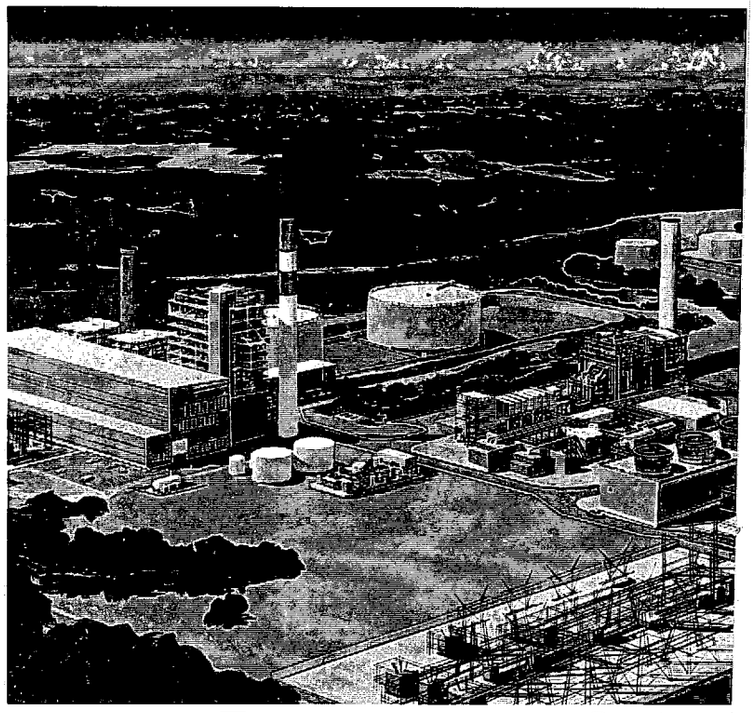
CITY OF TALLAHASSEE



Purdom Unit 8 Site Certification Application

VOLUME 1

March, 1997

Raytheon Engineers & Constructors

MOORE/BOW

Raytheon Engineers & Constructors

MOORE/BOWERS

FOSTER WHEELER ENVIRONMENTAL CORPORATION

HOPPING GREEN SAMS & SMITH PROFESSIONAL ASSOCIATION

CITY OF TALLAHASSEE

Purdom Unit 8 Site Certification Application

VOLUME 1

DEPARTMENT OF
ENVIRONMENTAL PROTECTION
MAR 07 1997
SITING COORDINATION

CITY OF TALLAHASSEE

SITE CERTIFICATION APPLICATION

PURDOM UNIT 8

MARCH 1997

VOLUME 1

Cover Art by Ouida Vick

CITY OF TALLAHASSEE

CITY HALL
300 S. ADAMS ST.
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RON WEAVER
Mayor
SCOTT MADDOX
Mayor Pro Tem

JOHN PAUL BAILEY
Commissioner
DEBBIE LIGHTSEY
Commissioner
STEVE MEISBURG
Commissioner

STEVEN C. BURKETT
City Manager
ROBERT B. INZER
City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

March 7, 1997

Mr. Hamilton S. Oven, Jr.
Siting Coordination Office
Department of Environmental Protection
2600 Blair Stone Road MS480
Tallahassee, FL 32399

Dear Mr. Oven:

Subject: Purdom Unit 8 Project
Site Certification Application

Enclosed are five copies of the City of Tallahassee's Site Certification Application for a new unit (Unit 8) at the Sam O. Purdom Generating Station in the City of St. Marks, Wakulla County, Florida. The application requests certification of the existing site simultaneously with the new unit. As you know, the Florida Public Service Commission is considering the need application for this project, which was filed on December 20, 1996.

Also enclosed is a check for $75,000 to cover the application processing fee. Upon your determination of "completeness," the additional copies of the application required by the Department will be provided.

As always, the City of Tallahassee is available to discuss any aspect of this application and looks forward to a close working relationship with you during the certification process. Should you have any questions, please feel free to call me at (904) 891-8850.

Sincerely,

Jennette Curtis

Jennette Curtis
Environmental Administrator

Enclosures

Printed on Recycled Paper with Soy Ink

SITE CERTIFICATION APPLICATION

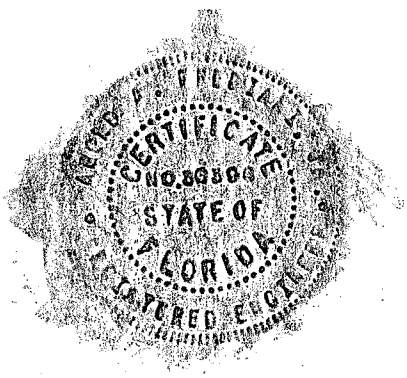
FOR

CITY OF TALLAHASSEE

PURDOM UNIT 8

Harold A. Frediani, Jr., P.E. 3/4/97
Date
Florida No. 36394
Raytheon Engineers & Constructors
145 Technology Park
Norcross, Georgia 30092

Darrel J. Graziani, P.E. 3/4/97
Date
Florida No. 44685
Foster Wheeler Environmental
Corporation
759 South Federal Highway
Stuart, Florida 34994



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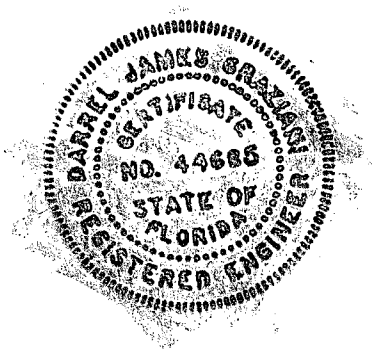

APPLICANT INFORMATION

Applicant Official Name: City of Tallahassee

Address: City Hall, 300 South Adams Street, Tallahassee, FL 32301

Address of Official Headquarters: Same

Business Entity (corporation, partnership, co-operative): City

Names, Owners, etc.: N/A

Name and Title of Chief Executive Officer: Anita R. Favors, Interim City Manager

Name, Address, and Phone Number of official Representative responsible for obtaining certification: Jennette Curtis, Environmental Administrator
City of Tallahassee, Utility Services/Third Floor
300 South Adams Street, Tallahassee, FL 32301
(904) 891-8850

Site Location (county): Wakulla

Nearest Incorporated City: St. Marks

Latitude and Longitude: Latitude 30° 9′ 40″; Longitude 84° 12′ 01″

UTM's Northerly: 3,339.767 km
Easterly: 769.611 km

Section, Township, Range: S2, T4S, R1E

Location of any directly associated transmission facilities (counties): Wakulla and Leon
(certification is sought for reconductoring as a direct project impact, not as an associated facility. See Section 6.2.)

Name Plate Generating Capacity: 250 MW (nominal)

Capacity of Proposed Additions and Ultimate Site Capacity (where applicable): N/A

Remarks: (Additional information that will help identify the applicant): Applicant is represented by: Mr. Gary Sams
Hopping Green Sams & Smith
P.O. Box 6526, Tallahassee, FL 32314
(904) 222-7500

LIST OF ORGANIZATIONS THAT PARTICIPATED IN THE PREPARATION OF THE SCA

City of Tallahassee
Tallahassee, Florida
- Overall Management and Direction

Raytheon Engineers & Constructors
Norcross, Georgia
- Engineering Contractor

Foster Wheeler Environmental Corporation
Norcross, Georgia; Stuart, Florida
- Overall Environmental Contractor

Hopping Green Sams & Smith
Tallahassee, Florida
- Environmental Attorneys for City of Tallahassee

Moore/Bowers
Tampa, Florida
- Consultant for Land Use, Planning, Zoning, Human Resources, Public Information, and Socioeconomics

Hall Planning & Engineering, Inc.
Tallahassee, Florida
- Subconsultant for Traffic Analyses

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LIST OF ACRONYMS AND ABBREVIATIONS

#/100 ml	Number per 100 Mililiters
° C	Degrees Celsius
µg/l	Micrograms per Liter
µmhos	Micromhos
µmhos/cm	Micromhos per Centimeter
µS	Microsiemens
µS/cm	Microsiemens per Centimeter
° F	Degrees Fahrenheit
$\mu g/m^3$	Micrograms per Cubic Meter
0.05% S	0.05 Percent Sulfur by Weight
2378 TCDD	Dioxin
7Q10	Seven Consecutive Day Low Flow with a Ten Year Recurrence
AADT	Average Annual Daily Traffic
AAQS	Ambient Air Quality Standards
Acfm	Actual Cubic Feet per Minute
ACSR	Aluminum Conductor, Steel Reinforced
AET	Actual evapotranspiration
agl	Above Ground Level
ANSI	American National Standard Institute
AP-42	Compilation of Air Pollutant Emission Factors
AQRV	Air Quality Related Values
ARPC	Apalachee Regional Planning Council
As	Arsenic
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
Aux	Auxiliary
AWG	American Wire Gage
BACT	Best Available Control Technology
BaP	Benzo(a)pyrene
BDL	Below Detection Level
Be	Beryllium
BEBR	Bureau of Economic and Business Research
BMPS	Best Management Practices
BOCC	Board of County Commissioners
BOD-5	5 Day Biological Oxygen Demand
BPIP	Building Profile Input Program
Btu	British Thermal Unit
Btu/ft^3	British Thermal Units per Cubic Foot
Btu/kWh	British Thermal Units per Kilowatt Hour
Btu/lb	British Thermal Units per Pound
Btu/MW-hour	British Thermal Units per Megawatt Hour
Ca	Calcium

LIST OF ACRONYMS AND ABBREVIATIONS (Cont'd)

CAA	Clean Air Act
$CaCO_3$	Calcium Carbonate
CARL	Conservation and Recreation Land
CBOD	Carbonaceous Biological Oxygen Demand
Cd	Cadmium
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CH	Sandy Clay
CN	Cyanide
CO	Carbon Monoxide
Co	Cobalt
CO_2	Carbon Dioxide
COD	Chemical Oxygen Demand
COE	U.S. Army Corps of Engineers
CompQAP	Comprehensive Quality Assurance Plan
COT	City of Tallahassee
Cr	Chromium
CSM	City of St. Marks
CT	Combustion Turbine
CWA	Clean Water Act
DACS	Department of Agriculture and Consumer Services
dB	Decibel
dBA	Decibel (A level)
DCA	Department of Community Affairs
DEP	Department of Environmental Protection
DHR	Florida Department of State, Division of Historical Resources
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
DOT	U.S. Department of Transportation
Ds	Stack Diameter
DSM	Demand Side Management
EB	Eastbound
EEI	Edison Electric Institute
EMA	Ecosystem Management Area
EMF	Electric and Magnetic Fields
EMS	Emergency Medical Services
EPA	U. S. Environmental Protection Agency
EPRI	Electric Power Research Institute
EPT	Etheroptera/Pleucoptera/Trichoptera
ESP	Electrostatic Precipitators
F.A.C.	Florida Administrative Code
F.S.	Florida Statutes

LIST OF ACRONYMS AND ABBREVIATIONS (Cont'd)

FAA	Federal Aviation Administration
FAAQS	Florida Ambient Air Quality Standards
FARCs	Florida Ambient Reference Concentrations
FBN	Fuel Bound Nitrogen
FCMP	Florida Coastal Management Program
FDACS	Florida Department of Agriculture and Consumer Services
FDBF	Florida Department of Banking and Finance
FDE	Florida Department of Education
FDEP	Florida Department of Environmental Protection
FDEP-MRD	Florida Department of Environmental Protection, Marine Resources Division
FDLES	Florida Department of Labor and Employment Security
FDNR	Florida Department of Natural Resources
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FGFWFC	Florida Game and Fresh Water Fish Commission
FGS	Florida Geological Survey
FGT	Florida Gas Transmission
Fl	Fluoride
FLMs	Federal Land Managers
FLUCCS	Florida Land Use and Cover Classification System
FNAI	Florida Natural Areas Inventory
FPC	Florida Power Corporation
FR	Federal Register
ft	Foot
ft/day	Feet per Day
ft/sec	Feet per Second
ft^2/day	Square Feet per Day
FWENC	Foster Wheeler Environmental Corporation
FWS	U.S. Fish and Wildlife Service
GE	General Electric
GEP	Good Engineering Practice
Gpd	Gallons per day
Gpm	Gallons per minute
GT	Gas Turbine
GT/STG	Gas Turbine/Steam Turbine Generator
H_2SO_4	Sulfuric Acid Mist
HAP	Hazardous Air Pollutant
HC	Hydrocarbon
HCl	Hydrochloric Acid
HCO_3	Bicarbonate
HCOH	Formaldehyde
HF	Hydrogen Fluoride

LIST OF ACRONYMS AND ABBREVIATIONS (Cont'd)

Hg	Mercury
HGSS	Hopping Green Sams & Smith
HHV	Higher Heating Value
hp	Horse Power
HPE	Hall Planning and Engineering
Hr	Hour
HRSG	Heat Recovery Steam Generator
Hs	Stack Height
IRP	Integrated Resource Planning
ISC3	Industrial Source Complex
ISCST3	Industrial Source Complex, Short-Term
ISO	International Standards Organization
IWW	Industrial Wastewater
km	Kilometers
kV	Kilovolts
kV/m	Kilovolts per Meter
kW	Kilowatt
kWh	Kilowatt hour
L_{10}	Noise Level Exceeded 10 Percent of Each Hour
L_{90}	Noise Level Exceeded 90 Percent of Each Hour
LAER	Lowest Achievable Emission Rate
lb/hr	Pounds per Hour
lb/in^2	Pounds per Square Inch
lb/mmBtu	Pounds per Million British Thermal Units
LDL	Larson-Davis Laboratories
L_{dn}	Day/night noise level
L_{eq}	Equivalent Noise Level
LHV	Lower Heating Value
ln H	Natural Log Hardness
LOS	Level of service
m/s	Meters per Second
MBAS	Methylene Blue Active Substance
MCR	Maximum Current Rating
MF/100ML	Membrane filtration/number per 100 milliliters
MFCP	Main Fire Control Panel
Mg	Magnesium
mG	MilliGauss
mg/l	Milligrams per Liter
MGD	Million Gallons Per Day
mmBtu/hr	Million British Thermal Units per Hour
Mn	Manganese
MODFLOW	Modular Three-Dimensional Finite-Difference Ground Water Flow Model

LIST OF ACRONYMS AND ABBREVIATIONS (Cont'd)

mph	Miles per Hour
msl	Mean Sea Level
MW	Megawatt
MW-hour/year	Megawatt Hour per Year
N/A	Not available
N_2	Nitrogen
NAAQS	National Ambient Air Quality Standards
NB	Northbound
NFPA	National Fire Protection Association
Ni	Nickel
$NiCl_2$	Nickel Chloride
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_x	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NR	No Restrictions
NRCS	Natural Resources Conservation Service
NSPS	New Source Performance Standards
NST	National Standard Thread
NT	Not Tested
NWFWMD	Northwest Florida Water Management District
NWS	National Weather Service
O_2	Oxygen
O_3	Ozone
OFW	Outstanding Florida Waters
OSN	Outfall Serial Number
P	Phosphorus
PAH	Polycyclic aromatic hydrocarbon
Pb	Lead
PbO_3	Lead Oxide
pci/l	Picocuries per Liter
PD	Peak Direction
pH	Negative logarithm of the concentration of hydrogen ions
PK	Peak
PM	Particulate Matter
PM (TSP)	Total Suspended Particulate Matter
PM_{10}	Particulate Matter less than 10 Microns in Diameter
POM	Polycyclic Organic Material
POR	Period of Record
POS	Plan of Study
POTW	Publicly Owned Treatment Works
ppm	Part per Million
ppmvd	Parts per Million by Volume on a dry basis

LIST OF ACRONYMS AND ABBREVIATIONS (Cont'd)

ppmvw	Parts per Million by Volume on a wet basis
PPSA	Florida Electrical Power Plant Siting Act
PSC	Public Service Commission
PSD	Prevention of Significant Deterioration
psig	Pounds per Square Inch Gauge
PVC	Polyvinyl Chloride
PWRR	Present Worth of Revenue Requirements
QA	Quality Assurance
QAPP	QA Project Plan
RARE	Roadless Area Review and Evaluation Area
RE&C	Raytheon Engineers and Constructors
RFP	Request for Proposal
RIMS	Regional Input-Output Modeling System
S-C-T	Salinity-Conductivity-Temperature
Sb	Antimony
SB	Southbound
SC	Clayey Sand
SCA	Site Certification Application
SCDHEC	South Carolina Department of Health and Environmental Control
SCE	Southern California Edison
SCF	Standard Cubic Feet
SCR	Selective Catalytic Reduction
SCRAM	Support Center for Regulatory Air Models
Se	Selenium
SiO_2	Silica, as silicon dioxide
SMCC	St. Marks City Commission
SMNWR	St. Marks National Wildlife Refuge
SNCR	Selective Noncatalytic Reduction
SO_2	Sulfur Dioxide
SO_3	Sulfur Trioxide
SPT	Standard Penetration Test
SR	State Road
STAR	Stability Array
Std.	Standard
SWPPP	Stormwater Pollution Prevention Plan
TDG	Total Dissolved Gases
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TPY	Tons per Year
TRB	Transportation Research Board
Ts	Stack Exit Temperature
TSP	Total Suspended Particulates
TSS	Total Suspended Solids

LIST OF ACRONYMS AND ABBREVIATIONS (Cont'd)

TTN	Technology Transfer Network
USCS	Unified Soil Classification System
USDA	United States Department of Agriculture
USDC	United States Department of Commerce
USDI	United States Department of Interior
USFS	U.S. Forest Service
USFWS	U.S. Fish & Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
V	Vanadium
VOC	Volatile Organic Compound
Vs	Stack Exit Velocity
WB	Westbound
WMA	Wildlife Management Area
WWTF	Wastewater Treatment Facility
YSI	Yellow Springs Instruments

LIST OF FREQUENTLY USED TERMS

"City of Tallahassee" or "City"	Utilized to refer to the City and the Electric Utility.
"commercial operation"	The date on which the first electricity is generated for sale. This is expected to be in May 2000.
"facility-wide caps"	The federally enforceable permit conditions which would require annual emissions of SO_2 and NO_x to remain at or below recent levels of those pollutants from Units 5, 6, and 7 and from the combustion turbines (GT1 and 2).
"guarantee point"	95°F, 50% relative humidity, firing natural gas.
"guaranteed net heat rate"	7,040 Btu/kWh (HHV) on a 95°F, 50% relative humidity while firing natural gas.
"guaranteed net power output"	232,900 kW on a 95°F, 50% relative humidity while firing natural gas.
"power output"	A nominal 250 MW.
"Project" or "Purdom Unit 8 Project"	Describes the addition of "Unit 8" and the associated modifications to the "Purdom Station," which include but are not limited to the retirement of Units 5 and 6 and future operational limits for Unit 7, Gas Turbine 1, Gas Turbine 2, and auxiliary boiler under facility-wide cap.
"Sam O. Purdom Generating Station" or "Purdom Station" or "Plant" or "Purdom Plant" or "Power Plant" or "the Facility"	Describes the equipment owned or operated by the City on the site. "Purdom Station" is used after the first usage of "Sam O. Purdom Generating Station."
"Purdom Unit 8" or "Unit 8"	Utilized to describe the new combined cycle facility, the zero discharge facility, the cooling tower, and ancillary equipment which is installed as part of the "Project."
"site"	The entire property owned by the City which is being "certified" under the PPSA.
"Unit 8 Location"	The portion of the "site" which is being developed for "Unit 8."
"zero discharge facility"	Utilized to describe the wastewater treatment facility being installed with Unit 8.

PREFACE

The City of Tallahassee (City) is a municipally owned corporation under the laws of the State of Florida. Under the City's charter, the City owns and operates the fourth largest municipal electric utility in Florida and serves approximately 88,000 customers in a service territory of 221 square miles. The City's electric utility continues to enjoy growth in the demand for electricity. The City's current and projected growth rate is approximately 2 percent per year.

The City currently contracts for a 100 MW portion of its supply side resources, 75 MW from the Southern Company and 25 MW from Entergy. In May of 2000, the 75 MW contract will expire and the City has a need to replace this resource as well as meet the increasing customer load. To meet this need, the City proposes to expand its generating capacity at its existing Purdom Generating Station located in the City of St. Marks, Florida. The existing Purdom Station has a nominal generating capacity of 112 MW (Steam Units 5 and 6 - 22 MW each; Steam Unit 7 - 44 MW, Gas Turbines 1 & 2 - 12.5 MW each) This expansion will include the addition of a nominal 250 MW combined cycle generating facility (known as Unit 8) coupled with the early permanent retirement of the existing Purdom Units 5 and 6. This will result in a net addition of over 200 MW to the City's electric system. Unit 8 will primarily burn clean natural gas and utilize Number 2 (0.05% S) diesel fuel oil as a secondary fuel. The design of Unit 8 includes many environmentally beneficial design features that result in a reduced environmental impact from the Purdom Station while the generating capacity is doubled.

The City is seeking approval for the Purdom Unit 8 Project under the Florida Electrical Power Plant Siting Act, Chapter 403, Part II, Florida Statutes (PPSA). The PPSA provides for a centralized review process for new electrical generating facilities in Florida, involving a balancing of "the increasing demand for electrical power plants with the broad interests of the public," including human health, the environment, state waters and wildlife. Under the PPSA, the Florida Public Service Commission (PSC) is the sole forum for the determination of need for a proposed facility. The Florida Department of Environmental Protection (FDEP) acts as the coordinator for the remainder of the certification process, with input from various State, regional and local agencies and ultimate disposition by the Governor and Cabinet sitting as the Siting Board. The City is concurrently seeking certification under the PPSA of its entire Purdom site.

The City submitted a "Petition to Determine Need for Electrical Power Plant - Purdom Unit 8" to the PSC on December 21, 1996. The Petition, along with supporting documentation, addresses the manner in which the Purdom Unit 8 Project will: (i) meet the need for electric system reliability and integrity; (ii) meet the need for adequate electricity at reasonable cost; and (iii) be the most cost-effective alternative available. Salient points of the Need Petition are summarized in Chapter 1 of this Site Certification Application (SCA).

This SCA is being filed with FDEP pursuant to Chapter 62-17, F.A.C. It addresses the environmental and socioeconomic aspects of the Purdom Unit 8 Project by presenting information on the existing natural and human environments, on the generating and associated facilities proposed to be constructed and operated, and on the impacts of those facilities on those environments. In general, the Purdom Unit 8 Project represents a major addition to the City's total generating capacity. Use of an existing site minimizes environmental impacts.

The City provided opportunities for the public to comment on the project during a number of public meetings in Tallahassee and St. Marks in the fall of 1996. Special briefings and meetings were also held with environmental groups, officials of the City of St. Marks and Wakulla County, and regulatory agencies. These comments were considered and addressed, as appropriate, in the SCA and/or separate correspondence with the individual commentors. Appendix 10.7 includes a record of the public comments obtained on the project during preparation of this SCA.

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1.1 INTRODUCTION

The City of Tallahassee (City) has determined that in order to continue to provide reliable, cost-effective service to its customers, as well as to meet future load growth, it must add generating resources to replace an expiring 75 megawatts (MW) purchased power contract which terminates in the year 2000. The most cost-effective way for the City to meet this need is to construct a new 250 MW primarily natural gas fired combined cycle unit to be placed into service by May 2000. This unit will be constructed at the City's existing Sam O. Purdom Generating Station (Purdom Station) located in the City of St. Marks, Florida, and will be designated as Purdom Unit 8. The unit consists of a new combustion turbine/generator, heat recovery steam generator, steam turbine/generator and the associated auxiliary facilities.

The Purdom Unit 8 Project will have an immediate and positive impact on the City's ability to provide cost-effective utility service. Based on an evaluation conducted during the City's Integrated Resource Planning (IRP) process, the addition of Purdom Unit 8 will reduce the electric system average energy cost by approximately 11 percent in the first full year of commercial operation. This savings comes from replacing relatively high-cost purchased power and existing generation from older, less efficient units on the City's system (Purdom Units 5 and 6 will be retired once Purdom Unit 8 goes into service) with generation from a highly efficient new unit. Additionally, Purdom Unit 8 will enhance the reliability of the City's system by enabling the City to meet its reliability criteria in the year 2000 as well as providing the required reactive capability for voltage support to the southeast portion of the City's electric system.

Purdom Unit 8 is being licensed under the Florida Electrical Power Plant Siting Act (PPSA), Chapter 403, Part II, Florida Statutes and the Site Certification Application (SCA) is being filed with the Florida Department of Environmental Protection (FDEP). The City filed its Need for Power Application with the Florida Public Service Commission (PSC) on December 20, 1996. This Chapter 1 of the Site Certification Application is comprised mainly of the Executive Summary of the Need for Power Application. The full Need for Power Application, as filed with the PSC (Docket No. 961512-EM), should be consulted for details.

1.2 BACKGROUND

The City of Tallahassee is a municipal corporation which owns, operates, and maintains an electric generation, transmission, and distribution system to supply electric power in and around the City. One of the City's primary goals in the operation of its utility is to provide an adequate and reliable power supply to its customers.

1.3 THE CITY'S CURRENT POWER SYSTEM

The City currently serves approximately 88,000 customers located within a 221-square mile service territory. The City has two fossil fuel generating stations, each of which contains both steam and gas turbine electric generating facilities, a hydroelectric generating station, and a 1.33 percent undivided ownership interest in Crystal River Unit #3. Together, these generating resources provide 490 MW (net) of summer capacity. The City currently purchases power under

a 75 MW contract with the Southern Company which expires on May 31, 2000, and a 25 MW contract with Entergy Power, Inc. which will terminate on March 31, 2002.

1.4 THE CITY'S PLANNING PROCESS

In late 1993, the City recognized that an opportunity would exist at the termination of the Southern Company contract to reduce the cost of supplying power to its customers. Improvements in generating technology made it clear that a new gas fired generator could be installed and operated for significantly less than the price being paid for purchased power. The City began the process of screening various generating technologies and other resources for evaluation in an Integrated Resource Planning (IRP) study.

The City's Initial IRP Study, completed in May 1995, showed that the optimal resource type for meeting the year 2000 need would be a combination of demand side management programs and a long-term base-load-type supply resource, most likely using a gas fired combined cycle technology. In order to determine the most cost-effective alternative for meeting the year 2000 need, the City conducted a competitive Request for Proposal (RFP) process in parallel with the development and evaluation of self-build options.

On August 31, 1995, the City released an RFP for the supply of electric capacity and energy. This RFP solicited proposals for purchased power and/or generating Projects in amounts from 10 MW to 250 MW. A total of 1,410 MW was submitted in response to the request for up to 250 MW of supply-side resources, including five external proposals and two alternatives proposed by the City. All of these proposals included gas fired capacity, and some also included options for additional purchased power.

After an extensive evaluation process, the City selected the Purdom Unit 8 alternative as the best economic choice for meeting the year 2000 need for power. This unit has a guaranteed heat rate of 7,040 Btu/kWh at an ambient temperature of 95°F while firing natural gas. The total construction cost of Purdom Unit 8 is approximately $434/kW exclusive of contingency, capitalized interest, and transmission upgrades and based on a rating of 251,054 kW at ISO conditions). Under base case planning assumptions, the resource plan including Purdom Unit 8 produces savings of approximately $91 million in Present Worth of Revenue Requirements (PWRR) over a 20-year period compared to the next best alternative identified through the RFP process. The Purdom Unit 8 Project also performs best under a wide range of alternative future scenarios identified during the evaluation process.

1.5 OTHER CONSIDERATIONS

1.5.1 Load Forecast

The City's load forecast shows that summer peak demand is projected to grow at a rate of approximately 1.8 percent over a 20-year planning horizon. Although load growth is not the primary driver in the need for additional generating resources in 2000, load growth before and after that date has an impact on the selection of the most cost-effective power supply alternative.

1.5.2 Demand Side Management

The City has implemented demand side management (DSM) programs, which make a significant contribution in reducing demand and energy requirements. While DSM programs can frequently be effective in reducing or delaying utilities' requirements for future capacity additions, there is insufficient DSM potential to avoid the addition of Purdom Unit 8, or to delay its in-service date beyond 2000. The City has a sudden need for additional power supply or sources in the year 2000 as a result of the termination of the purchased power contract for 75 MW from the Southern Company.

DSM nevertheless remains an important part of the City's resource mix. Without existing and proposed DSM, the City would have had to add generating capacity one to two years earlier than currently scheduled in order to continue to meet its 17 percent reserve margin reliability criterion. In addition, DSM defers future combustion turbine unit additions in the later years of the City's planning horizon, thereby producing approximately $16 million PWRR in savings to the City's electric customers.

1.5.3 Reliability Considerations

Purdom Unit 8 enhances the reliability of the City's electric system in a number of ways. It enables the City to continue to meet its reliability criteria when the purchased power contract with the Southern Company expires in May 2000. In addition, the City has determined that the most effective system reactive supply strategy requires at least one unit on line at the Purdom Station in order to provide adequate voltage support to the southeast portion of the City's system. Otherwise, low voltage can become a problem during periods of high load. Purdom Unit 8 will enable the City to supply the needed reactive power by a unit that is expected to be dispatched full time and at a much lower cost than any of the other existing units currently located at the Purdom site.

1.5.4 Consequences Of Delay

A delay in the in-service date for Purdom Unit 8 would have a substantial impact on the cost of power to the City's retail customers. Such a delay could cost customers approximately $947,000 per month. This increased cost would result from the need to replace the Southern Company power purchase with another short-term purchase at a relatively high cost, and from the loss of an efficient new generating resource to displace higher cost generation from existing units on the City's system.

A delay of Purdom Unit 8 would also have negative environmental and system operations impacts. Such a delay would require the City to consume more fuel to serve the same amount of load, thereby increasing the air emissions slightly in the area around Tallahassee. It is also possible that more fuel oil might be consumed in the case where this new unit is delayed and the existing system were called upon to continue to serve the City's load after the expiration of the purchased power contract.

Additionally, a delay could cause an immediate shortfall of adequate capacity and require reliance on transmission tie lines to provide adequate emergency power when the City experiences a forced outage. If Purdom Unit 8 is not on line by May 2000, the City's resource

portfolio will be 88 MW below the amount needed to maintain an appropriate reserve margin. This shortfall could be covered by short-term purchases, but such purchases would be made at substantially higher costs than those associated with the Purdom Unit 8 Project.

1.5.5 Consistency With Statewide Need

The construction of Purdom Unit 8 will not result in excess generating capacity on a statewide basis. Purdom Unit 8 has been included in the most recent Ten Year Site Plan for peninsular Florida. Even with the addition of Purdom Unit 8 and the other new generating units shown in that plan, peninsular Florida reserve margins, which are not at excessive levels today, continue to decline over the period 2000 to 2005.

1.5.6 Environmental Features of Purdom Unit 8

The Purdom Unit 8 Project has been designed to comply with all applicable environmental requirements and to minimize the impact or enhance the environmental characteristics of the Purdom Station. Environmental highlights include utilization of clean burning natural gas as the primary fuel, utilization of low sulfur diesel oil as the secondary fuel, utilization of the latest dry low-NO_x combustor technology to achieve a NO_x emission rate lower than that of other recently licensed projects, the use of a zero water discharge design which also eliminates groundwater withdrawals for the entire Purdom Station and reuse of the treated sewage effluent (which is currently discharged to the St. Marks River) from the City of St. Marks Wastewater Treatment Facility.

1.6 CONCLUSION

The construction of Purdom Unit 8 is the most cost-effective alternative, with minimal environmental impacts, available to the City to meet its customers' power supply needs. This Project will enhance the reliability of the City's system and will ensure that its customers have access to an adequate supply of electricity at a reasonable cost while ensuring compliance with all related environmental regulations.

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CHAPTER 2

SITE AND VICINITY CHARACTERIZATION

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2.1 SITE AND ASSOCIATED FACILITIES DELINEATION

2.1.1 Site Location

The site for the Purdom Unit 8 Project is the existing Sam O. Purdom Generating Station, located on 63 acres within the City of St. Marks in Wakulla County, Florida (see Figures 2.1.1-1 and 2.1.1-2). The plant site is located in Section 2 of Township 4S, Range 1E; more specifically, east of State Road (SR) 363 approximately two miles south of US Highway 98. The St. Marks River is the eastern boundary of the Project site.

In addition to Unit 8, the City seeks certification, pursuant to Section 403.5175, Florida Statutes (F.S.), of the existing Purdom Station and its site (see Figure 2.1.1-3). The Project area includes the existing power plant and other existing facilities such as the fuel storage tanks, wastewater treatment facility, switchyard, parking lots, and various buildings.

There are no associated facilities proposed other than those facilities which are addressed in Chapter 6.0.

2.1.2 Existing Site Uses

An aerial photograph of the site and surrounding land uses is provided on Figure 2.1.2-1. As shown on this figure, approximately 50 percent of the site is in woodland and open space. The remaining half of the site is occupied by the existing power generation and fuel handling facilities. Those facilities include nine generating units, the retired steam electric Units 1 through 4, the active steam electric Units 5 through 7 and their associated facilities, and the combustion gas turbine (GT) Units 1 and 2. The locations of the existing units are depicted on Figure 2.1.2-2. The two discharge canals are located south of these units with the main oil storage area between them. The natural gas pipeline that provides the primary fuel for the facility enters the plant site at the intersection of SR 363 and the Purdom Station driveway and runs along the south side of the access road. The oil barge unloading facility is located on the east side of the Number 6 fuel oil storage area. The plant access road runs east-west and separates the steam generating units from the Number 6 fuel oil storage area, Number 2 fuel oil storage area, maintenance shops and warehouse, and existing combustion turbines. Number 6 fuel oil is the alternative fuel source for the existing steam units, and Number 2 fuel oil is the alternative fuel for the combustion turbines.

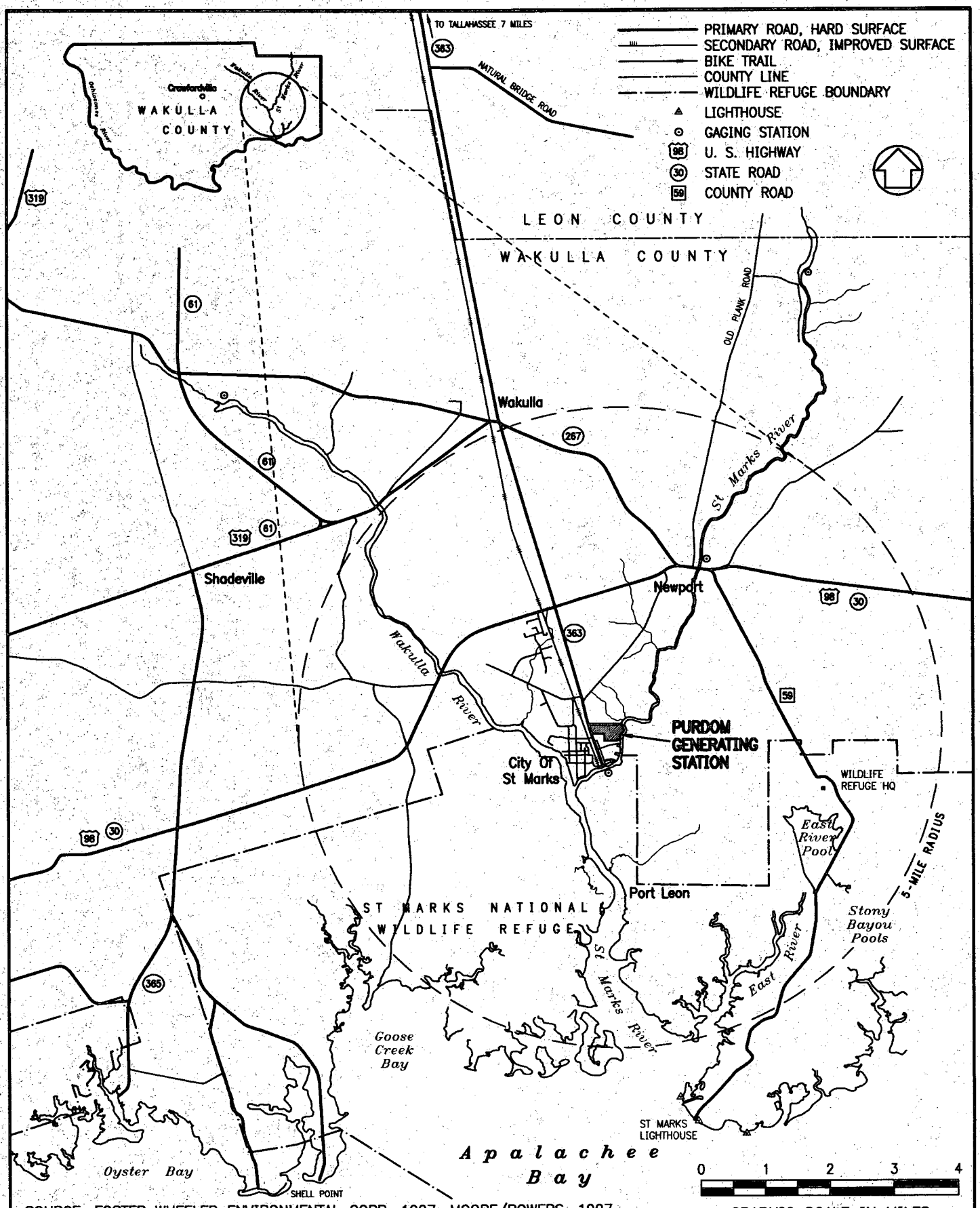
The Purdom Station switchyard is scheduled to be refurbished in the next several years. Construction on the refurbishment is scheduled to be completed no later than the summer of 1999. This work was planned independently of the Unit 8 installation and is intended to replace obsolete equipment and upgrade the switchyard design and functionality.

2.1.3 Adjacent Properties

Surrounding land uses include industrial uses to the north and south, the privately owned and publicly managed Aucilla Wildlife Management Area (WMA) to the east across the St. Marks

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.



SOURCE: FOSTER WHEELER ENVIRONMENTAL CORP, 1997; MOORE/BOWERS, 1997

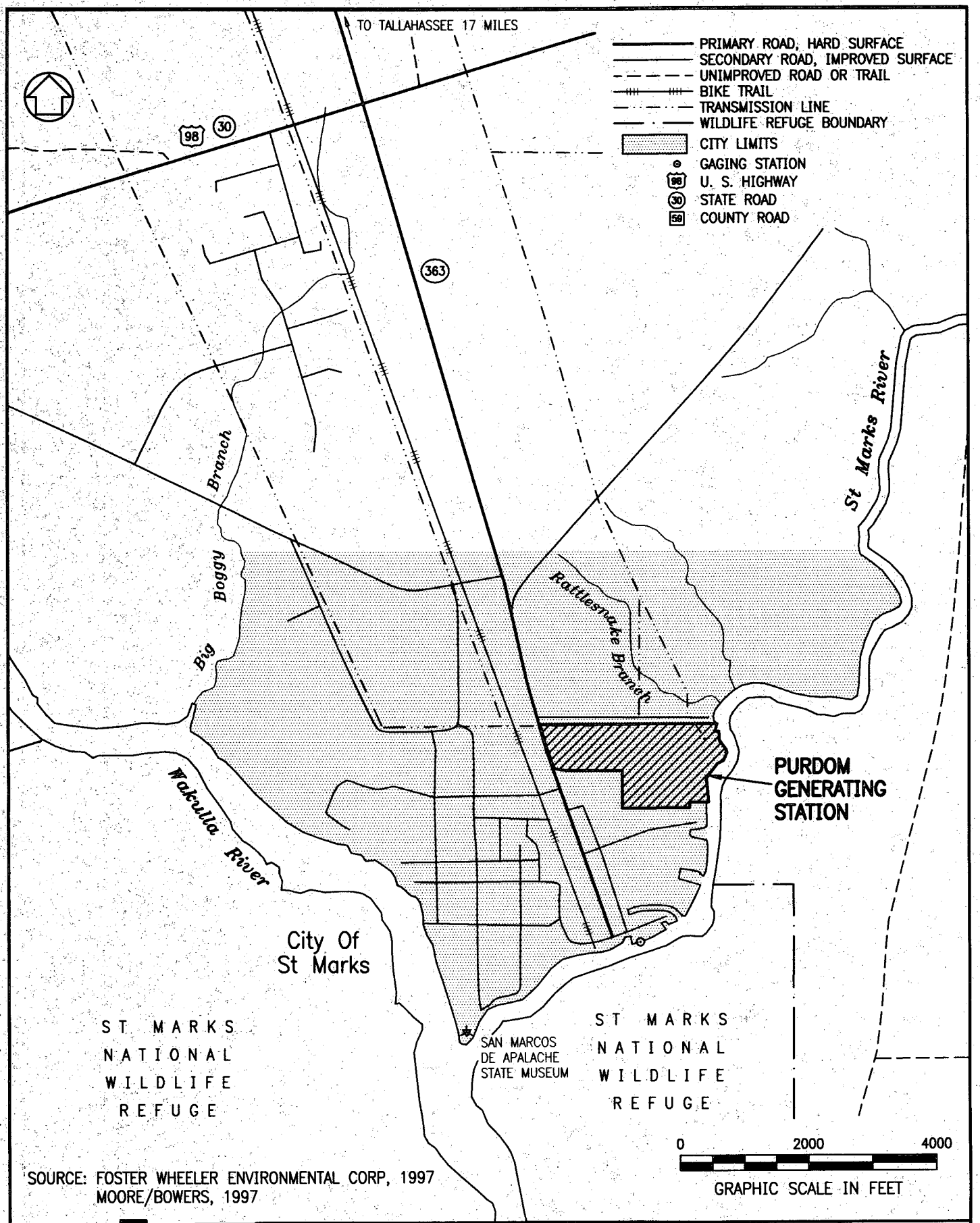
CITY OF TALLAHASSEE

SITE LOCATION MAP

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.1.1-1

PLOT DATE MAR 1, 1997, 1996 C:\15840002\----\00000-35.DWG



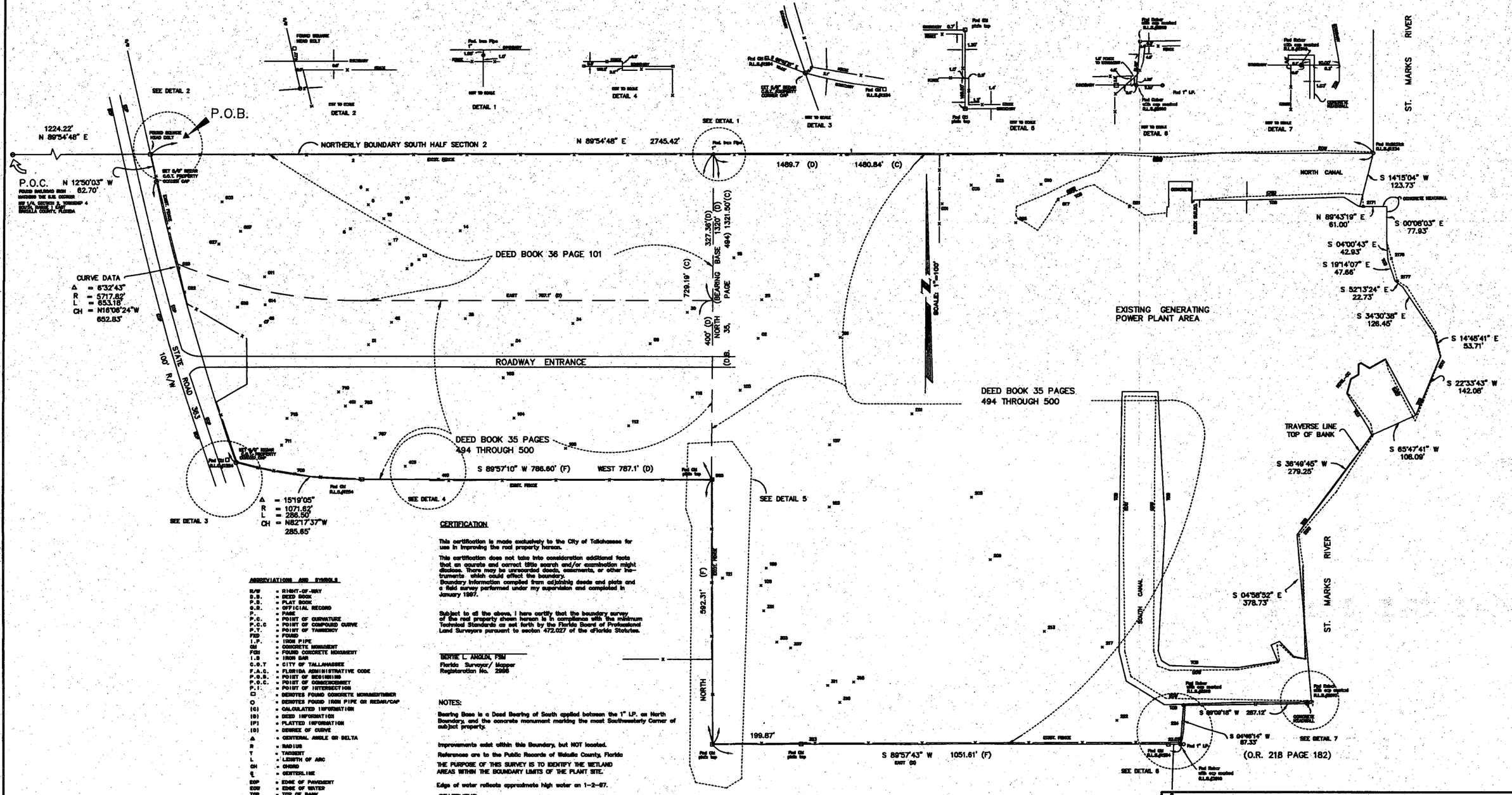
PLOT DATE MAR 1, 19976 C:\15840007\----\00000-33.DWG

CITY OF TALLAHASSEE

SITE LOCATION

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.1.1-2



ABBREVIATIONS AND SYMBOLS

R/W	= RIGHT-OF-WAY
D.B.	= DEED BOOK
P.B.	= PLAT BOOK
O.R.	= OFFICIAL RECORD
P.	= PAGE
P.C.	= POINT OF CURVATURE
P.C.C.	= POINT OF COMPOUND CURVE
P.T.	= POINT OF TANGENCY
FND	= FOUND
I.P.	= IRON PIPE
CM	= CONCRETE MONUMENT
FCM	= FOUND CONCRETE MONUMENT
I.R.	= IRON BAR
C.O.T	= CITY OF TALLAHASSEE
F.A.C.	= FLORIDA ADMINISTRATIVE CODE
P.O.B.	= POINT OF BEGINNING
P.O.C.	= POINT OF COMMENCEMENT
P.I.	= POINT OF INTERSECTION
☐	= DENOTES FOUND CONCRETE MONUMENT/MEMBER
○	= DENOTES FOUND IRON PIPE OR REBAR/CAP
(C)	= CALCULATED INFORMATION
(D)	= DEED INFORMATION
(P)	= PLATTED INFORMATION
(D)	= DEGREE OF CURVE
Δ	= CENTERAL ANGLE OR DELTA
R	= RADIUS
T	= TANGENT
L	= LENGTH OF ARC
CH	= CHORD
℄	= CENTERLINE
EOP	= EDGE OF PAVEMENT
EOW	= EDGE OF WATER
TOB	= TOP OF BANK

CERTIFICATION

This certification is made exclusively to the City of Tallahassee for use in improving the real property hereon.

This certification does not take into consideration additional facts that an accurate and correct title search and/or examination might disclose. There may be unrecorded deeds, easements, or other instruments which could affect the boundary.
Boundary information compiled from adjoining deeds and plats and a field survey performed under my supervision and completed in January 1997.

Subject to all the above, I here certify that the boundary survey of the real property shown hereon is in compliance with the minimum Technical Standards as set forth by the Florida Board of Professional Land Surveyors pursuant to section 472.027 of the oFlorida Statutes.

BERTIE L. ANGLIN, PSM
Florida Surveyor/ Mapper
Registeration No. 2986

NOTES:

Bearing Base is a Deed Bearing of South applied between the 1" I.P. on North Boundary and the concrete monument marking the most Southwesterly Corner of subject property.

Improvements exist within this Boundary, but NOT located.

References are to the Public Records of Wakulla County, Florida

THE PURPOSE OF THIS SURVEY IS TO IDENTIFY THE WETLAND AREAS WITHIN THE BOUNDARY LIMITS OF THE PLANT SITE.

Edge of water reflects approximate high water on 1-2-97.

STATEMENT:

The meander line of the wetland areas, depicted hereon, was established by a combination of the Army Corps of Engineers; Foster Wheeler Environmental Corp. A Constructing Firm and the members of the Florida Department of Environmental Protection Agency, Jurisdictional Declaratory statement. The meander line were located by the City of Tallahassee Surveying Section/Engineering Division.

ALL FENCES SHOWN ARE 6' HIGH CHAIN LINK

NUMBERS SHOWN ON WETLAND BOUNDARIES REFLECT NUMBERS MARKED ON FLAGGING LOCATED IN FIELD. ALL NUMBERS NOT SHOWN FOR CLARITY.

SOURCE: CITY OF TALLAHASSEE, 1997

PLOT DATE FEB 27, 1997 C:\15840007\---\00000-38.DWG

EXISTING PURDOM STATION AND ITS SITE

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 2.1.1-3

SAM O. PURDOM GENERATING STATION SITE

1" = 200'

0 200 400

GRAPHIC SCALE IN FEET

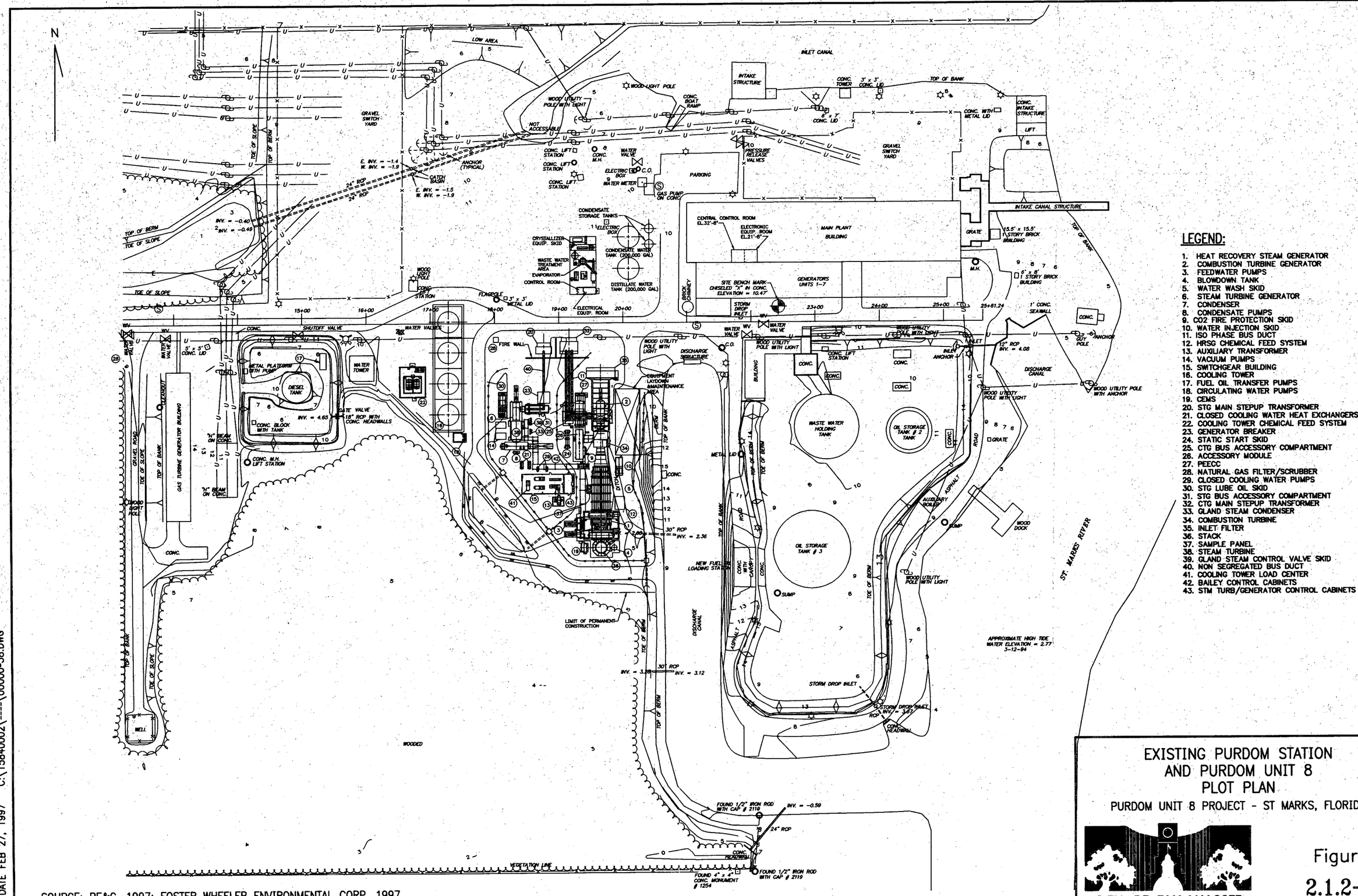
SOURCE: FDOT, 1994; MOORE/BOWERS, 1997
CITY OF TALLAHASSEE, 1997

AERIAL PHOTOGRAPH OF THE
PURDOM GENERATING STATION
AND SURROUNDING AREAS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure
2.1.2-1



LEGEND:

1. HEAT RECOVERY STEAM GENERATOR
2. COMBUSTION TURBINE GENERATOR
3. FEEDWATER PUMPS
4. BLOWDOWN TANK
5. WATER WASH SKID
6. STEAM TURBINE GENERATOR
7. CONDENSER
8. CONDENSATE PUMPS
9. CO_2 FIRE PROTECTION SKID
10. WATER INJECTION SKID
11. ISO PHASE BUS DUCT
12. HRSG CHEMICAL FEED SYSTEM
13. AUXILIARY TRANSFORMER
14. VACUUM PUMPS
15. SWITCHGEAR BUILDING
16. COOLING TOWER
17. FUEL OIL TRANSFER PUMPS
18. CIRCULATING WATER PUMPS
19. CEMS
20. STG MAIN STEPUP TRANSFORMER
21. CLOSED COOLING WATER HEAT EXCHANGERS
22. COOLING TOWER CHEMICAL FEED SYSTEM
23. GENERATOR BREAKER
24. STATIC START SKID
25. CTG BUS ACCESSORY COMPARTMENT
26. ACCESSORY MODULE
27. PEECC
28. NATURAL GAS FILTER/SCRUBBER
29. CLOSED COOLING WATER PUMPS
30. STG LUBE OIL SKID
31. STG BUS ACCESSORY COMPARTMENT
32. CTG MAIN STEPUP TRANSFORMER
33. GLAND STEAM CONDENSER
34. COMBUSTION TURBINE
35. INLET FILTER
36. STACK
37. SAMPLE PANEL
38. STEAM TURBINE
39. GLAND STEAM CONTROL VALVE SKID
40. NON SEGREGATED BUS DUCT
41. COOLING TOWER LOAD CENTER
42. BAILEY CONTROL CABINETS
43. STM TURB/GENERATOR CONTROL CABINETS

SOURCE: RE&C, 1997; FOSTER WHEELER ENVIRONMENTAL CORP, 1997

EXISTING PURDOM STATION AND PURDOM UNIT 8 PLOT PLAN

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 2.1.2-2

PLOT DATE FEB 27, 1997 C:\15840002\----\00000-38.DWG

River, and a mix of low density residential uses and scattered commercial uses to the west along SR 363.

2.1.4 Proposed Site Uses

The proposed Unit 8, the location of which is also depicted on Figure 2.1.1-3 consists of a combined cycle unit rated at a nominal 250 MW. Unit 8 is proposed to be installed on the west side of the westernmost discharge canal, south of the plant access road.

The natural gas metering and regulation station located on the plant site will be upgraded and relocated to the west on the site and there is a potential that Florida Gas Transmission will upgrade certain portions of the existing pipeline to accommodate the fuel delivery requirements. The cooling tower will be west of the steam turbine-generator. The zero discharge wastewater treatment system will be just north of the access road. A detailed description of the new unit is provided in Chapter 3.

The proposed unit will utilize the existing natural gas pipeline (after it is upgraded) for fuel delivery, and will similarly transmit the new power over the existing transmission lines (after they are reconductored). The existing Number 2 (0.4% S) diesel oil storage tank near the combustion turbines will be used for the storage of secondary fuel. Oil storage at Purdom Station will be reduced due to the retirement of Units 5 and 6. One of the large Number 6 fuel oil storage tanks will be converted to a wastewater storage tank to facilitate recycling of all plant (and the City of St. Marks) wastewaters. This oil storage tank will be closed in accordance with the procedures of Rule 62-762, Florida Administrative Code (F.A.C.) prior to conversion.

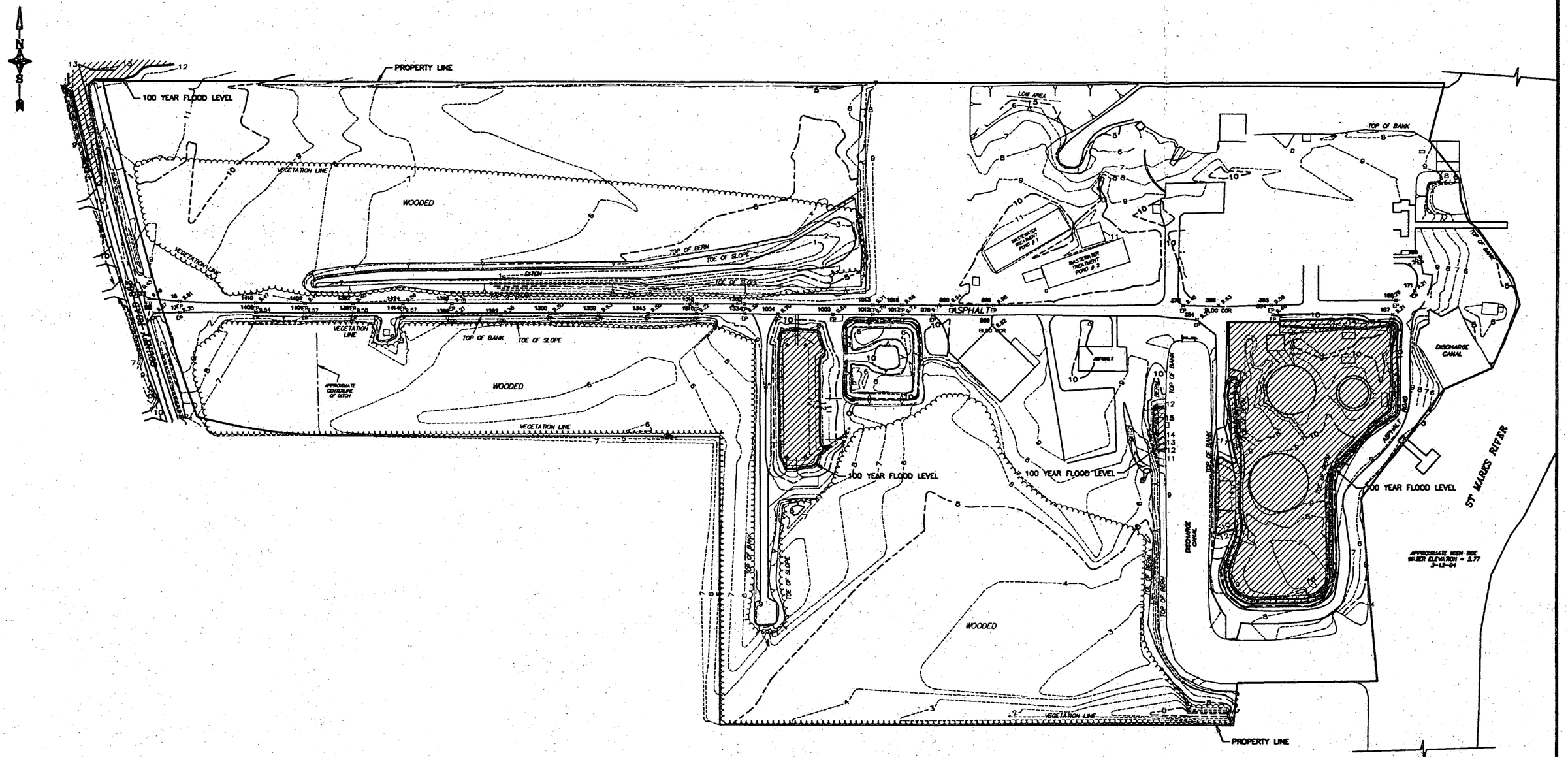
The existing Station is connected to the City of St. Marks' potable water system and sewage collection and treatment system. These connections will be kept with the addition of Unit 8. Because of the retirement of Units 5 and 6, fewer personnel will be required to operate the station; therefore, the existing water and sewer service will be adequate. Similarly, the existing plant access road and access to Port Leon Drive (SR 363) are expected to be adequate.

A new pumping station and pipeline, less than one mile in length, will be installed to deliver the effluent from the City of St. Marks Wastewater Treatment Facility to the Purdom Station for reuse. The pipeline will follow City of St. Marks rights-of-way, and will be located to avoid wetlands.

2.1.5 100-Year Flood Zone

The 100-year flood elevation in the City of St. Marks has been established (FEMA, 1979), pursuant to the requirements of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973, as 12.4 feet above mean sea level (msl). The portions of the site which are at or above that level are shown on Figure 2.1.5-1. As most of the Project is proposed for construction at locations where the existing grade is below the 100-year flood level, structures will be raised or floodproofed to that level, to provide flood protection as required by the National Flood Insurance Program (Pilkey, et al., 1983).

FEMA states that the main cause of flooding in St. Marks is from tidal surge associated with hurricanes. Although the site is mainly within the 100-year flood area, it is within an "A" zone



AREAS ABOVE THE 100 YEAR FLOOD

200 0 200 400

SCALE IN FEET

SOURCE: RE&C, 1997

100 YEAR FLOOD ELEVATION

PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 2.1.5-1

I:\CTAL4015\CAD\LDWG\CODE\...1.DWG Wed, 2/28/07, 13:36:04, NORRIS, C3082, 84140.754, 1788 1WW32

(in which velocity of water or wave action is not a concern) and not within a "V" zone (in which the velocity of water and battering action of debris are concerns). Thus, flooding in St. Marks is due to gradual rise in water levels caused by hurricanes in the Gulf of Mexico. At this distance inland, violent wave action is not expected.

FEMA made a literature search of historical records of flood elevations in St. Marks and concluded that over the 136 years from 1843 to 1979, the highest flood elevation was 11.3 feet msl. In the 17 years since the study was published, that flood level has not been reached. Therefore, the 100-year flood level established by FEMA is 1.1 feet higher than the highest flood over the 153 year period of record.

2.1.5.1 References

Federal Emergency Management Agency, Federal Insurance Administration. 1979. Flood Insurance Study, Town of St. Marks, Florida, Wakulla County. September, 1979.

Pilkey, O.H. Sr., Pilkey, W.D., Pilkey, O.H. Jr., and Neal, W.J. 1983. Coastal Design. Van Nostrand Reinhold Company, New York, New York.

2.2 SOCIOPOLITICAL ENVIRONMENT

This section contains subsections on the following issues, in accordance with the SCA Guidelines:

- Governmental Jurisdictions
- Zoning and Land Use Plans
- Demography and Ongoing Land Use
- Easements, Title, Agency Works
- Regional Scenic, Cultural and Natural Landmarks
- Archeological and Historic Sites
- Socioeconomics and Public Services

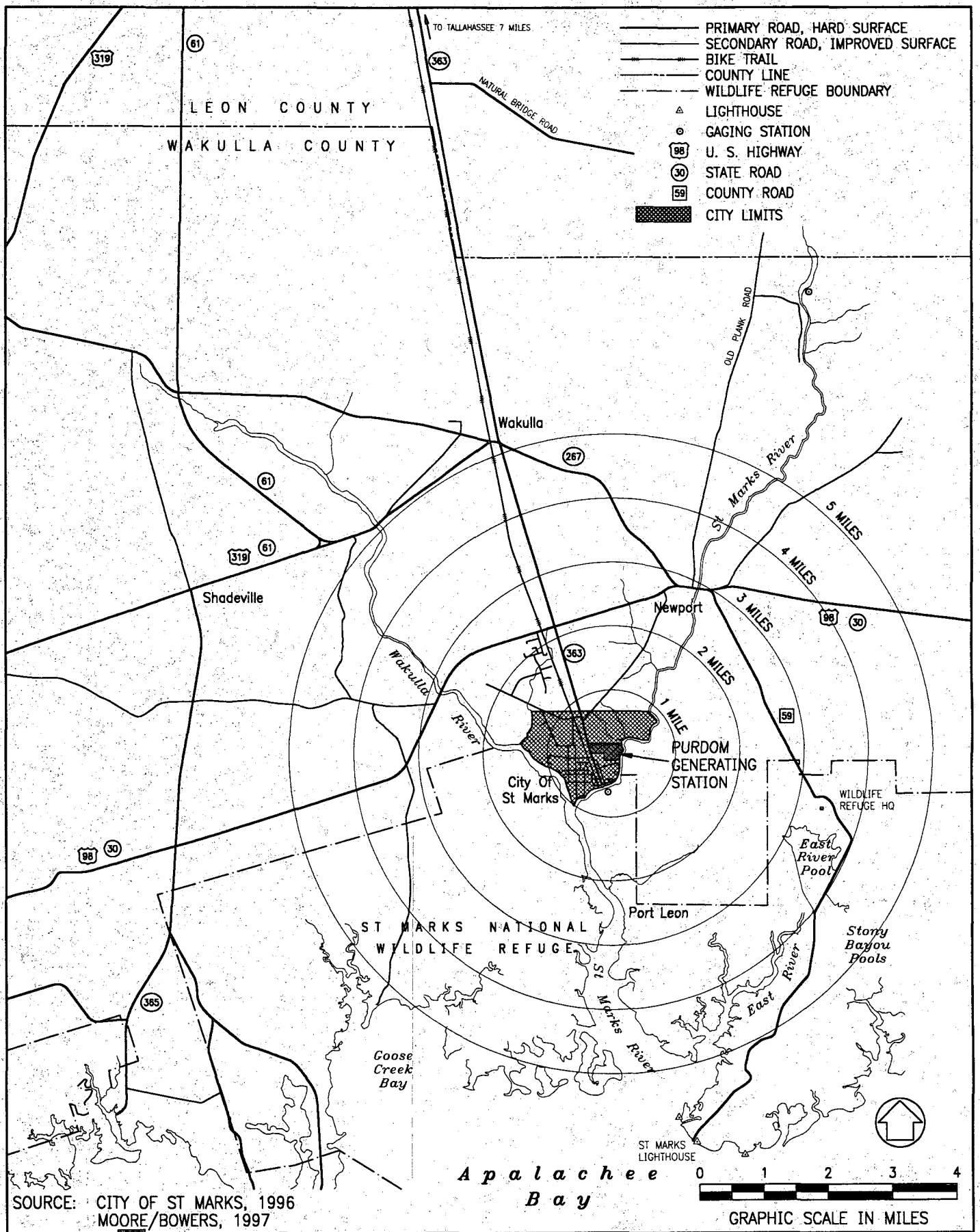
2.2.1 Governmental Jurisdictions

The Purdom Station is located in the City of St. Marks in southeast Wakulla County approximately 20 miles southeast of Tallahassee. As shown on Figure 2.2.1-1, there are no incorporated municipalities other than the City of St. Marks within a 5-mile radius of the Purdom Station.

Parks, recreation areas, and environmentally sensitive lands within 5 miles of the Purdom Station are shown on Figure 2.2.1-2. Several areas are associated with the St. Marks River and the St. Marks National Wildlife Refuge (Refuge) and Wilderness Area. The St. Marks River except that part between Rattlesnake Branch and the confluence of the St. Marks and Wakulla Rivers (near the Purdom Station), the Wakulla River, waters within the St. Marks National Wildlife Refuge, and the Big Bend Aquatic Preserve have been designated Outstanding Florida Waters (OFW). The Refuge boundaries parallel Apalachee Bay from Sopchoppy on the west to the Aucilla River on the east. Refuge headquarters are located east of the St. Marks River on Lighthouse Road. The Wilderness Area, within the Refuge, lies primarily between the St. Marks River and the Aucilla River along the coast of Apalachee Bay. The Aucilla Wildlife Management Area (WMA) is located in the eastern portion of the Refuge. The Big Bend Aquatic Preserve, designated by the Florida Department of Environmental Protection (FDEP), is located in the Apalachee Bay and includes the southern portion of the St. Marks River and East River.

Designated recreational trails in the vicinity of the Purdom Station include the Tallahassee-St. Marks Historic Railroad State Trail, the Florida National Scenic Trail, the Wakulla River Canoe Trail, and the Big Bend Historic Saltwater Paddling Trail. In 1984, the Florida Department of Transportation (FDOT) purchased 16 miles of the Tallahassee-St. Marks Railroad which had been in service for 147 years. The Tallahassee-St. Marks Historic Railroad State Trail, which was constructed and is maintained by the FDEP Division of Recreation and Parks, runs parallel to SR 363 from just south of Capital Circle in Tallahassee south to the St. Marks River. The southern two miles of the trail have been designated a segment of the Florida National Scenic Trail. The Florida National Scenic Trail was established March 28, 1983, and runs 1,300 miles north from Big Cypress National Preserve to the gulf islands. The Florida National Scenic Trail continues across the St. Marks River to historic Port Leon and continues east through the St. Marks National Wildlife Refuge. The Wakulla River Canoe Trail, approximately four miles in length, begins at SR 365 and ends at US 98. The Big Bend Historic Saltwater Paddling Trail, Florida's first legislatively designated water trail, runs from the confluence of the St. Marks and Wakulla Rivers southeasterly along the coast to the Suwannee River, a length of approximately 92 miles.

San Marcos de Apalache State Historic Site (registered as a national historic landmark November 13, 1966) is located at the confluence of the Wakulla and St. Marks Rivers. The site is managed and maintained by the FDEP Division of Recreation and Parks. Registered national historic places include Bird Hammock Indian Mounds, located west of Purdom Station on the south side of US 98.



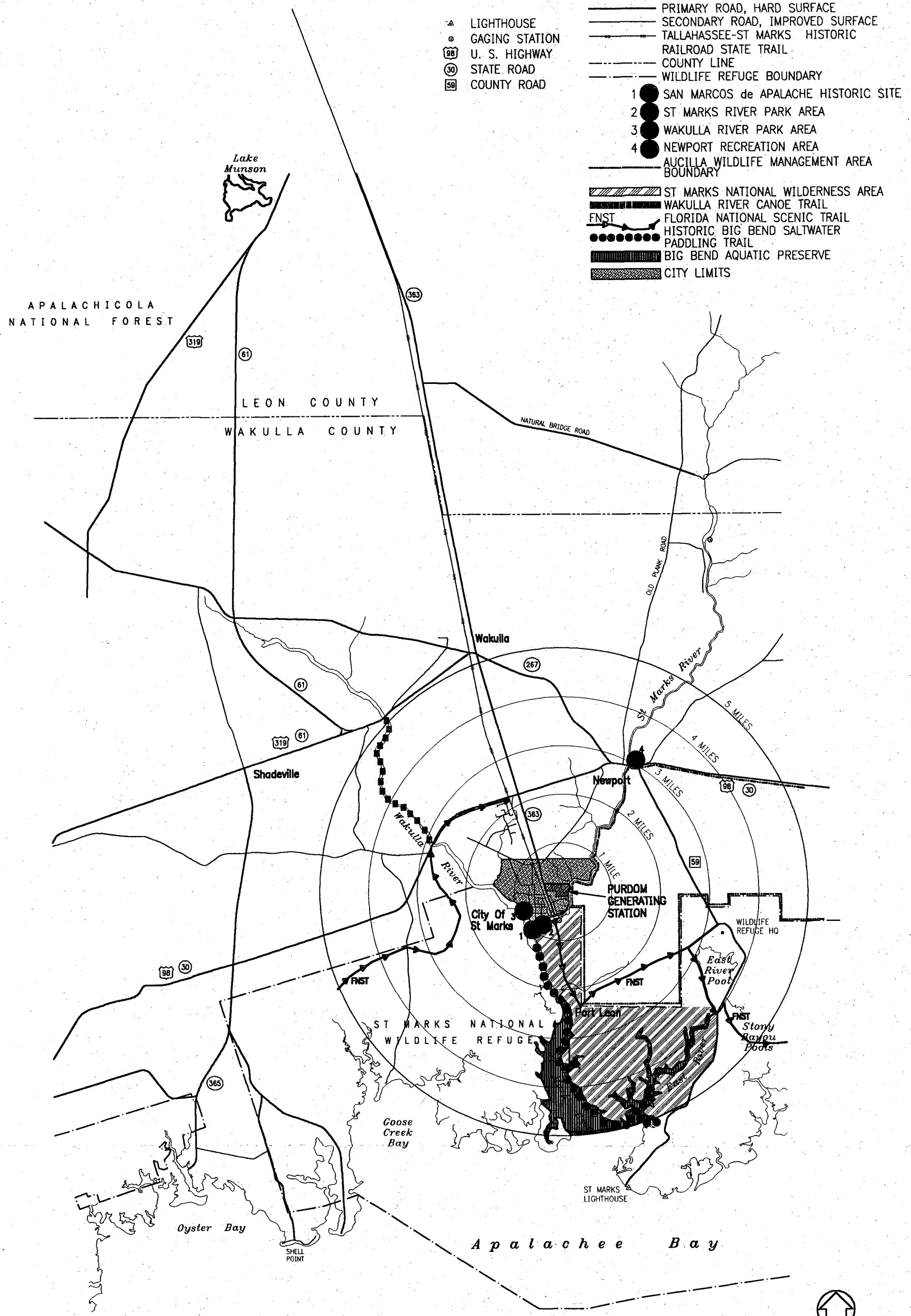
SOURCE: CITY OF ST MARKS, 1996
MOORE/BOWERS, 1997

CITY OF TALLAHASSEE

GOVERNMENTAL JURISDICTIONS WITHIN FIVE MILES
1" = 2 MILES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.2.1-1



SOURCE: MOORE/BOWERS, 1997

CITY OF TALLAHASSEE

PARKS, RECREATION AREAS AND CONSERVATION LANDS WITHIN FIVE MILES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

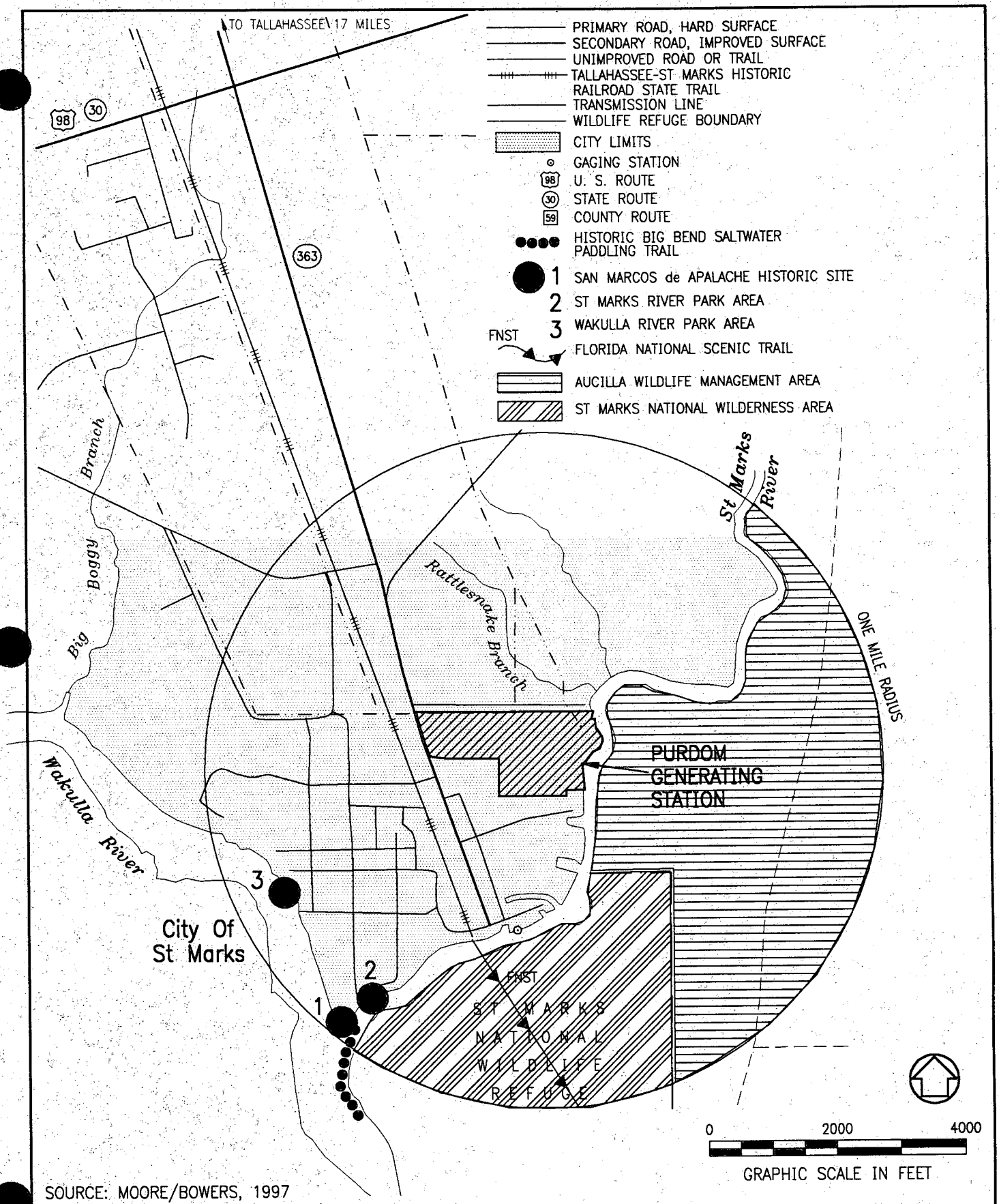
Figure 2.2.1-2

Parks within a 5-mile radius of the proposed new unit include the Wakulla River Boat Ramp (US 98), Wakulla Park Area, Newport Recreation Area, City Park (St. Marks), St. Marks Ballfield, and St. Marks Park Area.

The parks, recreation areas, and environmentally sensitive lands within a 1-mile radius of the Purdom Station are shown on Figure 2.2.1-3. The City of St. Marks owns two parks within the one-mile radius: the Wakulla River park area and the St. Marks River park area. The Wakulla River park area consists of a 2.7 acre site located 0.4 mile north of Fort San Marcos de Apalache. The land was given to the City of St. Marks as part of a land grant in 1928 and is designated for public park purposes. Park facilities include picnic tables, swings, and restroom facilities. The St. Marks River park area is 1.76 acres and is owned and maintained by the City of St. Marks. The park is located adjacent to Fort San Marcos de Apalache on the St. Marks River. Improvements include picnic tables and grills. Wakulla County owns and maintains a boat ramp adjacent to Fort San Marcos de Apalache.

The following areas <u>are not</u> found within a 5-mile radius of the proposed stack location of the new unit:

- National Parks
- National Forests
- National Seashores
- National Memorials or Monuments
- National Marine and Estuarine Sanctuaries
- RARE (Roadless Area Review and Evaluation) Areas
- National Wild and Scenic Rivers
- Critical Habitats of endangered species
- State Parks
- State Forests
- Areas of Critical State Concern
- Conservation and Recreation Lands (CARL)
- Save Our Rivers Lands
- Scenic and Wild Rivers
- Indian Reservations
- Military Lands
- Major private land-holdings for environmental protection



SOURCE: MOORE/BOWERS, 1997

CITY OF TALLAHASSEE

PARKS, RECREATION AREAS AND CONSERVATION LANDS WITHIN ONE MILE

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.2.1-3

2.2.2 Zoning and Land Use Plans

The Purdom Station site is currently in use for power generation. The status of the site with respect to future land use and zoning is outlined in the following paragraphs.

2.2.2.1 Comprehensive Plan Future Land Use Map

As shown in Figure 2.2.2-1, the Purdom Station site is designated Industrial on the Future Land Use Map of the St. Marks Comprehensive Plan. The Industrial future land use category is described as follows in the Comprehensive Plan: "Industrial land use includes land area used for manufacturing, assembly, processing, or storage of products" (Future Land Use Element, p. 2).

Although the Plan does not specifically mention power plants as an allowed use within the Industrial future land use category, the site was in use for electricity generation at the time the Future Land Use Map was prepared. Therefore, it may be assumed that the Industrial future land use category was intended to encompass power plants. The Purdom Station site in relation to the City of St. Marks' Future Land Use Map is shown on Figure 2.2.2-1.

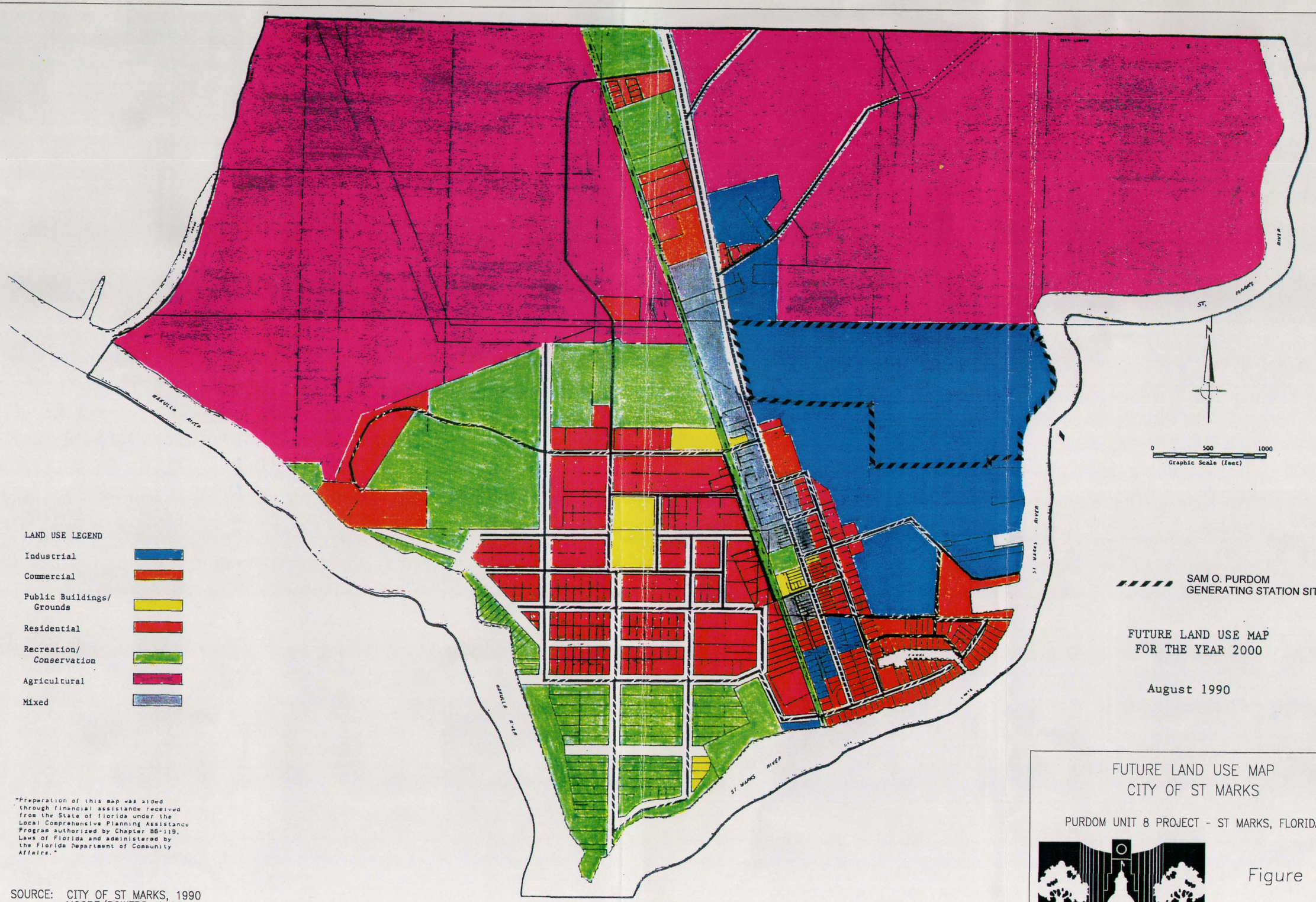
2.2.2.2 Zoning

The City of St. Marks has a draft Land Development Code which has not been adopted. Since the City of St. Marks informally refers to the Code during development reviews, the following sections discuss project zoning in terms of the draft Land Development Code. Zoning districts within the City of St. Marks correspond to the Future Land Use Map and are depicted in Figure 2.2.2-1. Section 2.01.01, p. II-6 of the Land Development Code (draft), entitled Land Use Districts, indicates:

> "Land use districts for the City/County are established in the Comprehensive Plan, Future Land Use Element, including a map. The land use districts and classifications defined in the Future Land Use Element of the City Comprehensive Plan and delineated on the Future Land Use Map shall be the determinants of permissible activities on any parcel in the jurisdiction. Refer to the Future Land Use Element of the Comprehensive Plan for the definitions of each use category."

Thus, the site is zoned Industrial. Since the Land Development Code (draft) implements the Comprehensive Plan, it provides further clarification as to the intent of the Comprehensive Plan in terms of the uses allowed in the Industrial future land use category. Section 2.02.02(I), p. II-15 of the Land Development Code (draft) describes the Industrial land use district as follows:

> "This type of use includes those wholesale and retail businesses for manufacturing, processing, storing, or distributing goods. Included in this category are uses which require primarily outdoor storage or the industrial activity itself is conducted outdoors. Such uses include, for example, LP gas storage and/or distribution exceeding 1,000 gallons, junkyards or salvage yards, recycling centers, and borrow pits (but not excavation which requires blasting)."



FUTURE LAND USE MAP
FOR THE YEAR 2000

August 1990

"Preparation of this map was aided through financial assistance received from the State of Florida under the Local Comprehensive Planning Assistance Program authorized by Chapter 86-119, Laws of Florida and administered by the Florida Department of Community Affairs."

SOURCE: CITY OF ST MARKS, 1990
MOORE/BOWERS, 1996

FUTURE LAND USE MAP
CITY OF ST MARKS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 2.2.2-1

PLOT DATE FEB 10, 1997 F:\ACADWIN\PROJECTS\MISC\2-2-2-1.DWG

Further, Section 2.02.03, entitled Allowable Uses within Each Land Use District, lists Industrial and Public Service/Utility uses as allowed in the Industrial land use district. Public Service/Utility uses are described in the Land Development Code (draft) as follows:

> "This group of activities includes those uses which provide essential or important public services, and which may have characteristics of outdoor storage, or potential nuisance to adjacent properties due to noise, light and glare, or appearance. Government offices or governmental agency offices specifically are not included in this group of uses. Uses include the following, and substantially similar activities, based upon similarity of characteristics:
>
> 1. Emergency service activities such as buildings, garages, parking, and/or dispatch centers for ambulances, fire, police and rescue.
> 2. Broadcasting stations, transmission towers.
> 3. Utility facilities, such as water plants, wastewater treatment plants, electricity substations serving 230 KV or greater.
> 4. Maintenance facilities and storage yards for schools, government agencies, and telephone and cable companies.
> 5. LP gas storage and/or distribution facility for up to one thousand (1,000) gallons. This shall not be construed to prevent retail sales of LP gas in canisters or similar pre-filled containers.
> 6. Airports, airfields, and truck or bus terminals." (Section 2.02.02(G), p. II-14, emphasis added)

Although generating plants are not specifically mentioned, they clearly provide essential public services and have "substantially similar activities." Indeed, some of the uses mentioned under the Public Service/Utility use, such as high voltage electricity substations, maintenance/storage yards, and large volume fuel storage facilities, are part of any power plant and specifically are part of the Purdom Station. Thus, whether the Purdom Station is considered a place for manufacturing or processing goods (i.e., generating electricity), or a use which provides essential public services and has characteristics of outdoor storage or potential nuisance to adjacent properties, it is clearly allowed within the Industrial land use district. In the first instance, it would be considered an Industrial use; in the second, a Public Service/Utility use. Both are allowed in the Industrial land use district, according to the City of St. Marks Land Development Code (draft).

In conclusion, the Purdom Station site is consistent with the City of St. Marks' Future Land Use Map and zoning.

2.2.3 Demography and Ongoing Land Use

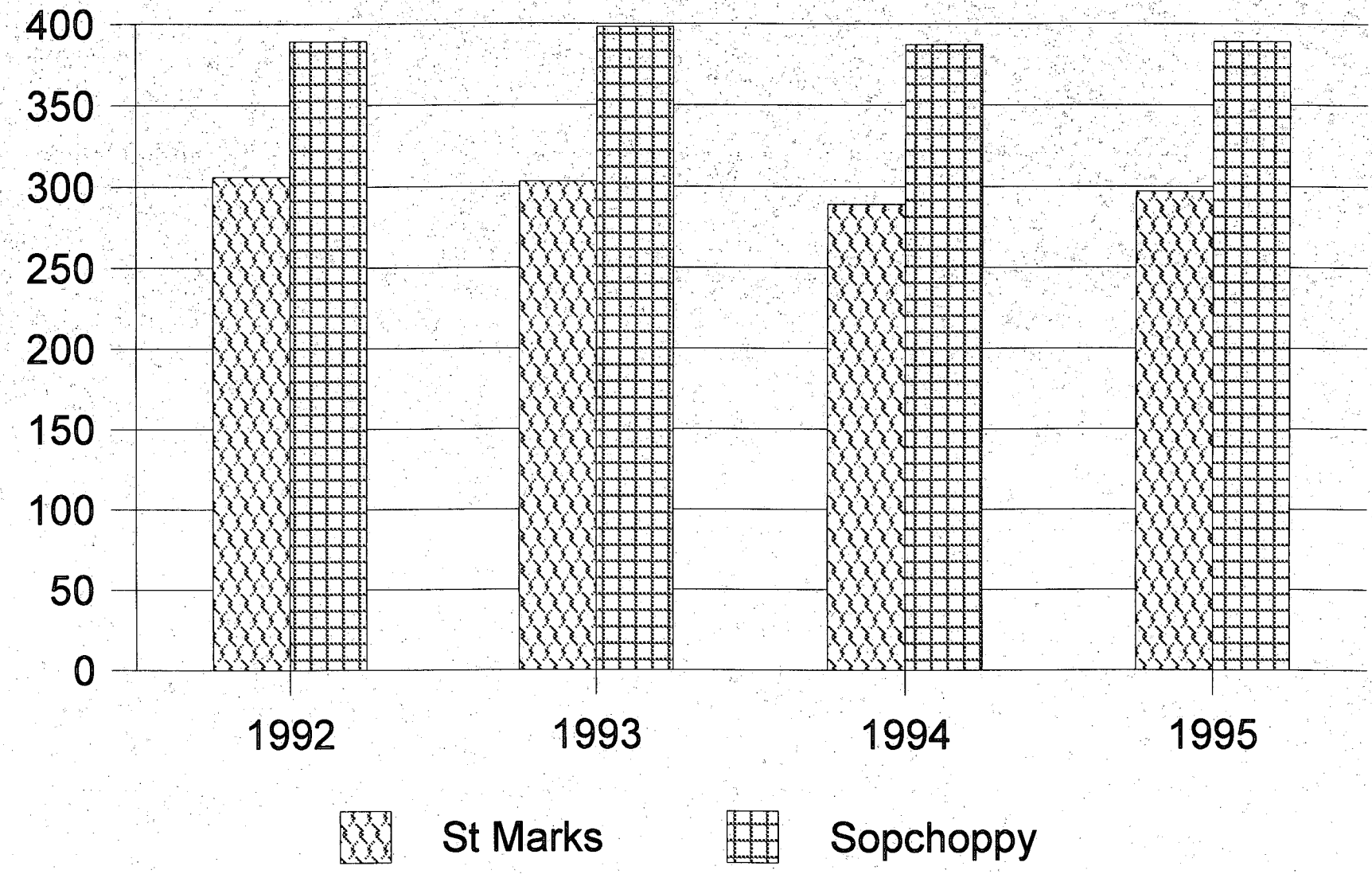
The Project is located within the incorporated boundaries of the City of St. Marks. Recent population trends for Wakulla County and the Cities of St. Marks and Sopchoppy are shown on Figures 2.2.3-1 and 2.2.3-2.

The rate of population growth in Florida and Wakulla County is illustrated on Figure 2.2.3-3. Florida's population increased 37.2 percent between 1960 and 1970, 43.5 percent between 1970 and 1980, and 32.7 percent between 1980 and 1990. Wakulla County's population increased 19.8 percent in the 1960s, 73 percent in the 1970s, and 30.3 percent in the 1980s. The unincorporated areas of Wakulla County saw a significant increase in population in the 1970s of 85.3 percent; while the City of St. Marks' population dropped by 21.9 percent between 1970 and 1980. During the 1980s, the growth in the unincorporated areas slowed to a 33.2 percent increase while the City of St. Marks realized an increase of 7.3 percent. According to the University of Florida's Bureau of Economic and Business Research, the population of Wakulla County is projected to increase 10 percent between 2000 and 2005 and 9 percent between 2005 and 2010 (see Figure 2.2.3-4).

Existing land uses within a 5-mile radius of the Purdom Station consist mainly of industrial uses to the north and south, conservation and forest lands to the east across the St. Marks River, and low-density residential areas to the west. The existing land uses within 5 miles of the Purdom Station using the City of St. Marks and Wakulla County existing land use maps are shown on Figure 2.2.3-5. Validity of the land use data was field verified in December 1996. Lands adjacent to the Purdom Station include the Aucilla Wildlife Management Area across the St. Marks River to the east, low density residential uses to the west, and the St. Marks Refinery property and McKenzie Tank Lines to the north and south, respectively.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

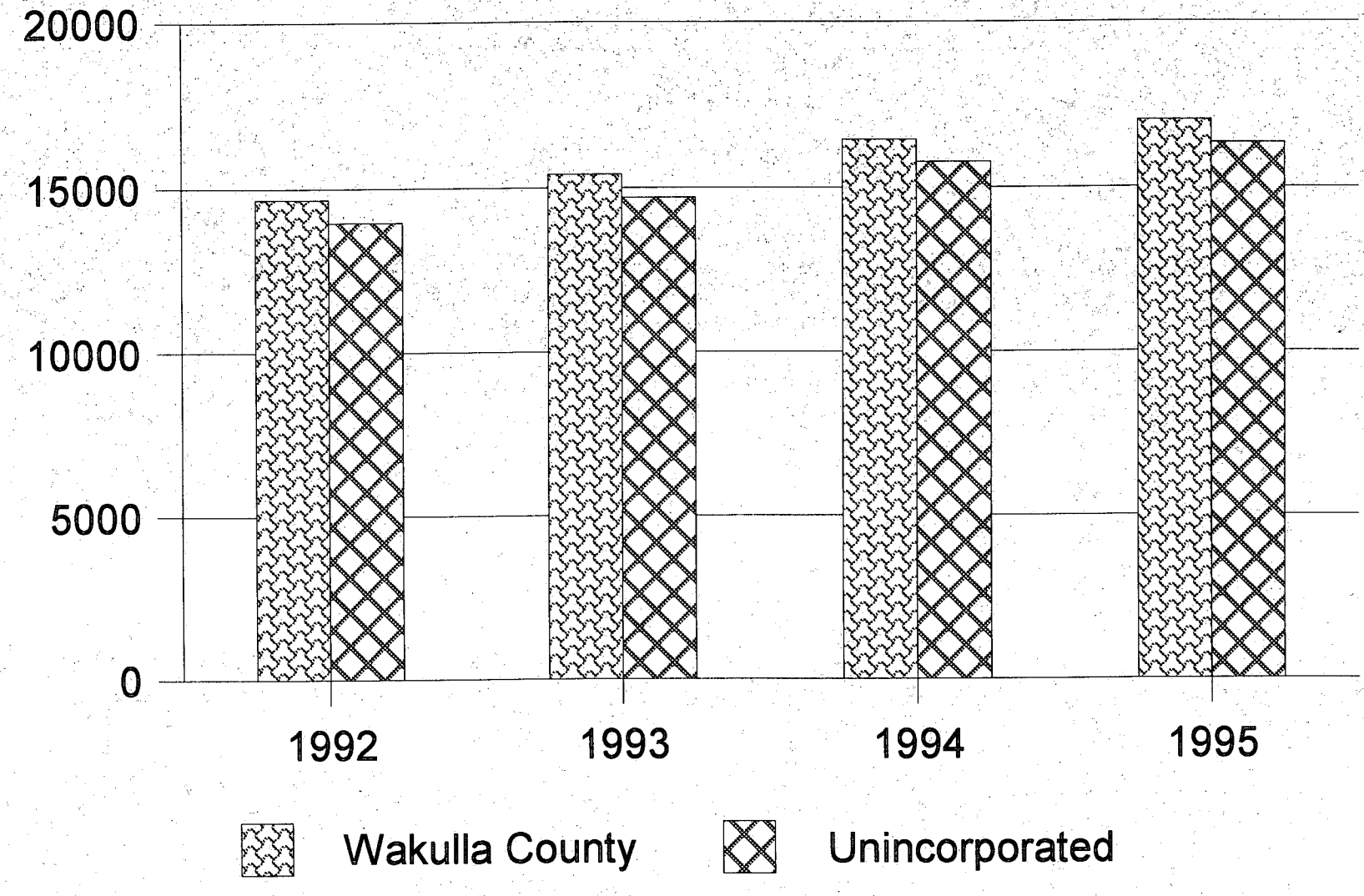


Source: Florida Statistical Abstract, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

MUNICIPALITIES
POPULATION
1992 - 1995
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.3-1



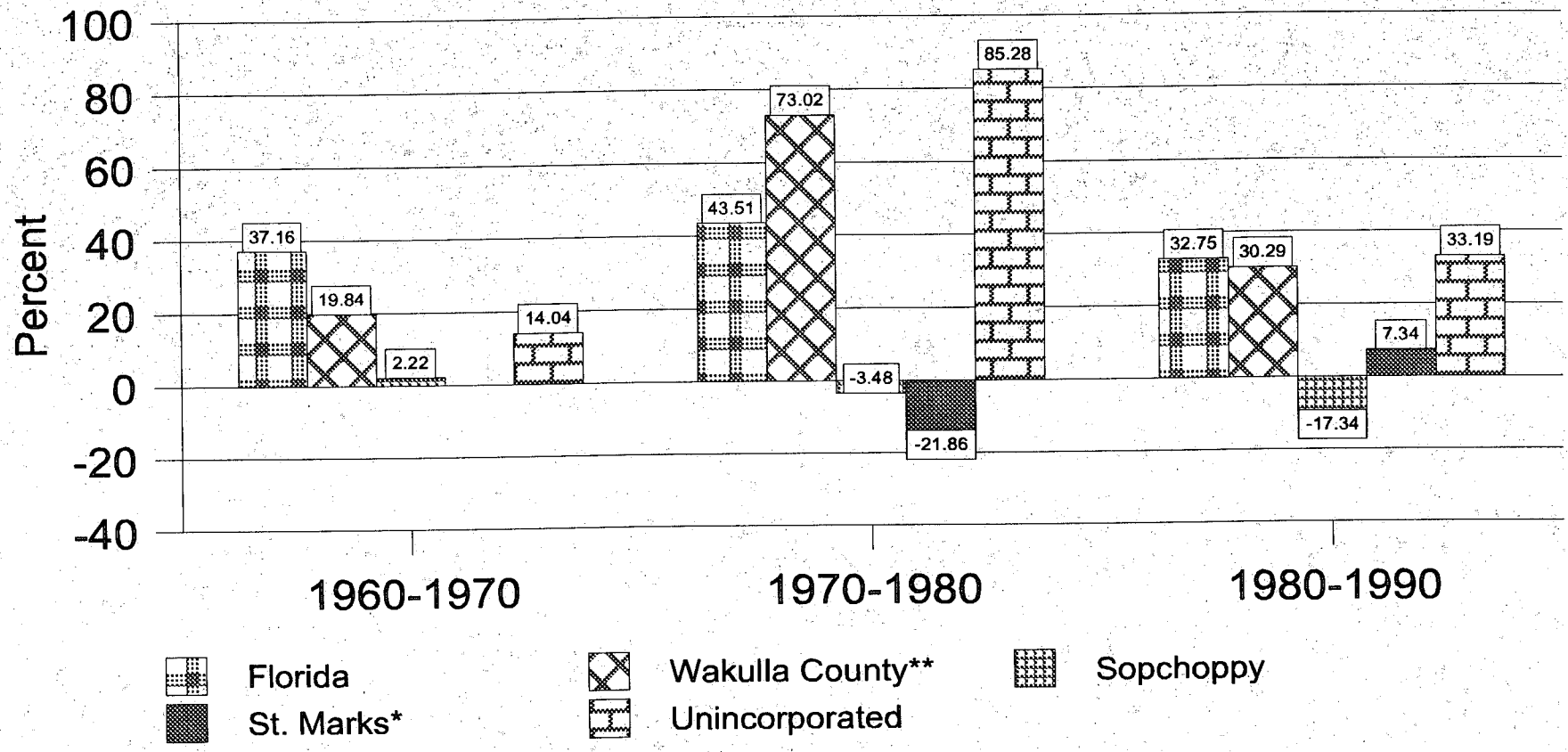
Source: Florida Statistical Abstract, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY AND UNINCORPORATED AREAS
POPULATION
1992 - 1995
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.3-2

Population Growth



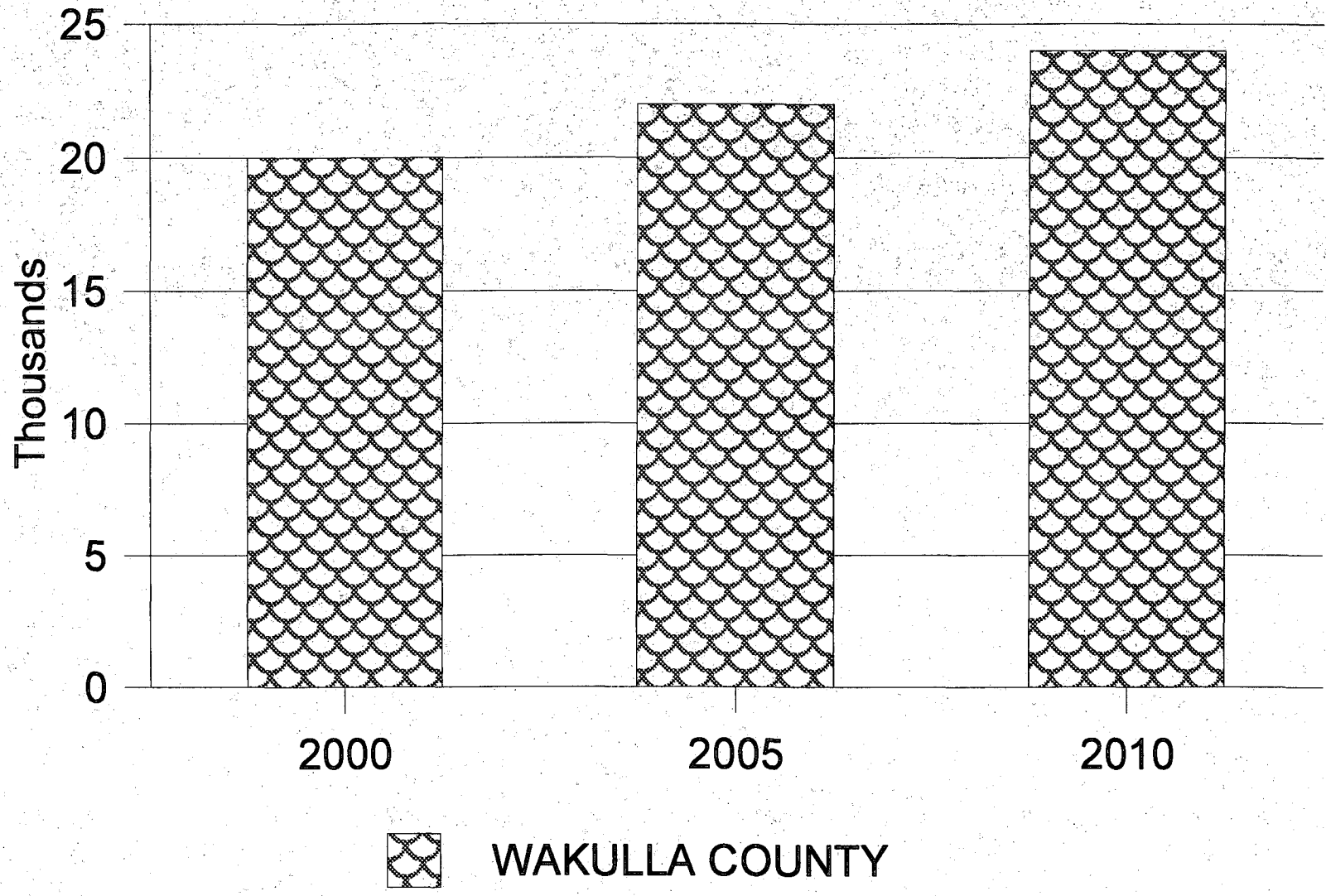
Sources: Florida Statistical Abstract, 1967, 1975, 1985.
U.S. Bureau of the Census, 1990. Moore/Bowers, 1997.

*1960 data unavailable
**Including St. Marks and Sopchoppy

CITY OF TALLAHASSEE

FLORIDA, WAKULLA COUNTY, UNINCORPORATED, ST MARKS AND SOPCHOPPY
POPULATION GROWTH
1960 TO 1990
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.3-3



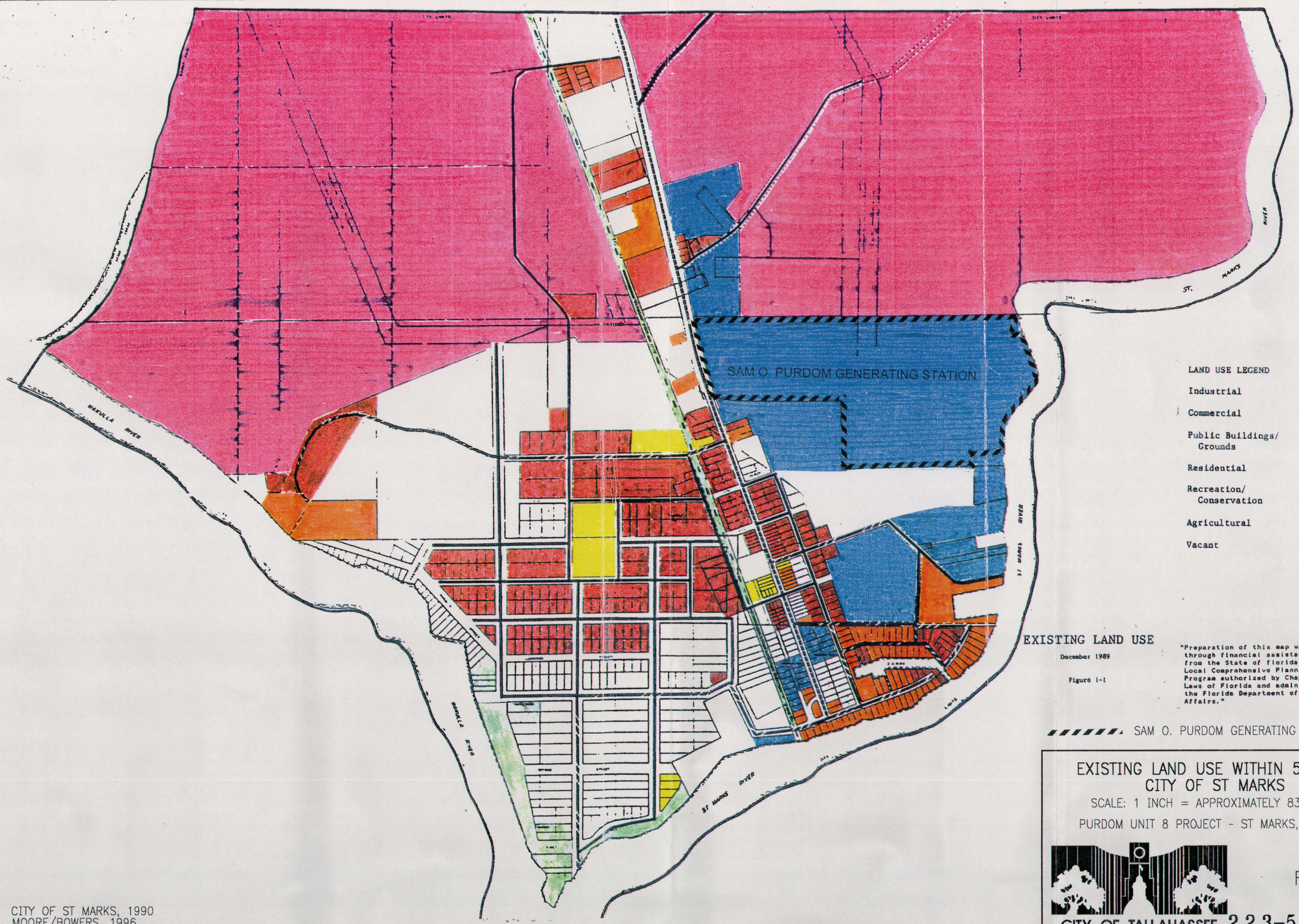
Source: Florida Statistical Abstract, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY
POPULATION PROJECTIONS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.3-4



EXISTING LAND USE

December 1989

Figure 1-1

"Preparation of this map was aided through financial assistance received from the State of Florida under the Local Comprehensive Planning Assistance Program authorized by Chapter 86-119, Laws of Florida and administered by the Florida Department of Community Affairs."

SAM O. PURDOM GENERATING STATION SITE

SOURCE: CITY OF ST MARKS, 1990
MOORE/BOWERS, 1996

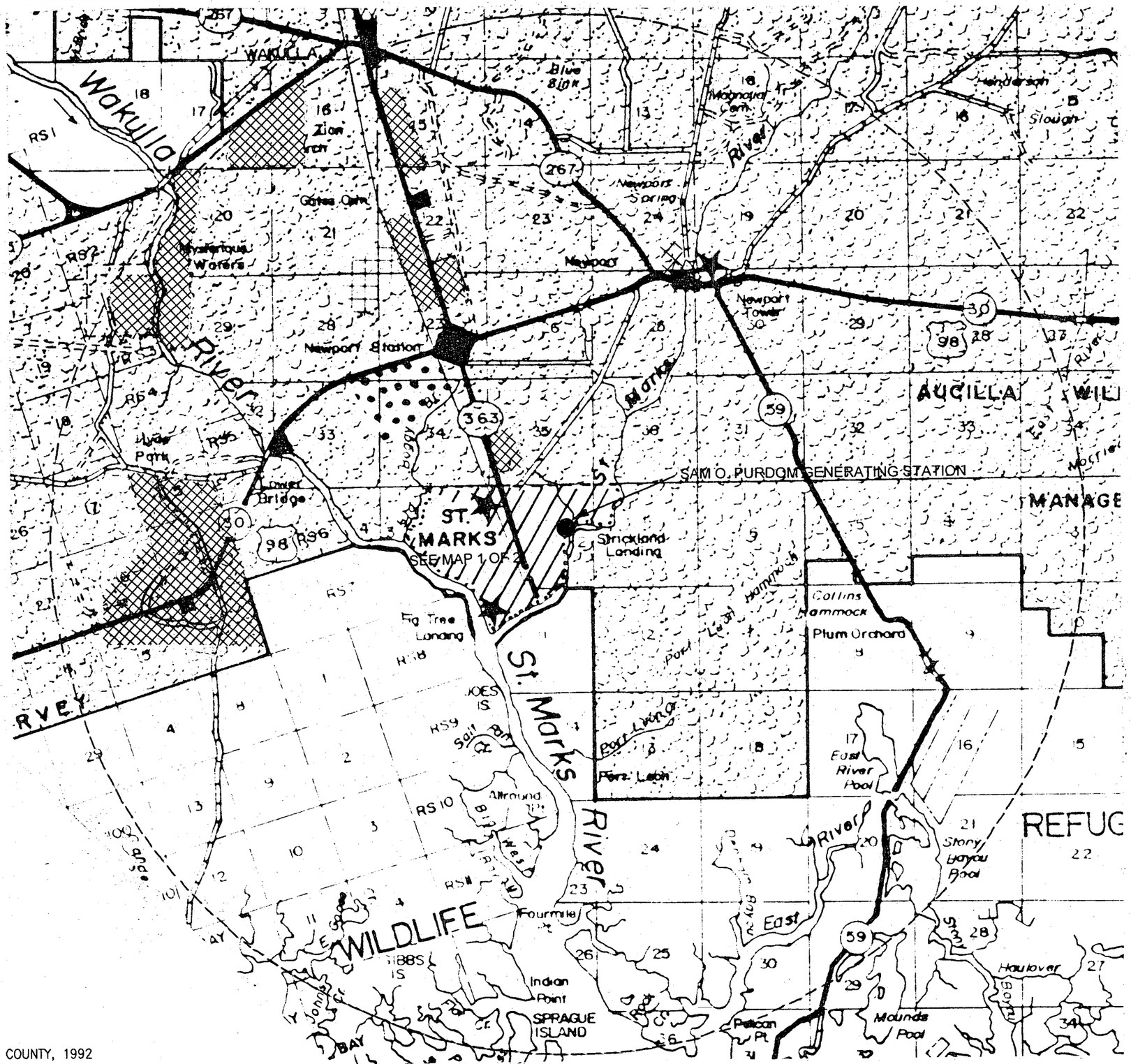
EXISTING LAND USE WITHIN 5 MILES
CITY OF ST MARKS

SCALE: 1 INCH = APPROXIMATELY 833 FEET

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 2.2.3-5 (1 of 2)



LEGEND

- CONSERVATION
- AGRICULTURE
- RURAL
- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- INCORPORATED CITY
- ★ PUBLIC RECREATION FACILITY

0 1 2

GRAPHIC SCALE IN MILES

SOURCE: WAKULLA COUNTY, 1992
MOORE/BOWERS, 1996

EXISTING LAND USE WITHIN 5 MILES
WAKULLA COUNTY
1" = 1 MILE
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 2.2.3-5 (2 of 2)

2.2.4 Easements, Title, Agency Works

There are no easements, title, or agency works crossing approvals known to be required for Unit 8. Easements and crossing approvals necessary for the proposed reclaimed water pipeline located off site are discussed in Chapter 6.

2.2.5 Regional Scenic, Cultural and Natural Landmarks

Areas identified in Section 2.2.1 located within 5 miles of the proposed new unit at the Purdom Station include one aquatic preserve, one state wildlife management area, one national wildlife refuge, one national wilderness area, one national historic landmark and state special feature site, one state museum, three parks, two state canoe trails, one state trail, and one national trail. The trails are part of a state and national network of recreational, scenic and historic trails, and by definition would contain areas of scenic value. The trails run through two wilderness areas and the Refuge area which provide access to fishing, hunting, boating, picnicking, wildlife observation, and other intensive recreational uses considered to have scenic value. The state museum and the national historic landmark/state special feature site have cultural significance because they preserve the history of the area and provide educational and recreational opportunities for the visitors. The aquatic preserve is associated with Apalachicola Bay and contains significant scenic and/or natural values. Those areas considered to contain scenic, cultural, and natural landmarks are described briefly below.

1. Big Bend Aquatic Preserve (designated in 1985): Encompassing 450,000 acres, the Big Bend Aquatic Preserve includes saltmarshes and tidal creeks which are dominated by sea grasses. Water depths vary considerably. Florida's Historic Big Bend Paddling Trail runs along the coast and through the preserve.

2. Aucilla Wildlife Management Area: The portion of the WMA that is located in Wakulla County is bounded by the St. Marks River on the west, US 98 to the north, Wakulla/Jefferson County line to the east and the St. Marks National Wildlife Refuge to the south. One of the designated entrances is located where US 98 crosses the St. Marks River. Hunting is permitted. This area is privately owned (St. Joe Paper Company) and "free-leased" to the state and managed by Florida Game and Fresh Water Fish Commission. Hunting is the primary use offered to the public in this area. The area is also actively managed for timber production.

3. St. Marks National Wildlife Refuge: The St. Marks National Wildlife Refuge offers a variety of outdoor recreation activities including hunting, picnicking, fishing, boating, hiking, and wildlife observation. The visitor center is located off SR 59 (Lighthouse Road).

4. St. Marks National Wilderness Area (established 1975): This area received the federal designation as a wilderness area after completion of a Roadless Area Review and Evaluation (RARE) in the 1970s. Much of the wilderness area, located within the National Wildlife Refuge, consists of salt marsh. Motorized vehicles are not permitted except for land management purposes.

5. San Marcos de Apalache State Historic Site and State Museum (registered as a national historic landmark November 13, 1966): This site is located at the confluence of the Wakulla and St. Marks Rivers and is managed and maintained by the FDEP Division of Recreation and Parks. The area has a rich history beginning in 1528 with the arrival of Navarez and 1539 with Hernando de Soto. The first fort was built in 1679 but was burned by pirates several years later. Today, a museum containing

exhibits and artifacts is located on the foundation of an old marine hospital. There is a trail through the fortification ruins.

6. Wakulla River Canoe Trail: The Wakulla River Canoe Trail runs between SR 365 and US 98 for a distance of approximately four miles.

7. Big Bend Historic Saltwater Paddling Trail: Florida's first legislatively designated water trail provides opportunities for paddlers to experience "outside" paddling. The trail is located between the St. Marks River lighthouse and the Suwannee River encompassing the Big Bend Aquatic Preserve. It provides access to hiking, camping and several other parks, preserves, and refuges along the Big Bend coast.

8. Tallahassee-St. Marks Historic Railroad State Trail (established 1984): In 1984, the Florida Department of Transportation (FDOT) purchased 16 miles of the corridor to preserve the right-of-way. The recreational trail was constructed and is maintained by the FDEP Division of Recreation and Parks. Activities permitted on the trail include bicycling, walking, jogging, skating, and horseback riding. The southern two miles of the trail have been designated as a segment of the Florida National Scenic Trail.

9. The Florida National Scenic Trail (established 1983): The portion of the Florida Trail within the five-mile radius of the Purdom Station is certified by the United States Forest Service (USFS) which provides varying degrees of protection. The trail runs through the St. Marks National Wildlife Refuge traversing a variety of forest types and wildlife zones. The segment through the refuge was among the first sections designated in 1981 as part of the Florida National Scenic Trail.

10. Outstanding Florida Waters: Waters within National Wildlife Refuges - St. Marks National Wildlife Refuge (designated by FDEP in 1979 and as modified 10/4/90, 8/8/94); Waters within State Ornamental Gardens, State Botanical Sites, State Historic Sites and State Geological Sites - San Marcos de Apalache State Historic Site (designated 10/4/90); Waters within State Aquatic Preserves - Big Bend Seagrasses (designated 10/29/86) with the exception of several areas in Levy and Taylor Counties; and Special Waters - St. Marks River except that part of the river between Rattlesnake Branch and the confluence of the St. Marks and Wakulla Rivers and the Wakulla River (designated 1979).

11. St. Marks River Park Area: The park site contains 1.76 acres adjacent to the Fort San Marcos de Apalache and provides opportunities for picnicking for local residents and museum visitors. The park is owned and maintained by the City of St. Marks.

12. Wakulla River Park Area: This park is a 2.7-acre parcel with river frontage located approximately 0.4 mile north of the Fort San Marcos de Apalache museum. The park improvements include picnic facilities and restrooms. The park is owned and maintained by the City of St. Marks.

13. Wakulla River Boat Ramp: Owned and maintained by Wakulla County, the ramp is located adjacent to the Fort San Marcos de Apalache.

14. Newport Recreation Area: Located on the St. Marks River, the Newport Recreation Area includes facilities for picnicking. The park is owned and maintained by Wakulla County.

2.2.6 Archeological and Historic Sites

A review of the Florida Site File by the Florida Department of State, Division of Historical Resources (DHR) identified three archeological sites in the Project vicinity, but outside the Project site (DHR, 1992a, 1992b). Based on a review of the Florida Site File, DHR advised the City of Tallahassee that "no significant archeological or historic sites are recorded for or likely to be present within the area of the proposed Purdom Unit 8" (DHR, 1996).

See Section 6.1 of the SCA for discussion of archeological and historic sites as they relate to the off-site reclaimed water pipeline.

2.2.7 Socioeconomics and Public Services

2.2.7.1 Socioeconomics

Employment and Income

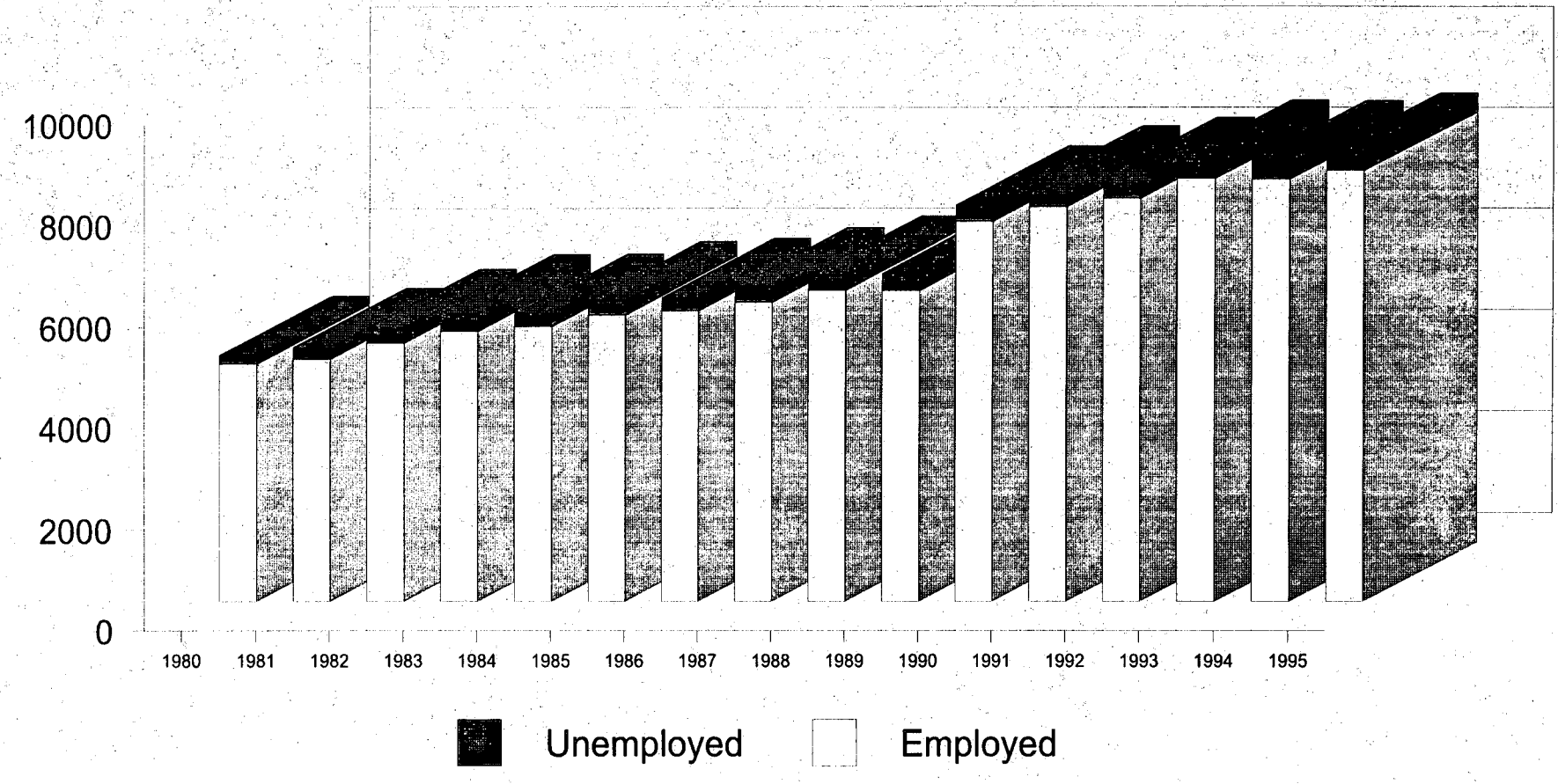
Wakulla County's labor force included 8,877 persons in 1995 (Figure 2.2.7-1). Out of this total, 8,497 were employed, resulting in an unemployment rate of 4.3 percent. This compares to a statewide unemployment rate of 5.5 percent for the same time period. Wakulla County's unemployment rate has consistently been lower than the state average in the last 15 years (Figure 2.2.7-2).

Annual average employment (jobs) for Wakulla County was 3,102 for 1995, according to the Florida Department of Labor and Employment Security (FDLES). The difference between the number of Wakulla County jobs and the size of the work force in Wakulla County reflects the large number of Wakulla County residents who work outside the county. The Wakulla County Comprehensive Plan Future Land Use Element notes that in 1989 only 38 percent of Wakulla County's workforce worked within the county; over 60 percent commuted to Tallahassee to work.

Historically, the City of St. Marks was a port town with a railroad connection to Tallahassee. Also, the railroad, which is now a recreational trail, brought visitors to the City of St. Marks who came for the hunting and fishing. The City of St. Marks still serves those same functions (transportation and recreation), as evidenced by the tank farms and transportation facilities in the community as well as the many recreational opportunities in St. Marks and the surrounding area.

Major industries, in terms of employment, in Wakulla County in 1995 were retail trade (20.2 percent), manufacturing (19.9 percent), services (13.6 percent) and government employment (30.7 percent). See Figure 2.2.7-3. The average annual wages for these industries in 1995 were $9,067 for retail trade, $27,218 for manufacturing, and $17,157 for services (Figure 2.2.7-4). The average annual wage for all government employees was $21,489. Average annual wages for all non-government employees in Wakulla County in 1995 were $18,501. The highest average annual wages were in transportation, communications, and public utilities ($27,460), while the lowest were in retail trade.

Employment in Jobs and Education Partnership Area 5 (Gadsden, Leon, and Wakulla Counties) is projected to increase to 204,023 by the year 2005, according to FDLES's publication on Industry and Occupational Employment Projections (Figure 2.2.7-5). According to these projections, 23.6 percent of the employment will be in services and 19 percent will be in wholesale and retail trade (Figure 2.2.7-6). Government jobs are expected to account for 35.3 percent of the total employment. The FDLES's employment projections show increasing employment in all industries, except for mining. The greatest growth in projected employment is in services, which is projected to increase by 42.75 percent between 1994 and 2005. The least growth will occur in the transportation and public utilities sector, and mining employment in the area is projected to decline.

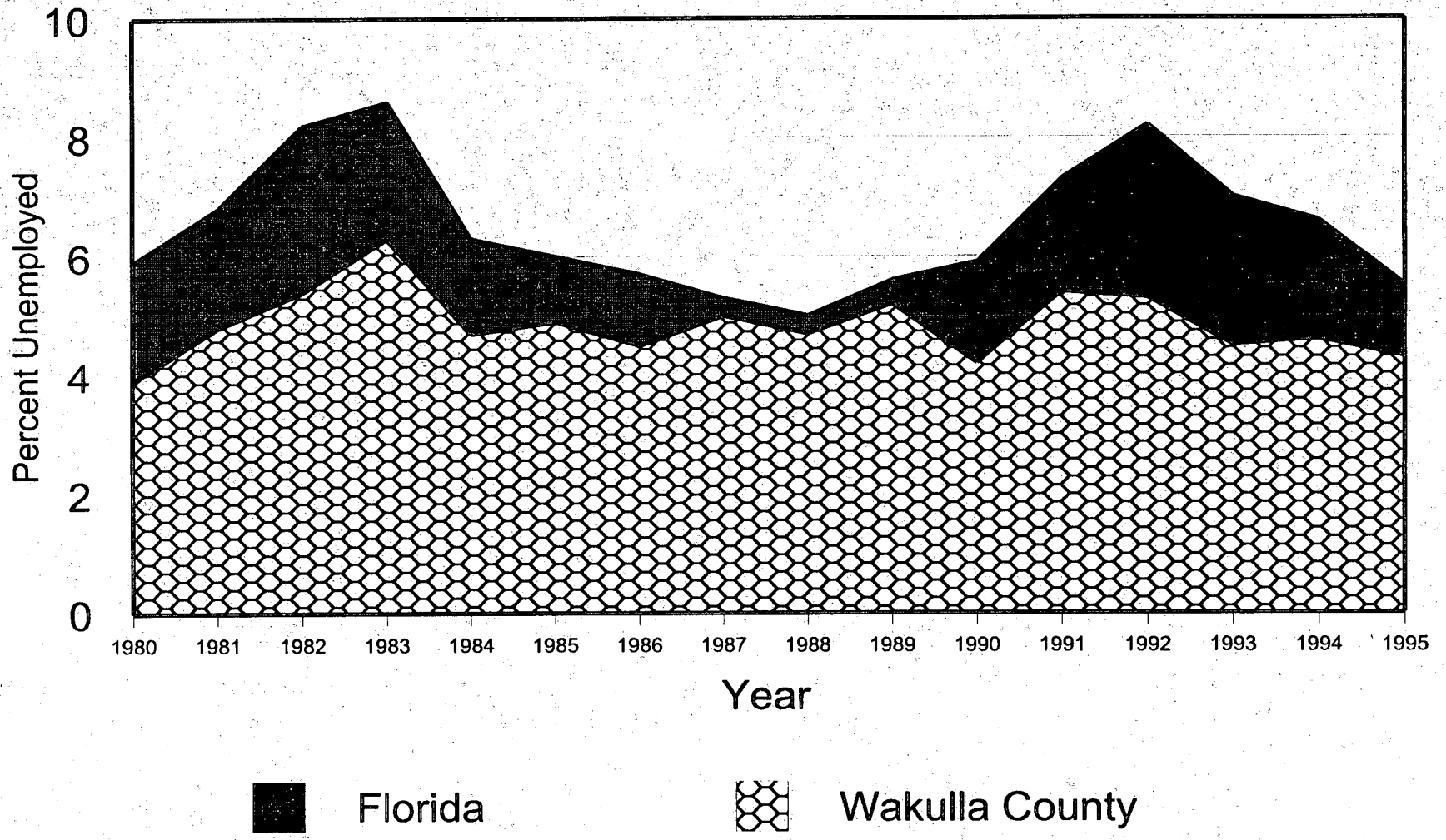


Source: Florida Department of Labor & Employment Security, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY LABOR FORCE
EMPLOYMENT AND UNEMPLOYMENT
1980 THROUGH 1995
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-1

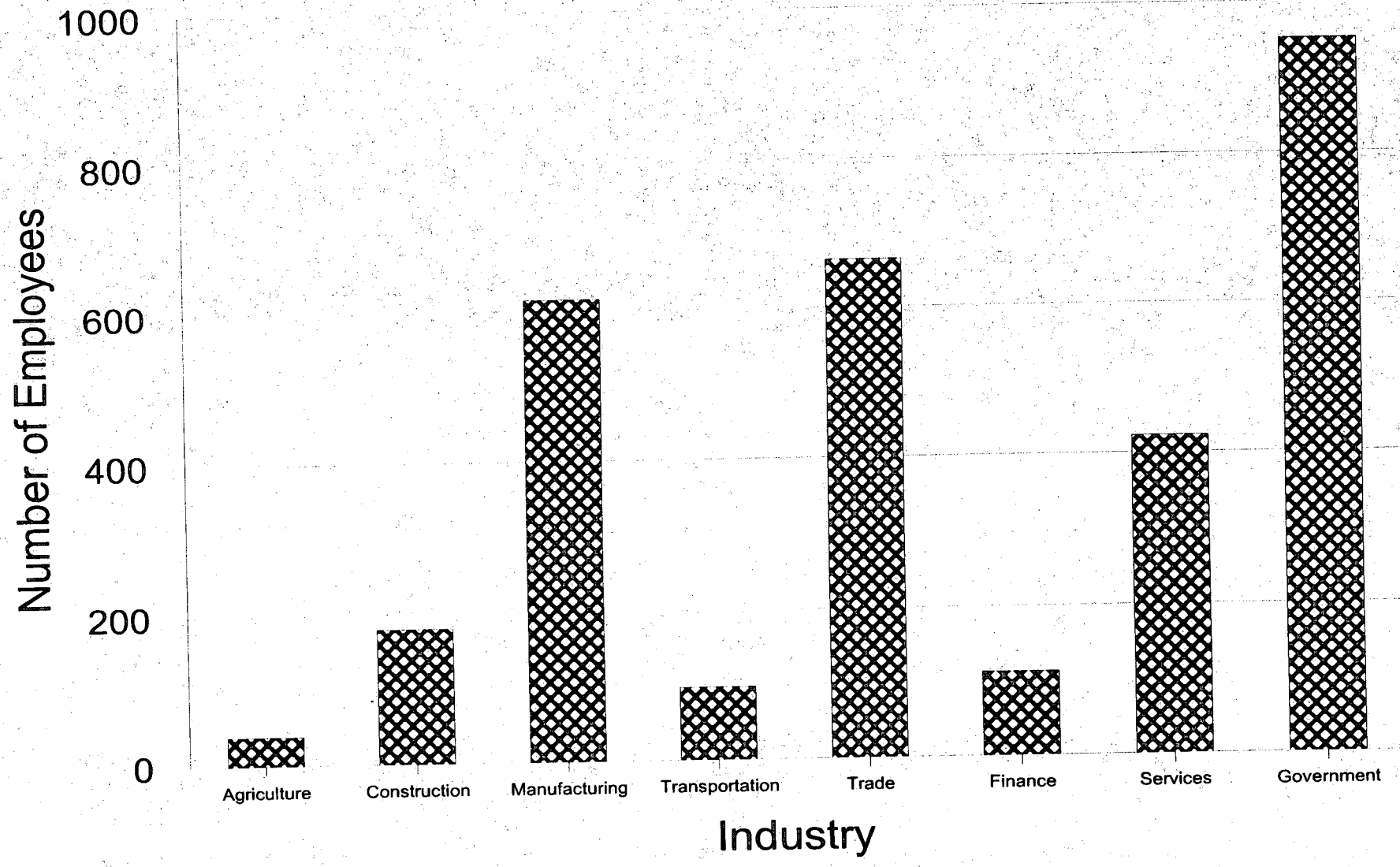


Source: Florida Department of Labor & Employment Security, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY AND FLORIDA
UNEMPLOYMENT RATES
1980 THROUGH 1995
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-2

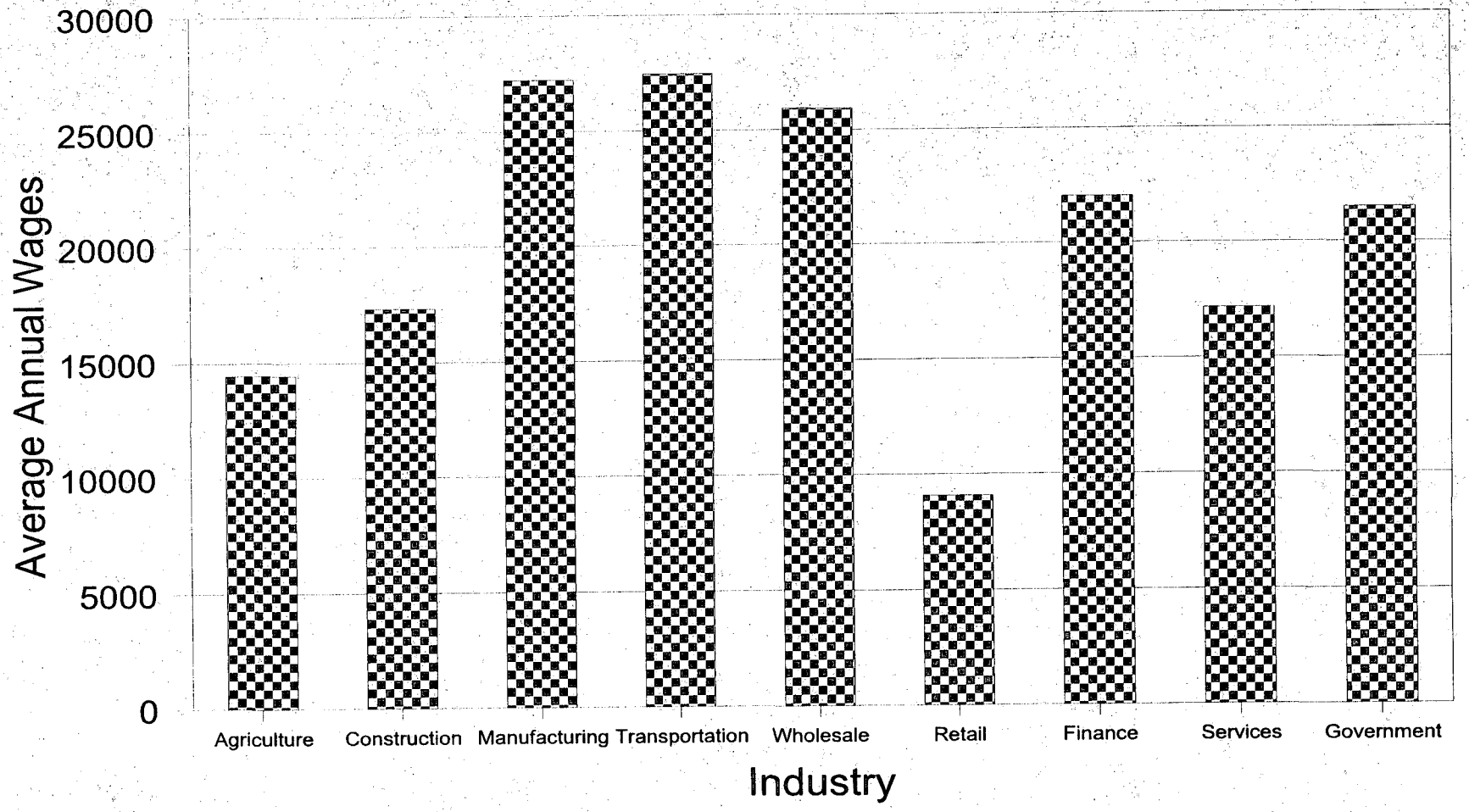


Source: Florida Department of Labor & Employment Security, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY EMPLOYMENT
BY INDUSTRY
1995
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-3

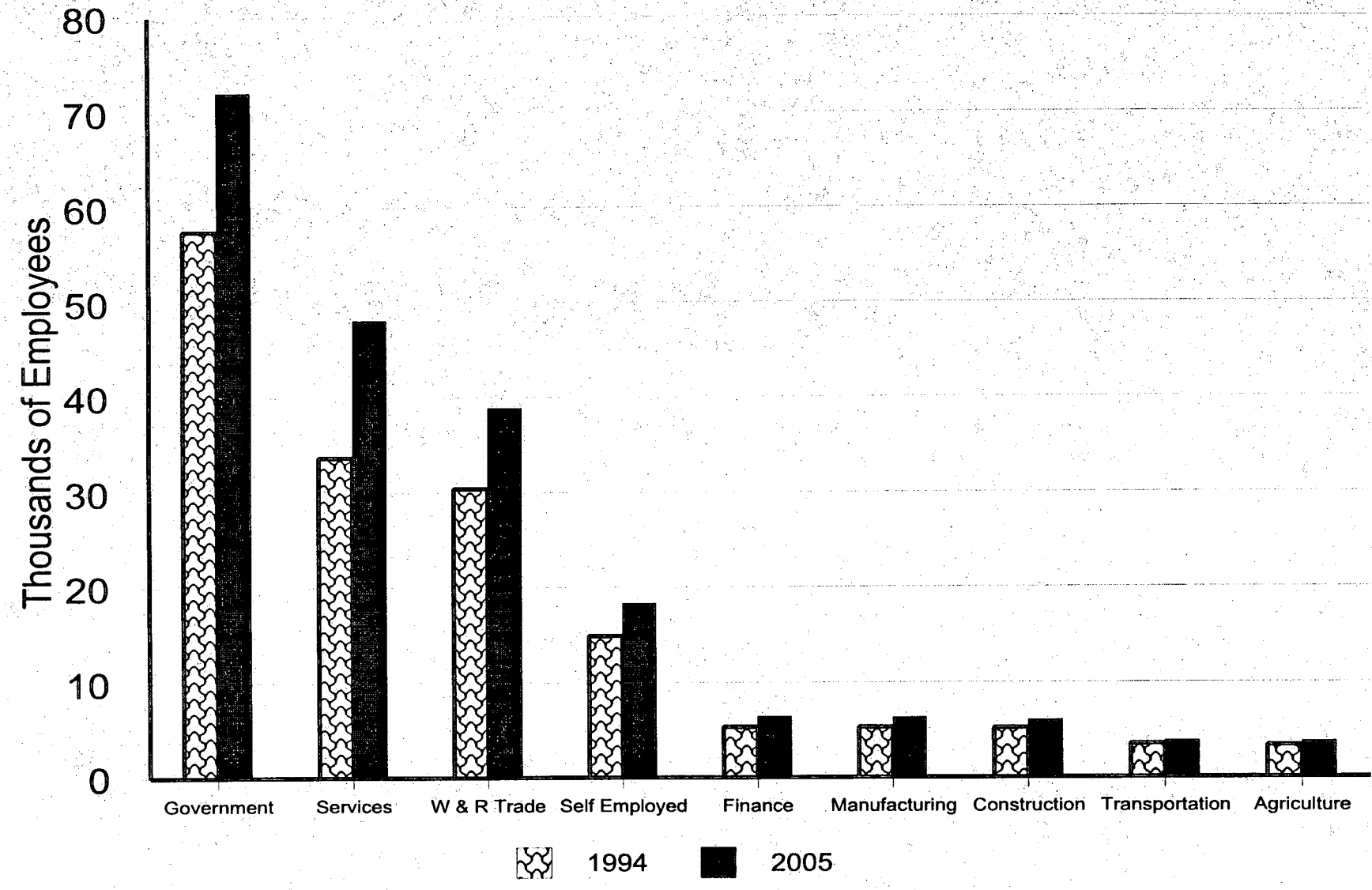


Source: Florida Department of Labor & Employment Security, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY
AVERAGE WAGE BY INDUSTRY
1995
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-4

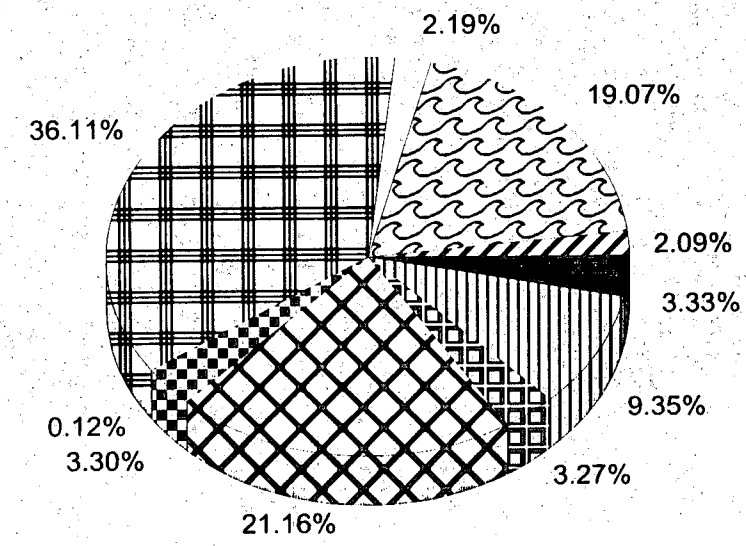


Source: Florida Department of Labor & Employment Security, 1996. Moore/Bowers, 1997.

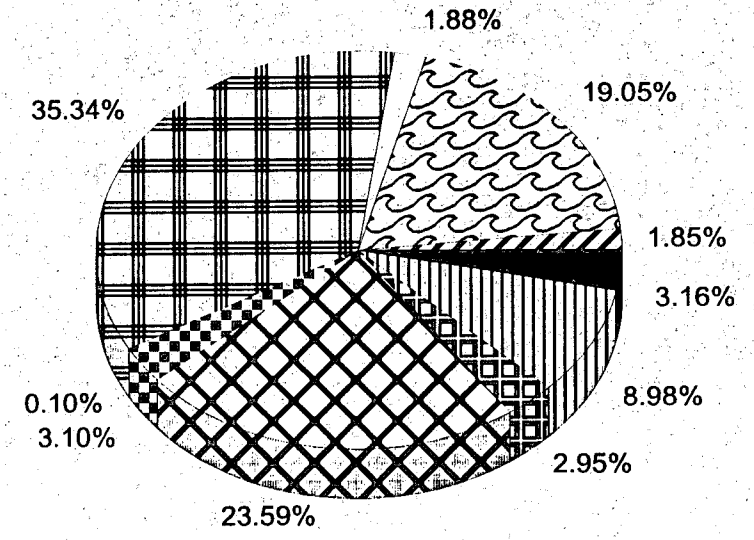
CITY OF TALLAHASSEE

GADSDEN, LEON AND WAKULLA COUNTIES
1994 EMPLOYMENT AND
2005 PROJECTIONS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-5



1994



2005

Agriculture
Suppressed
Self Employed
W & R Trade
Manufacturing
Finance
Transportation
Services
Government
Construction

Source: Florida Department of Labor & Employment Security, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

GADSDEN, LEON AND WAKULLA COUNTIES
1994 EMPLOYMENT AND
2005 PROJECTIONS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-6

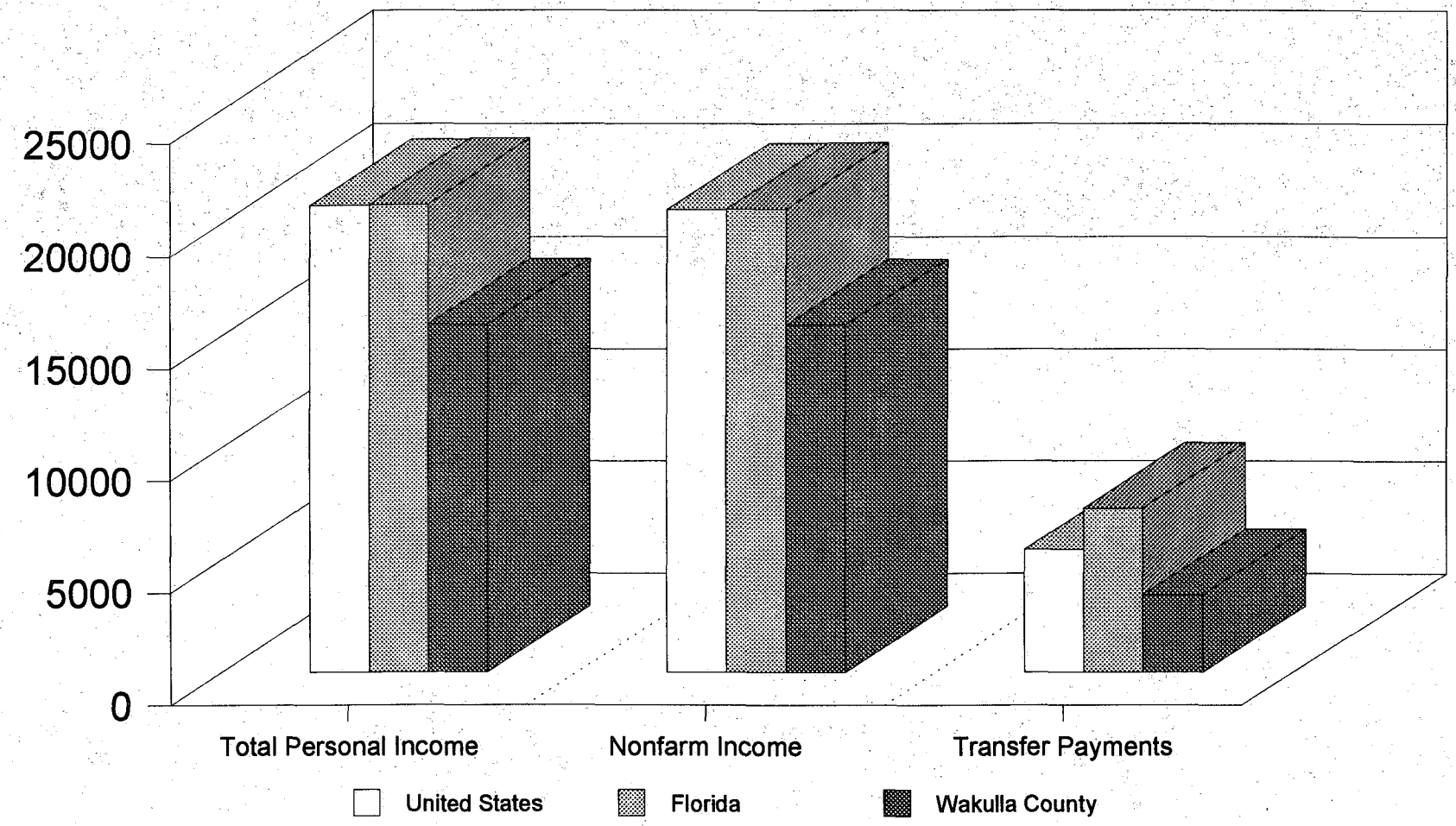
Per capita personal income for Wakulla County was $15,506 in 1993, or approximately 74.5 percent of the Florida average and the national average (Figure 2.2.7-7). Wakulla County's nonfarm per capita income was $15,481 compared to the Florida average of $20,631 and the national average of $20,605. Per capita transfer payments (including unemployment, retirement, and other payments) were $3,427 for Wakulla County compared to $7,294 for Florida and $5,446 nationally. The 1993 per capita income for Wakulla County represented less than a one percent increase over the 1992 per capita income of $15,003.

According to the 1980 Census, households in the lowest income range, less than $15,000 per year, made up 59.1 percent of total households (Figure 2.2.7-8). Middle income households of $15,000 to $24,999 per year made up 25.1 percent of the total, while the moderate income level, $25,000 to $49,999 per year, made up 14.4 percent of total households. Incomes of $50,000 or more per year only made up 1.4 percent of total households. As expected, the 1990 Census data show a shift in the distribution of households among these same income categories. In 1990 households in the lowest income range, less than $15,000 per year, made up 28.7 percent of total households. Middle income households of $15,000 to $24,999 per year made up 21.3 percent of the total, while the moderate income level, $25,000 to $49,999 per year, made up 35.9 percent of total households. Incomes of $50,000 or more per year remained the same at 1.4 percent of total households.

Housing

A breakdown of housing units, by type, shows an increasing trend toward mobile homes. According to the 1970 Census data, conventional single family units in Wakulla County made up 85 percent of all year-round housing units, mobile homes made up 10 percent, and multi-family units made up 5 percent. According to the 1980 census, conventional single family units had declined to 65 percent of all year-round housing units, mobile homes had increased to 32 percent of the total, and multi-family made up 3 percent. By 1990, conventional single family units had decreased to 51 percent, mobile homes had increased to 47 percent, and multi-family had fallen to 2 percent of the total. The Housing Element of the Wakulla County Comprehensive Plan also indicates an increasing trend toward more mobile homes. The trend of increasing reliance on mobile homes for housing in Wakulla County is illustrated on Figure 2.2.7-9.

Housing cost information was obtained from census data. In 1980, 13 percent of the county's housing stock was occupied by renters, 61 percent was occupied by owners, and the remaining 26 percent was vacant. Detailed housing characteristics from the 1980 Census indicates that 97 percent of the rental units rent for less than $400. The median monthly rent in Wakulla County, according to the 1980 Census, was $190. The median cost of owner-occupied units was $284 if the home was mortgaged and $102 if the home was not mortgaged (Figure 2.2.7-10). The 1990 Census reported that the percentage of units occupied by renters was the same as 1980, while units occupied by owners increased to 66 percent. Vacant units accounted for 21 percent of all units in the county. Housing cost data from the 1990 Census indicate that 69 percent of the rental units in the county rented for less than $400 per month. The median monthly rent in Wakulla



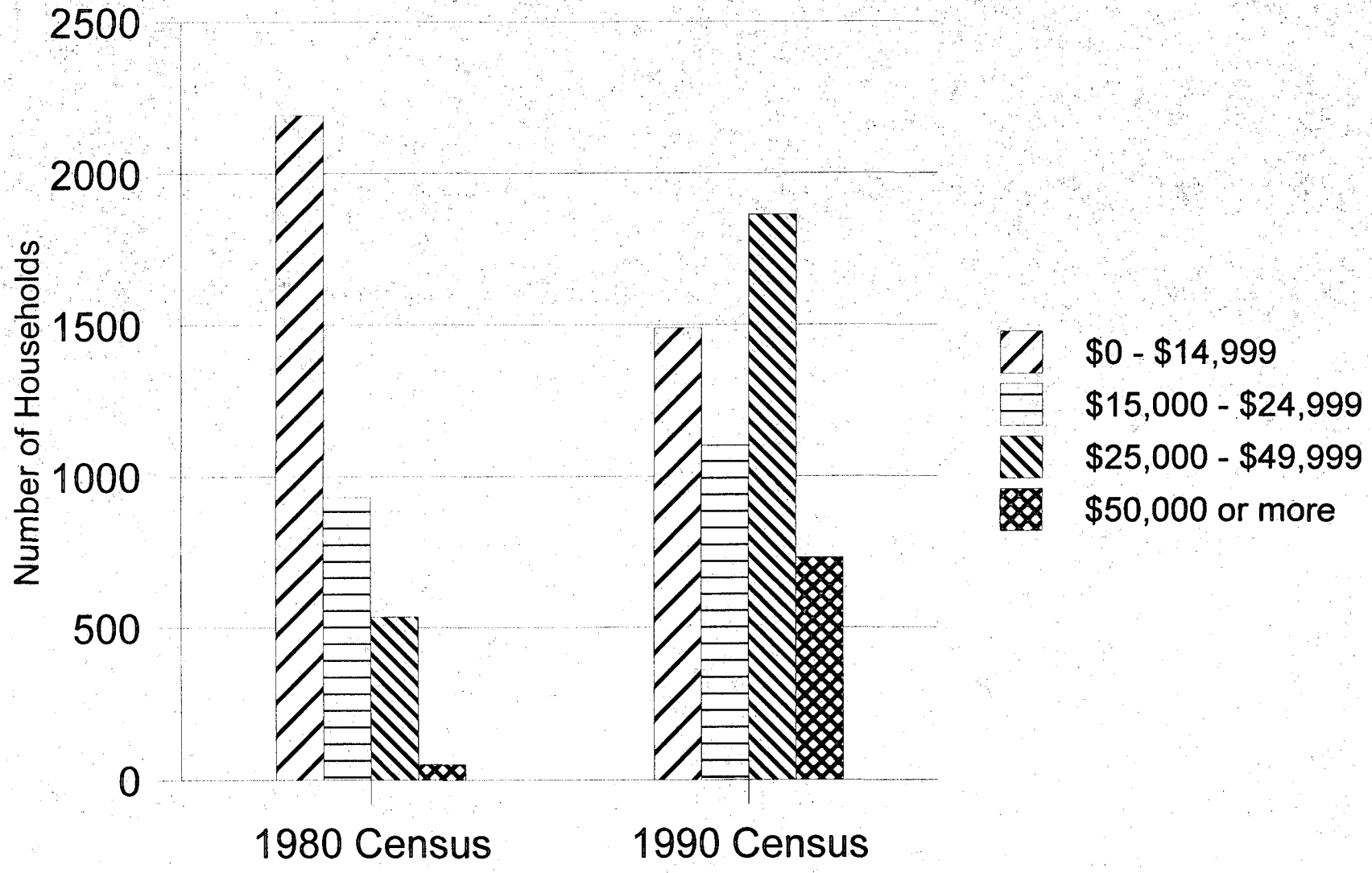
Source: Florida Statistical Abstract, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

UNITED STATES, FLORIDA AND WAKULLA COUNTY
1993 PER CAPITA INCOME

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-7

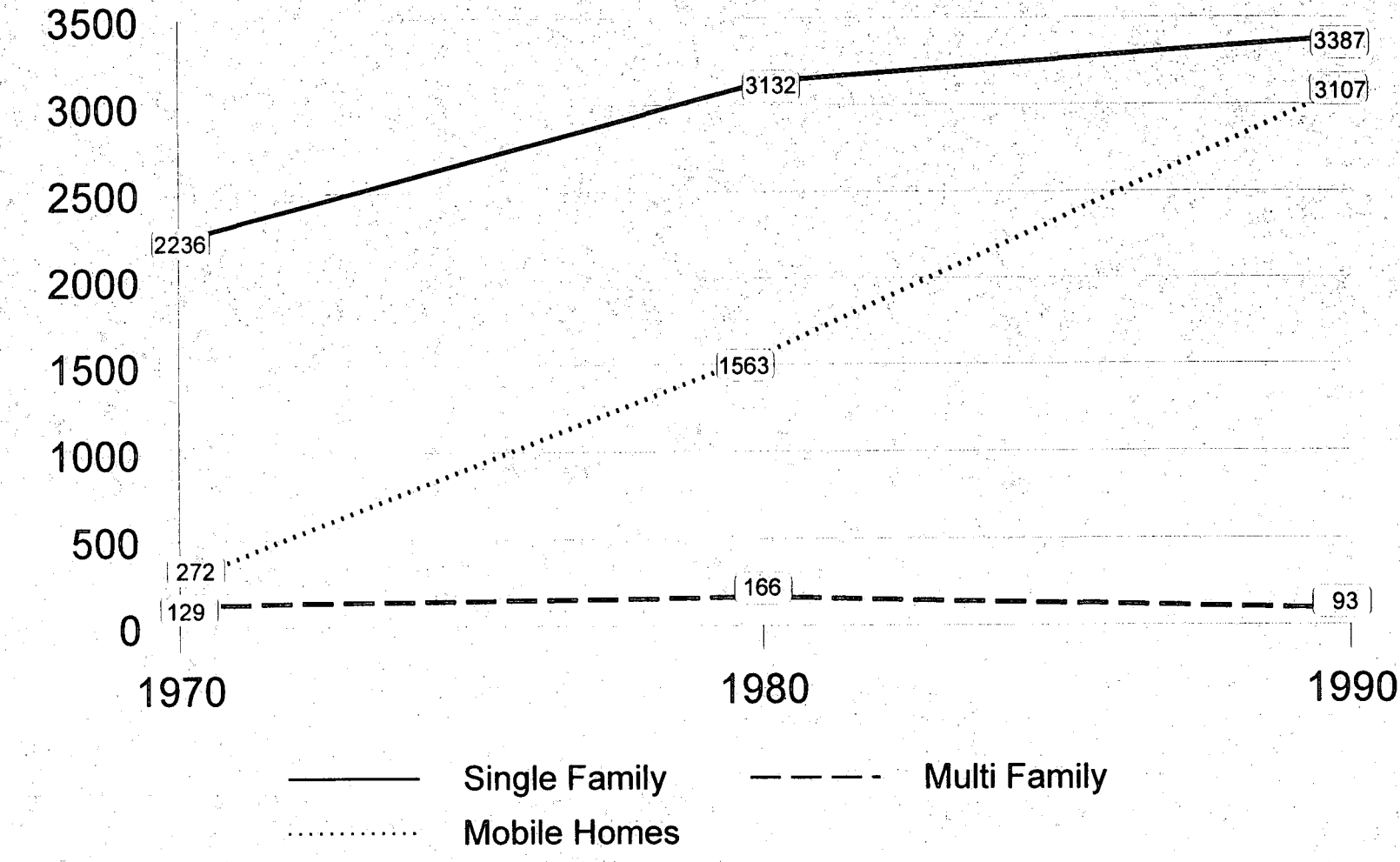


Sources: U.S. Bureau of the Census, 1980. U.S. Bureau of the Census, 1990. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY
DISTRIBUTION OF HOUSEHOLD INCOMES
1980 AND 1990
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-8

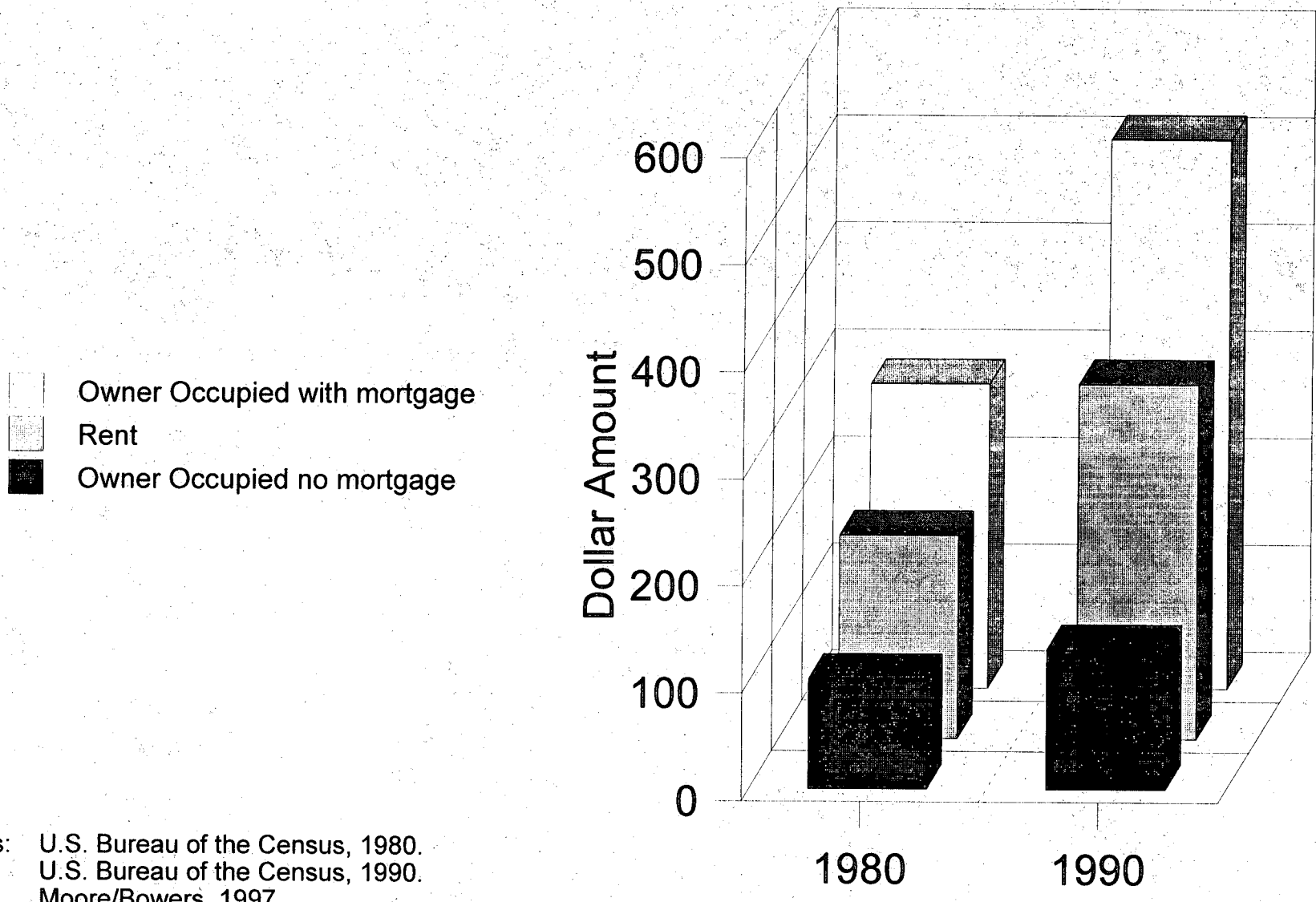


Source: U.S. Bureau of the Census, 1970. U.S. Bureau of the Census,1980.
U.S. Bureau of the Census, 1990. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY
TREND IN HOUSING UNITS
1970, 1980 AND 1990
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-9



Sources: U.S. Bureau of the Census, 1980.
U.S. Bureau of the Census, 1990.
Moore/Bowers, 1997.

CITY OF TALLAHASSEE

MEDIAN MONTHLY HOUSING COSTS
WAKULLA COUNTY
1980 AND 1990
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-10

County in 1990 was $331. The median monthly cost of owner-occupied units was $513 for homes with a mortgage and $130 if the home was not mortgaged.

The trend in residential building permits issued in Wakulla County between 1985 and 1994 for the total county according to the Florida Statistical Abstract is illustrated by Figure 2.2.7-11. The County reached a peak of 155 residential permits in 1993. Generally, residential permits have increased every year. In the past 10 years, only 1989 and 1994 showed a decline in the number of permits issued. The number of building permits issued by type for the past three years according to the Wakulla Building Department is shown on Figure 2.2.7-12.

Local Government Revenues and Expenditures

Wakulla County's revenue sources include taxes, licenses and permits, federal grants, state and other governmental sources, charges for services, fines and forfeitures, special assessments and impact fees, other sources/interfund transfers, and other miscellaneous revenues. Total revenues for the county for the fiscal year ending September 30, 1995 were $17,033,075. Other sources/interfund transfers made up 25.5 percent of the county's total revenue (Figure 2.2.7-13). State and other government sources accounted for 16 percent and ad valorem taxes accounted for 14.9 percent of the total.

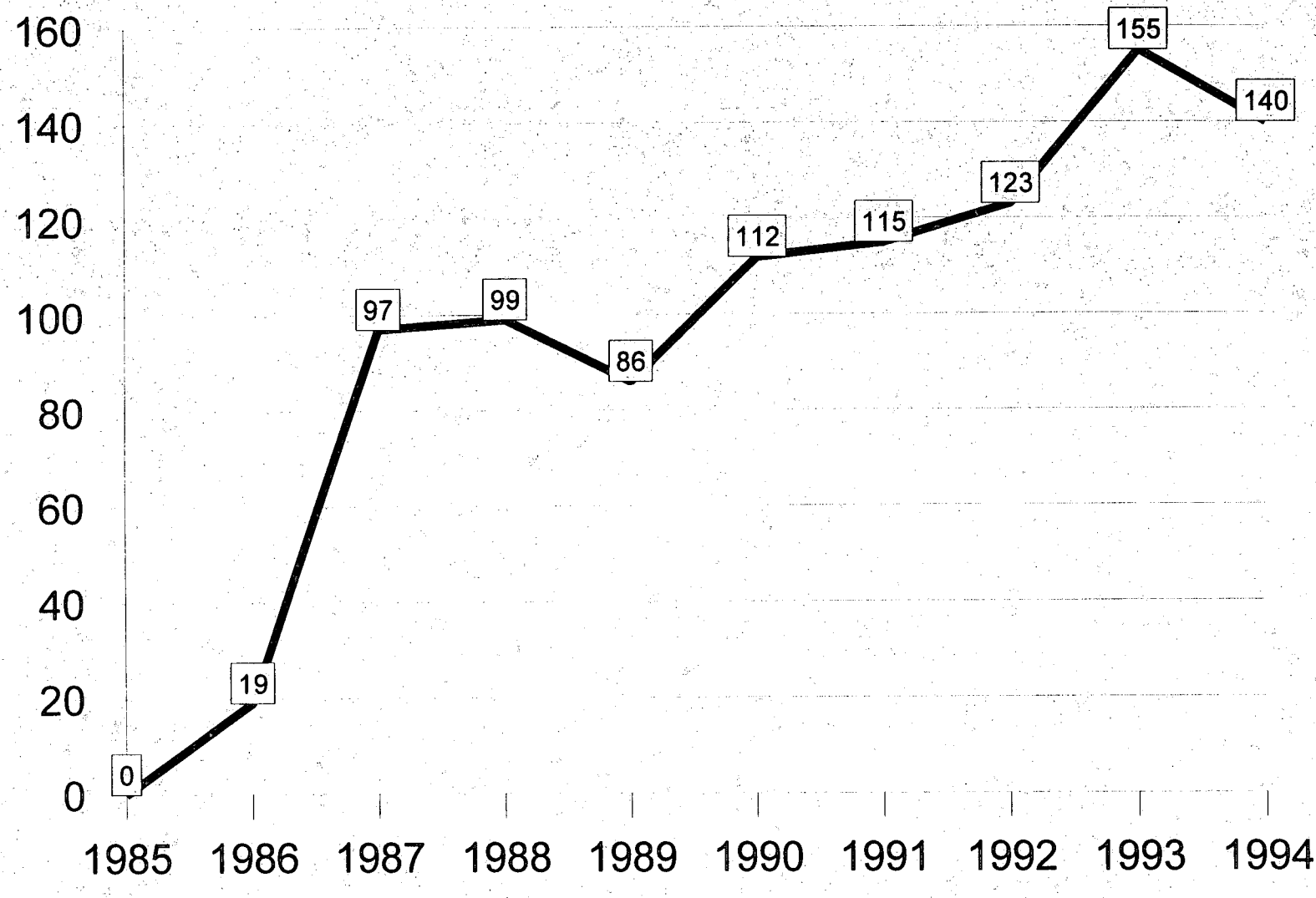
Wakulla County expenditures consisted of general government, public safety, physical environment, transportation, economic environment, human services, cultural/recreation, debt service and other uses/interfund transfers. The total expenditures for the fiscal year ending September 30, 1995, were $16,547,064. Both public safety and other uses/interfund transfers made up 24.3 percent (Figure 2.2.7-14) of the county's expenditures. General government made up 13.6 percent.

Per capita revenues and per capita expenditures for the county are shown on Figure 2.2.7-15 and Figure 2.2.7-16, respectively.

The City of St. Marks' revenue sources include taxes, licenses and permits, state and other governmental sources, charges for services, fines and forfeitures, and other miscellaneous revenues. The City of St. Marks' total revenues for the fiscal year ending September 30, 1995, were $256,566. Charges for services made up 40.8 percent of the City of St. Marks' total revenue (Figure 2.2.7-17). State and other government sources accounted for 29.8 percent and other taxes, fees and licenses accounted for 14.8 percent of the total.

The City of St. Marks' expenditures consisted of general government, physical environment, transportation, cultural/recreation, and debt service. The total expenditures for the fiscal year ending September 30, 1995, were $273,423. Physical environment made up 43.9 percent (Figure 2.2.7-18) of the City of St. Marks' expenditures, while general government made up 19.9 percent.

Per capita revenues and per capita expenditures for the City of St. Marks are shown on Figure 2.2.7-19 and Figure 2.2.7-20 respectively.



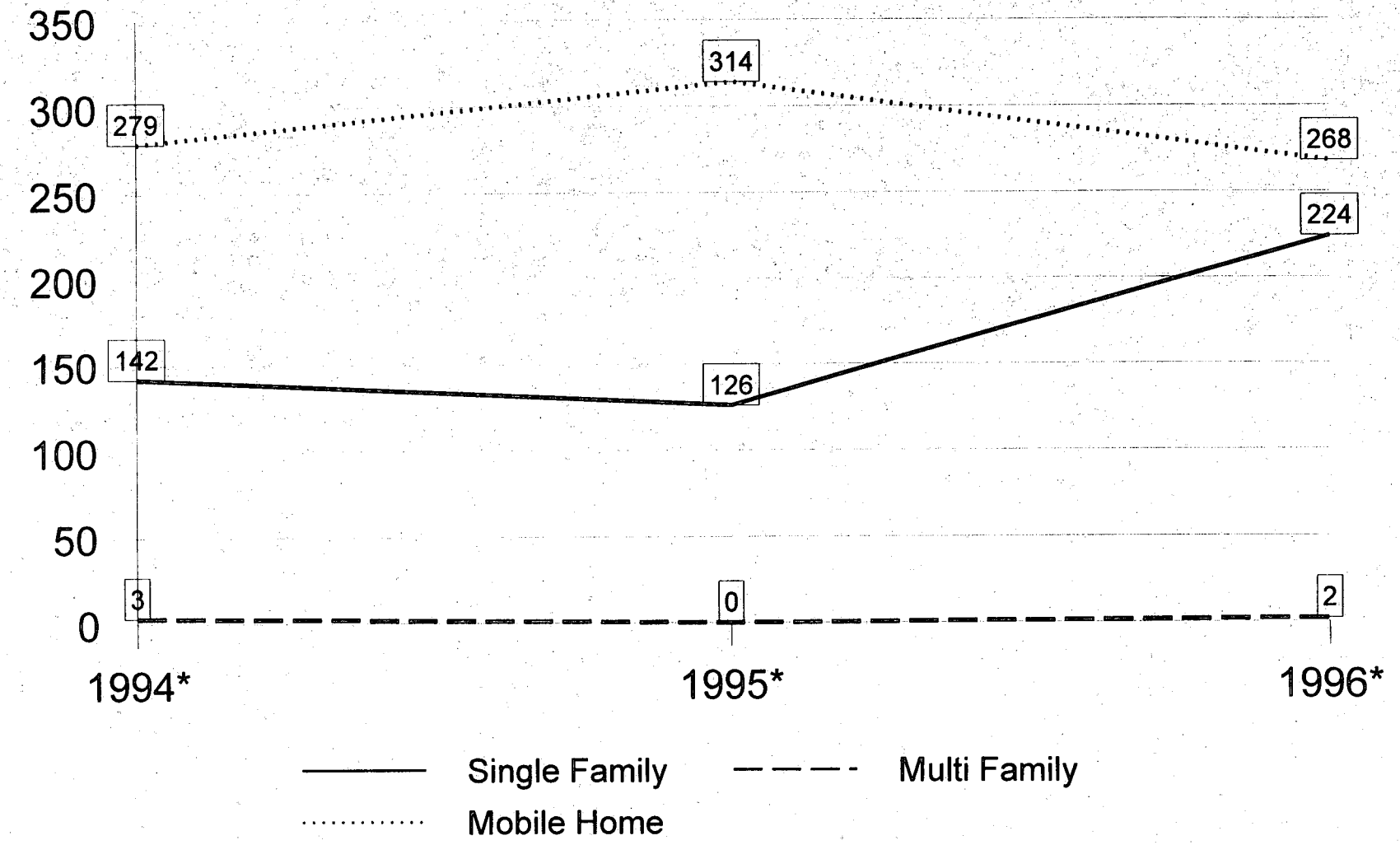
*Note: These numbers do not include mobile home permits.

Source: Florida Statistical Abstract, 1988, 1990, 1992, 1993, 1994, 1995 and 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY
RESIDENTIAL BUILDING PERMITS
1985 THROUGH 1994
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-11



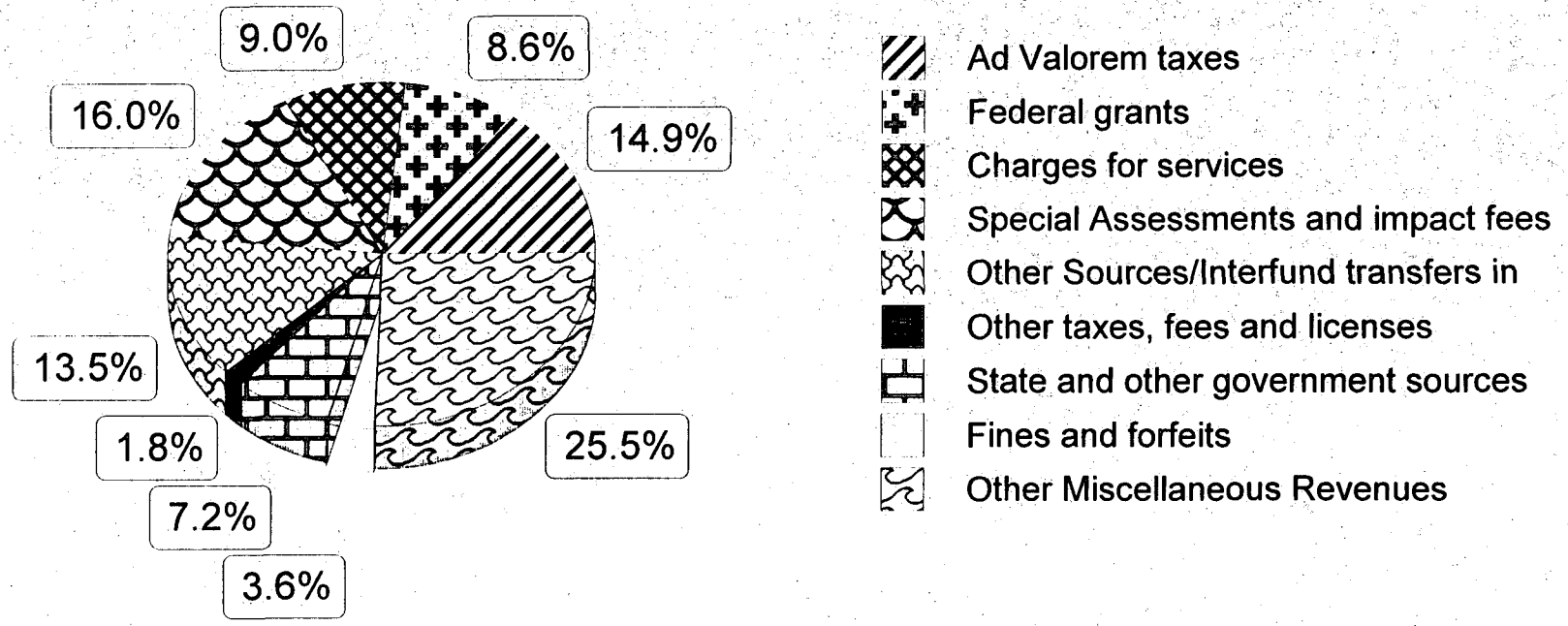
***Figures are based on Wakulla County's fiscal year ending September 30th.**

Source: Wakulla County Building Department, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY
RESIDENTIAL BUILDING PERMITS
1994 THROUGH 1996
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-12



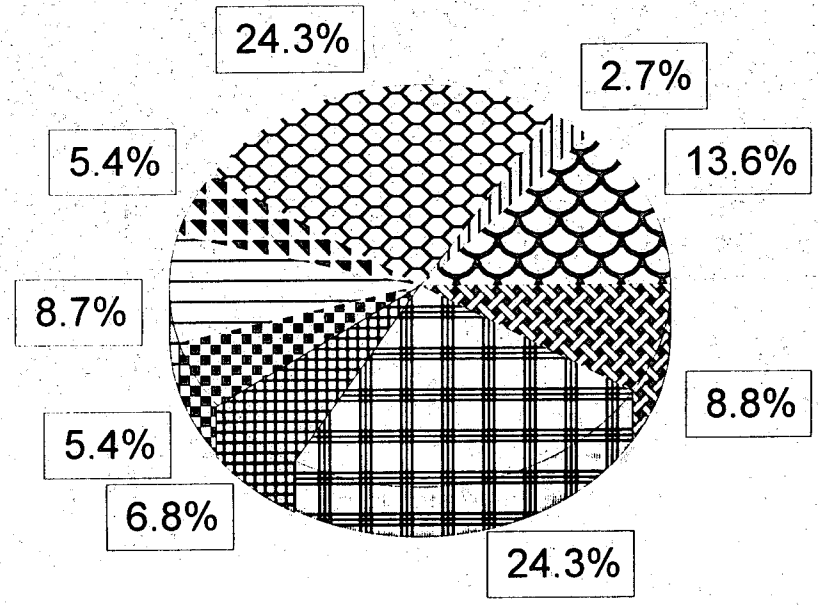
Source: Florida Department of Banking and Finance, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY
1995 REVENUES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-13



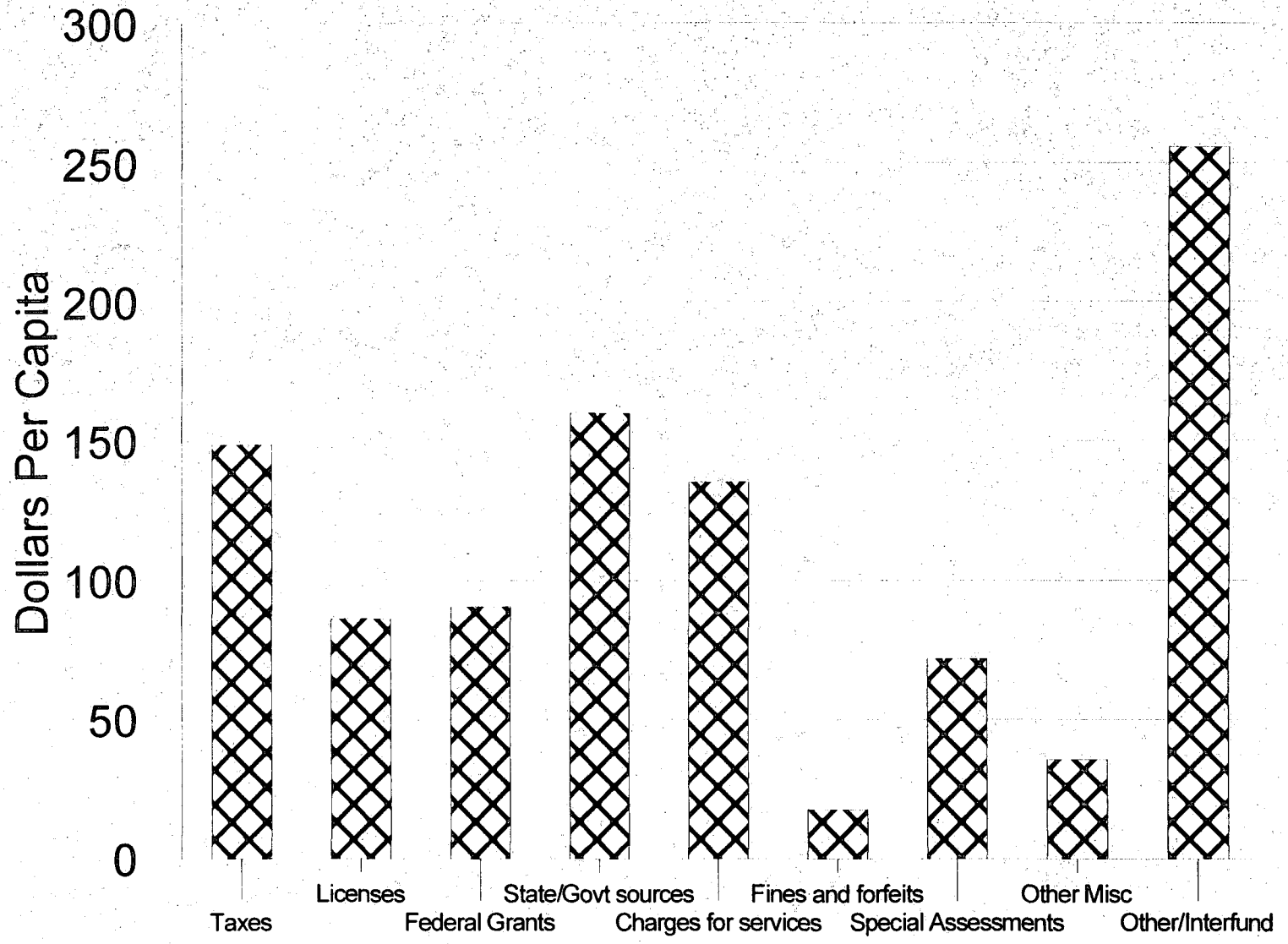
Source: Florida Department of Banking and Finance, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY
1995 EXPENDITURES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-14



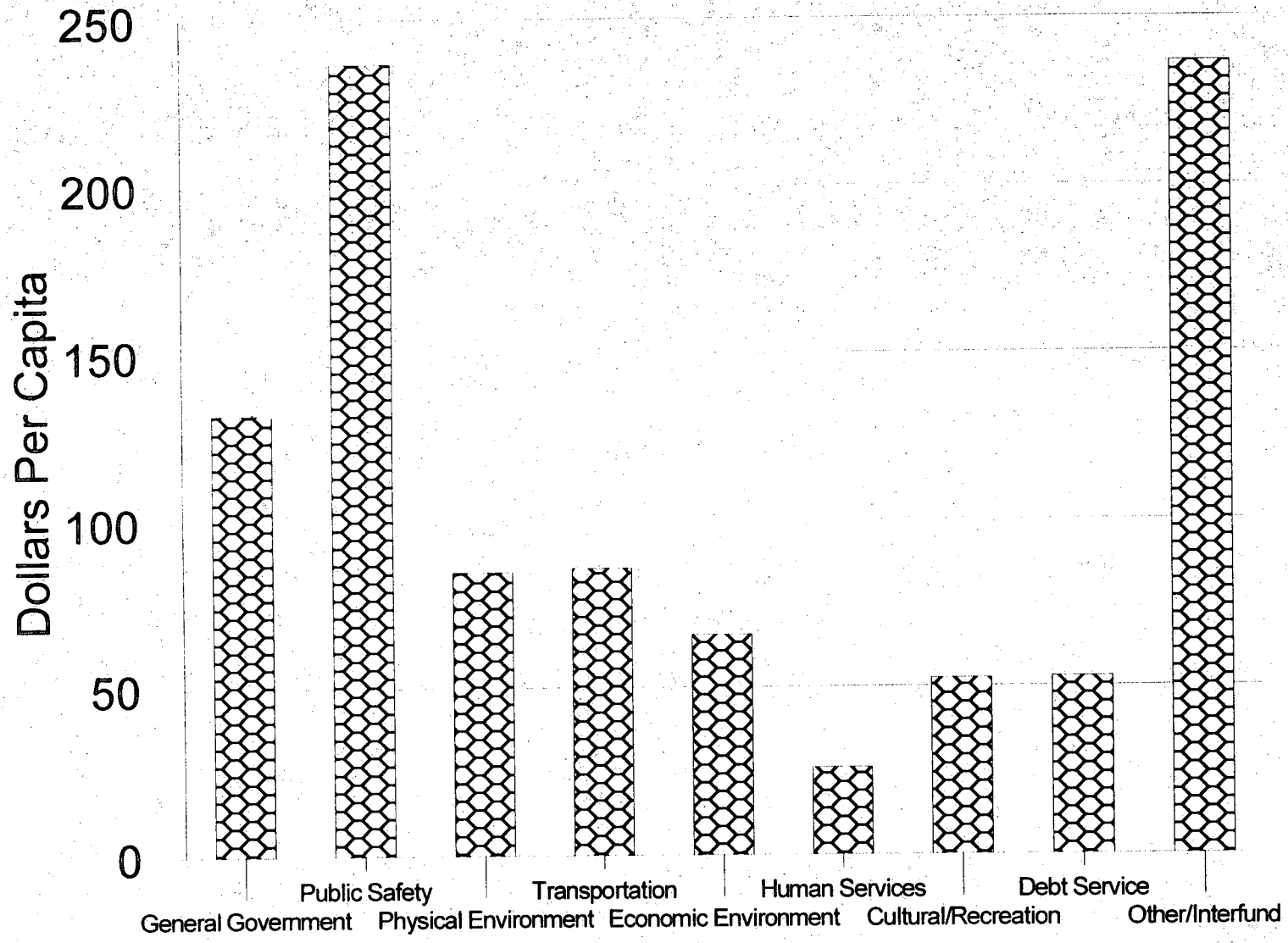
Source: Florida Department of Banking and Finance, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY
1995 REVENUES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-15



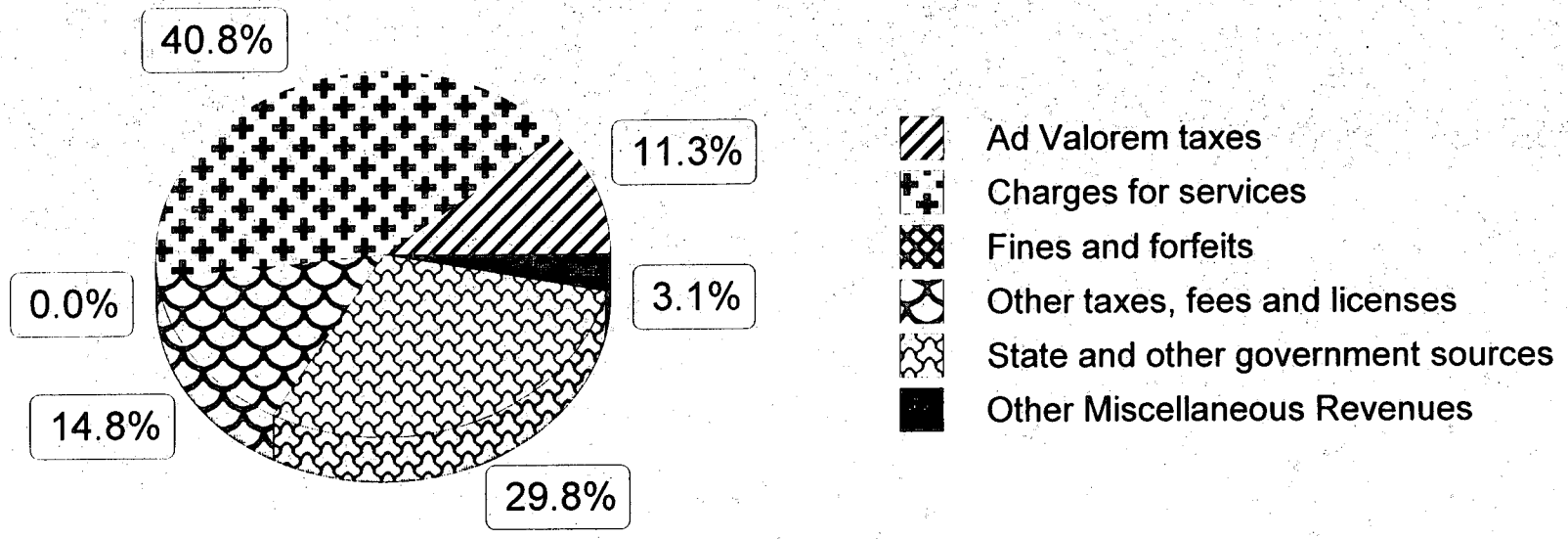
Source: Florida Department of Banking and Finance, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

WAKULLA COUNTY
1995 EXPENDITURES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-16



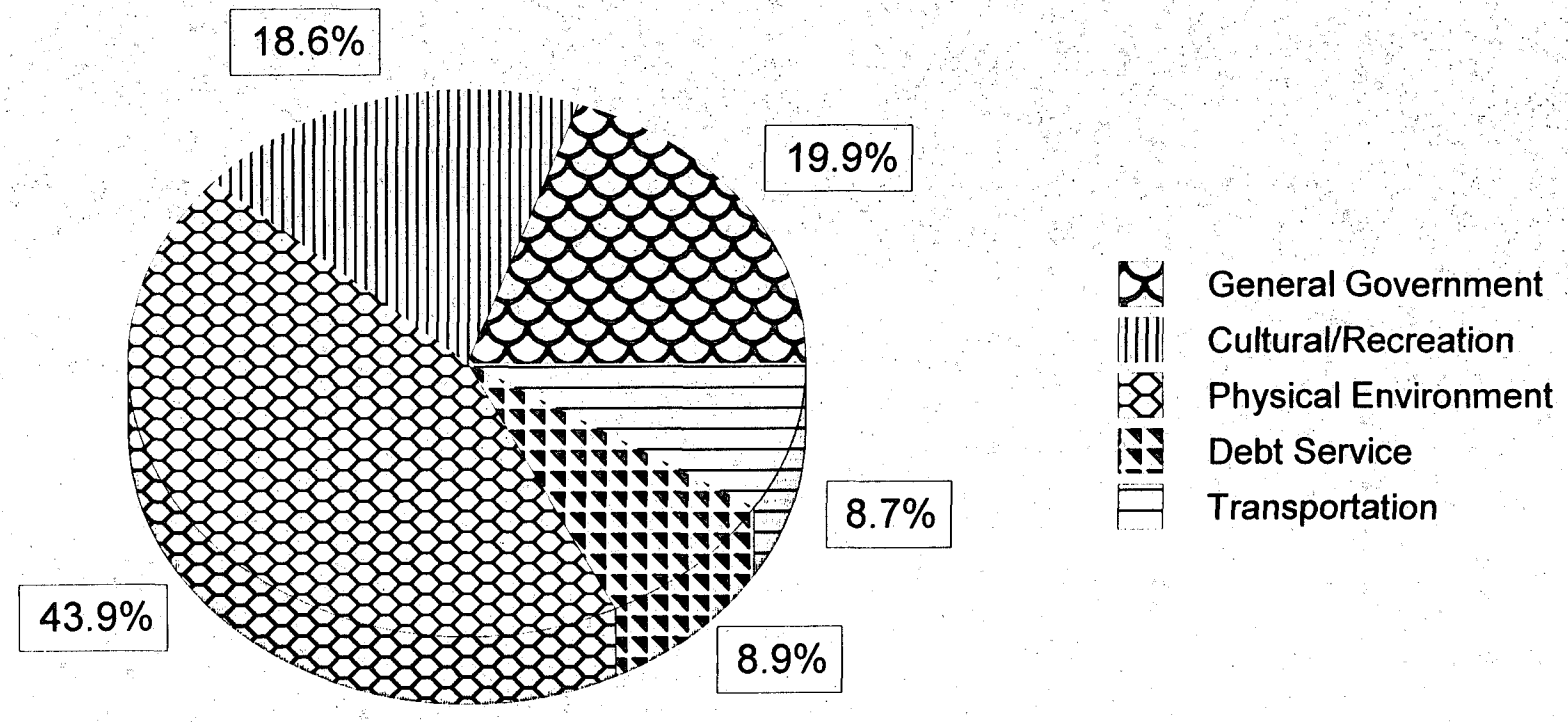
Source: Florida Department of Banking and Finance, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

CITY OF ST MARKS
1995 REVENUES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-17



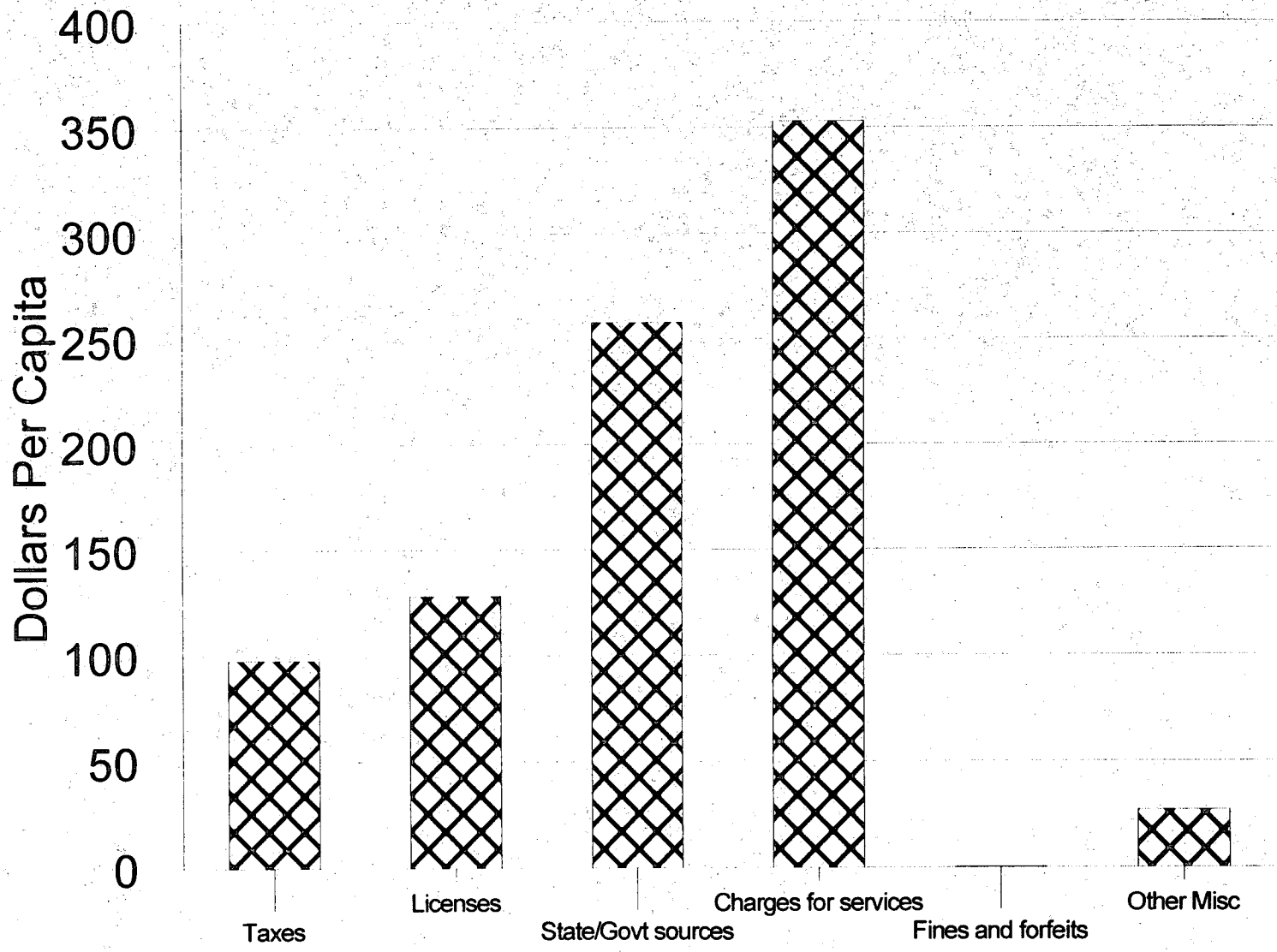
Source: Florida Department of Banking and Finance, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

CITY OF ST MARKS
1995 EXPENDITURES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-18



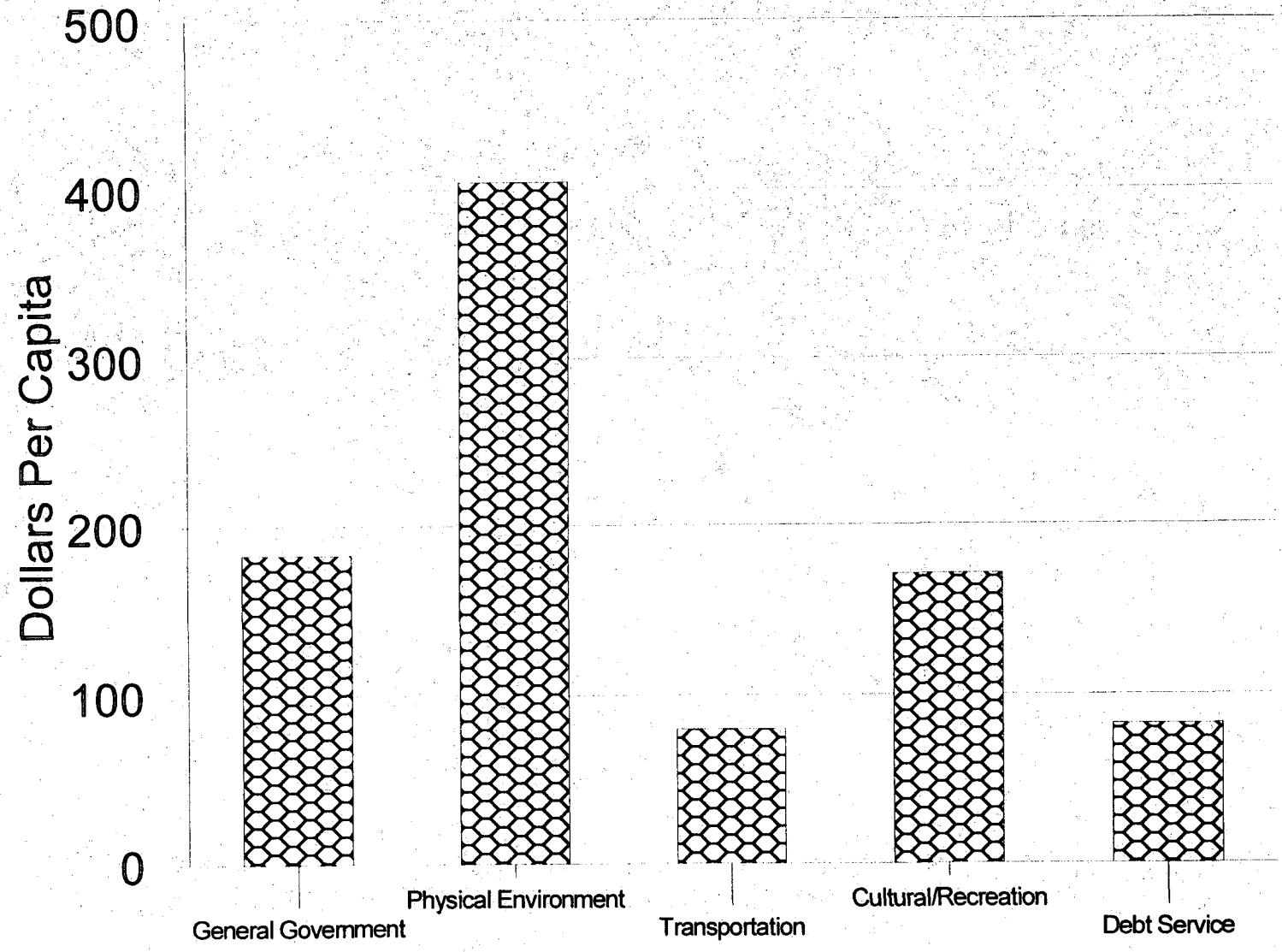
Source: Florida Department of Banking and Finance, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

CITY OF ST MARKS
1995 REVENUES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-19



Source: Florida Department of Banking and Finance, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

CITY OF ST MARKS
1995 EXPENDITURES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-20

2.2.7.2 Public Services

Parks and Recreation

Wakulla County's parks and recreation inventory includes 39 public and private recreational facilities, five designated pastoral open space areas, and five designated corridor open space locations throughout the county. Pastoral open space areas correspond to the boundaries of the Apalachicola National Forest, the St. Marks National Wildlife Refuge, the Aucilla Wildlife Management Area, the Ochlockonee River State Park and the Wakulla Springs State Park. The corridor open space designation includes the St. Marks Rail to Trail (Tallahassee-St. Marks Historic Railroad State Trail), the Wakulla River, Florida National Scenic Trail, Sopchoppy River Canoe Trail, Ochlockonee River Canoe Trail and the St. Marks River.

The City of St. Marks owns and operates two parks. There are three parks located within a five-mile radius of the Purdom Station, including the Wakulla River Park Area, the St. Marks River Park Area and the Newport Recreation Area. Wakulla County owns and maintains the Newport Recreation Area.

Educational Services

Locations of educational facilities in Wakulla County are shown on Figure 2.2.7-21.

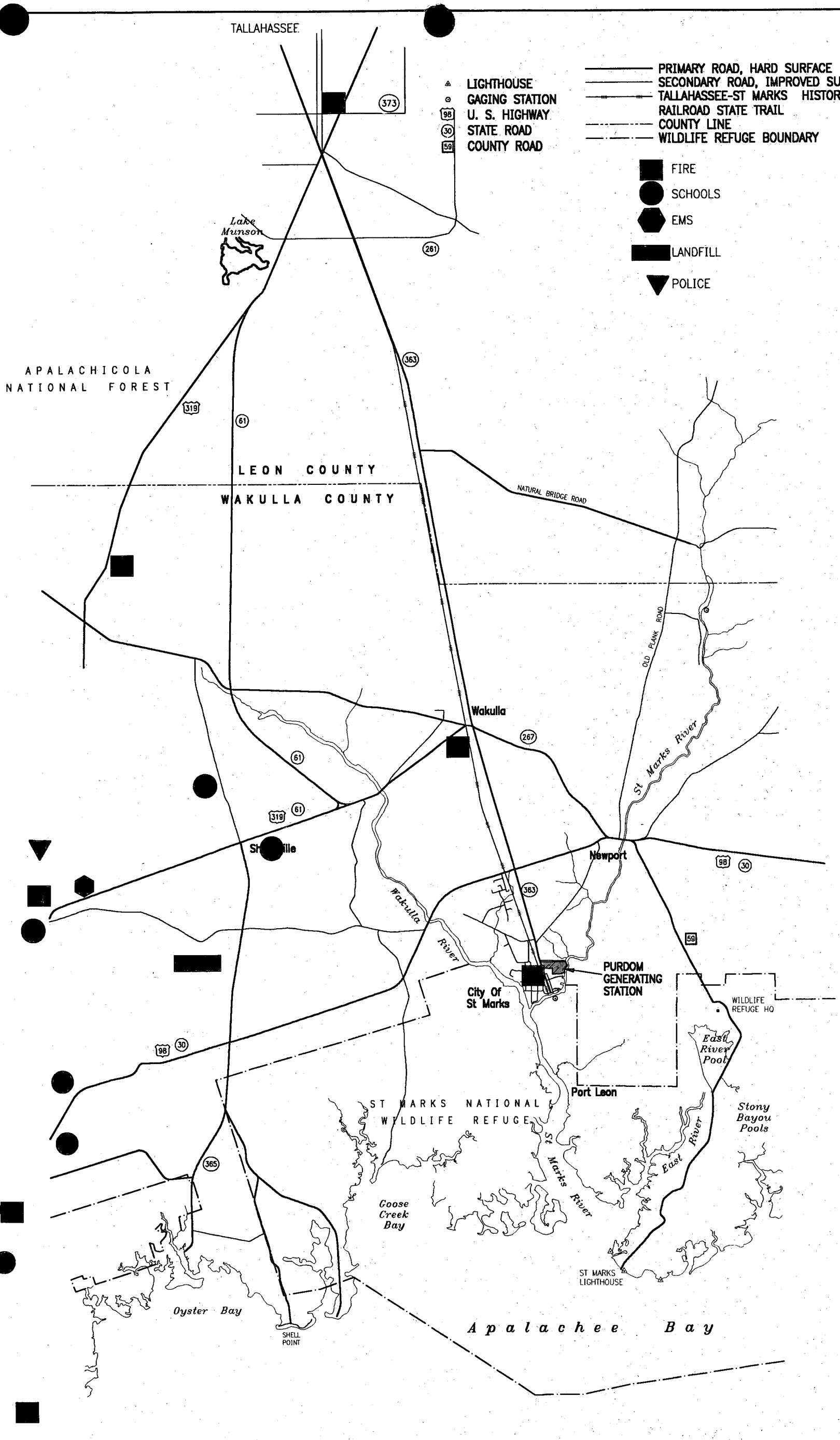
There are five primary and secondary schools in the county, including three elementary schools, one middle/junior high school, one high school, and one other type of school. Tallahassee Community College, Florida State University, and Florida A&M University are located in Tallahassee, approximately 20 miles north of the Purdom Station. Adult and community education is provided at the Wakulla Education Center. The Purdom Station lies within the Shadeville Elementary School District (SR 365), the Wakulla Middle School District, and the Wakulla High School District. The Florida Department of Education calculated a teacher-to-student ratio of 1:18.61 for Wakulla County during the 1994-95 school year. The Wakulla County School District's 1994-95 total budget was $43,185,089 including general revenue, debt service, capital projects, and special revenues. Wakulla County's expenditure per student was $4,494 per full-time equivalent; 92 percent of the statewide average expenditure. Local revenue makes up 12 percent of the school district's revenue, with federal funds contributing 5 percent and state funds contributing the remaining 83 percent.

Wakulla County operates one library which is located at 4330 Crawfordville Highway in Medart.

Public Safety

Locations of public safety facilities in Wakulla County are shown on Figure 2.2.7-21.

Law enforcement is provided by the Wakulla County Sheriff's Office, headquartered at 15 Oak Street, Crawfordville, approximately 15 miles from the Purdom Station. The Sheriff's Office headquarters is also the location of the Wakulla County jail facility and dispatch. The county is



SOURCES: WAKULLA COUNTY PLANNING DEPARTMENT, 1996
MOORE/BOWERS, 1996

CITY OF TALLAHASSEE

LOCATIONS OF PUBLIC SERVICES IN WAKULLA COUNTY

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.2.7-21

divided into three districts: north, central, and east. Coverage is provided by 3 to 4 shifts of 12 hours each.

Fire protection in Wakulla County is provided by 10 volunteer fire departments located throughout the county. The nearest fire stations to the Purdom Station are the St. Marks Volunteer Fire Department and the Wakulla Station Volunteer Fire Department.

The City of Tallahassee, the City of St. Marks, and the St. Marks Volunteer Fire Department have executed a mutual assistance agreement for fire protection and rescue service. That agreement provides for mutual assistance among the parties "in the event of a fire or other emergency which is, or is likely to be, beyond the control of the services, personnel, equipment, and facilities of the agency or fire department having jurisdiction. . . ." (Wakulla County Fire/EMS, 1996). The closest City of Tallahassee fire station likely to respond under the terms of the agreement is at the corner of Monroe Street and Magnolia Avenue on the south side of Tallahassee.

There are two 24-hour Emergency Medical Services (EMS) stations in Wakulla County that provide ambulance and rescue services. Station 2 in Medart is the nearest EMS station, located approximately eight miles from the Purdom Station. The fire departments also act as first responders in medical emergencies and are dispatched through the 911 system. The St. Marks Volunteer Fire Department is approximately one-half mile from the Purdom Station. There are no hospitals in Wakulla County, but two hospitals, Tallahassee Memorial Hospital and Tallahassee Community Hospital, are located approximately 25 miles from the Purdom Station. The Apalachee Health Center, located in Crawfordville, provides primary care health services to a limited number of patients, including, typically, lower income residents without health insurance.

Utility Services

Wastewater

Wakulla County has two wastewater treatment plants: Otter Creek Wastewater Treatment Plant and one at the county jail. The City of St. Marks Wastewater Treatment Facility is a city-wide system that is operated for the collection, treatment and disposal of non-industrial wastewater. The City of St. Marks Wastewater Treatment Facility is the nearest wastewater treatment facility to the Purdom Station. The maximum capacity is 50,000 gallons per day (gpd); current loads average 21,000 gpd.

Other nondomestic wastewater treatment facilities include two industrial wastewater treatment facilities serving the Purdom Station discharging to the St. Marks River and Primex Technologies (formerly Olin Corporation) discharging to the Wakulla River.

Water

The potable water system for the City of St. Marks is municipally owned and operated. The water system also serves the outlying unincorporated areas of the county along SR 30 and SR 363. The facilities comprising the water system include two wells: one supply well and one

stand-by well. The water treatment plant has a 10,000 gallon holding tank and a 100,000 gallon elevated storage tank. The facility has the capacity to provide 144,000 gallons per day.

Currently, Wakulla County does not operate any water systems. Other water systems in the county providing services include the City of Tallahassee, Talquin, Sopchoppy Water, and Winco Utilities, which serves the Wakulla County Correctional Facility.

Solid Waste Services

The solid waste system in the City of St. Marks includes collection and disposal services as a municipal service. Residential garbage is collected twice weekly. The county-owned Lower Bridge Landfill is used only for construction debris and is used primarily as a transfer station for garbage before being hauled to the incinerator in Panama City. All other garbage is transferred to the Panama City incinerator in Bay County. Private contractors carry the garbage from the transfer station to Panama City. There are three solid waste drop sites to serve Wakulla County residents. The landfill and drop sites are maintained by the county. The solid waste disposal service is provided by the county for the county and the cities of St. Marks and Sopchoppy. Collection services in the county are currently unregulated. In addition to the City of St. Marks' service, three private contractors, Waste Management, Argus Services, and Quantum Services, provide collection services to county residents at the resident's request.

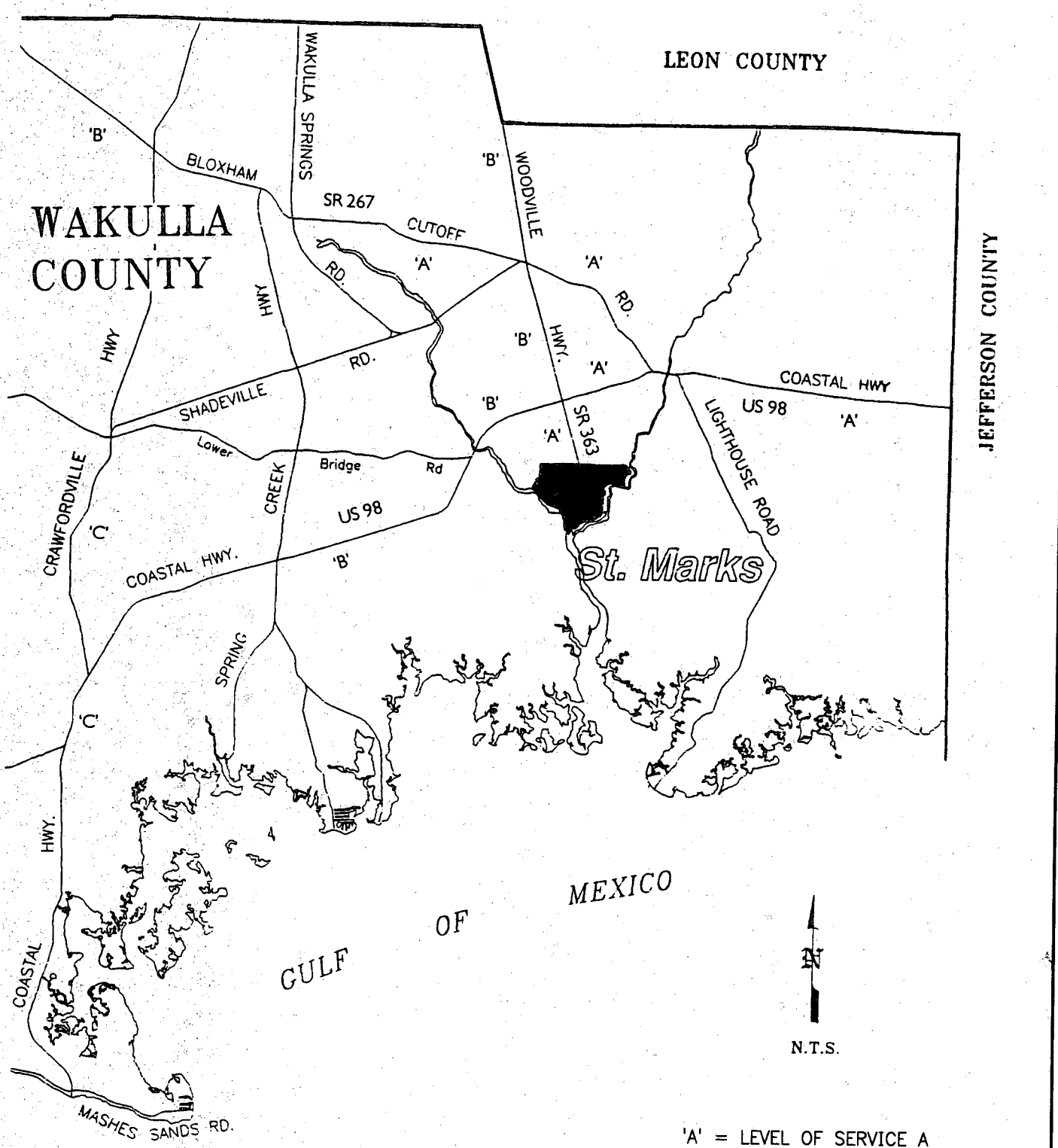
Transportation

Existing Traffic Conditions

To determine the existing levels of service (LOS) in the study area, new traffic volume data were collected in the immediate vicinity of the Purdom Station and county-wide data were obtained from the Apalachee Regional Planning Council (ARPC). In general, the roadways in the vicinity of the plant are lightly traveled.

Study Area

Initial study area limits for the Purdom Station were established based on traffic volumes expected to be generated by the Project. The main travel component consists of project construction traffic. If any impacts occur, traffic generated by the construction workers is expected to have the most impact on the roadways in Wakulla County and parts of Leon County. Since there is limited lodging available in close proximity to the site, the Project study area encompasses the central and eastern part of Wakulla County (Figure 2.2.7-22), and the southeastern part of Leon County (Figure 2.2.7-23).



'A' = LEVEL OF SERVICE A
'B' = LEVEL OF SERVICE B
'C' = LEVEL OF SERVICE C

SOURCE: HALL PLANNING & ENGINEERING, 1997

CITY OF TALLAHASSEE

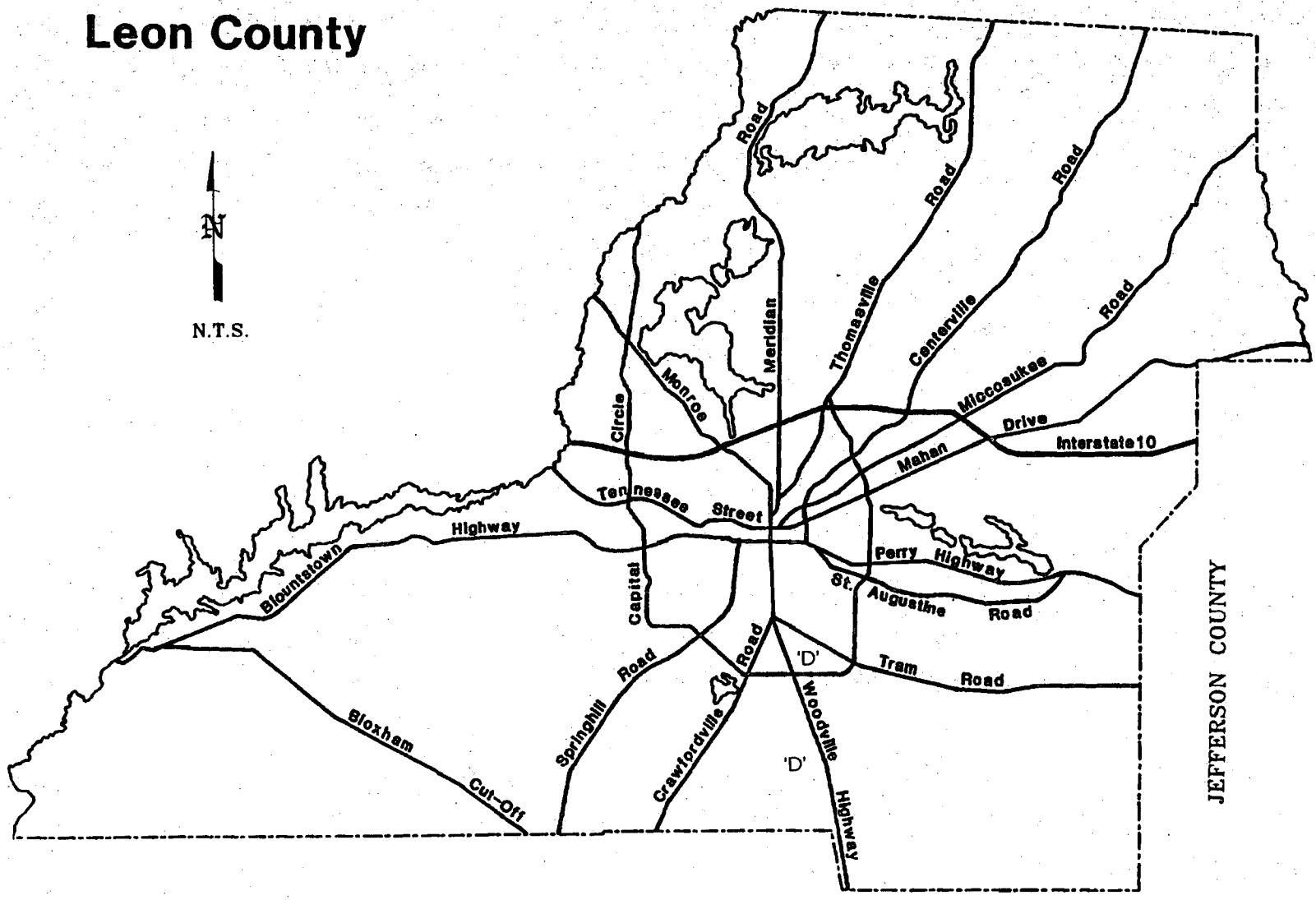
WAKULLA COUNTY
TRANSPORTATION ROUTES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-22

PLOT DATE FEB 28, 1997 C:\15840002\---\00000-30.DWG

PLOT DATE FEB 28, 1997 C:\15840002\----\00000-31.DWG



SOURCE: HALL PLANNING & ENGINEERING, 1997

CITY OF TALLAHASSEE

LEON COUNTY
TRANSPORTATION ROUTES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.2.7-23

2.2.7-29

The determination of significant traffic impact is different in Wakulla County and Leon County. Wakulla County bases its determination on any traffic impact to a county road in excess of 5 percent of the peak hour directional Maximum Service Flow at LOS D. Leon County considers their rural roads significantly affected by the Project, if:

1. Any roadway segment is operating at or above the adopted LOS, based on the most recent annual traffic count and the Project traffic is expected to contribute vehicle trips equal to 5 percent or more of the service volume at LOS C in the peak hour, and in the peak direction; or,
2. Any roadway segment is operating below the adopted LOS, based on the most recent annual traffic count and the Project traffic is expected to contribute vehicle trips equal to one percent or more of the service volume at LOS C in the peak hour, and in the peak direction.

Level of Service (LOS)

The concept of LOS uses quantitative measures that characterize operational conditions within a traffic stream and their perception by motorists and passengers (TRB, Highway Capacity Manual, Special Report 209). The descriptions for each individual LOS incorporate these conditions via such factors as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six levels of service are defined for each type of arterial. They are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions.

The traffic volume that can be served under the stop-and-go conditions of LOS F is generally lower than the LOS E volume; consequently, service flow rate E defines the maximum flow rate, or capacity, of the facility. For most planning and design purposes; however, service flow rates C or D are usually used because they ensure an acceptable quality of service.

The following general statements describe arterial LOS:

1. *LOS A* consists of primarily free-flow operations at average travel speeds, usually about 90 percent of the free-flow speed for the arterial classification. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
2. *LOS B* represents reasonably unimpeded operations at average travel speeds, usually about 70 percent of the free-flow speed for the arterial classification. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tension.
3. *LOS C* represents stable operations; however, ability to maneuver and change lanes in midblock locations may be more restricted than at LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50 percent of the average free-flow speed for the arterial classification. Motorists will experience appreciable tension while driving.

4. *LOS D* borders on a range in which small increases in flow may cause substantial increases in delay and hence decreases in arterial speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these factors. Average travel speeds are about 40 percent of free-flow speed.
5. *LOS E* is characterized by significant delays and average travel speeds of one-third the free-flow speed or less. Such operations are caused by some combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.
6. *LOS F* characterizes arterial flow at extremely low speeds below one-third to one-fourth of the free-flow speed. Intersection congestion is likely at critical signalized locations, with high delays and extensive queuing. Adverse progress is frequently a contributor to this condition.

Project traffic impacts are defined based on a peak hour directional LOS D standard in Wakulla County. Since these hourly volumes are not generally available, a daily LOS analysis is used and yields an adequate approximation. The existing, relatively low traffic volumes in the area are the main reason the daily analysis is sufficient. Policy 1.1 of the Traffic Element of the Wakulla County Comprehensive Plan states that the County has adopted the LOS standards as defined by the Florida Department of Transportation "Level of Service Standards and Guidelines Manual for Planning."

This report incorporated all adopted LOS standards by state or local governments to remain consistent with their plans. Data collected by the ARPC and the Leon County Growth Management Department are used to supplement the traffic data, as necessary.

The ARPC determined the existing levels of service on all state roads within Wakulla County, based on average annual daily traffic. The Leon County Growth Management Department determined existing levels of service within their jurisdiction for peak hour, peak directional traffic flows (Leon County does not consider the peak hour, non-peak directional flow). These data, together with the roadway geometrics, adopted LOS standards, existing traffic volumes and corresponding LOS are shown in Table 2.2.7-1.

Table 2.2.7-1 shows that all roads in the study area, except two segments of Woodville Highway in Leon County, operate at or above LOS C. Although two segments in the study area operate below LOS C, Project traffic on these segments will not be traveling in the peak direction and, therefore, will not adversely affect the LOS.

Programmed Improvements

Presently, the FDOT is performing a Project Development and Environmental study to four-lane US 319 from US 98 into Leon County. However, the construction phase for this Project has not been scheduled as of this date. In addition, the FDOT has not scheduled any other capacity improvements within the area which would effect the existing LOS.

TABLE 2.2.7-1
EXISTING TRAFFIC CONDITIONS

Roadway	Section	State Road	No. of Lanes	Type	Agency	LOS Standard	Max. Service Flow at Adopted LOS	1996 AADT * = estimated	Existing LOS
Woodville Hwy.	St. Marks to US 98	SR 363	2	Rural Und.	FDOT	C	8200	2040	A
	US 98 to Leon Co. line	SR 363	2	Rural Und.	FDOT	C	8200	3890*	B
US 98	SR 375 to US 319	SR 30/61	2	Rural Dev.	FDOT	C	9200	7530*	C
	US 319 to SR 363	SR 30	2	Rural Und.	FDOT	C	8200	4600	B
	SR 363 to Jefferson Co. line	SR 30	2	Rural Und.	FDOT	C	8200	2400	A
SR 267	US 98 to US 319	SR 267	2	Rural Und.	FDOT	C	8200	2470*	A
	US 319 to CR 373	SR 267	2	Rural Und.	FDOT	C	8200	3390*	B
	CR 373 to Leon Co. line	SR 267	2	Rural Und.	FDOT	C	8200	1160*	C
US 319	SR 30 to Forest Tower	SR 61	2	Rural Und.	FDOT	C	8200	7530*	C
	Crawfordville area	SR 61	2	Rural Dev.	FDOT	C	11000	8030*	C
Leon County (peak hour, peak directional volumes)									
Woodville Hwy.	Wakulla Co. line to Natural Bridge Rd. southbound: peak direction	SR 363	2	Rural Dev.	FDOT	C	650	450	C
	Natural Bridge Rd. to Oak Ridge Rd. southbound: peak direction	SR 363	2	Rural Dev.	FDOT	C	650	900	D
	Oak Ridge Rd. to Capital Circle southbound: peak direction	SR 363	2	Rural Dev.	FDOT	C	810	1060	D

* Volumes were determined by applying an average annual growth factor to the 1995 AADT of the roadway section.

** The peak directional volumes were determined with the Art_Tab program. The non peak directional volumes were determined based on the 1995 FDOT Level of Service tables.

AADT - Average Annual Daily Traffic

Source: Hall Planning and Engineering, 1997

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2.3 BIOPHYSICAL ENVIRONMENT

This section contains subsections on the following issues, in accordance with the SCA Guidelines:

- Geohydrology
- Subsurface Hydrology
- Site Water Budget and Area Uses
- Surficial Hydrology
- Vegetation/Land Use
- Ecology
- Meteorology and Ambient Air Quality
- Noise
- Other Environmental Features

2.3.1 Geohydrology

2.3.1.1 Geologic Description of the Site-Area

This section describes the major geologic features of the eastern panhandle region of Florida, including the area of the Purdom Station, and discusses these geologic features on a regional scale.

Geographic Setting

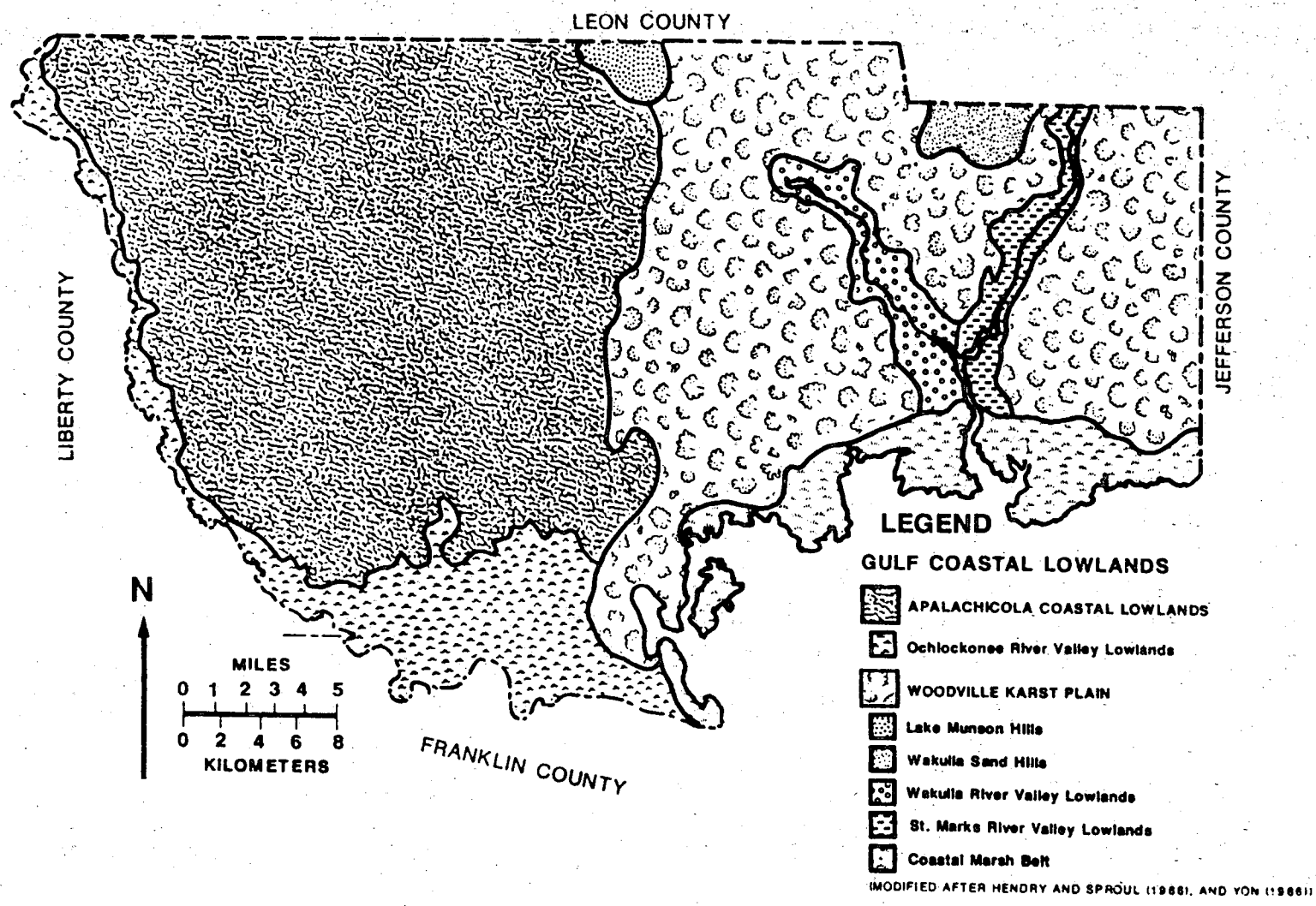
Wakulla County lies entirely within the Gulf Coastal Lowlands physiographic province. This province is characterized by generally flat, sandy terrain which extends from the Gulf Coast inland to approximately the 100-foot elevation contour. The Gulf Coastal Lowlands province includes the poorly drained pine flatwoods, swamps, and river basins that extend from the Gulf north into Leon County. Surface slope averages about four feet per mile and dips downward toward the coast. A series of Pleistocene marine terraces, defined based on their relative elevations, punctuates the surface of the Gulf Coastal Lowlands (see Figure 2.3.1-1). The Gulf Coastal Lowlands are locally divided into a series of two major and six minor geomorphic subzones (see Figure 2.3.1-1). The major geomorphic zones within this province are the Apalachicola Coastal Lowlands and the Woodville Karst Plain (Rupert and Spencer, 1988).

The Purdom Station is located between and just north of the confluence of the St. Marks and the Wakulla Rivers in St. Marks, Wakulla County, Florida at a site grade elevation of approximately 10 feet above mean sea level. This area is part of the Woodville Karst Plain, one of the two major geomorphic zones within the Gulf Coastal Lowlands. The Woodville Karst Plain comprises the entire eastern portion of Wakulla County. The St. Marks and Wakulla Rivers are the major streams flowing in the Woodville Karst Plain. Both rivers have swampy floodplains averaging less than 10 feet in elevation (Rupert and Spencer, 1988).

Geologic Structure

The subsurface geologic structure of Wakulla County has been influenced by several regional structural features including the Peninsular Arch, the Apalachicola Embayment, the Chattahoochee Anticline, the Gulf Trough, and the Ocala Platform. The location and orientation of these features is illustrated on Figure 2.3.1-2, prepared by the Florida Geological Survey (Florida Geological Survey, 1991).

- *Peninsular Arch* - The Peninsular Arch forms the axis of peninsular Florida. It is a southeast trending structural high in pre-Mesozoic sediments. No direct structural relationships are known to exist between this arch and the Tertiary sediments of Wakulla County. The downwarped western flank of the Peninsular Arch extends beneath the eastern portion of the area (Rupert and Spencer, 1988).



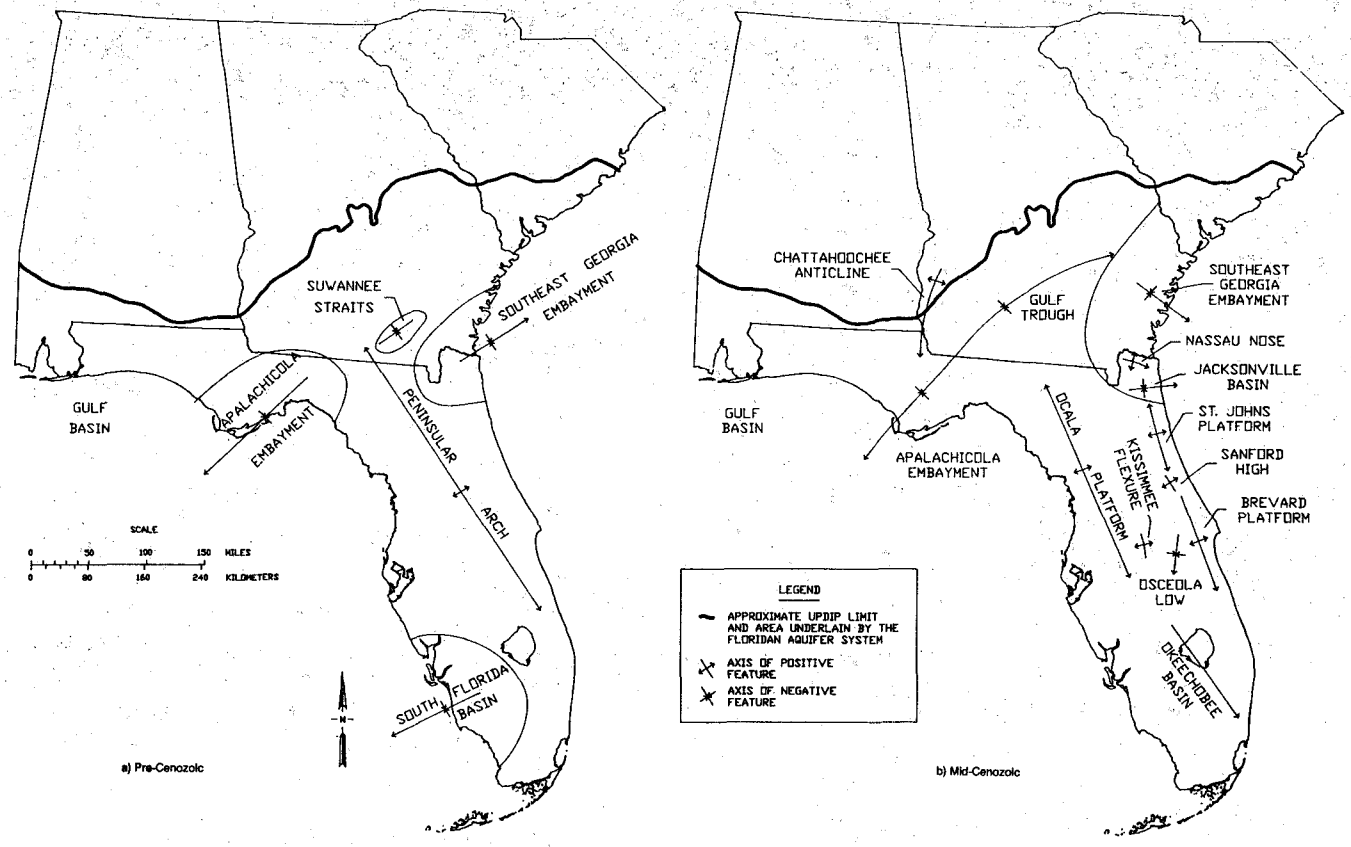
SOURCE: RUPERT AND SPENCER, 1988

CITY OF TALLAHASSEE

GEOMORPHIC PROVINCES OF WAKULLA COUNTY

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.1-1



SOURCE: FLORIDA GEOLOGICAL SURVEY, 1991

CITY OF TALLAHASSEE

STRUCTURAL GEOLOGIC FEATURES OF FLORIDA

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.1-2

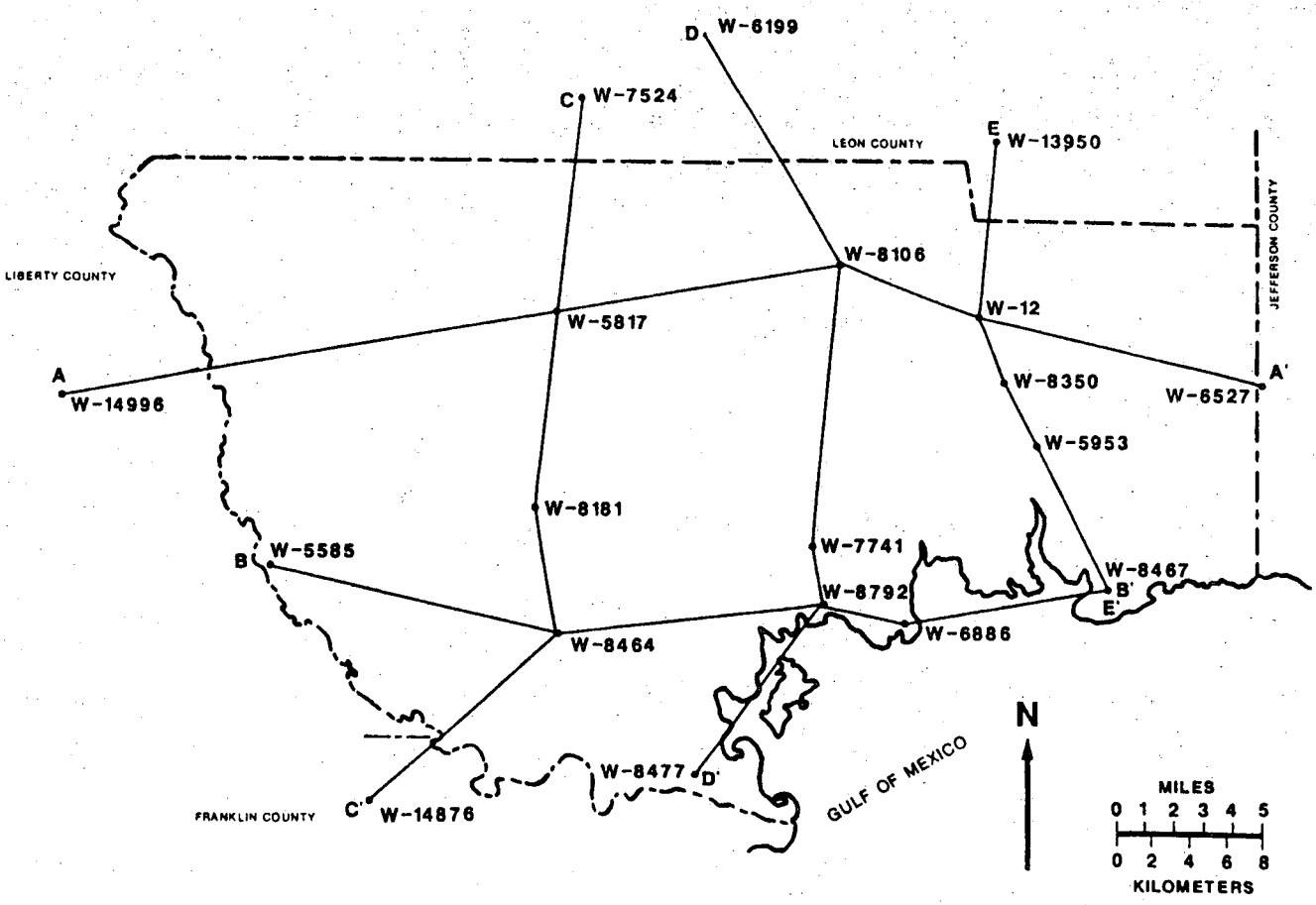
- *Apalachicola Embayment* - Wakulla County is situated along the eastern edge of a broad sedimentary basin known as the Apalachicola Embayment. This basin covers approximately 30,000 square miles. Geologic logs from oil test wells have shown that the sediments in this basin are approximately 13,000 feet thick. These sediments overlie Paleozoic-age metamorphic rocks (Rupert and Spencer, 1988)
- *Chattahoochee Anticline* - North and northwest of the Apalachicola Embayment is a minor structural high named the Chattahoochee Anticline (Rupert and Spencer, 1988). This structure is an elongate anticline trending northeast-southwest. Oligocene and Eocene rocks are exposed at the surface in the vicinity of the crest. Younger sediments pinch out or are truncated against it (Schmidt, 1984).
- *Gulf Trough* - Wakulla County lies in a transitional area between the carbonate-evaporite facies to the southeast and the terrigenous clastic facies to the north and west within a broad basin known as the Gulf Trough. Early researchers proposed the existence of a channel-like area of erosion separating the continental border from the Eocene and Miocene islands of the Florida peninsula. Recent researchers have suggested that strong, scouring water currents in the trough formed both a lithologic and biologic facies barrier during almost the entire Paleocene through Eocene. Wells drilled in Oligocene and younger sediments over the trough show a sediment thickening which may be related to post-Eocene downwarping in the trough or infilling of this topographically low feature (Rupert and Spencer, 1988).
- *Ocala Platform* - The Ocala Platform is a gentle, post-Oligocene flexure in west-central peninsular Florida (Scott, 1988). The platform exposes the Ocala Group and Avon Park Formation near its crest in central Florida. East and west of the crest, younger sediments truncate against the flanks of this structure (Rupert and Spencer, 1988).

Regional Geologic Setting

In eastern Wakulla County, the subsurface geology, in descending order, consists of a thin veneer, usually less than 20 feet thick, of quartz sand and calcareous, clayey, sand deposits of recent alluvium. These sediments were deposited after the Miocene in the Pleistocene through the Holocene. This thin veneer of recent alluvium lies unconformably over weathered limestone of the St. Marks Formation, portions of the Hawthorn Group, and other Miocene age deposits. West of Crawfordville, these recent clastic sedimentary deposits thicken to as much as 100 feet and may lie directly on the Jackson Bluff Formation of the Hawthorn Group, or the St. Marks Formation. The Hawthorn Group consist of several early to mid-Miocene age formations (Rupert and Spencer, 1988).

A location map for two regional geologic cross-sections is provided on Figure 2.3.1-3: A-A' (Figure 2.3.1-4) and E-E' (Figure 2.3.1-5).

The lower Miocene includes two formations, the St. Marks and the Chattahoochee. The Chattahoochee Formation includes the updip, generally silty and clayey facies occurring to the west of Wakulla County. The St. Marks Formation refers to the calcareous downdip facies of this lower Miocene (Rupert and Spencer, 1988). This formation underlies nearly all of Wakulla County, and interfingers with the Chattahoochee Formation to the west and northwest. The St.



SOURCE: RUPERT AND SPENCER, 1988

CITY OF TALLAHASSEE

GEOLOGIC CROSS SECTION LOCATION MAP

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure

2.3.1-3

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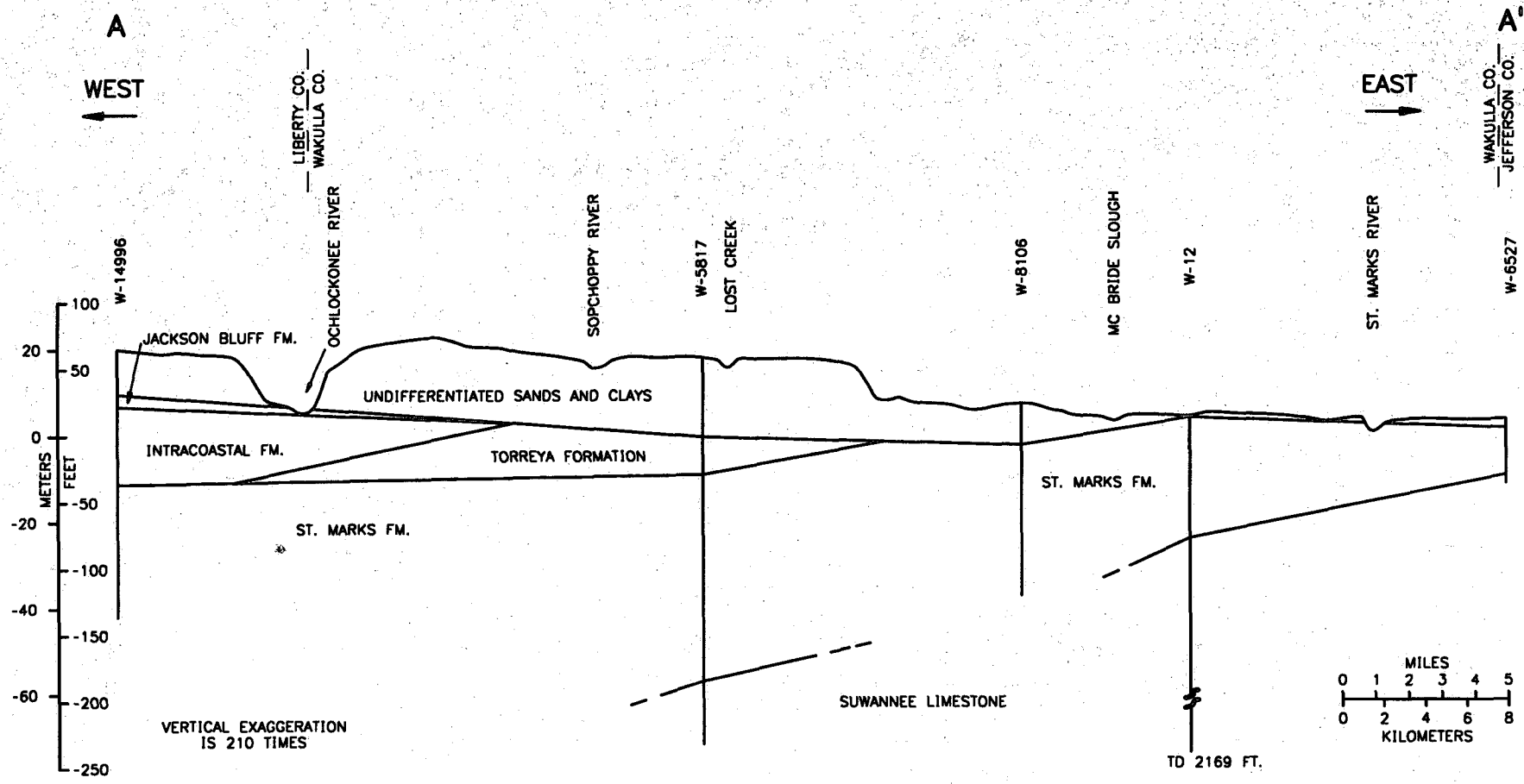

SOURCE: RUPERT AND SPENCER, 1988

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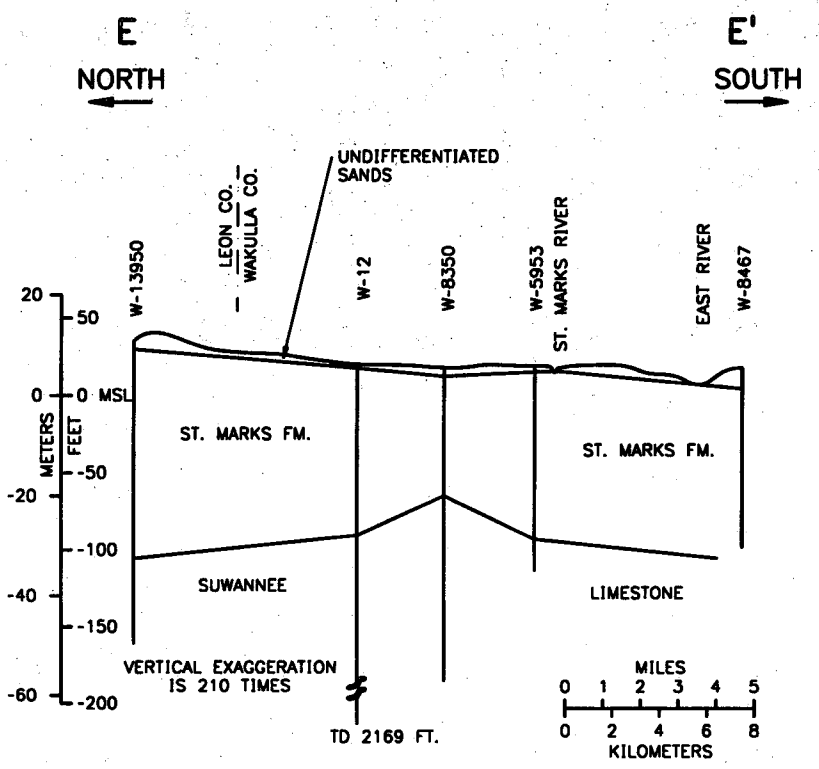
GEOLOGIC CROSS SECTION A-A' (EAST-WEST)

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.1-4

2.3.1-6



SOURCE: RUPERT AND SPENCER, 1988

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GEOLOGIC CROSS SECTION E-E' (NORTH-SOUTH)

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.1-5

Marks outcrops throughout much of eastern Wakulla County, particularly along the southeast coast. Many of the springs and sinks present in Wakulla County are associated with the St. Marks River. The St. Marks Formation is typically described as a pale orange, or light gray to white, calcarenitic limestone, generally fossiliferous, well indurated, and frequently dolomitic. Often, the St. Marks consists of several weathered limestone and marl or clay layers which are complexly interfingered. Several common foraminifera and mollusk species are found throughout the St. Marks Formation (Rupert and Spencer, 1988). The United State Geological Survey (USGS) provided the following description for the St. Marks Formation: "a predominately fine- to medium-grained, partially recrystallized, silty to sandy limestone that has undergone degrees of secondary dolomitization" (Davis, 1996).

The thickness of the St. Marks Formation varies from less than 1 foot in southwestern Jefferson County, where it pinches out against the Suwannee Limestone, to over 200 feet in Gulf County to the west of Wakulla County. The lithology of the St. Marks Formation becomes indistinguishable from that of the younger Bruce Creek Limestone west of Wakulla County (Schmidt, 1984).

The Bruce Creek limestone is a younger, Middle Miocene-age limestone, typically white to light yellow-gray, moderately indurated, calcarenitic and quartz sandy, highly fossiliferous limestone. Schmidt places the easternmost limit of this formation's occurrence at the eastern edge of the Apalachicola Embayment, but the extent to which it underlies Wakulla County is yet to be determined (Schmidt, 1984).

The St. Marks Formation lies unconformably over the Suwannee Limestone. All of Wakulla County is underlain by the Suwannee Limestone of the Oligocene which outcrops sporadically in southeast Wakulla County. Some researchers have indicated that the Suwannee Limestone borders the Gulf Coast along a portion of the Wakulla-Jefferson County line (Rupert and Spencer, 1988). Outcrops are in the form of dolostone and silicified limestone boulders. In well cuttings and cores, the Suwannee Limestone is generally described as a white to light-tan, cream, or brown recrystallized calcarenitic limestone, frequently dolomitic, and usually fossiliferous. The USGS described the Suwannee Limestone as "usually consisting of two permeable rock types: 1) cream to tan, crystalline, highly vuggy limestone containing prominent gastropod and pelecypod casts and molds and 2) white to cream, finely pelletal limestone containing small foraminifers and pellets of micrite bound to a finely crystalline limestone matrix" (Davis, 1996). The conduits of the Wakulla Spring cave system are developed in Suwannee Limestone (Rupert and Spencer, 1988). The Suwannee Limestone is the uppermost formation of a group of limestone and dolomite formations which form a blanket several thousand feet thick beneath all of Wakulla County.

Below the Suwannee Limestone lies the Eocene series of the Ocala Group, the Avon Park Formation and the Wilcox Group. Essentially all of Wakulla County is underlain by the Ocala Group. In Wakulla county, the Ocala Group consists in descending order of the Inglis, Williston, and Crystal River Formations. The contact between the Suwannee Limestone Formation and the Ocala Group is an unconformable erosional surface. Lithologic descriptions from several oil test wells reported penetrating a light-tan limestone and brown dolomitic or chalky limestone at depth intervals from 400 to 917 feet below land surface which were described as Eocene deposits (Rupert and Spencer, 1988). The USGS provides the following description of the Ocala Group:

"The Ocala Limestone consists of two different rock types. The upper portion is a white, generally soft and friable, porous coquina consisting of foraminifera, bryzoa fragments, and whole to broken echnoid remains. The lower part of the Ocala Limestone is composed of cream to white, generally fine-grained, soft to semi-indurated, micritic limestone containing abundant miliolid remains and large foraminifers" (Davis, 1996). Eocene Series deposits are underlain by the Paleocene Cedar Keys Formation or Clayton Formations and several other older sedimentary and metamorphic deposits which form the basement of the Eastern Florida Panhandle region.

2.3.1.2 Detailed Site Lithologic Description

The regional geology of the area near the Purdom Station is described in Section 2.3.1.1, based upon available publications. This section presents site-specific data obtained from subsurface geotechnical explorations performed by independent consultants in 1956, 1976, 1994, and 1995 at the Purdom Station. This section describes and correlates site-specific geology to previously described geologic units. The geologic framework is limited to the spatial distribution and depth of the borings conducted.

Seven test soil borings were conducted by Reynolds, Smith & Hills in January 1956 using a split spoon sampler and rotary drill. These borings were completed in an area northeast of the Purdom Unit 8 site to provide geotechnical and foundation data as part of the construction for Unit 5 of the Purdom Station. The borings ranged in depth from approximately 10 to 50 feet below land surface. Samples were collected using a split spoon sampler until refusal. Sediment samples were then collected from cuttings using a rotary drill. The corresponding soil boring logs indicated unconsolidated silty sands, clayey sands, sandy clays, and clays with broken limestone fragments to a depth of approximately 15 to 18 feet below land surface.

Six test borings were completed by Ardaman and Associates in 1976 along the west side of the containment dike around the bulk oil storage tanks. This area is on the east side of the discharge canal which borders the east side of the Purdom Unit 8 site. Four of these borings were hand augered to a depth of 10 feet, and two were completed as split spoon borings using a drilling rig to a depth of 22 feet. Limestone stringers were encountered in all of these borings at depths ranging from 7.5 feet to 14 feet. The two drilled borings found continuous limestone from a depth of 14 feet to the terminal depth of each boring. All four borings encountered mixed lithologies at shallow depths including dark gray sand and clay, limerock rubble, dark brown sandy silt, and gray to green sandy clay.

In August 1994, Ardaman & Associates completed three test borings while conducting a Geotechnical Exploration for a Neutralization Tank near the northwest corner of the bulk oil storage area (east of the Purdom Unit 8 site). Two of these borings were hand augered to depths of 4.5 and 5 feet. The third boring was performed in accordance with ASTM D-1586 using a drilling rig to a terminal depth of 25 feet. Limestone stringers were encountered in all three of these borings at depths between 4.5 and 6 feet. Continuous limestone was not encountered in the deep boring until a depth of 18 feet. All three borings encountered silty sand, fine sand, and clayey sands at shallow depths. The deeper boring encountered several lenses of gray, fat clay with pockets of tan, silty, fine sand.

Four test soil borings were conducted by Ardaman & Associates in November 1995, to provide preliminary geotechnical information to aid in the design and construction of Purdom Unit 8. These borings were completed using the Standard Penetration Test (SPT) in accordance with ASTM D-1586, to depths of 25 feet below the existing ground surface in three borings: TH-2, TH-3, and TH-4. A fourth test boring TH-1 was conducted to a depth of 70 feet below ground surface. The corresponding soil boring logs indicated unconsolidated silty, clayey sands; clayey sands; and sandy clays with seams of weathered limestone to a depth of approximately 20 feet. The log for borings TH-3 and TH-4 noted that some organic matter was encountered at depths of 13 to 18 feet with staining, small roots, and some trace amounts of compressible peat-like material present. At depths greater than 20 feet, a tan to white limestone, with seams of green and gray silty clay containing limestone fragments was encountered. This unit most likely represents the upper surface of the St. Marks Formation.

Two geologic cross sections based on interpretation of the geotechnical borings completed between 1956 and 1996 are presented on Figures 2.3.1-6 and 2.3.1-7. These boring investigations indicate that recent (Holocene) to Pleistocene deposits of unconsolidated or poorly consolidated silts, clayey sand, and sandy clay blanket the site from land surface to a depth of 10 to 14 feet. These sand and clay sediments are underlain by mixed clay, marl, and limestone deposits of the Hawthorn or St. Marks Formations to a depth of 18 to 25 feet. Below a depth of 18 to 25 feet limestone deposits of the St. Marks Formation were consistently encountered in all of the borings to their terminal depths. Based on published, geologic maps, the St. Marks Formation lies unconformably over the Suwannee Limestone to a depth of between 75 and 100 feet below land surface at the Purdom Station.

Additional foundation design borings will be performed prior to completion of the final plant design. These additional borings will provide more site-specific data on the lithologic units and their depths.

Soils

Soils from the Tooles-Nutall-Chaires group blanket the entire region of Wakulla County around St. Marks. Tooles-Nutall-Chaires soils cover only about 4.5% of the total land area in Wakulla County. These soils are described as "nearly level, poorly drained, sandy soils; some have a loamy subsoil underlain by limestone, and some have a sandy and loamy subsoil" (USCS, 1991). The Natural Resources Conservation Service (NRCS) specifically classifies the site soils as dredged Quartzipsamments.

The following description of Quartzipsamments was taken entirely from the NRCS publication (USCS, 1991). "These soils are nearly level and are somewhat poorly drained. They formed in fill material that has been reworked and shaped by earthmoving equipment. Slopes are 0 to 1 percent. In a representative area, the surface layer is light brownish gray sand about 7 inches thick. The underlying material extends to a depth of about 80 inches. In sequence downward, it is dark grayish brown sand, light gray sand, dark grayish brown mucky sand, and grayish brown sand. The depth to the high water table in the Quartzipsamments varies with the amount of fill material and the extent of artificial drainage, however, the seasonal high water table is commonly at a depth of 24 to 42 inches. The available water capacity is low. Permeability is rapid. Natural fertility is low."

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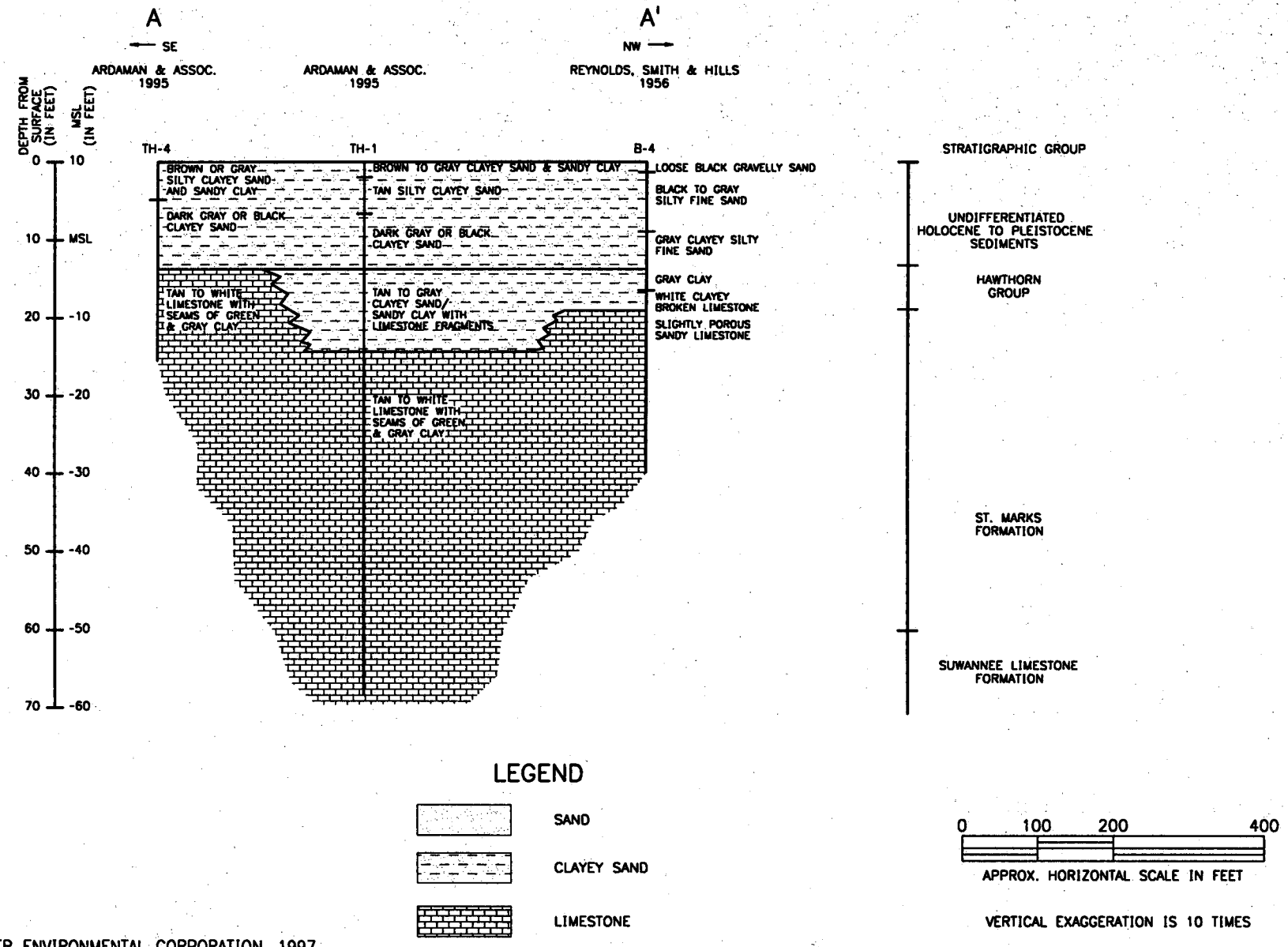

SOURCE: FOSTER WHEELER ENVIRONMENTAL CORPORATION, 1997

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SITE-SPECIFIC GEOLOGIC CROSS SECTION A-A'

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.1-6

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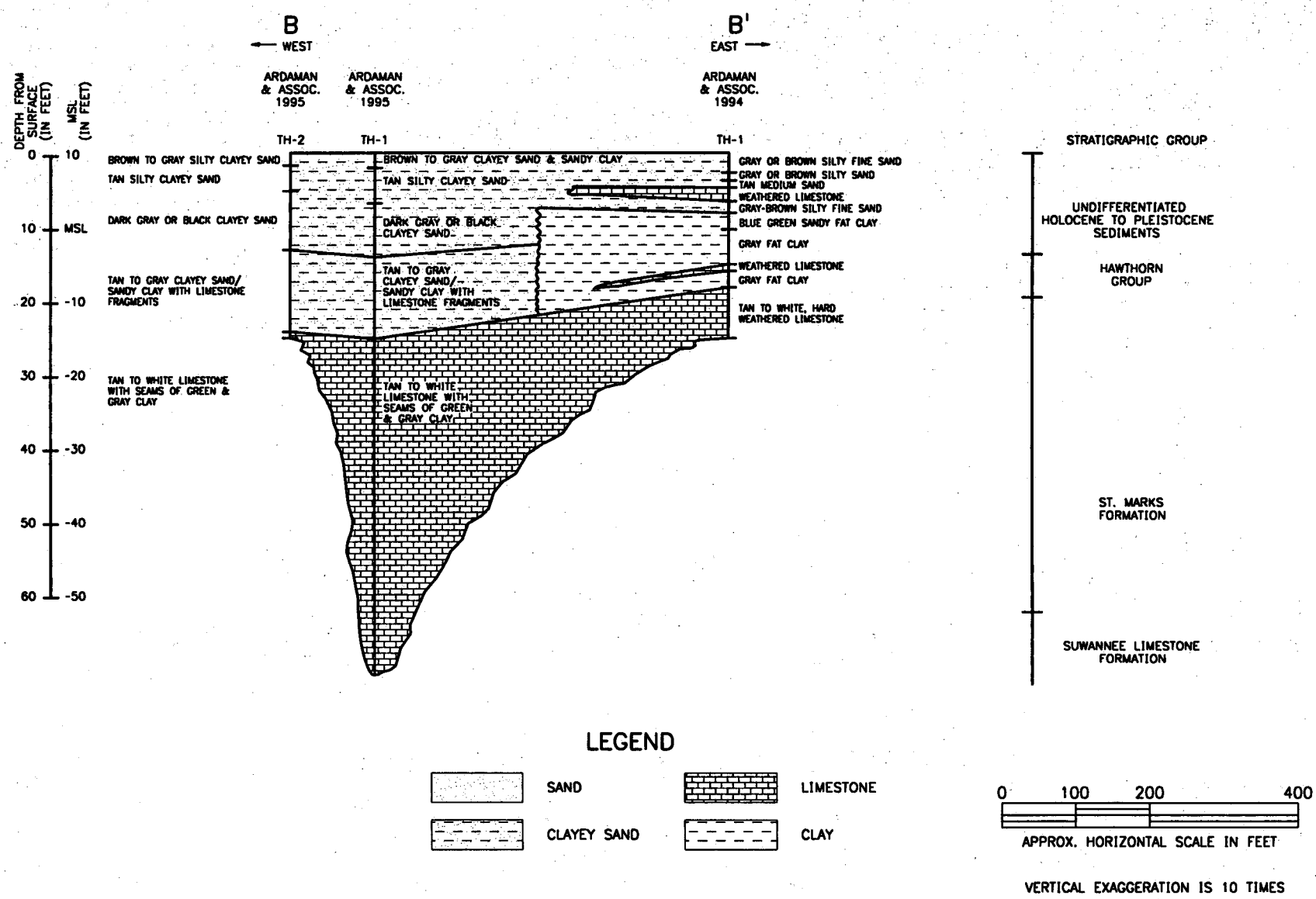

SOURCE: FOSTER WHEELER ENVIRONMENTAL CORPORATION, 1997

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SITE-SPECIFIC GEOLOGIC CROSS SECTION B-B'

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.1-7

2.3.1-12

2.3.1.3 Geologic Maps

Geologic cross-sections are presented in Sections 2.3.1.1 and 2.3.1.2 which depict the regional and local geologic relationships. Table 2.3.1-1 is adapted from Rupert and Spencer (1988), the Florida Geological Survey (1991), and the USGS (1996). This table presents the stratigraphic and hydrogeologic relationships of the formations present beneath the Purdom Station and their approximate depths and thicknesses based on existing literature. Maps depicting the thickness, potentiometric surface, and confinement of the Floridan aquifer are presented in Section 2.3.2.

2.3.1.4 Bearing Strength

A Preliminary Geotechnical Exploration Program was conducted at the proposed site in October 1995. The exploration was performed by the Tallahassee, Florida office of Ardaman & Associates, Inc. Field exploration consisted of performing four Standard Penetration Test (SPT) soil borings in accordance with ASTM D-1586, to depths of 25 feet below the existing ground surface in test borings TH-2, 3 and 4 and to a depth of 70 feet below the existing ground surface in TH-1.

Although some variability in the subsurface conditions exist from one boring to another, the following is a generalization of the overall conditions encountered (Ardaman, 1995).

Depth From (ft)	Depth To (ft)	
0	1.5 - 5	Stratum 1, a dark brown or gray to light gray silty clayey sand to sandy clay (SC to CH) with roots and limestone fragments in a loose to medium dense condition (possible "fill").
1.5 - 3.5	3 - 6.5	Stratum 2, tan to light tan silty to clayey sand (SC) with limestone fragments in a medium dense condition.
4.5 - 6.5	13 - 18	Stratum 3, dark gray or black clayey sand (SC) in a loose to medium dense condition.
13 - 18 sand	16.5 - 25	Stratum 4, a tan to light gray to white calcareous clayey to sandy clay (SC to CH) with seams of hard limestone (weathered limestone).
16.5 - 25	Termination	Stratum 5, tan to white hard limestone with seams of green or gray calcareous silty sandy clay (CH) and clayey sand (SC) with limestone fragments.

At the time of the test borings (early October 1995), groundwater was encountered at depths ranging from approximately 4 to 7 feet below existing land surface. The groundwater levels in the borings were estimated by the drillers, in the field, and verified by visual examination of soil samples returned to the laboratory. Fluctuations in groundwater levels should be anticipated through the year due to seasonal variations in rainfall, tides, and other factors.

Laboratory testing was performed on selected samples to aid in soil classification and to further define the engineering properties of the soils. The laboratory tests included Natural Moisture Content (ASTM D-2216), Percent Finer than the U.S. No. 200 Sieve and Sieve Analyses (ASTM D-1140 and D-422 to determine percent silt and clay), Atterberg Limits (ASTM D-4318 to evaluate plasticity characteristics), and Unconfined Compression Tests (ASTM D-2166) on cored specimens suitable for such testing.

TABLE 2.3.1-1
GENERALIZED GEOLOGIC AND HYDROGEOLOGIC UNITS IN WAKULLA COUNTY AND AT THE PURDOM STATION

Era	System	Series	Wakulla County		Purdom Station		
			West	East	Stratigraphy	Approx. Depth[(1)]	Aquifer Units
Cenozoic	Tertiary	Holocene	Undifferentiated Sand and Clay			+10 to -10	
		Pleistocene	Undifferentiated Sand and Clay			+10 to -10	
		Pliocene	Jackson Bluff Fm	Absent	Possible-Gray Marly Clay	0 to -10	Upper Floridan Aquifer
		Miocene	Intracoastal Fm	Absent	Absent	N/A	
			Bruce Creek Limestone Fm	Absent	Absent	N/A	
			Hawthorn Group	Absent	Possible-Gray Marly Clay	0 to -10	
			St. Marks Fm		Clay, Marl, & Calcarenite	-10 to -50	
		Oligocene	Suwannee Limestone Fm		Limestone	-50 to >-400	
		Eocene	Ocala Group		Limestone	>-400 to Unk	
			Avon Park Fm		Limestone & Dolomite	Unk	
			Oldsmar Fm		Dolomitic Limestone	Unk	
		Paleocene	Cedar Keys or Clayton Fm		Dolomitic Limestone	Unk	Sub-Floridan Confining Unit
Mesozoic	Cretaceous and Older		Undifferentiated		Unk	Unk	

[(1)] Note: Approximate depths given are based on mean sea level.
ft - feet
Fm - formation
Unk - unknown

Source: Adapted from Rupert and Spencer, 1988; Florida Geological Survey, 1991; and USGS, 1996.

Based upon the subsurface soil conditions, the foundation support systems will consist of either auger-cast in place concrete piles, concrete caissons (drilled shafts), shallow spread footings, or a continuous structural mat foundation. The equipment size, weight, and foundation economics will dictate which foundation system will be used.

For the heavy pieces of equipment (i.e., combustion turbine, steam turbine, etc.), a pile foundation system will be used. The piles will be founded at a depth of approximately 25 feet below existing ground level and will have a 60-ton vertical capacity, 5-ton lateral capacity, and 25-ton uplift capacity. Lighter equipment (i.e., small tanks, compressors, small pipe supports, slabs on grade, etc.) will be placed on spread footings or mat type foundations. The allowable soil bearing strength to be used for design will be 1,500 pounds per square foot.

By using the shallow foundation system of spread footings or a structural mat, some significant settlements may occur given the relatively loose soils encountered in the depth range from about 8 to 18 feet below land surface. However, using the allowable bearing strength of no more than 1,500 pounds per square foot, these settlements should not exceed about 2 inches total. However, of special concern may be possible differential settlements due to the presence of slightly more compressible Stratum 3 soils at TH-3 and TH-4. Differential settlements will be evaluated and kept to within the industry standard of less than 1 inch.

2.3.1.5 References

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2.3.2 Subsurface Hydrology

2.3.2.1 Subsurface Hydrologic Data for the Site

Southern Wakulla County is underlain entirely by sedimentary formations which form the Floridan aquifer system. This aquifer system extends from Georgia throughout Florida. In the study area, it is divided into two units, the Upper Floridan aquifer and the Lower Floridan aquifer. The Upper Floridan aquifer extends from southwestern Georgia to the Gulf of Mexico in the eastern panhandle region of Florida (Davis, 1996). The total thickness of the Upper Floridan aquifer in this region exceeds 2,200 feet and includes all of the permeable units in the St. Marks Formation, the Suwannee Limestone, the Ocala Group, and the Avon Park and Oldsmar Formations. This unit is separated from the Lower Floridan aquifer by low permeability sediments of the Paleocene Cedar Keys or Clayton Formation. In the City of St. Marks, the top of the Floridan aquifer occurs at a depth of about 10 to 20 feet below land surface. The thickness of the Floridan aquifer throughout this region is depicted on Figure 2.3.2-1 from the Florida Geological Survey.

The Floridan aquifer is not confined at the surface in this region and a separate water table aquifer is not present above this aquifer. The confined and unconfined areas of the Floridan aquifer on a regional scale are mapped on Figure 2.3.2-2, from the Northwest Florida Water Management District (NWFWMD). The potentiometric surface of the Floridan at the site is normally at an elevation between 1 and 3 feet above mean sea level (msl) and is commonly found in the clayey sand and marl units which coincide with and overlie the top of the St. Marks Formation. A potentiometric surface map of the Floridan aquifer is provided on Figure 2.3.2-3.

The NWFWMD and the USGS both classify the area in and around St. Marks as a recharge zone for the Floridan aquifer system (Davis, 1996; Florida Geological Survey, 1991). The USGS estimates of recharge for the area vary from less than 1 to 18 inches per year and average near 7 inches in the St. Marks area. Groundwater discharges from the aquifer via numerous springs and rivers, including the Wakulla and St. Marks Rivers, and the Gulf of Mexico. Some of the most prolific springs in Florida are located within a few miles of the Purdom Station. Wakulla Springs to the west has recorded flows which vary between 25 and 1,910 cubic feet per second (cfs). The USGS conducted extensive numerical groundwater flow modeling of the Upper Floridan aquifer, in the eastern panhandle of Florida, from 1990 to 1994 and derived a transmissivity of 10,000 ft^2 per day along with a porosity of 25 percent for the Upper Floridan aquifer in this area (Davis, 1996). Based on the USGS groundwater modeling results, groundwater normally flows through this area from the north near Tallahassee and elsewhere in Leon County, southward to its discharge points at a rate of nearly 1 foot per day.

Both domestic and public supply wells throughout the area rely on water from the Upper Floridan aquifer for their production. Due to the abundant supplies of water produced by the Floridan aquifer these wells are seldom drilled more than 200 feet deep. Recent pumping of this aquifer has caused a steady increase in total dissolved solids, chlorides, and conductivity values in the region around the City of St. Marks. These increases resulted both from upward migration (upconing) of saltwater in the lower portions of the aquifer and from lateral infiltration of saltwater in the Gulf and near the mouths of local rivers. This influx of saline waters to the

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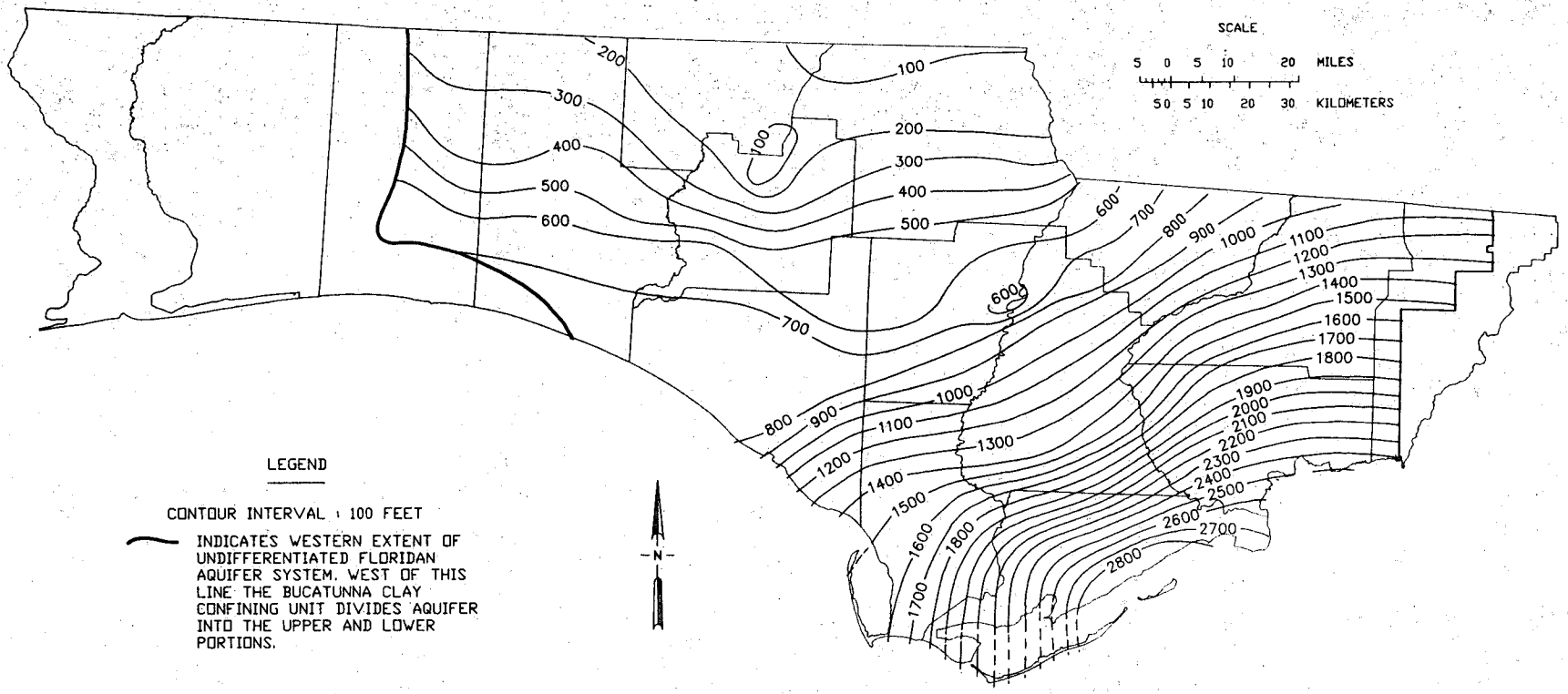

SOURCE: FLORIDA GEOLOGICAL SURVEY, 1991

CITY OF TALLAHASSEE

THICKNESS OF THE FLORIDAN AQUIFER SYSTEM IN THE NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.2-1

2.3.2-2

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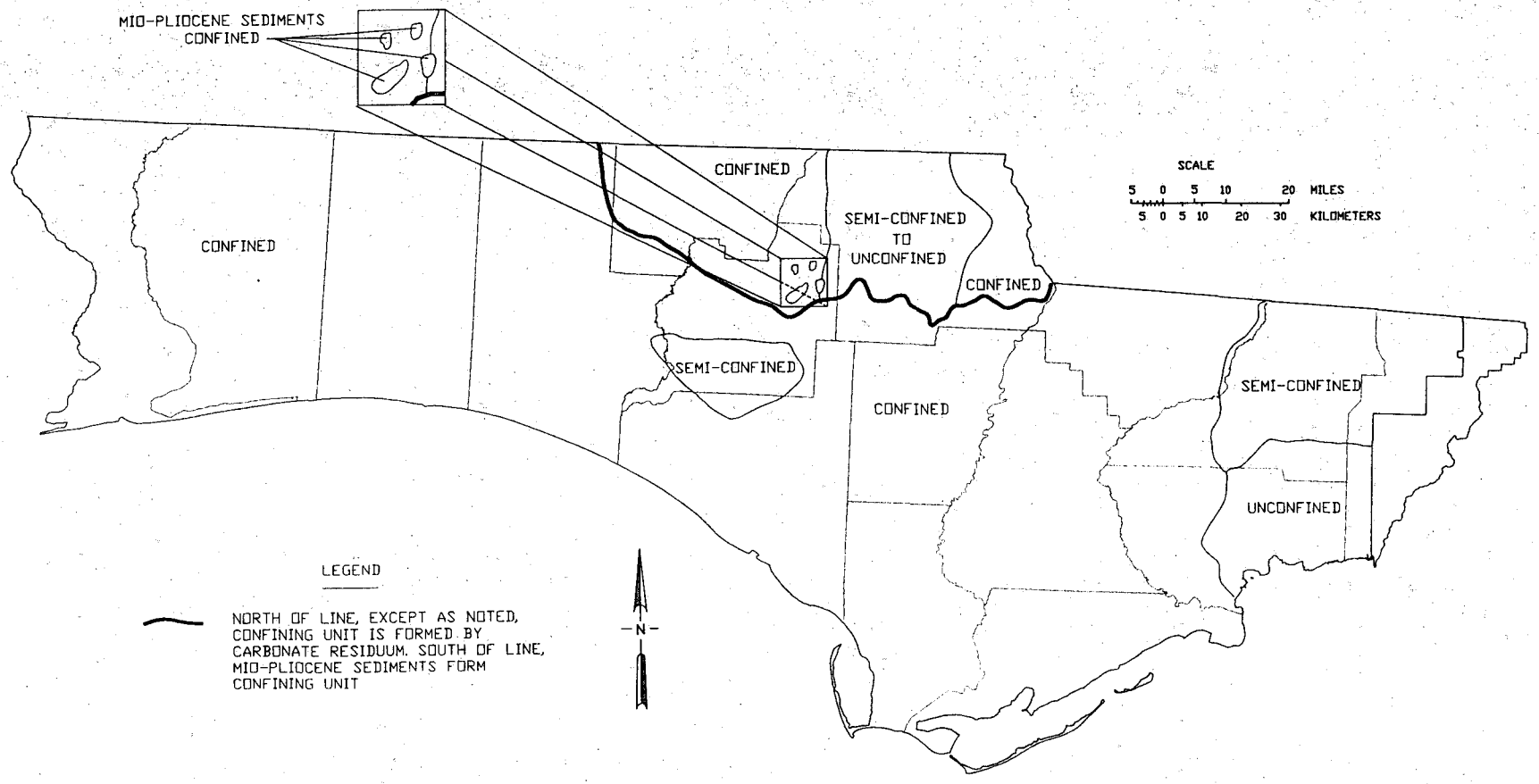


SOURCE: FLORIDA GEOLOGICAL SURVEY, 1991

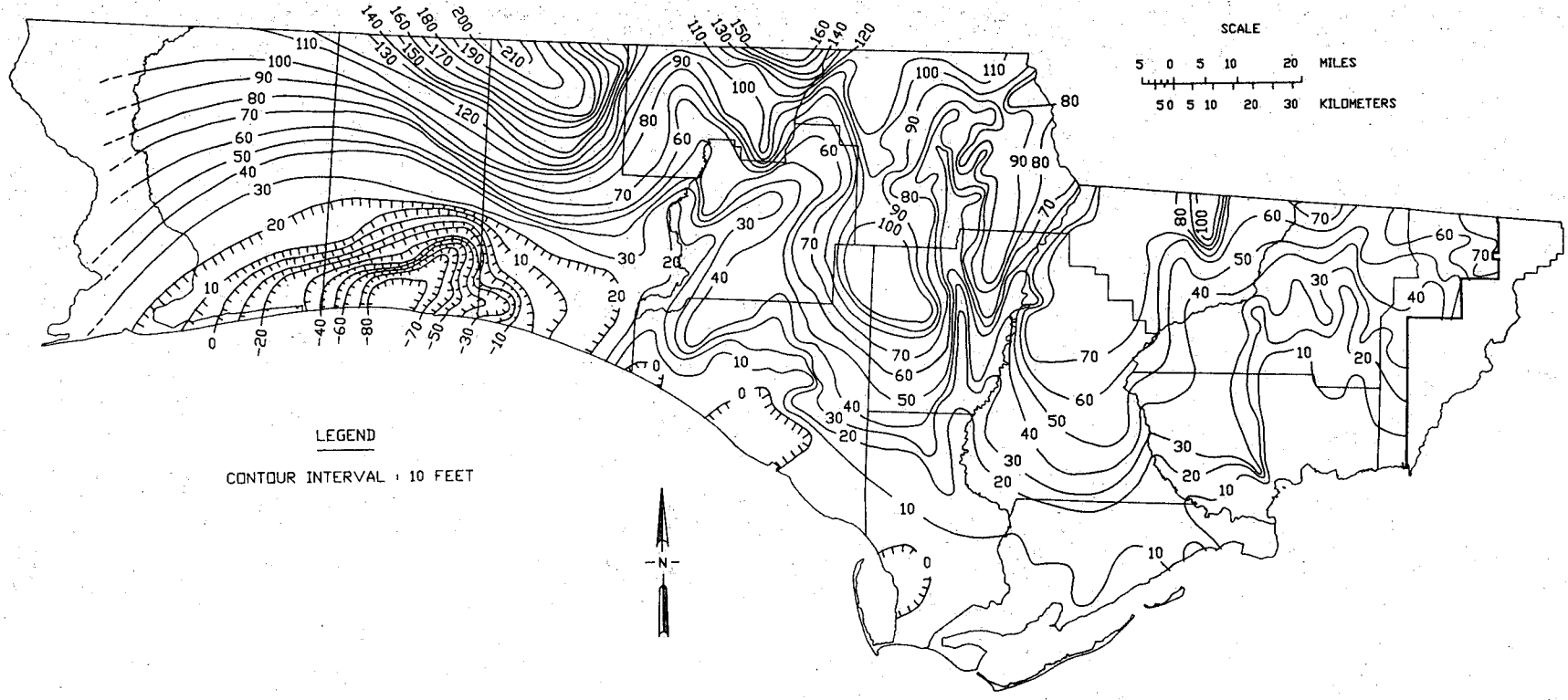
CITY OF TALLAHASSEE

CONFINEMENT OF THE FLORIDAN AQUIFER SYSTEM IN THE NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.2-2

2.3.2-3



SOURCE: FLORIDA GEOLOGICAL SURVEY, 1991

CITY OF TALLAHASSEE

FLORIDAN AQUIFER SYSTEM POTENTIOMETRIC SURFACE IN THE NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.2-3

formerly freshwater portion of the Floridan aquifer is caused by well withdrawals which have reduced potentiometric heads in the immediate area. The reduction in water quality has prompted the City of St. Marks and the Purdom Station to move most of their water supply wells farther inland from coastal areas to areas where the water quality is better. A list with the locations of existing and former water supply wells used by the Purdom Station is provided on Table 2.3.2-1. All of the former water supply wells were either plugged or removed from service due to poor water quality caused by saltwater intrusion in the area.

TABLE 2.3.2-1
EXISTING AND FORMER WATER SUPPLY WELLS AT THE PURDOM STATION

Well No.	Location	Year Drilled	Casing Depth	Total Depth	Usage
1	Sec 2, T4S, R1E	1949	88	165	Properly Abandoned
2	Sec 2, T4S, R1E	1953	Unk	140	Properly Abandoned
3	Sec 2, T4S, R1E	1959	112	185	Properly Abandoned
4	Sec 34, T3S, R1E	1959	71	106	NWFWMD Observation
5	Sec 34, T3S, R1E	1960	44.5	136	Properly Abandoned
6	Sec 34, T3S, R1E	1962	95	152	Permitted Public Supply
7	Sec 34, T3S, R1E	1962	90	215	Permitted Public Supply
8	Sec 34, T3S, R1E	1965	84	210	Permitted Public Supply
9	Sec 34, T3S, R1E	1972	125	205	Permitted Public Supply

Source: NWFWMD Consumptive Use Permit Files; City of Tallahassee; S. O. Purdom Generation Station, facility records

Specific data on the availability of water in the Lower Floridan aquifer is not available for this area.

Groundwater Quality

The FDEP classifies the waters of the Floridan aquifer in Wakulla County as G-II. (All groundwater aquifers which have a total dissolved solids content of less than 10,000 mg/l are classified as G-II.)

The NWFWMD collected and compiled data on the ambient groundwater quality throughout the District, including Wakulla County in 1986 (Clemons, 1989). Samples were obtained and the results were reported for 12 wells throughout Wakulla County. A reprint of the results from three of these wells closest to the Purdom Station, including one of the former City of Tallahassee Purdom Station wells (Number 4) in their wellfield is provided in Table 2.3.2-2.

City of Tallahassee Well Number 4 had the highest chloride, specific conductance, total dissolved solids, and bicarbonate (HCO_3) of the 12 Wakulla County wells in the NWFWMD report. Well Number 4 was removed from service by the City of Tallahassee because its water quality no longer met plant requirements.

Historically, the City of Tallahassee has had nine wells in the Purdom Station wellfield. Well Numbers 1 through 3 and 5 were properly abandoned, Well Number 4 is used by the NWFWMD for monitoring, and Well Numbers 6 through 9 are currently used to provide water for the Purdom Station. Well Numbers 1, 2, and 3 were located close to the Purdom Station and nearer to the Gulf Coast, and Well Nos. 4 through 9 have each been located successively further north

TABLE 2.3.2-2
RESULTS OF SELECTED GROUNDWATER QUALITY ANALYSES

Physical Properties	Well No.			
	Purdom Station No. 4(1) (1989)	Purdom Station No. 4(1) (1994)	St. Marks National Wildlife Refuge(2)	Wakulla County Park Rec. Center(3)
Well Depth (ft)	106	106	65	120
Casing Depth (ft)	71	71	45	35
Aquifer	Floridan	Floridan	Floridan	Floridan
Date Sampled	7/31/86	2/16/94	7/29/86	2/24/86
Analytical Measurements				
Temperature (°C)	22.2	20.6	22.9	21.5
Specific Conductance (µmhos)	950	990	531	150
pH (Std. units)	6.9	6.9	6.8	8.1
Total Dissolved Solids (mg/l)	640	540	350	120
Total Organic Carbon (mg/l)	5.4	N/A	10.2	0.4
Chloride (mg/l)	130	110	88	4
HCO_3 (mg/l)	451	456	183	59
Nitrate (mg/l)	1.6	N/A	1.4	11.0
Sulfate (mg/l)	3.2	1.4	9.2	1.5
Arsenic (µg/l)	<2	<1.0	14	<1
Barium (µg/l)	250	120	50	<5
Cadmium (µg/l)	3.0	<1.0	5.0	<0.5
Calcium (mg/l)	110	100	58	21
Chromium (µg/l)	<10	<5	<10	<13
Copper (µg/l)	<10	<10	50	<10
Cyanide (mg/l)	<0.01	N/A	<10.00	<0.01
Fluoride (mg/l)	0.3	0.3	0.1	0.1
Iron (mg/l)	1.5	2.2	0.8	0.2
Lead (µg/l)	<10.0	<1	10.0	1.6
Magnesium (mg/l)	48.0	50	6.2	1.8
Manganese (µg/l)	20	13	25	<10
Mercury (µg/l)	<0.5	0.1	<0.5	0.5
Nickel (µg/l)	<10	<10	<10	<13
Orthophosphate (mg/l)	0.04	0.03	1.20	0.09
Potassium (mg/l)	2.4	3.3	3.4	0.3
Selenium (µg/l)	<2	N/A	<2	<1
Silver (µg/l)	<10	<1	<10	<10
Sodium (mg/l)	33.0	26	66.0	0.8
Zinc (µg/l)	30	58	60	180
Gross Alpha (pci/l)	5.3	N/A	<2.1	<1.9
Gross Beta (pci/l)	<4.4	N/A	<3.1	<2.6
Total Coliform (MF/100ML)(4)	50	N/A	0	0
Fecal Coliform (MF/100ML)(4)	50	N/A	<2	<2

(1) Purdom Well No. 4 located approximately 1 mile north of the Purdom Station, east of SR 363.
(2) St. Marks National Wildlife Headquarters potable well located approximately 3.5 miles east of the Purdom Station.
(3) Wakulla County Parks and Recreation Center potable well located approximately 10 miles west of the Purdom Station.
(4) Membrane filtration/number per 100 ml.

Source: NWFWMD, 1989; and USGS STORET Database, 1994

of the Purdom Station in an effort to improve their water quality. Well Number 9 is located approximately 2.5 miles north of the Purdom Station along the railroad easement which parallels the west side of SR 363.

The results of several recent water quality analyses from the City of Tallahassee's Well Number 9 are presented in Table 2.3.2-3. Figure 2.3.2-4 is a graphical representation of the results for chloride analysis from this well over time. The results shown in Table 2.3.2-3 and on Figure 2.3.2-4 indicate that the chloride levels for Well Number 9 have been slowly increasing over time and that the most dramatic increases occurred between 1986 and 1993. The exact cause for this rapid deterioration in water quality is not known, but it is probably related to saltwater intrusion caused by local pumping of groundwater resources. There are several other groundwater users in the area (see Groundwater Modeling in this Section).

Groundwater discharges via several springs to the St. Marks River which flows along the east side of Purdom Station. The water quality of the St. Marks River can be compared to groundwater quality for the Upper Floridan aquifer. Tables in Section 2.3.4 Surficial Hydrology present the results of recent water quality analyses from the St. Marks River at the Purdom Station. These results indicate that water samples collected from the river have lower specific conductance, chlorides, sulfates, and hardness than recent groundwater samples collected from the City of Tallahassee Well Number 9 (Table 2.3.2-3). For example, specific conductance in the St. Marks River ranged from 183 to 583 μmhos/cm in two 1996 samples; whereas, specific conductance in Well Number 9 ranged from 683 to 782 in three samples collected between 1991 and 1994. Furthermore, there is a trend in groundwater samples collected from Well Number 9 of higher conductivity values over time which can be interpreted as decreasing water quality. This decrease in water quality may be due to the upconing of lower quality water from lower portions of the aquifer which may have been caused by local groundwater pumping.

TABLE 2.3.2-3
RESULTS OF SELECTED ADDITIONAL GROUNDWATER QUALITY ANALYSES

Physical Properties	City of Tallahassee Well Number 9			
Date Sampled	**3/6/87**	**1/2/91**	**10/1/93**	**5/4/94**
Analytical Measurements				
Specific Conductance (μmhos)	N/A	683	766	782
pH (Std. units)	4.8	7.8	7.7	7.8
Total Dissolved Solids (mg/l)	N/A	452	478	440
Chloride (mg/l)	21.6	64	101	84
Sulfate (mg/l)	10.2	31	36	41
Hardness as $CaCO_3$ (mg/l)	N/A	291	296	258
Ca Hardness as $CaCO_3$ (mg/l)	N/A	246	250	<5
Mg Hardness as $CaCO_3$ (mg/l)	N/A	44	46	49
Sodium (mg/l)	N/A	36	66.0	50

N/A - Not Reported

Source: City of Tallahassee S. O. Purdom Generating Station, facility records

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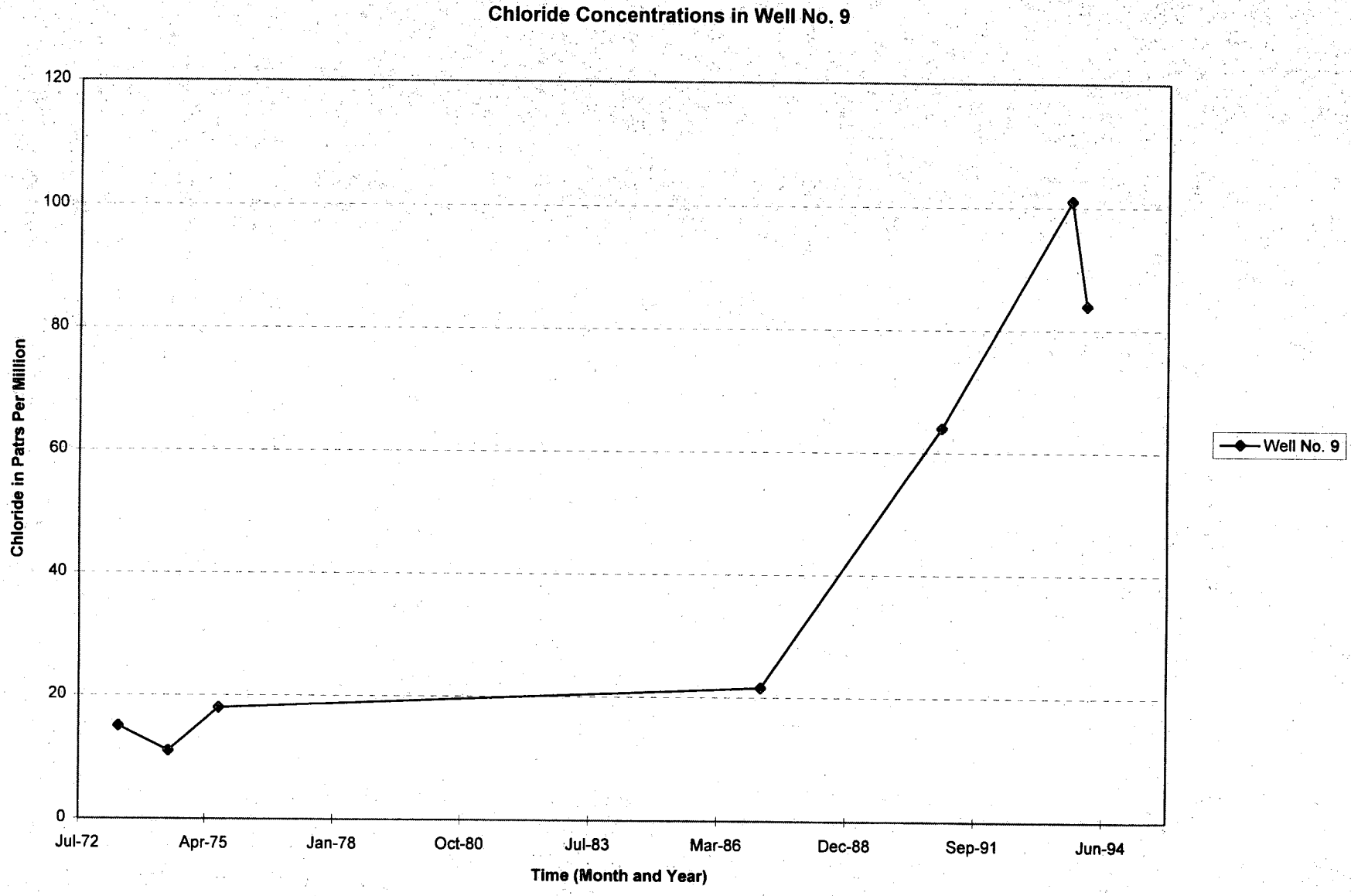

SOURCE: CITY OF TALLAHASSEE

CITY OF TALLAHASSEE

CHLORIDE CONCENTRATIONS
IN CITY OF TALLAHASSEE PURDOM WELL NO. 9

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.2-4

Site Screening Assessment

Because of its prior industrial usage and as part of the SCA studies, the City conducted a Site Screening Assessment of the area where Purdom Unit 8 will be constructed. Field activities were conducted by Foster Wheeler Environmental in November 1996, and by Woodward-Clyde Consultants in February 1997. The Site Screening Assessment included screening of shallow soil samples from borings in the field with an organic vapor analyzer (OVA), and laboratory analyses of surface soil and groundwater samples for volatile and semivolatile organic compounds, metals, and asbestos (soil only). A copy of the Site Screening Assessment Report is included as Appendix 10.5.8 of the SCA; only a brief summary of the results is provided here.

While the soil assessment did detect some positive results, none of the results from the OVA headspace screening or laboratory analyses of soil samples from the site indicate exceedances of any applicable standards.

The initial results for laboratory analyses of groundwater samples collected from one temporary monitoring well found questionable elevated results for toluene and cadmium. This sample also had undesirably high turbidity which could have affected the results. Based on these questionable results, additional assessment of shallow groundwater in this vicinity was initiated as a supplemental activity. The results of a supplemental groundwater sample collected from a properly developed permanent monitoring well at this location did not duplicate the initial suspect toluene or cadmium results found in the earlier sample, which indicates the previous results were incorrect. Low levels of organic constituents were detected in some of the groundwater samples during the assessment; however, none of the results for groundwater were above DEP regulatory or guidance concentrations.

The City has undertaken to remove soil in several small areas of the site: one with low level petroleum constituents based on soil OVA headspace screening data and in two other areas where asbestos was found in surface soil samples. This material will be managed and disposed of in accordance with applicable requirements.

Groundwater Modeling

A simple groundwater flow model was constructed to model the existing conditions and impacts resulting from the use of the City of Tallahassee's Purdom Station wellfield and other nearby groundwater users. The model was constructed using the USGS's Modular Three-Dimensional Finite-Difference Ground Water Flow Model (MODFLOW) to simulate the Upper Floridan aquifer system (McDonald and Harbaugh, 1988). The model simulates the current effects of groundwater withdrawals by the City of Tallahassee and other nearby users from the Upper Floridan aquifer system in the vicinity of the Purdom Station. The construction of the model and its inputs for aquifer parameters were based on a recent USGS publication, "Hydrogeologic Investigation and Simulation of Ground-Water Flow in the Upper Floridan Aquifer of North-Central Florida and Southwestern Georgia and Delineation of Contributing Areas for selected City of Tallahassee, Florida Water Supply Wells," which provides details on a similar MODFLOW model (Davis, 1996). This recently published USGS model covers a much broader geographic range (including the area near Purdom Station) than the model used for this study. However, because of the broad, regional perspective of the published USGS model it is difficult

to discern the details of localized pumping withdrawals near the Purdom Station. Appendix 10.5.3 provides a complete discussion of the construction of the model and the results of model simulations.

A list of groundwater users in the vicinity of the Purdom Station whose withdrawals were included in the groundwater model is provided in Table 2.3.2-4, "Groundwater Modeling Data." A model layout along with the location of each well in Table 2.3.2-3 is provided on Figure 2.3.2-5. The rate of average daily withdrawals from each permitted groundwater user was provided from the NWFWMD permit files.

TABLE 2.3.2-4
GROUNDWATER MODEL DATA

Owner	Number of Wells	Average Pumping Rate/Well (Gpm)[1]
City of Tallahassee	2[2]	100
Olin Corporation	4	158
City of St. Marks	2	29
Wakulla County	1	1.3

(1) Permitted Average Daily Pumping Rates (Source: NWFWMD)
(2) The City of Tallahassee Purdom Station wellfield has four wells, but only two are operated at a time:
Primex Technologies (formerly Olin Corporation) = 910,000 gpd
City of Tallahassee, Purdom Station = 288,000 gpd
City of St. Marks = 84,000 gpd
Wakulla County = 1,900 gpd.

A potentiometric surface map of the Upper Floridan aquifer system, in the vicinity of the Purdom Station was created from the results of the groundwater model (Figure 2.3.2-6). This map represents an estimate of the localized potentiometric surface of the Floridan aquifer based on the effects of groundwater withdrawals. The potentiometric surface map indicates that an elliptical-shaped localized depression in the potentiometric surface exists which is caused by the combined effects of groundwater withdrawals by the City of Tallahassee, Primex Technologies (formerly Olin Corporation), and the City of St. Marks water supply wells. The model simulation estimated that the area of this elliptical-shaped cone of depression is approximately 4,000 feet wide by 5,800 feet long and encompasses approximately 360 acres. The maximum potentiometric drawdowns within this area were estimated to be 2 to 3 feet below the potentiometric surface of the surrounding area. These estimates were calculated by measuring all of the area within a closed region having 1 foot or more of potentiometric drawdown (see Figure 2.3.2-6).

2.3.2.2 Karst Hydrogeology

Throughout Florida where limestone is exposed near the surface, karst terrain is common. Karst terrain consists of an undulating natural surface punctuated by sinkholes, natural bridges, caverns, springs, and disappearing streams. These karst features result from the dissolution of the limestone by naturally occurring chemical and physical processes. More often, the primary contributor to dissolution of the limestone is fluctuating water tables. Rainfall infiltrating through near surface deposits as recharge to the water table normally has a slightly acidic pH and is low

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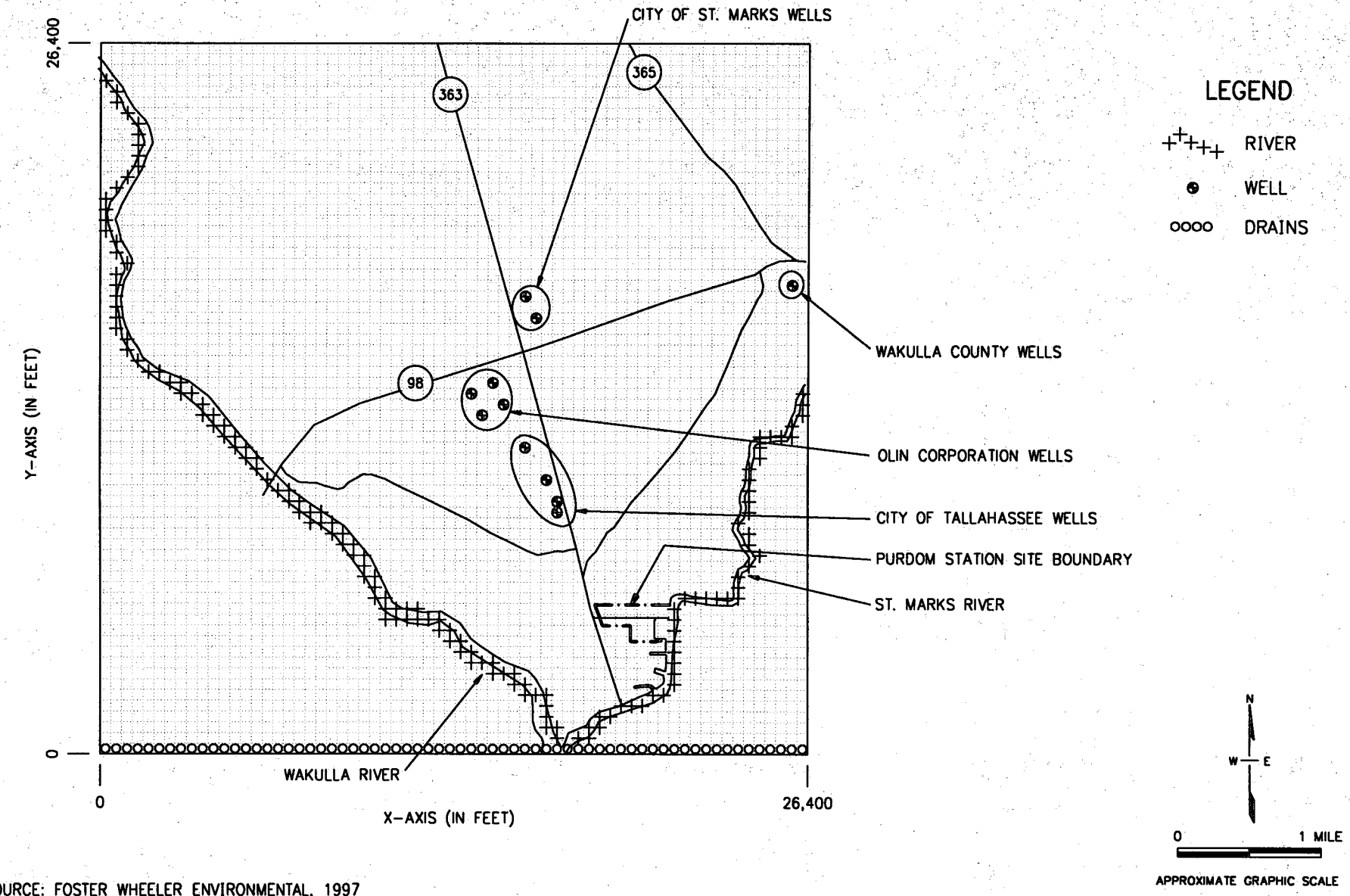

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

GROUNDWATER MODEL
GRID LAYOUT

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.2-5

2.3.2-11

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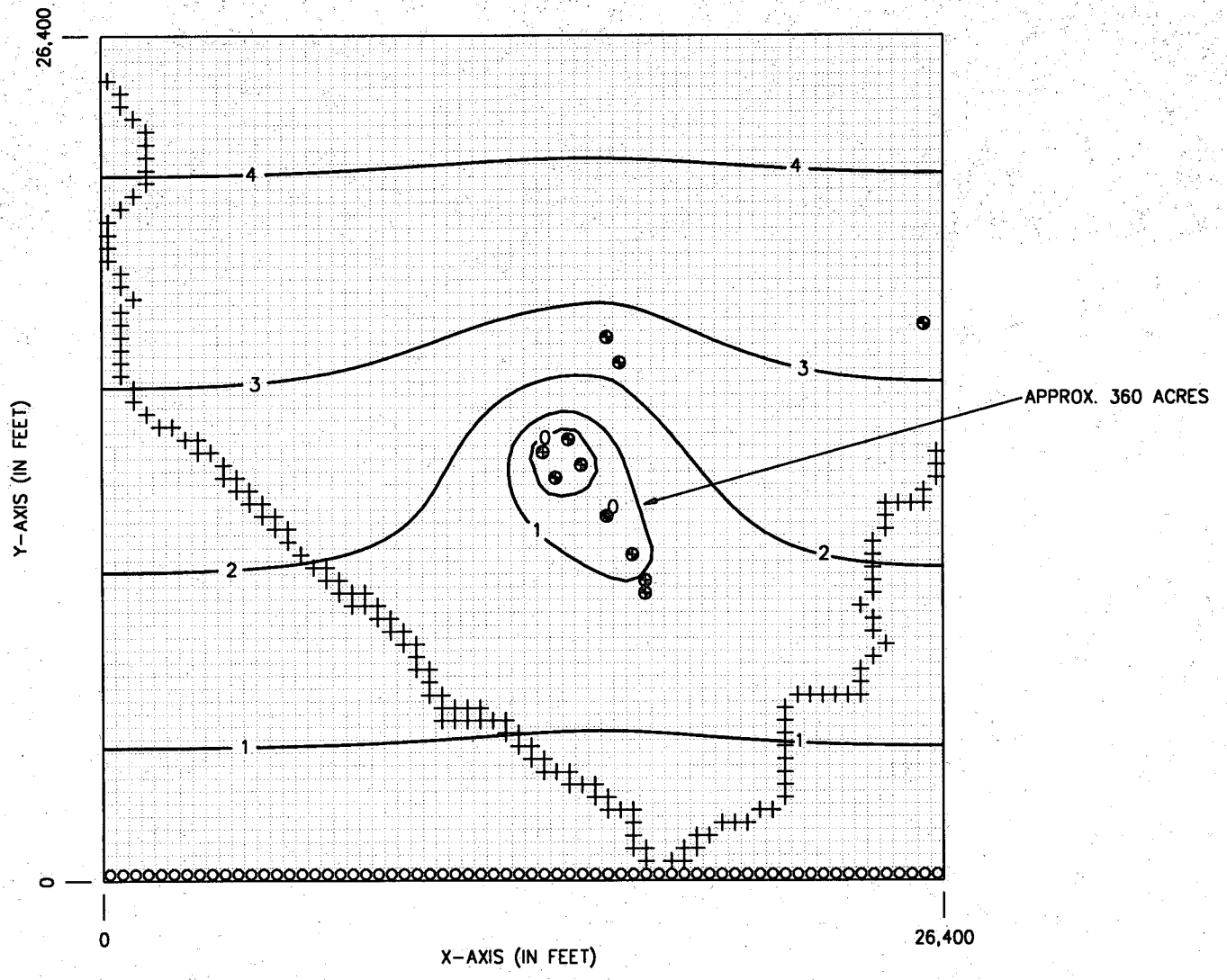
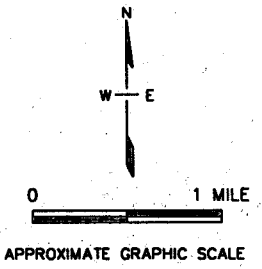


LEGEND

RIVER

WELL

DRAINS



APPROXIMATE GRAPHIC SCALE

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

GROUNDWATER MODEL
EXISTING CONDITIONS - BASELINE SIMULATION

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.2-6

in dissolved solids. When rainwater comes into direct contact with limestone (calcium carbonate [$CaCO_3$]) in the subsurface groundwater aquifer, it causes dissolution of the limestone as part of the natural chemical stabilization of fluids in the aquifer. "Man's activities also impose stresses on the environment, which, in a karst terrain, pose special concerns. In Florida, two categories account for most of the man-induced sinkhole formation: pumpage from wells and construction activities. Well pumpage can cause rapid fluctuation in the water table and construction activities often involve dewatering for foundations, blasting to remove unwanted materials, and heavy equipment traffic all of which can result in the collapse of previously weakened limestone structures" (Lane, 1986). The areas which are most affected by karst development are depicted on Figure 2.3.2-7, from the NWFWMD.

The Purdom Station lies in the River Valley Lowlands geomorphic subdivision of the Woodville Karst Plain geomorphic province (Rupert and Spencer, 1988). This geomorphic subdivision was named for the many shallow dunes and sinkholes that dot the relatively flat countryside of this coastal plain. According to the Florida Geological Survey, "This plain (Woodville Karst Plain) exhibits karst features that are still evolving, for example: many old well developed sinkholes that are either permanently or intermittently flooded (Big Dismal Sink), disappearing streams and natural bridges (Natural Bridge), Wakulla Springs, and new sinkholes reported periodically" (Lane, 1986). Geologically, the area consists of a thin "surface veneer of generally less than 20 feet of quartz sand which overlies the undulating karst surface of the St. Marks and Suwannee Limestone Formations" (Lane, 1986).

There are 18 reported sinkholes in the Florida Sinkhole Research Institute's database for all of Wakulla County as shown in Table 2.3.2-5 (Schmidt, 1995). The closest sinkholes in the database to the Purdom facility are over 2 miles from the plant location (Nos. 59-002 and 59-505). Both of these sinkholes occurred near Newport, approximately two miles northeast of the site. These sinkholes were reported in 1975 and 1976, respectively. Sinkhole No. 59-505 is also the largest reported sinkhole in Wakulla County. This sinkhole reportedly was discovered in 1975 and when reported was approximately 75 feet in diameter and 15 feet deep.

Using statistical calculations and the Florida Sinkhole Research Institute's Sinkhole database, Wilson reports that the rate of new sinkhole formation in Florida falls between 0.001 and 0.05 new sinkholes per square mile per year (Wilson, 1997). Wilson also calculated that the probability of sinkhole development for a large site ranges from 6.5×10^{-5} to 0.28 per year. Based on an analysis of the sinkholes in the Sinkhole Research Institute's database, Wilson found that 50 percent of all new sinkholes are less than 8 feet in diameter and 6 feet deep. "Only 16 percent of all new sinkholes are more than 30 feet wide and only 3.6 percent are more than 100 feet wide" (Wilson, 1997).

A review of aerial black and white and infrared spectrum photographs of the area, within approximately two miles of the Purdom Station, indicates a number of small circular depressions probably of sinkhole origin. None are apparent on the facility property and none are reported in the Florida Sinkhole Research Institute's database. However, two occur west-southwest of the site within the City of St. Marks and several are apparent east of the facility across the St. Marks River. The exact size, depth, and origin of these particular features is unknown. However, some

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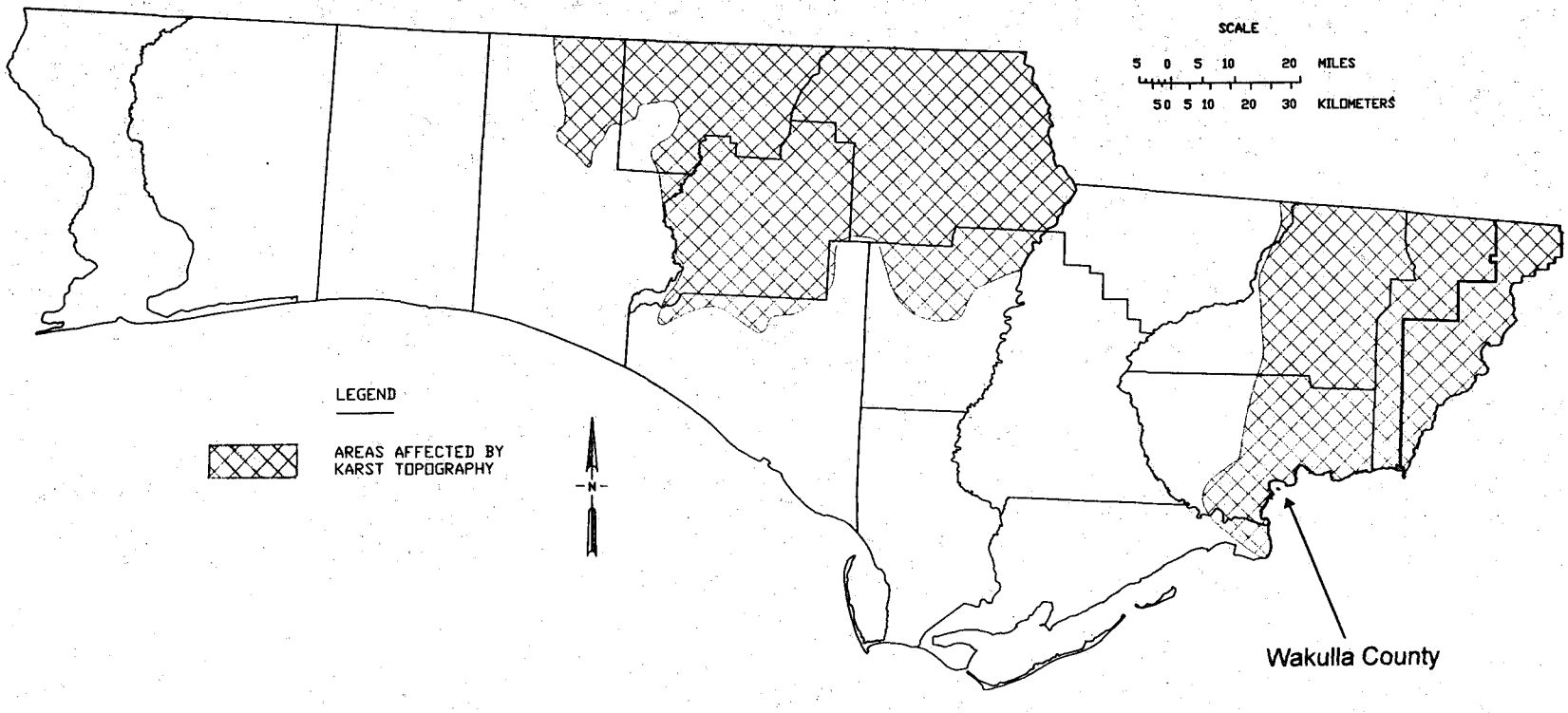

SOURCE: FLORIDA GEOLOGICAL SURVEY, 1991

CITY OF TALLAHASSEE

AREAS OF KARST DEVELOPMENT
IN THE NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.2-7

TABLE 2.3.2-5
FLORIDA SINKHOLE RESEARCH INSTITUTE DATABASE OF REPORTED SINKHOLES IN THE AREA NEAR THE PURDOM STATION

Fgs No.	Location		Length (ft)	Width (ft)	Depth (ft)	Year Reported
	Latitude	Longitude				
59-001	30°14'15"	84°21'40"	2	2	3	1970
59-002	30°11'50"	84°10'55"	3	3	5	1975
59-003	30°13'50"	84°13'55"	3	3	9	1979
59-004	30°13'50"	84°13'55"	2	2	6	1979
59-501	30°17'43"	84°23'03"	16	10	0	1977
59-502	30°16'37"	84°21'00"	1	1	2	1980
59-503	30°10'47"	84°18'54"	2.5	2.5	2	1978
59-504	30°01'55"	84°23'40"	10	0	1	1980
59-505	30°12'40"	84°11'00"	75	75	15	1976
59-506	30°10'55"	84°19'35"	5	3	4	1973
59-507	30°10'25"	84°21'15"	Unk.	Unk.	Unk.	Unk.
59-508	30°13'02"	84°20'37"	8	8	8	1985
59-509	30°17'36"	84°15'43"	25	15	15	1984
59-510	30°13'34"	84°20'26"	15	15	8	1985
59-511	30°13'02"	84°20'37"	9	9	8	1985
59-512	30°12'19"	84°20'20"	25	25	15	1986
59-513	30°15'10"	84°21'17"	2	2	12	1990
59-514	30°16'30"	84°10'00"	4	4	6	1990

Source: Schmidt, 1995
Unk. - Unknown, not reported.

may have resulted from old karst activities which predate the Sinkhole Research Institute's database.

The Purdom Station has been in operation since the 1950s and there have been no reported occurrences of sinkholes, subsidence, or collapse on the property throughout the history of plant operations. Nineteen geotechnical borings have been completed on the site for foundation design purposes, seven in 1956 (Reynolds, et al., 1956), six in 1976 (Ardaman & Associates, 1976), three in 1994 (Ardaman & Associates, 1994), and four in 1995 (Ardaman & Associates, 1995). The deepest of these borings were drilled to a depth of 75 feet below land surface. None of these borings reported any voids or significant losses of circulation (drilling fluids) during drilling. The reported lithologies from the 11 borings are fairly consistent and without any gross discontinuities which would be expected if an old or infilled sinkhole was encountered. However, the top of the limestone surface does exhibit some variability within the area of the borings, based on the depth at which limestone was encountered in each boring. This variability in the limestone surface (St. Marks Formation) likely resulted from erosion to the limestone surface which occurred after its initial deposition and prior to the deposition of the overlying layers of clastic (sand, clay, and silty) materials. It is important to note that the water table at the plant normally occurs at a depth of approximately 7 feet below land surface (about 2 feet above msl). This depth places the normal water table approximately 5 to 10 feet above the top of the limestone surface. In the absence of large local withdrawals for construction dewatering, it is unlikely that the water table would ever drop below the top of the limestone surface at the site, due to the fact the limestone surface occurs approximately 5 to 10 feet below sea level (below the normal level of water in the St. Marks River adjacent to the site).

No significant construction dewatering activities are planned during construction of Purdom Unit 8. The foundation of this facility has been designed to be supported by piers on drilled caissons which will be cast in-place and filled with cement and reinforcing steel. Additional foundation design borings will be performed prior to completion of the final plant design. These will include borings drilled at each caisson location. If any voids are encountered, they will be filled with concrete or the final foundation design may be revised.

Based on the available information, the likelihood of occurrence of a sinkhole at the Purdom Station appears low but it is a possibility which cannot be entirely ruled out. It is even possible that voids (pre-cursors to the formation of future sinkholes) exist in the limestone beneath the facility at depths greater than the depth of the deepest geotechnical borings (75 feet). However, any voids at this depth will remain well below the water table and the water filled pores of the limestone rock units beneath the site are under hydrostatic pressure which helps to support the matrix of overlying rock units.

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USGS (United States Geological Survey). 1982. St. Marks, FLA 7.5 Minute Quadrangle Sheet. Denver, Colorado.

USGS (United States Geological Survey). 1996. Water Quality Analyses Data Printout of Historical Records for Wakulla Spring near Crawfordville, Florida. Tallahassee, Florida Water Resources District Field Office.

2.3.3 Site Water Budget and Area Users

2.3.3.1 Discussion

The site area is in northwest Florida where the climate is humid subtropical with relatively high rainfall (Davis, 1995). Based on data from Tallahassee for the period 1961-1990, Davis reports that the average annual temperature was 67° F and the average precipitation was 66 inches per year (Davis, 1995). Average monthly temperatures and rainfall amounts shown in Table 2.3.3-1 below were developed for the Purdom Unit 8 Project and are in substantial agreement with Davis. Please note that different 30-year periods result in somewhat different averages. For example, for the 1931-1960 period, rainfall averaged 56.86 inches/year (Water Information Center, 1994), whereas it averaged 64.59 inches/year for the period 1951-1980 (USDC, 1989).

TABLE 2.3.3-1
AVERAGE MONTHLY TEMPERATURES (1961-1990) AND RAINFALL (1959-1988) AT TALLAHASSEE

Month	Temperature (°F)	Temperature (°C)	Rainfall (inches)
January	50.2	10.1	4.09
February	52.9	11.6	4.75
March	60.1	15.6	5.23
April	66.6	19.2	3.89
May	73.4	23.0	4.12
June	78.4	25.8	6.56
July	79.7	26.5	8.05
August	79.5	26.4	7.00
September	76.8	24.9	5.42
October	67.6	19.8	2.78
November	59.0	15.0	2.95
December	52.5	11.4	4.31
Annual Average	66.4	19.1	4.93
Annual Total			59.15

Source: Foster Wheeler Environmental, 1996

During the summer months, thunderstorms occur on an average of once every other day, making July and August the wettest months. The driest months are October and November. Snowfall is rare and inconsequential to the water budget.

Actual evapotranspiration (AET) is defined as the combined loss of water from soils by evaporation and plant transpiration. Estimated AET near the site area is about 64 percent of annual precipitation, or about 42 inches per year (NWFWMD, 1985). Davis (USGS, 1995) reports recharge rates up to 18 inches per year. Estimated yearly runoff is about 30 percent of precipitation, or about 20 inches per year (NWFWMD, 1985; USGS, 1966) although in this region of Wakulla County, where karstic limestone is bare or thinly covered by surface soil, runoff can be expected to be closer to about 6 inches per year.

The area within a 5-mile radius of the Purdom site lies solely within Wakulla County. Groundwater consumptive use permit holders within or near this radius are shown in Table 2.3.3-2.

TABLE 2.3.3-2
PERMITTED GROUNDWATER CONSUMPTIVE USERS

Owner	Permitted Pumping Rate [1]	Average Pumping Rate [1]	Site Number [2]	Permit Number
Talquin Electric Cooperative	320 gpm	229 gpm	37	840060
Primex Technologies (formerly Olin Corporation)	903 gpm	632 gpm	38	950038
City of Tallahassee - Purdom Station	300 gpm	229 gpm	39	960104
City of St. Marks	100 gpm	58 gpm	47	842449

[1] Northwest Florida Water Management District permit listing.
[2] Site numbers as shown on Figure 2.3.3-1.
Source: Northwest Florida Water Management District

Primex Technologies (formerly Olin Corporation) and the City of Tallahassee's Purdom Station use their groundwater for industrial purposes, while Talquin Electric Cooperative and the City of St. Marks use it for public supply. Primex Technologies uses a small portion of their groundwater for public supply.

The only consumptive use permit for surface water withdrawal in the county is held by the Purdom Station. This permit (Number 960104) allows the withdrawal of an average of 74,781 gpm and a maximum of 100,000 gpm. This water is withdrawn from the St. Marks River for condenser cooling and is then returned back to the river. There are no other known permitted consumptive uses of surface water in Wakulla County. The other main uses of the St. Marks River are for navigation (the barging of fuels to the various storage and distribution facilities in the town) and for recreation (boating and fishing).

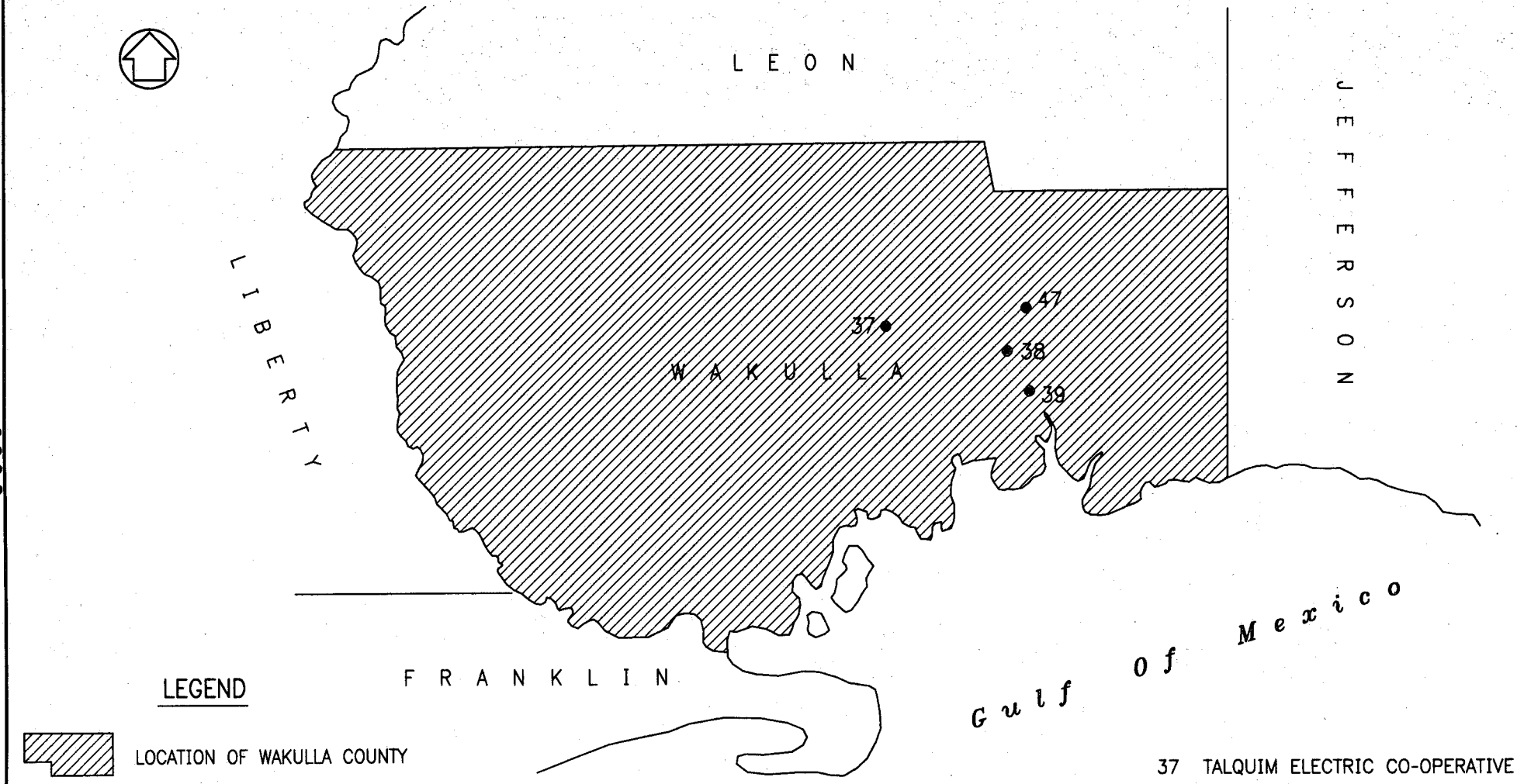
The City of St. Marks permitted its municipal well in 1984 and provides potable water to most of its residents. A review of the Northwest Florida Water Management District list of Well Construction Permits reveals only two domestic wells within 1 mile of the site constructed since 1982. A 4-inch diameter, 98-foot deep well, with 19 feet of casing, was permitted in the name of Maurice Howland on Savannah Road, St. Marks. Another 4-inch diameter, 176-foot deep well, with 13 feet of casing, was permitted under the name George Tillman on 5th Avenue (Tallahassee Avenue), St. Marks. The approximate estimated locations of these two wells are shown on Figure 2.3.3-2.

2.3.3.2 References

Davis, Hal. 1995. Water-Resources Investigations Report 95-4296. U.S. Geological Survey, Tallahassee, Florida.

NWFWMD (Northwest Florida Water Management District). 1985. Water Resources Special Report 85-1.

PLOT DATE MAR 1, 1997 C:\15840002\----\00000-49.DWG



LEGEND

LOCATION OF WAKULLA COUNTY

37 ● PUMPING WELL OR SYSTEM (NUMBER REFERS TO TABLE AT RIGHT)

SOURCE: NWFWMD, 1996

37 TALQUIM ELECTRIC CO-OPERATIVE

38 PRIMEX TECHNOLOGIES (FORMERLY OLIN CORPORATION)

39 PURDOM GENERATING STATION

47 CITY OF ST MARKS

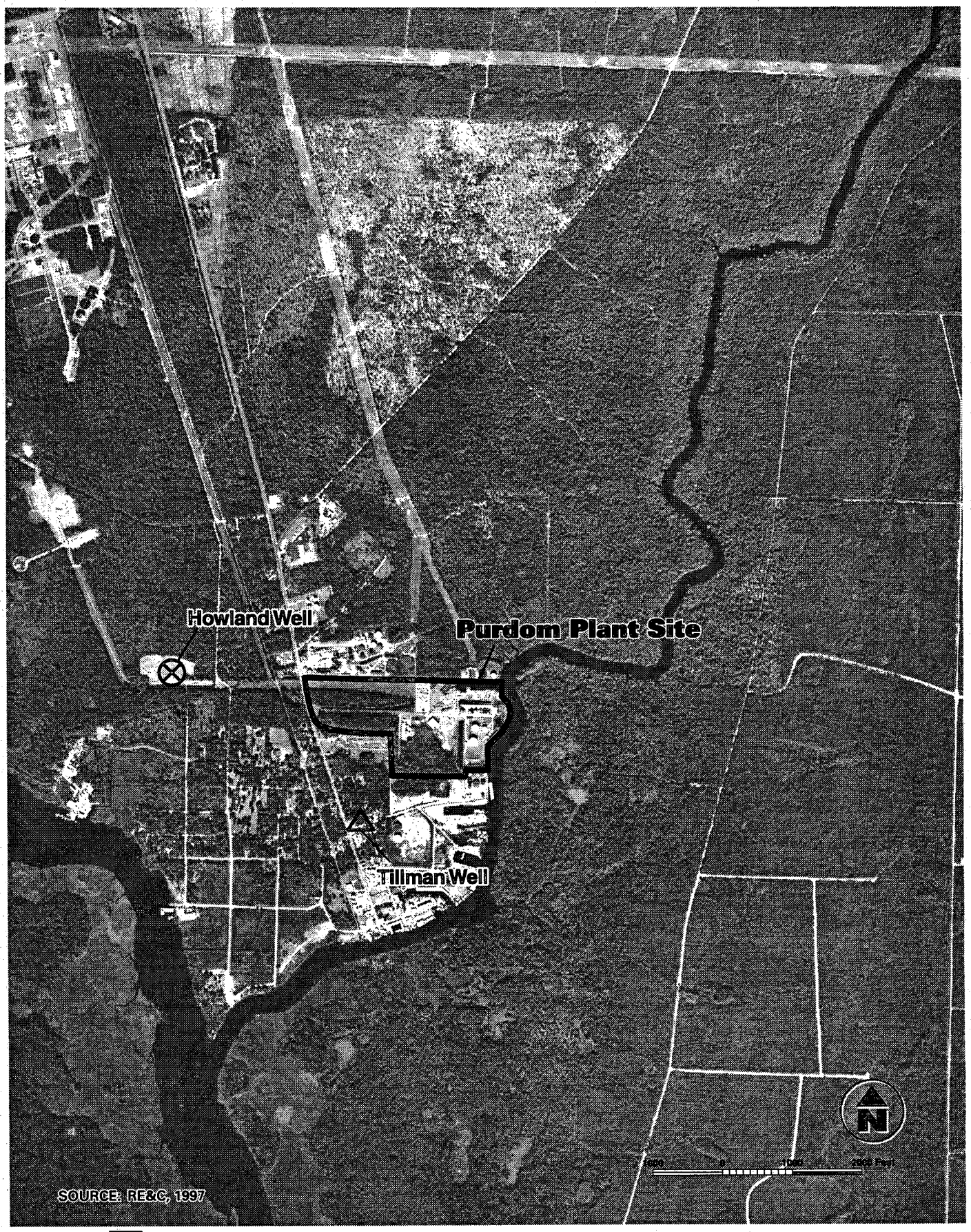
CITY OF TALLAHASSEE

PERMITTED GROUNDWATER CONSUMPTIVE USERS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.3-1

2.3.3-3



CITY OF TALLAHASSEE

DOMESTIC WELLS
WITHIN ONE(1) MILE OF THE SITE

PURDOM UNIT 8 PROJECT – ST MARKS FLORIDA

Figure
2.3.3-2

USDC (U.S. Department of Commerce). 1989. Local Climatological Data Annual Summaries for 1988. Part II Southern Region. National Climatic Data Center. Asheville, North Carolina.

USGS. 1966. Map Series No. 22.

Water Information Center. 1994. Climates of the States. Volume 2. Port Washington, New York.

2.3.4 Surficial Hydrology

2.3.4.1 Hydrological Characterization

General Description

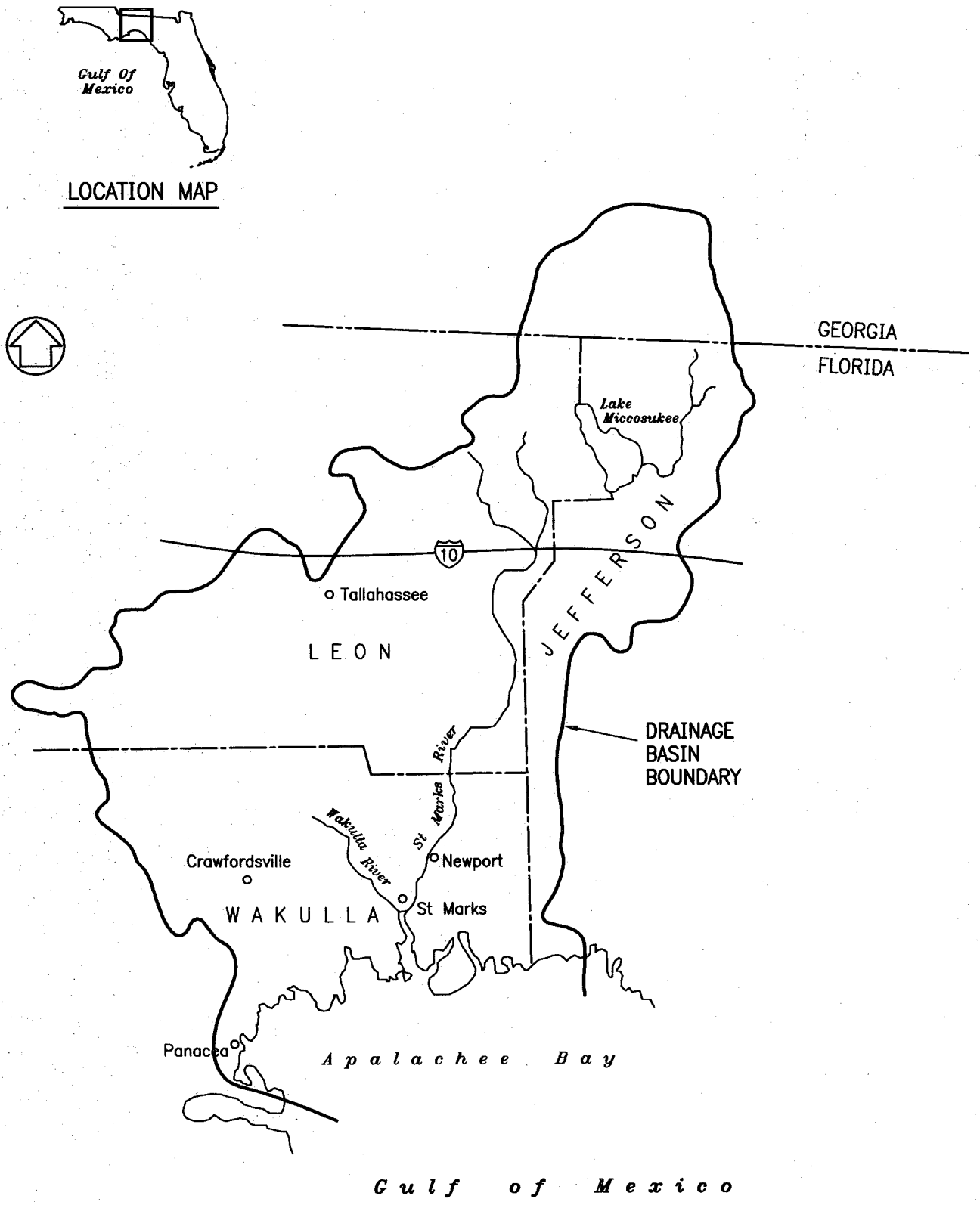
The Purdom site is within the St. Marks River basin (see Figure 2.3.4-1), approximately 7 miles upstream of the mouth of the St. Marks River, and about 1.5 miles upstream of the confluence of the St. Marks and Wakulla Rivers. The following general description of the St. Marks River drainage basin is based upon information provided in NWFWMD (1980), Hand et al. (1994), and Williams et al. (1994). The St. Marks River basin drains approximately 1,180 square miles including parts of Wakulla, Jefferson, and Leon Counties in Florida, and Thomas County in Georgia. It includes approximately one half of the drainage of the metropolitan area of Tallahassee. The river originates in the Red Hills Region of north Florida/south Georgia as a blackwater river. From its headwaters in Georgia to the town of Newport (about 10.2 miles upstream of the mouth) in Wakulla County, approximately half of the drainage basin is non-contributory except during extended periods of rainfall (Franklin and Meadows, 1994). Near the Leon-Wakulla County line (about 12.8 miles upstream of the mouth), the river widens and clarity improves with water input from several springs.

Horn Spring and Rhodes Spring are the first major springs along the St. Marks River, and are in Leon County, north of Natural Bridge. The St. Marks River exhibits a strong interconnection with the groundwater system of the area, and in some locations flows underground. For example, at Natural Bridge during normal flow, the river plunges underground and resurfaces at St. Marks Spring about 1 mile south. The segment from Natural Bridge to the Gulf of Mexico is the only portion of the river that has a well-defined channel all year round. This segment exhibits the characteristics of a spring-fed stream.

The Wakulla River confluences with the St. Marks River in the City of St. Marks, about 5.5 miles upstream of the river mouth. The Wakulla River arises from Wakulla Springs, in the south-central part of the St. Marks basin which is in a highly karstic area (see Section 2.3.2.2). It is widely speculated that there is a strong relationship between the surface waters entering the sinks to the north and west, and the outflow of Wakulla Springs. Wakulla Springs is one of Florida's highest volume springs with an average flow of about 400 cubic feet per second (cfs).

The lower St. Marks and Wakulla Rivers are estuarine in nature, with a strong salt wedge. The salt wedge in the St. Marks River has been detected as far as 9.5 miles upstream of the river mouth or 2.5 miles upstream of the Purdom Station intake area (Ebasco Services Incorporated, 1992), and has been reported (Hand et al., 1994) to extend up the Wakulla River at least 3 miles upstream of its confluence with the St. Marks River.

The St. Marks River is classified by the FDEP as Class III waters from Rattlesnake Branch (about 375 feet upstream of the Purdom intake area, or 7.07 miles upstream of the river mouth) to its confluence with the Wakulla River (about 1.5 miles downstream of the Purdom intake area). The rest of both rivers is classified as Outstanding Florida Waters (OFW).



SOURCE: RE&C, 1997

CITY OF TALLAHASSEE

ST MARKS RIVER DRAINAGE BASIN

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.4-1

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Hand et al. (1994) indicates that there are only two portions of the St. Marks River Basin which have water quality problems. They are the Lake Munson/Munson Slough area, which has historically been impacted by sewage effluent, and the portion of the river within the City of St. Marks which has been affected by discharges from the Purdom Station, the refinery to the north, tugboats and oil barges, and the City of St. Marks Wastewater Treatment Facility. Hand et al. (1994) also indicates there is only one water quality problem area in the Wakulla River, that being the discharge of nutrients via Boggy Branch by Primex Technologies (formerly Olin Corporation).

Morphometry, Bathymetry, and Stages

The St. Marks River has been used for navigational purposes since colonial times. Prior to the Civil War, it was used to send agricultural products (such as cotton) to market and to receive other goods. This traffic declined after the Civil War, and was finally replaced by traffic in volatile fuels, beginning in the 1930s. The U.S. Army Corps of Engineers (COE) investigated improving the river because of a formation known as the Devil's Rocks which lay between the City of St. Marks and the mouth of the river. Reports for and against improving the channel were made to the Chief of Engineers between 1845 and 1936.

The Project to improve the channel by dredging a channel to the City of St. Marks was completed in 1964. The channel was dredged to be at least 12 feet deep and 125 feet wide from a point about 4 miles offshore in Apalachee Bay to the Turning Basin (see Figure 2.3.4-2). The channel width is reduced to 100 feet from the turning basin to Newport. Dredging was not required between St. Marks and Newport, only "clearing and snagging" (COE, 1996).

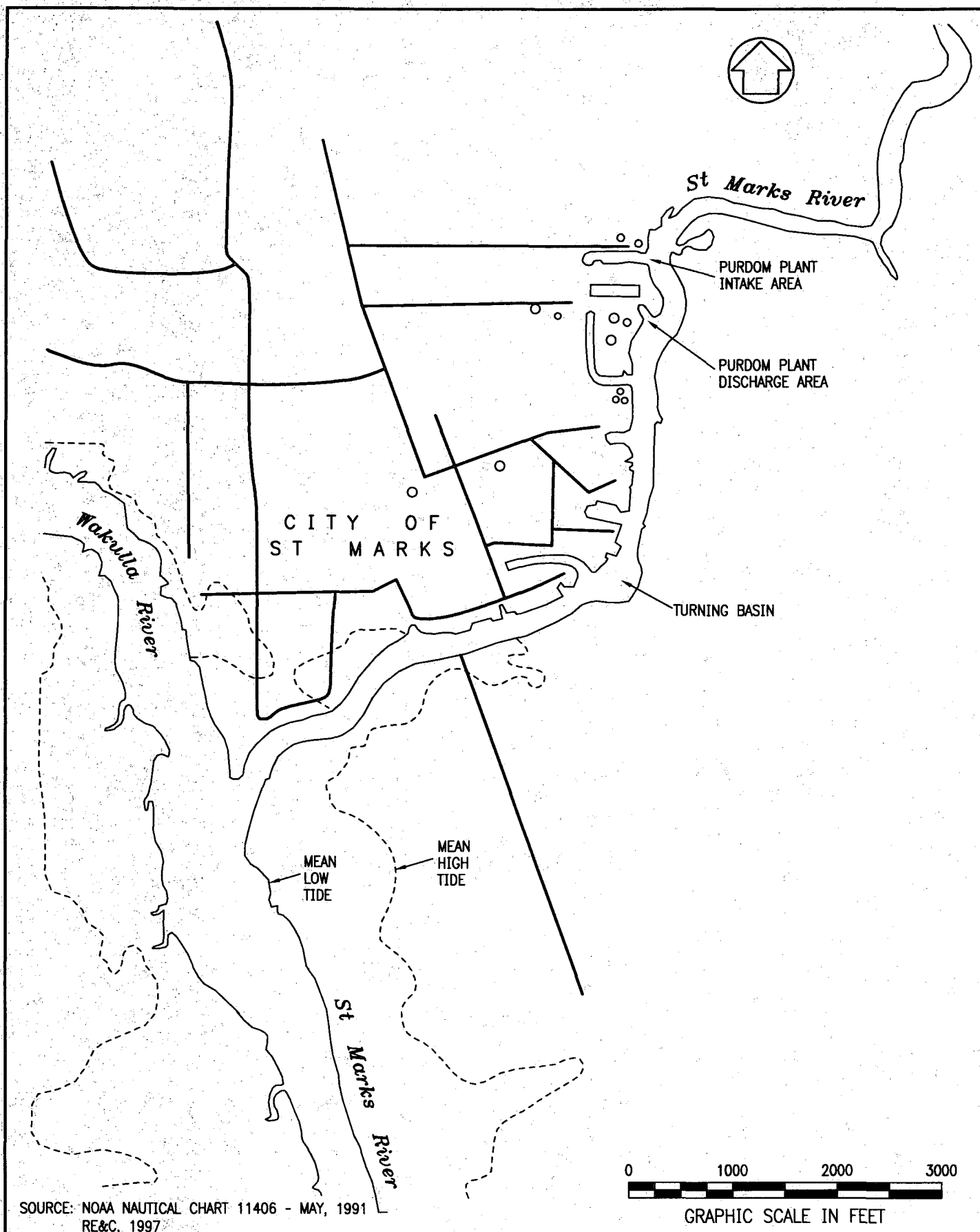
Morphometry and bathymetry of the St. Marks and Wakulla Rivers in the site vicinity are shown on Figures 2.3.4-2 and 2.3.4-3. The tidal range on the St. Marks River varies from 2.58 feet (mean) and 3.49 feet (diurnal) at the mouth, to 2.4 feet (mean) and 3.3 feet (diurnal) in the City of St. Marks. The mean tide level varies from 0.04 feet mean sea level (msl) at the mouth to -0.1 feet msl in St. Marks.

Bathymetry (Ebasco Services, 1992) at the Purdom Station is shown for the Intake Area on Figure 2.3.4-4 and for the Discharge Area on Figure 2.3.4-5.

Measured water levels in the St. Marks River at the Purdom Station are shown on Figure 2.3.4-6. The water level range shown is about 7 feet, indicating the effects of freshwater inflow superimposed upon the tidal levels. Figure 2.3.4-7 shows the water levels for varying freshwater inflows at Newport.

Currents

The National Oceanic and Atmospheric Administration (NOAA) indicates that tidal currents range up to 0.5 ft/sec on flood tides and 0.67 ft/sec on ebb tides, in the St. Marks River within the City of St. Marks (International Marine, 1995b). Actual measurements were performed in 1992 in the vicinity of the Purdom Station, when no generating units were operating, on the ebb tide. Actual measured currents were larger than predicted for two reasons. The first reason is because they were influenced by freshwater inflows. The second reason is that the river is



SOURCE: NOAA NAUTICAL CHART 11406 - MAY, 1991
RE&C, 1997

CITY OF TALLAHASSEE

FEATURES OF THE
ST MARKS RIVER
IN THE SITE VICINITY
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-2

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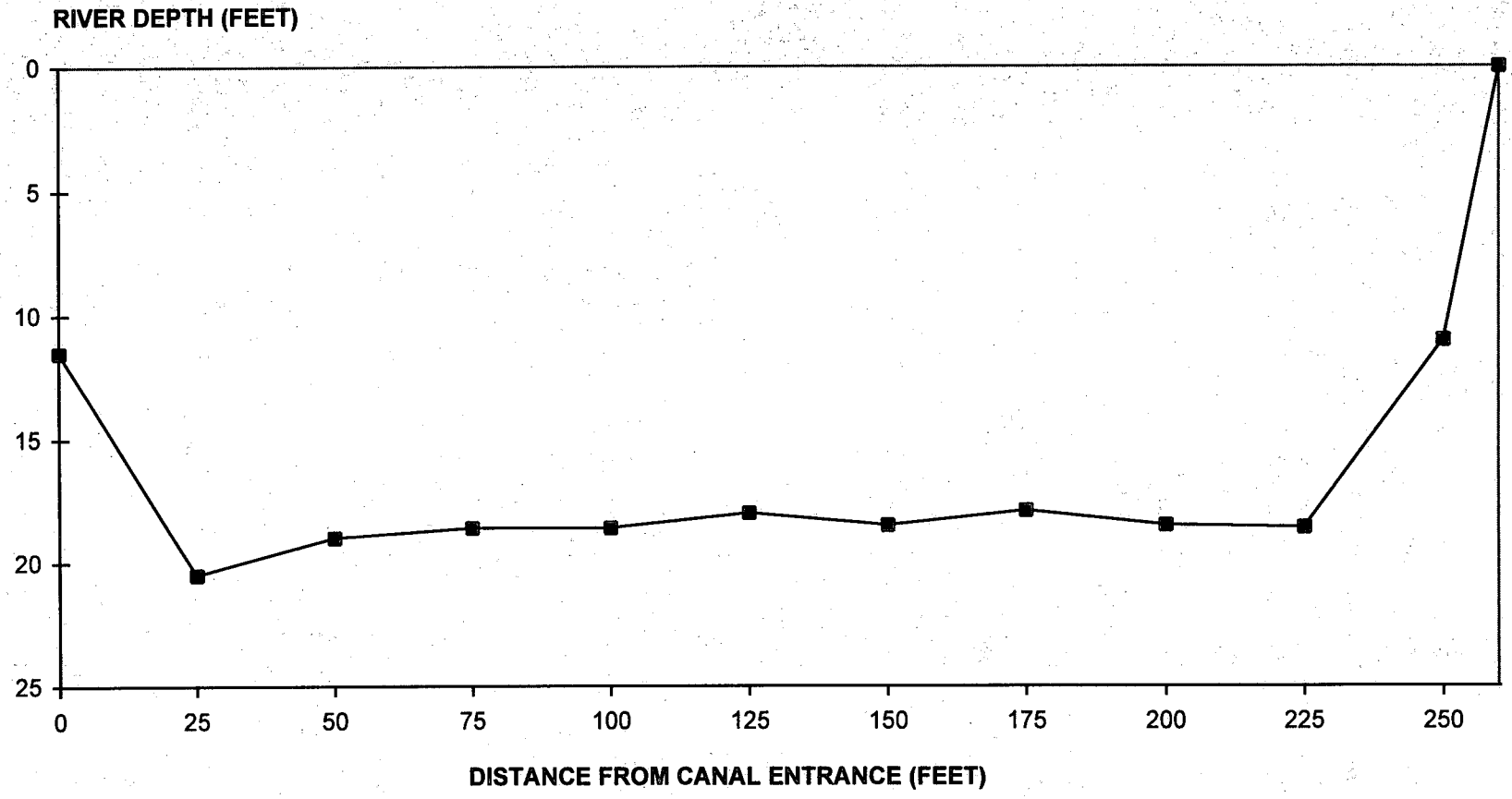
CITY OF TALLAHASSEE

RIVERS IN THE SITE VICINITY

PURDOM UNIT 8 PROJECT - ST MARKS FLORIDA

Figure

2.3.4-3



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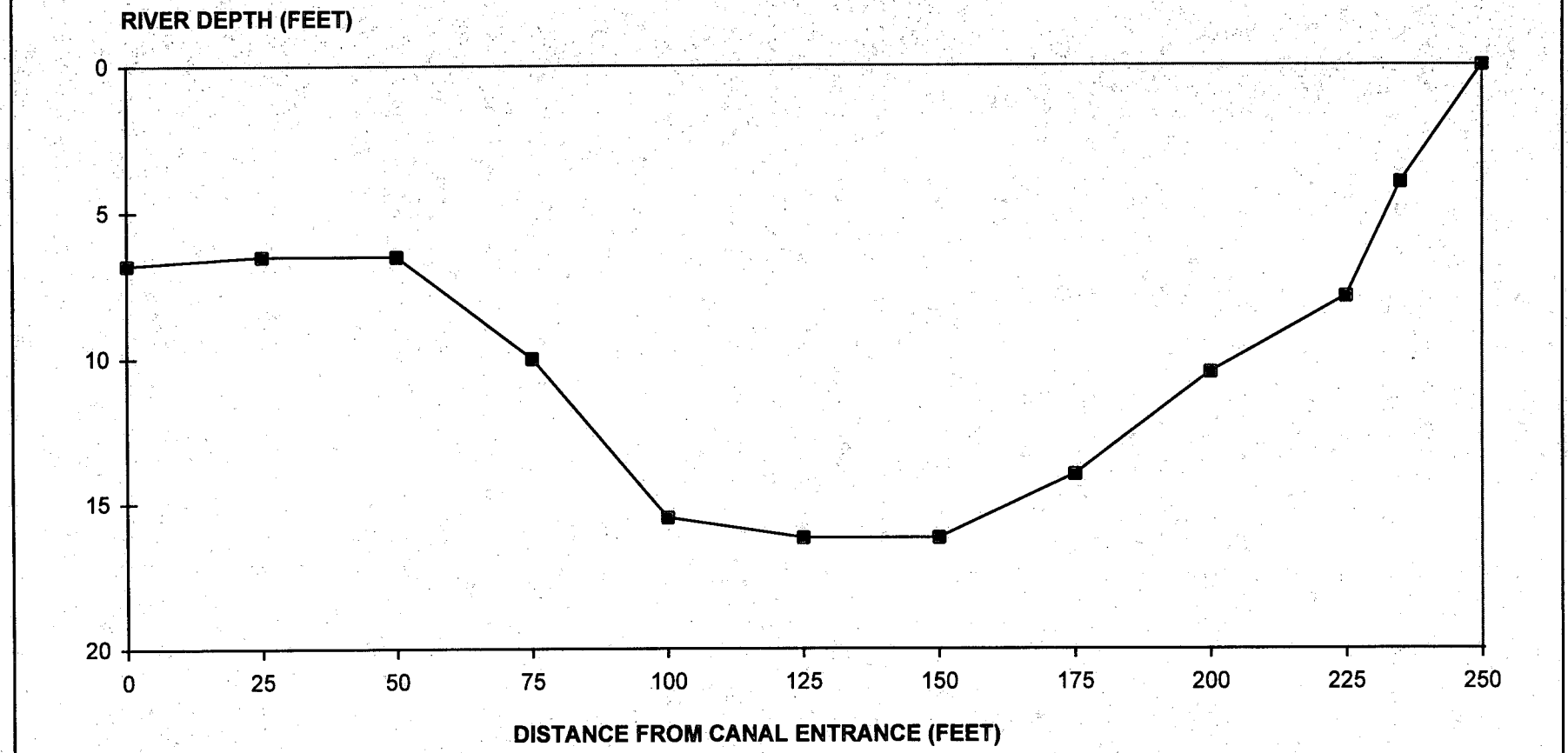
SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

BATHYMETRY IN THE INTAKE AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-4



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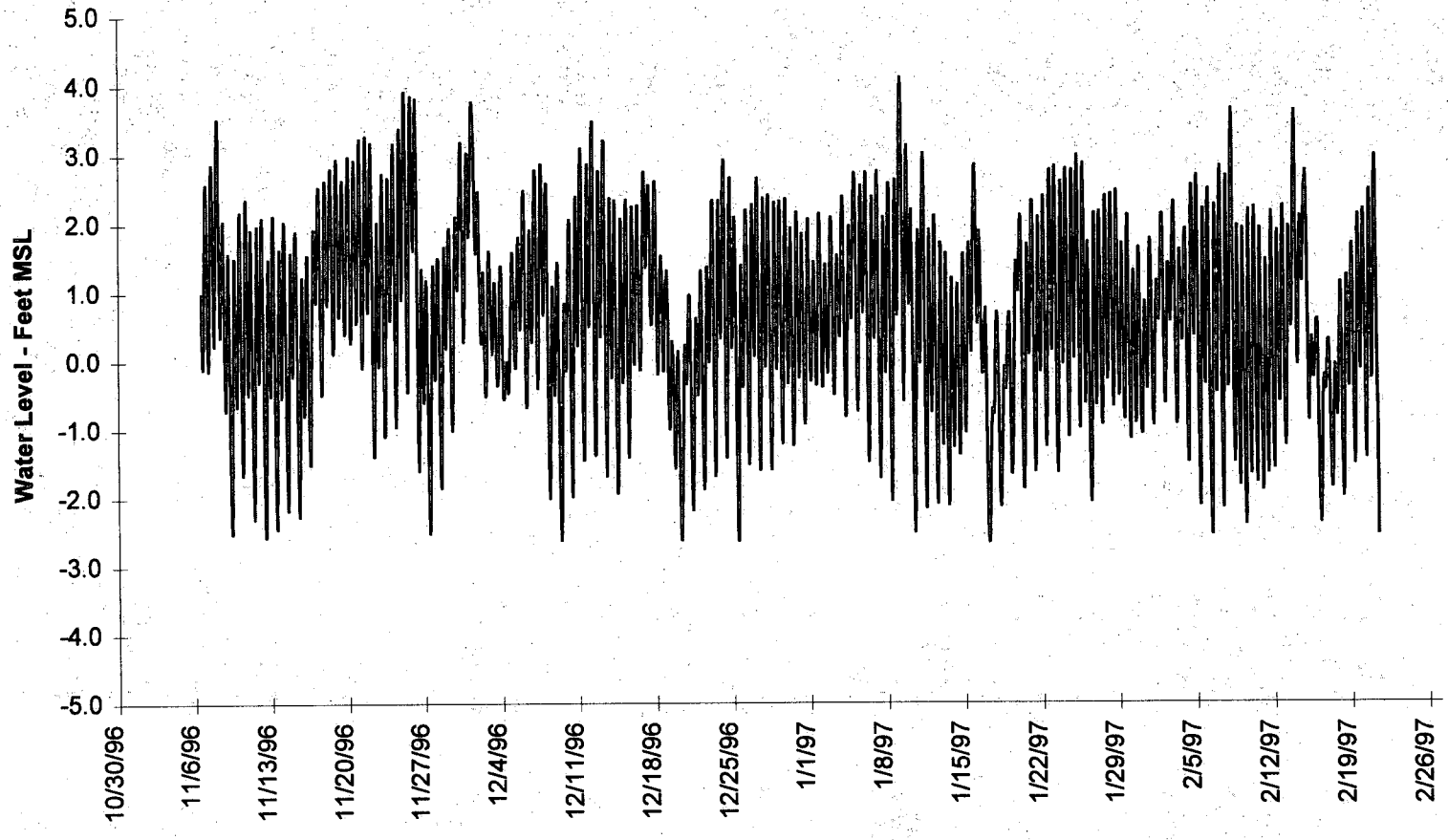
SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

BATHYMETRY IN THE DISCHARGE AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-5

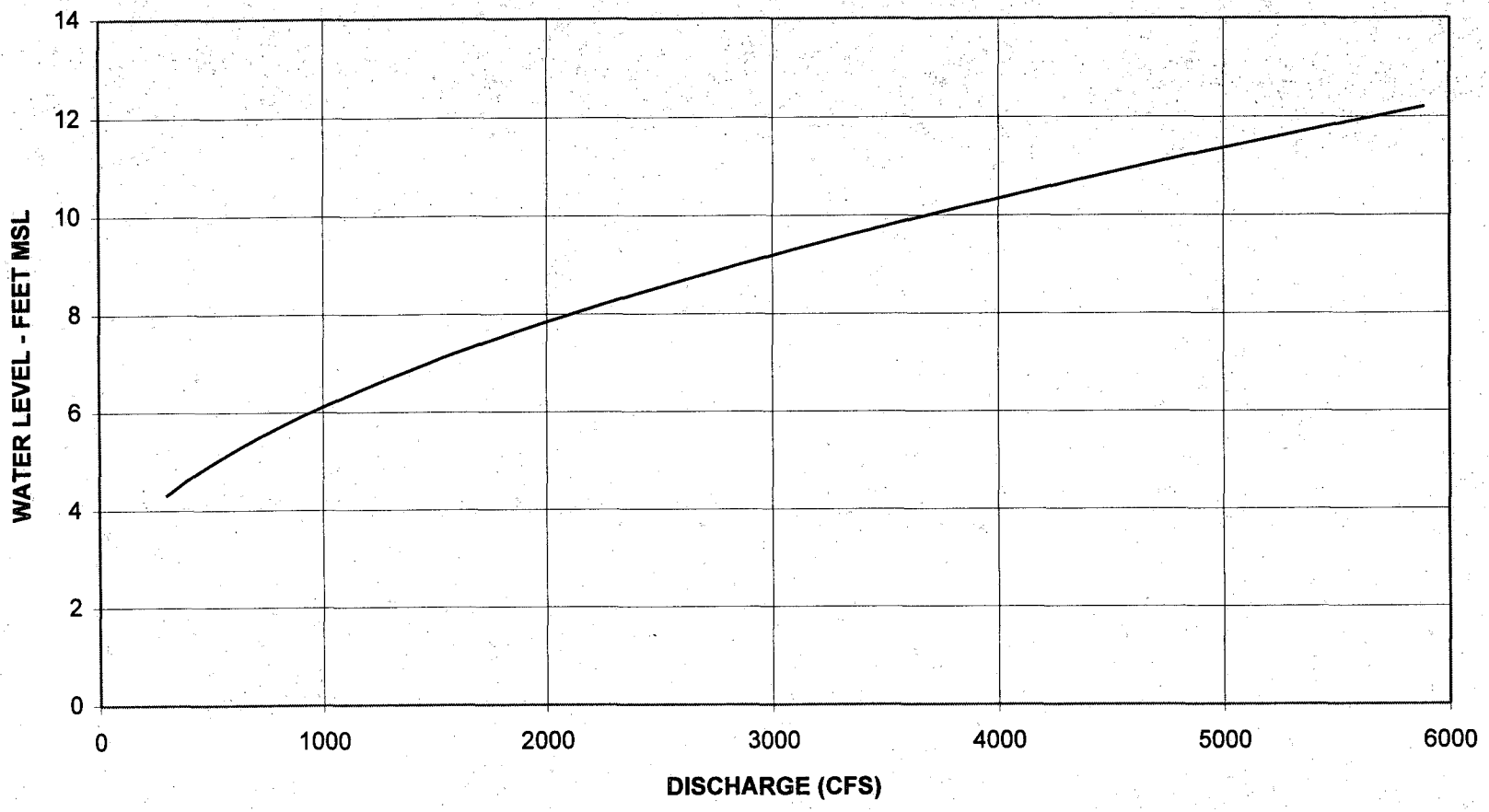


SOURCE:RE&C,1997

CITY OF TALLAHASSEE

WATER LEVELS AT THE PURDOM STATION INTAKE AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-6



SOURCE: USGS, 1996

CITY OF TALLAHASSEE

RATING CURVE ST. MARKS RIVER NEAR NEWPORT, FLORIDA
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-7

stratified and the freshwater flow is predominantly in the upper layer, and the tidal flow is predominantly in the lower layer.

In July of 1996, baseline monitoring field studies were conducted in the St. Marks River to support this certification application. Complete details of this effort are presented in Appendix 10.5.4. The associated profiling locations are shown on Figure 2.3.4-8 and, in more detail near the plant, Figure 2.3.4-9. A typical current velocity profile on an outgoing tide is illustrated in Figure 2.3.4-10, on which positive current is in the downstream direction.

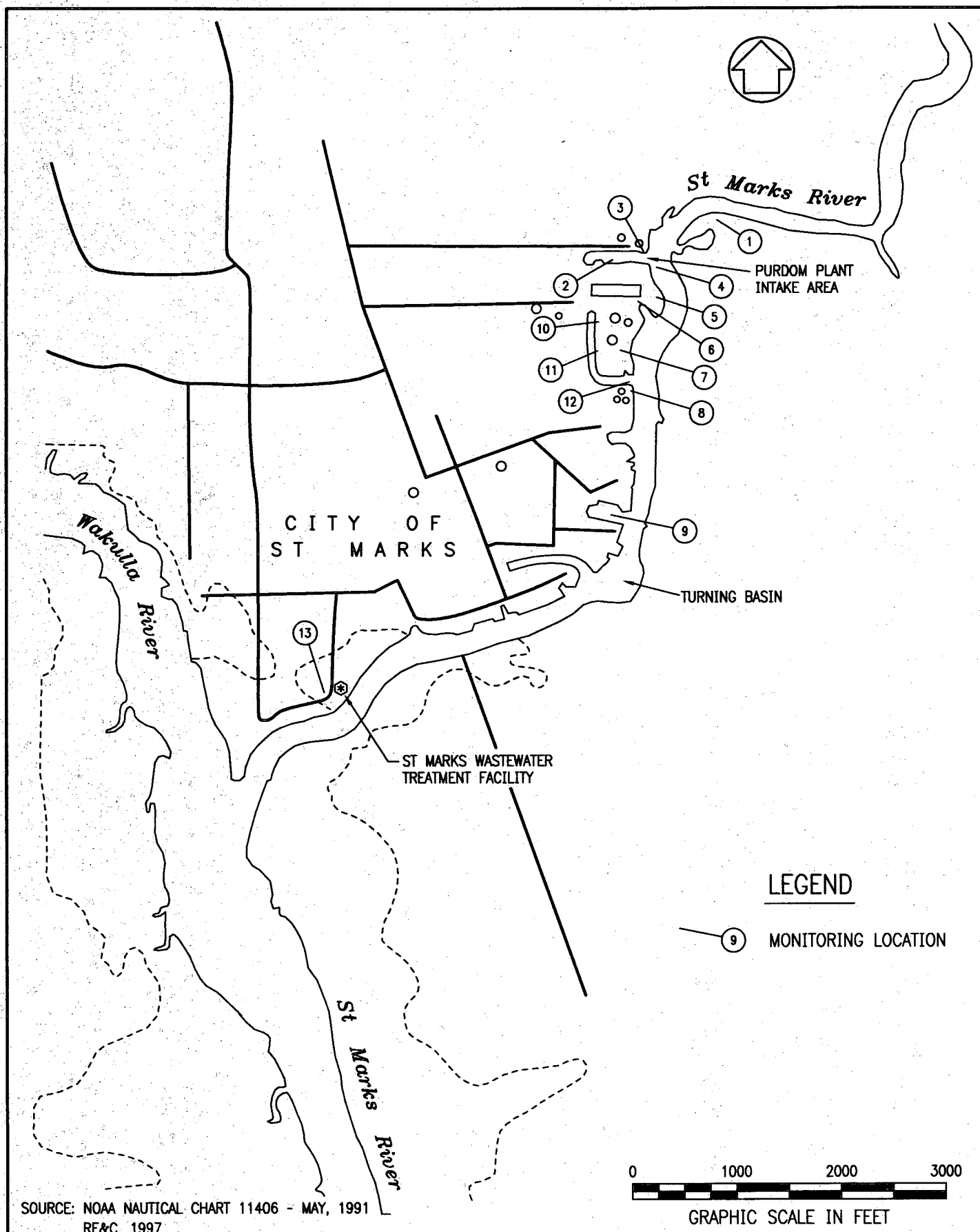
The Purdom Station has five operational generating units, three steam electric units (numbered 5 through 7) and two gas turbine units (numbered GT1 and GT2.) Units 5 and 6 are rated at 22 MW (nominal) and were placed in operation in 1958 and 1961 respectively. The gas turbines are each rated at 12.5 MW (nominal) and were installed in 1961 (GT1) and 1966 (GT2). Unit 7, rated at 44 MW (nominal), became operational in June of 1966.

The units were all installed with once-through cooling systems and have operated under an NPDES permit since the inception of the NPDES permitting program, and a state-issued Industrial Wastewater (IWW) permit. A discharge canal originally constructed along with Units 1 through 4 presently serves Unit 5. The St. Marks River was dredged and a fuel oil barge unloading terminal was installed at the same time. An intake structure was installed on the west bank of the St. Marks River along with Unit 5. A second discharge canal was installed with Unit 6, and another intake structure was installed adjacent to that of Unit 5 for Unit 6. An intake canal and another intake structure were installed with Unit 7, which shares a common discharge canal with Unit 6. Units GT1 and GT2 have an intake structure in, and discharge via a culvert to, the discharge canal serving Units 6 and 7. The locations of these facilities are shown on Figure 2.3.4-11. Units 5 through 7, GT1, and GT2 are presently used for peaking.

When Units 5 and 6 are operating, they superimpose new currents in the vicinity of their intake structures (Location 4 on Figure 2.3.4-8). Westward (into the intake structures) velocities in that area range from 0.12 to 0.43 ft/sec (see Figure 2.3.4-12) with all three steam units running. Similarly, velocities entering the Unit 7 intake canal range from 0.2 ft/sec at the bottom to about 0.004 ft/sec near the surface (see Figure 2.3.4-13). Velocities into the river from the Unit 5 discharge canal range from 0.73 ft/sec at 3.5 feet depth, to 0.05 ft/sec at the surface and at 6.5 feet of depth (see Figure 2.3.4-14) with Unit 5 operating. Velocities into the river from the Units 6 and 7 discharge canal range from 1.083 ft/sec at about 5 feet of depth, to about 0.5 ft/sec near the surface with Units 6 and 7 both running (see Figure 2.3.4-15). If only Unit 7 is running, these velocities drop to a maximum of about 0.67 ft/sec at a depth of 4 feet and a minimum of about 0.067 ft/sec near the water surface (see Figure 2.3.4-16). All of these velocities are of the same order of magnitude as the natural ambient velocities in the river (see Figure 2.3.4-10).

Flows

The only long-term flow gauging station on the St. Marks River was the USGS Station Number 02326900, near Newport. Data were recorded once a day at this station from October 1956 through October 1994, a period of record (POR) of 38 years. The drainage basin upstream of this station encompasses 535 square miles, of which some 240 square miles are noncontributory during periods of low flow. The single maximum daily flow over the POR for each month, the average of the maximum daily flows for each month, the average daily flows for each month, the



SOURCE: NOAA NAUTICAL CHART 11406 - MAY, 1991
RE&C, 1997

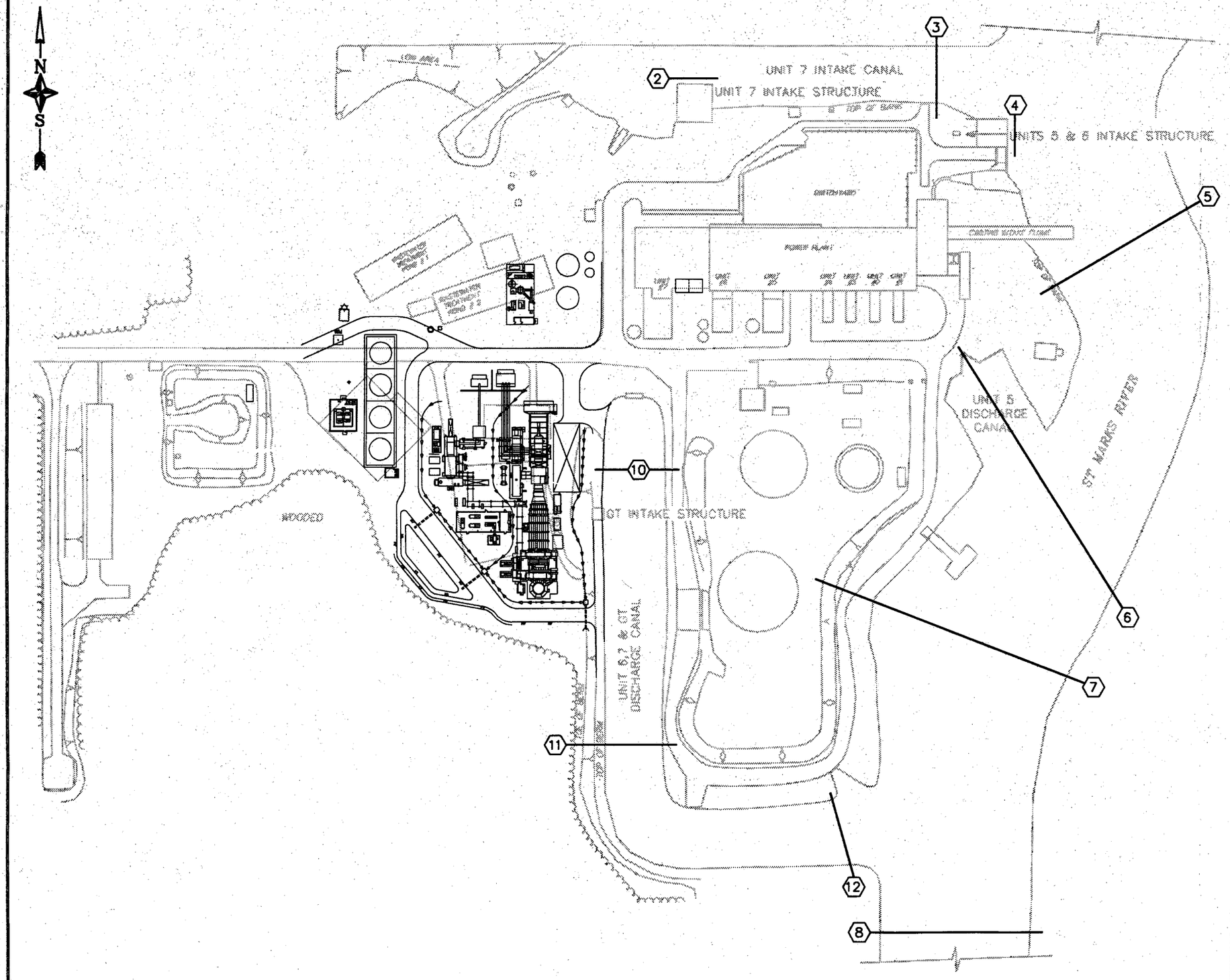
CITY OF TALLAHASSEE

SURFICIAL HYDROLOGY
BASELINE MONITORING PROFILING LOCATIONS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-8

PLOT DATE FEB 28, 1997 C:\15840002\----\00000-29.DWG



(1) MONITORING LOCATIONS

150 0 150 300

SCALE IN FEET

SOURCE: RE&C, 1997

SURFICIAL HYDROLOGY BASELINE MONITORING PROFILING LOCATIONS

PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 2.3.4-9

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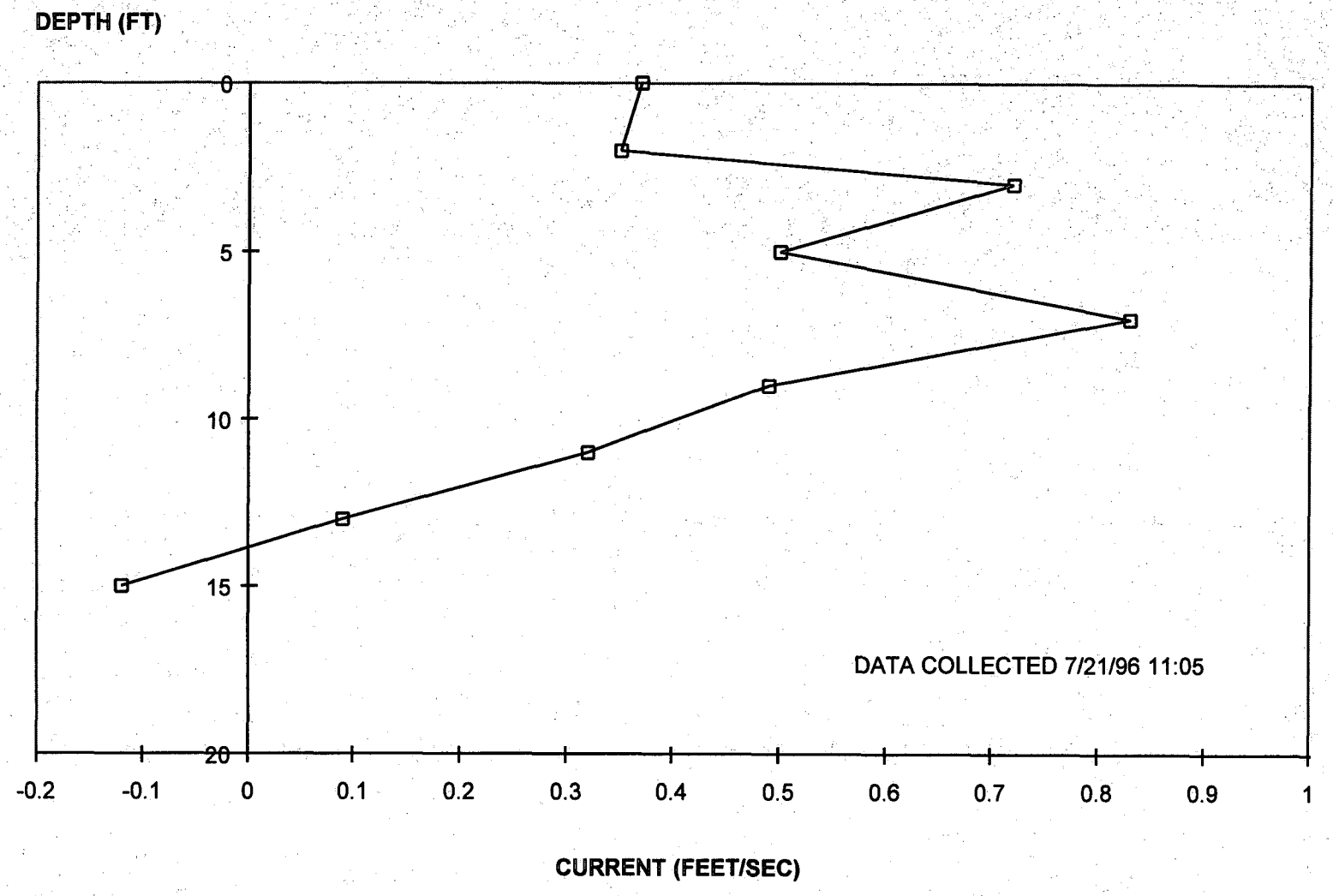
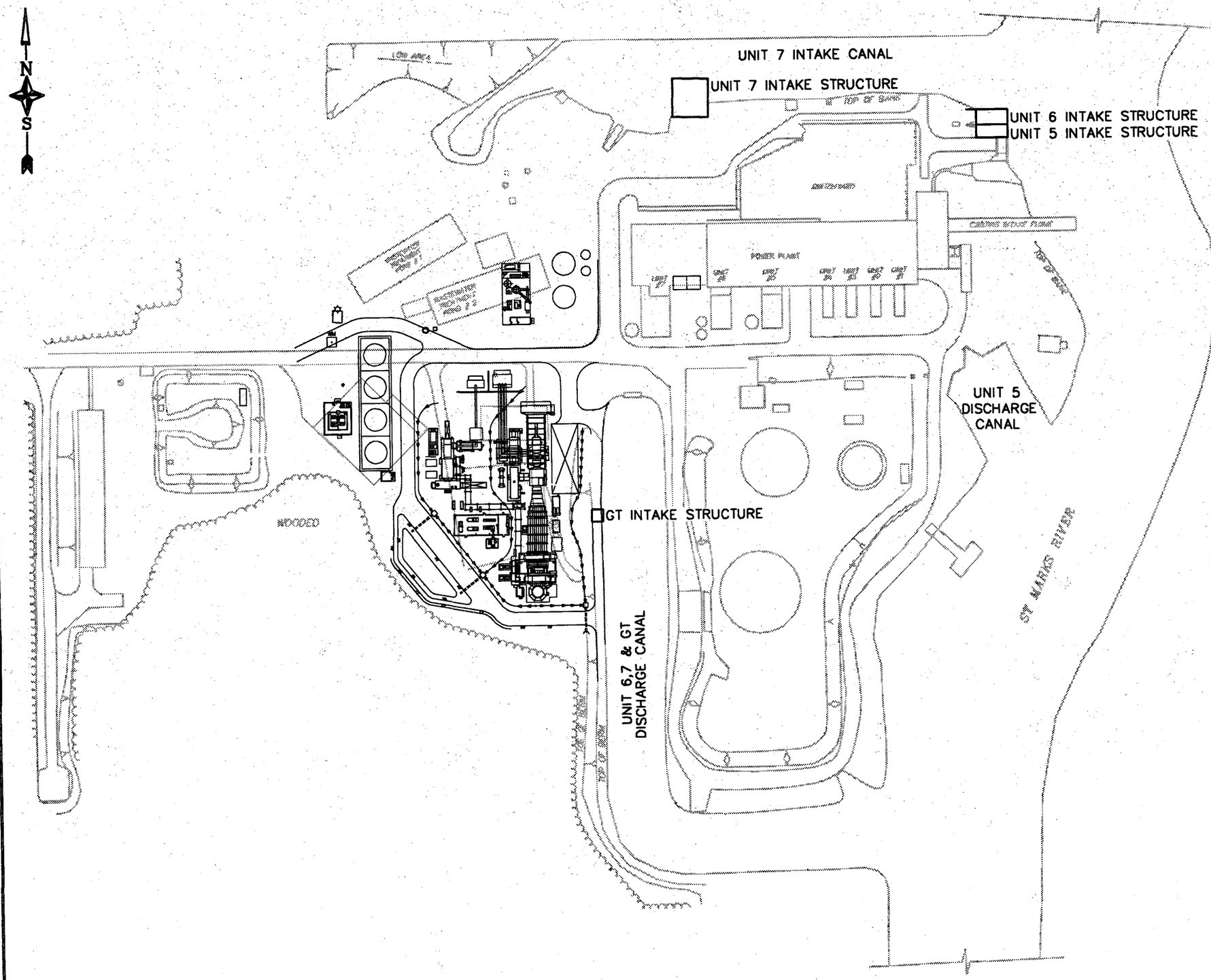


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER DOWNSTREAM OF UNIT 6/7 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-10



150 0 150 300

SCALE IN FEET

SOURCE: RE&C, 1997

INTAKE STRUCTURE AND
DISCHARGE CANAL LOCATIONS

PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure
2.3.4-11

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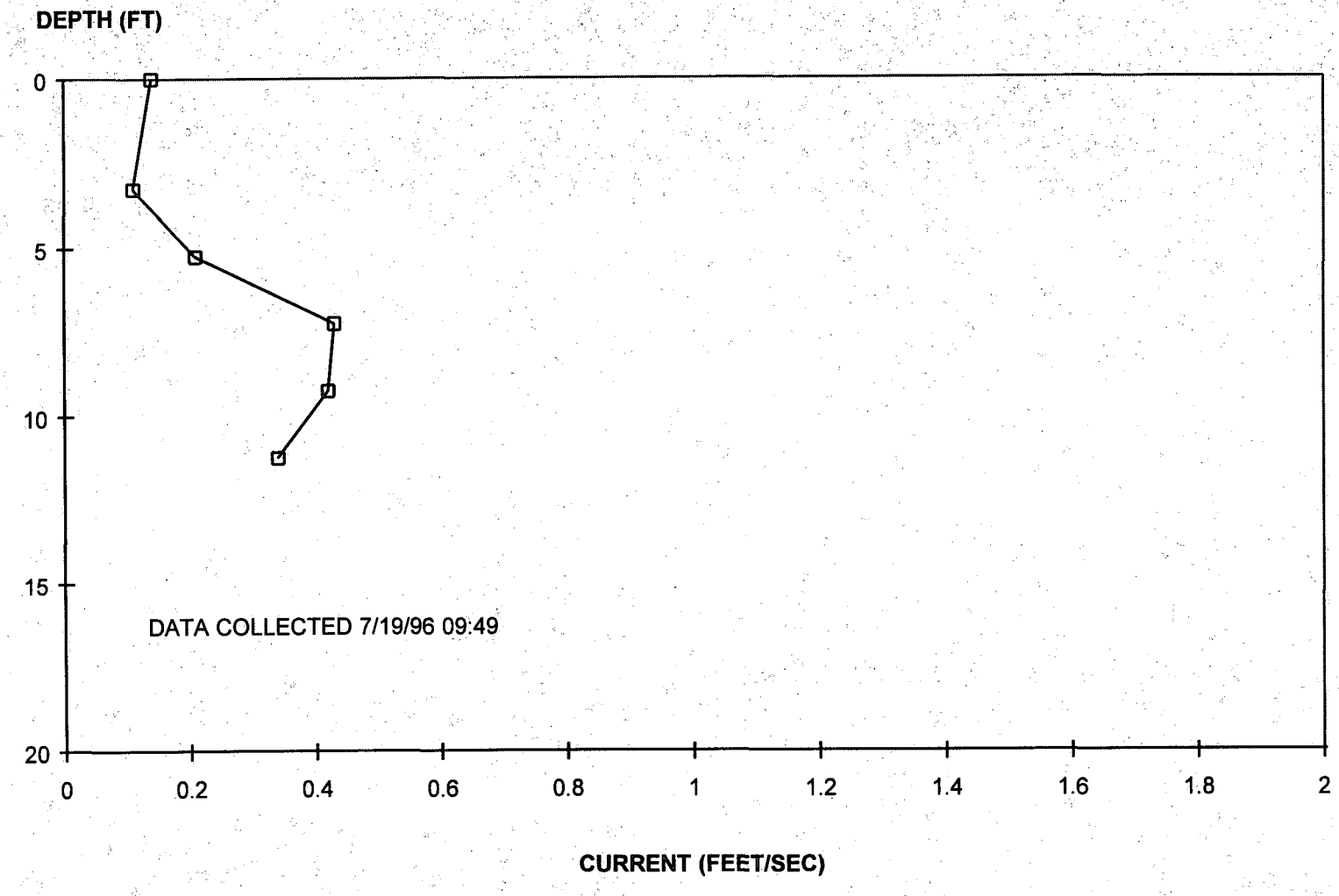
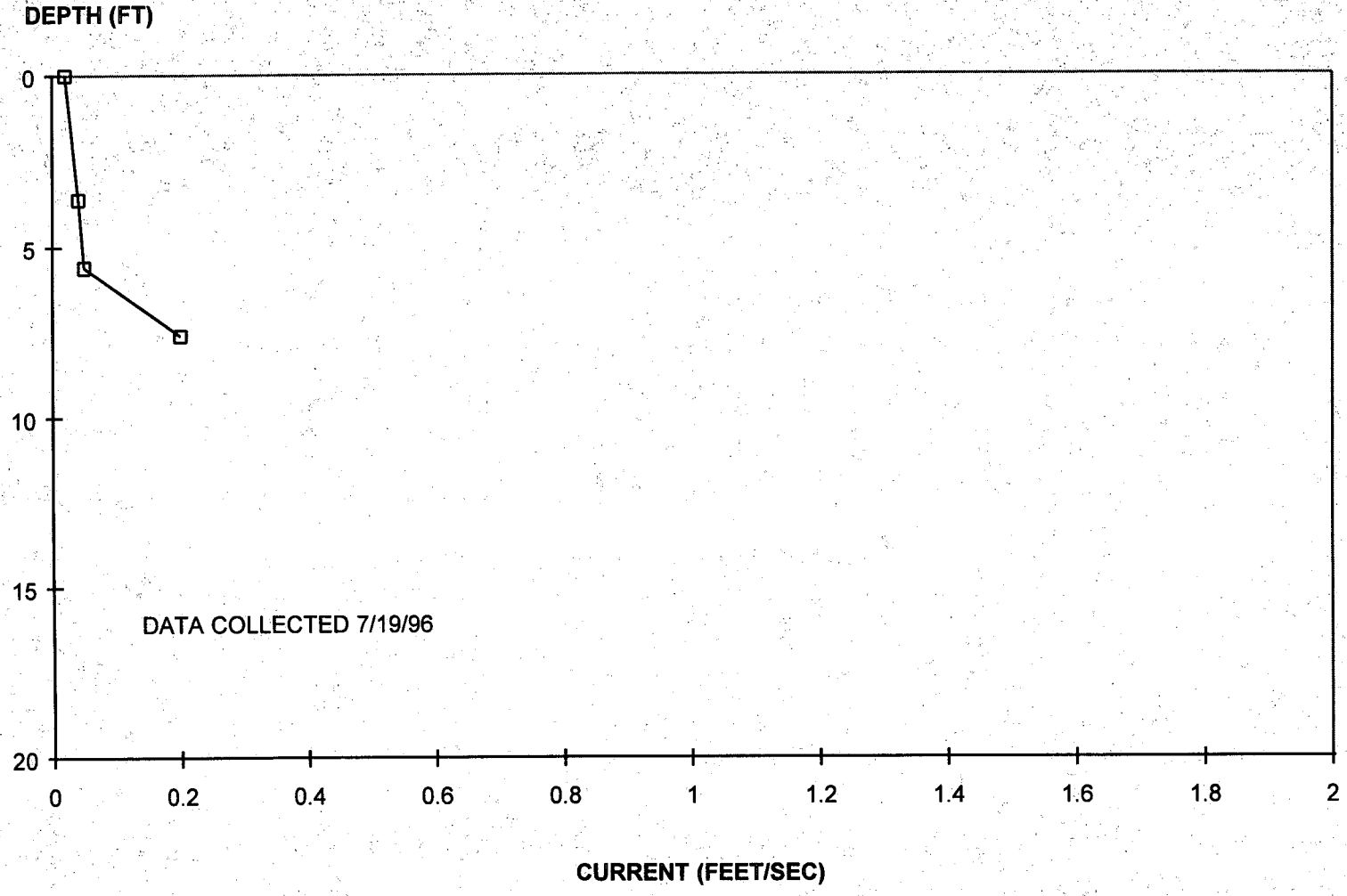


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 4
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, AT UNIT 5 INTAKE STRUCTURE
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-12

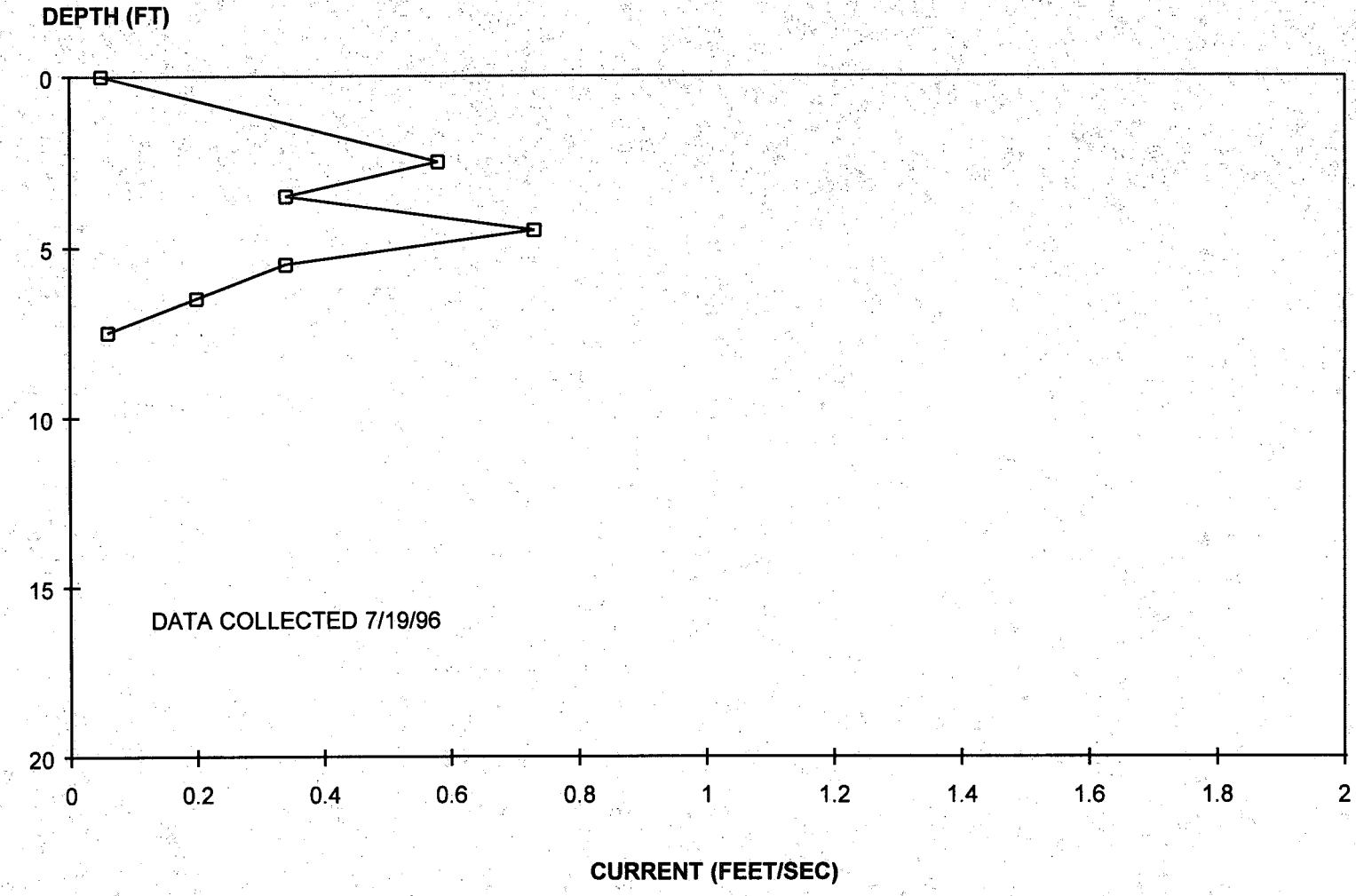


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 3
WATER COLUMN CURRENT PROFILE
AT OPENING OF INTAKE CANAL
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-13

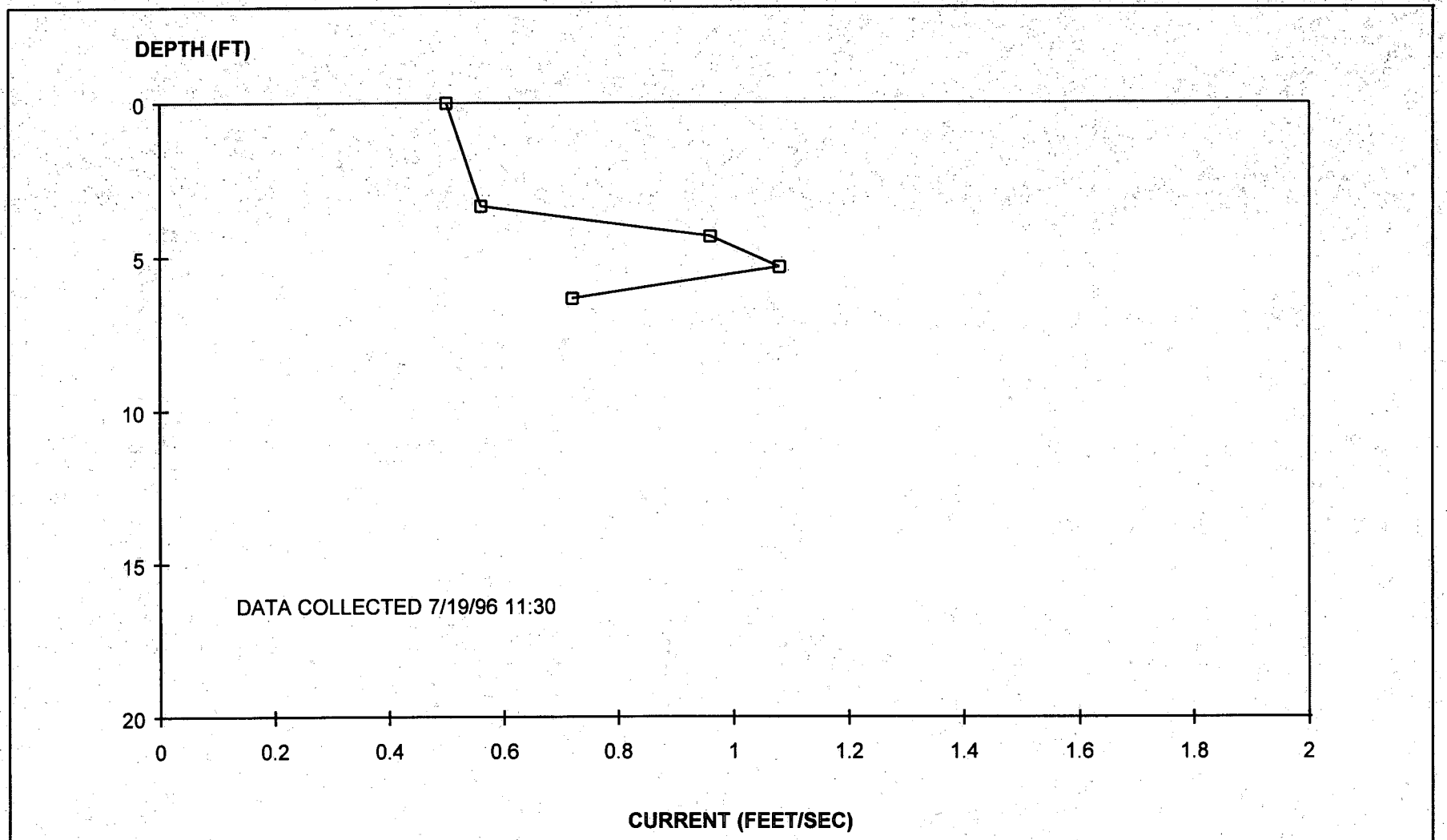


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN CURRENT PROFILE
AT UNIT 5 DISCHARGE
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-14

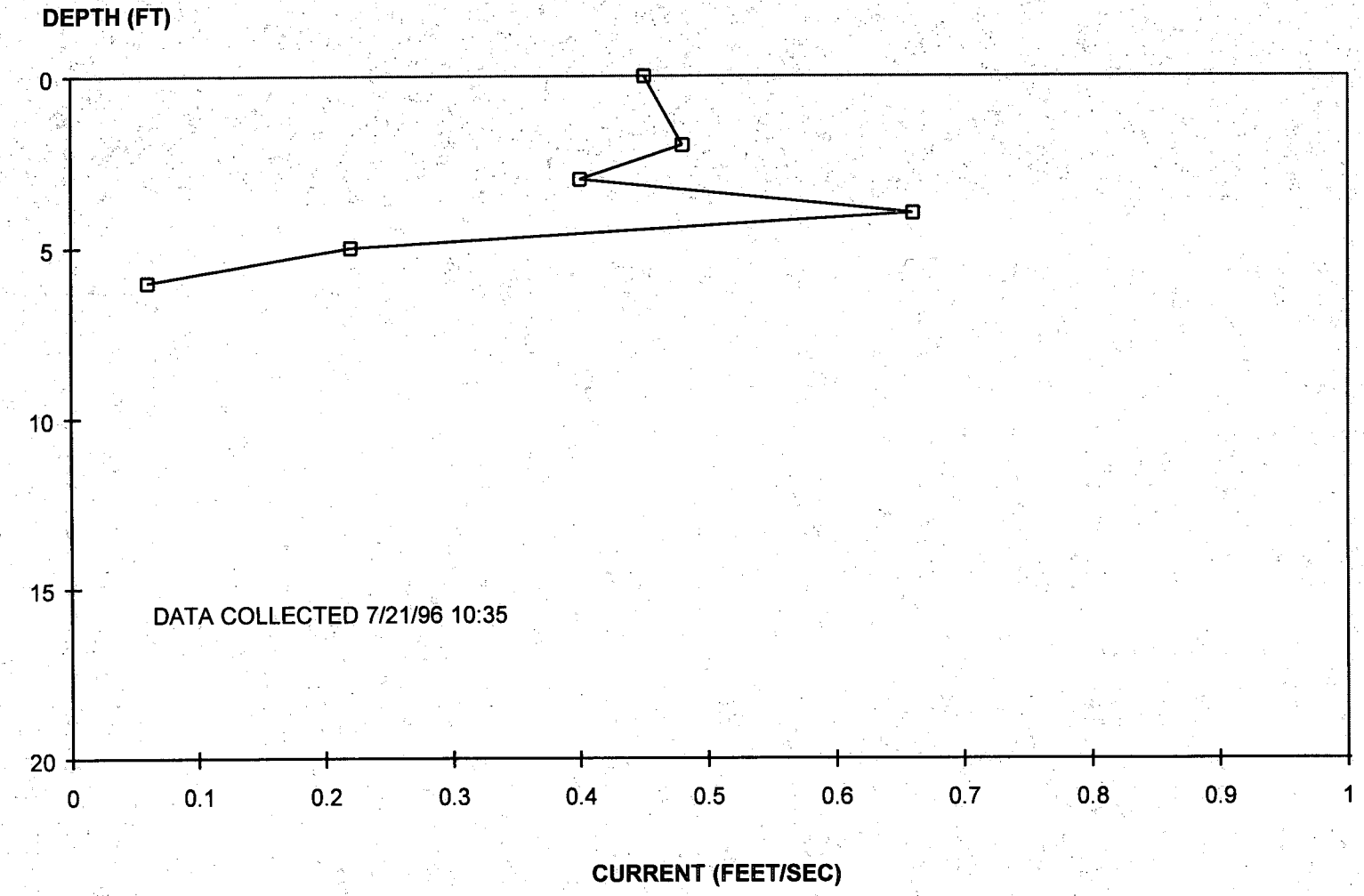


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN CURRENT PROFILE
AT UNITS 6/7 DISCHARGE, AFTER BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-15



SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN CURRENT PROFILE
AT UNITS 6/7 DISCHARGE, AFTER BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-16

single minimum daily flow for each month over the POR, and the average of the minimum daily flows for each month are shown on Figure 2.3.4-17. The overall average flow over the POR is 720 cfs. Flow at Newport represents freshwater flow of the St. Marks River.

The data were also analyzed to determine the seven consecutive day low flow with a ten year recurrence (7Q10) for the station at Newport. This 7Q10 was determined to be 333 cfs. The 7Q10 at the Purdom Station was estimated, based on the ratio of drainage areas, to be about 347 cfs.

Similarly, the average freshwater flow and 7Q10 of the St. Marks River at the mouth were estimated based on the ratios of drainage areas. The average was determined to be about 1,588 cfs (representing the average freshwater inflow to Apalachee Bay from the St. Marks River) and the 7Q10 was determined to be about 734 cfs.

The average tidal flow at the Purdom Station has been estimated, based on mean tidal ranges, to be about 360 cfs (Envirosphere Company, 1985)

The design flow rates of the five operational units at the Purdom Station are as follows:

Unit	Flow Rate-cfs
5	54
6	54
7	94
GT1	2.3
GT2	2.3
Total	206.6

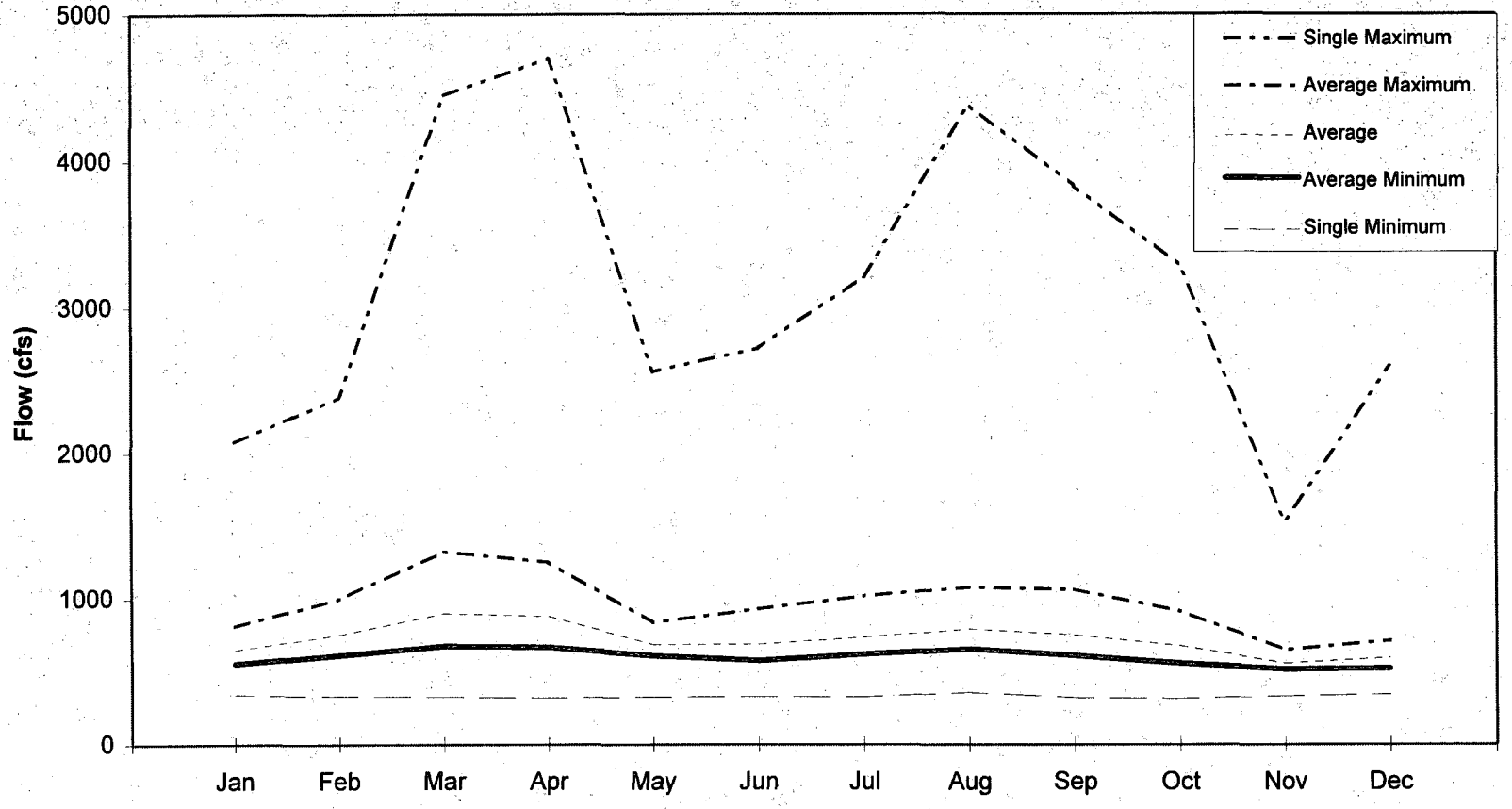
The total of 206.6 cfs represents about 60 percent of the 7Q10 of the St. Marks River. Actual operating data for Units 5, 6, and 7, for Water Year 1996 (October 1, 1995 through September 30, 1996) indicate that the actual flow rates (excluding the GTs) were:

Unit	Gallons Pumped Per Year	% of Design Flow
5	7,255,950,000	57.6
6	6,287,100,000	49.8
7	21,325,764,000	96.4
Total	34,868,814,000	73.6

The City of St. Marks operates a wastewater treatment facility at the location shown on Figure 2.3.4-8. This facility discharges secondary effluent into the St. Marks River at a location about 200 yards upstream of its confluence with the Wakulla River. The discharge flow rate of this facility for the period February 1993 through August 1996 averaged about 21,000 gallons per day (about 0.03 cfs or 15 gpm).

Temperature

The U.S. Geological Survey recorded non-continuous temperature data within the St. Marks River (see Figure 2.3.4-27), near Newport, between June of 1967 and June of 1994, and at Wakulla Springs (the headwaters of the Wakulla River) between May of 1954 and February of 1985. The data are presented in Section 10.5.4, and are plotted in Figures 2.3.4-28 (St. Marks River) and 2.3.4-29 (Wakulla Springs). Temperatures in the St. Marks River near Newport



SOURCE:RE&C,1996; USGS, 1992

CITY OF TALLAHASSEE

ST. MARKS RIVER FLOWS AT NEWPORT
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-17

ranged from a low of 12° C (53.6° F) in January of 1979 to a high of 27° C (80.6° F) in May of 1970. Temperatures at Wakulla Springs stayed in a narrower range between a low of 18.5° C (65.3° F) and a high of 24.0° C (75.2° F) in May of 1968. Temperatures at Wakulla Springs are more representative of groundwater temperatures than of surface water temperatures.

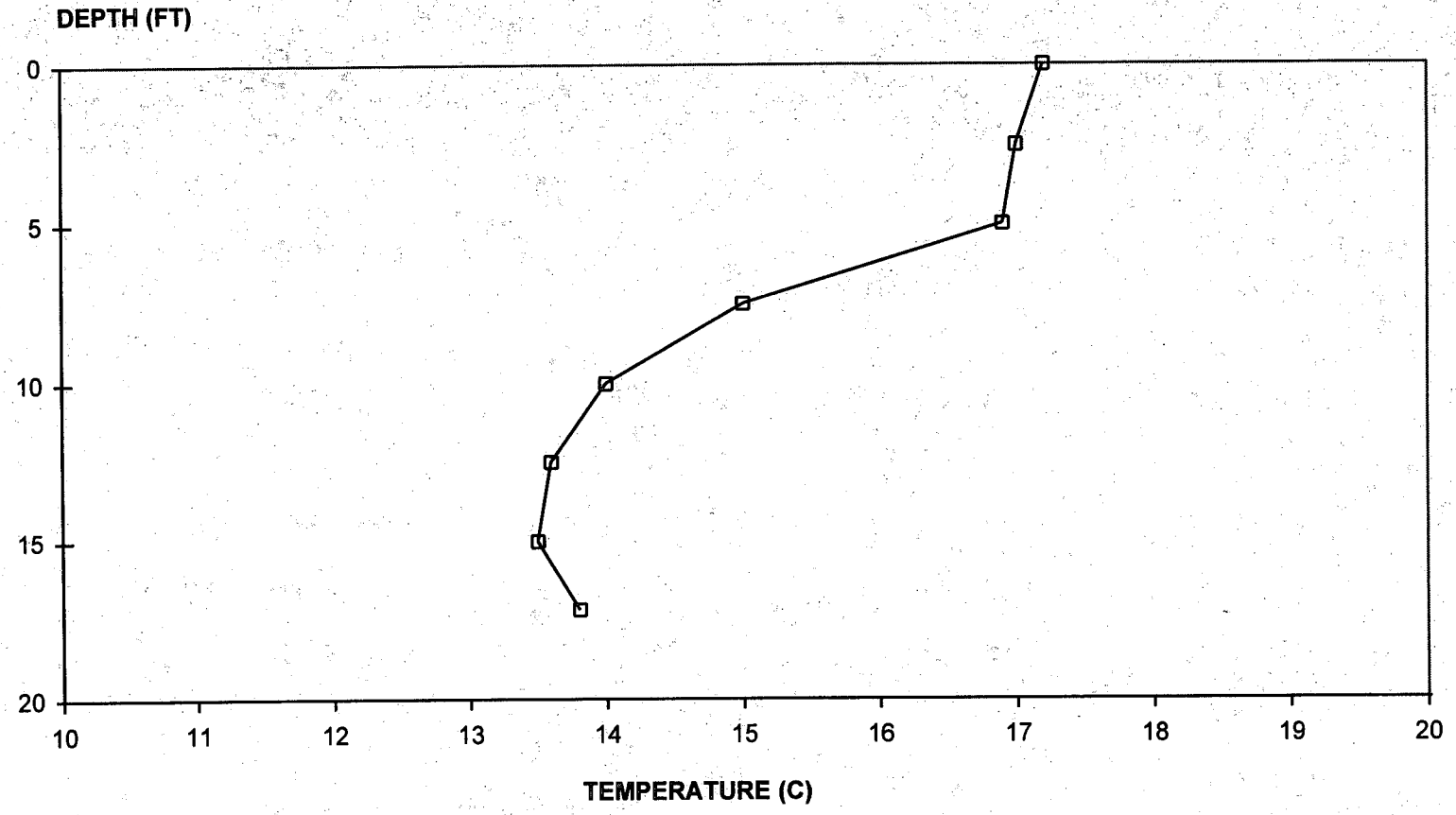
The St. Marks River exhibits strong natural thermal stratification in the vicinity of the Purdom Station, when the generating units are not running, as illustrated for the Intake Area on Figure 2.3.4-18, and for the Unit 6/7 Discharge Area on Figure 2.3.4-19. The difference between top and bottom shown on these figures is about 4° C. (7.2° F). Further north at Newport, there is no thermal stratification in the river (see Figure 2.3.4-20). These data were all taken during the winter, when the salt wedge temperature at the bottom was lower than the freshwater temperature at the top.

When Unit 7 is operating, water from the top 10 feet of the river is drawn into the intake canal, and the temperature therein is an average of the temperatures across that depth (see Figure 2.3.4-21). The resultant temperature shown on that figure was about 1.5° C (3° F) higher than the surface temperature in the river upstream of the plant (see Figure 2.3.4-22). That is because these data were measured during the summer, when the salt wedge at the bottom of the river was at a higher temperature than the freshwater above. The freshwater is influenced by the groundwater temperature, while the salt wedge is influenced by the Apalachee Bay water temperature.

Unit 7 condenser inlet water temperatures were analyzed for the water year 1996 (October 1, 1995 through September 30, 1996). The results, in ° F, are presented on Figure 2.3.4-23. The temperatures range from a minimum of 56° F in February to a maximum of 84.4° F in July. The average difference between the maximum and minimum in any given month averages 13.1° F.

The steam generating units (5, 6, and 7) add heat to the water they circulate from the river. The temperatures resulting from this addition were measured in July 1996. The results are shown for the surface on Figures 2.3.4-24 for all three units operating, and on Figure 2.3.4-25 for Unit 7 only. With three units operating, the thermal plume crossed the river and extended downstream several hundred feet. When only Unit 7 operated, the plume extended about half way across the river, and occupied less than 1 acre. These interpretations of plume size consider that the ambient background temperature increases in the downstream direction, and that the salt wedge impact on temperatures was of the same order of magnitude as that of the plant. This is illustrated by the vertical temperature profile shown on Figure 2.3.4-26, in which the thermal plume from the plant is at the surface, the ambient freshwater temperature is indicated at a depth of 2 to 9 feet, and the salt wedge temperature is at a depth of about 15 feet.

The design temperature rise of the three steam units is estimated to be 13.7° F at 22 megawatts (MW) each for Units 5 and 6, and 14.9° F at 44 MW for Unit 7. This means that when the three units are all running at full load, the cooling water is raised above the intake temperature by the design temperature rise. At part loads, the temperature rises are proportionally less. During Water Year 1996, actual monthly MW-hours were recorded and average heat rejected to the river, condenser rise, and MW were estimated. The design and actual quantities are as follows:



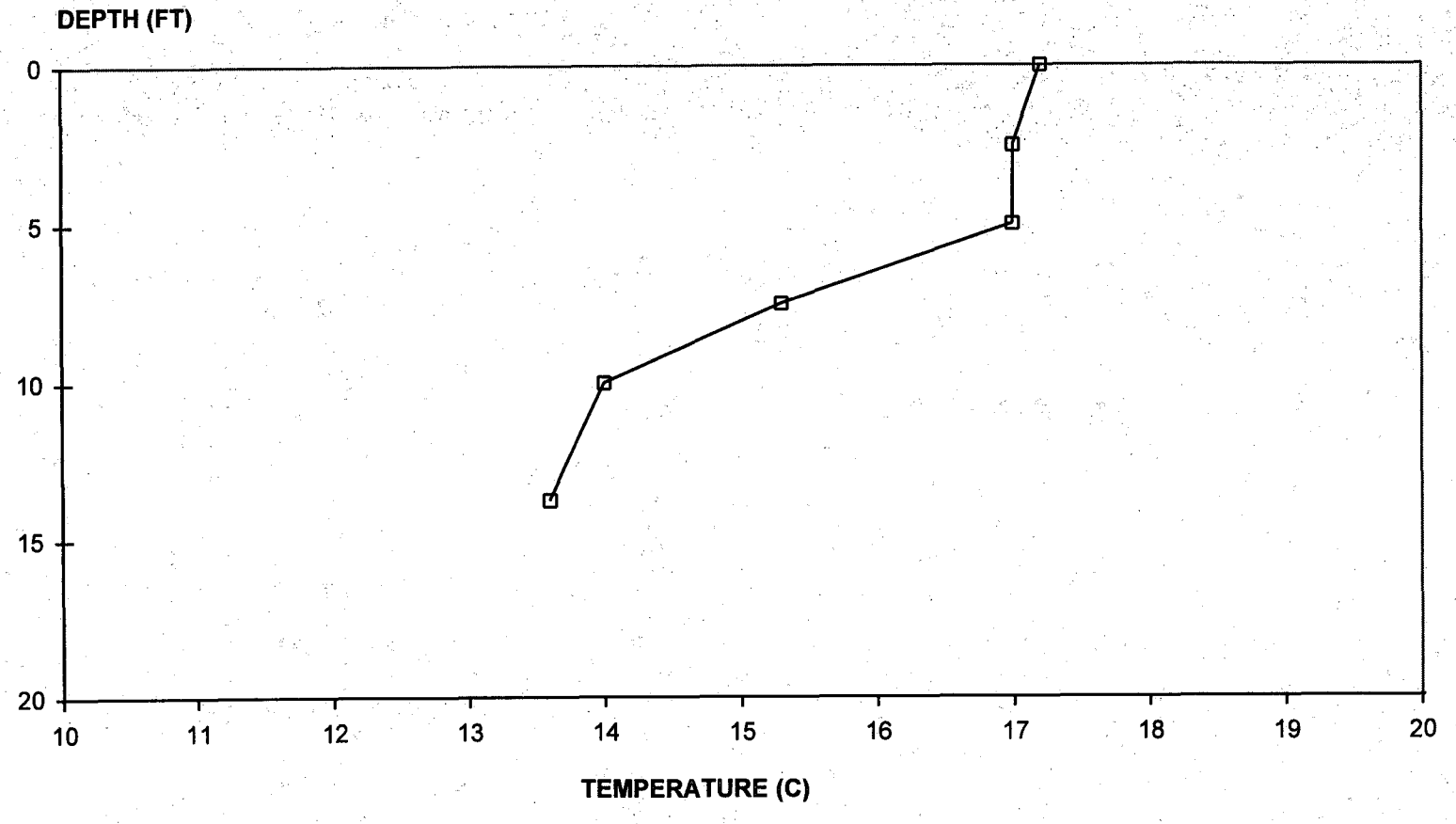
DATA COLLECTED 2/11/92 09:10

SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

WATER COLUMN TEMPERATURE PROFILE
AT UNIT 7 INLET CANAL
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-18



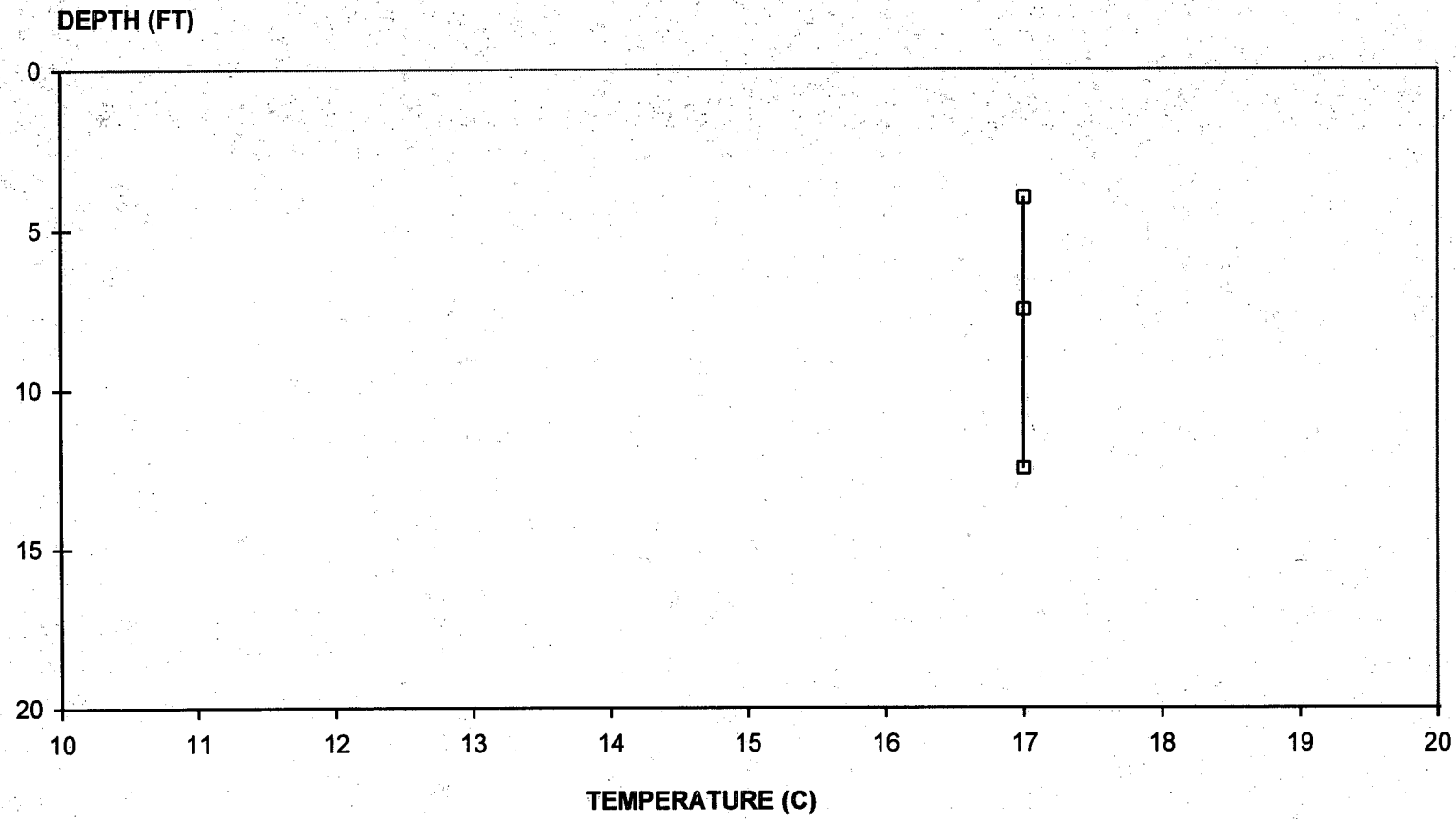
DATA COLLECTED 2/11/92 10:00

SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

WATER COLUMN TEMPERATURE PROFILE
AT UNIT 6 & 7 DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – ST. MARKS, FLORIDA

Figure
2.3.4-19

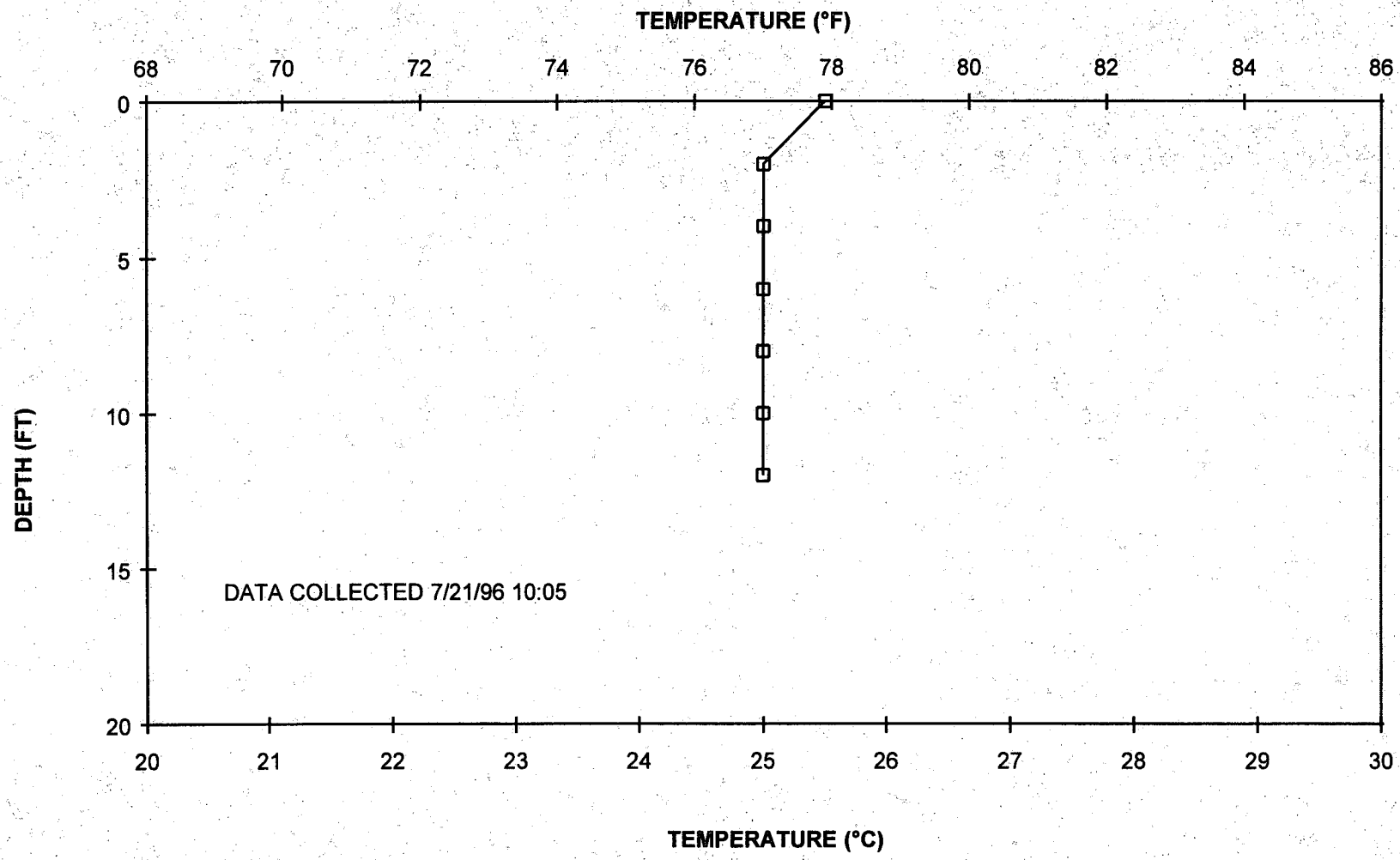


SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

WATER COLUMN TEMPERATURE PROFILE
AT NEWPORT BRIDGE
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-20

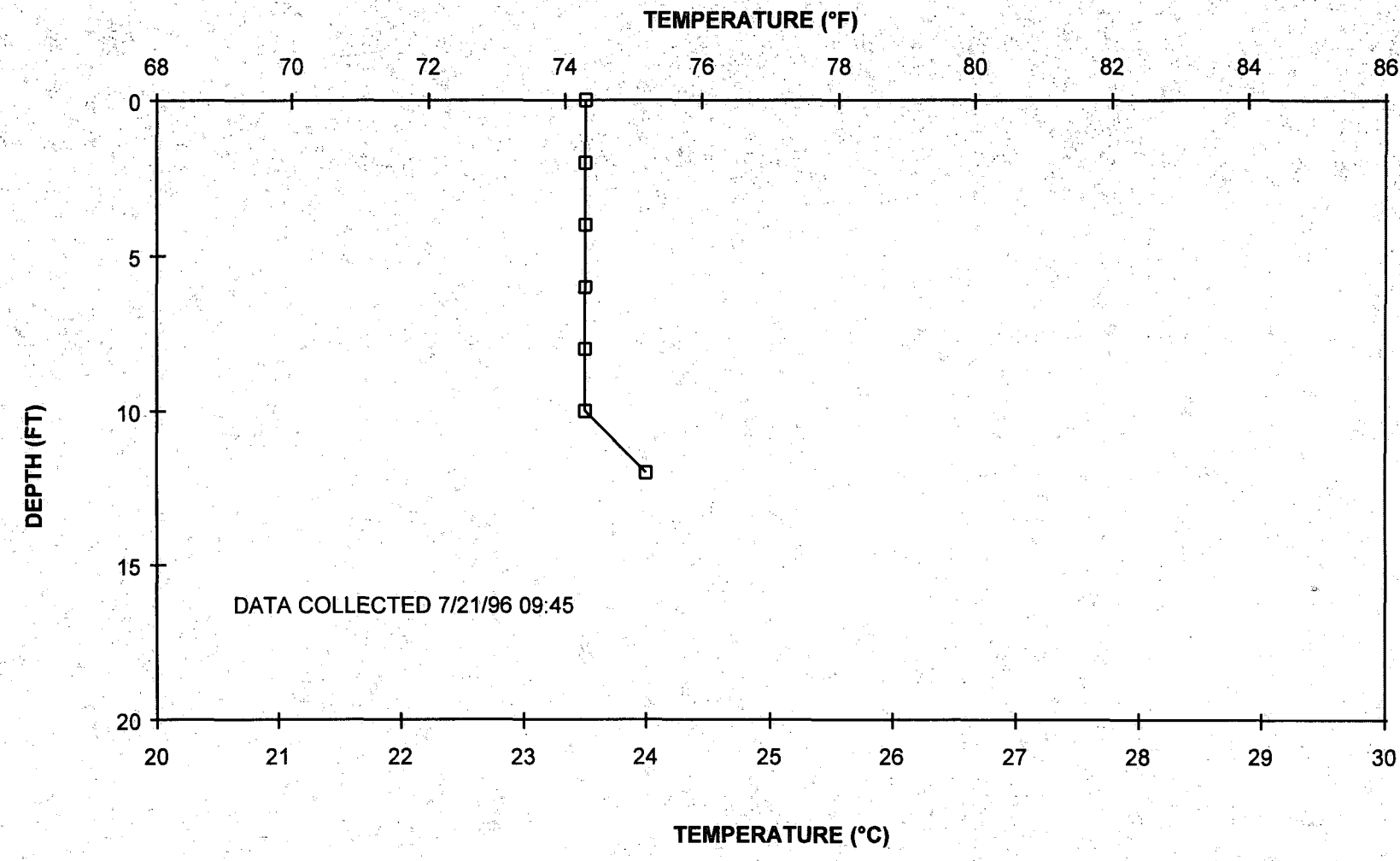


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 2
WATER COLUMN TEMPERATURE PROFILE
AT UNIT 7 INTAKE
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-21

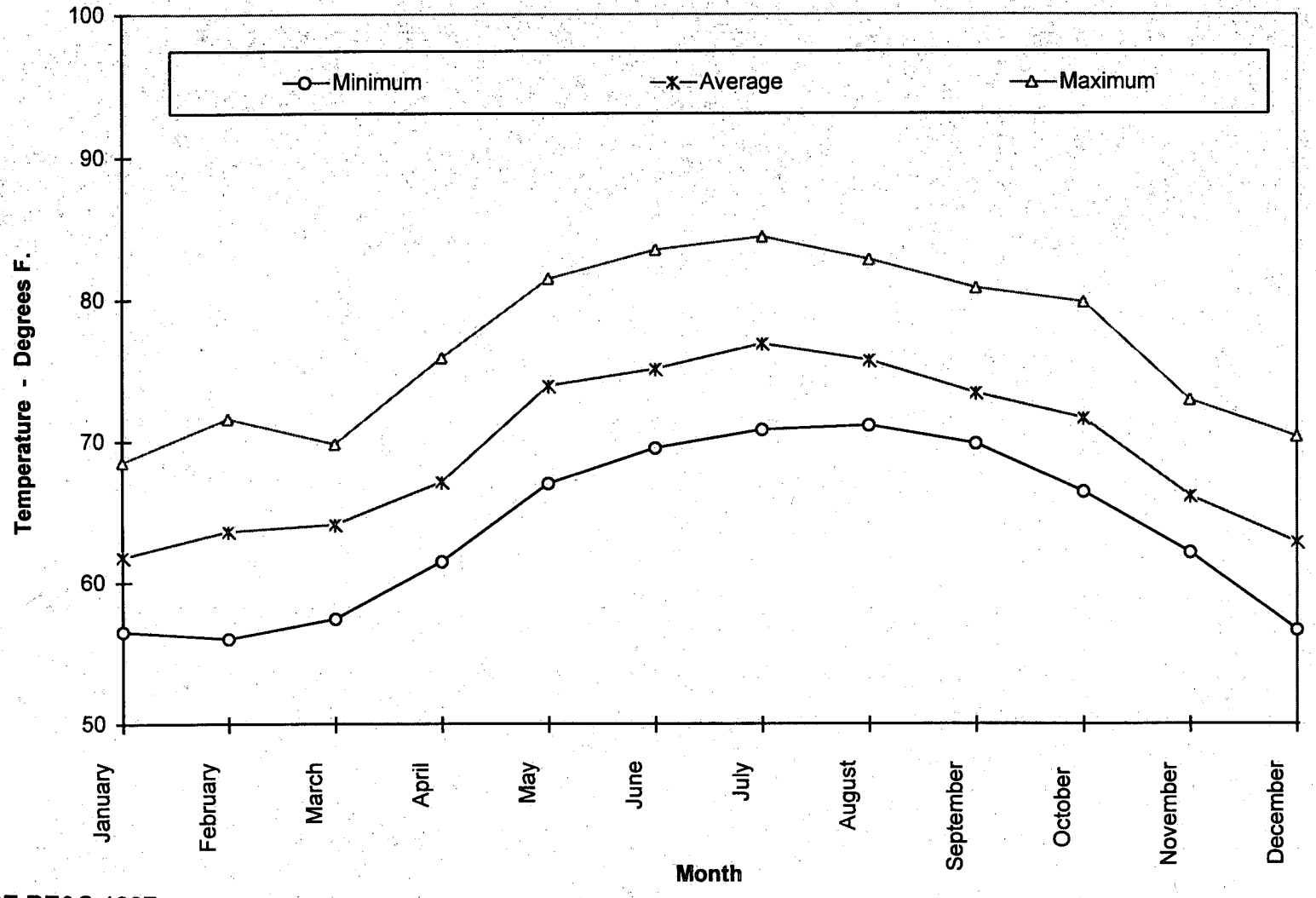


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-22



SOURCE:RE&C,1997

CITY OF TALLAHASSEE

UNIT 7 INTAKE TEMPERATURE ANALYSIS
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

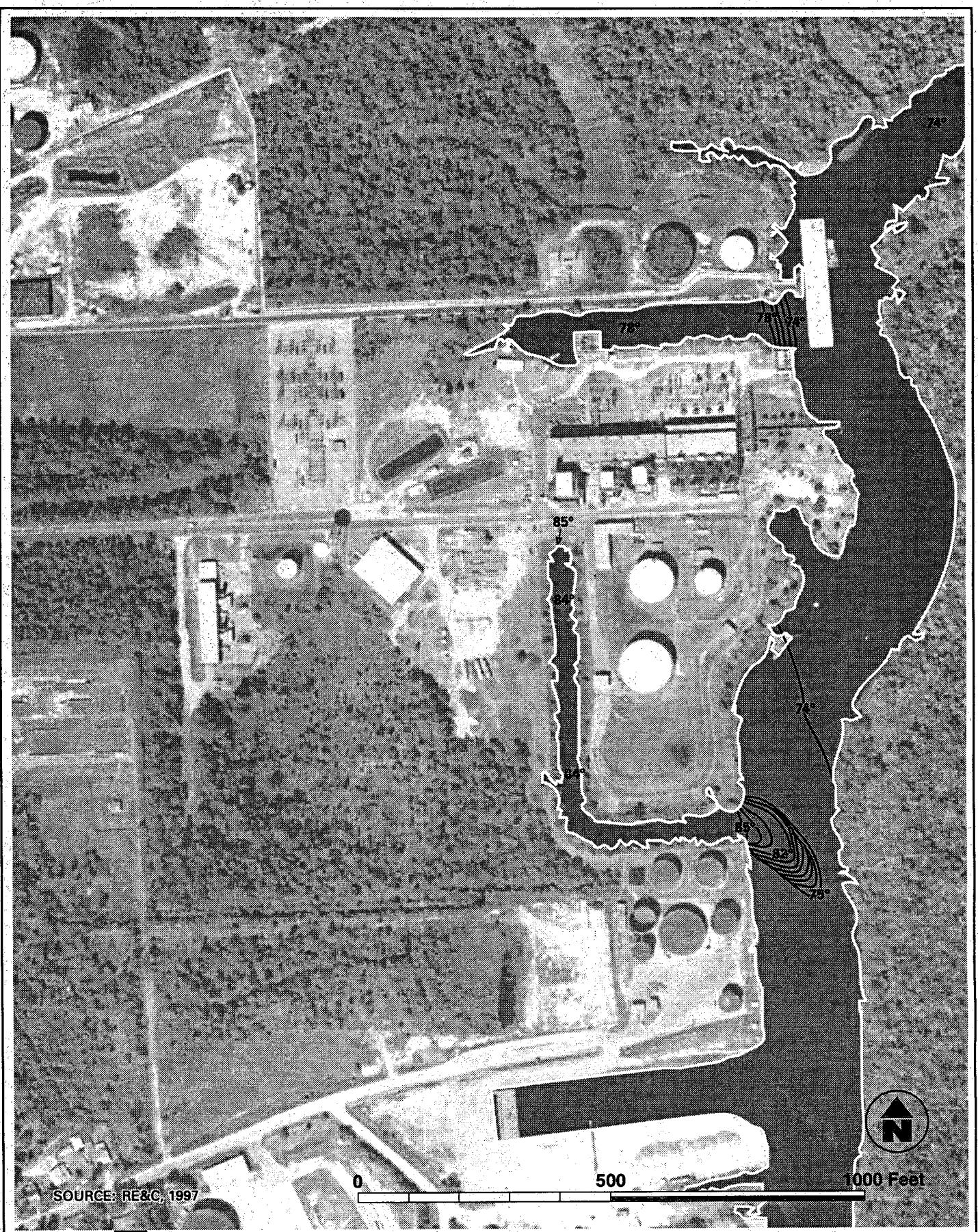
Figure
2.3.4-23

CITY OF TALLAHASSEE

THERMAL PLUME FOR UNITS 5, 6, AND 7 OPERATIVE

PURDOM UNIT 8 PROJECT – ST MARKS FLORIDA

Figure 2.3.4-24

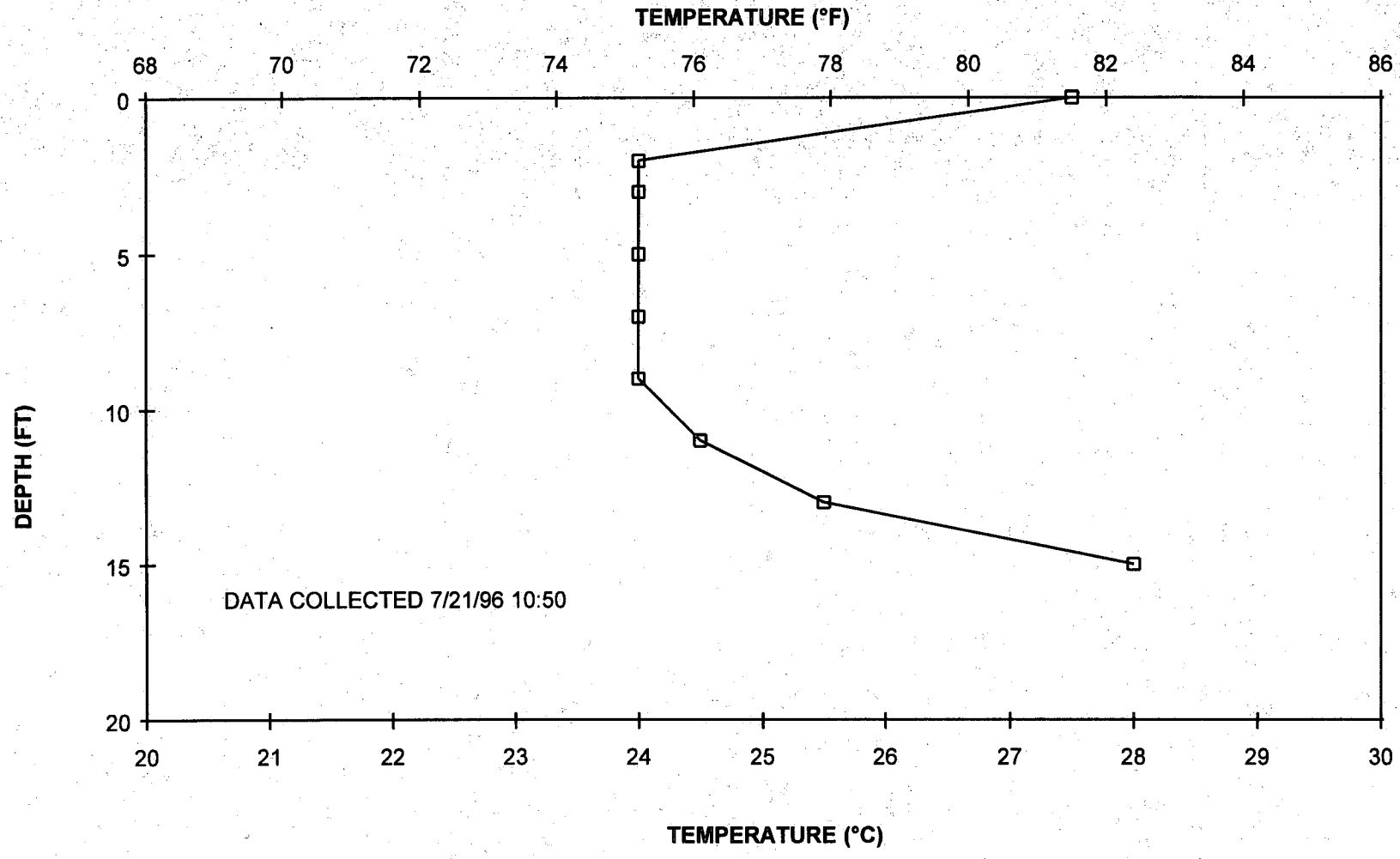


CITY OF TALLAHASSEE

THERMAL PLUME FOR UNIT 7
ONLY OPERATIVE

PURDOM UNIT 8 PROJECT – ST MARKS FLORIDA

Figure
2.3.4-25

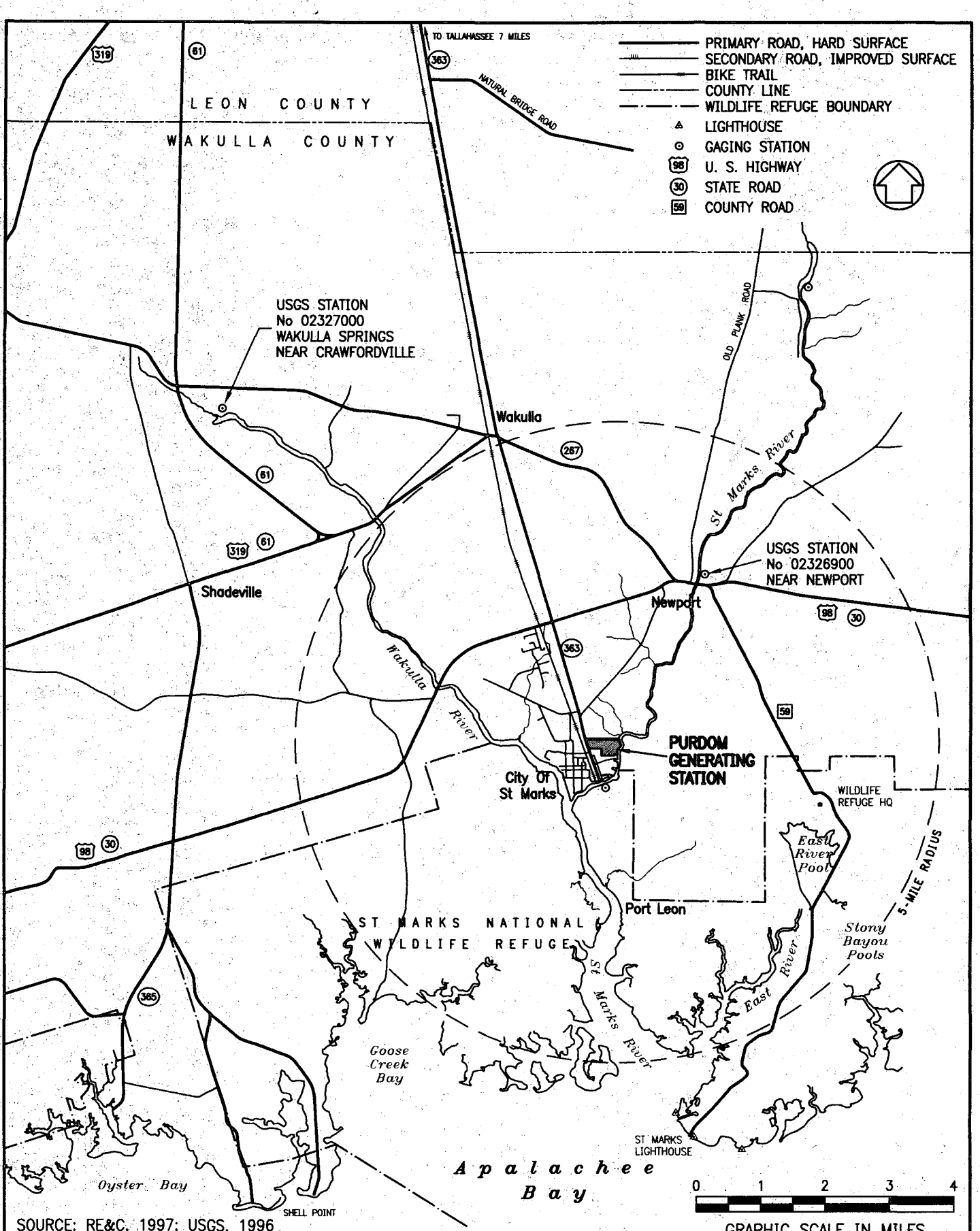


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN TEMPERATURE PROFILE
AT UNITS 6/7 DISCHARGE, AFTER BEND IN DISCHARGE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-26



SOURCE: RE&C, 1997; USGS, 1996

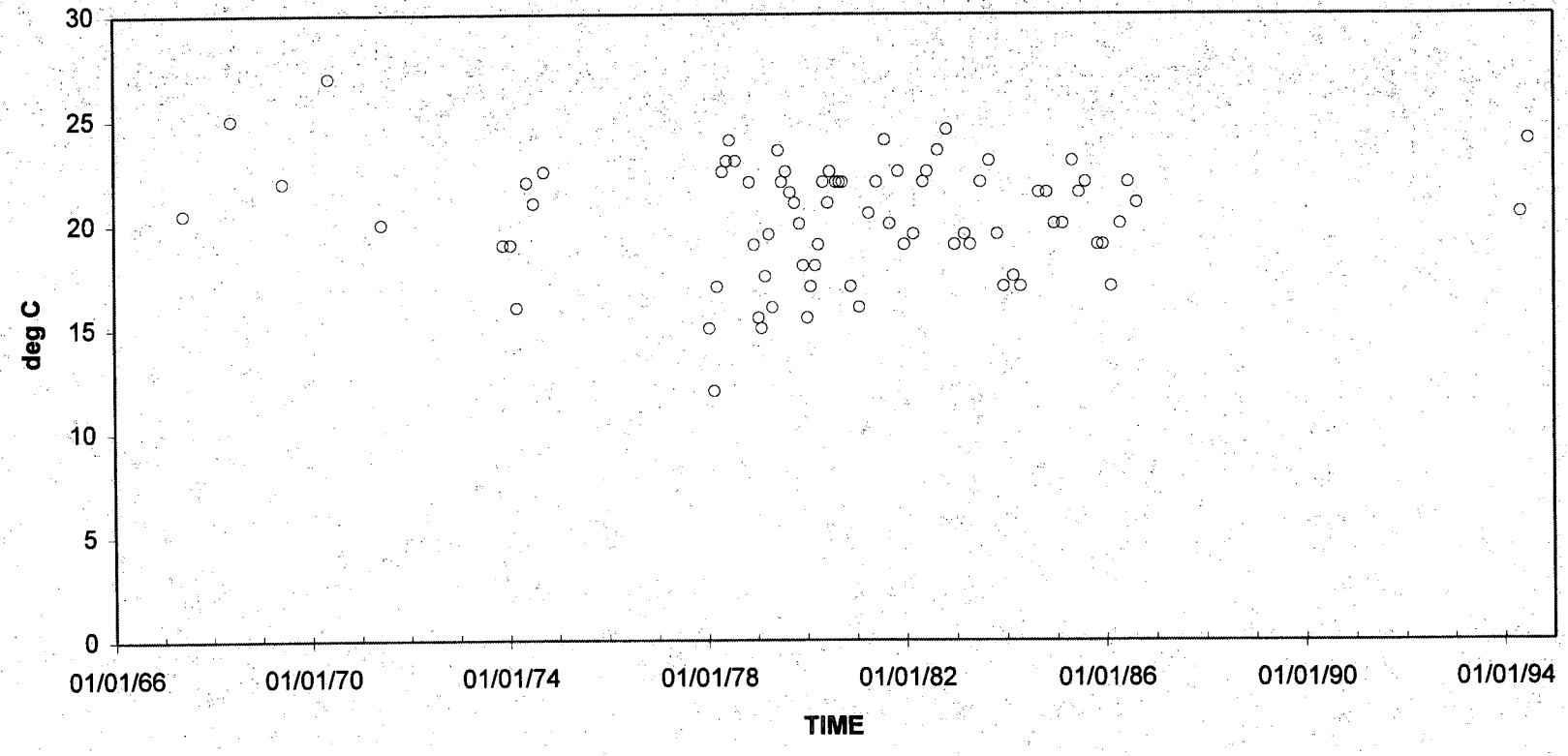
PLOT DATE FEB 27, 1997, 1996 C:\15840002\----\00000-28.DWG

CITY OF TALLAHASSEE

USGS WATER QUALITY MONITORING STATIONS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.4-27

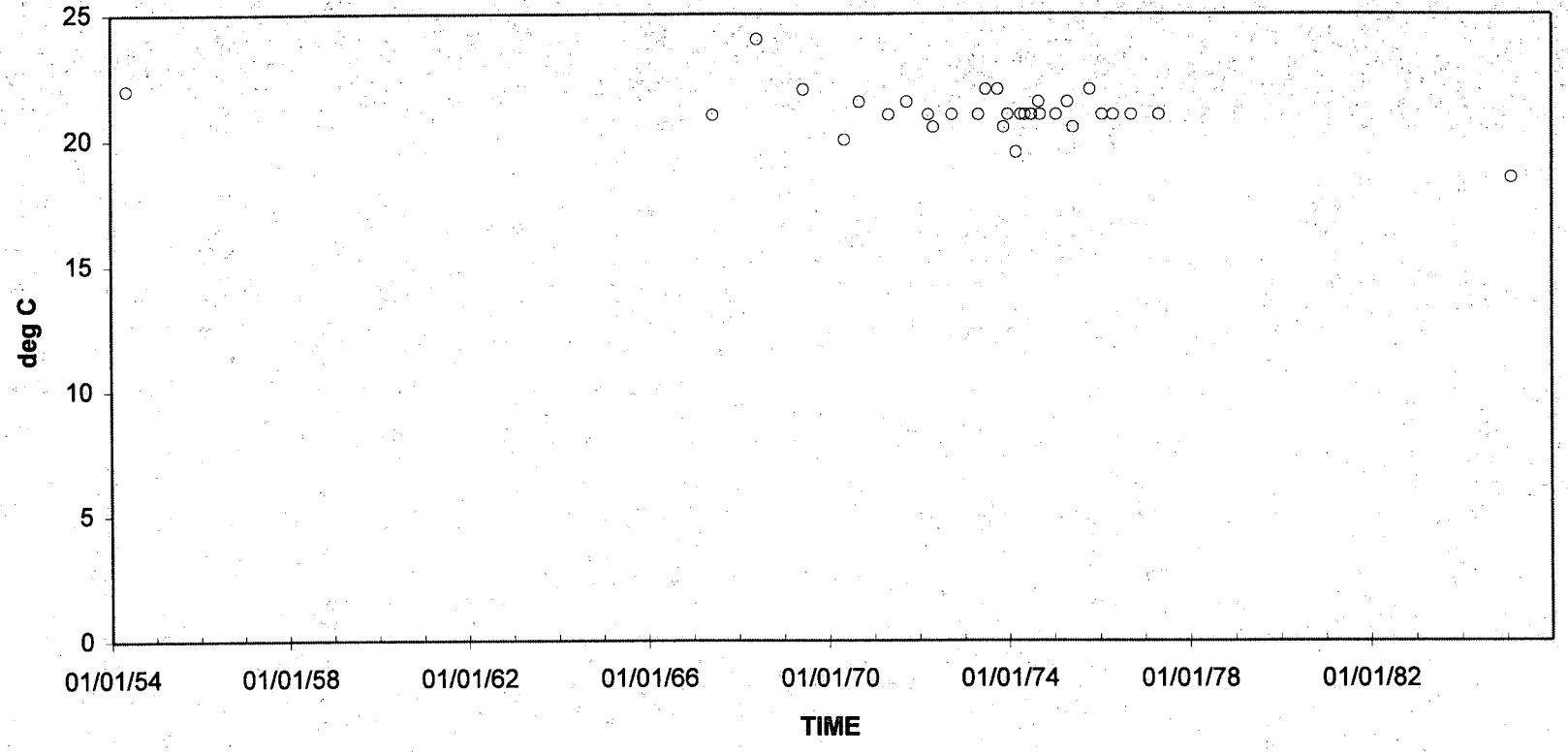


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

USGS STATION NUMBER 02326900
TEMPERATURE, WATER
ST. MARKS RIVER NEAR NEWPORT, FLORIDA
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-28



SOURCE:RE&C,1996

CITY OF TALLAHASSEE

USGS STATION NUMBER 02327000
TEMPERATURE, WATER
WAKULLA SPRINGS NEAR CRAWFORDVILLE, FLORIDA
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-29

DESIGN CONDITIONS						
Unit	MW	Condenser Rise (°F)	Million Btu/MW-hour	MW-hours/year	% of Design	% of Total
5	22	13.7	164	192,852	100.0%	25.0%
6	22	13.7	164	192,852	100.0%	25.0%
7	44	14.9	179	385,704	100.0%	50.0%
Total	88	NA	507	771,408		100.0%

ACTUALS FROM WATER YEAR 1996						
Unit	MW	Condenser Rise (°F)	Million Btu/MW-hour	MW-hours/year	% of Design	% of Total
5	6.6	4.1	49	57,513	29.8%	18.2%
6	5.8	3.6	43	50,852	26.4%	16.1%
7	23.7	8.0	96	207,691	53.8%	65.7%
Total	36.1	NA	188	316,056	41.0%	100.0%

The existing combustion turbines (GT1 and GT2) have an estimated temperature rise for their cooling water of about 5° F. Because their cooling water flow rate is so low (about 2 percent of the Purdom Station total cooling water flow rate), the temperature effects of these units are negligible.

Water Quality

U.S. Geological Survey Historical Data

As described in the ***Temperature*** sub-section above, the USGS has maintained water quality monitoring stations in the St. Marks River near Newport, and at Wakulla Springs near Crawfordville (see Figure 2.3.4-27). The data from these stations are presented in tabular and graphic form in Section 10.5.4. The data have been segregated into nine distinct groups as follows:

1. Physical: Chemical Oxygen Demand (COD), Color, Dissolved Carbon Dioxide (CO_2), Dissolved Oxygen (DO), pH, Temperature, Total Dissolved Gases (TDG), Turbidity. The data indicate that dissolved CO_2 levels are often high at both locations (1 to 15 mg/l). DO was only measured at Wakulla Springs, and ranged from 20 percent to 80 percent of saturation, and generally less than 4 mg/l. pH at both locations ranged between 6 and 8.5. Turbidity at both locations was generally low, less than 5 units most of the time.
2. General Inorganics: Alkalinity, Aluminum, Fluoride, Cyanide, Hardness, Silica, Specific Conductance, Total Suspended Solids (TSS), Total Dissolved Solids (TDS). Alkalinity is relatively high at both locations. It ranged from 30 to 130 mg/l as calcium carbonate in the St. Marks River, and between 110 and 130 mg/l in Wakulla Springs. Aluminum was detected at both locations. Fluoride was found at low levels (0.1 to 0.7 mg/l) in Wakulla Springs. Water at both locations is moderately hard (up to 150 mg/l as calcium carbonate), with non-carbonate hardness ranging from 10 percent to 20 percent of total hardness. Silica was found in Wakulla Springs at significant levels (8 to 13 mg/l).

Suspended solids were very low in the St. Marks River (generally less than 10 mg/l). Dissolved solids were relatively high at 120 to 140 mg/l for Wakulla Springs, and generally from 50 to 150 mg/l in the St. Marks River. Specific conductance stayed within a narrow band (240 to 300 microsiemens [μS] per centimeter) at Wakulla Springs, but ranged from near 0 to almost 300 μS/cm (μS/cm are the same as μmhos/cm) in the St. Marks River.

3. Major Cations: Calcium, Magnesium, Sodium, and Potassium. Calcium presence was significant, at 15 to 45 mg/l in the St. Marks River, and 30 to 45 mg/l at Wakulla Springs. Magnesium ranged from 2 to 14 mg/l in the St. Marks River, and from 8 to 12 mg/l at Wakulla Springs. Potassium levels were insignificant at both locations, being less than 1 mg/l. Sodium levels were also small, less than 5 mg/l.

4. Major Anions: Bicarbonate, Carbonate, Chloride, and Sulfate. Bicarbonate levels were relatively high at both locations; from 40 to 140 mg/l as calcium carbonate in the St. Marks River, and from 140 to 160 mg/l at Wakulla Springs. As would be expected for the pH ranges presented above, no carbonate was found at either location. Chloride levels at both locations were low, between 2 and 8 mg/l. Sulfate levels were also low, ranging from 2 to 16 mg/l in the St. Marks River, and from 5 to 22 mg/l at Wakulla Springs.

5. Minor/Trace Elements: Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Manganese, Mercury, Molybdenum, Nickel, Radium 226, Selenium, Silver, Strontium, Uranium, Vanadium, and Zinc. Ranges of these trace elements, and the associated Class III freshwater standard if applicable, are shown in Table 2.3.4-1 .

6. Nutrients: Carbon, Nitrogen (Ammonia, Nitrate, Nitrite, Organic), Phosphorus (Organic, Orthophosphate, Phosphate). Carbon was present in Wakulla Springs from 15 to 35 mg/l as inorganic, and from 20 to 37 mg/l as total. Nitrogen and phosphorus were present at both locations in all their forms, as summarized in Table 2.3.4-2.

7. Microbiological: 5 Day Biological Oxygen Demand (BOD-5). BOD-5 levels were measured only at Wakulla Springs, and were very low (less than 1.2 mg/l).

8. Organics: Pesticides, Polychlorinated Biphenyls, General Organics. Organics data are very limited. Total Organic Carbon (TOC) ranged from 0 to 23 mg/l in the St. Marks River, of which less than 0.4 mg/l was suspended and the rest was dissolved.

   TOC at Wakulla springs ranged from 0 to 33 mg/l. Some pesticides were found at trace levels in the St. Marks River, and one positive test was recorded for Methylene Blue Active Substance (MBAS, detergent) in Wakulla Springs.

9. Biological. These data are addressed in Section 2.3.6.

TABLE 2.3.4-1
MINOR/TRACE ELEMENTS

Parameter	St. Marks River	Wakulla Springs	Class III Freshwater Standard
Arsenic (µg/l)	0-3	0-10	50
Barium (µg/l)	0-100	0	NA
Boron (µg/l)	NA	0-50	NA
Beryllium (µg/l)	0-0.9	NA	0.13[a]
Cadmium (µg/l)	0-1	0-2	1.13[b]
Chromium (µg/l)	0-20	0-10	NA
Cobalt (µg/l)	0	0-1	NA
Copper (µg/l)	NA	0-20	11.82[b]
Iron (µg/l)	0-350	0-220	1000
Lead (µg/l)	0-14	0-14	3.18[b]
Lithium (µg/l)	0-14	0	NA
Manganese (µg/l)	0-30	0-40	NA
Mercury (µg/l)	0-0.5	0-0.2	0.012
Molybdenum (µg/l)	0	0-1	NA
Nickel (µg/l)	0-7	0-5	157.7[b]
Radium 226	NA	0.2	NA
Selenium	0	0	5
Silver (µg/l)	0-1	0	0.07
Strontium (µg/l)	25-90	60-160	NA
Uranium (µg/l)	NA	0.5	NA
Vanadium (µg/l)	0	3	NA
Zinc (µg/l)	0-150	0-230	1.54[b]

[a] For flows exceeding the average annual value.
[b] Assuming hardness of 100 mg/l as calcium carbonate.

TABLE 2.3.4-2
NUTRIENTS (in mg/l)

Parameter	St. Marks River	Wakulla Springs
Ammonia as N	0-0.14	.02-0.2
Dissolved Nitrogen	0.05-0.45	0.35
Nitrate as N	0.0-0.23	0.1-0.55
Nitrite as N	0-0.12	0-0.02
Total Organic Nitrogen	0-0.95	0-0.55
Orthophosphate as P	0-0.38	0.03-0.065
Organic Phosphorus as P	0	0.0-0.05

Other Historical Data

Several single purpose studies have been performed on the St. Marks River. These purposes include documentation and cleanup measures for spilled oil (Olsen et al., 1981; C.K. Associates, 1984), and documentation of the effects of the release of untreated sewage from Newport and the City of St. Marks (Haney et al., 1964). The data from these surveys are not considered representative of present conditions. They do indicate that the St. Marks River has a history of minor oil spills and one major spill (10,000 gallons on July 12, 1978, near the turning basin, about 0.6 mile downstream of the Purdom Station Intake Area), as well as a history of pollution from sanitary sewage.

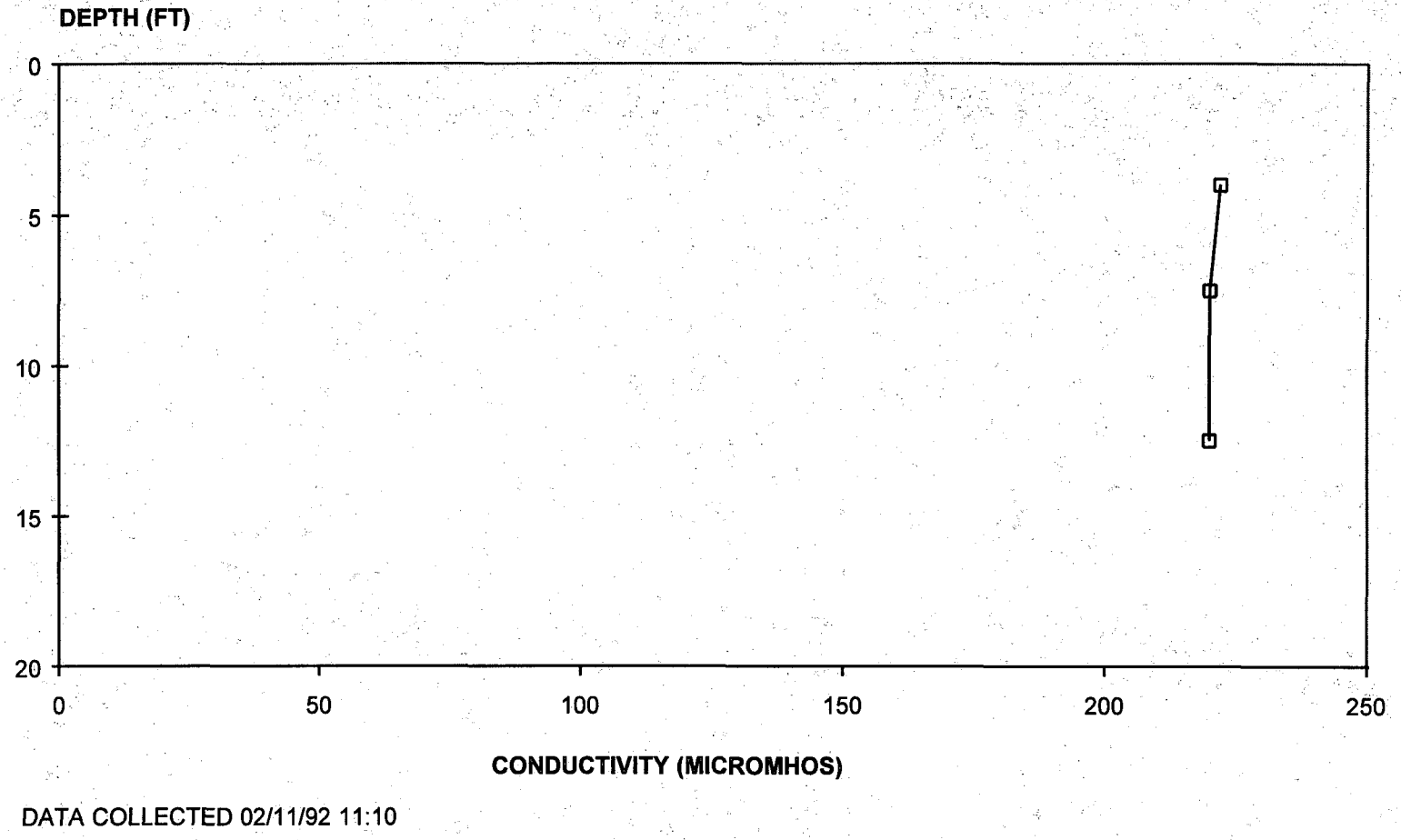
City of Tallahassee Data

The City of Tallahassee has performed sampling surveys in the past (Ebasco, 1992) and as part of the pre-application studies for this SCA. These studies have had two water quality components: conductivity/salinity profiling to identify the salt wedge, and analytical analysis of samples to determine the detailed chemistry of the upper part of the river which would be affected by the Project.

Salinity and conductivity profiles were measured during winter conditions, when no generating units were operating. The results indicate that there was no salt wedge in the St. Marks River at Newport (see Figures 2.3.4-30 and 2.3.4-31), but that there was a well-defined salt wedge in the Station vicinity (see Figures 2.3.4-32 through 2.3.4-35). Similar profiling was performed during summer conditions while either Units 5, 6, and 7 were operating (7/19/96) or when just Unit 7 was operating (7/21/96). The summer results indicated that there was a definite salt wedge in the plant vicinity (see Figures 2.3.4-36 and 2.3.4-37) . As described in ***Temperature*** above, the salt wedge during summer conditions was at a higher temperature than the freshwater above it. Further downstream near the City of St. Marks Wastewater Treatment Facility (see Figure 2.3.4-8) the salt wedge was more pronounced, as shown on Figures 2.3.4-38 and 2.3.4-39. Conductivity (and water level in the river) were measured on a continuous basis (hourly measurements) at the existing Unit 5 Intake Structure (see Figure 2.3.4-11). These conductivity measurements were taken at two depths, one at 1.5 feet below the water level, and the other at a fixed elevation of -3.35 feet msl. These data were taken from November 7, 1996, through February 21, 1997. The data are presented on Figure 2.3.4-40. They indicate that the top 1.5 feet of the river remain relatively fresh most of the time, with peak conductivities seldom exceeding about 7,500 µmhos/cm (same as µS/cm), while the river at elevation -3.35 msl shows more frequent high excursions up to about 22,000 µmhos/cm.

Profiles of DO and pH were taken at selected locations concurrent with the conductivity/salinity profiles. DO values ranged from a maximum of 6.80 mg/l to a minimum of 4.06 mg/l. All values less than 5.9 mg/l were measured in the salt wedge. Similarly, pH ranged from 5.78 to 8.09, with all values less than 7.57 being measured in the salt wedge. Both pH and DO decreased with increasing depth.

The St. Marks River in the vicinity of the Purdom Station is designated as Class III fresh waters. The City of Tallahassee has performed a detailed analysis for all Class III standards (except for Total Dissolved Gases) on two samples that were withdrawn from the river near the Unit 5



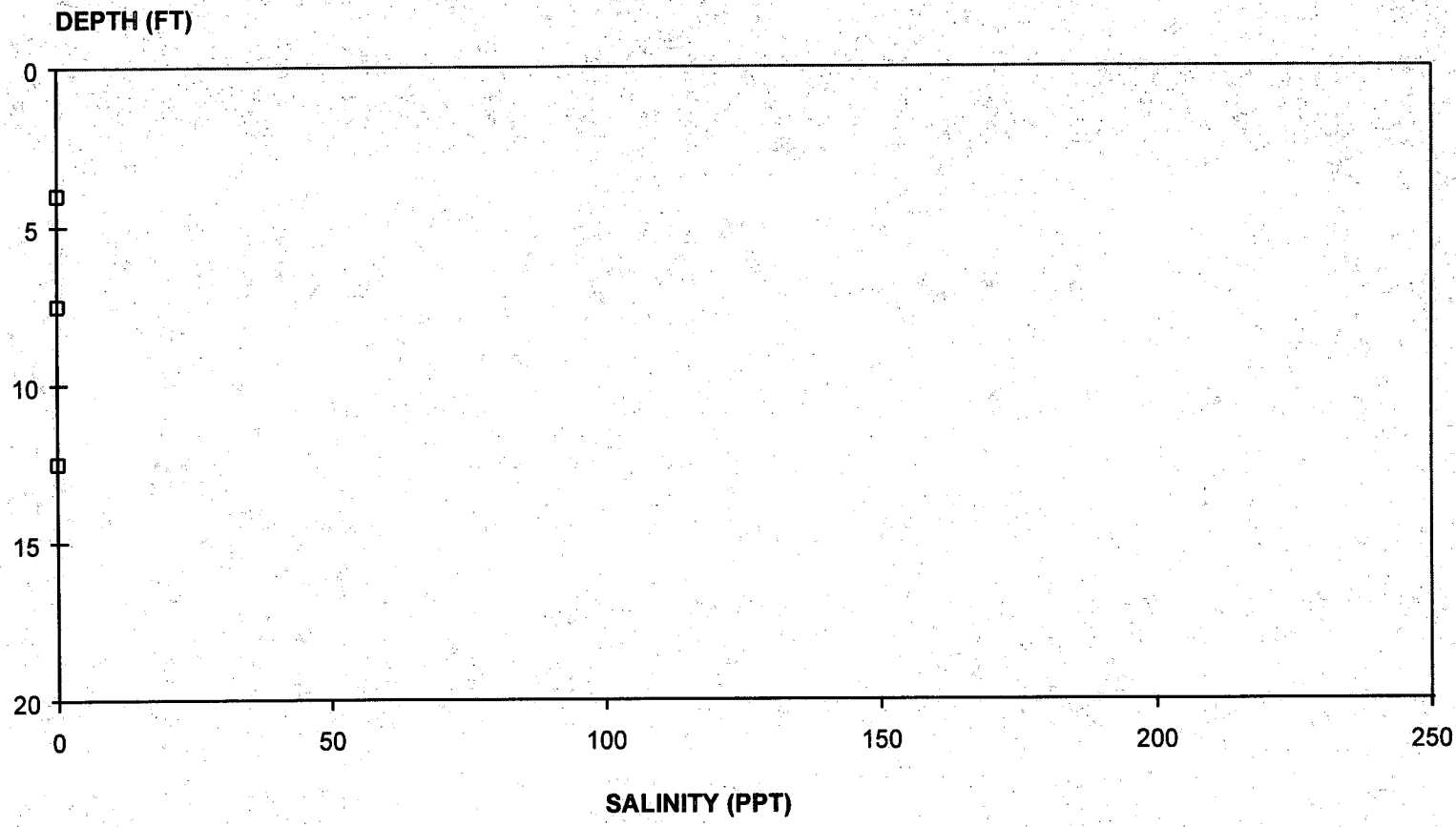
DATA COLLECTED 02/11/92 11:10

SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

WATER COLUMN CONDUCTIVITY PROFILE
AT NEWPORT BRIDGE
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-30



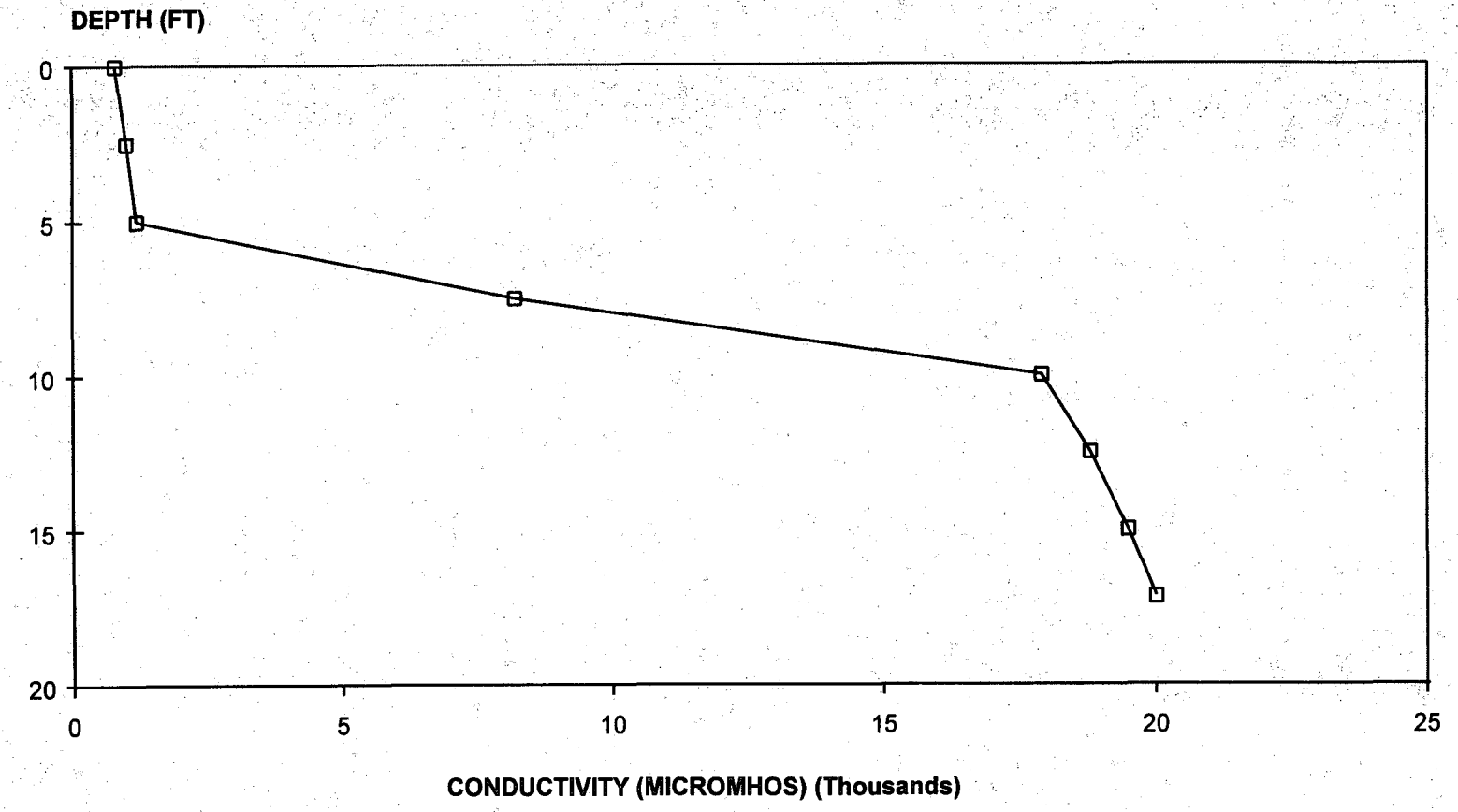
DATA COLLECTED 02/11/92 11:10

SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

WATER COLUMN SALINITY PROFILE
AT NEWPORT BRIDGE
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-31



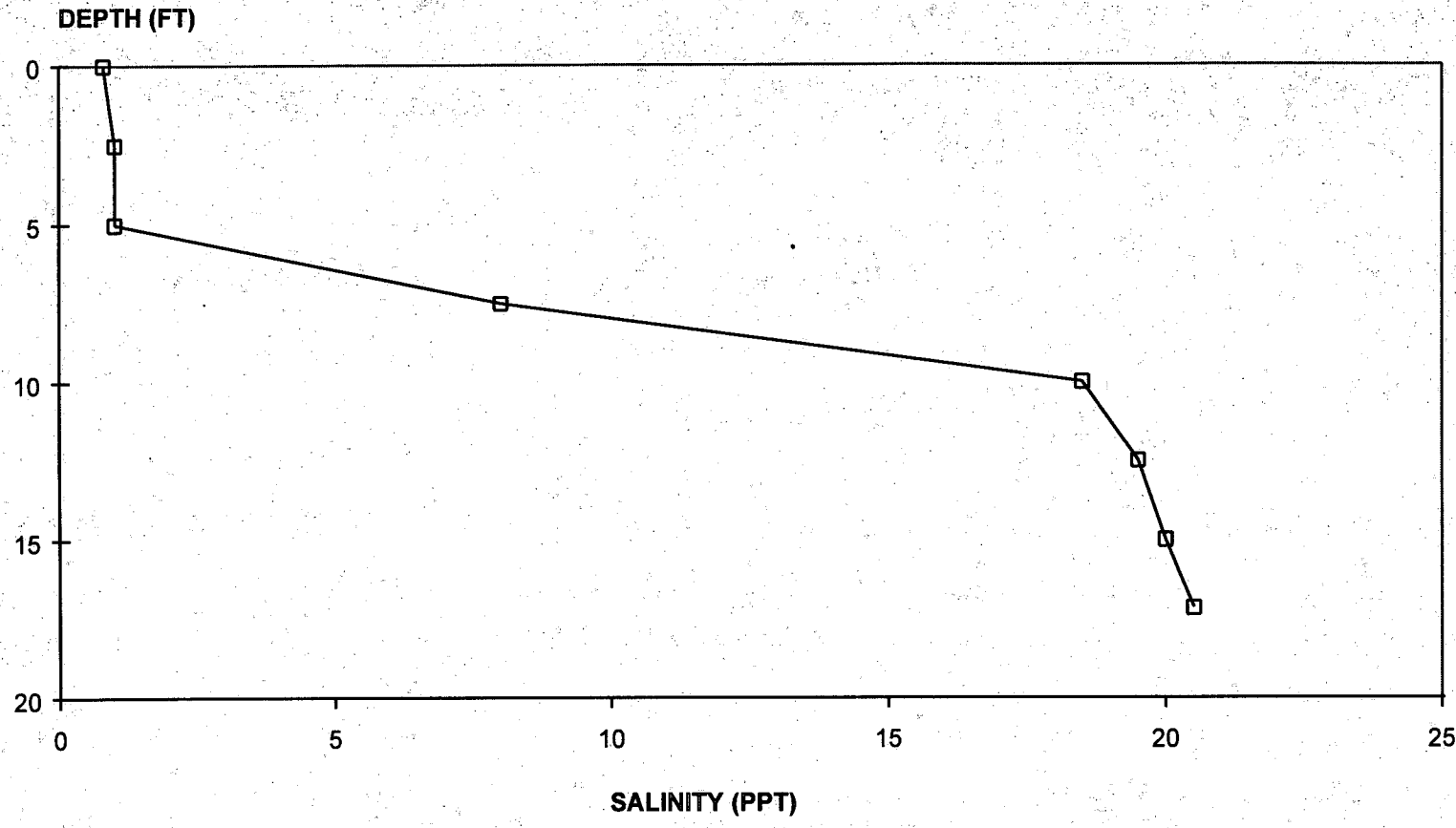
DATA COLLECTED 02/11/92 09:10

SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

WATER COLUMN CONDUCTIVITY PROFILE
AT UNIT 7 INLET CANAL
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-32



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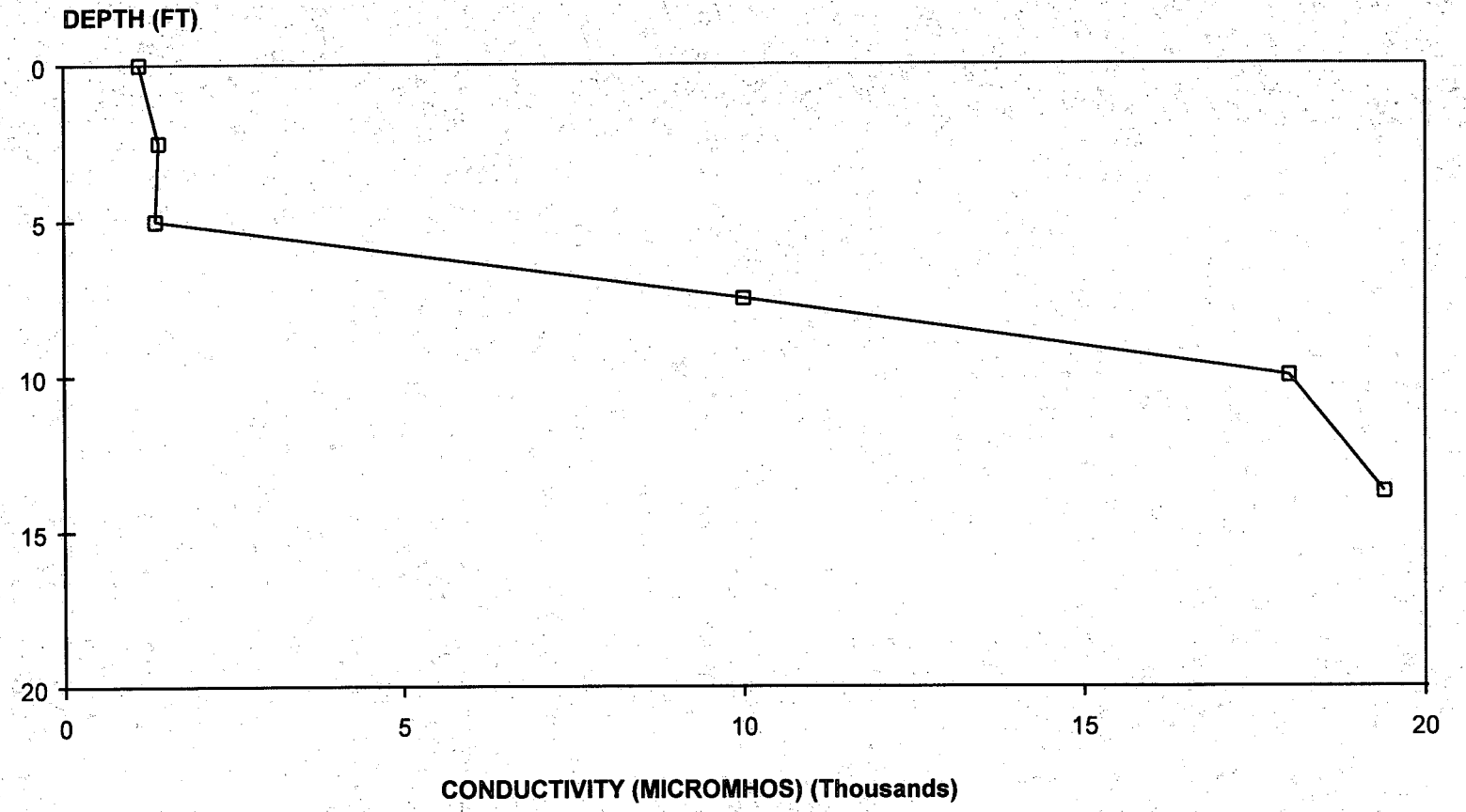
SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

WATER COLUMN SALINITY PROFILE
AT UNIT 7 INLET CANAL
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-33



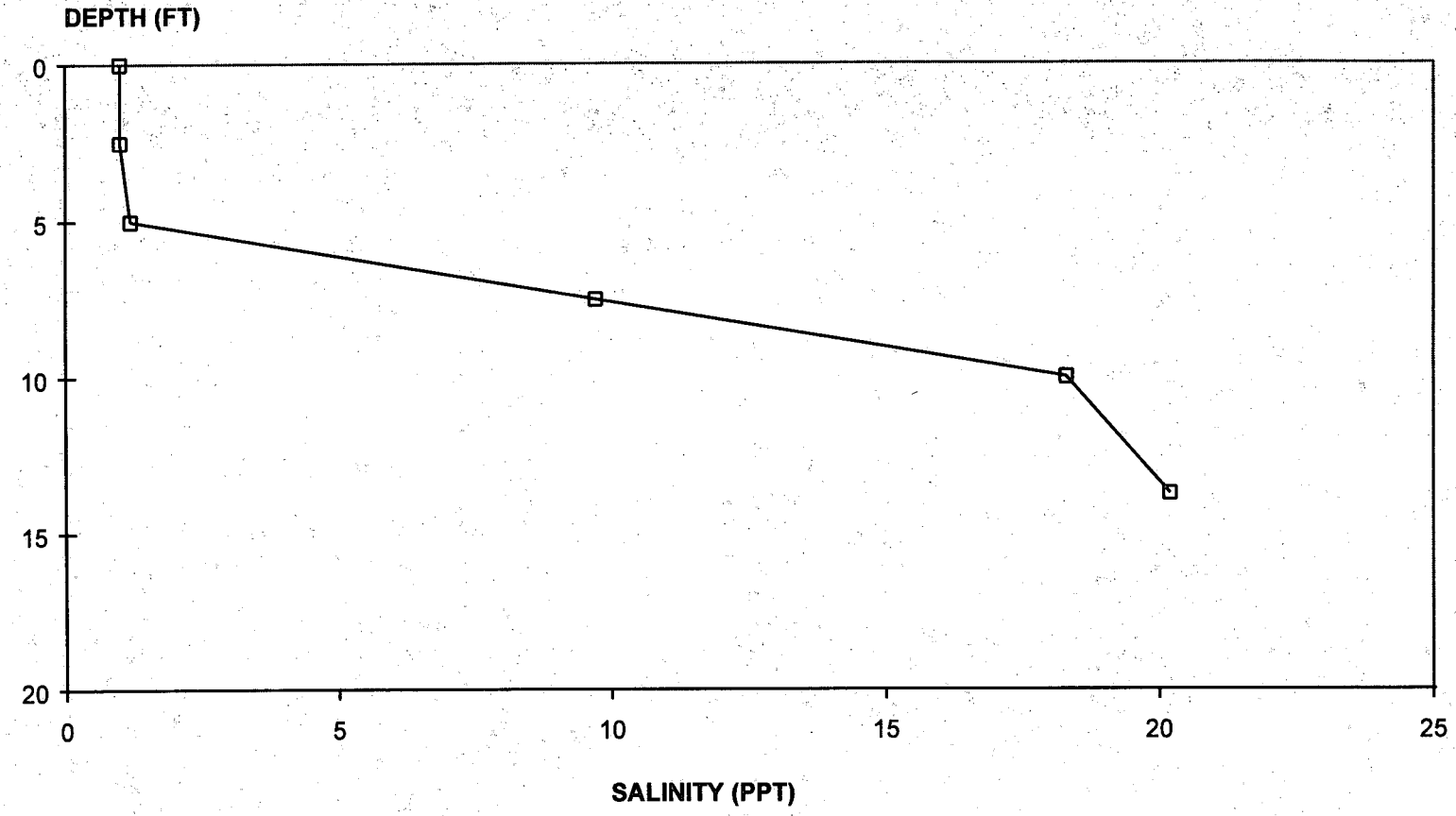
DATA COLLECTED 02/11/92 10:00

SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

WATER COLUMN CONDUCTIVITY PROFILE
AT UNIT 6 & 7 DISCHARGE CANAL
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-34



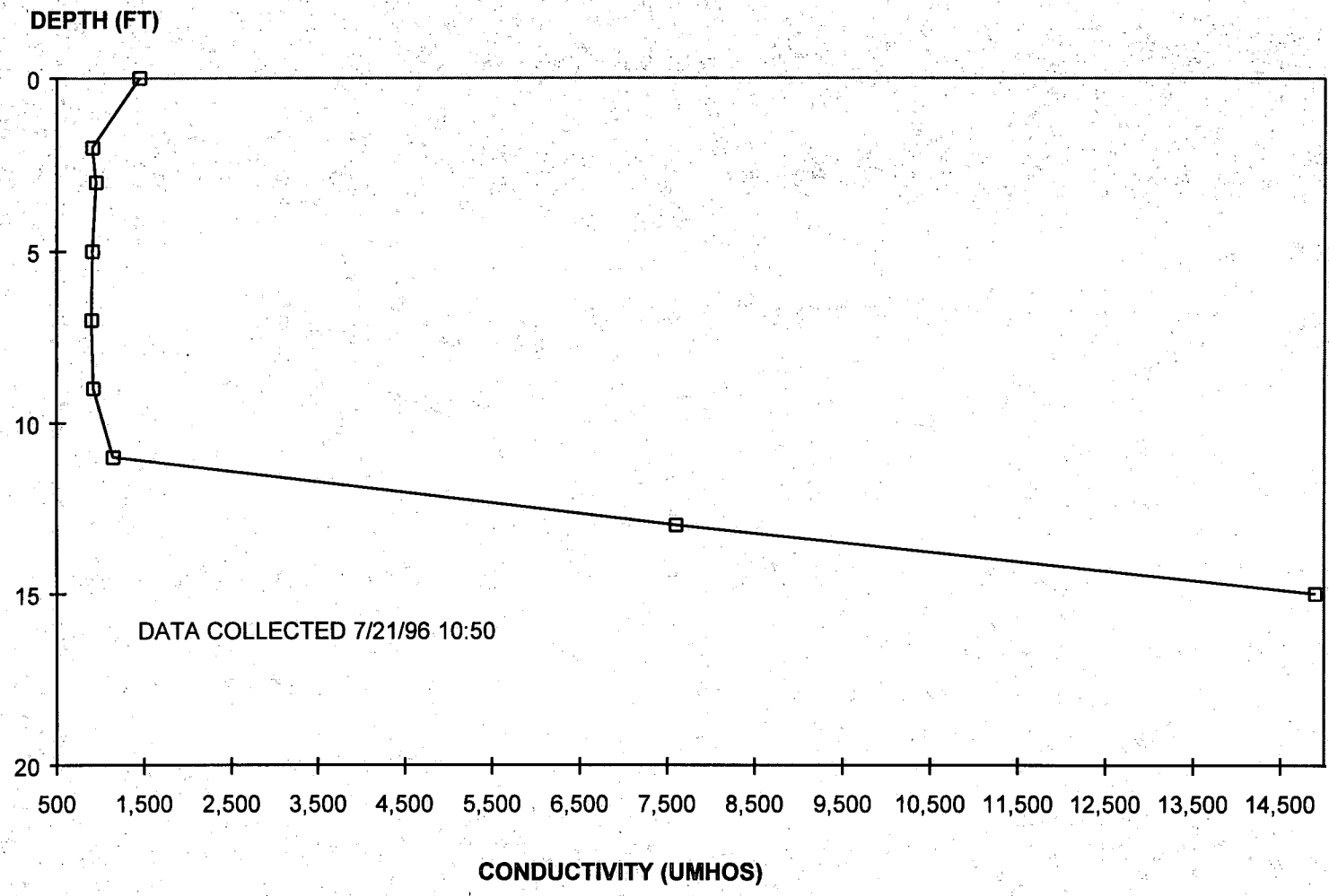
DATA COLLECTED 02/11/92 10:00

SOURCE: EBASCO ENVIRONMENTAL, 1992

CITY OF TALLAHASSEE

WATER COLUMN SALINITY PROFILE
AT UNIT 6 & 7 DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-35

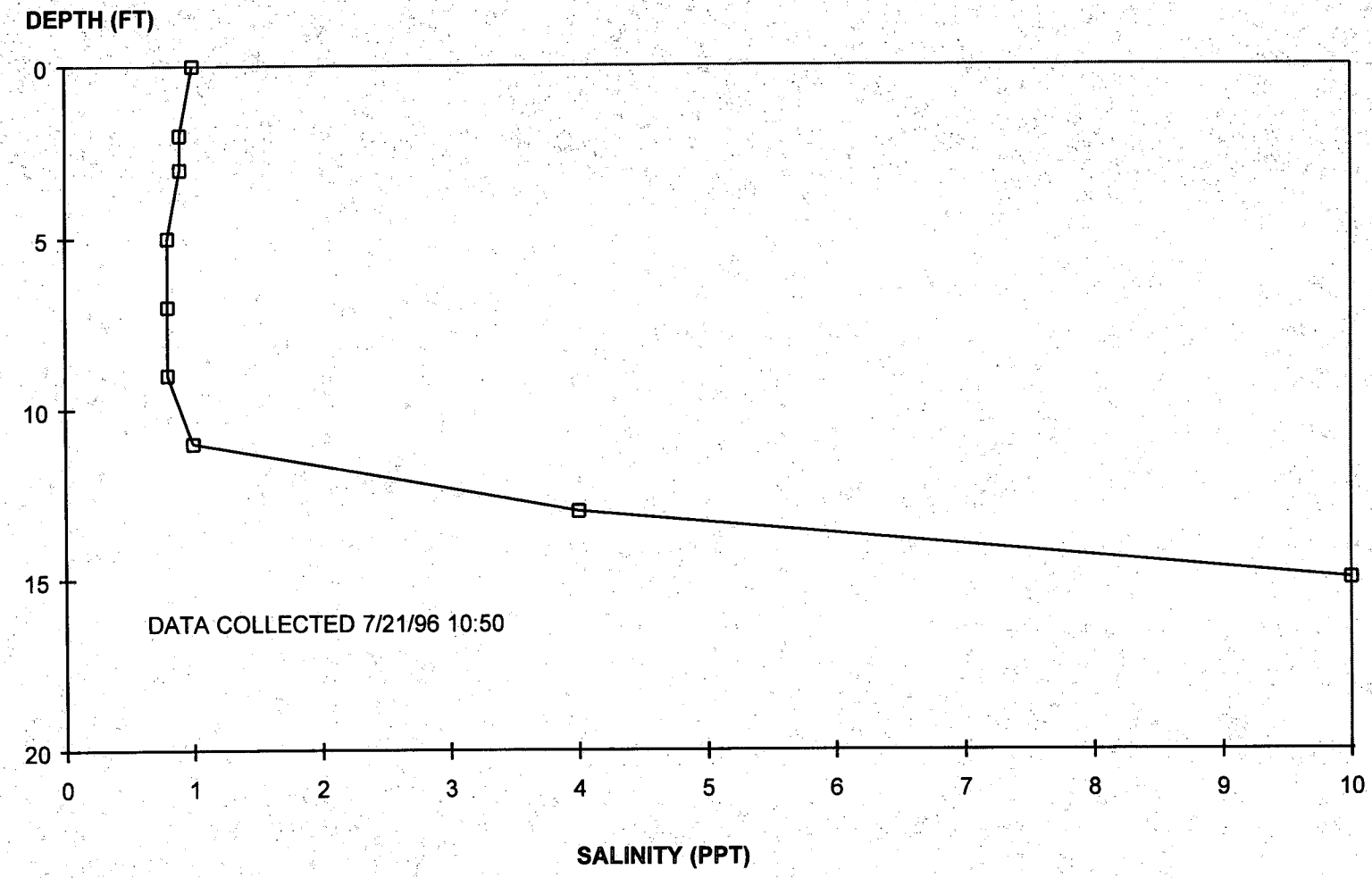


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN CONDUCTIVITY PROFILE
AT UNITS 6/7 DISCHARGE, EAST OF DISCHARGE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-36

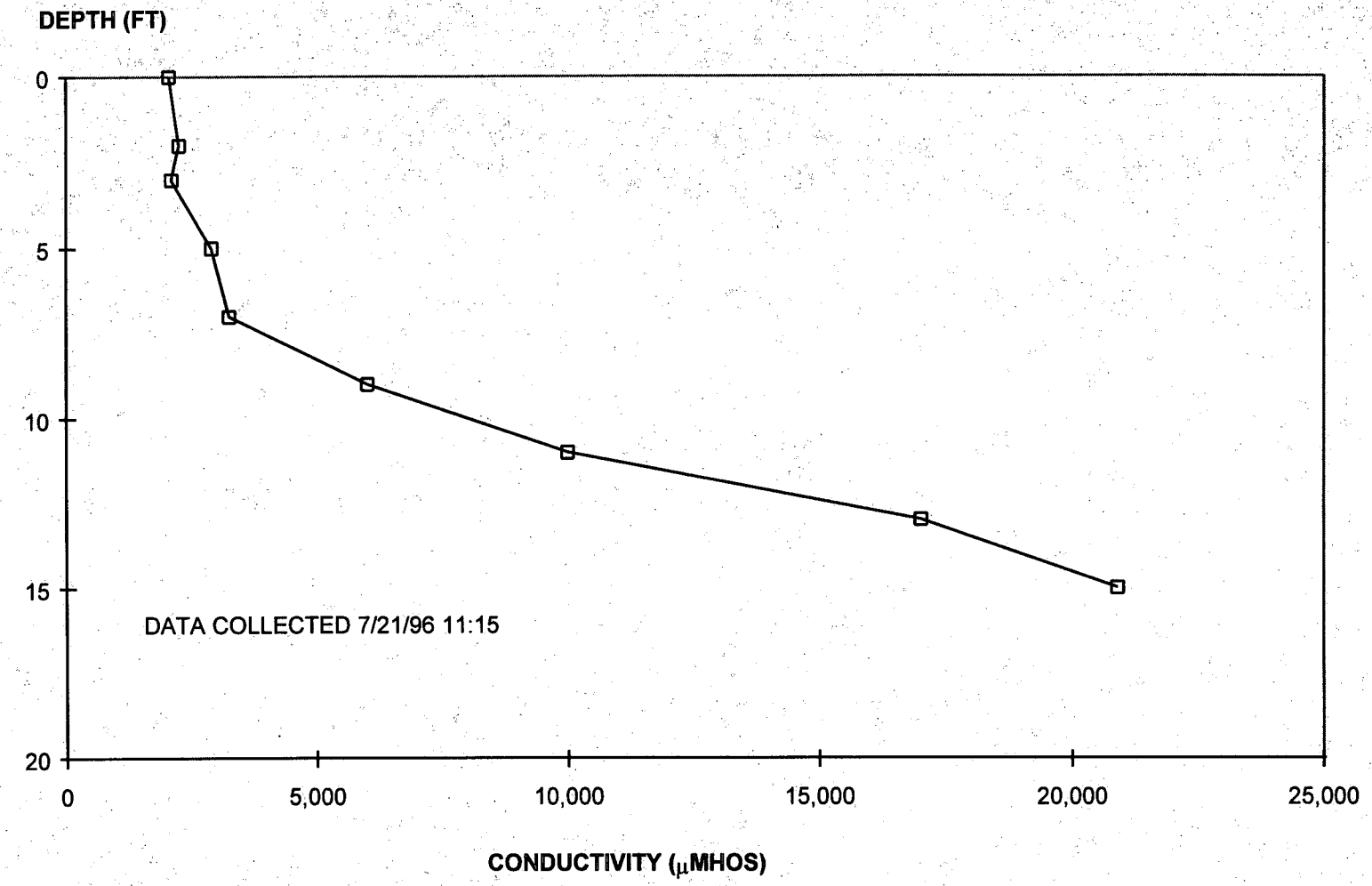


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN SALINITY PROFILE
AT UNITS 6/7 DISCHARGE, EAST OF DISCHARGE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-37

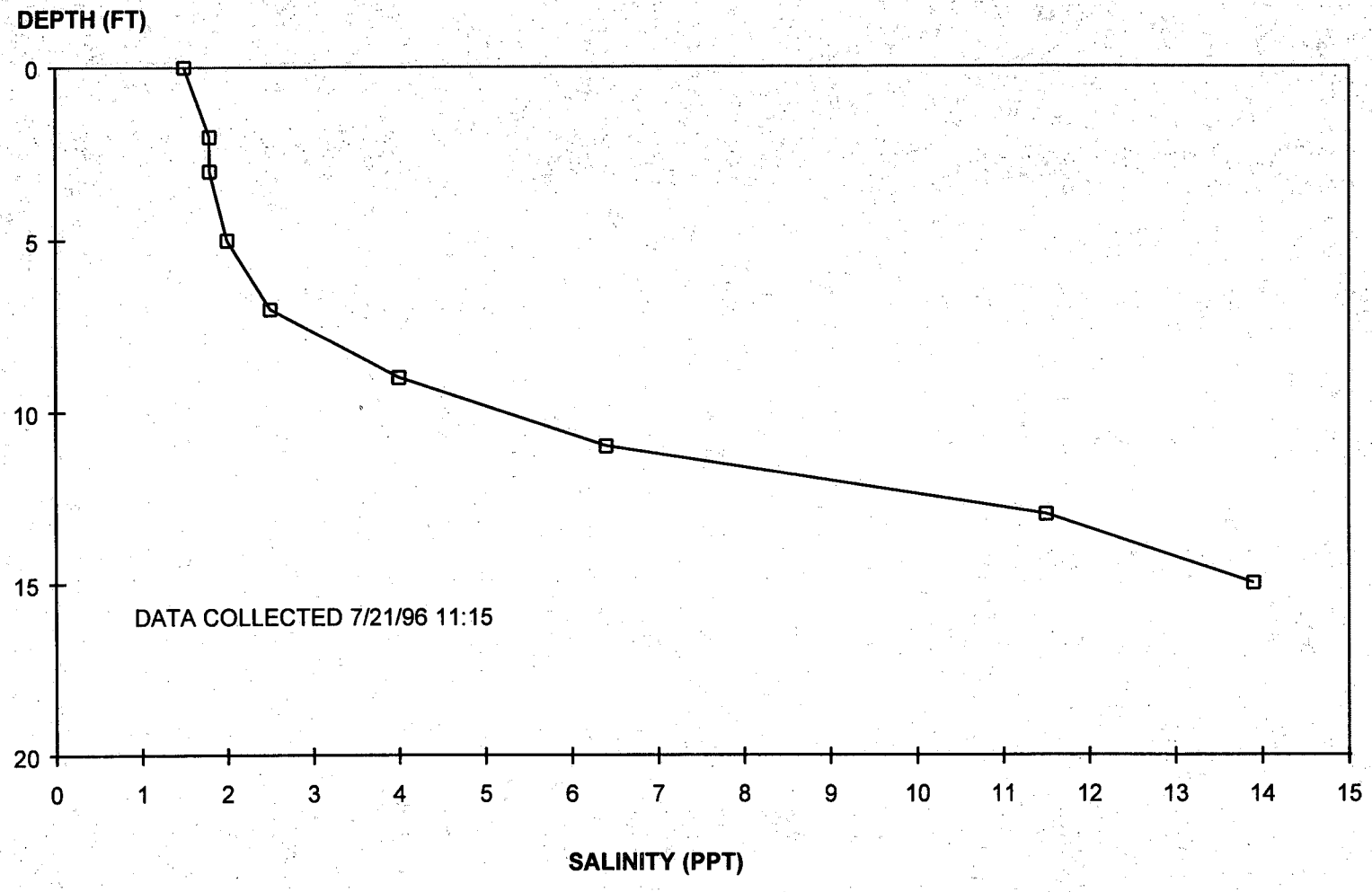


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-38

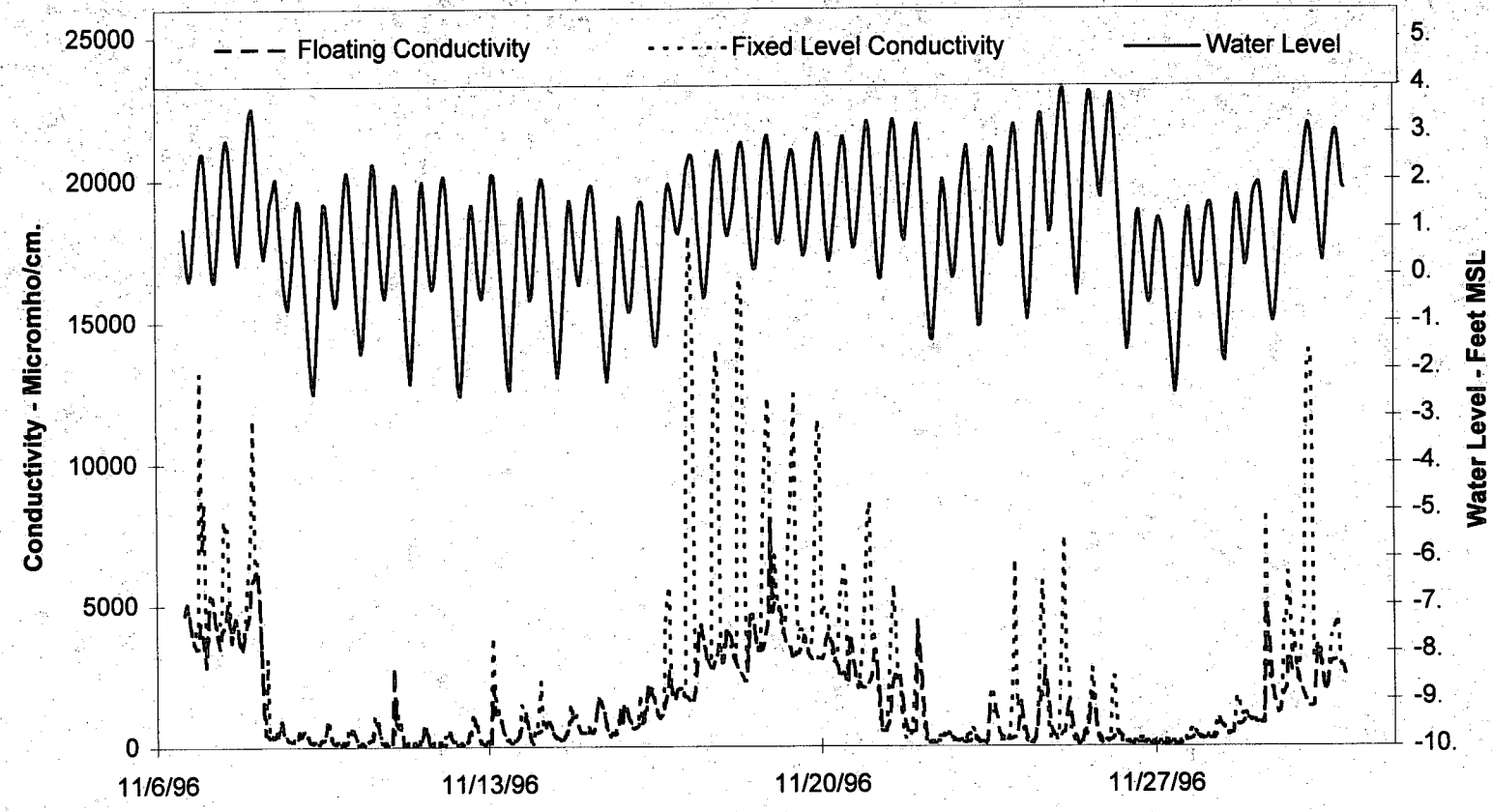


SOURCE:RE&C,1996

CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-39

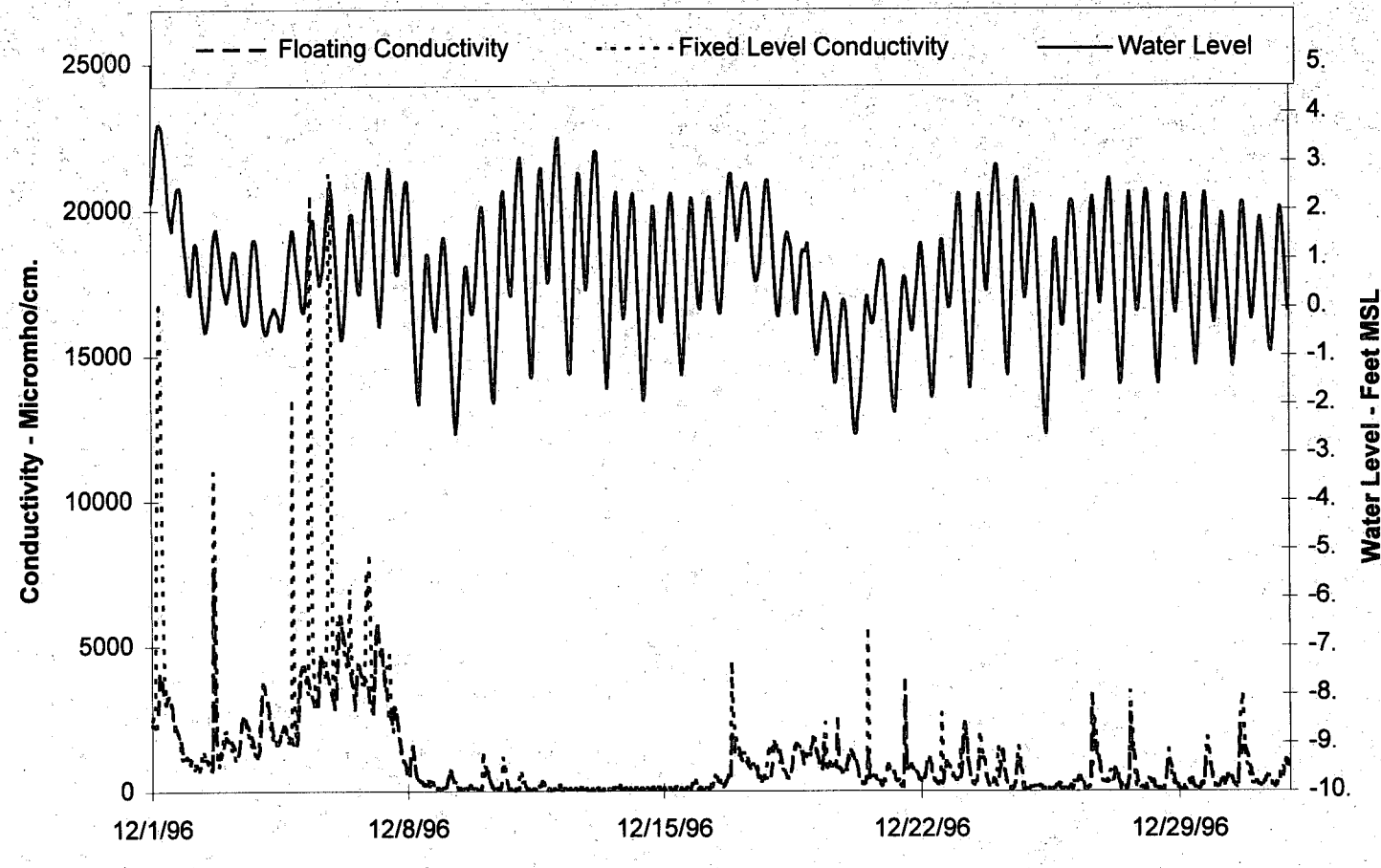


SOURCE:RE&C,1997

CITY OF TALLAHASSEE

CONDUCTIVITY MEASUREMENTS
SHEET 1
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-40

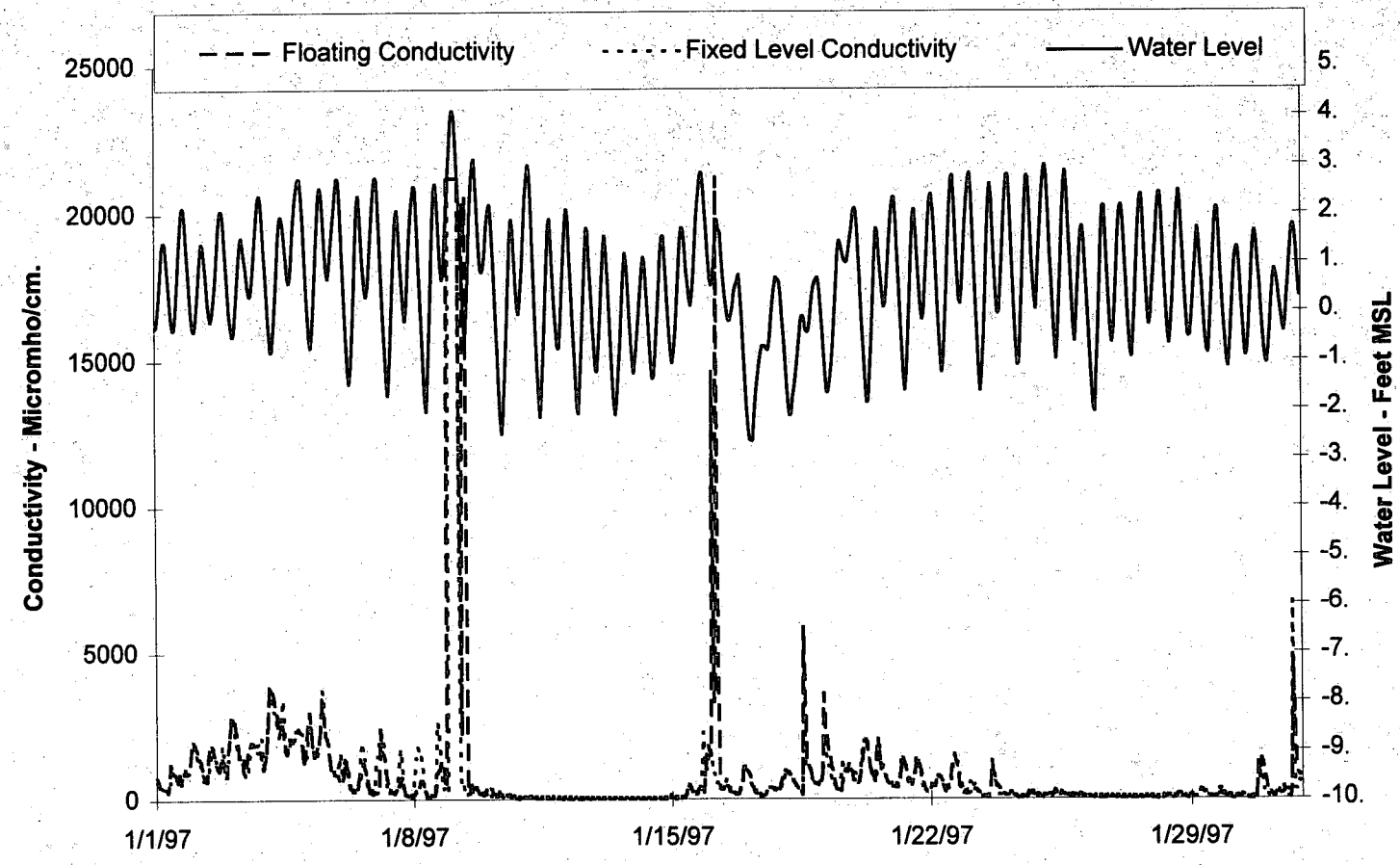


SOURCE:RE&C,1997

CITY OF TALLAHASSEE

CONDUCTIVITY MEASUREMENTS
SHEET 2
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-40

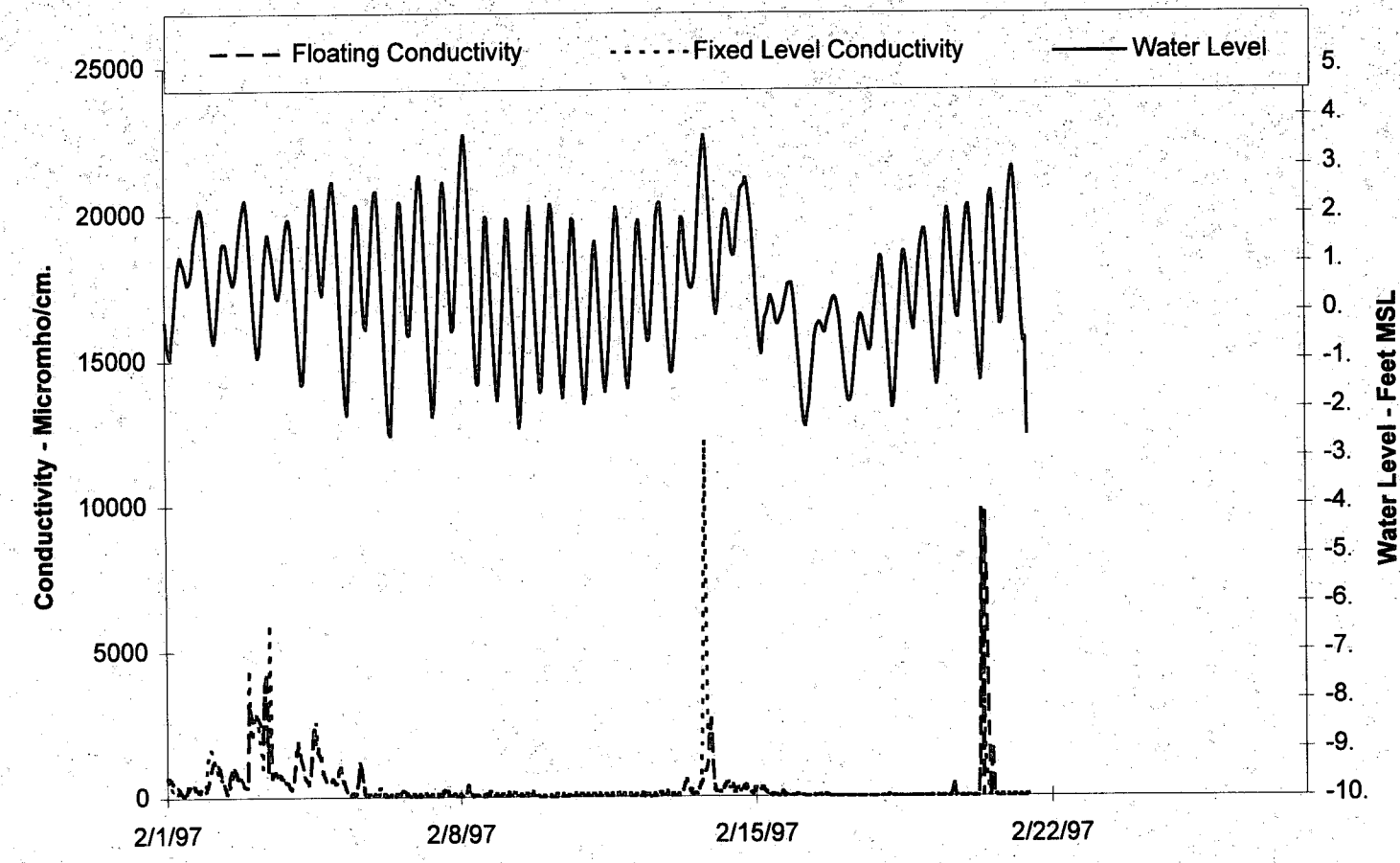


SOURCE:RE&C,1997

CITY OF TALLAHASSEE

CONDUCTIVITY MEASUREMENTS
SHEET 3
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-40



SOURCE:RE&C,1997

CITY OF TALLAHASSEE

CONDUCTIVITY MEASUREMENTS
SHEET 4
PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

Figure
2.3.4-40

intake, which is the location from which cooling tower makeup is proposed to be withdrawn for Purdom Unit 8. Analyses were also performed for several other constituents which were needed either to calculate Class III standards (such as hardness), or to predict operation of the proposed Project's heat dissipation system. The full list of constituents, the associated Class III standards where applicable, the test methods used, and the results for the two sampling episodes that were performed are all presented in Table 2.3.4-3. For convenience, only those constituents that were actually detected are reproduced in Table 2.3.4-4.

There are two industrial NPDES-permitted discharges to the St. Marks River in the vicinity of the Purdom Station that will be affected by the proposed Project. The Purdom Station itself discharges, in addition to the cooling water discharges described in ***Temperature*** above, chemical and non-chemical metal cleaning wastes through Outfall Serial Number (OSN) 005, and low volume wastes including boiler blowdown, demineralizer regeneration wastewater, and laboratory sampling wastewater through OSN 006, to the St. Marks River. The permit limits are as follows:

	OSN 005 Average/Maximum	OSN 006 Average/Maximum
TSS	30/100 mg/l	30/100 mg/l
Oil & Grease	NA/5 mg/l	NA/5 mg/l
pH (range)	6.0 to 8.5	6.0 to 8.5
Total Copper	NA/.03 mg/l	NA/NA
Total Iron	1.0/1.0 mg/l	NA/NA
N/A = Not applicable Source: NPDES Permit		

The Discharge Monitoring Reports (DMRs) for the Purdom Station for the periods April through December 1994, and February 1995 through May 1996, have been analyzed with respect to compliance at OSNs 005 and 006. The results are that, with the exception of one reading of 1.8 mg/l for iron at OSN 005 during July 1994, all of the data in the DMRs were in compliance with the permit limits.

The City of St. Marks Wastewater Treatment Facility DMRs for the period from February 1993 through August 1996, were also analyzed. A summary of the data is presented in Table 2.3.4-5. These data indicate that the discharge from the City of St. Marks Wastewater Treatment Facility was in compliance with their NPDES permit.

On-Site Water Bodies

The City of Tallahassee has identified ten on-site water bodies, seven of which are wetlands and three of which are artificial canals serving the power generating units. For convenience, the

TABLE 2.3.4-3
WATER QUALITY SAMPLING ANALYSIS

Parameters to be Sampled For	Constituent	Class III Limit in St. Marks River at Purdom Station (if applicable)	Lab Analytical Method (if applicable)	Results from 10/17/96 Sampling Episode	Results from 11/21/96 Sampling Episode
Physical	pH	Within 1 unit of natural background & between 6 and 8.5, or not less than natural nor more than 1 unit above natural if natural <6, and not more than natural nor less than 1 unit below natural if natural > 8.5	EPA 150.1	7.25	7.18
	Dissolved Oxygen	5 mg/l (minimum)	EPA 360.1	3.67	3.88
	Temperature (° C)	see 62-302.520	EPA 170.1	21.2	20.3
	Total Dissolved Gases	110% of saturation value	field measurement	NT	NT
General Inorganics	Total Suspended Solids	Tested for operational reasons	EPA 160.2	3	2
	Total Dissolved Solids	Tested for operational reasons	EPA 160.1	124	346
	Hardness (as $CaCO_3$)	Required for calculating trace metal limits, abbreviated as H	EPA 130.2	93.0	162
	Alkalinity (as $CaCO_3$)	20 mg/l as $CaCO_3$(minimum)	EPA 310.1	77.1	119
	Specific Conductance (µmhos/cm)	Tested for operational reasons	EPA 120.1	163	583
	Nitrate (as N)	Not to imbalance natural populations	EPA 353.2	BDL	0.124
	Nitrite (as N)	Not to imbalance natural populations	EPA 353.2	BDL	BDL
	Ammonia (as N)	.02 mg/l (un-ionized) and not to imbalance natural populations	EPA 350.1	0.014	0.016
	Total Phosphorus (as P)	Not to imbalance natural populations	EPA 365.4	0.049	BDL
	Silica (as SiO_2)	Tested for operational reasons	SM-4500SiD	8.58	11.6
	Cyanide (as CN)	.0052 mg/l	EPA 335.4	0.017	BDL
	Aluminum	Tested for operational reasons	EPA 202.2	0.218	0.0291
	Sulfides	Tested for operational reasons	EPA 376.1	BDL	BDL
	Total Residual Chlorine	.01 mg/l	EPA 330.1	BDL	0.0
Major Cations	Calcium	Tested for operational reasons	EPA 215.1	25.8	40.4
	Magnesium	Tested for operational reasons	EPA 242.1	4.42	13.4
	Sodium	Tested for operational reasons	EPA 273.1	3.19	53.8
	Potassium	Tested for operational reasons	EPA 258.1	0.51	2.32
Minor/Trace Elements	Antimony	4.3 mg/l	EPA 204.2	BDL	BDL
	Arsenic	.050 mg/l	EPA 206.2	BDL	BDL

TABLE 2.3.4-3
WATER QUALITY SAMPLING ANALYSIS

Parameters to be Sampled For	Constituent	Class III Limit in St. Marks River at Purdom Station (if applicable)	Lab Analytical Method (if applicable)	Results from 10/17/96 Sampling Episode	Results from 11/21/96 Sampling Episode
	Beryllium	.00013 mg/l (at ann avg flow)	EPA 210.2	BDL	BDL
	Cadmium	e^(.7852[ln H]-3.49) µg/l	EPA 213.2	BDL	BDL
	Copper	e^(.8545[ln H]-1.465) µg/l	EPA 220.2	BDL	BDL
	Iron	1.0 mg/l	EPA 236.2	0.314	0.0656
	Lead	e^(1.273[ln H]-4.705) µg/l	EPA 239.2	BDL	BDL
	Mercury	.000012mg/l	EPA 245.1	BDL	BDL
	Nickel	e^(0.846[ln H]+1.1645) µg/l	EPA 249.2	BDL	0.0017
	Selenium	0.005 mg/l	EPA 270.2	BDL	BDL
	Silver	0.00007 mg/l	EPA 272.2	BDL	BDL
	Thallium	0.048 mg/l	EPA 279.2	BDL	BDL
	Zinc	e^(0.8473[ln H]+0.7614) µg/l	EPA 289.1	BDL	BDL
Major Anions	Chloride	Tested for operational reasons	EPA 325.2	5.58	93
	Bicarbonate	Tested for operational reasons	SM500-CO2D	76.96	118.8
	Carbonate	Tested for operational reasons	SM500-CO2D	BDL	BDL
	Sulfate	Tested for operational reasons	EPA 375.2	7.15	21.7
Microbiologicals	Fecal Coliform	Multiple requirements	EPA 600/8/78-017 Section III C, pg 124	154 /100 ml	170 /100 ml
	Total Coliform	Multiple requirements	EPA 600/8/78-017 Section III B, pg 108	533 /100 ml	324 /100 ml
Organics	Benzene	.07128 mg/l (at ann avg flow)	EPA 502.2	BDL	BDL
	Phthalate Esters	0.003 mg/l	EPA 505	ND	BDL
	PCBs	0.000000045 mg/l (ann avg flow) & 0.000014 mg/l	EPA 505	ND	BDL
	Tetrachloroethylene	0.00885 mg/l (ann avg flow)	EPA 502.2	BDL	BDL
	1, 1, 1-Trichloroethane	173 mg/l	EPA 502.2	BDL	BDL
	Trichloroethene	0.0807 mg/l (ann avg flow)	EPA 502.2	BDL	BDL
	Carbon Tetrachloride	.00442 mg/l (ann avg flow)	EPA 502.2	BDL	BDL
	1,1-Dichloroethylene (1,1-Dichloroethene)	.0032 mg/l (ann avg flow)	EPA 502.2	BDL	BDL
	Dichloromethane (methylene chloride)	1.58 mg/l (ann avg flow)	EPA 502.2	BDL	BDL
	2,4-Dinitrotoluene	.0091 mg/l (ann avg flow)	EPA 8270/625	BDL	BDL
	Bromoform	0.360 mg/l (ann avg flow)	EPA 502.2	BDL	BDL

TABLE 2.3.4-3
WATER QUALITY SAMPLING ANALYSIS

Parameters to be Sampled For	Constituent	Class III Limit in St. Marks River at Purdom Station (if applicable)	Lab Analytical Method (if applicable)	Results from 10/17/96 Sampling Episode	Results from 11/21/96 Sampling Episode
	Chlorodibromomethane	0.034 mg/l (ann avg flow)	EPA 502.2	BDL	BDL
	Chloroform	0.4708 mg/l (ann avg flow)	EPA 502.2	BDL	BDL
	Chloromethane (methyl chloride)	0.4708 mg/l (ann avg flow)	EPA 502.2	BDL	BDL
	Dichlorobromomethane	0.022 mg/l (ann avg flow)	EPA 502.2	BDL	BDL
	Hexachlorobutadiene	0.0497 mg/l (ann avg flow)	EPA 502.2	BDL	BDL
	Pentachlorophenol	0.0082 mg/l (ann avg flow) & e^(1.005[pH]-5.29) µg/l & 0.030 mg/l	EPA 525.1		
	Polycyclic aromatic hydrocarbons (PAHs, see Note 1)	0.000031 mg/l (ann avg flow)	EPA 8270/625	BDL	BDL
	Anthracene	110 mg/l	EPA 8270/625	BDL	BDL
	Fluorene	14 mg/l	EPA 8270/625	BDL	BDL
	Pyrene	11 mg/l	EPA 8270/625	BDL	BDL
	Fluoranthene	0.370 mg/l	EPA 8270/625	BDL	BDL
	Acenaphthene	2.7 mg/l	EPA 8270/625	BDL	BDL
	1,1,2,2-Tetrachloroethane	0.0108 mg/l (avg ann flow)	EPA 502.2	BDL	BDL
Pesticides & Herbicides	Aldrin	0.003 mg/l & 0.00000014 mg/l (ann avg flow)	EPA 508	BDL	BDL
	Dieldrin	0.00000014 mg/l (ann avg flow) & 0.0000019 mg/l	EPA 508	BDL	BDL
	Chlordane	0.00000059 mg/l (ann avg flow) & 0.0000043 mg/l	EPA 508	BDL	BDL
	Demeton	0.0001 mg/l	EPA 505	BDL	BDL
	Endosulfan	0.000056 mg/l	EPA 508	BDL	BDL
	Endrin	0.0000023 mg/l	EPA 508	BDL	BDL
	Guthion	.00001 mg/l	EPA 505	BDL	BDL
	Heptachlor	.00000021 mg/l (ann avg flow) & 0.0000038 mg/l	EPA 508	BDL	BDL
	Lindane (g-benzene hexachloride)	0.000063 mg/l (ann avg flow) & 0.00008 mg/l	EPA 508	BDL	BDL
	Malathion	0.0001 mg/l	EPA 505	BDL	BDL
	Methoxychlor	0.00003 mg/l	EPA 508	BDL	BDL
	Mirex	0.000001 mg/l	EPA 617		
	Parathion	0.00004 mg/l	EPA 505	BDL	BDL
	Toxaphene	0.0000002 mg/l	EPA 508	BDL	BDL

TABLE 2.3.4-3
WATER QUALITY SAMPLING ANALYSIS

Parameters to be Sampled For	Constituent	Class III Limit in St. Marks River at Purdom Station (if applicable)	Lab Analytical Method (if applicable)	Results from 10/17/96 Sampling Episode	Results from 11/21/96 Sampling Episode
	beta-hexachlorocyclohexane (b-BHC)	0.000046 mg/l (ann avg flow)	EPA 508	BDL	BDL
	DDT	0.00000059 mg/l (ann avg flow) & 0.000001 mg/l	EPA 508	BDL	BDL
Biological Integrity	Shannon-Weaver diversity index	75% of background levels	field measurement	ND	ND
	Transparency	Not to be reduced more than 10% of natural	field measurement	ND	ND

Note (1) PAH includes the following:
Acenaphthylene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenzo(a,h)anthracene
Indeno(1,2,3-cd)pyrene
Phenanthrene

Note: NT = not tested as part of these sampling episodes
BDL = below detection level
ND = not done as part of these sampling episodes

Source: City of Tallahassee Water Quality Laboratory, 1996

TABLE 2.3.4-4
DETECTED WATER QUALITY CONSTITUENTS

Parameters to be Sampled For	Constituent (units are mg/L unless otherwise stated)	Class III Limit in St. Marks River at Purdom Station (if applicable)	Lab Analytical Method (if applicable)	Results from 10/17/96 Sampling Episode	Results from 11/21/96 Sampling Episode
Physical	pH(standard units)	Within 1 unit of natural background & between 6 and 8.5, or not less than natural nor more than 1 unit above natural if natural <6, and not more than natural nor less than 1 unit below natural if natural > 8.5	EPA 150.1	7.25	7.18
	Dissolved Oxygen	5 mg/l (minimum)	EPA 360.1	3.67	3.88
	Temperature (° C)	See 62-302.520	EPA 170.1	21.2	20.3
	Total Dissolved Gases	110% of saturation value	Field measurement	NT	NT
General Inorganics	Total Suspended Solids	Tested for operational reasons	EPA 160.2	3	2
	Total Dissolved Solids	Tested for operational reasons	EPA 160.1	124	346
	Hardness (as $CaCO_3$)	Required for calculating trace metal limits, abbreviated as H	EPA 130.2	93.0	162
	Alkalinity (as $CaCO_3$)	20 mg/l as $CaCO_3$(minimum)	EPA 310.1	77.1	119
	Specific Conductance (µmhos/cm)	Tested for operational reasons	EPA 120.1	163	583
	Nitrate (as N)	Not to imbalance natural populations	EPA 353.2	BDL	0.124
	Ammonia (as N)	.02 mg/l (un-ionized) and not to imbalance natural populations	EPA 350.1	0.014	0.016
	Total Phosphorus (as P)	Not to imbalance natural populations	EPA 365.4	0.049	BDL
	Silica (as SiO_2)	Tested for operational reasons	SM-4500SiD	8.58	11.6
	Cyanide (as CN)	.0052 mg/l	EPA 335.4	0.017	BDL
	Aluminum	Tested for operational reasons	EPA 202.2	0.218	0.0291
Major Cations	Calcium	Tested for operational reasons	EPA 215.1	25.8	40.4
	Magnesium	Tested for operational reasons	EPA 242.1	4.42	13.4
	Sodium	Tested for operational reasons	EPA 273.1	3.19	53.8
	Potassium	Tested for operational reasons	EPA 258.1	0.51	2.32

TABLE 2.3.4-5
CITY OF ST. MARKS WASTEWATER
TREATMENT FACILITY EFFLUENT DATA

Date	Monthly avg daily flow (mgd)	CBOD Effluent (mg/l)	TSS Effluent (mg/l)	pH min	pH max	Ammonia (mg/l)	Nitrate (mg/l)	Total Phosphorus (mg/l)	Nitrite, Effluent (mg/l)	Cadmium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Hardness (mg/l)
Feb-93	0.002	5.8	9	7.2	7.2	0.2		3.2					
Mar-93	0.016	7.2	5.5	7.2	7.2	0.1		0.1					
Apr-93	0.023	12.9	12	7.2	7.2	2.4		5					
May-93	0.012	7.9	6.5	7.1	7.2	2.8		6					
Jun-93	0.024	4	2	7.2	7.2	0.3	7	1.5					
Jul-93	0.009	2	2.5	7.2	7.2	0.2	15.8	3.6					
Aug-93	0.013	2	2	7.2	7.2	0.3	4.7	1.6					
Sep-93	0.021	5.5	3.5	7.2	7.2	0.6	0.7	3.6					
Oct-93	0.017	1.8	6.5	7.1	7.4	1.3		21.7					
Nov-93	0.017	2	4	7.4	7.2	0.5	< .1	< .1					
Dec-93	0.015	9	14	7.1	7.4	0.3		1.2					
Jan-94	0.016	9.5	27	7.2	7.3	0.5		9					
Feb-94	0.015	6.5	15.5	7	7.2	0.4		3.3					
Mar-94	0.013	2.5	7.5	7.1	7.2	0.3		3.4					
Apr-94		3.5	13	7	7.1	0.4		4.7					
May-94		4.5	11	7.2	7.3	0.3		3					
Jun-94		2	6	7.3	7.4	0.4		2.9					
Jul-94		21	15	7	7.8	0.4		2.2					
Aug-94		5	9	6.3	7.7	0.2	9.9	3.6					
Sep-94		4.5	6	7	7.9	1	8.3	2.5					
Oct-94	0.029	2	4.5	7	8.1	0.8	2.8	2					
Nov-94	0.035	3.3	4.3	6.9	7.8	0.2	18.4	1.5					
Dec-94	0.031	1	6	6.9	7.6	0.4	12.5	3.9					
Jan-95	0.029	3.5	6	6.9	7.4	5.2	0.21	1.9	0.02				
Feb-95	0.028	2.5	4	6.9	7.4	1.4	< .1	1.2	< .1				
Mar-95	0.029	4.5	10	6.9	7.5	8	0.2	1.6	0.1				
Apr-95	0.024	5	6	7	7.4	12.2	0.2	2.3	0.1				
May-95	0.028	6.1	9	6.9	7.2	0.8	18.8	5.7	< .1				
Jun-95	0.023	2.2	7	6.8	7.2	0.4	6	2.5	< .1				
Jul-95	0.024	3.5	4	6.9	7.2	3.5	0.3	1.6	0.05				

TABLE 2.3.4-5
CITY OF ST. MARKS WASTEWATER
TREATMENT FACILITY EFFLUENT DATA

Date	Monthly avg daily flow (mgd)	CBOD Effluent (mg/l)	TSS Effluent (mg/l)	pH min	pH max	Ammonia (mg/l)	Nitrate (mg/l)	Total Phosphorus (mg/l)	Nitrite, Effluent (mg/l)	Cadmium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Hardness (mg/l)
Aug-95	0.025	4.5	7	7	7.4	0.2	15.6	3.9	0.1	0.007	77.9	6.1	219.6
Sep-95	0.024	3	5.5	7.3	7.4	0.3	22.8	3.5	< .1	0.003	101.2	6.9	218.2
Oct-95	0.019	3.3	7.3	7.3	7.4	0.16	10.3	3.4	< .1	< .002	114.5	6.1	310.8
Nov-95	0.023	4	5.5	7.3	7.5	0.1	14.7	2.4	< .1	0.003	90.3	10.3	247.1
Dec-95		5.5	11	7.3	7.5	0.01	20.5	3.2	< .01	< .002	103	11.1	302.9
Jan-96		4	13.5	7	7.5	0.17	10.7	3.2	0.04	0.003	33.8	10.9	129.4
Feb-96		5	13.5	7	7.4	0.17	7.9	1.9	< 0.01	< 0.002	94.2	6.3	261.1
Mar-96	0.021	6.5	10	7.1	7.4	1.7	1.1	2.8	0.1	0.002	93.4	9.7	273.2
Apr-96	0.023	4.3	6.7	6.9	7.4	6.1	0.14	2.9	0.2	< 0.002	84.4	8.7	246.4
May-96	0.017	4.5	4.5	7	7.3	1	14.7	5.3	0.04	< .002	94	9.2	272.2
Jun-96	0.018	4	5.5	6.2	6.8	< .1	29.4	4	0.1				
Jul-96	0.024	3	7	7	7.4	0.2	23.9	3.6	< .1	< .002	85.8	6.9	242.4
Aug-96	0.024	4.5	5.5	7	7.3	0.2	25.2	3.2	< .1	< .002	83.6	6.5	235.6
Average	0.0209	4.86	7.93	7.04	7.37	1.34	10.81	3.56	0.09	0.00	88.01	8.23	246.6

Source: Raytheon Engineers & Constructors, 1996.

wetlands have been labeled, and are shown on Figure 2.3.4-41. The size of the wetlands are as follows:

Wetland	Acres
A	0.40
B	0.24
C	6.98
D	0.57
F	0.95
G	1.56
H	8.30
Total	19.00

The wetlands encompass about 30 percent of the total site acreage. The artificial canals have been identified on Figure 2.3.4-11. They include the Unit 7 Intake Canal, the Unit 5 Discharge Canal, and the Units 6/7 Discharge Canal. The artificial canals aggregate about 2.44 acres.

Site Drainage

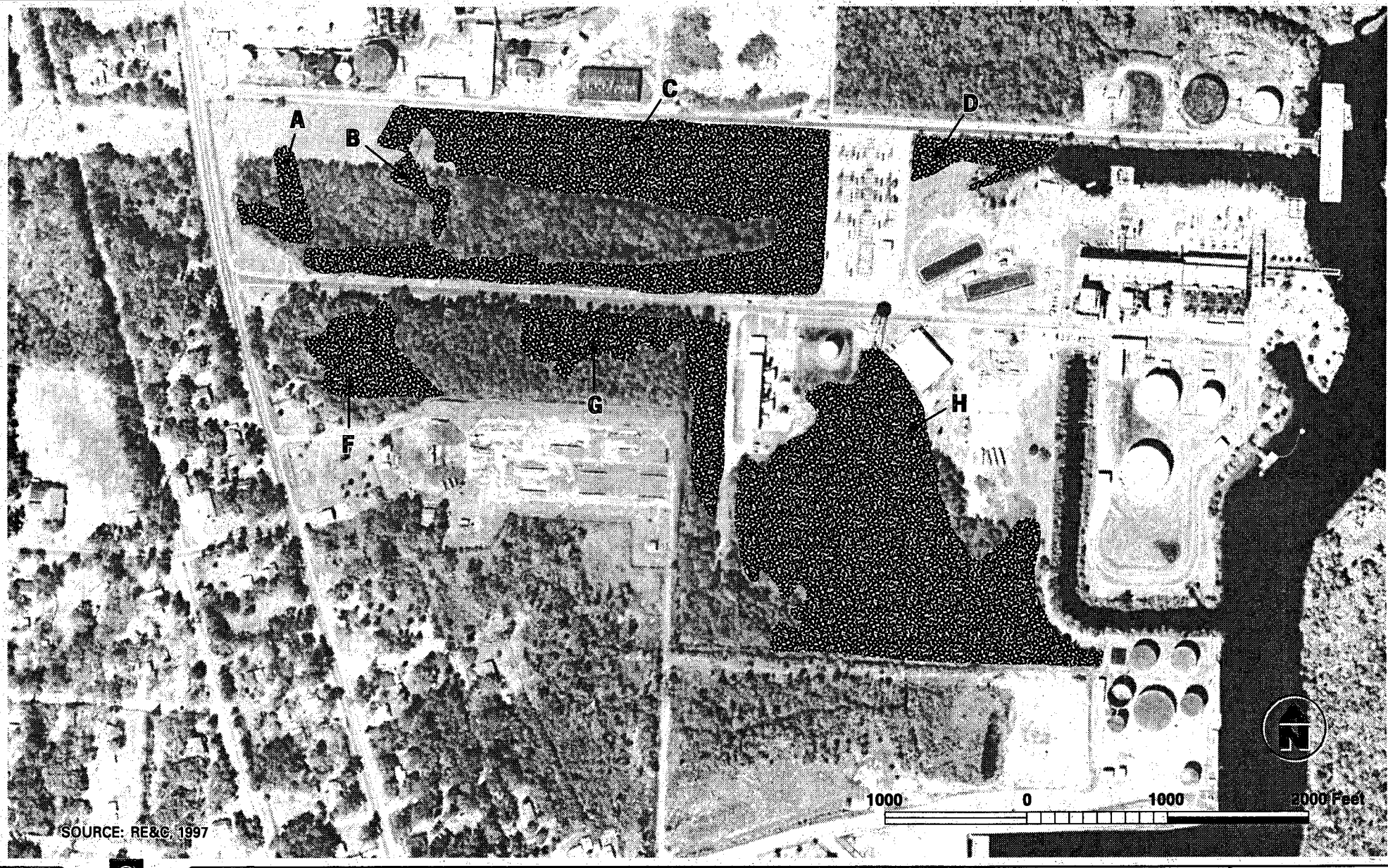
The Purdom site is part of a communal drainage system that drains runoff from the City of St. Marks. This system ties most of the City of St. Marks together through the use of ditches along all of the roads, and culverts under the roadways cross-connecting the ditches. The portion of the City of St. Marks that drains through the Purdom site is estimated to include approximately 139.5 acres (see Figure 2.3.4-42), of which about 62.7 acres are the site itself. On-site drainage is depicted on Figure 2.3.4-43, sheets 1 through 4. Stormwater from the site, unaffected by industrial activity, is permitted under EPA's General Permit. This stormwater is discharged via OSN 007, 008, 009, and 010. The on-site acreage and total acreage draining through each outfall are:

OSN	On-Site Acres	Total Acres
007	18.2	57.1
008	1.7	1.7
009	0*	0*
010	19.3	57.2
Total	39.2	116.0
* OSN 009 is an overflow for OSN 010		

The remaining 23.5 on-site acres include roof drains and grassed areas that sheet flow to the intake and/or discharge canals, the intake and/or discharge canals themselves, and the oil storage tanks containment areas, which are permitted under the plant industrial NPDES permit.

2.3.4.2 Measurement Programs

The surficial hydrology measurement program included hydrographic and hydrothermal monitoring and chemical water quality monitoring. The former included measurements of bathymetry, currents, water levels, and water temperatures at selected locations in the St. Marks River, and the plant intake and discharge canals. The chemical water quality monitoring included in-situ continuous monitoring of water level and conductivity at the proposed location of the



SOURCE: RE&C, 1997

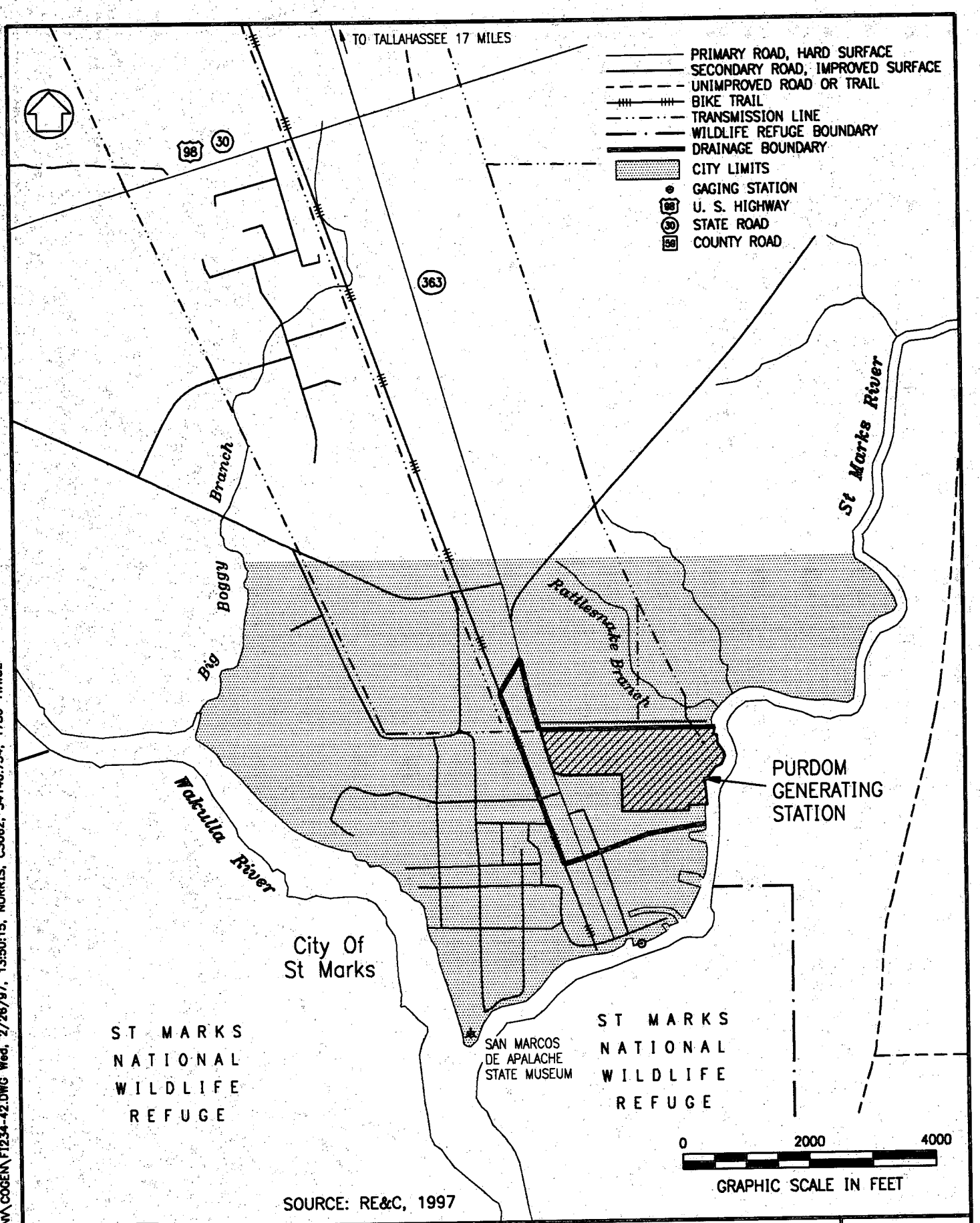
CITY OF TALLAHASSEE

ON-SITE WETLAND WATER BODIES

PURDOM UNIT 8 PROJECT – ST MARKS FLORIDA

Figure

2.3.4-41



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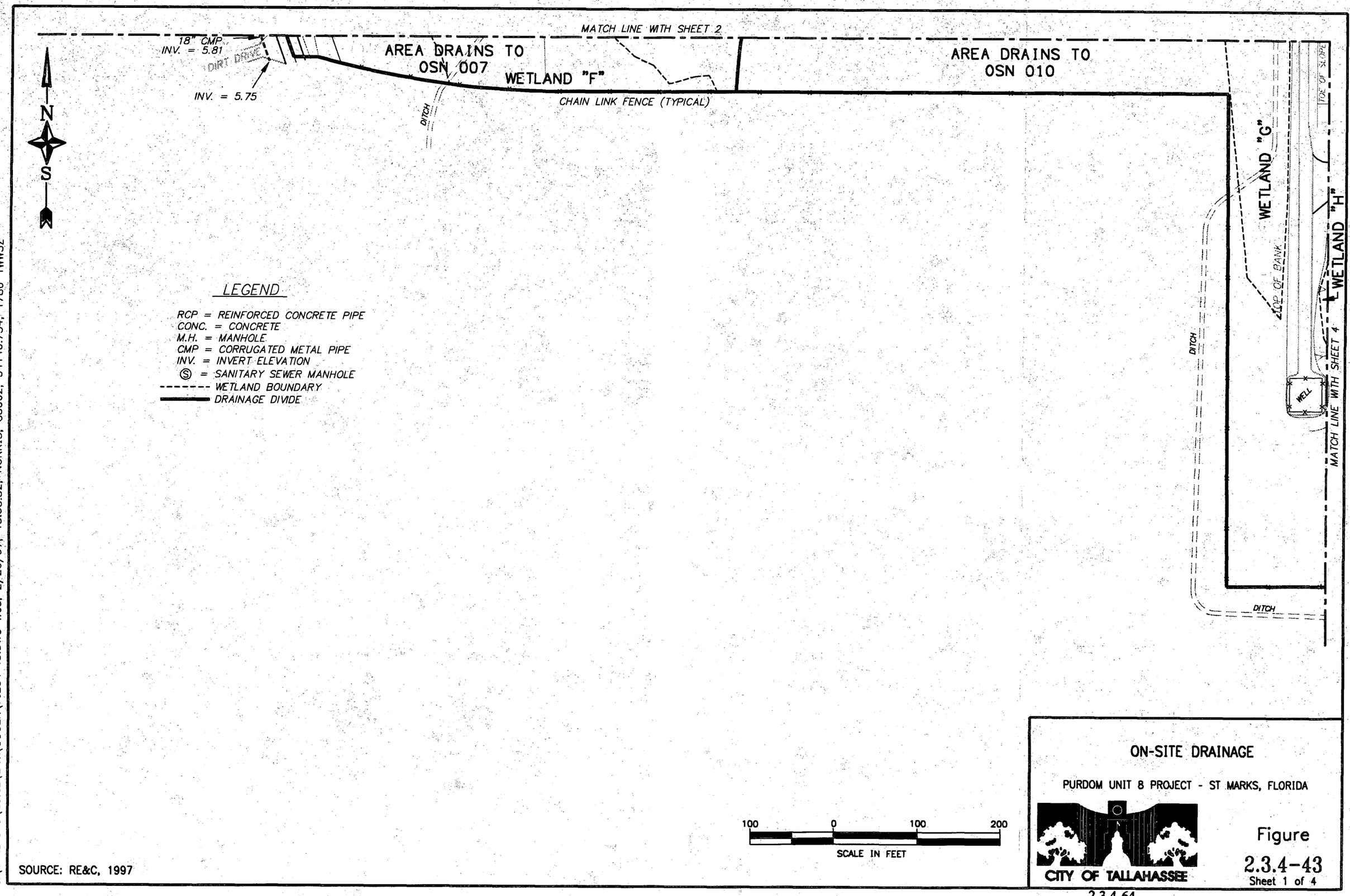
CITY OF TALLAHASSEE

DRAINAGE THROUGH THE PURDOM SITE
1" = 2000'

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.4-42



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N

S

18" CMP
INV. = 10.30

DRAINAGE DIVIDE

WETLAND "C"

WETLAND "A"

WETLAND "B"

WOODED

AREA DRAINS TO
OSN 007

18" CMP
INV. = 8.39

TOP OF BANK

DITCH

DIRT DRIVE

INV. = 7.96

18" CMP
INV. = 7.88

INV. = 7.79

DIRT DRIVE

18" CMP
INV. = 7.50

ENTRANCE
GATE

18" CMP
INV. = 7.94

DIRT DRIVE

INV. = 7.28

INV. =
7.01

ASPHALT ROAD

DITCH

CONC.
HEADWALL

30" RCP
INV. = 0.65

TOP OF BERM

TOE OF SLOPE

WETLAND "C"

DITCH

TOE OF SLOPE

MATCH LINE WITH SHEET 3

TOP OF BANK

ASPHALT ENTRANCE ROAD

30" RCP
INV. = 1.60

12" CAPPED
WELL

TOP OF BANK

TOE OF SLOPE

WETLAND "G"

1 STORY BRICK
PUMP BUILDING

WATER

AREA DRAINS TO
OSN 007

WETLAND "F"

WOODED

AREA DRAINS TO
OSN 010

DITCH

MATCH LINE WITH SHEET 1

100 0 100 200

SCALE IN FEET

SOURCE: RE&C, 1997

ON-SITE DRAINAGE

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure
2.3.4-43
Sheet 2 of 4

DRAINAGE DIVIDE

DRAINAGE DIVIDE

AREA DRAINS TO
OSN 007

WETLAND "C"

LOW AREA WETLAND "D"

INLET CANAL

ST MARKS RIVER

N

S

MATCH LINE WITH SHEET 2

TOE OF SLOPE

TOP OF BERM

GRAVEL SWITCH YARD

OSN 007

E. INV. = -1.4
W. INV. = -1.9

24" RCP

24" RCP

CATCH BASIN

E. INV. = -1.5
W. INV. = -1.9

INV. = -0.40

INV. = -0.49

CONC. BOAT RAMP

INTAKE STRUCTURE

TOP OF BANK

6' x 7' CONC. LID

CONC. M.H.

ELECTRIC BOX

WATER METER

GAS PUMP ON CONC.

PARKING

GRAVEL SWITCH YARD

INTAKE CANAL STRUCTURE

SITE BENCH MARK
CHISELED "X" IN CONC.
ELEVATION = 10.47'

MAIN PLANT BUILDING

GRATE

WASTEWATER TREATMENT POND # 1

CONC.

WASTEWATER TREATMENT POND # 2

WATER VALVE

TOP OF BANK

BRICK CHIMNEY

STORM DROP INLET

WATER VALVE

GENERATORS UNITS 1-7

M.H.

CONC.

METAL SHED ON CONC.

FLAGPOLE

3' x 3' METAL LID

WM

WV

WV

WV

INLET

ASPHALT

WATER TOWER

DISCHARGE STRUCTURE

BUILDING

CONC.

12" RCP
INV. = 4.08

DISCHARGE CANAL

LP GAS YARD

ASPHALT

METAL BUILDING SHIPPING & RECEIVING

CONC.

DIESEL TANK

INV. = 4.65

GATE VALVE

18" RCP WITH CONC. HEADWALLS

GAS TURBINE GENERATOR BLDG

AREA DRAINS TO
OSN 008

BERM

OIL STORAGE TANK # 2

OIL STORAGE TANK # 1

CONC.

MATCH LINE WITH SHEET 4

AREA DRAINS TO
OSN 010

WETLAND "H"

100 0 100 200

SCALE IN FEET

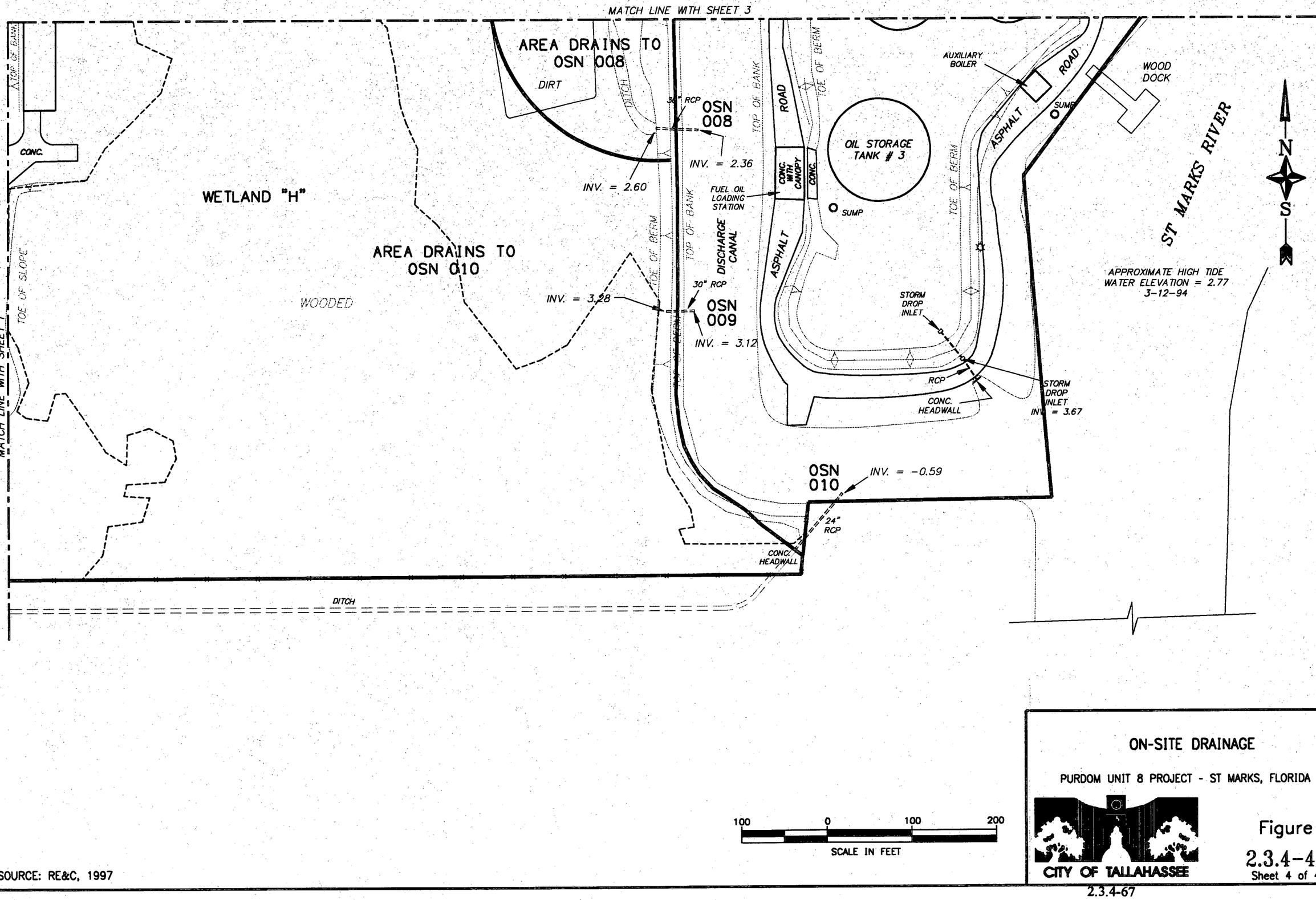
SOURCE: RE&C, 1997

ON-SITE DRAINAGE

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure
2.3.4-43
Sheet 3 of 4



100 0 100 200

SCALE IN FEET

SOURCE: RE&C, 1997

ON-SITE DRAINAGE

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 2.3.4-43 Sheet 4 of 4

Project surface water withdrawal location, and the taking and detailed laboratory analysis of river water samples at the same location. The City of Tallahassee submitted a Quality Assurance Project Plan in accordance with F.A.C. 62-160; however, the FDEP QA Section stated that a plan was not required. Copies of all the recorded data are presented in Section 10.5.4.

Bathymetry

River bathymetry was measured from a boat using a depth finder. The depth finder operates by measuring the echo delay from a periodic signal aimed toward the river bottom. Water depth is recorded continuously on a strip chart. The signal transmitter/receiver was suspended from the front of the boat and was held in place while the boat was in motion to ensure proper downward orientation of the device. For each bathymetry measurement pass, the recorded depth was verified by taking a duplicate measurement from the front of the boat in the same location as the depth finder signal transmitter/receiver with a calibrated weighted sounding tape. The strip chart recording was marked to identify the beginning and end of each pass.

Salinity, Conductivity, Temperature, Dissolved Oxygen, and pH Profiles

Salinity, conductivity, and temperature measurements were made from a moored boat using a Yellow Springs Instruments (YSI) Model 33 salinity-conductivity-temperature (S-C-T) meter. DO was measured using a YSI Model 50B DO meter. The S-C-T and DO meters were calibrated every four hours, according to the manufacturer's instructions. pH was measured using an Orion Model 230A pH meter, which was also calibrated every four hours, according to the manufacturer's instructions. Calibration data and field measurements were recorded on preprinted forms.

Long-Term Measurements

Long-term conductivity measurements were made using two In-Situ Inc. Model CTS-200 conductivity probes, one floating at a fixed depth and the other at a fixed depth. Long-term water level measurements were made using an In-Situ Inc. Model PTX-161D Pressure Transducer. Data from all three probes were recorded using In-Situ Inc. Hermit Model SE1000C Environmental Data Loggers.

River Current and Stage

River currents were measured using a Marsh-McBirney Flo-Mate™ Model 2000 Flowmeter. Measurements were made from a moored boat as described above under profiles. Stage, or water level, was measured during short term profiling surveys, using a Leupold & Stevens Type F water level recorder. The recorder operates by recording the rotation of a cylinder attached to a float which rises and falls with stage height over time. The recorder was placed on a platform whose elevation was known from a plant drawing, and was calibrated by measuring from the platform to the water surface with a calibrated tape measure.

2.3.4.3 References

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Williams, R., K. Wimmer, D. Gluckman, T. McMillan, L. Rains, and D. Huffman. 1994. St. Marks and Wakulla River Resource Assessment and Florida Greenways Program of 1000 Friends of Florida, the Conservation Fund, the Northwest Florida Water Management District, and the Florida Coastal Management Program. September, 1994.

2.3.5 Vegetation/Land Use

The Purdom Station site consists primarily of developed lands associated with the generation of electrical power. The site also includes upland nonforested, disturbed lands; forested uplands and wetlands; nonforested wetlands; and open water areas. The location of the proposed Unit 8 has minimal vegetation cover within upland disturbed land.

2.3.5.1 Baseline Site Conditions

Figure 2.3.5-1 is a vegetation/land cover map of the site. The site includes about 34 acres of developed lands (including areas mowed) and about 29 acres of land with a natural vegetation cover. The new development will occur on the already developed portion of the site.

The following vegetation/land use types are present on the site. Classification is based primarily on Levels II and III Florida Land Use, Cover and Forms Classification System (numbers in parenthesis).

- Hardwood-conifer mixed (434)
- Streams and waterways (510)
- Wetland forested mixed (630)
- Freshwater marshes (641)
- Wet prairies (643)
- Shorelines (652)
- Electric power facilities including upland nonforested disturbed land (831)
- Electric power transmission lines (832)

Dominant Indicator Vegetation

In order to characterize the vegetation/land use types identified above, vegetative cover was inspected and described qualitatively. Site ecological inspections have been carried out at the site periodically since 1992.

Upland nonforested disturbed land is now composed dominantly of grassy vegetation. These areas have a lawn like appearance due to maintenance by mowing. Other uplands on the site (hardwood-conifer mixed - 434), which are relatively undisturbed, are forested with a mix of hardwoods, conifers, and cabbage palm (*Sabal palmetto*). Dominant forest species include live and laurel oaks (*Quercus virginiana* and *Q. laurifolia*), loblolly pine (*Pinus taeda*) and cabbage palm. A relatively well developed middlestory or shrub layer dominated by wax myrtle (*Myrica cerifera*) and saw palmetto (*Serenoa repens*) exists. Generally, minimal ground cover vegetation is present within this forest community.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

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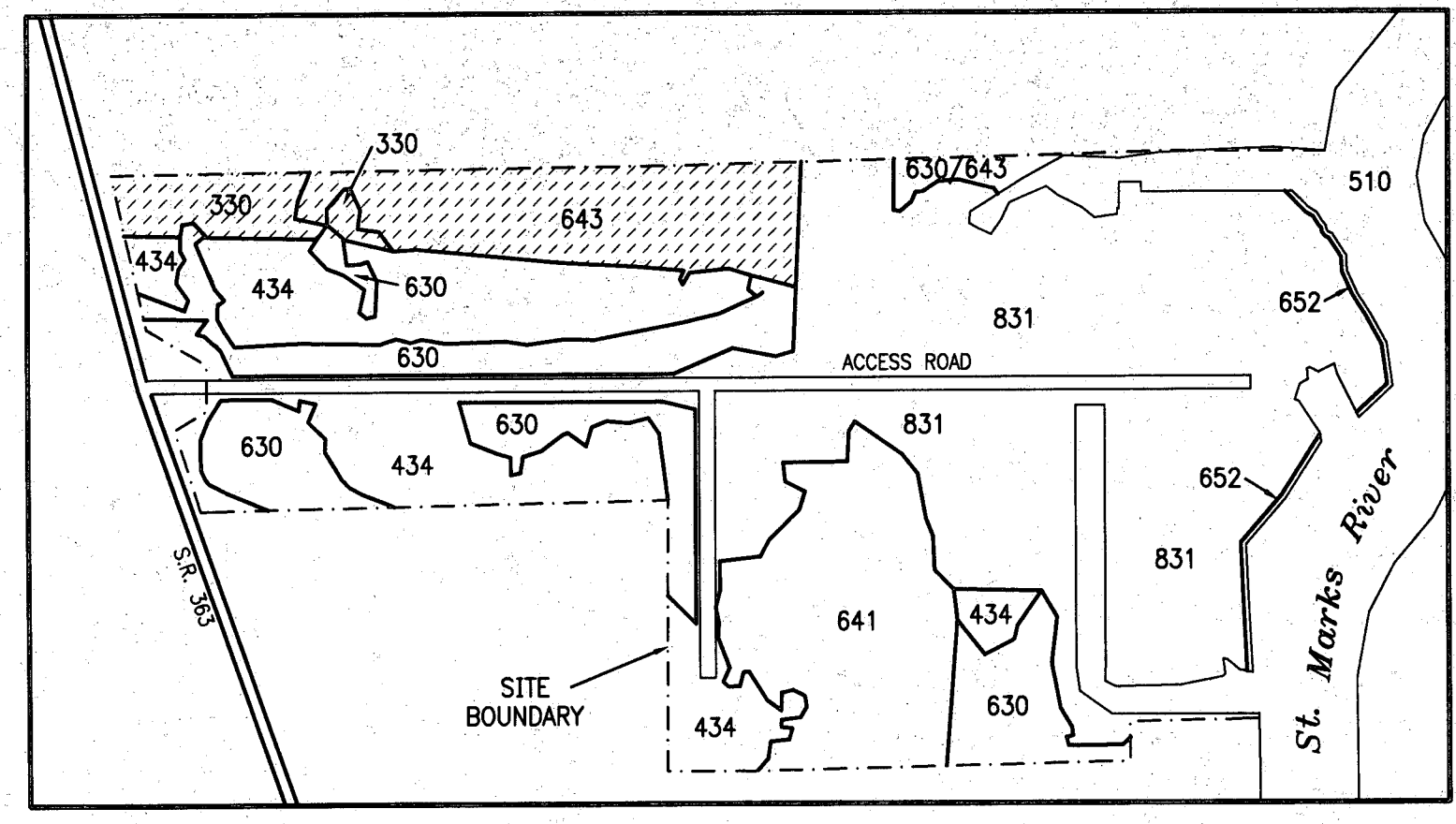


LEGEND

	TRANSMISSION LINE RIGHT OF WAY	641	FRESHWATER MARSHES
330	MIXED RANGELAND	643	WET PRAIRIES
434	HARDWOOD-CONIFER MIXED	652	SHORELINES
510	STREAMS AND WATERWAYS	831	ELECTRICAL POWER FACILITIES
630	WETLAND FORESTED MIXED		

N
W E
0 400 FT

SOURCES: FLORIDA D.O.T. AERIAL PHOTOGRAPHY PD4258-17-9, MARCH 17, 1994
FOSTER WHEELER ENVIRONMENTAL, 1996-1997 SITE INSPECTIONS

CITY OF TALLAHASSEE

PURDOM SITE
LAND COVER AND VEGETATION MAP

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.5-1

2.3.5-2

Wetlands occurring on the site are generally of three types: forested wetland mixed (630), vegetated nonforested wetland (641, 643 including freshwater marshes and wet prairies), and nonvegetated wetlands along the shoreline (652).

Forested wetlands included species such as sweet bay (*Magnolia virginiana*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), blackgum (*Nyssa sylvatica* var *biflora*), and bald cypress (*Taxodium distichum*). Forested wetland areas are noted on Figure 2.3.5-2. Minimal ground cover is present in the forested wetland areas.

Herbaceous nonforested wetlands (the second type of wetlands) are also noted on Figure 2.3.5-2. These areas are dominated by sawgrass (*Cladium jamaciensis*) where water has been present most of the year. Other areas, such as wetlands along the on-site transmission line right-of-way, have no clear dominant species over the entire area. Depending on the local topography, concentrations of individuals of the following species were present: broomsedge (*Andropogon virginicus*), purple lovegrass (*Eragrastis spectabilis*), plumegrass (*Erianthus giganteus*), corn snakeroot (*Eryngium aquaticum*), beakrush (*Rhynchospora* sp.), and red-top panic grass (*Panicum rigidulum*).

The shorelines (the third type of wetlands) are defined by the Florida Land Use, Cover and Forms Classification System as nonvegetated wetlands. The shore is defined as the zone extending from the low tide mark to the farthest point inland to which wave action transports materials.

The principal open water habitat is the St. Marks River, which forms the eastern boundary of the site.

Vegetation Community Quality and Condition

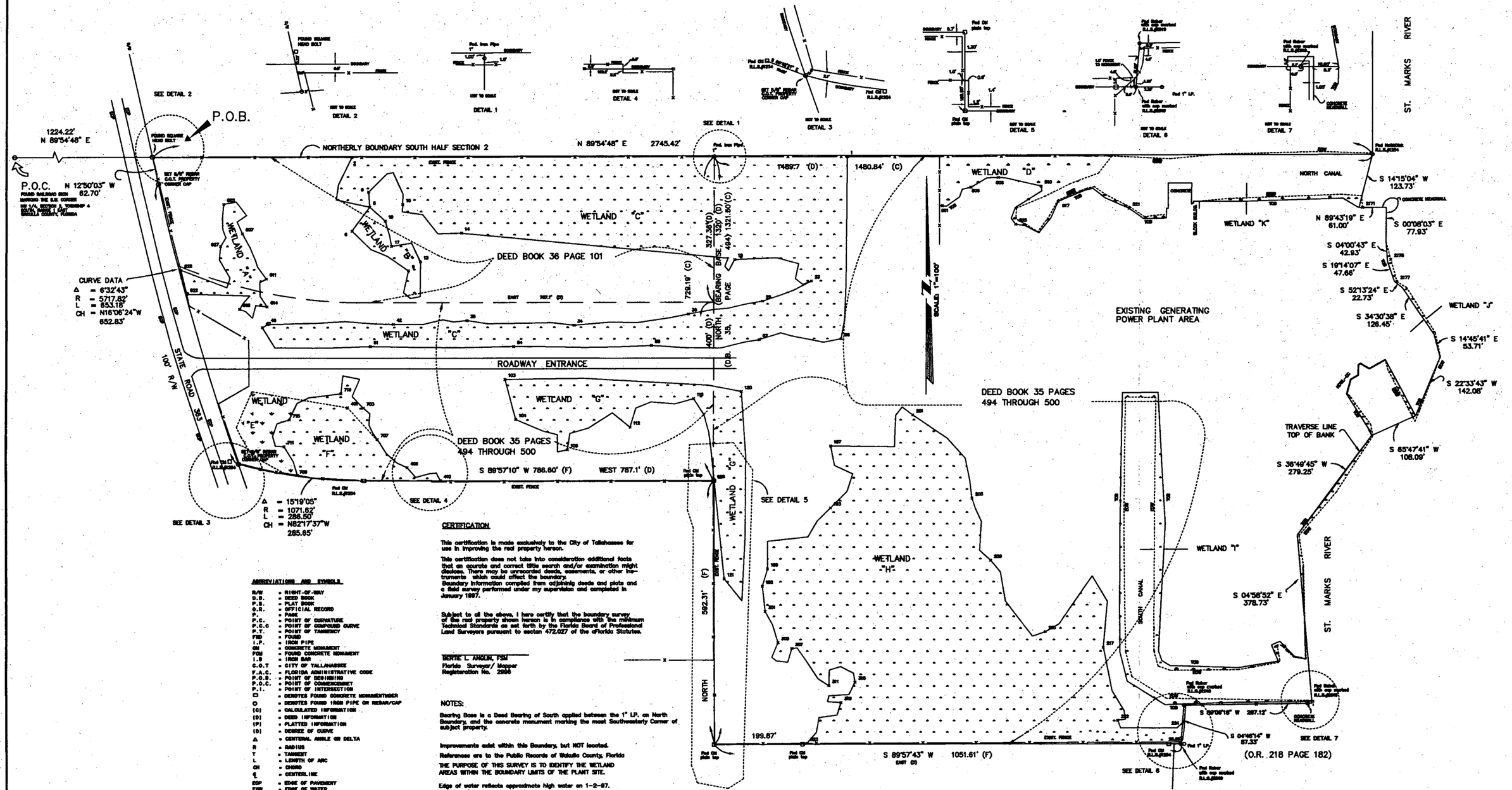
Upland vegetation communities are maintained as oldfield or grasslands or as existing forest land cover. Though there is evidence of earth moving activity in forested areas dating back well over a decade, the existing condition of these stands is relatively good as is the potential for wildlife usage. Several large hardwood trees are present in portions of the forested land.

Herbaceous nonforested wetlands along the transmission line right-of-way are periodically mowed as part of routine maintenance procedures. Since this protective vegetative cover is removed, these areas are not allowed to successionally mature and provide a stable habitat for ground dwelling animal species.

Most other site wetlands are not maintained at a given stage of successional maturity. These areas are less disturbed and provide potential habitat for larger numbers of animal species.

2.3.5.2 Aucilla Wildlife Management Area/St. Marks National Wildlife Refuge

Vegetation communities in the Aucilla Wildlife Management Area and in the nearby St. Marks National Wildlife Refuge are generally similar to the relatively undisturbed site vegetation communities. Much of the Aucilla Wildlife Management Area is in forestry management including pine plantation.



CERTIFICATION

This certification is made exclusively to the City of Tallahassee for use in improving the real property hereon.

This certification does not take into consideration additional facts that an accurate and correct title search and/or examination might disclose. There may be unrecorded deeds, easements, or other instruments which could affect the boundary. Boundary information compiled from adjoining deeds and plats and a field survey performed under my supervision and completed in January 1997.

Subject to all the above, I here certify that the boundary survey of the real property shown hereon is in compliance with the minimum Technical Standards as set forth by the Florida Board of Professional Land Surveyors pursuant to section 472.027 of the oFlorida Statutes.

BERTIE L. AMSLER, PSM
Florida Surveyor/ Mapper
Registeration No. 2986

ABBREVIATIONS AND SYMBOLS

R/W	= RIGHT-OF-WAY
D.B.	= DEED BOOK
P.B.	= PLAT BOOK
O.R.	= OFFICIAL RECORD
P.	= PAGE
P.C.	= POINT OF CURVATURE
P.C.C	= POINT OF COMPOUND CURVE
P.T.	= POINT OF TANGENCY
FND	= FOUND
I.P.	= IRON PIPE
CM	= CONCRETE MONUMENT
FCM	= FOUND CONCRETE MONUMENT
I.B	= IRON BAR
C.O.T	= CITY OF TALLAHASSEE
F.A.C.	= FLORIDA ADMINISTRATIVE CODE
P.O.B.	= POINT OF BEGINNING
P.O.C.	= POINT OF COMMENCEMENT
P.I.	= POINT OF INTERSECTION
□	= DENOTES FOUND CONCRETE MONUMENT/MDER
○	= DENOTES FOUND IRON PIPE OR REBAR/CAP
(C)	= CALCULATED INFORMATION
(D)	= DEED INFORMATION
(P)	= PLATTED INFORMATION
(D)	= DEGREE OF CURVE
Δ	= CENTERAL ANGLE OR DELTA
R	= RADIUS
T	= TANGENT
L	= LENGTH OF ARC
CH	= CHORD
℄	= CENTERLINE
EOP	= EDGE OF PAVEMENT
EOW	= EDGE OF WATER
TOB	= TOP OF BANK

NOTES:

Bearing Base is a Deed Bearing of South applied between the 1" I.P. on North Boundary, and the concrete monument marking the most Southwesterly Corner of subject property.

Improvements exist within this Boundary, but NOT located.

References are to the Public Records of Wakulla County, Florida

THE PURPOSE OF THIS SURVEY IS TO IDENTIFY THE WETLAND AREAS WITHIN THE BOUNDARY LIMITS OF THE PLANT SITE.

Edge of water reflects approximate high water on 1-2-97.

STATEMENT:

The meander line of the wetland areas, depicted hereon, was established by a combination of the Army Corps of Engineers; Foster Wheeler Environmental Corp. A Constructing Firm and the members of the Florida Department of Environmental Protection Agency, Jurisdictional Declaratory statement. The meander line were located by the City of Tallahassee Surveying Section/Engineering Division.

ALL FENCES SHOWN ARE 6' HIGH CHAIN LINK

NUMBERS SHOWN ON WETLAND BOUNDARIES REFLECT NUMBERS MARKED ON FLAGGING LOCATED IN FIELD. ALL NUMBERS NOT SHOWN FOR CLARITY.

SOURCE: CITY OF TALLAHASSEE, 1997

PURDOM SITE WETLANDS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 2.3.5-2

PLOT DATE FEB 27, 1997 C:\15840007\----\00000-41.DWG

Populations of red maple (*Acer rubrum*), swamp tupelo (*Nyssa sylvatica* var *biflora*), slash pine (*Pinus elliottis*), sweetbay magnolia (*Magnolia virginiana* var *australis*), and pond cypress (*Taxodium ascendens*) dominate wetlands in both the Aucilla Wildlife Management Area and the Refuge. Vegetation in wetland transition areas and uplands on the refuge include slash pine, red maple, several species of St. John's wort (*Hypericum* ssp.) and holly (*Ilex* ssp.), winged sumac (*Rhus copallina*), blackberries (*Rubus* spp.), and saw palmetto (*Serenoa repens*) (Gilbert et al., 1995)

Soils over most of the refuge area are hydric or at least hydric components such as Tooles-Nutall-Chaires fine sand and Chaires fine sand. Soils and vegetation near the Gulf Coast in the Refuge reflect those typical of tidal marshes. Extensive areas of black rush (*Juncus roemerianus*) exist in this environment with smooth cordgrass (*Spartina alterniflora*) and other typical salt marsh species occurring in lesser acreage.

2.3.5.3 References

Enserch Environmental Corp. 1995. Existing Conditions Assessment Report. Sam O. Purdom Generating Station Arvah B. Hopkins, Generating Station. Prepared for the City of Tallahassee Electric Department.

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Wood, D.A. 1996. Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida. Florida Game and Fresh Water Fish Commission. Tallahassee, Florida.

2.3.6 Ecology

The status of important flora and fauna is highlighted in this section. Importance status is based upon species or assemblages of species which are:

- Designated as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS);
- Designated as threatened or endangered or species of special concern by the Florida Game and Fresh Water Fish Commission (FGFWFC) and Department of Agriculture and Consumer Services (DACS);
- Game, furbearers, or fishery resources by the FGFWFC;
- Indicators that are endemic or unique to specific plant communities or habitat types; or
- Species functionally dominant in their vegetation communities or habitat types.

The St. Marks National Wildlife Refuge boundary is southeast of the site on the east side of the St. Marks River. The Aucilla Wildlife Management Area is directly across the river from the site. During periods of time between November and April, hunting by archery and gun is allowed in both the refuge and management area. Additionally, portions of the management area are managed for timber production.

Deer, feral hogs, and turkey are hunted in both areas as are small game (i.e., gray squirrels and raccoons). Additional species are hunted in the management area. These animals include bobwhite, rabbits, beaver, opossum, coyote, armadillo, nutria, and migratory game birds (Urban, 1997).

This section is presented in three parts, beginning first with species-environmental relationships. Secondly, the presence of environmental stress and its effect on area biota is discussed. Finally, the methodologies used to obtain the baseline site characterization data are described.

2.3.6.1 Species - Environmental Relationships

Aquatic Systems

Site Description

The headwaters of the St. Marks River consist of several lakes located within the Tallahassee Hills of Florida. The largest of these lakes is Lake Miccosukee which covers approximately 810 hectares. These headwater lakes typically discharge to sinkholes. Additional sinkholes collect rainwater resulting in very little surface runoff within this area. Lake Miccosukee and the other lakes discharge directly to the St. Marks River during high flow periods through poorly defined channels in swampy terrain. The St. Marks River in its upper reaches flows over shallow bedrock and is a highly stained and sluggish stream. Approximately 0.6 mile north of the Leon-Wakulla county line, the river disappears underground through a number of sinkholes and then emerges as several springs at Natural Bridge approximately 6 miles east of Woodville. From Natural Bridge to Newport, the St. Marks is a typical cool clear spring-fed river flowing through a well-defined channel in fluvial swamps and slash pine-palmetto scrub habitats. Near Newport, the St. Marks becomes tidally influenced with a salt wedge often existing several miles upstream of the site.

The St. Marks is joined by the Wakulla River approximately 0.6 mile south of the City of St. Marks and approximately 1.5 river miles south of the Purdom Station. The St. Marks flows approximately 5.5 miles from the confluence of the Wakulla River to the Gulf of Mexico.

Sampling Station Location and Description

Thirteen water sampling locations were established along the St. Marks River from a point immediately above all influences of the Purdom Station to a point immediately downstream of the discharge of the City of St. Marks Wastewater Treatment Facility (Figures 2.3.4-8 and 2.3.4-9). These sampling locations were utilized to establish water quality characteristics (Section 2.3.4).

Four of these water quality sampling locations were also utilized as collection points for benthic macroinvertebrates. Sampling location PD-01 was located immediately upstream of all Purdom Station influences, upstream of the intake canal for Units 5, 6, and 7. Sampling Location PD-07 was located immediately downstream of the Unit 5 discharge canal. Sampling Location PD-08 was located immediately downstream of the Unit 6/7 discharge canal, and downstream of all Purdom Station influences. Sampling Location 13 was located approximately 0.5 mile downstream of the Purdom Station, immediately downstream of the discharge for the City of St. Marks Wastewater Treatment Facility and just upstream of the confluence of the St. Marks and the Wakulla Rivers.

Water Chemistry

The physical and chemical characteristics of the stations for the date that the Hester-Dendy samplers were deployed, and water chemistry and physical data for each of the stations utilized during the water quality and thermal plume study, are presented in Appendix 10.5.4.

Fisheries

No commercial fishing is allowed above the saltwater line, located approximately at the confluence of the St. Marks and Wakulla Rivers (Shields, 1997). According to local fishermen (Shields, 1997; Hobbs, 1997), typical freshwater sport fish residing in the area of the Purdom Station include: largemouth bass, bluegill, redbreast sunfish, sunfish (shellcrackers), spotted sunfish (stumpnockers), brown catfish, yellow catfish, and channel catfish. These species reside in the St. Marks River year-round. During the winter months, marine fish species typically enter freshwater in search of warm water. Typical marine sport fish species which may move into the Purdom Station area during the winter months include: weakfish (spotted trout), red drum (redfish), gray snapper (mangrove snapper), sheepshead, crevalle jack, and flounder. Forage fish typical of the area include mullet, pinfish, sand seatrout, and shad (*Alosa* sp. and *Dorosoma* sp.), as well as various small and immature freshwater species. Striped bass have historically been stocked within the St. Marks River and striped bass are caught in the St. Marks River in the area of the Purdom Station annually, but there are no reports of striped bass spawning in the St. Marks River. A literature survey was conducted to supplement this listing and to prepare a fish species table. The fish species table is provided to indicate the fish species which are likely to inhabit freshwater, brackish, and marine habitats typical of the St. Marks River near the site and are potentially occurring in the site area. They are presented in Appendix 10.5.5.

Benthic Macroinvertebrates

Benthic macroinvertebrates are benthic or substrate dwelling organisms visible to the unaided eye and are retained on a U.S. Standard No. 30 sieve. They represent an important link in the food chain of many fish species. The majority of these organisms are juvenile or mature life stages of five classes or subclasses: Oligochaeta, Crustacea, Insecta, Gastropoda, and Pelecypoda. Larger individuals or species of several other classes may also be considered macroinvertebrates.

Benthic macroinvertebrates collected from Hester-Dendy sample collections in the St. Marks River near the Purdom Station are presented in Table 2.3.6-1. Based on these data, the benthic macroinvertebrate community appears to be healthy. Total numbers of individuals collected ranged from 221 at the station above all plant influences to 547 below the St. Marks POTW discharge. Total number of taxa collected ranged from 9 above all plant influences to 15 immediately below the Unit 6/7 discharge. The percentage of dominant taxa ranged from 63.0% immediately downstream of the Unit 6/7 discharge, to 21.4% below the St. Marks POTW discharge. Species diversity ranged from 1.29 immediately downstream of the Unit 6/7 discharge to 2.08 below the City of St. Marks Wastewater Treatment Facility discharge.

Site Habitat Value

The St. Marks River in the area of the Purdom Station is tidally influenced and is subject to fluctuations in salinity. Water quality data presented in Appendix 10.5.4 indicate the presence of a salt wedge upstream of the City of St. Marks. These fluctuations in salinity influence the biological community of the river, which exhibits freshwater and marine species. Increased salinities produce conditions which are inhospitable to freshwater species.

Florida Department of Environmental Protection conducted a biological assessment of the Purdom Station's discharges on the St. Marks River (FDEP, 1995). FDEP indicated that reduced Florida Index and Ephemoroptera, Pleucodptera, Trichoptera scores at the reference and test stations may be attributed to the estuarine conditions of the St. Marks River. FDEP also indicated that the water chemistry and physical parameters of the river were within the Class III Water Quality Standards. Biotic indices, using macroinvertebrates, suggested no adverse effects caused by the existing Purdom Station effluent. Toxicity tests using water flea (*Ceriodaphnia dubia)* and bannerfin shiner (*Cyprinella leedsi*) indicated that the effluent was not acutely toxic.

Food Chain Relationships

The waters of the St. Marks River appear to be highly productive. Organic materials are broken down slowly by chemical and biological decomposition in the sediments and their nutrients released. These nutrients are utilized by plankton and aquatic vegetation to produce new organic growth. The plankton and detritivores (worms and certain aquatic insects which feed on decomposing organic materials) form the basis of the food chain for the primary consumers of the ecosystem. Primary consumers (aquatic insects, crustaceans, and small fish) provide food to the secondary consumer (predators). Gizzard and threadfin shad are examples of primary consumers that feed exclusively on plankton. The killifish, cyprinids, and poecillids are primary consumers, as well as predators, in that they feed on aquatic insects, small crustaceans, and

TABLE 2.3.6-1
BENTHIC MACROINVERTEBRATES COLLECTED ON
HESTER-DENDY SAMPLES NEAR PURDOM STATION ST. MARKS RIVER

Taxonomy	Station				Total Individuals
	CTAL-PD01 (2)	CTAL-PD07 (3)	CTAL-PD08 (4)	CTAL-PD13 (5)	
Annelida					
Polychaeta					
Serpulidae					
Hydroides sp.	-	-	-	12	12
Molluska					
Gastropoda					
Hydrobiidae					
Littoridinops sp.	28	20	65	76	189
Neritinidae					
Neritina reclivata	38	8	18	11	75
Pelecypoda					
Dreisseniidae					
Mytilopsis leucopheata	2	1	1	-	4
Crustacea					
Thoracica					
Balanidae					
Balanus sp.	2	-	-	98	100
Decapoda					
Pilumnidae					
Rhithropanopeus harrissi	-	7	16	15	38
Amphipoda					
Crangonyctidae					
Crangonyx sp.	-	-	10	110	120
Grammaridae					
Grammarus sp.	3	10	8	33	54
Talitridae					
Hyalella azecta	-	32	1	-	33
Isopoda					
Munna reyondsi	112	156	313	117	698
Asellidae					
Caecidontea sp.	2	23	1	38	64
Ostracoda	-	74	1	-	75
Insecta					
Ephemeroptera					
Baetidae					
Baetis sp.	-	-	1	-	1
Odonata					
Coenagrionidae					
Enallagma sp.	-	-	1	2	3
Trichoptera					
Hydroptilidae					
Oxyethira sp.	-	1	1	-	2
Diptera					
Chironomidae	33	43	59	28	163
Tipulidae					
Liogma sp.	-	-	-	7	7
Arachnida					
Hydroacarina	1	-	-	-	1
Hydroachnidae					
Hydrachna sp.	-	-	1	-	1
Total Individuals	221	375	497	547	1640
Number Of Taxa	9	11	15	11	18
Percent Dominant Taxa	50.7	41.6	63.0	21.4	42.6
Percent Diptera	14.9	11.5	11.9	6.4	10.4
EPT Taxa	0	1	2	0	2
Shannon-Wiener Diversity Index	1.40	1.76	1.29	2.08	2.00

(1) Hester Dendy samples incubated for 26 days (07/20/96 through 08/10/96). Source: Foster Wheeler Environmental, 1996.
(2) Station located on St. Marks River above all Purdom Station influences.
(3) Station located on St. Marks River downstream of the Purdom Station Unit 5 discharge.
(4) Station located on St. Marks River downstream of the Purdom Station Units 6/7 discharge.
(5) Station located on St. Marks River downstream of the discharge of the City of St. Marks WWTF.

Source: Foster Wheeler Environmental, 1996

algae. These fish are fed upon by larger fish (sunfish, bass, crappie), water snakes, and wading birds. The larger predatory fish are also the prey of many terrestrial predators including wading birds, raptors, mammals, and humans. The process begins again as organic material, predominantly dead vegetation, becomes reincorporated into the aquatic system.

Species Importance Criteria

Species importance is based on the following criteria:

- Threatened, endangered, or species of special concern status;
- Freshwater game or commercial fish;
- Indicator, endemic, and exotic species; or
- Species significant to local ecological systems.

Following is a discussion of site fisheries resources as they relate to the above criteria.

Threatened and Endangered Species and Species of Special Concern

No benthic macroinvertebrate or fish species listed as state or federally threatened or endangered species of special concern are known to occur in the aquatic habitats associated with or near the site (50 CFR 17; FGFWFC, 1987).

Freshwater Game or Commercial Fish

No commercial fishing occurs in the St. Marks River within the immediate area of the site. Commercial species may move up into the St. Marks from the Gulf of Mexico. Game and commercial fish species potentially occurring within the area of the Purdom Station are indicated in Appendix 10.5.5.

Indicator, Endemic, and Exotic Species

There are no indicator species thought to occur in the St. Marks River. There are no endemic or exotic fish species thought to be specific to the St. Marks River drainage. There are six native fish species which are endemic to Florida: Florida gar, banded killifish, marsh killifish, Seminole killifish, flagfish, and bluefin killifish. These species have natural distributions which mainly occur within Florida. All six of these species potentially occur within the St. Marks River near the Purdom Site.

Species Significant to Local Ecological Systems

In addition to the important game and commercial species discussed earlier, which function as the predominant predators living within the aquatic ecosystems on the site, several additional species are significant to the local ecological system. These species are presented in Appendix 10.5.5.

Baseline Terrestrial And Wetland Conditions

Species Importance Criteria

Descriptions of expected baseline vegetation community structure, vegetation species dominance, and floral species composition are presented in Section 2.3.5. Within these communities is the potential for occurrence of faunal and floral species which are of special importance. This special importance arises from species status as being either:

- Threatened, endangered, or species of special concern;
- Game animals or furbearers;
- Indicator and endemic species; or
- Vertebrate species significant to local ecological systems.

Threatened or Endangered Plant Species

Discussions of endangered or federally threatened plants whose habitat ranges include the site are listed below. Many of the plant species discussed are not expected to occur within the site. This is primarily due to an absence of a species suitable habitat. None of the species described below have been found at the site during several site reconnaissance visits conducted in all seasons.

Protected species importance is based on species lists of the USFWS (50 CFR 17.11-12), the Florida Game and Fresh Water Fish Commission (Rule 39-27.003-005, F.A.C.), and the Florida Department of Agriculture and Consumer Services (DACS) (Preservation of Native Flora Act, Section 581.185-187, F.S.).

Florida Brickell-Bush (*Brickellia eupatoriodes*) is listed as endangered by DACS. It is most commonly found in sandhills and pine-oak forests. Marginal habitat is present on the site. The species was not found on the site.

Wiregrass Gentian (*Gentiana pennelliana*) is an endangered species (DACS) that is found in flatwoods. Adequate habitat for this species does not occur at the site.

Godfrey's Blazing Star (*Liatris provincialis*) is listed as endangered by DACS. It is found on sandhills and dunes. Neither habitat occurs on the site.

Hummingbird Flower (*Macranthera flammea*) is listed as endangered by DACS and is found in bogs and acid swamps and along creek banks. Marginal habitat occurs on the site and the species was not observed on the site.

Ashe's Magnolia (*Magnolia ashei*) is listed as endangered by DACS. This species is found on bluffs, in hammocks, and in bayheads. Adequate habitat for this species is present on the site. The species was not observed on the site.

Pyramidal Magnolia (*Magnolia pyramodata*) is listed as endangered by DACS and is found on bluffs. This habitat type is not found on the site.

Panhandle Golden Aster (*Pityopsis flexuosa*) is listed as endangered by DACS and prefers sandhill habitat types. This habitat type is not present on the site.

Orange Azalea (*Rhododendron austrinum*) is listed as an endangered species by DACS. It is found on bluffs, hammocks, and in floodplains. Adequate habitat for this species is present on the site. The species was not observed on the site.

Threatened, Endangered, or Species of Special Concern (Animals)

Terrestrial vertebrate protected species status for the site is summarized below. No protected invertebrates occur in the site vicinity (Wood, 1996).

Florida Gopher Frog (*Rana areolata*) has been recorded throughout most of Florida. Its most common habitat association is in and around gopher tortoise burrows. The preferred habitat is dry but near enough to grassy ponds for breeding. The gopher frog feeds upon insects and toads. No habitat for the species currently exists on the site. Habitat loss and human disturbance are cause for this listing as a species of special concern (McDiarmid, 1978).

Gopher Tortoise (*Gopherus polyphemus*), a species of special concern in Florida, has large populations within the state of Florida. Species habitat includes dry, well drained soils covered with a variety of upland pine and oak species, as well as old field vegetation communities. Vegetation cover is usually a habitat requirement. Gopher tortoises feed on grasses, leaves, and other herbaceous matter. This species excavates long burrows for its own use. However, a variety of other species including the indigo snake (*Drymarchon coupari*) and gopher frog also use these burrows for shelter, although gopher tortoise burrows are not required. Potential habitat for the gopher tortoise would be found in open upland areas of the site. Areas with flat topography and a high wet season water table would limit burrowing habitat. Sandy soils versus soils with rock and solidified hard clays on the site will be preferred by the tortoise. The gopher tortoise has been recorded near the site area but not on the site (FNAI, 1996).

American Alligator (*Alligator mississippiensis*), federally classified as threatened through its similarity in appearance to the American crocodile (*Crocodylus acutus*), and a species of special concern in Florida, has populations existing throughout the state and over much of the southeastern United States coastal plain. This species is found in nearly all wetland and aquatic habitat types in Florida. Food for the alligator includes aquatic and wetland vertebrates and larger invertebrates (McDiarmid, 1978). Alligators are commonly observed in appropriate habitat in Wakulla County and have been observed in the on-site canals and treatment pond by plant personnel.

Florida Pine Snake (*Pituophis melanoleucus mugitus*) is found throughout most of northern and eastern Florida. It occupies sandy habitats such as longleaf pine and turkey oak communities. The pine snake feeds upon small mammals, birds, and other small vertebrates (Ashton and Ashton, 1988). Habitat loss is the primary reason for its population decline and listing as a species of special concern. No habitat for this species is currently on the site.

Eastern Indigo Snake (*Drymarchon corais couperi*), classified as threatened by Florida and the federal government, is generally found in Florida and southeastern Georgia. Species habitat includes dry sandy areas, as well as moist vegetation communities. The indigo snake frequently uses gopher tortoise burrows as shelter in xeric habitats, in part to avoid desiccation. Food for this species includes a wide range of small upland vertebrates including other snakes (McDiarmid, 1978). Potential habitat for the indigo snake occurs in the site area. No indigo

snakes were observed at the site. The indigo snake has been observed in several areas of Wakulla County (FNAI, 1996).

Wood Stork (*Mycteria americana*) is considered endangered in Florida with nesting colonies occurring in South Carolina, southeastern Georgia, and Florida. Nesting and feeding occur in freshwater wetlands and brackish mangrove swamps. Food for this species includes small fish usually obtained from shallow water. Inland nesting is frequently in large cypress trees, while mangrove islands provide nesting habitat in estuarine and marine environments (Kale and Maehr, 1990). Shallow open water and isolated marsh lands represent potential feeding habitat for the wood stork, particularly under low water conditions when fish are concentrated. This habitat exists along ditches. No wood storks were observed feeding in these habitats on the site. No suitable freshwater swamp nesting habitat and minimal feeding habitat were found to occur at or near the site.

Southern Bald Eagle (*Haliaeetus leucocephalus*), considered threatened by the State of Florida and by the federal government, occurs throughout the state; however, nesting is concentrated in north central counties and along coastal portions of Charlotte, Lee, Collier, Monroe, and Dade Counties. Nesting usually occurs near feeding areas along shorelines and over shallow water bodies. Nests are solitary and are usually in tall pine or cypress trees often with good visibility over the surrounding countryside. Although fish are this species' primary food source, other vertebrate prey may be captured (Kale and Maehr, 1990). Feeding habitat for this species includes the St. Marks River. This species has been seen feeding at the St. Marks River near the site. The potential for nesting at the site is low.

Southeastern American Kestrel (*Falco sparverius paulus*), considered threatened by the State of Florida, is an open habitat bird preferring open pine forest and clearings with dead trees. However, it can also be found along the open edges of river bottoms, coastal regions, suburban areas, and even in large cities. Large insects are the primary food item with small rodents and reptiles also being important prey items. *Falco sparverius paulus* ranges from South Carolina south to southern Alabama and Florida with recent observations indicating that the Florida population is declining (Kale and Maehr, 1990). Minimal nesting habitat and some feeding habitat for this species occurs at the site. Kestrels were not observed at the site.

Osprey (*Pandion haliaetus*) occurs at and near rivers, lakes and wetlands throughout the state. The population in the Keys is listed as a species of special concern. It has received consideration here because of its protected status elsewhere in the state, its previous decline due to chlorinated insecticides, and its high position in the food chain. The osprey nests on tall structures near feeding areas or near the ground on islands with low predator populations (Kale and Maehr, 1990). The species feeds upon fish. No nesting by this species occurs on the site. The osprey has been observed feeding in the site area along the St. Marks River.

Florida Sandhill Crane (*Grus canadensis pratensis*) is classified as threatened in Florida and ranges from extreme southeastern Georgia (Okefenokee Swamp) southward through peninsular Florida, becoming scarce in Monroe and Dade Counties. The preferred habitat includes wet prairies, marshy lake margins, and low-lying improved cattle pastures. Nesting activity is related to water level with eggs hatching normally in March and April. Sandhill cranes feed on a wide range of plants. Besides eating various grains, they consume herbaceous foliage, underground

stems, tubers, and roots. Invertebrates such as grasshoppers, beetles, caterpillars and snails along with certain amphibians and mammals make up the bulk of the animal portion of its diet (Kale and Maehr, 1990). Suitable feeding habitat exists in the on-site transmission line right-of-way and would likely be limited to herbaceous wetlands. No sandhill cranes were observed on the site.

Limpkin (*Aramus guarauna*), a species of special concern in Florida, can be found throughout peninsular Florida where they favor slow-moving freshwater rivers and streams, marshes and lake shores. Nesting in Florida probably occurs year-round and corresponds with the availability of foods. Various snails along with other freshwater mussels are the limpkin's primary foods. Lizards, insects, frogs, and worms are eaten in lesser amounts (Kale and Maehr, 1990). Limited limpkin feeding and nesting habitat was present at the site. This species was not observed on the site.

Little Blue Heron (*Egretta caerulea*), a Florida species of special concern, breeds along much of the Atlantic and Gulf coasts. In Florida, they range from the panhandle south to the Keys. Cypress (*Taxodium distichum*), southern willow (*Salix caroliniana*), and cabbage palm (*Sabal palmetto*) are among the more common trees used during the breeding season which, in Florida, spans the months of February to September. These three species occur in habitats ranging from fresh to saltwater. Little blue herons prefer to forage in freshwater habitats for the crustaceans, insects, small fish, frogs, and lizards which form the major portion of their diet (Kale and Maehr, 1990). The site contains suitable feeding habitat for the little blue heron in herbaceous and fringe wetlands. It was not observed at the site during site inspections but it was commonly observed in the site area.

Snowy Egret (*Egretta thula*), a Florida species of special concern, is typically restricted to coastal areas. It is found from Maine to Florida, along the Atlantic Coast, and to Texas along the Gulf. This small white egret nests in both inland and coastal colonies throughout peninsular Florida. The largest nesting colonies occur in coastal estuarine habitats often in association with tricolored heron. Woody plant species typically chosen for nest sites include willow, buttonbush, and wax myrtle stands. Small fish and various invertebrates are among the more common food items. The snowy egret has been observed feeding along the river shoreline at the site.

Tricolored Heron (*Egretta tricolor*), classified as a species of special concern in Florida, can be found along the entire Atlantic and Gulf coasts to include the Caribbean and West Indies to northern Brazil. In Florida, this large wader is most commonly found in estuarine colonies and occasionally in freshwater habitats. Willow, buttonbush, marsh elder, and wax myrtle are among the more common woody species used for nesting. Nesting may begin as early as February or as late as July (Kale and Maehr, 1990). Small fish are the primary food source while a variety of invertebrates are also consumed to a lesser extent. The tricolored heron has been observed feeding along the shoreline of the St. Marks River at the site.

Least Tern (*Sterna albifrons*) occurs in coastal areas throughout the state. Nesting colonies have occurred at widely scattered inland locations. Nesting generally occurs on open flat sandy areas. Feeding habitat includes aquatic areas where they feed upon small fish (Kale and Maehr, 1990). The St. Marks River in the vicinity of the site may be used sparingly by this species for feeding.

Habitat loss and human disturbance are the reasons for its listing as a threatened species. The least tern was not observed at the site.

Red-Cockaded Woodpecker (*Picoides borealis*), a species classified as endangered by the federal government and as threatened by Florida, has a range primarily restricted to coastal plain pine woods of the southeastern United States. In Florida, this bird is found throughout most of the state, south to the Homestead area. Historically, red-cockaded woodpecker cavities have been found in a variety of pine species. Trees chosen usually are advanced in age and infected by a fungus disease that softens their heartwood. Studies from different parts of the south found that the average cavity tree age ranged from 62 to 149 years in age with cavities rarely found in trees as young as 30 to 40 years (Lennartz and Henry, 1985). No habitat for the red-cockaded woodpecker is present at the site. No colonies were observed or are reported to exist at or near the site.

West Indian Manatee (*Trichechus manatus*), is listed by the both the State of Florida and the USFWS as endangered. This species occurs from coastal southeastern United States southward to Brazil. In Florida, the manatee is found naturally year-round in southern portions of the state and during the summer in the northern portion of the state as well. The manatee occupies a variety of marine, estuarine and fresh waters and is found in both turbid and clear water. Water depths of at least 3 feet are preferred. In coastal areas the manatee tends to travel in water up to 20 feet deep. It also tends to avoid swift currents. Manatees are primarily herbivorous and feed on seagrasses and their rhizomes, freshwater plants and plants along shorelines (Van Meter, 1987).

An active manatee watch program is in effect in Wakulla County. Observations of manatees are common in county waters during the summer months. Observations are published weekly to help boaters avoid or be alert for manatees in areas where they are likely to be present.

Manatees are regularly spotted in the area of the power plant during warm months and have been observed there during winter months. Plans are being formulated to discourage boaters from entering the Unit 7 discharge canal in order to provide a safe haven for manatees.

The northernmost warm water winter refuge for the manatee in the Gulf of Mexico is in the Citrus County area. Waters warmed or thermally moderated by power plant cooling water discharges and natural spring waters are the reasons for manatee use of this area (USFWS, 1996). The existing Purdom site discharge canal temperature range during the winter is 13° C to 17° C (Figure 2.3.4-19) . This compares to St. Marks River minimum water temperatures during the winter of 13° C (Figure 2.3.4-20).

Manatees that spend summers in northern Florida water may exhibit two migratory behavioral patterns. Most manatees that occupy this area during the summer migrate south to their traditional warm water refuges as winter approaches. A few manatees, however, may remain in the northern waters through the winter. These animals seem to be able to remember and find warm waters, including springs and thermal discharges. They leave warm water areas to feed and then return. During the winter they may travel many miles to feed, and may even resort to consuming undesirable food such as saltmarsh (*Spartina alterniflora*) (USFWS, 1997).

Freshwater springs are the dominant factor controlling the water temperature in the Wakulla River, while meteorological factors are the dominant factors for the St. Marks River. Wakulla

Springs discharges an average of 390 cfs (USGS, 1981) at temperatures no lower than 65° F (18.5° C). On a cold winter day, this water is expected to not cool below 62° F (16.8° C) by the time it reaches the confluence with the St. Marks River. Manatees having been observed in the Wakulla River during winter months by Foster Wheeler Environmental personnel. Thus, the Wakulla River is a natural attractant for manatees as well as a potential thermal refuge for them.

Florida Panther (*Felis concolor coryi*), is a species considered endangered by both the State of Florida and the USFWS. In Florida, this species is generally found in large undeveloped lands in the central parts of the state southward. It feeds primarily on large mammals, such as deer, rabbits, raccoons, etc. It may be diurnally active. The Florida panther has a large home range and may travel extensively, up to 25 miles, in a given night (Whitaker, 1980). The FNAI (1996) files show no records of the panther in the site region.

Florida Black Bear (*Ursus americanus floridanus*) has been recorded at scattered locations throughout the state. Records exist for the species occurring in Wakulla County. This species prefers dense vegetation cover and is omnivorous in its feeding habits. Habitat loss, hunting, and other human disturbance have contributed to the decline of populations of this species and its listing as threatened (Layne, 1978). Minimal habitat is present on or adjacent to the site for the bear. The bear occurs in the St. Marks National Wildlife Refuge east of the site (FNAI, 1996).

Sherman's Fox Squirrel (*Sciurus niger shermani*), a Florida species of special concern, prefers the longleaf pine-turkey oak vegetation association of the sandhills. Pine seeds and acorns along with a few insects are the primary food items (Layne, 1978). Suitable habitat does not exist on the site.

Game Animals and Furbearers

The site is relatively low in population levels of most game animals and furbearers. This condition is due to the relatively small size of the site, its location within the industrial use area of the City of St. Marks, relatively small habitat areas and the continued operation of the Purdom Station. It should be noted that no hunting has been allowed on the site.

Indicator and Endemic Vertebrate Species

No animal species endemic to Florida are likely to occur on the site. The following indicator species characteristic of a given habitat type may be present:

- Eastern Meadowlark - Rangeland and old field habitats
- Marsh Rice Rat - Herbaceous wetlands
- Southern Leopard Frog - Herbaceous wetlands
- Southern Cricket Frog - Ditches and herbaceous wetlands

Vertebrate Species Important to Local Ecological Systems

The importance of vertebrate species to ecological systems on the site is based upon roles species play in the local food chains and their ability to impact this energy flow by virtue of their numbers present. Seasonal shifts in faunal ecosystem roles can complicate site food chain characteristics. For example, breeding, migratory and wintering birds differ seasonally in their

food requirements and use of site habitats. Additionally, during the dry season when many site wetland areas dry out for several months, these areas take on terrestrial characteristics. Consequently, habitat availability for species changes during the course of a year.

The following discussion of avian species important to local ecological systems focuses on winter and breeding season populations. During these periods of time, species populations are, at least in part, directly dependent on site habitats for food, cover and other life history requirements. During migratory seasons, avian populations have less of a dependence upon site resources. The combined ecological effects of migratory birds of all species likely influences populations of most site biota.

Birds significant to local ecological systems are generally those with larger population densities or those considered to be upper and top carnivore species. Upper and top carnivore species include raptors, shrikes, and large wading birds. For most of the smaller migratory bird species, dietary shifts occur in preparation for migration and winter occupation (when high energy content foods, such as grains, are required) and for nesting (when higher protein content foods are required for egg production and nestling growth). During the breeding season; therefore, many of these migratory species' position in the food chain will rise with more carnivorous diets and in the other seasons fall, at times when more herbivorous or graniverous diets are required.

Red-shouldered hawks would be observed more often in and near forested habitats. In open riverine systems, waterfowl, including ducks, coots, common moorhens, double-crested cormorants, brown pelicans, and anhingas would dominate the food chain systems at the upper trophic levels.

In wetlands and riverine habitats, river otters would likely be the most prominent mammals. Elsewhere, where there is adequate cover, the assortment of medium-sized mammals would occur. These include raccoons, opossum, armadillos, and bobcats. The white-tailed deer should also be present but in low numbers. In addition to the bobcat as a top carnivore, the gray and red fox could be present in adequate numbers to significantly influence the food chain. Other species which could be present include the eastern cottontail and marsh rabbits, and striped skunks. Small mammals which could be present include several rodents and shrews.

2.3.6.2 Pre-existing Stresses

Generally, stresses which would be expected at the site include the following categories:

- Effects of human activity
- Effects of previous site development
- Effects of site maintenance

Effects of Human Activity

Effects of human activity result from periodic movement of soils and machinery during maintenance and construction, and, in each case, degrades habitat value of the land. As noted, hunting and timber operations occur in the Aucilla Wildlife Management Area directly across the river from the site.

Effects of Previous Site Development

Effect of previous site development has included the addition of fill material to much of the site for purposes of site development. These activities date back to the early 1950s. Site development resulted in loss of natural habitat types.

Effects of Site Maintenance

The effect of site maintenance such as mowing and facility repair results in the control of ecological succession to protect the generation units and their associated facilities.

2.3.6.3 Measurement Program

Methods associated with aquatic ecology studies and terrestrial and wetlands ecological studies conducted at the site are described within Appendix 10.5.5.

2.3.6.4 References

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2.3.7 Meteorology and Ambient Air Quality

2.3.7.1 Meteorology

General Climatology

The climate in the vicinity of the Purdom Generating Station, approximately five air miles from the Gulf of Mexico, is mild and moist, characteristic of the Gulf Coast. The nearest National Weather Service "first-order" climatological station is located at the Tallahassee Regional Airport approximately 30 kilometers (km) (18 miles) northwest of the site. Data recorded at the Tallahassee Regional Airport should be representative of the conditions at the site since the terrain is fairly flat and the site is relatively close to the airport. However, since the Purdom Station is closer to the coast than Tallahassee, data from the Apalachicola Municipal Airport (about 90 km (55 miles) southwest in a coastal setting) are also presented.

Unlike Florida's southern peninsula, Tallahassee experiences four definitive seasons with considerable winter rainfall and diminished winter sunshine. The Tallahassee area climatic data summary based on the years 1951 to 1980 is shown in Table 2.3.7-1. Similar data from Apalachicola are presented in Table 2.3.7-2. Most climatological information presented in this section is taken from three publications by the U.S. Department of Commerce (1989, 1984, 1984a).

Winds

Wind speed is one of the important parameters in the dispersion of air emissions. Wind speeds below 2 meters/second (m/s) (4.5 miles per hour) are generally considered conducive to decreased air pollution dispersion. The mean wind speeds in the area exceed 5 mph in all 12 months at Tallahassee (Table 2.3.7-1) and 6 mph at Apalachicola (Table 2.3.7-2).

The prevailing wind directions are influenced locally by convectional forces. Consequently, seasonal wind directions tend to be from the north in fall and winter and from the south and east in spring and summer at Tallahassee. The pattern at Apalachicola is similar but with more of a southwesterly component in summer. The average annual wind speed is 6.4 mph at Tallahassee and 7.9 mph at Apalachicola. The average wind speed is typically lower than this value in the summer and higher in the winter. At Tallahassee, the maximum observed wind speed (one minute) recorded since 1959 was 58 mph from the north in August 1962. The highest gust of wind recorded since 1982 was 68 mph from the south in November 1985; it was associated with Hurricane Kate. High winds are infrequent and of short duration, usually associated with strong cold fronts in the late winter and early spring months and/or with tropical storms/hurricanes in the summer and fall.

The wind regime at the Purdom Station is undoubtedly similar to the Tallahassee and Apalachicola locations and is most probably characterized by directions and speeds in between those of the two locations where there are differences. Either location could be considered reasonably representative of the Purdom Station site. FDEP has requested that the Tallahassee

TABLE 2.3.7-1
TALLAHASSEE CLIMATOLOGICAL SUMMARY

NORMALS, MEANS, AND EXTREMES

TALLAHASSEE, FLORIDA

LATITUDE: 30°23'N LONGITUDE: 84°22' W ELEVATION: FT. GRND 55 BARO 58 TIME ZONE: EASTERN WBAN: 93805

	(a)	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	EAR
TEMPERATURE °F:														
Normals														
-Daily Maximum		63.4	65.9	72.7	80.0	86.0	90.1	90.9	90.6	87.8	80.4	71.5	65.3	78.7
-Daily Minimum		39.9	41.2	47.7	54.0	62.0	68.8	71.5	71.6	68.8	56.4	46.0	40.7	55.7
-Monthly		51.6	53.6	60.2	67.1	74.0	79.5	81.2	81.1	78.3	68.4	58.8	53.0	67.2
Extremes														
-Record Highest	28	82	85	90	95	98	103	103	102	99	94	88	84	103
-Year		1972	1962	1967	1968	1962	1985	1980	1986	1962	1986	1961	1971	JUN 1985
-Record Lowest	28	6	14	20	29	34	46	57	61	40	30	13	10	6
-Year		1985	1971	1986	1987	1971	1984	1967	1986	1967	1973	1970	1962	JAN 1985
NORMAL DEGREE DAYS:														
Heating (base 65°F)		441	341	191	48	0	0	0	0	0	38	210	383	1652
Cooling (base 65°F)		25	22	42	111	279	435	502	499	399	143	24	11	2492
% OF POSSIBLE SUNSHINE														
MEAN SKY COVER (tenths)														
Sunrise - Sunset	27	6.2	5.9	5.9	5.2	5.5	5.9	6.4	6.1	5.9	4.6	5.2	5.9	5.7
MEAN NUMBER OF DAYS:														
Sunrise to Sunset														
-Clear	27	8.8	8.4	8.9	10.3	8.7	5.7	3.6	4.7	7.2	13.8	10.8	9.1	100.0
-Partly Cloudy	27	7.0	7.3	8.8	10.4	12.8	14.4	16.7	16.1	12.1	8.0	8.5	7.9	129.9
-Cloudy	27	15.1	12.5	13.3	9.3	9.6	9.9	10.7	10.2	10.7	9.3	10.7	13.9	135.3
Precipitation .01 inches or more	27	9.9	9.1	8.9	6.4	8.4	12.1	16.6	14.9	9.4	4.9	6.9	8.3	115.8
Snow, Ice pellets 1.0 inches or more	27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thunderstorms	27	1.6	2.3	4.0	3.4	7.9	13.0	19.6	16.7	8.3	2.0	1.6	1.7	82.2
Heavy Fog Visibility 1/4 mile or less	27	6.9	5.2	5.8	4.9	4.7	2.8	2.3	1.8	1.7	2.7	5.1	6.2	50.0
Temperature °F														
-Maximum														
90° and above	27	0.0	0.0	0.*	1.5	7.5	19.2	22.6	21.4	14.4	1.6	0.0	0.0	88
32° and below	27	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.*	0.1
-Minimum														
32° and below	27	11.7	8.4	3.4	0.2	0.0	0.0	0.0	0.0	0.0	0.2	4.1	9.6	37.6
0° and below	27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG. STATION PRESS. (mb)	16	1018.4	1017.1	1015.2	1014.6	1013.2	1013.8	1015.0	1014.7	1014.1	1016.1	1017.1	1018.7	1015.7
RELATIVE HUMIDITY (%)														
Hour 01	27	85	84	86	88	89	90	93	93	91	88	88	87	89
Hour 07 (Local Time)	27	86	87	89	91	91	91	94	95	94	91	90	88	91
Hour 13	27	58	54	52	47	50	55	61	62	59	52	55	57	55
Hour 19	27	72	64	60	56	60	67	74	76	75	72	77	77	69
PRECIPITATION (inches):														
Water Equivalent														
-Normal		4.66	5.00	5.60	4.13	5.16	6.55	8.75	7.30	6.45	3.10	3.31	4.58	64.59
-Maximum Monthly	28	11.68	11.50	13.57	13.13	11.66	12.62	20.12	15.73	15.92	11.79	10.44	12.65	20.12
-Year		1975	1964	1973	1973	1976	1965	1964	1977	1969	1976	1976	1964	JUL 1964
-Minimum Monthly	28	0.40	1.21	1.29	0.39	T	2.09	2.35	2.45	0.11	T	0.88	0.89	T
-Year		1969	1976	1967	1986	1965	1977	1983	1983	1972	1987	1971	1980	OCT 1987
-Maximum in 24 hrs	28	3.75	6.04	7.16	4.73	4.50	6.75	8.94	3.70	9.47	5.95	4.98	9.26	9.47
-Year		1976	1991	1962	1964	1979	1966	1964	1987	1969	1964	1976	1964	SEP 1969
Snow, Ice pellets														
-Maximum Monthly	28	T	0.4	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.4
-Year		1985	1973	1980									1976	FEB 1973
-Maximum in 24 hrs	28	T	0.4	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.4
-Year		1985	1973	1980									1976	FEB 1973
WIND:														
Mean Speed (mph)	27	7.0	7.4	7.7	7.0	6.3	5.9	5.2	5.1	6.0	6.3	6.2	6.4	6.4
Prevailing Direction through 1963		N	S	S	S	E	S	SW	E	ENE	N	N	N	N
Fastest Obs. 1 Min.														
-Direction (!!)	29	23	09	27	27	29	03	23	02	36	34	16	15	02
-Speed (MPH)	29	46	40	48	35	40	44	36	58	44	30	40	32	58
-Year		1963	1969	1964	1961	1961	1966	1963	1962	1963	1961	1985	1969	AUG 1962
Peak Gust														
-Direction (!!)	5	S	S	S	N	S	SE	E	S	E	SE	S	NW	S
-Speed (mph)	5	33	51	47	35	41	47	43	39	44	31	68	29	68
-Date		1987	1984	1984	1987	1984	1987	1986	1986	1985	1986	1985	1984	NOV 1985

(a) Period of record 30 years (1951-1980) unless a shorter period is indicated.
Source: U.S. Department of Commerce, 1989

TABLE 2.3.7-2
APALACHICOLA CLIMATOLOGICAL SUMMARY

NORMALS, MEANS, AND EXTREMES

APALACHICOLA, FLORIDA

LATITUDE: 29°44'N LONGITUDE: 85°02' W ELEVATION: FT. GRND 19 BARO 22 TIME ZONE: EASTERN WBAN: 12832

	(a)	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F:														
Normals														
-Daily Maximum		60.5	62.4	68.0	75.1	81.7	86.6	88.0	88.0	85.3	78.2	69.2	63.0	75.5
-Daily Minimum		45.1	46.9	53.4	60.7	67.3	72.9	75.0	74.7	72.3	62.1	52.7	47.0	60.8
-Monthly		52.8	54.7	60.7	67.9	74.5	79.8	81.5	81.4	78.9	70.2	61.0	55.0	68.2
Extremes														
-Record Highest	59	79	80	85	90	98	101	102	99	96	93	87	82	102
-Year		1957	1957	1982	1967	1986	1930	1932	1986	1932	1941	1935	1931	JUL 1932
-Record Lowest	59	9	21	22	36	47	48	63	62	50	39	24	13	9
-Year		1985	1951	1980	1987	1981	1984	1981	1986	1967	1977	1950	1962	JAN 1985
NORMAL DEGREE DAYS:														
Heating (base 65°F)		401	311	168	30	0	0	0	0	0	24	154	320	1408
Cooling (base 65°F)		23	23	35	117	295	444	512	508	417	185	34	10	2603
% OF POSSIBLE SUNSHINE	53	59	62	65	74	78	71	64	64	65	74	67	57	67
MEAN SKY COVER (tenths)														
Sunrise - Sunset	55	5.7	5.6	5.6	4.8	4.6	5.3	6.1	5.9	5.6	4.0	4.6	5.7	5.3
MEAN NUMBER OF DAYS:														
Sunrise to Sunset														
-Clear	58	10.2	9.7	10.7	12.5	12.9	9.1	6.5	7.2	9.7	16.2	13.4	10.0	128.1
-Partly Cloudy	58	7.7	6.8	8.3	8.7	10.4	13.0	13.1	13.0	9.7	7.6	7.6	7.7	113.4
-Cloudy	58	4.6	11.8	12.1	8.8	7.7	7.9	11.5	10.8	10.5	7.3	9.0	13.3	115.2
Precipitation .01 inches or more	59	8.9	8.6	7.9	5.6	5.4	9.6	14.6	13.7	11.2	5.4	6.3	8.1	105.3
Snow, Ice pellets 1.0 inches or more	59	0.0	0.*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*
Thunderstorms	55	1.6	2.4	3.8	3.4	4.9	9.8	16.3	15.7	9.8	1.7	1.5	1.6	72.4
Heavy Fog Visibility 1/4 mile or less	55	6.2	4.6	5.4	2.5	0.9	0.3	0.1	0.1	0.1	0.6	2.1	4.3	27.2
Temperature °F														
-Maximum														
90° and above	59	0.0	0.0	0.0	0.*	0.6	5.5	7.9	7.5	3.2	0.1	0.0	0.0	25.0
32° and below	59	0.*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.*	*
-Minimum														
32° and below	59	3.2	1.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.7	6.9
0° and below	59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG. STATION PRESS. (mb)	13	1020.2	1019.0	1017.2	1016.3	1015.2	1015.9	1017.0	1016.4	1015.7	1017.4	1018.6	1020.5	1017.4
RELATIVE HUMIDITY (%)														
Hour 01	34	83	83	86	86	86	86	87	88	86	83	83	84	85
Hour 07 (Local Time)	38	85	86	86	86	84	85	86	88	88	86	85	86	86
Hour 13	34	66	65	65	64	64	67	71	76	69	62	64	67	67
Hour 19	38	78	77	76	73	72	74	76	77	78	76	78	78	76
PRECIPITATION (inches):														
Water Equivalent														
-Normal		3.51	3.64	4.04	3.25	2.94	4.81	7.09	7.53	8.66	3.19	2.82	3.50	54.98
-Maximum Monthly	59	8.25	9.19	14.33	12.14	8.70	18.32	18.07	21.08	22.55	12.09	9.00	9.68	22.55
-Year		1964	1960	1959	1983	1974	1965	1984	1970	1946	1959	1947	1986	SEP 1946
-Minimum Monthly	59	0.04	0.38	0.71	0.09	0.25	0.30	0.75	1.85	0.60	0.01	0.04	0.30	0.01
-Year		1957	1938	1939	1942	1983	1977	1976	1951	1972	1935	1931	1955	OCT 1935
-Maximum in 24 hrs	59	3.91	7.12	8.17	7.76	7.07	5.34	6.75	5.93	11.71	6.32	5.84	4.15	11.71
-Year		1985	1988	1948	1964	1959	1949	1975	1986	1932	1965	1930	1931	SEP 1932
Snow, Ice pellets														
-Maximum Monthly	59	0.4	1.2	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	1.2
-Year		1977	1958	1980									1988	FEB 1958
-Maximum in 24 hrs	59	0.4	1.2	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	1.2
-Year		1977	1958	1980									1988	FEB 1958
WIND:														
Mean Speed (mph)	40	8.3	8.7	8.9	8.6	7.7	7.2	6.4	6.5	7.9	8.0	8.0	8.0	7.9
Prevailing Direction through 1956		N	N	SE	SE	SE	SW	W	SW	NE	NE	N	N	N
Fastest Mile														
-Direction (!!)	47	E	E	E	SE	SE	E	N	NE	E	NW	SE	SE	E
-Speed (MPH)	47	48	42	54	51	47	55	63	59	67	56	47	42	67
-Year		1960	1969	1931	1933	1937	1972	1930	1939	1947	1941	1948	1945	SEP 1947
Peak Gust														
-Direction (!!)	3	N	W	NE	W	NW	NW	S	E	SE	SE	SW	E	SW
-Speed (mph)	3	41	46	40	43	39	38	41	68	68	44	85	47	85
-Date		1987	1986	1988	1988	1985	1986	1988	1985	1985	1985	1985	1986	NOV 1985

(a) Period of record 30 years (1951-1980) unless a shorter period is indicated.
Source: U.S. Department of Commerce, 1989

Regional Airport data for the years 1985 through 1989 be used for the dispersion modelling which supports the air impact assessment. Therefore, it is the Tallahassee wind data which are used to characterize the site. Additional Tallahassee wind information is depicted in the wind rose for 1985 through 1989 on Figure 2.3.7-1 and for the four seasons for that same period on Figure 2.3.7-2. A wind rose for a longer period of record (1948 through 1990) presented in the Plan of Study (COT, 1996) exhibited less dominance of the northerly component and more winds from the east than the wind rose on Figure 2.3.7-1. However, the wind instruments were moved in 1961 from Dale Mabry Field to the current location, which likely accounts for the differences.

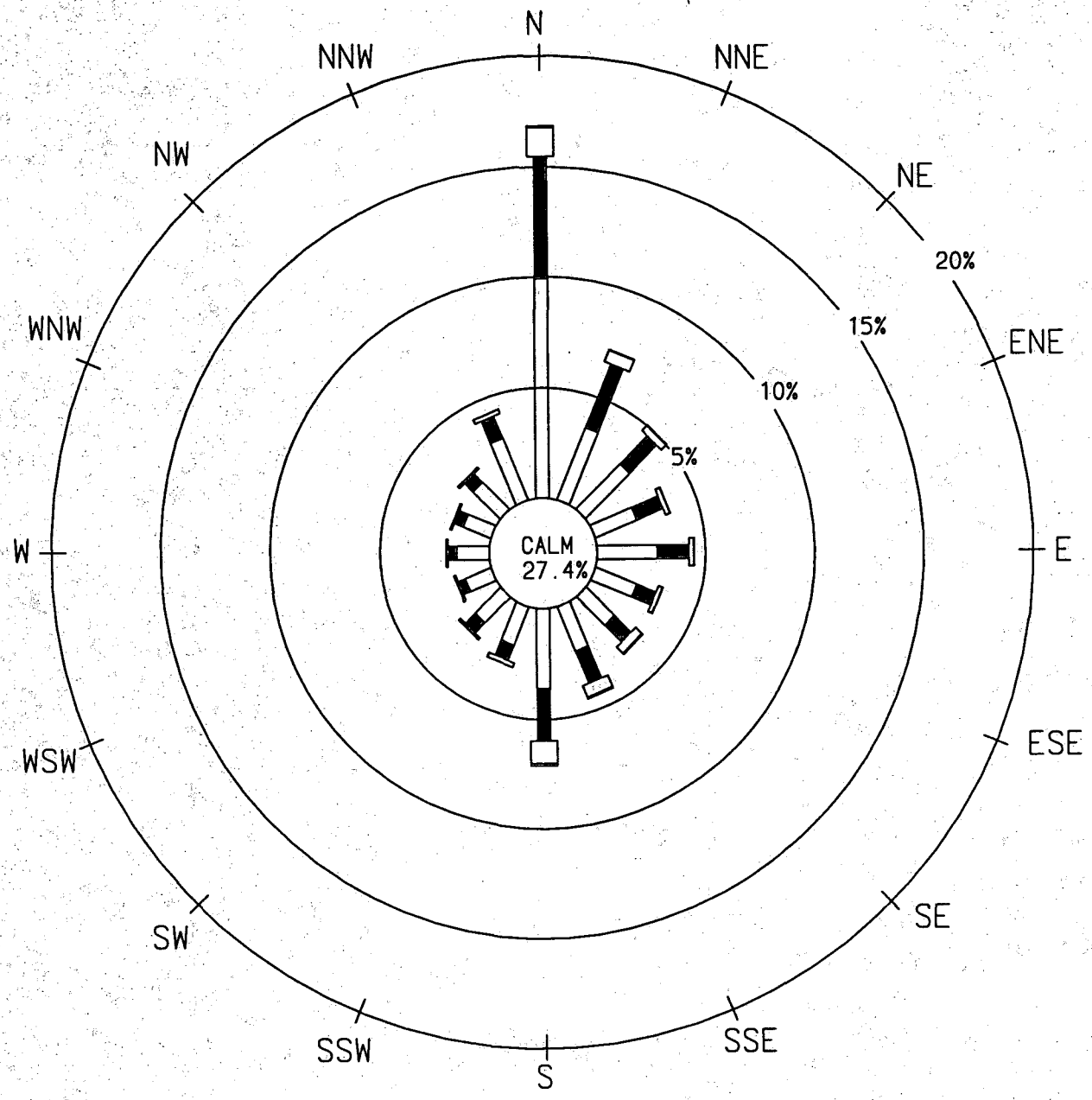
Atmospheric Stability

Another important factor in determining the impact of an emission source on air quality is the stability of the atmosphere. The American Society of Mechanical Engineers (ASME, 1968) defined the stability of the atmosphere as its "tendency to resist or enhance vertical motion, or alternatively to suppress or augment existing turbulence." Stability is related to both wind shear and vertical temperature structure, but it is generally the latter which is used as an indicator of the condition. The atmospheric dispersion models used to predict the impacts of the Project on air quality use atmospheric stability class as one of the key meteorological input parameters (along with wind speed, wind direction, and mixing height). The dispersion models are described briefly in Section 5.6 of the SCA, and additional information on them may be found in Appendix 10.6.6.

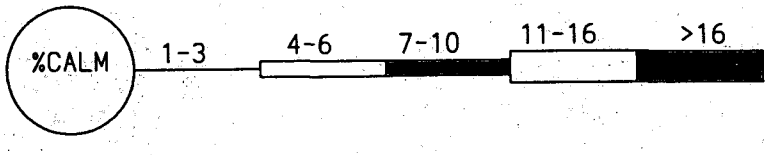
A system for classification of stability was developed by Pasquill (1961), who defined stability categories in terms of statistical plume spread in the horizontal and vertical directions. This technique permits the estimation of dispersion without direct measurement of turbulence. A revised stability classification system divides stability into Classes A (least stable) through F (most stable) and is commonly used today (Gifford, 1961). The stability categories are described along with typical plume behavior in Table 2.3.7-3. A summary of the joint frequency of occurrence of wind speed and wind direction categories according to stability class based on meteorological data for the Tallahassee Regional Airport for the period 1985 through 1989 is contained in Appendix 10.5.6.1. This is referred to as STAR (STability ARray) program data.

Mixing Height

An important parameter which describes the regional dispersion capability of the atmosphere is mixing height. Mixing height is simply the vertical extent of the surface layer within which relatively vigorous mixing of pollutants takes place. Holzworth (1972) has compiled statistical summaries for mixing height at various locations throughout the United States based on twice daily radiosonde measurements. The abundance of moisture from the ocean around Florida creates high humidities and low-level cloudiness that absorb heat, inhibit nighttime radiational cooling, and generally prevent the nighttime/early morning mixing height from subsiding below 400 meters. Because mixing heights are dependent upon surface temperatures, afternoon levels reach above 1,300 meters under intense solar insolation except in winter. Lesser diurnal mixing height fluctuations occur at coastal stations in Florida, as compared to inland locations, due primarily to moderating effects of the ocean and Gulf.



WIND SPEED CLASSES (MPH)



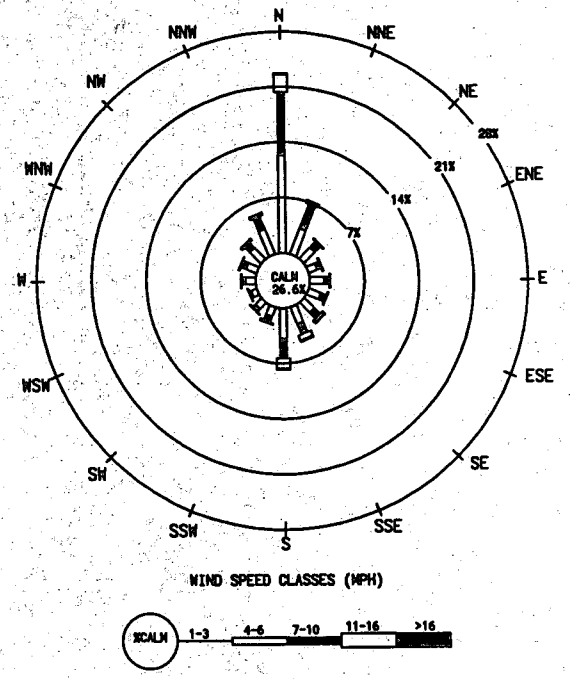
SOURCE: U.S. DEPARTMENT OF COMMERCE, 1993

CITY OF TALLAHASSEE

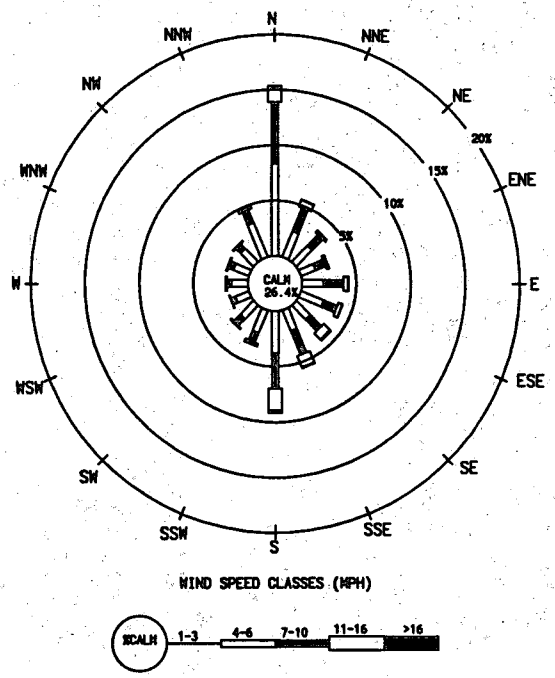
WIND ROSE
TALLAHASSEE REGIONAL AIRPORT
(1985-89)
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.7-1

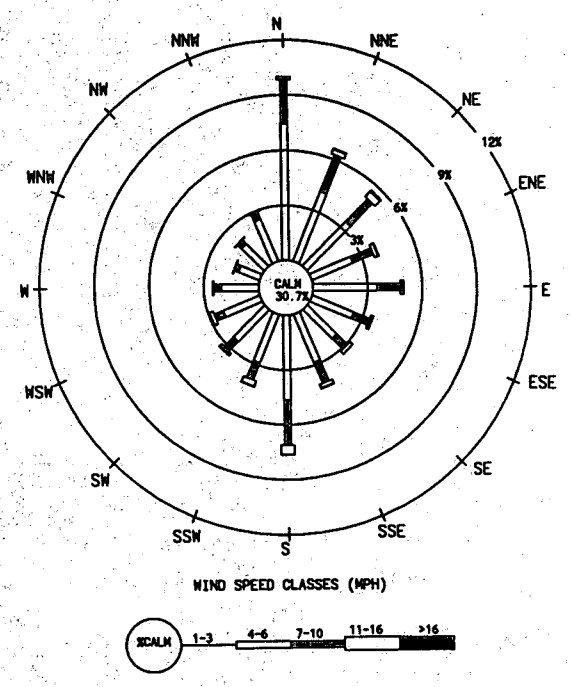
PLOT DATE JAN 21, 1997 C:\15840002\----\00000-14.DWG



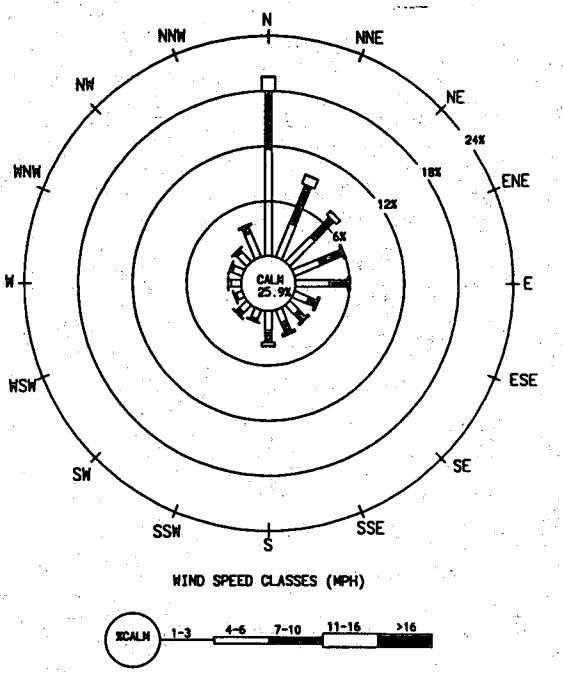
WINTER



SPRING



SUMMER



FALL

SOURCE: U.S. DEPARTMENT OF COMMERCE, 1993

CITY OF TALLAHASSEE

SEASONAL WIND ROSES
TALLAHASSEE REGIONAL AIRPORT
(1985-89)
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.7-2

PLOT DATE JAN 21, 1997 C:\15840002\----\00000-19.DWG

TABLE 2.3.7-3
AIR EMISSION SOURCE PLUME BEHAVIOR

Stability Class	Description	Plume Behavior
A - Extremely Unstable	This classification is associated with conditions of low surface wind speeds and strong solar radiation.	There are rapid changes in wind direction with time. Surface heating has eliminated all temperature inversions near the ground. Wind speeds are generallly less than 4.9 m/s. Rapidly rising parcels of warm air from near the Earth's surface are replaced by equal amounts of air moving downward nearby. A plume is carried with this "looping" motion. It is typical that cumulus clouds will be seen above terrain. Highly cumulus clouds will be seen above terrain. Highly transitory maxima in ground-level concentration relatively near the source occur with this category.
B - Moderately Unstable	This stability class is most common when the wind speeds are slightly higher (1.8 to 2.7 m/s) and the solar radiation is still strong.	
C - Slightly Unstable	This category is typified by wind speeds from 3.1 to 4.5 m/s with moderate to strong radiation or lower wind speeds coupled with slight radiation.	
D - Neutral	Conditions which produce this class of stability are fairly high wind speeds during a period of slight solar radiation or at night.	This classification includes most cases with winds stronger than 5.4 m/s. Duration is two hours or more. The vertical temperature profile is near the adiabatic lapse rate. A plume is dispersed rapidly with a "coning" motion.
E - Slightly Stable	This classification is associated with wind speeds from 1.8 to 2.7 m/s at night.	Coolest air is located at the Earth's surface and stack plumes move horizontally at effective stack height. Almost no pollution can be measured at the ground.
F - Moderately Stable	This class of stability is found at night when wind speed is even lower than in Class E.	
Transition	Conditions which change in a relatively short period of time from stable to neutral or unstable.	A portion of the plume will experience limited mixing prior to complete linkage of surface airflow to synoptic airflow, which is controlled by pressure pattern winds.
Source: Gifford, 1961		

The seasonal annual average mixing heights for the period 1960 to 1964 as observed at Jacksonville International Airport is presented in Table 2.3.7-4. The Jacksonville upper air station is the closest location analyzed and should be considered regionally representative of the area. Holzworth's (1972) comparison of morning and afternoon mixing heights based on data for 62 locations throughout the United States is shown on Figures 2.3.7-3 and 2.3.7-4. These data indicate that the site area experiences mixing heights that are typical of or higher than large areas of the eastern half of the United States. This information combined with wind speed was used by Holzworth (1974) to rank these 62 locations in order from lowest to highest dilutions (defined as mixing height times wind speed). For all episode lengths considered, Jacksonville ranked in the top 20 percent. It may be assumed that the site area experiences better than average dispersion conditions, especially since the Jacksonville station is also coastal.

TABLE 2.3.7-4
MEAN DIURNAL MIXING HEIGHTS
JACKSONVILLE, FLORIDA

Season	Morning	Afternoon
Winter	403	1,104
Spring	477	1,667
Summer	583	1,712
Fall	458	1,342
Annual Average	480	1,456

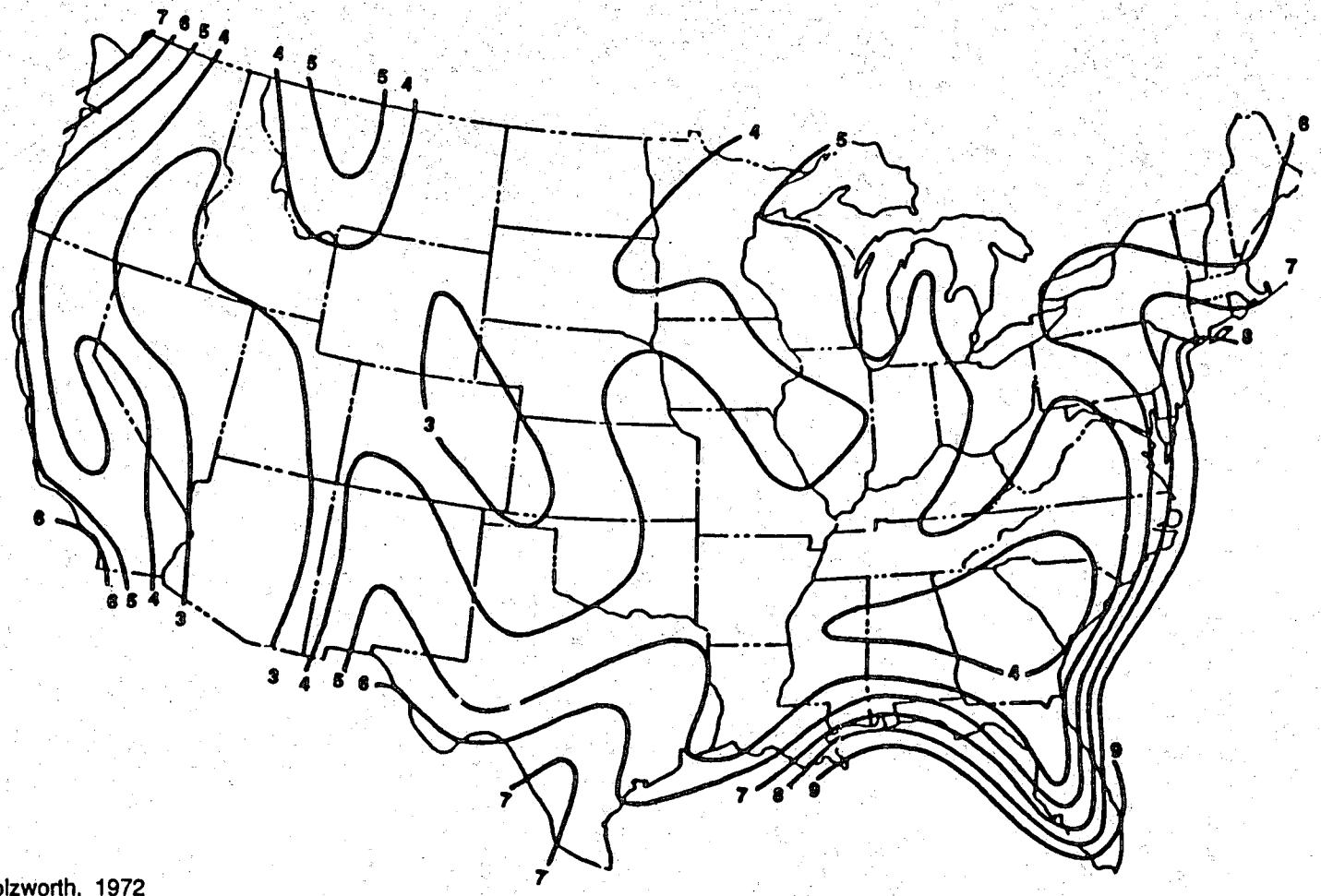
Note: Mixing heights are in meters
Period of Record: 1960-1964
Source: Holzworth, 1972

Precipitation

The average annual precipitation in Tallahassee is 64.6 inches based on the 1951 through 1980 period of record. July is the wettest month followed by August, June, and September. The driest months are October and November. Thunderstorms typically occur every other day during the summer. Snow may occur in the winter but it is very infrequent. The highest annual amount of precipitation recorded since 1894 was 104 inches in 1964. Measurable precipitation (24-hour precipitation exceeding 0.01 inch water equivalent) occurs approximately 116 days per year. Precipitation in Apalachicola is somewhat less than in Tallahassee, with an annual average of 55.0 inches based on the 1951 through 1980 period of record.

Temperature

The average annual temperature for Tallahassee is 67° F. Freezing temperatures at the airport average 38 occurrences each winter. Sub-zero temperatures are rarely recorded; however, the lowest recorded temperature for Florida is -2° F and occurred in Tallahassee on February 13, 1899. Although the Tallahassee Regional Airport may report anomalously cold temperatures on clear, calm nights (Elsner et al., 1996), its temperature data are considered reasonably representative of St. Marks. On average, temperatures in Apalachicola are about 1° F warmer than in Tallahassee; Tallahassee's highs are typically 3 to 4° F warmer and its lows typically 5° F lower than Apalachicola's. Occurrences of temperatures of 90° F or higher average 88 days per year. Temperatures occasionally reach 100° F. The highest temperature recorded in Tallahassee was 104° F in June 1933.



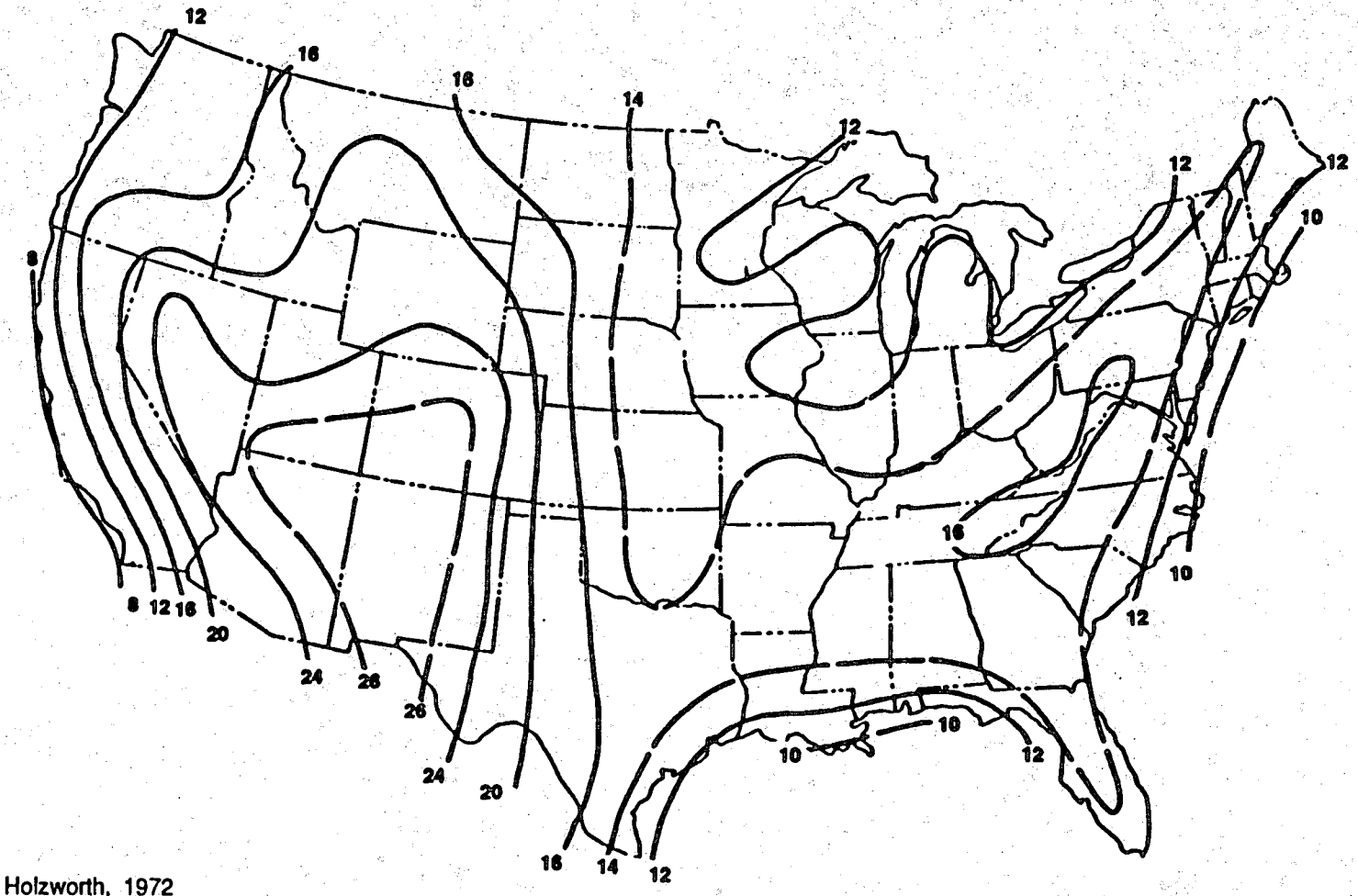
Source: Holzworth, 1972

CITY OF TALLAHASSEE

ISOPLETHS ($mX10^2$) OF MEAN
ANNUAL MORNING MIXING HEIGHTS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.7-3



Source: Holzworth, 1972

CITY OF TALLAHASSEE

ISOPLETHS ($mX10^2$) OF MEAN
ANNUAL AFTERNOON MIXING HEIGHTS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2.3.7-4

Relative Humidity

Relative humidity is the amount of water vapor in the air compared to the maximum water vapor the air will hold at a given temperature. Relative humidity in Tallahassee typically ranges from 50 to 75 percent during the afternoon hours to 85 to 95 percent during the night and early morning hours. Relative humidities in Apalachicola are generally somewhat lower than in Tallahassee in the night and early morning hours and somewhat higher in the afternoon.

Fog

Fog, by definition, reduces visibility below one kilometer (0.62 mile). Fog frequency is generally related to the microclimate (Huschke, 1970) and cannot be assumed to be the same for locations separated by even a few kilometers. Heavy fog (visibility less than or equal to 0.4 km or 0.25 mile) occurs about 50 days a year in the Tallahassee area and is usually confined to the night and early morning hours in the late fall, winter, and early spring. These fogs usually dissipate soon after sunrise. In Apalachicola, heavy fog occurs about 27 days per year.

Severe Weather

Thunderstorms occur on an average of more than 80 days per year. In June, July, and August, thunderstorms occur on an average of 16 days per month. Thunderstorms are rare during the winter.

Though annual rainfall amounts are relatively large, droughts of short duration are rather common. Prolonged dry periods are occasionally experienced and can lead to lowered water tables and lake levels, affecting the ecological communities dependent on these lakes. Droughts also may increase fire danger in the nearby forests.

Tornadoes, funnel clouds, and water spouts may occur statewide, and 10 to 15 are sighted each year. They are most frequent in the spring, but may occur in any season. Occasionally, waterspouts come inland, but usually dissipate after reaching land. Damage in Florida from tornadoes has historically not been extensive.

While other parts of the state are severely buffeted by hurricanes, the St. Marks area has a likelihood of a hurricane occurrence about once every 17 years. Fringe effects from tropical storms (wind speeds in excess of 40 mph) are felt about once every 5 years. According to a U.S. Department of Commerce (1971) publication, the probability of a tropical storm making landfall in a 50-mile segment of the coastline including the Apalachee Bay in any given year is 19 percent. The probability of a hurricane (wind speeds in excess of 74 mph) making landfall in this area is 7 percent and the probability of a "great hurricane" (i.e., sustained winds greater than 125 mph) is less than 1 percent.

Distributions of extreme winds (including the effects of hurricanes and other storms) have been computed by H.C.S. Thom (1968) for the United States. Based on Thom's estimates, the extreme fastest mile of wind (the same as the fastest 1 minute value at 60 mph) at 30 feet above ground level is about 60 mph for a 10-year recurrence interval, 70 mph for a 25-year recurrence interval, 80 mph for a 50-year recurrence interval, and 90 mph for a 100-year recurrence interval.

Maximum probable rainfall amounts have been computed by the Weather Bureau (Hershfield, 1961; Miller, 1964) for various durations and recurrence intervals for the contiguous United States. These estimates are presented in Table 2.3.7-5 for the St. Marks area.

TABLE 2.3.7-5
ESTIMATED MAXIMUM EXPECTED PRECIPITATION (INCHES) FOR THE ST. MARKS AREA

Duration	Recurrence Interval (Years)					
	1 Year	5 Years	10 Years	25 Years	50 Years	100 Years
30 minutes	1.5	2.1	2.4	2.7	3.0	3.3
1 hour	2.0	2.7	3.1	3.4	3.8	4.1
6 hours	3.0	4.7	5.5	6.5	7.0	8.0
12 hours	3.5	5.7	6.5	7.5	8.8	9.7
24 hours	4.2	6.7	7.9	9.0	10.0	11.5
2 days	N/A	7.5	8.5	10.0	11.5	13.0
10 days	N/A	11.0	13.0	15.0	17.0	18.0

Note: Values are interpolated and are not intended to be exact.
N/A - No calculations performed for these periods/recurrence intervals.

Source: Hershfield, 1961; Miller, 1964

Sunshine and Cloudiness

Statewide measurements indicate the sun shines about two-thirds of the possible sunlight hours during the year. Since 1959, the mean number of days which were clear from sunrise to sunset in Tallahassee is 100 per year. The number of days which were cloudy is approximately 135 per year. The remaining days were partly cloudy. In Apalachicola, there was more sunshine, with 128 clear, 115 cloudy, and 113 partly cloudy days per year, on average.

2.3.7.2 Ambient Air Quality

Regional Air Quality Data

The Purdom Station is located in an area that FDEP currently classifies as attainment for all criteria pollutants (Rule 62-204.210, F.A.C.). Wakulla County is an "attainment" or "unclassifiable/attainment" area for all National and Florida Ambient Air Quality Standards (NAAQS/FAAQS). Attainment is achieved when the maximum concentration of a pollutant for a specified averaging time does not exceed the NAAQS/FAAQS. The FAAQS are the same as the NAAQS except for SO_2, for which the Florida standard is more stringent than the national standard. The "unclassifiable/attainment" designation means that no data exist which would indicate that the area is not in compliance with the standards. Other areas of the country are classified as "non-attainment" for specific pollutants. However, there are no such areas within Wakulla County or the surrounding counties.

Most of Wakulla County is designated as Class II from a Prevention of Significant Deterioration (PSD) standpoint. The nearest Class I areas are the St. Marks National Wilderness Area, located approximately 0.6 km (0.4 mile) to the south of the site and the Bradwell Bay National Wilderness Area, located approximately 29 km (18 miles) to the west.

Ambient air monitoring data are available to characterize the existing conditions in the vicinity of the site. A map depicting the locations of selected ambient air quality monitoring sites is presented on Figure 2.3.7-5. The FDEP data from these monitors for 1995 (primarily) are summarized in Table 2.3.7-6. Data were obtained from FDEP (1995, 1996) and from EPA (1996, 1996a).

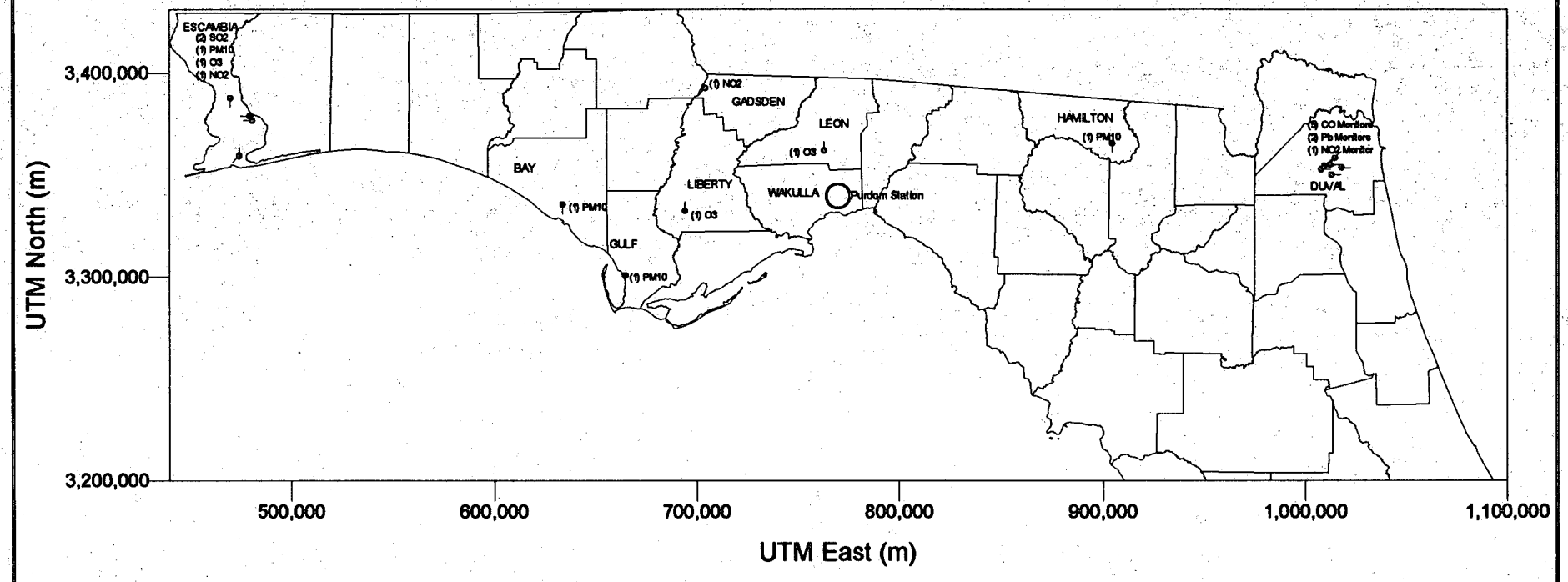
Ozone is monitored in neighboring Leon County, the most urban county of the region. Thus, Leon County data may be considered to overpredict ozone levels for the Project location. The NAAQS and FAAQS for ozone (O_3) is 0.12 parts per million (ppm) (235 micrograms per cubic meter ($\mu g/m^3$)). This is a daily maximum 1-hour concentration, which is not to be exceeded an average of more than 1 day per year, according to Rule 62-204.240(4), F.A.C. In 1995, the second highest 1-hour value observed in Leon County was approximately 80 percent of the standard at 0.096 ppm (188 $\mu g/m^3$). Data available for previous years show similar concentrations. An O_3 monitor in Escambia County, about 170 miles west of the site, had a 1995 second high concentration equal to the standard. Additional O_3 data are available from a closer station in Sumatra, in Liberty County, Florida, a distance of 45 miles from the site (EPA, 1996a). These data indicate a second high 1-hour value of 166 $\mu g/m^3$, or about 70 percent of the standard. Of the locations where O_3 is monitored, the data from the Sumatra location are probably most representative of the St. Marks area as this location is away from urbanized areas.

The FAAQS and NAAQS for nitrogen dioxide (NO_2) is 100 $\mu g/m^3$ averaged over the entire year. The average concentration monitored in Duval County, roughly 140 miles east of the site and the nearest location with NO_2 data for 1995, was 30 $\mu g/m^3$ or 30 percent of the standard. A closer monitor in Gadsden County, a distance of 55 miles from the site, has been discontinued. In January to June 1992 the average NO_2 concentration at the Gadsden monitor was 7 $\mu g/m^3$ or 7 percent of the standard. The average concentration in Escambia County in 1990 was 14 $\mu g/m^3$.

Respirable particulate matter less than 10 microns (PM_{10}) and sulfur dioxide (SO_2) are not monitored by FDEP in Wakulla, Leon, Jefferson, Taylor, or Gadsden Counties in Florida. The nearest monitoring locations for those pollutants are in Hamilton and Bay Counties, which are roughly 70 miles east and west of the site, respectively; in Gulf County, about 70 miles to the west, and Escambia County, about 170 miles to the west. In fact, at least the Hamilton and Bay County monitors are located near major air pollutant sources and the use of concentrations monitored there would be expected to overestimate "background" concentrations in the St. Marks area. Nevertheless, these data are being provided as they are the only data available.

The FAAQS and NAAQS for PM_{10} is 50 $\mu g/m^3$ annual arithmetic mean, with a second highest 24-hour average of 150 $\mu g/m^3$, according to Rule 62-204.240(2), F.A.C. The second highest short-term concentration measured in 1995 in Hamilton County was 48 $\mu g/m^3$ or 32 percent of the standard. The annual arithmetic mean was 23 $\mu g/m^3$ or 46 percent of the standard. In Bay, Gulf, and Escambia Counties, similar concentrations have been observed.

The FAAQS for SO_2 (which is more stringent that the NAAQS) is 1,300 $\mu g/m^3$ for a 3-hour average (not to be exceeded more than once per year), 260 $\mu g/m^3$ for a 24-hour period (not to be exceeded more than once per year), and 60 $\mu g/m^3$ for an annual average (Rule 62-204.240(1), F.A.C.). The second highest 3-hour average recorded in 1995 in Hamilton County was 318 $\mu g/m^3$ or 24 percent of the standard. The second highest 24-hour average for 1995 was



Legend

- OZONE
- SULFUR DIOXIDE
- PARTICULATE MATTER (10 MICRONS AND SMALLER)
- NITROGEN DIOXIDE
- CARBON MONOXIDE
- LEAD

Sources: Monitoring locations FDEP
Base Map Foster Wheeler Environmental, 1997

CITY OF TALLAHASSEE

SELECTED AMBIENT AIR QUALITY MONITORING LOCATIONS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2.3.7-5

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TABLE 2.3.7-6
MONITORING DATA SUMMARIES FOR
REGIONAL AIR QUALITY MONITORING SITES

Parameter	Year	Station	ID	1-Hr[(1)]	3-Hr[(1)]	8-Hr[(1)]	24-Hr[(1)]	Quarter	Annual
PM_{10}	1995	Bay	12-005-1004	-	-	-	58	-	23.8
	1995	Gulf	12-045-1003	-	-	-	47	-	22.4
	1995	Escambia	12-033-0003	-	-	-	54	-	23.4
	1995	Hamilton	12-047-0015	-	-	-	48	-	22.9
SO_2	1995	Escambia	12-033-0022	-	183	-	71	-	9
	1995	Escambia	12-033-0004	-	176	-	50	-	8
	1995	Hamilton	12-047-0015	-	318	-	102	-	13
O_3	1995	Escambia	12-033-0018	235	-	-	-	-	-
	1995	Leon	12-073-0003	188	-	-	-	-	-
	1995	Liberty	EPA SUM 156	166	-	-	-	-	-
NO_2	1995	Duval	12-031-0032	-	-	-	-	-	30
	1990	Escambia	12-033-0007	-	-	-	-	-	14
	1992	Gasden	0540002J02	-	-	-	-	-	7
CO	1995	Duval	12-031-0084	-	8050	5290	-	-	-
	1995	Duval	12-031-0082	-	7245	3910	-	-	-
	1995	Duval	12-031-0083	-	7245	4255	-	-	-
	1995	Duval	12-031-0095	-	7360	3795	-	-	-
	1995	Duval	12-031-0080	-	5520	3220	-	-	-
Pb	1995	Duval	12-031-0032	-	-	-	-	0.026	-
	1995	Duval	12-031-0032	-	-	-	-	0.030	-

(1) All short-term values are the second highest values in $\mu g/m^3$
- = Not applicable

Source: FDEP, 1995, 1996; EPA, 1996, 1996a

102 $\mu g/m^3$ or 39 percent of the standard. The annual average concentration for 1995 was 13 $\mu g/m^3$ or 22 percent of the standard. Since this monitor is close to a major source, background values from Escambia County may be more representative. Monitored values for Escambia County in 1995 were 191, 70, and 9 $\mu g/m^3$ for the 3-hour, 24-hour, and annual periods, respectively.

No background concentration data are available for lead (Pb) and carbon monoxide (CO) in the site area. Concentrations for both of these pollutants would be expected to be low in the site vicinity due to the limited number of emission sources. The nearest location where data for these pollutants is collected is Duval County (Jacksonville), which is roughly 140 miles east of the site. Data from the Duval County monitors are presented below.

The FAAQS and NAAQS for CO is 40,000 $\mu g/m^3$ for a 1-hour average and 10,000 $\mu g/m^3$ for an 8-hour average, neither to be exceeded more than once per year (Rule 62-204.240(3), F.A.C.). The second-highest 1-hour average recorded at a monitor in Duval County in 1995 was 8,050 $\mu g/m^3$ or 20 percent of the standard. The second highest 8-hour average was 5290 $\mu g/m^3$ or 53 percent of the standard.

The FAAQS and NAAQS for Pb is 1.5 $\mu g/m^3$ on a calendar quarter basis (Rule 62-204.240(6), F.A.C.). The highest quarterly average recorded at a monitor in Duval County in 1995 was 0.03 $\mu g/m^3$ or 2 percent of the standard.

On-Site Ambient Air Quality Monitoring Requirements

In accordance with the requirements of Rule 62-212.400(5)(f), F.A.C., any application for a PSD permit must contain an analysis of continuous ambient air quality monitoring data in the area affected by the proposed major stationary source or major modification for those pollutants subject to PSD review.

According to EPA's *Ambient Monitoring Guidelines for Prevention of Significant Deterioration* (EPA, 1987), ambient air monitoring for a period of up to one year is generally appropriate to satisfy the PSD monitoring requirements. A minimum of four months of data are generally required. Existing data from the vicinity of the proposed source may be utilized if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered.

The PSD regulations include an exemption in Rule 62-212.400(3)(e), F.A.C. which states that the Department will exempt a proposed major stationary source or major modification from the pre- and post-construction monitoring requirements of Rule 62-212.400(5)(f) and (g) with respect to a particular pollutant if the net emissions increase of the pollutant from the source or modification would cause air quality impacts less than certain *de minimis* air quality impact levels (Table 212.400-3 in Rule 62-212.400, F.A.C.).

As indicated elsewhere in this application, the Project will only trigger PSD review for the following pollutants: PM(TSP), PM_{10} and CO. A preliminary analysis was conducted of maximum potential impacts for these pollutants. The results indicated that projected impacts were below the *de minimis* air quality impact levels for PM_{10} and CO and that the *de minimis* level for PM(TSP) had been removed from Table 212.400-3 as the TSP ambient standard has been replaced by a PM_{10} standard. This analysis was provided to FDEP and it was confirmed that

an ambient air quality monitoring program was not required under Rule 62-212.400(5)(f) and (g) (FDEP, 1997).

Background Air Quality Concentrations

Background air quality concentrations to be utilized in the modelling analyses were compiled from the data presented in Table 2.3.7-6 and from recommendations by FDEP (1996). A summary of the background values is presented in Table 2.3.7-7. Many of the values in Table 2.3.7-7 are considered to be very conservative estimates (i.e., overestimates) of background concentrations in the site vicinity because they are more representative of larger urban areas or of areas in the vicinity of major existing sources of air pollutants. All major sources in the vicinity of the Purdom Station are explicitly included in the modelling; adding background concentrations representative of locations near major sources is essentially "double-counting," an especially conservative approach.

2.3.7.3 References

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TABLE 2.3.7-7
MONITORING DATA TO BE USED AS
BACKGROUND AIR QUALITY IN NAAQS/FAAQS MODELLING

Parameter	Year	Station	ID	1-Hr[(1)]	3-Hr[(1)]	8-Hr[(1)]	24-Hr[(1)]	Quarter	Annual
PM_{10}	1995	Gulf	12-045-1003	-	-	-	47	-	22.4
SO_2	1995	Escambia	12-033-0022	-	183	-	71	-	9
NO_2	1990	Escambia	12-033-0007	-	-	-	-	-	14
CO	1995	Duval	12-031-0084	8050	-	5290	-	-	-
Pb	1995	Duval	12-031-0032	-	-	-	-	0.030	-

(1) All short-term values are the second highest value in $\mu g/m^3$
- = Not applicable

Source: FDEP, 1995, 1996; EPA, 1995

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2.3.8 Noise

This section is based on a comprehensive noise study of the Purdom Station, performed during October 1994 (FWENC, 1995). Conditions with respect to residences, other sources of noise, and plant facilities are essentially the same today as they were then, with a few exceptions. The exceptions are the public address system and the Unit 5, 6, and 7 hogging jets at the plant. Both of these plant noise sources have been modified to reduce noise.

The scope of the noise study included continuous noise monitoring over a 24-hour period at several boundary or receptor locations during normal and exceptional plant operating conditions, and comparison of the data with applicable assessment criteria. Normal plant operating conditions included operation of steam Units 5, 6 and 7. Exceptional plant operating conditions included start-up and operation of both existing combustion turbines (GT1 and GT2), along with the steam units, during the late-night hours. Operation of the existing combustion turbines is considered to be an exceptional condition because of their infrequent use (see Table 2.3.8-1), which is a function of their high operating cost.

TABLE 2.3.8-1
PURDOM STATION COMBUSTION TURBINE OPERATING HISTORY
1989 - 1996

Year	GT1 On-Line Hours	GT2 On-Line Hours
Mar - Dec 1989	71.2	87.6
1990	55.75	84.6
1991	83.8	107.6
1992	69	17
1993	305.9	308
1994	96.6	139.1
1995	157.4	112.6
1996 (thru Nov 13)	125.8	115.8
Average	**120.7**	**121.5**

Source: City of Tallahassee Electric Department, 1996

As indicated in Table 2.3.8-1, GT1 operated for an average of 120.7 hours and GT2 for 121.5 hours over the last 8 years. During the peak year of operation in 1993, only 36 hours of the combined total of 614 hours occurred at night between 10 p.m. and 7 a.m. Overall, the combustion turbine units are used less than 2 percent of the year and nighttime operation occurs during about 1 percent of the nighttime hours.

The existing combustion turbines are typically not operated late at night because peak air conditioning load conditions generally diminish by the early evening hours, after the sun sets. About the only condition which causes them to be operated late at night is very cold winter nights when the electric heating load is highest. During the hot weather peak, due to air conditioning usage, and the cold weather peak, due to electric heater usage, people are normally

inside with their windows and doors closed. This tends to mitigate any impacts due to exterior noise.

2.3.8.1 Monitoring Location Selection

The general criteria for selecting the five monitoring locations include the following:

- Accessible now and in the future after any plant addition;
- Far enough from the plant to be representative of the whole plant;
- Greater than 50 feet from any large reflecting surface;
- Beyond the influence of any localized noise source; and
- Adjacent to the nearest residences or boundary lines in several directions from the plant.

The entire site was walked during the site visit on February 10, 1992, to find suitable monitoring locations. The identified locations will be useful for documenting any changes in plant noise levels in future years. Additionally, aerial photos and maps were reviewed to provide preliminary determinations of the nearest off-site receptors. A driving tour was then conducted to confirm the information and make final site selection determinations. Four off-site locations were selected to be representative of the nearest noise-sensitive receptors which are single family residences. One on-site location was also selected to be representative of plant operations near the boundary adjacent to the Wildlife Management Area on the east side of the river. The five locations are shown on the area map in Figure 2.3.8-1. A brief description of each location is presented below.

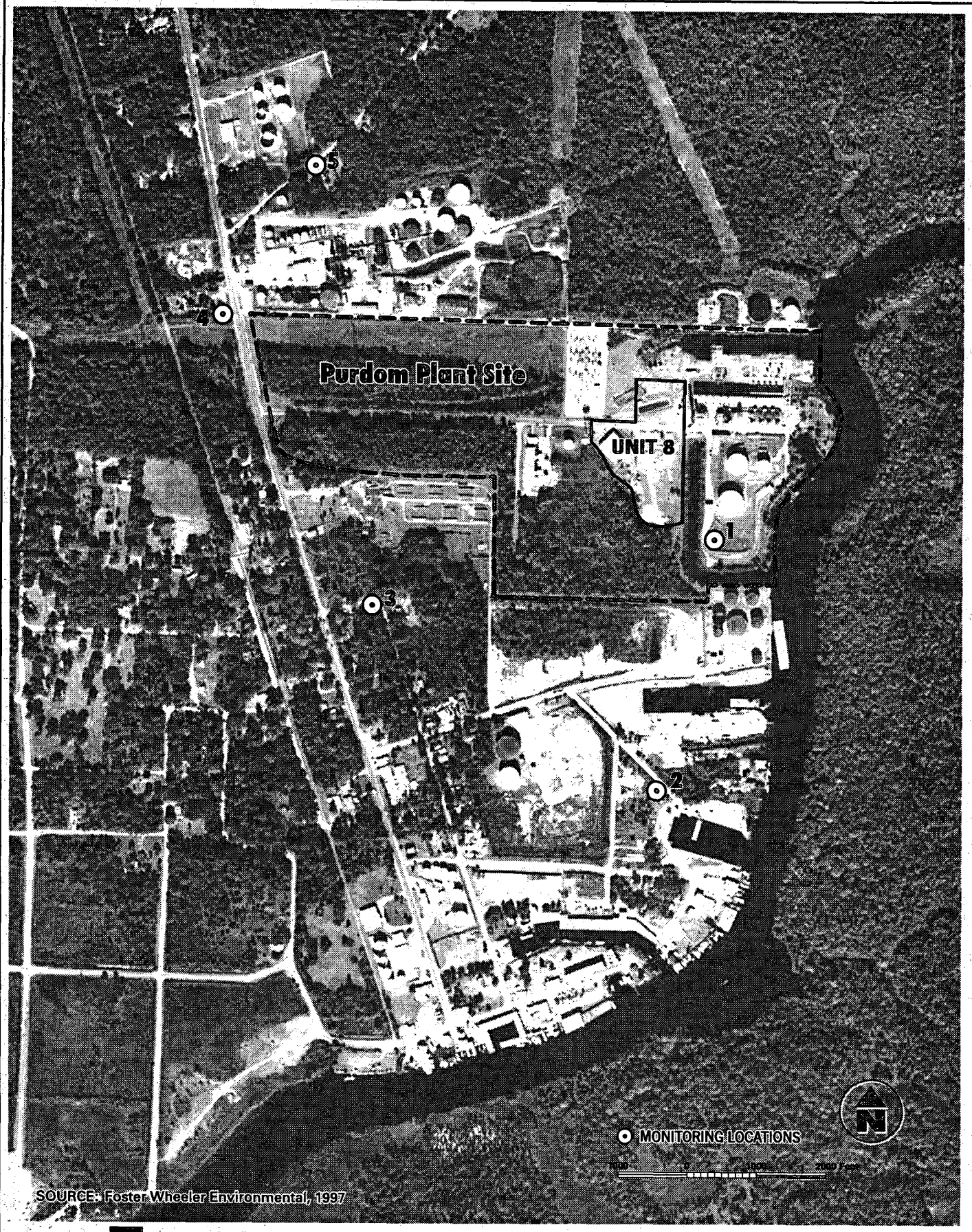
Location 1 - At the southwest corner of the oil storage tank area, about 25 feet southwest of the edge of the road, around the containment dike in a grassed area. Levels measured here are representative of those on the opposite side of the river near the plant.

Location 2 - Off-site near the nearest residence to the south. The monitor was at the double gates at the end of Public Road. A bulk handling operation is located between the Purdom Station and this location.

Location 3 - Adjacent to the nearest residence southwest of the plant. This is also the nearest residence to the combustion turbines. The monitor was mounted on a fence post on the outside corner of the intersection of 6th Street and Tallahassee Avenue. Both streets are unpaved and lightly traveled, serving only the residents.

Location 4 - Adjacent to SR 363, across from the nearest residence to the west, on the site fence underneath the transmission lines. This site is mostly affected by highway traffic.

Location 5 - At the nearest residence north of the plant on North Street (a dead-end dirt road). Southeastern Lubricants' facility lies between this location and the plant.



CITY OF TALLAHASSEE

NOISE MONITORING LOCATIONS (1 – 5)

PURDOM UNIT 8 PROJECT – ST MARKS FLORIDA

Figure 2.3.8-1

2.3.8.2 Monitoring Equipment

One Larson-Davis Laboratories (LDL) Model 700 and four LDL Model 820 precision integrating sound level meters, which meet ANSI Standard S1.4-1983 Type 1 requirements for precision meters, were used for the survey. They were programmed to store the equivalent or average noise level (L_{eq}) at 1-minute intervals throughout the 24-hour monitoring period. Hourly equivalent levels and the levels exceeded 10 and 90 percent of each hour (L_{10} and L_{90}, respectively) were also recorded. The L_{10} level is indicative of traffic and other intermittent type noises that have high levels over short durations. The L_{90} is indicative of constant level noise sources, such as a power plant, that operate continuously at a low noise level. The hourly L_{eq} levels are used to compute the day/night level (L_{dn}) used for comparison with U.S. Environmental Protection Agency (EPA) guidelines.

Weather-proof enclosures were provided for the instruments and the microphones were mounted, via 10-foot extension cables, at the standard monitoring height of about 4.5 feet above the ground. Foam windscreens 3.5 inches in diameter were placed over the microphones to reduce any wind-generated noise. The internal clocks of the monitors were synchronized to allow direct comparison of levels at all locations from discrete events at the plant, such as starting and stopping the combustion turbines.

A single LDL Model 2800 audio spectrum analyzer, meeting the same ANSI specification for precision sound level meters, plus ANSI S1.11 Type 0-AA for precision octave band filters was used on a rotating basis at all locations to obtain octave band levels. It also provided confirmatory measurements of the A-weighted levels.

The calibration of all instruments was verified before and after the monitoring period using a Bruel & Kjaer Type 4230 sound level calibrator.

2.3.8.3 Test Procedure

Noise levels were monitored continuously over a complete 24-hour period at the selected locations while the plant was operated in various modes ranging from normal operation to worst-case operation. Worst-case operations required that the test be performed during the late-night hours, when noise is perceived to be more of a problem and when atmospheric conditions generally enhance the transmission of sound. Human activity is also at a minimum resulting in lower levels of traffic noise which could interfere with the testing.

The monitors were installed and started at 10 a.m. on October 4, 1994, when all three steam generating units were on line and operating in a normal configuration. Both combustion turbines were started and run for about 1.5 hours during the day and again late at night. The two existing combustion turbines at the plant are identical in size and configuration.

Each monitoring location was visited four times during the 24 hours to obtain octave band data and to determine the source of sounds heard.

2.3.8.4 Data Analysis

Data were downloaded from the instruments via a computer interface. In general, steam plant (Units 5 through 7) noise levels were below the prevailing ambient noise levels at all off-site locations. However, noise levels produced by the combustion turbines and the hogging jets were above ambient levels. Silencers have since been installed on the hogging jets for all three units, and they are no longer a significant source of noise.

Annual day/night (L_{dn}) levels were computed for each monitoring location using the most recent historical record of the number of hours per year that the combustion turbine generating units operated along with the operating noise level as determined above. The 1993 operating record provided the worst-case assessment since it showed the greatest usage of both turbines.

2.3.8.5 Assessment Criteria

There are currently no federal, state or local laws governing noise levels from the Purdom Station. The U.S. Environmental Protection Agency (EPA) has published guidelines identifying acceptable noise levels for various types of land uses. Although they are not formal regulations, the EPA guidelines provide a good basis for comparison with the existing levels. A day/night level (L_{dn}) of 55 dBA is identified in the guidelines as acceptable for outside spaces at rural residences. The L_{dn} descriptor adds a 10 dBA penalty to measured noise levels between 10 p.m. and 7 a.m. to account for the greater sensitivity of people to noise at night. It is also based on long-term or annual averages of sound levels. An L_{dn} level of 55 dBA is equivalent to a constant level of 48.6 dBA because of the 10 dBA penalty added to nighttime levels, before the 24-hour average is computed.

The FDEP published a model community noise ordinance (FDEP, 1975) to assist local governments with their noise programs. The model ordinance was not intended to be used verbatim by any municipality/county in the State. Each government was to refine the ordinance to meet their individual local needs and conditions. Thus, the guidelines of this model ordinance are also not legally enforceable. The recommended levels applicable to residences around the Purdom Station are 60 dBA during the day and 55 dBA at night for continuous types of sounds. Short-term sounds can exceed these levels by 10 dBA during the day and 5 dBA at night for durations up to 10 percent of any measurement period.

The EPA guideline level of 55 dBA L_{dn} (equivalent to a constant level of 48.6 dBA) will be used as the basis for noise impact determination for this Project because it provides the greatest level of protection against excessive noise. This criterion has also been used in several other power plant licensing cases in Florida, thus setting a precedent. The proposed new unit will be designed such that the combined level of noise from it and the other existing units at the plant will not exceed a continuous operating level of 48.6 dBA at the nearest residence. This level is 11.4 dBA and 6.4 dBA below the FDEP day and night guideline levels, respectively.

The Wildlife Management Area on the east side of the river was considered in this assessment, but there are no noise standards or guidelines applicable to wildlife. Research has found that animals adapt quickly to high noise environments, such as around airports, and that continuous type noise, such as from power plants, has no demonstrated effect (EPA, 1971).

2.3.8.6 Results

Weather conditions were near ideal for the noise survey with mild temperatures, light to no wind and no precipitation. Noise produced by crickets and frogs was evident at many locations, particularly at night.

Steam generating Units 5, 6, and 7 were operating throughout the 24-hour survey at substantial load levels of 10 to 11 megawatts (MW) for Units 5 and 6, and 19 to 29 MW for Unit 7, which are indicative of maximum noise being produced. The noise level produced by the Purdom Station was essentially constant, except for a 5-minute test of the hogging jet on Unit 7, and occasional announcements on the public address system. The hogging jets are only used during start up of the steam units. The public address system appeared to be operating at a lower volume than during the 1992 site visit. Announcements were not as noticeable at off-site locations. Additionally, since the 1994 survey, about 30 percent of the exterior loud speakers have been disabled and paging is restricted at night.

Both Combustion Turbines Number 1 and 2 (GT1 and GT2, respectively) were run twice during the period for noise testing, once during the day and once at night, for about 1.5 hours each time. Due to a technical problem, GT2 could not be loaded although it could be run at normal speed. GT1 was started and loaded to 5 MW. Noise testing conducted around GT1 revealed a slight decrease in sound levels of about 0.5 dBA upon loading the generator. This indicates that the noise level produced is essentially constant, whether the unit is loaded or just running at full speed with no load. During start-up however, the sound level steadily increased with increasing rpm. Two events during start-up resulted in sudden drops in sound level. These are the cut out of the starting motor and the closing of the bleed valve. The two GTs are identical and produce the same levels of noise.

Ambient sounds not related to plant operations are also included in the data. These generally included road traffic, insects and frogs, barking dogs, and wind rustling nearby leaves. A synopsis of the data from each location is presented below.

Location 1 - Noise levels at this on-site location at the southwest corner of the oil tank yard were mostly controlled during normal operations by the operating steam units at a constant level of about 55 to 56 dBA. Noise levels during exceptional operations are about 58 to 61 dBA. The Unit 7 hogging jet noise peaked at 84 dBA at this location about 850 feet south of the jet, indicating that it was a very loud source of noise. Although confirming noise measurements of the now silenced hogging jets have not been made, it is understood that the silencers are very effective and the jets are no longer significant noise sources.

Location 2 - The most notable feature in the data from this off-site location well south of the plant was the nighttime rise in levels due to insects and frogs. The normal operation level was about 47 dBA at the lower end of most of the measured noise levels and the plant was barely audible. Under exceptional operating conditions, noise levels were barely above the background levels.

Location 3 - This location is at the nearest residence to the GTs, at about 1,000 feet, and only a thin line of trees provides any shielding. Thus, the exceptional operating condition data is more significant than at any other off-site location. The level was about 63 dBA with both combustion

turbines operating. Noise levels during normal operating conditions were much lower, at about 45 dBA. Other sounds noted were a barking dog at the residence and infrequent car passages on the dirt road.

Location 4 - Traffic on SR 363, about 40 feet from the microphone, was the primary noise source at the location. Levels were typically as high as 63 dBA due to traffic. The noise level during normal operation was estimated to be 43 dBA at the lower end of the data. The plant was generally inaudible because of the higher background level from traffic. Data from the exceptional condition test conducted during the daytime is completely hidden in the background noise. The nighttime test is just barely discernible. The late night background levels were maintained at a minimum level of 48 to 49 dBA by insects and frogs, which were more active during this period.

Location 5 - This location on a dead-end dirt road at the nearest residence north of the station was still affected to a small degree by traffic on SR 363. Noise from the industrial facilities on the north and south sides of the road, primarily pumps and trucks, were heard at a higher level than the plant. Plant noise was never clearly distinguishable from the other noises during normal or exceptional operating conditions.

Table 2.3.8-2 presents a summary of noise levels attributable to the Purdom Station at each of the locations.

TABLE 2.3.8-2
PURDOM STATION NOISE LEVELS

	Normal Conditions	Exceptional Conditions	
Location	Purdom Station Units 5-7 (dBA)	Either GT1 or GT2 Plus Units 5 - 7 (dBA)	Both GT1 & GT2 Plus Units 5 - 7 (dBA)
1	55	55	58
2	47	52	55
3	45	60	63
4	43	47	50
5	43	45	48

Source: Foster Wheeler Environmental, 1995

The EPA guidelines, based on the annualized L_{dn}, considers the frequency of occurrence of higher level noises by looking at levels over the long-term. The L_{dn} was computed for each of the off-site locations using the above levels in conjunction with the operating history of the units. Table 2.3.8-1 presents the operating record of the two turbines for the last 8 years. Only the data from 1993 were used in the calculation because they produce the worst case or highest levels. It was assumed that Units 5 through 7 operate 50 percent of the time. This is not entirely accurate (they operate less than 50 percent of the year), but it makes little difference in the calculated levels. In fact, after Unit 8 is completed and goes on line, steam Units 5 and 6 will be decommissioned.

The resulting L_{dn} levels due to plant noise, including both normal and exceptional operations, are presented in Table 2.3.8-3 for each of the off-site locations. These levels ranged from a low of 47

dBA at Locations 4 and 5 to 53 dBA at Location 3. All of these levels are well within the EPA guideline level of 55 dBA.

Levels produced during normal operations at the off-site receptors (Locations 2 through 5) are all within the FDEP recommended level of 60 dBA for daytime operations and 55 dBA nighttime. Exceptional operation levels are within the nighttime FDEP recommended level of 55 dBA at all locations except Location 3 where the combined level is 63 dBA.

If exceptional operations were to be routinely conducted at night, the expected noise impact at this location would be significant. However, the infrequent late night operation minimizes the impact greatly.

TABLE 2.3.8-3
PURDOM STATION ANNUALIZED DAY/NIGHT LEVELS
(OFF-SITE LOCATIONS ONLY)

Location	Day/Night Level (L_{dn}) (dBA)
2 - Nearest Residence to South	51
3 - Nearest Residence to Southwest	53
4 - Nearest Residence to West	47
5 - Nearest Residence to North	47
Source: Foster Wheeler Environmental, 1995	

2.3.8.7 Conclusion

The Purdom Station noise levels, as currently operated, are within the 55 dBA L_{dn} noise level limit recommended by the EPA at all off-site receptors. The FDEP recommended levels are met at all locations during normal operations and at all locations except Location 3 during exceptional operations where the nighttime guideline of 55 dBA is exceeded by 8 dBA. However, exceptional operations occur very infrequently at night, and emergency situations required exceptional operations for only 36 hours during 1993, the worst-case year out of the last 8 years. Thus, the impact of noise produced during exceptional operations should be insignificant. Background noise levels due to frogs, crickets and other natural sounds, are frequently higher than plant noise levels at the receptors. These higher levels of sound often mask plant noise making it inaudible, particularly to the north and west. The installation of silencers on the hogging jets of the three steam units eliminated the jets as significant noise sources. Adjustments to the public address system, deactivation of about 30 percent of the speakers, and restricting nighttime paging have reduced the noise impact of that system considerably.

2.3.8.8 References

EPA (U.S. Environmental Protection Agency). 1971. Effects of Noise on Wildlife and Other Animals. NTID300.5. Prepared by Memphis State University, Memphis, TN.

EPA (U.S. Environmental Protection Agency). 1974. Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety. EPA 550/9-74-004. Office of Noise Abatement and Control. Washington, DC.

FDEP. (Florida Department of Environmental Protection). 1975. Model Community Noise Control Ordinance. Tallahassee, FL.

FWENC (Foster Wheeler Environmental Corporation). 1995. Future Conditions Assessment Report - Sam O. Purdom Generating Station, Arvah B. Hopkins Generating Station. Norcross, GA.

2.3.9 Other Environment Features

All relevant environmental features have been discussed within the scope of the preceding topics in Chapter 2. There are no other environmental features.

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3.1 BACKGROUND

3.1.1 Project Description

The City of Tallahassee proposes to construct Unit 8 at its Purdom Generating Station with a commercial operation date of May 15, 2000. Unit 8 is a new 250 MW combined cycle facility in a one-on-one (one combustion turbine/generator and one steam turbine/generator) configuration, primarily firing clean, pipeline quality natural gas. The addition of this highly efficient unit will provide for the City electric system needs in the year 2000 and beyond, in addition to significantly reducing the City's cost of producing electricity.

The addition of Unit 8 enables the City to permanently shut down Purdom Units 5 and 6 early. Units 5 and 6 are the two oldest and least efficient steam generating units still operated by the City. They were originally scheduled for retirement in 2003 and 2006, respectively. Units 5 and 6 utilize water from the St. Marks River for once-through cooling of the condensers. With the permanent shutdown of these units, the use of St. Marks River water for once through cooling at the Station will be reduced by approximately 50 percent (Unit 7 and the existing combustion turbines will continue to utilize once through cooling water from the St. Marks River).

The overall environmental impact from the addition of Unit 8 is minimal. Annual air emissions of sulfur dioxide (SO_2) and oxides of nitrogen (NO_x) for the remaining Purdom units plus Unit 8 will not increase over the historical average annual air emissions for these pollutants at the Purdom Station. This "netting out" is achievable due to the permanent shutdown of Units 5 and 6, the expected reduced utilization of Unit 7, and the improved technology and environmental efficiency of Unit 8. From a water perspective, Unit 8 will not result in any industrial wastewater discharge to surface or groundwater and, through reuse, will eliminate three existing waste streams that are currently being discharged to the St. Marks River. In addition, the existing deep wells that serve the Purdom Generating Station will be properly abandoned and the associated groundwater use eliminated. Thus, the City will install net additional generating capacity of more than 200 MW with no net increase, and indeed some decrease, in the principal types of environmental impact.

Unit 8 will consist of a combustion turbine/generator, a heat recovery steam generator, and a reheat steam turbine/generator. The design for Unit 8 is based on the standard configuration for a General Electric 7FA combined cycle unit. The unit performance on natural gas as the primary fuel and Number 2 (0.05% S) diesel fuel oil as the secondary fuel is set forth below:

Condition	Fuel	Winter (40°F)	Mean (67.5°F)	Summer (95°F)
Net Output (kW)	Gas	259,800	247,743	232,900*
Net Heat Rate (Btu/kWh, HHV)	Gas	6,960	6,940	7,040*
Net Output (kW)	Oil	271,900	263,300	250,100
Net Heat Rate (Btu/kWh, HHV)	Oil	7,142	7,061	7,061

* Guarantee Point

Source: GE, 1997

Poor Original

The combustion turbine will be a General Electric MS7231FA equipped with an evaporative cooler and a hydrogen cooled generator. The heat recovery steam generator (HRSG) will be an unfired, three pressure, reheat HRSG with "space-only" provisions for a Selective Catalytic Reduction (SCR) system. The HRSG will be equipped with a 200 foot above ground level (agl) stack. The nominal 90 MW steam turbine will be a General Electric single flow, reheat unit equipped with a totally enclosed water-to-air cooled generator.

The new unit will be equipped with a mechanical draft cooling tower to provide cooling water to the steam turbine condenser. Make-up water to the cooling tower will come from several sources. The primary source will be the St. Marks River. Additional makeup will be obtained from: (1) the City of St. Marks Wastewater Treatment Facility effluent; (2) the Purdom Station low volume and metal cleaning waste; and (3) the distilled water discharge from the zero discharge facility when not needed for process water.

Unit 8 will be equipped with a zero discharge wastewater treatment facility to avoid any water discharge from the unit to the St. Marks River. This facility will be designed with an evaporative system to process the cooling tower blowdown and produce high quality distillate and one to two truckloads per day of a dry filter cake. The distillate will be reused by Units 7 and 8 for process water and cooling tower makeup. The filter cake is comprised of the solids from the blowdown and is nonhazardous. This filter cake will be disposed of through commercial reuse or through a licensed off-site Class I landfill (independent of the Project). In addition to eliminating any new water discharge to the St. Marks River from Unit 8, this zero discharge facility will allow for the reuse of existing treated waste streams that are currently being discharged to the St. Marks River. These waste streams are the existing Purdom Station low volume and metal cleaning waste discharges and the City of St. Marks Wastewater Treatment Facility effluent. Due to the high quality of the distillate that will be produced by the zero discharge facility, the City will eliminate the need for the existing Purdom Station deep wells and the associated groundwater withdrawal.

The addition of Unit 8 will not require the addition of any new transmission lines for support. Currently, the City owns and operates three (3) 115 kV transmission lines between the Purdom Station and the City's electrical distribution network. Two of the three lines will have their conductors upgraded from 4/0 copper to 477 aluminum conductor, steel reinforced (ACSR) to support the addition of Unit 8. This reconductoring will take place on the existing structures and within the existing rights-of-way.

To support the additional natural gas requirements for Unit 8, the natural gas lateral (owned by Florida Gas Transmission (FGT)) will require relatively minor upgrades. The metering and regulation station located within the Purdom Station will require relocation and upgrading. In addition, there is the potential for up to approximately 3 miles of the lateral to be upgraded with the addition of a 12-inch loop. This 12-inch loop, to be permitted and installed by FGT, is anticipated to be located within or adjacent to the existing lateral right-of-way and have minimal impacts on the environment.

3.1.2 Design Commitments Resulting in Ecological Benefits

The proposed Project design reflects an appreciation for the environment in Wakulla County and attempts to protect that environment while providing for the growing electricity needs of the Tallahassee area. Commitments incorporated into the design include special protections, above and beyond regulatory requirements, for air quality, water resources, and habitat, taking into account the Purdom Station's location along the St. Marks River, its proximity to the St. Marks National Wildlife Refuge, and its proximity to the Bradwell Bay National Wilderness Area. With the use of a clean fuel, i.e., natural gas, and adaptation/retrofit of an existing facility, the Project emphasizes pollution prevention rather than pollution control. The installation of advanced, highly efficient generating technology, which produces a large amount of electricity per unit of fuel consumed, will also conserve scarce energy resources.

The City of Tallahassee, through its design approach, will practice stewardship by upgrading an existing facility and leaving the environment "better off". The Project will result in ecological benefits, as illustrated by the following design features:

- Air Quality

  Through the selection of a clean fuel, the installation of advanced combined cycle technology, and the permanent shutdown of Units 5 and 6 at the Purdom Generating Station, increases in air emissions will be kept to a minimum even though generating capacity at the station will increase by about 200 percent. Actual emissions of key pollutants, such as SO_2 and NO_x, will remain at or below historical average annual emission levels. Allowable (permitted) emission levels will be dramatically decreased.

- Water Use

  Water use will be minimized through water recycling in the zero discharge system and reuse of treated wastewater, both from the City of St. Marks Wastewater Treatment Facility and the Purdom Station's own waste streams, for make-up to the cooling tower. Existing Purdom Station wells will be properly abandoned, allowing groundwater levels to rebound, and withdrawals from the St. Marks River for once-through cooling will be cut in half due to the retirement of Units 5 and 6 and the use of a cooling tower for Unit 8.

- Water Quality

  The zero discharge system will eliminate the need for discharges to the St. Marks River from the new power plant unit. It will also remove existing permitted wastewater discharges to the St. Marks River from the City of St. Marks Wastewater Treatment Facility and the Purdom Station's waste treatment system.

- Wetland Protection

  Wetland impacts will be avoided through careful site layout.

- Aesthetics

  Aesthetics along the St. Marks River shoreline will be improved through landscaping and the removal of the old boilers from Units 1 through 4, which is already under way.

3.2 SITE LAYOUT

The conceptual layout of the proposed Purdom Unit 8 is depicted in plan view on Figure 3.2-1, and a detailed footprint of the combined cycle unit is shown on Figure 3.2-2. The conceptual design for the combined cycle unit upon which the layout is based includes an advanced combustion turbine/generator, an unfired HRSG, a steam turbine/generator, a closed cycle mechanical draft cooling tower for condenser cooling, and a zero discharge wastewater treatment system.

Unit 8 will be installed on the west side of the Unit 6/7 discharge canal, south of the facility access road. The combustion turbine/generator and the HRSG will be oriented north-south adjacent to the canal, and the steam turbine/generator and other equipment will be adjacent to the west. The cooling tower will be west of the steam turbine/generator. The zero discharge wastewater treatment system will be just north of the access road. A stormwater retention swale will be added to the southwest of the new unit to percolate as much uncontaminated stormwater as possible into the groundwater, and to release the remainder as a sheet flow to the southwest, as it presently flows. Other uncontaminated stormwater will use the existing stormwater outfalls. Potentially contaminated stormwater will be segregated and reused.

The combined cycle unit will utilize a stack (chimney) that meets state requirements for Good Engineering Practice (GEP), and is 200 feet tall. The GEP calculation is in Appendix 10.1.5.

New release points for air emissions will be the main stack from the combined cycle combustion turbine unit, and the cooling tower fan stacks, as shown on Figures 3.2-1 and 3.2-2. New release points for liquids are from the new retention swale, also shown on Figures 3.2-1 and 3.2-2.

A cross section of the combined cycle unit is shown on Figure 3.2-3.

As part of the Purdom Unit 8 Project, the City of Tallahassee will be permanently shutting down the existing Units 5 and 6, and ceasing all industrial wastewater discharges from Unit 7 except for the thermal discharge. This will result in the elimination of the air emission releases from Units 5 and 6 (see Section 5.6), the wastewater releases from Units 5 and 6, and the nonthermal effluents from Unit 7 (see Section 2.3.4).

IMAGE QUALITY

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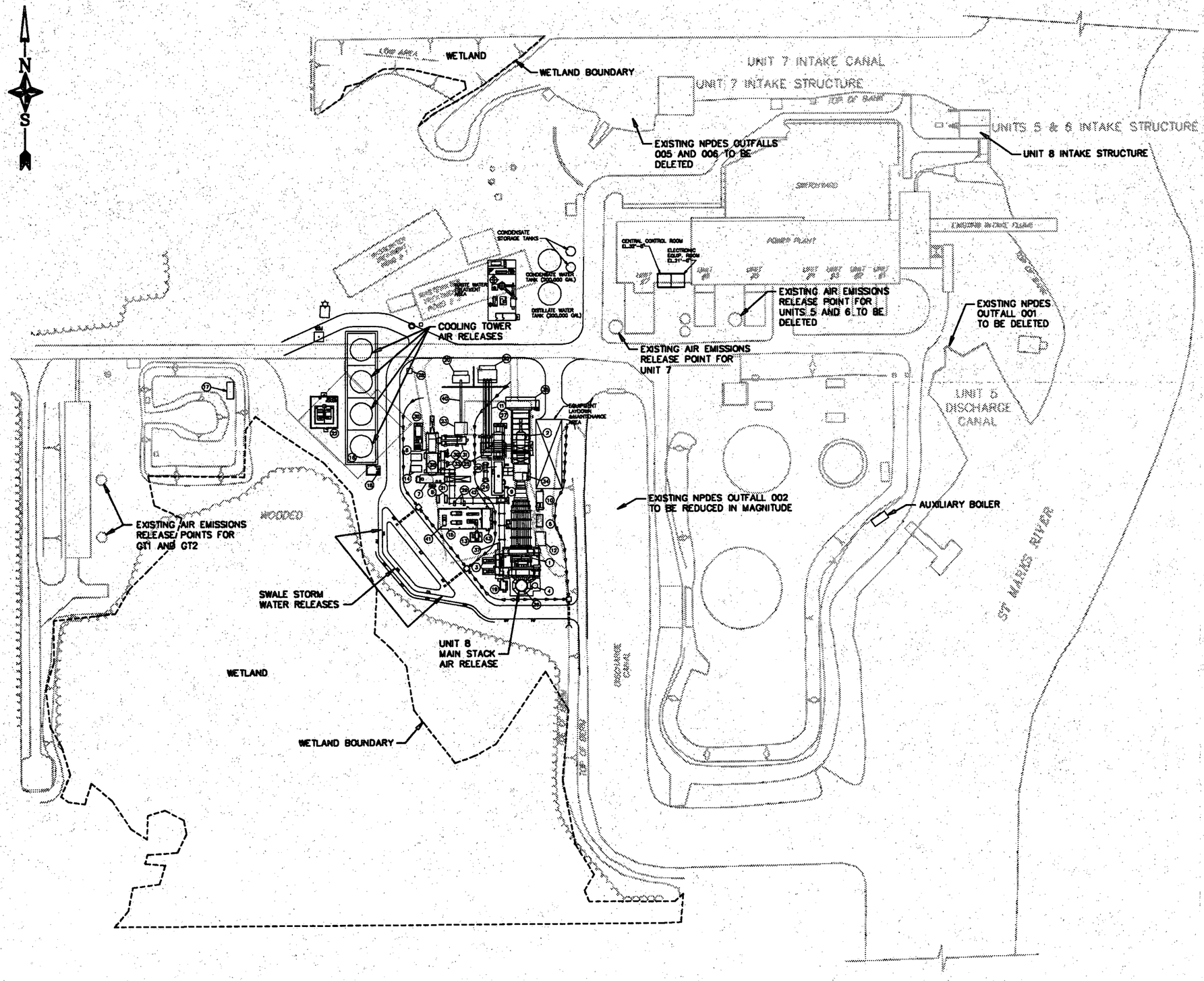

LEGEND:

1. HEAT RECOVERY STEAM GENERATOR
2. COMBUSTION TURBINE GENERATOR
3. FEEDWATER PUMPS
4. BLOWDOWN TANK
5. WATER WASH SKID
6. STEAM TURBINE GENERATOR
7. CONDENSER
8. CONDENSATE PUMPS
9. CO2 FIRE PROTECTION SKID
10. WATER INJECTION SKID
11. ISO PHASE BUS DUCT
12. HRSG CHEMICAL FEED SYSTEM
13. AUXILIARY TRANSFORMER
14. VACUUM PUMPS
15. SWITCHGEAR BUILDING
16. COOLING TOWER
17. FUEL OIL TRANSFER PUMPS
18. CIRCULATING WATER PUMPS
19. CONTINUOUS EMISSIONS MONITORING SYSTEM
20. STEAM TURBINE GENERATOR MAIN STEPUP TRANSFORMER
21. CLOSED COOLING WATER HEAT EXCHANGERS
22. COOLING TOWER CHEMICAL FEED SYSTEM
23. GENERATOR BREAKER
24. STATIC START SKID
25. COMBUSTION TURBINE GENERATOR BUS ACCESSORY COMPARTMENT
26. ACCESSORY MODULE
27. PACKAGED ELECTRICAL ELECTRONIC CONTROL CABINET
28. NATURAL GAS FILTER/SCRUBBER
29. CLOSED COOLING WATER PUMPS
30. STEAM TURBINE GENERATOR LUBE OIL SKID
31. STEAM TURBINE GENERATOR BUS ACCESSORY COMPARTMENT
32. COMBUSTION TURBINE GENERATOR MAIN STEPUP TRANSFORMER
33. GLAND STEAM CONDENSER
34. COMBUSTION TURBINE
35. INLET FILTER
36. STACK
37. SAMPLE PANEL
38. STEAM TURBINE
39. GLAND STEAM CONTROL VALVE SKID
40. NON SEGREGATED BUS DUCT
41. COOLING TOWER LOAD CENTER
42. BAILEY CONTROL CABINETS
43. STEAM TURBINE GENERATOR CONTROL CABINETS

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SCALE IN FEET

SOURCE: RE&C, 1997

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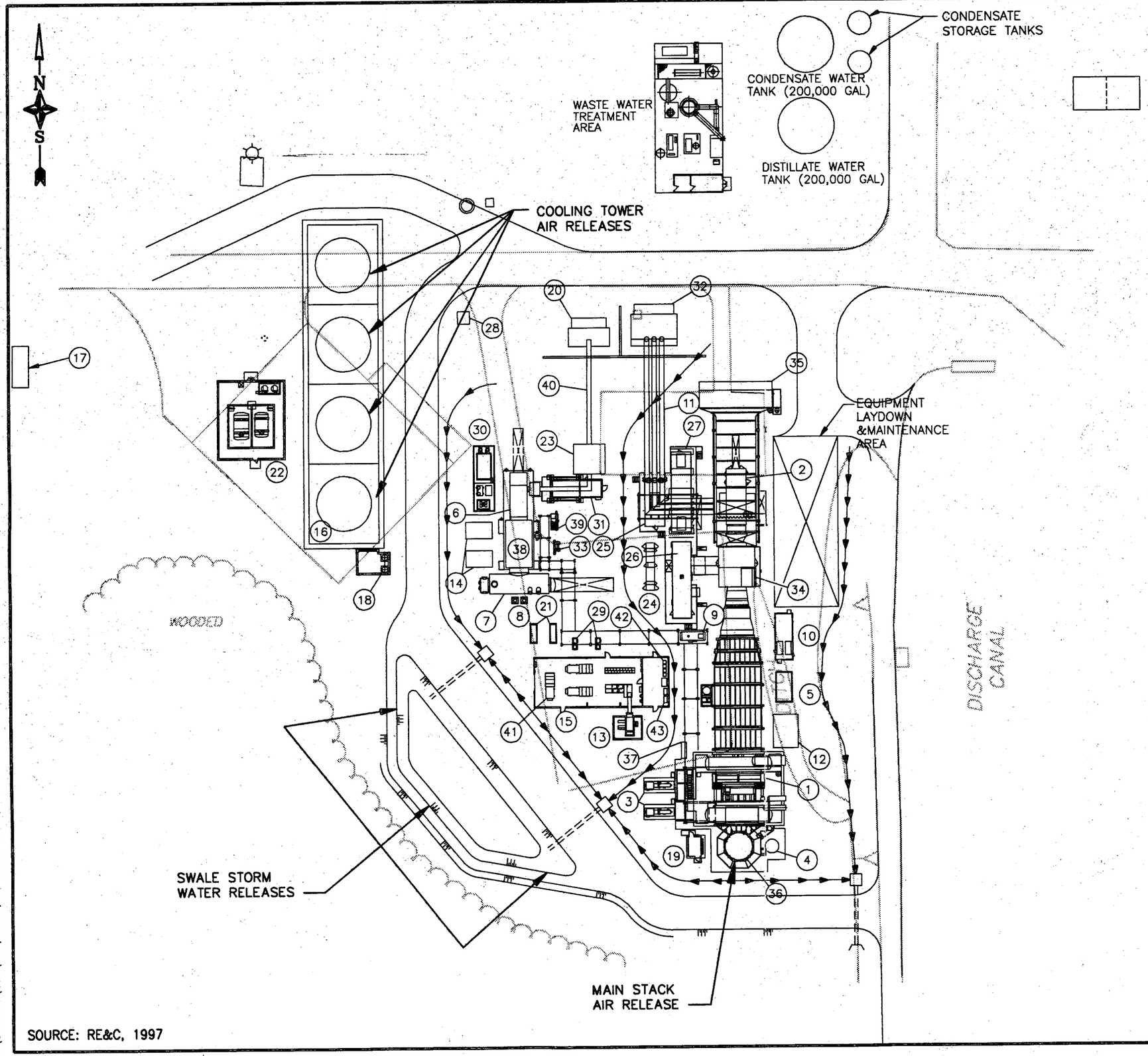
CONCEPTUAL LAYOUT

PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 3.2-1



LEGEND:

1. HEAT RECOVERY STEAM GENERATOR
2. COMBUSTION TURBINE GENERATOR
3. FEEDWATER PUMPS
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40. NON SEGREGATED BUS DUCT
41. COOLING TOWER LOAD CENTER
42. BAILEY CONTROL CABINETS
43. STEAM TURBINE GENERATOR CONTROL CABINETS

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SCALE IN FEET

SOURCE: RE&C, 1997

FOOTPRINT OF THE COMBINED CYCLE UNIT

PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 3.2-2

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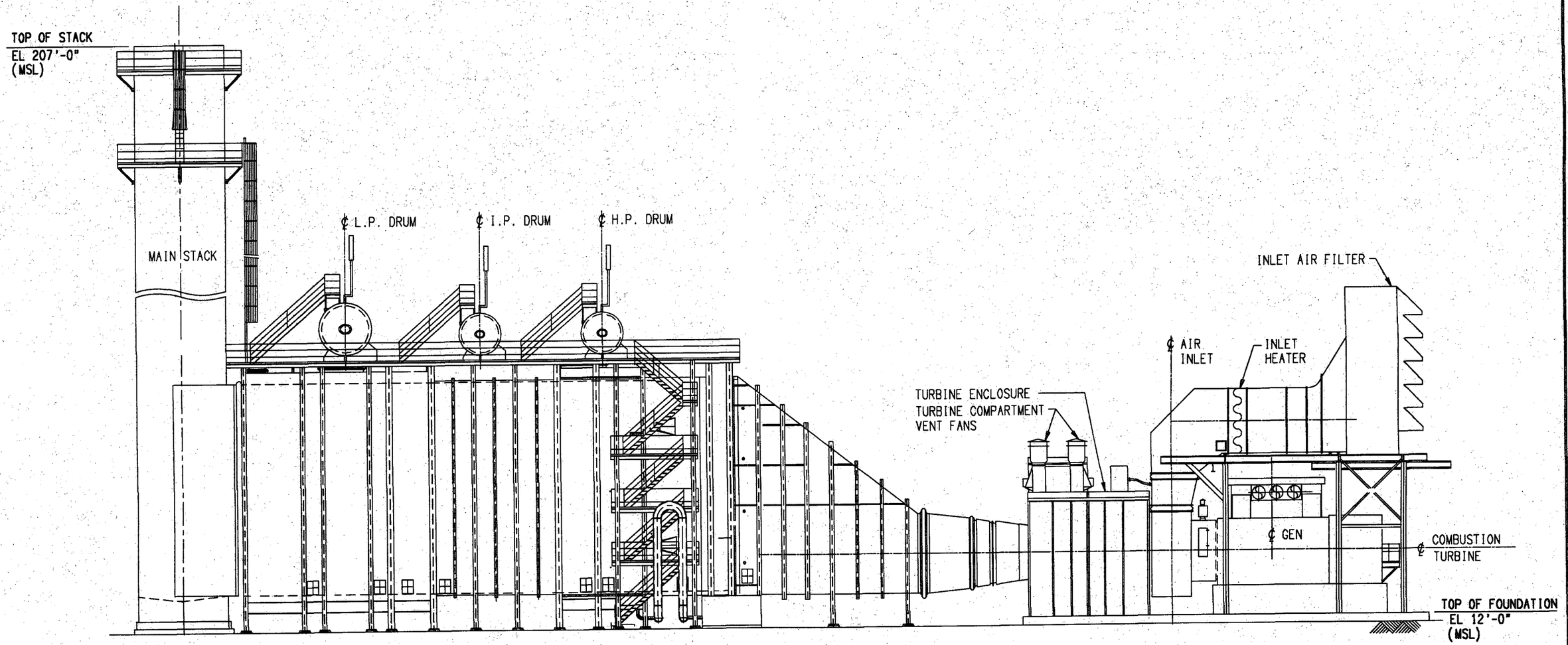

SOURCE: RE&C, 1997

CROSS SECTION
COMBINED CYCLE UNIT

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure
3.2-3

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3.3 FUEL

3.3.1 Fuel Types

The primary fuel for Unit 8 will be natural gas, with low-sulfur (0.05%) Number 2 fuel (a.k.a. No. 2 distillate or diesel) oil as a secondary fuel. Startup and operation of the combined cycle combustion turbine over the full load range will be possible using either fuel. The combined cycle combustion turbine can be automatically switched to fuel oil in the event that natural gas pressure is lost, and manual switching from one fuel to the other is also possible.

3.3.2 Quantities

The fuel gas is supplied to the valve and metering station by the fuel supplier and regulated at 390 psig (± 10 psig), 40° F to 100° F and 78,200 pounds per hour (an ambient temperature of 20° F), to accommodate the gas turbine inlet requirements.

Approximately 103,200 pounds per hour of Number 2 (0.05% S) diesel fuel oil will be required for use at full load when natural gas is not being utilized. Occasional barge deliveries of Number 6 fuel oil will continue to be made at the Purdom Station. However, with the permanent shutdown of Units 5 and 6, the City's need for Number 6 fuel oil is expected to be reduced.

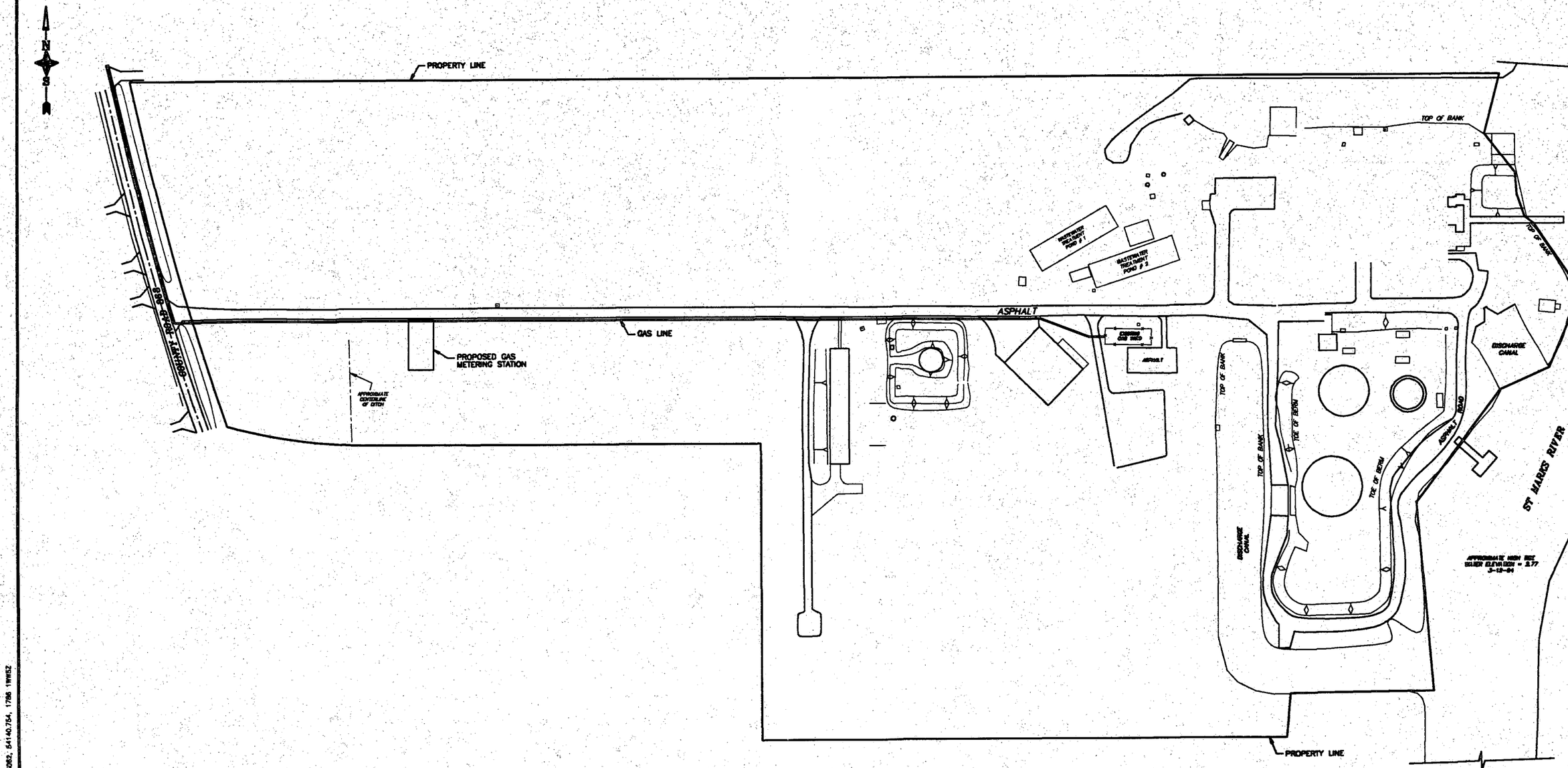
3.3.3 Transportation

Florida Gas Transmission Company (FGT) has two steel natural gas lines that run east-to-west between Capital Circle and Woodville. One of these lines has a 36-inch diameter and the other has a 30-inch diameter. The existing Purdom Station presently receives natural gas through the St. Marks lateral, which is an 8-inch steel line that enters the site at SR 363, and is buried along the south side of the facility access road (see Figure 3.3-1). The St. Marks lateral connects to the existing 30-inch diameter FGT line. As a part of FGT's upgrades to serve Purdom 8, they will: (1) connect the St. Marks lateral to the 36-inch diameter line at Woodville; (2) relocate and upgrade the existing valve and metering station to the new gas yard on site (see Figure 3.3-1); and (3) potentially install up to 3 miles of 12-inch loop to the St. Marks lateral. A new gas line will be installed from the new gas yard to the new Unit 8. The off-site portion of this work is described more fully in Section 6.3. The Number 2 (0.05% S) diesel fuel oil will continue to be supplied by truck delivery from local (most likely St. Marks) suppliers.

Number 6 fuel oil is presently delivered to the site by barge for use in Units 5, 6, and 7 and for delivery to the City of Tallahassee's Hopkins Plant. With the permanent shut-down of Units 5 and 6, the amount of Number 6 fuel oil delivered to the site and the related barge traffic on the river is expected to be reduced slightly.

3.3.4 Storage

The existing 10,000 barrel Number 2 (0.4% S) diesel fuel oil storage tank near the gas turbines will be used for the storage of the secondary Number 2 (0.05% S) diesel fuel oil (see Figure 3.2-1). Oil from this tank presently serves as the backup fuel for the existing combustion turbines (GT1 and GT2). The 20,000 barrel (Tank #1) and 80,000 barrel (Tank #3) heavy oil



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SOURCE: RE&C, 1997

EXISTING ON-SITE GAS PIPELINE

PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 3.3-1

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storage tanks (see Figure 3.2-1) will continue to store Number 6 fuel oil for use in Purdom Unit 7. All existing fuel oil tanks have been inspected and meet 17-762, F.A.C. Because of the permanent shutdown of Purdom Units 5 and 6, the 55,000 barrel (Tank #2) heavy oil storage tank will no longer be needed for fuel oil storage, and will be cleaned and recycled as a wastewater holding tank (see Sections 3.5 and 3.6). A small steel tank (100 gallons) will be installed near the natural gas filter/scrubber (item 28 on Figure 3.2-1) to store natural gas liquids that may occasionally come through the gas line and be removed by the filter. These liquids will be disposed off-site by an appropriately licensed contractor.

3.3.5 Quality

Fuel quality estimates supplied herein are projected based on typical values in the literature adjusted for known changes to be required in the sulfur content (fuel oil only).

Two types of fuel quality analysis have been estimated: an ultimate analysis and a proximate analysis. An ultimate analysis is a gravimetric (i.e., weight-based) breakdown of a fuel to the following: carbon, hydrogen, sulfur, nitrogen, oxygen and ash. A proximate analysis is a gravimetric breakdown of a fuel to the following components: volatile matter, fixed carbon, moisture and ash.

The results of the estimated analyses are presented in Table 3.3.5-1 for natural gas and Table 3.3.5-2 for Number 2 (0.05% S) diesel fuel oil.

TABLE 3.3.5-1
TYPICAL NATURAL GAS ANALYSIS[1]

Analysis	Gravimetric Breakdown (%)
Ultimate Analysis	
Carbon	64.84 - 75.25
Hydrogen	20.85 - 23.53
Oxygen	0 - 1.58
Nitrogen	0.76 - 12.90
Sulfur[2]	0 - 0.34
Ash	0.0
Proximate Analysis	
Volatile Matter	99.65 - 100.0
Fixed Carbon	0.0
Moisture	0.0 - 0.00138
Ash	0.0

(1) Heating value (HHV): 964 - 1129 Btu/ft^3
(2) Total sulfur (maximum) 10 grains/100 SCF

Source: Babcock & Wilcox, 1972 and RE&C, 1997

TABLE 3.3.5-2
TYPICAL NUMBER 2 (0.05% S) DIESEL FUEL OIL ANALYSIS[1]

Analysis	Gravimetric Breakdown (%)
Ultimate Analysis	
Carbon	86.1 - 88.2
Hydrogen	11.8 - 13.9
Oxygen	0.0
Nitrogen	0.0 - 0.1
Sulfur[2]	0.0 - 0.05
Ash	0.0 - 0.05
Proximate Analysis	
Volatile Matter	99.05 - 99.5
Fixed Carbon	0.25 - 1.0
Moisture	0.0 - 0.1
Ash	0.0 - 0.05

(1) Heating value (HHV): 19,170 - 19,750 Btu/lb
(2) Total sulfur (maximum) 0.05%

Source: Babcock & Wilcox, 1972 and RE&C, 1997

3.4 AIR EMISSIONS AND CONTROLS

Upon completion of this Project, the Purdom Station will have increased its generating capacity from a nominal 113 megawatts (MW) to a nominal 319 MW. This new total reflects the addition of Unit 8 (nominal 250 MW), the continued operation of existing Unit 7 (nominal 44 MW) and two existing combustion turbines (nominal 12.5 MW each), and the permanent shutdown of Units 5 and 6. Appendix 10.1.5 of this SCA contains the complete application for Prevention of Significant Deterioration (PSD) and Title V air operation permits for the Project. The permit application further describes the Purdom Station's existing capacity, the proposed modifications, and issues associated with current and future air emissions.

This section of the SCA describes the proposed approach to the Project and the resulting air pollutant emissions and control strategies.

3.4.1 Emission Types and Sources

The SCA proposes the construction of a new Unit 8 at the Purdom Station which will consist of a nominal 160 MW combustion turbine/generator, a non-fired heat-recovery steam generator (HRSG), a nominal 90 MW reheat steam turbine/generator, and a multi-celled cooling tower. Therefore, the types of air pollutants expected to be emitted include the products of combustion resulting from burning clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil in the combustion turbine, and small quantities of particulate matter resulting from the cooling tower drift losses.

While the SCA proposes an increase of approximately 200 MW of generating capacity for the Purdom Station, annual facility-wide emissions of oxides of nitrogen (NO_x) and sulfur dioxide (SO_2) will not be increased above their current actual levels. This is possible through the use of efficient combined cycle technology, the permanent shutdown of existing Units 5 and 6, and reduced annual operation of the remaining units in conjunction with the proposed Unit 8. Through the NO_x and SO_2 caps, facility emissions of other regulated air pollutants will also be minimized. The following subsections describe the existing and future air emission units, including the proposed Unit 8 and cooling tower.

3.4.1.1 Emissions Sources

The entire list of future emission units at the Purdom Station (existing and proposed) is provided in Appendix 10.1.5. The existing emissions units of primary interest include the Unit 7 steam generator, which is capable of firing clean pipeline quality natural gas and/or fuel oil in various combinations; a new auxiliary boiler (currently being installed), which has authorization to fire only natural gas; and two existing combustion turbines, which can fire either Number 2 (0.4% S) fuel oil or clean pipeline quality natural gas. Unit 8, as proposed, would consist of a combustion turbine, capable of firing either clean pipeline quality natural gas or Number 2 (0.05% S) diesel fuel oil, and equipped with a non-fired heat recovery steam generator (HRSG). Following completion of the compliance testing on Unit 8, the existing combustion turbines will no longer fire the Number 2 (0.4% S) fuel oil and will also fire Number 2 (0.05% S) diesel fuel oil. In addition, a cooling tower will be installed at the site to supply cooling water for the Unit 8 steam turbine condenser. The locations of these units and their associated emission points were

identified in Figures 3.2-1 and 3.2-2. Other emission units at the Purdom Station include emergency generators, fuel oil storage tanks, fuel dispensing operations, surface coating operations, and maintenance operations.

The proposed Unit 8 combustion turbine is an advanced GE MS7231FA equipped with an evaporative cooler. The combustion turbine exhausts through a single non-fired HRSG into a stack designed to meet good engineering practice (GEP) height requirements. The combustion turbine powers a nominal 160 MW generator with output varying based on ambient conditions and fuel input. The HRSG provides steam to a steam turbine which powers a nominal 90 MW generator. The combustion turbine is equipped with dry low-NO_x combustors and a water injection system for controlling NO_x emissions while firing clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil, respectively.

The cooling tower is a multi-cell mechanical draft evaporative cooling tower operating at five cycles of concentration. The unit will be equipped with drift eliminators to reduce drift losses associated with the normal operation of the cooling tower. The drift eliminators are primarily designed to reduce water usage but also result in the minimization of particulate matter emissions.

3.4.1.2 Emissions

The recent annual emissions for the existing regulated units at the Purdom Station have been estimated for the PSD regulated pollutants, and a summary is provided in Table 3.4.1-1. The future annual emissions for the Purdom Station after the proposed project have also been estimated, based on various worst-case scenarios for the facility operating under the SO_2 and NO_x caps, and these estimates are also included in Table 3.4.1-1. The emission rates for the Unit 8 combustion turbine and the cooling tower were based on Best Available Control Technology (BACT) evaluations, described below, which considered technical, economic, energy, and environmental factors. The net emission increases associated with the Project and the significant emission rate thresholds for the various PSD pollutants are also summarized in Table 3.4.1-1.

3.4.1.3 Emissions Inventory

The Purdom Station's complete emissions inventory is included in Appendix 10.1.5. Appendix 10.1.5 contains FDEP Form 62-210.900(1), *Application for Air Permit-Long Form*, for both the PSD and Title V permits.

3.4.2 Air Emission Controls

A review of the various control technologies and associated emission rates for Unit 8 and the cooling tower was completed for the proposed Project, The results of the review included the identification of the most efficient control technologies available and the most stringent emission limitations imposed for each of the PSD pollutants. The BACT analysis, which considered technical, economic, energy, and environmental factors, is presented in Section 3.4.3. This analysis resulted in the selection of the air emission controls for this Project, which include:

TABLE 3.4.1-1
PURDOM STATION PSD APPLICABILITY SUMMARY

Pollutant	Current Actual Emissions (tons/year)[1]	Future Estimated Emissions (tons/year)[1]	Net Increase in Emissions (tons/year)	Applicable PSD Significance Criterion (tons/year)[3]	PSD Applicability Determination
Carbon Monoxide	66	193	127	0[2]	Yes
Nitrogen Oxides	467	467	0	0[2]	No
Sulfur Dioxide	80	80	0	0[2]	No
Ozone (VOCs)	2.8	14.7	11.9	40	No
Particulate Matter (TSP)	10.7	59.0	48.3	25	Yes
Particulate Matter (PM_{10})	10.7	59.0	48.3	15	Yes
Total Reduced Sulfur	NA	NA	NA	10	No
Reduced Sulfur Compounds	NA	NA	NA	10	No
Sulfuric Acid Mist	3.0	8.6	5.6	7	No
Fluorides	.08	1.64	1.56	3	No
Vinyl Chloride	NA	NA	NA	1	No
Lead	.091	.011	0.080	0.6	No
Mercury	.0020	.0024	0.0004	0.1	No
Asbestos	NA	NA	NA	0.007	No
Beryllium	.00052	.00030	0.00022	0.0004	No

NA - No emissions information available or no emissions expected.

(1) For information on these values see appendix B and C PSD report (section 10.1.5)

(2) Due to the proximity to the Class I area, lower criteria apply for those pollutants with a maximum projected 24-hour average impact of 1.0 microgram per cubic meter or more in the Class I area

(3) Table 212.400-2, Rule 62-212.400, F.A.C.

Source: Foster Wheeler Environmental, 1997

- Good Combustion Practices
- Combustion Controls
- Fuel Quality
- Dry-Low NO_x Combustion
- Water Injection
- Drift Eliminators

3.4.3 Best Available Control Technology (BACT)

3.4.3.1 Introduction

Under both federal and Florida PSD programs, PSD review is triggered for a modification to an existing major facility that results in a significant net emissions increase. As part of the proposed Project, federally enforceable facility-wide caps on the annual emissions of SO_2 and NO_x are being proposed to hold the facility's future emissions of these pollutants to their current actual levels. Because of this commitment, the Project will net out of PSD review for these pollutants. To determine the worst-case emissions of other pollutants from the Project under the proposed facility-wide caps, eleven potential operating scenarios were identified. These scenarios, while not intended to represent limits on the facility, bracket the expected operating ranges of the individual units within the facility. Based on the proposed SO_2 and NO_x caps and the various pollutant-specific worst-case operating scenarios within those caps, the Project will also net out of PSD review for volatile organic compounds (VOCs), sulfuric acid mist (H_2SO_4), lead (Pb), mercury (Hg), beryllium (Be), and total fluorides (Fl). PSD review was triggered only for carbon monoxide (CO) and particulate matter (TSP and PM_{10}). The PSD applicability analysis is summarized in Table 3.4.1-1, and the supporting calculations for the current actual emissions and future allowable emissions are contained in Appendix 10.1.5

Because PSD was triggered for CO and particulate matter (TSP and PM_{10}), the BACT requirements of Rule 62-213.400(6), F.A.C., will apply to new and modified emission units for which a net emissions increase of these pollutants is expected to occur. This BACT analysis therefore addresses control strategies for CO and particulate matter (TSP and PM_{10}) emissions from the Unit 8 combustion turbine, and for particulate matter (TSP and PM_{10}) emissions from the cooling tower. In addition, the BACT analysis includes an evaluation for all PSD pollutants emitted from the combustion turbine to ensure that the proposed Project incorporates the most appropriate control strategies, regardless of the applicability of the BACT requirements.

The Florida PSD regulations require, among other things, that a proposed new facility or major modification: (a) comply with all applicable emission limitations contained in Chapter 62-296, F.A.C., and Title 40 of the Code of Federal Regulations Parts 60 and 61 (40 CFR Parts 60 and 61); and (b) apply BACT for each pollutant subject to PSD review. As defined in Rule 62-210.200(40), F.A.C., BACT is:

> "An emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts,

and other costs, determines is achievable through application of production processes and available methods, systems and techniques (including cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant."

In order to ensure consistent BACT determinations, and provide guidance to state and local regulatory programs as well as the regulated community, the EPA published guidance for conducting BACT determinations. The guidance includes the following documents:

- *Draft Top-Down BACT Summary* (EPA, 1990a)
- *Draft New Source Review Manual* (EPA, 1990b)
- *OAQPS Control Cost Manual, Fourth Edition* (EPA, 1990c)

Currently the FDEP requires applicants to follow the EPA's draft "top-down" procedures when conducting BACT evaluations, which are done on a case-by-case basis. These draft procedures have recently been formally proposed by EPA as part of the New Source Review Reform Package (61 Federal Register (FR) 38250, 7/23/96).

The "top-down" process requires initial consideration of the most stringent control technologies available, which may then be eliminated based on unacceptable source-specific energy, environmental, or economic impacts. This analysis includes technology transfers when applicable. For combustion turbines, the technical feasibility and economic impacts associated with the most stringent control technologies are typically the determinative factors. For the proposed Project, the economic impact analyses followed the procedures outlined in the above references.

The "top-down" process begins with the identification of various control technologies and strategies available to reduce emission levels of the pollutants subject to PSD review. The following sources were reviewed for identification of control technologies available for the proposed Project:

- California BACT Clearinghouse
- EPA BACT/LAER Clearinghouse
- Recent FDEP BACT Determinations
- EPA's Alternative Controls Techniques Document -- "Emissions from Stationary Gas Turbines" (EPA, 1993)

These sources provide the best information related to available control technologies and the most stringent emission limitations. The EPA BACT/LAER Clearinghouse data was downloaded from EPA's electronic bulletin board and a query was run on "internal combustion.". A separate query was run for the cooling tower. The results of the combustion turbine query are contained in Appendix 10.1.5.

The most stringent control technologies and strategies identified are as follows:

- Fuel Quality
- Good Combustion Practices

- Combustion Techniques
- Add-On Air Pollution Control Systems

The "top-down" evaluation included a review of each control technology and strategy including combinations, technology transfers, and the associated emission limitations.

Associated with each most stringent control technology is an emission limitation. These emission limitations form the basis of the BACT evaluation. For the proposed Unit 8 combustion turbine, the General Electric (GE) operating and emissions data are contained within Appendix 10.1.5.

3.4.3.2 Requirements and Assumptions

As required under the "top-down" process, the technical feasibility, economic impacts, energy impacts, and environmental impacts of each of the various control technologies and strategies were evaluated. These impacts were used to determine the most appropriate control strategies for the Unit 8 combustion turbine and the cooling tower.

For the pollutants requiring an economic impact evaluation, annual emissions from the Unit 8 combustion turbine were estimated based on 8,760 hours of operation and reasonably expected future operations of the unit. Because the short-term emission rates for the unit vary based on fuel type, load, and ambient temperature, certain assumptions were made. For CO and VOCs, the short-term emission rates increase with decreasing load; for all other pollutants, the short-term emission rates remain unchanged or increase with load. The short-term rates generally increase with lower ambient temperatures. An ambient temperature of 59° F was used, which is conservative since the average annual ambient temperature at the site is about 67° F. For the economic analyses that were required, base-case annual emissions from the Unit 8 combustion turbine were based on GE emissions data and the following reasonable assumptions:

For CO and VOCs, the unit was assumed to operate for 8,260 hours on clean pipeline quality natural gas and 500 hours on Number 2 (0.05% S) diesel fuel oil. Based on future expected operations, the unit was conservatively assumed to operate at 50 percent load for 19 percent of those hours, and at 100 percent load for the remainder of the hours. At these emission levels, the unit can operate within the proposed facility-wide SO_2 and NO_x caps.

For NO_x, the unit was assumed to operate at 100 percent load for 8,260 hours on clean pipeline quality natural gas and 500 hours on Number 2 (0.05% S) diesel fuel oil.

The cooling tower's conceptual design incorporates drift eliminators, allows for operation at five cycles of concentration, and reduces drift losses to 0.002 percent of the cooling tower water recirculation rate. Annual emissions of particulate matter (TSP and PM_{10}) were based on continuous (100 percent load) operation and the conceptual design.

3.4.3.3 Carbon Monoxide

CO is formed within a combustion turbine through the incomplete combustion of liquid and gaseous fuels. High temperatures, adequate excess air, and good fuel/air mixing during combustion minimize CO emissions. CO formation is therefore a function of the unit's overall combustion efficiency, which is a measure of the percentage of carbon and hydrogen within a

fuel that is converted to carbon dioxide and water. Complete or 100 percent conversions are only theoretical, so that products of incomplete combustion, including CO, are formed. The Unit 8 combustion turbine, as proposed, includes advanced GE dry-low NO_x combustor technology that maximizes NO_x reductions while minimizing CO and VOC emissions by varying the parameters which impact combustion efficiency. For the BACT analysis, the base-case CO emissions were estimated at 167 tons per year from the combustion turbine.

The combined use of good combustion practices and an oxidation catalyst was identified as the most stringent control technology currently available to control CO emissions. Combustion turbines equipped with an oxidation catalyst have had CO emissions limited to levels of about 2 and 3 ppm while firing natural gas and Number 2 fuel oil, respectively. For the proposed Unit 8 combustion turbine, this control equipment is known to be technologically feasible, but has been shown to have unacceptable economic, energy, and environmental impacts. "Good combustion practices" are typically determined to be the appropriate control technology for projects not required to meet the most stringent control technology's "Lowest Achievable Emission Rate" (LAER) limits that apply in nonattainment areas. The impacts of the control strategies are discussed in the following subsections.

Summary of Technologies Evaluated

The following control technologies were evaluated based on their control effectiveness:

- Oxidation Catalyst to reduce CO emissions by 90 percent; and
- Combustion controls to ensure good combustion.

Combustion controls represent the base case. Emission reductions were based the emission levels associated with the base case and a 90 percent control level.

Energy Impacts

An oxidation catalyst will result in a reduction in a combined cycle combustion turbine's overall performance and output capacity. The main loss is associated with the additional pressure drop across the catalyst bed. This pressure drop can range from 1 to 2 inches of water and can also reduce the unit's overall output by as much as 0.5 percent (1.25 MW). Although the energy impact may be measurable, it is not, by itself, considered significant enough to reject the control technology. Costs associated with the energy loss are included within the economic analysis.

Environmental Impacts

The environmental impacts resulting from the use of an oxidation catalyst can include increases of sulfur trioxide (SO_3) emissions and waste disposal. Increased SO_3 emissions are a result of the conversion of SO_2 to SO_3 in the presence of the oxidation catalyst. Water vapor within the exhaust gases can react with this additional SO_3 to form H_2SO_4. In addition, the disposal of the spent catalyst every two years also would place additional burdens on available landfill space. These potential environmental impacts alone were not considered significant enough to reject the control technology.

Economic Impacts

The economic impacts were based on the costs of an oxidation catalyst in accordance with the procedures outlined in the EPA's *"Cost Control Manual"* (EPA, 1990c) and the draft *'New Source Review Workshop Manual"* (EPA, 1990b). Appendix 10.1.5 contains the capital and operating cost factors used in the oxidation catalyst and later selective catalytic reduction (SCR) analyses.

Engelhard provided an estimated oxidation catalyst system cost of $830,000 for the 90 percent reduction of CO emissions, with a warranty period of two years. Seventy-five percent of this system's cost was reported to be associated with the catalyst, including replacement. The design criteria were based on firing Number 2 (0.05 % S) diesel fuel oil at 50 percent load and meeting the 2 and 3 ppm LAER limits for gas and oil firing.

The economic analysis reduces capital and operating costs to annualized values based on a 20-year economic life of the Project and a 7.25 percent return. On this basis, an oxidation system would add approximately $1.5 million to the capital cost of the Project.

The total levelized annual costs for the Project would increase by about $1.2 million per year, resulting in an incremental removal cost of approximately $7,720 per ton. The cost per ton for controlling CO emissions through the use of an oxidation catalyst is prohibitively expensive. This result is consistent with other recent BACT determinations by FDEP where good combustion practices were determined to be BACT. The use of good combustion practices to minimize CO emissions is therefore proposed as BACT for the Unit 8 combustion turbine.

3.4.3.4 Particulate Matter (TSP) And PM_{10}

Combustion Turbine

Emissions of particulate matter (TSP) and PM_{10} result from inert materials within the fuel, products of incomplete combustion, and inert materials within the combustion turbine inlet air. The New Source Performance Standards (NSPS) for combustion turbines, 40 CFR 60 Subpart GG do not establish emission limits for particulate matter. All of the particulates emitted from the combustion turbine are expected to be less than 10 microns in diameter. Thus, the emissions of TSP equal the emissions of PM_{10} and further discussion of particulate matter will refer to PM_{10}.

The combustion turbine has PM_{10} emissions levels of 9 lb/hr (0.0058 lb/mmBtu) while firing clean pipeline quality natural gas and 17 lb/hr (0.0096 lb/mmBtu), while firing Number 2 (0.05% S) diesel fuel oil, exclusive of background concentrations per the GE data sheets. These factors are based more on the uncertainties in PM_{10} stack testing methods than on the expectation of large quantities of inert materials within the combustion turbine inlet air or the fuel (GE, 1996a). Since inert materials can cause turbine damage resulting in additional downtime and maintenance, combustion turbines are normally fired with clean fuels such as natural gas and Number 2 diesel fuel oil. Air filtration systems are also employed to avoid the introduction of inert materials into the combustion turbine through the inlet air. In addition, good combustion practices are followed for both environmental and economic reasons.

The most stringent control technology associated with combustion turbines for PM_{10} is a combination of fuel quality, good combustion practices, and combustion turbine inlet air filtration. Add-on air pollution control strategies such as baghouses, scrubbers, and electrostatic precipitators (ESPs) have not been used on combustion turbines and their use as a transfer technology has been deemed neither technically nor economically feasible for combustion turbines due to anticipated back pressure problems. The emission levels associated with the most stringent controls were based on a North Carolina BACT determination of 9 lb/hr and 17 lb/hr when firing natural gas and Number 2 fuel oil, respectively. The Unit 8 combustion turbine has PM_{10} emission levels equal to those associated with the most stringent technology. Therefore, no further energy, environmental, or economic analysis was required. For the combustion turbine, BACT for the PM_{10} emissions is proposed as combustion turbine inlet air filtration, good combustion practices, and the use of clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil.

Cooling Tower

Emissions of particulate matter (TSP and PM_{10}) result from the direct contact between the cooling water and the air passing through it. As the air and water make contact, some water may become entrained within the air stream and carried out of the tower as "drift" droplets, which is known as drift loss. The cooling water, and consequently the drift droplets, typically contain dissolved and suspended solids. These solids constitute the particulate matter within the droplet and are considered in calculating the total PM_{10} emissions. The amount of drift loss depends on the number and size of the droplets produced within the cooling tower and is related to the overall design of the cooling tower. Typically, larger droplets will fall to the ground near the tower while smaller droplets may evaporate, leaving the solids suspended within the atmosphere. The amount of particulate emissions including TSP and PM_{10} depends on the amount of drift loss and the concentration of solids within the cooling tower water.

To reduce drift losses from cooling towers, and therefore indirectly lower particulate emissions, drift eliminators can be incorporated into the tower design. A single BACT determination for a cooling tower was identified in the control technology review, establishing drift eliminators as BACT, with an emission limitation of 0.002 percent of the recirculating water flow. The proposed cooling tower for the Purdom Station will incorporate drift eliminators, operate at 5 cycles of concentration, and reduce drift losses to 0.002 percent of the cooling tower recirculation rate. BACT for particulate matter emissions from the cooling tower is therefore proposed as the use of drift eliminators.

3.4.3.5 Other Pollutants

In addition to the pollutants subject to BACT, evaluations of the Unit 8 combustion turbine's emissions of other PSD pollutants was also conducted, although not required by the applicable regulations. These other pollutants included SO_2, H_2SO_4, NO_x, VOC, Fl, and trace metals. The findings regarding each of these pollutants are discussed in the following sections.

Sulfur Dioxide and Sulfuric Acid Mist

Sulfur dioxide emissions are a direct result of the oxidation of the various sulfur compounds contained within the fuel stream. Both natural gas and Number 2 fuel oil contain some sulfur compounds. In either case, the oxidation process follows the general chemical reaction:

$$S + O_2 \Rightarrow SO_2$$

Sulfuric acid mist is the result of the oxidation of SO_2 to SO_3 and the subsequent reaction with moisture to form H_2SO_4. This process follows the following general chemical reactions:

$$2SO_2 + O_2 \Rightarrow 2SO_3$$

$$SO_3 + H_2O \Rightarrow H_2SO_4$$

Combustion of both clean pipeline quality natural gas and the Number 2 (0.05% S) diesel fuel oil will result in emissions of SO_2 and H_2SO_4. Because SO_2 and H_2SO_4 emissions are directly proportional to the sulfur content of the fuel, they can be controlled through fuel quality. The most stringent SO_2 and H_2SO_4 emission standards for combustion turbines are related to fuel quality. The SO_2 and H_2SO_4 emissions from the Unit 8 combustion turbine are based on GE data which Project that 95 percent of the sulfur in the fuel would be emitted as SO_2 and the remaining 5 percent emitted as H_2SO_4.

The Unit 8 combustion turbine will fire clean pipeline quality natural gas as the primary fuel with Number 2 (0.05% S) diesel fuel oil as the secondary fuel, which meets the most stringent emission levels reported. In addition, the use of the Number 2 fuel oil with a sulfur content of 0.05 percent by weight is well within the NSPS requirements of Subpart GG, which specifies a maximum sulfur content of 0.8 percent by weight.

Oxides of Nitrogen

Emissions of NO_x from combustion turbines are generated by two primary mechanisms known as "fuel NO_x" and "thermal NO_x." Fuel NO_x is related to the nitrogen content of the fuels fired in the combustion turbine. Most solid and liquid fuels contain some quantities of nitrogen within their chemical structure, known as fuel bound nitrogen (FBN), which when burned can produce NO_x emissions or "fuel NO_x." Within combustion turbines, FBN is only a concern when firing fuel oils, since clean pipeline quality natural gas typically contains little or no FBN. The production of fuel NO_x can follow the generalized chemical reaction:

$$C_xH_yN + zO_2 \Rightarrow xCO_2 + (y/2)H_2O + NO_x$$

Fuel NO_x represents a relatively small but measurable portion of the overall NO_x emissions generated by a combustion turbine. For combustion turbines, NSPS Subpart GG establishes a base NO_x emissions standard of 75 parts per million by volume on a dry basis (ppmvd) corrected to 15 percent oxygen at ISO ambient conditions. This standard includes additional allowances for the heat rate and for FBN.

The second mechanism by which NO_x emissions are formed within a combustion turbine is known as "thermal NOx" and is a result of the dissociation of nitrogen (N_2) and Oxygen (O_2) in

the combustion air and the subsequent reactions to form NO_x. The Zeldovich mechanism has been proposed for this reaction and is based on the following general equations:

Dissociation

$$N_2 \Leftrightarrow 2N\bullet$$

$$O_2 \Leftrightarrow 2O\bullet$$

Reaction

$$N_2 + 3O\bullet \Leftrightarrow 2NO + O\bullet$$

$$O_2 + N\bullet \Leftrightarrow NO + O\bullet$$

$$N\bullet + O\bullet \Leftrightarrow NO$$

The dissociation reactions, which produce elemental nitrogen and oxygen, are favored under conditions of high temperatures and pressures. Combustion controls focus on reducing thermal NO_x production by reducing the peak flame temperatures within the combustion zone. Peak flame temperatures are controlled by either wet injection systems or by varying the stoicheometric ratio of the combustion air and fuels within the combustion zones. Wet injection systems involve the injection of either water or steam into the combustion zone to act as a heat sink and lower flame temperatures. Varying the stoicheometric ratios through staged combustion reduces flame temperatures and the nitrogen concentrations within the combustion zone. This later technique forms the basis of the dry low-NO_x combustors offered by various manufacturers. Appendix A of the PSD Report in Appendix 10.1.5 contains information provided by General Electric on its dry-low NOx development program, a technical paper on dry-low NOx technology, and the emissions data sheets for the proposed Unit.

For Unit 8, NO_x emission levels of 9 ppmvd (0.037 lb/mmBtu) while firing clean pipeline quality natural gas and 42 ppmvd (0.181 lb/mmBtu) while firing Number 2 (0.05% S) diesel fuel oil have been guaranteed up to a maximum of 0.015 percent FBN. Thermal NO_x emissions will be controlled by the use of an advanced dry low-NO_x combustor while firing clean pipeline quality natural gas and water injection while firing Number 2 (0.05% S) diesel fuel oil, respectively. The proposed emission limits are well below those of 40 CFR 60 Subpart GG and also below those considered BACT in recent FDEP determinations. However, the proposed combustion turbine's NO_x levels are above those associated with the most stringent emission limitations (3.5 ppmvd - natural gas and 10 ppmvd - fuel oil) placed on projects located within non-attainment areas. As such Foster Wheeler examined the costs associated with the installation of an add-on air pollution control technology were examined.

Add-on air pollution control systems for reducing emissions of NO_x from combustion sources include selective catalytic reduction (SCR) and selective noncatalytic reduction (SNCR). Currently, SCR in combination with either wet injection or dry low-NO_x technologies is the most efficient control technology employed to control NO_x emissions from combustion turbines. Combustion turbines equipped with SCR systems have demonstrated compliance with emission limits as low as 3.5 ppmvd and 10 ppmvd, corrected to 15 percent O_2, while firing natural gas and Number 2 fuel oil, respectively. Because of the current temperature limitations of the available SNCR systems, their use on combustion turbines is not considered to be

technologically feasible. Therefore, the evaluation addressed only SCR as an available add-on control technology for NO_x.

As part of the evaluation, the economic impact of an SCR system was considered. The economic impact analysis followed EPA's suggested procedures. A vendor quote was received for an SCR system, with a three-year catalyst warranty. The quote estimated the initial capital cost for an SCR system to be $1,676,000. In addition to this initial cost, the vendor estimated additional costs of $300,000 to $350,000 per year for catalyst replacement. The SCR design criteria was based on meeting the 3.5 and 10 ppmvd LAER limits for all gas and oil firing.

The economic impacts analysis reduced capital and operating costs to annualized values based on a twenty-year economic life of the Project and a 7.25 percent return. The analysis indicated that an SCR system would add approximately $3.1 million to the overall capital cost of the Project. The total levelized annual costs for the Project would increase by about $1.5 million per year, resulting in an incremental removal cost of approximately $7,225 per ton. Based on the economics impacts alone, it was determined that controlling NO_x emissions through an SCR system would be prohibitively expensive, consistent with other recent BACT determinations by FDEP.

In addition to the economic impacts, the use of an SCR system would result in a reduction in the combined cycle combustion turbine's performance and output capacity. The main loss is associated with the additional pressure drop across the ammonia injection grid and the catalyst bed. This pressure drop can range from 2 to 5 inches of water and can reduce the overall unit output by as much as 0.5 percent. In addition, energy losses are associated with the pumps and instrumentation used to control and operate the ammonia injection system. Although these energy impacts may be measurable, they were not by themselves considered significant enough to reject the control technology. Costs associated with the energy loss have been included within the economic analysis.

Environmental impacts resulting from the use of an SCR system include emission increases of SO_3 and PM_{10} emissions, waste disposal, increased water usage, and the storage, handling, and emissions of ammonia and ammonia products. Increased SO_3 emissions are a result of the catalytic oxidation of SO_2 to SO_3 in the presence of the SCR catalyst. As discussed previously, SO_3 can be expected to form H_2SO_4 in the presence of water vapor within the exhaust gases. SO_3 can also be expected to react with ammonia to form either ammonium bisulfate or ammonium sulfate, which will be reflected as increased PM_{10} emissions and which could potentially cause fouling in the HRSG. In addition to the increases in SO_3 and PM_{10} emissions, the SCR system could also introduce ammonia emissions into the environment. Disposal of the spent catalyst every three years will place additional burdens on available landfill space. Water usage would increase by about 136,500 gallons per year through the use of the aqueous ammonia solution. The handling, storage, and use of aqueous ammonia does pose less of an environmental threat than that of anhydrous ammonia from the standpoint of an accidental air release. However, because of the Purdom Station's location along the banks of the St. Marks River, the potential handling and storage of an aqueous ammonia solution would have to be addressed from an accidental spill and release perspective.

Based on the various impact analyses, BACT for NO_x emissions from the combustion turbine is proposed to be the use of clean pipeline quality natural gas as the primary fuel and Number 2 (0.05% S) diesel fuel oil as the secondary fuel, and the use of dry-Low-NO_x combustors and a water injection system when firing clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil, respectively.

Volatile Organic Compounds

Within a combustion process, emissions of VOCs are related to the combustion efficiency of the unit. Combustion control strategies for VOCs are similar to those for CO which target high temperatures, long residence times, and adequate excess air. For combustion turbines, NSPS Subpart GG does not establish emission limits for VOC emissions.

The Unit 8 combustion turbine will have VOC levels of 2 parts per million volume on a wet basis (ppmvw) (0.0018 lb/mmBtu) and 5 ppmvw (0.0042 lb/mmBtu), while firing clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil, respectively, for loads above 75 percent. These values are representative of BACT for these loads. For loads below 75 percent, the VOC levels are higher, as reported in the GE data sheets. The most stringent control technology for VOCs have associated emission levels of 1.5 and 3 ppmvw for natural gas and Number 2 (0.05% S) diesel fuel oil firing, respectively.

For combustion turbines, add-on air pollution control strategies for VOCs include oxidation catalysts. The use of an oxidation catalyst for the reduction of CO emissions was evaluated for the Unit 8 combustion turbine. Since VOC emissions were not subject to BACT review, a separate cost analysis for an oxidation catalyst to reduce VOCs was not conducted. However, by assuming a 30 percent reduction of VOC emissions across the CO oxidation catalyst, and by adding the additional reduction in VOC emissions to those of CO, the additional benefit of a lower incremental cost of the system was identified. This lower incremental cost was estimated at $7,510 per ton of CO and VOC removed. Although the combination of VOC and CO reductions is slightly higher, making the incremental removal cost lower, the economic cost of an oxidation catalyst was still considered to be unreasonably expensive.

Trace Metals

Emissions of trace metals result from inert materials within the fuel and combustion turbine inlet air. Clean pipeline quality natural gas contains little, if any, noncombustible inert materials; trace metal emissions are considered negligible. For mercury, an emission factor of 0.078 lb/10^{12} Btu has been used for this analysis. Number 2 fuel oil has a reported ash content of less than 0.01 percent by weight (Perry, 1973). Emissions of trace metals from the use of Number 2 (0.05% S) diesel fuel oil are therefore expected to be higher when compared to clean pipeline quality natural gas, but are still relatively low. For the Unit 8 combustion turbine on fuel oil, emissions of trace metals have been estimated based on AP-42 emission factors (EPA, 1995) for lead (194 lb/10^{12} Btu), beryllium (4.2 lb/10^{12} Btu), and mercury (32 lb/10^{12} Btu).

As discussed under the section regarding PM_{10} emissions, BACT for trace metal emissions from combustion turbines has been determined to be fuel quality, good combustion practices, and combustion turbine inlet air filtration. NSPS Subpart GG does not contain any emission standards for trace metals nor did any of the reported BACT determinations. Consistent with

other recent FDEP determinations of BACT for trace metal emissions from combustion turbines, the use of clean pipeline quality natural gas as the primary fuel with Number 2 (0.05% S) diesel fuel oil as the secondary fuel, good combustion practices, and combustion turbine inlet air filtration are proposed as BACT for Unit 8.

Total Fluorides

The review of the most stringent control technologies did not identify any emission limitations associated with fluoride emissions from combustion turbines. Fluoride emissions are associated with the use of fuel oil. Fuel quality is therefore proposed as BACT for fluoride emissions from the Unit 8 combustion turbine, with clean pipeline quality natural gas as the primary fuel and Number 2 (0.05% S) diesel fuel oil as the secondary fuel.

3.4.3.6 BACT Summary

The BACT evaluation examined the available fuels, combustion technologies, and add-on air pollution control systems. Based on the evaluations, BACT for the Project includes the following:

- For the primary control of CO and VOC emissions from the combustion turbine, good combustion practices, which maximize NO_x reductions while minimizing CO, VOCs, and PM_{10} emissions are proposed as BACT. For CO, the evaluation is based on the economic impacts of an oxidation catalyst, which represents the most stringent control technology.
- For the primary control of PM, PM_{10}, trace metals, and total fluorides emissions from the combustion turbine, inlet air filtration coupled with good combustion practices and fuel quality are proposed as BACT. The use of clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil is the most stringent control technology available.
- For the primary control of NO_x, combustion controls including dry-low NO_x combustors and wet injection techniques coupled with fuel quality are representative of BACT. The evaluation is based on the economic impacts associated with an SCR system, which represents the most stringent control technology available.
- For the primary control of SO_2 and H_2SO_4, and the secondary control of NO_x and PM_{10}, the use of clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil is the most stringent control technology available.
- For the primary control of PM and PM_{10} from the cooling towers, drift eliminators which reduce drift losses are proposed as BACT and are the most stringent control technology available.

3.4.4 Design Philosophy

The proposed Project design reflects an appreciation for the environment in Wakulla County. The Project's goals include the protection of that environment while providing for the growing electrical needs of the Tallahassee area. Design commitments include special protections for air quality due to the Purdom Station's proximity to the Bradwell Bay National Wilderness Area, and the St. Marks National Wildlife Refuge and its location along the St. Marks River.

These special protections are reflected in an overall plant-wide control strategy, which includes no net increases in annual emissions of SO_2 and NO_x above recent actual levels, the application of BACT for all PSD pollutants, the use of clean fuels including clean pipeline quality natural gas as the primary fuel and Number 2 (0.05% S) diesel fuel oil as the secondary fuel, the installation of advanced combined cycle technology, and the early retirement of two older units. The use of advanced combined cycle technology will allow the Purdom Station to run more efficiently with nearly triple the current plant capacity. In addition, Unit 8 will have the lowest NO_x emissions permitted to date for a major natural-gas-fired electric generating station in Florida.

3.4.5 References

EPA (U.S. Environmental Protection Agency). 1990a. "Top-Down" Best Available Control Technology Guidance Document (Draft). Office of Air Quality Planning and Standards, March 15. Research Triangle Park, North Carolina.

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EPA. 1993. Alternative Control Techniques Document - NO_x Emissions from Stationary Gas Turbines. EPA-453/R-93-007. Research Triangle Park, North Carolina.

EPA. 1995. Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, AP-42, 5th Edition January. Research Triangle Park, North Carolina.

Perry, R. H., and C. H. Chilton. 1973. Chemical Engineer's Handbook, 5th Edition. McGraw-Hill Book Company. New York, New York.

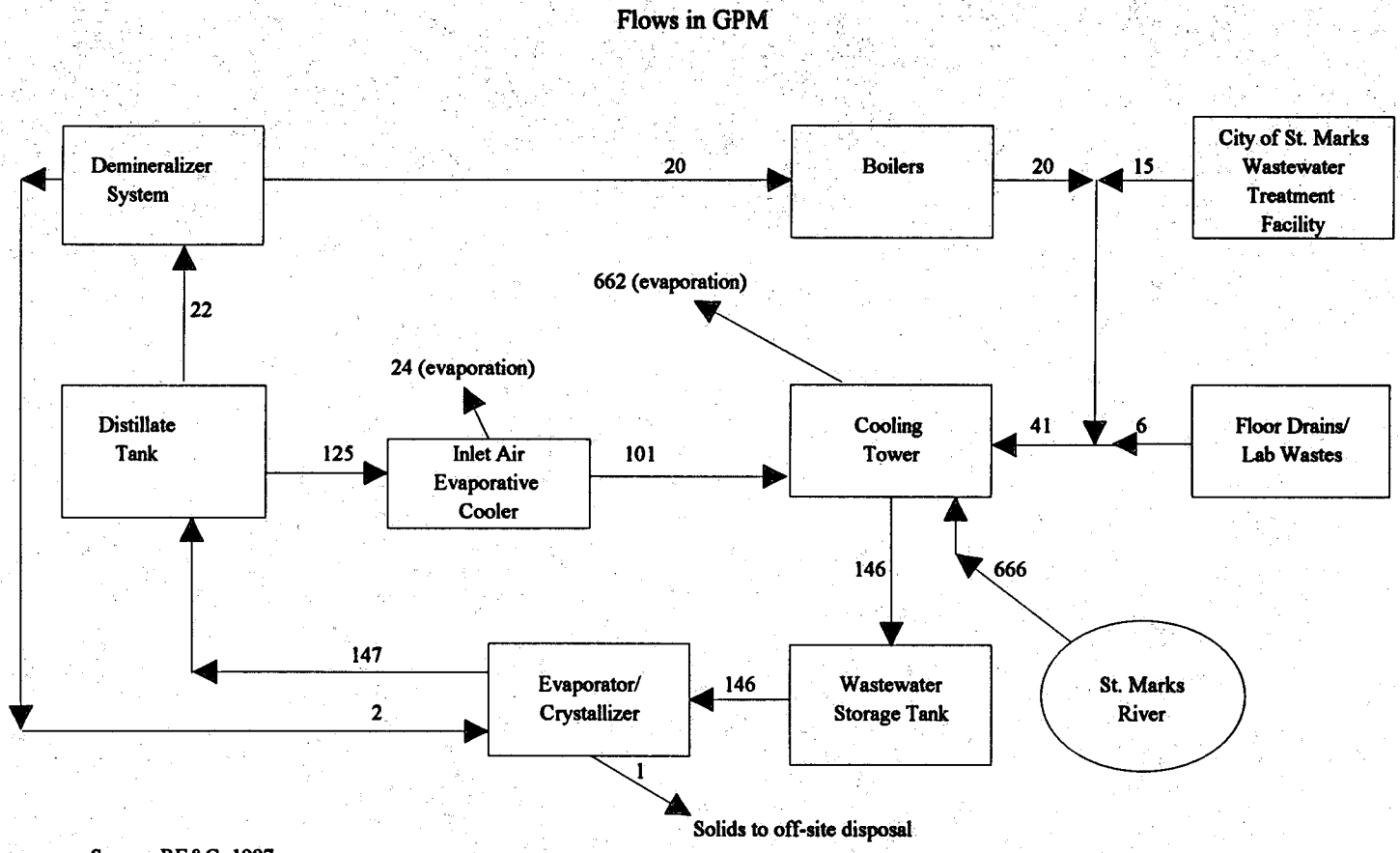
3.5 PROJECT WATER USE

Purdom Unit 8 has been designed to minimize impacts to the St. Marks River watershed. The existing plant currently uses St. Marks River water for once-through cooling, Floridan aquifer water for process makeup and auxiliary cooling, and water from the City of St. Marks municipal system for potable water. The City of Tallahassee looked at potential sources of wastewater as the first choice for makeup to the proposed Unit 8. The National Pollutant Discharge Elimination System (NPDES) permits in the site vicinity were examined. Those discharges that dealt primarily with stormwater flows to the river (e.g., Seminole Refining) were eliminated from consideration. The discharge from Primex Technologies (formerly Olin Corporation) was examined, but neither the City of Tallahassee nor Primex could justify the economics of pursuing reuse of that waste stream. This process of elimination left only the discharges from the St. Marks Wastewater Treatment Facility and the non-cooling, non-stormwater outfalls from the Purdom Station itself, as discharges to the river containing pollutants but suitable for use as cooling tower makeup. The City of Tallahassee is committed to reuse of these two waste streams, to improve the quality of the river, and to support the State's commitment to reuse wastewater.

Based on historical analysis of groundwater quality from the City of Tallahassee's wells, it was concluded that the use of groundwater should be discontinued with the start-up of Unit 8 to help prevent any further saline intrusion. This left the St. Marks River as the only remaining water source. Since the maximum facility demand was predicted to be approximately 2 cfs, or about 0.6 percent of the 7Q10 (347 cfs) at the Purdom Station, it was concluded that the utilization of such a quantity of surface water from the river would not have significant hydrological impact. Therefore, the Project proposes such a use. As the facility is already connected to the City of St. Marks municipal water system, and the proposed Project does not require any additional staff, potable water will continue to be withdrawn from the municipal system.

Purdom Unit 8 is proposed to be a zero discharge facility with respect to the NPDES program. This means it will have no point source discharges of wastewaters or contaminated stormwater to surface waters. The key feature of this design is the zero discharge wastewater treatment system. The City of Tallahassee is presently evaluating two different designs for this system. The first design consists of a falling film, vapor compression evaporator and a steam-driven forced circulation crystallizer and solids separator. The second design includes the use of heat exchangers and wastewater evaporating cooling tower cells. It is likely that the final design will be some combination of the two. In any case, use of the zero discharge wastewater treatment system will allow Unit 8 to use the reclaimed water from the City of St. Marks Wastewater Treatment Facility and the recycled process wastewaters from Purdom Units 7 and 8 to minimize the withdrawal of St. Marks River water for makeup to the cooling tower and to both boilers. This allows the Purdom Station to discontinue the use of groundwater at the site.

Based on this design, a quantitative water balance for the unit is shown on Figure 3.5-1 for firing natural gas under average annual meteorological conditions, and on Figure 3.5-2 for firing number 2 fuel oil under extreme meteorological conditions. Expected average conditions are represented on Figure 3.5-1, while peak water use at the plant under any conditions is represented on Figure 3.5-2

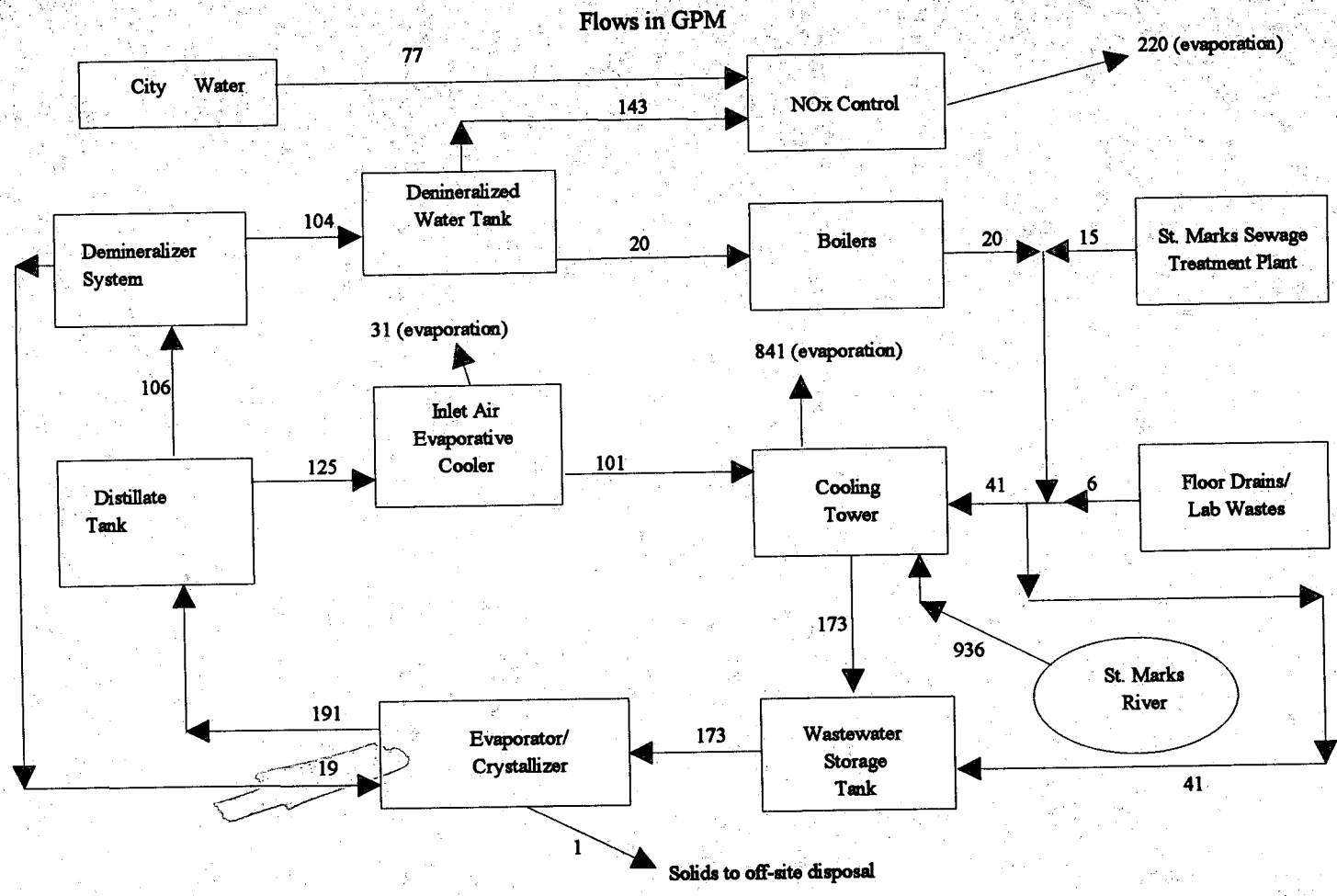


Source: RE&C, 1997

CITY OF TALLAHASSEE

AVERAGE WATER USE
100% CAPACITY FIRING NATURAL GAS
UNDER AVERAGE METEOROLOGICAL CONDITIONS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
3.5-1



Source: RE&C, 1997

3.5-3

CITY OF TALLAHASSEE

PEAK WATER USE
100% CAPACITY FIRING OIL
DURING SUMMERTIME
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
3.5-2

3.5.1 Heat Dissipation System

The heat dissipation device will consist of a closed-cycle mechanical draft evaporative cooling tower.

3.5.1.1 System Design

The heat dissipation system will consist of a multi-cell cooling tower, two 50 percent capacity circulating water pumps, piping, valves, and instrumentation to provide cooling water to the condenser and the auxiliary cooling water system.

The cooling tower will be an evaporative mechanical draft type unit sized to accommodate the heat load and flow from the condenser and auxiliary cooling water system. The tower construction will be treated Douglas Fir. Each cell will be provided with a motor driven fan. The tower will be erected over a concrete basin.

The circulating water pumps will be of the vertical, wet pit type. The system will provide for independent pump isolation and protection from flow reversal using motor operated butterfly valves at each pump discharge.

Two 50 percent capacity cooling tower makeup pumps will be installed in the existing circulating water intake structure for Purdom Unit 5. These pumps will deliver makeup water to the Unit 8 cooling tower basin.

The auxiliary cooling water system will consist of the auxiliary cooling water pumps, suction strainers, piping, valves, and instrumentation to provide cooling water to the following:

- Combustion Turbine Generator Coolers
- Combustion Turbine Lube Oil Coolers
- Steam Turbine Lube Oil Coolers
- Steam Turbine Hydraulic Oil Coolers
- Miscellaneous Mechanical Equipment Coolers

The auxiliary cooling water pumps will be two 100 percent capacity horizontal centrifugal type pumps taking suction from the circulating water system. The auxiliary cooling water pumps provide cooling water to the various plant equipment at sufficient flow and pressure for cooling.

At its design condition of a 95° F dry bulb and 79° F wet bulb, the cooling tower will dissipate about 580 million Btu per hour. Consumptive use of water by evaporation in the cooling tower has been estimated under both average and extreme (peak) conditions, on a monthly basis. The results are presented in Table 3.5.1-1. The heat dissipation systems for Units 5, 6, 7, GT1 and GT2 have been described in Section 2.3.4.1.

TABLE 3.5.1-1
AVERAGE AND PEAK MONTHLY COOLING TOWER EVAPORATION
(100% LOAD)

	Extreme Conditions		Average Conditions	
Month	Wet Bulb (°F)	Evaporation (gpm)	Wet Bulb (°F)	Evaporation (gpm)
January	66.4	707	46.0	595
February	65.1	740	48.5	619
March	68.9	771	55.0	643
April	68.4	809	60.2	679
May	72.1	841	67.1	689
June	75.9	834	72.3	705
July	77.4	835	75.0	701
August	77.7	837	75.0	695
September	75.9	835	71.3	701
October	72.5	799	62.0	675
November	69.1	759	54.4	635
December	68.5	724	48.7	611
	Peak = 77.7	841.0	Average = 61.3	662.3

Source: Foster Wheeler Environmental, 1996, RE&C, 1997

3.5.1.2 Source of Cooling Water

The main source of cooling water will be the St. Marks River. Its temperature range is described in Section 2.3.4.1. Minimum average cooling water quality characteristics to operate the heat dissipation system as proposed are estimated to be:

Silicon Dioxide	< 18 mg/l
Calcium	< 15 mg/l
Sulfate	< 12 mg/l
Iron	< 0.5 mg/l
Manganese	< 0.5 mg/l
Aluminum	< 0.125 mg/l
Sulfides	< 0.625 mg/l
Magnesium	< 54 mg/l
Total Dissolved Solids (TDS)	≤ 2500 mg/l
Source: RE&C, 1997	

3.5.1.3 Dilution System

There will be no dilution system associated with the heat dissipation system.

3.5.1.4 Blowdown, Screened Organisms, and Trash Disposal

The heat dissipation system will have no blowdown; it will be a zero discharge system. Wash water for the existing traveling water screens is supplied by screen-wash pumps which withdraw water from within the pump structure. The discharge from the screens is flushed into a collecting box where debris is retained for off-site disposal, and flush water is drained back to the source.

Unit 7 takes its water from the Unit 7 Intake Canal. Unit 8 will take its water from the St. Marks River, utilizing the existing Unit 5 intake structure.

3.5.1.5 Injection Wells

There will be no injection wells associated with the heat dissipation system.

3.5.2 Domestic/Sanitary Wastewater

Sanitary wastewater is currently sent to the City of St. Marks Wastewater Treatment Facility, at a rate estimated to be less than 1,500 gpd. Because there will not be any additional plant staff associated with the Project, no changes to these services are proposed.

3.5.3 Potable Water Systems

Potable water is currently provided to the site from the City of St. Marks municipal system at a rate estimated to be less than 1,500 gallons per day. Because there will not be any additional plant staff associated with the Project, no changes to these services are proposed.

3.5.4 Process Water Systems

The main usage of water at the site, after completion of the installation of Unit 8, will be as makeup to the cooling tower. The river water, the reclaimed water from the City of St. Marks Wastewater Treatment Facility, and the process wastewaters from the plant itself (both Units 7 and 8) will all be discharged directly to the cooling tower basin. Except for the continuation of chlorination (and the cessation of the dechlorination) of the Wastewater Treatment Facility effluent, the influent to the cooling tower basin will not be treated.

One of the large Number 6 fuel oil storage tanks (Tank No. 2) will be converted to a wastewater storage tank to facilitate recycling of all of the facility wastewaters. This tank will be closed in accordance with the procedures of Chapter 62-762, F.A.C. prior to being converted to a wastewater storage tank. This tank will then be the influent storage tank for the zero discharge wastewater treatment system, which will also serve as the pretreatment unit for the process water treatment system.

The tank normally will receive up to 173 gpm of cooling tower blowdown from Purdom Unit 8, and up to 19 gpm of demineralizer regeneration wastewater from Purdom Units 7 and 8, for a design inflow of 192 gpm. Design inflow TDS has been estimated to be 15,075 mg/l. If Unit 8 is not operational, the reclaimed water from the St. Marks Wastewater Treatment Facility and the recycled process wastewaters from the Purdom Station will be routed to this 2,310,000-gallon wastewater storage tank.

Water from the wastewater storage tank will be sent to the zero discharge wastewater treatment system, where the wastewater will be essentially distilled to produce feedwater for the existing demineralizer system. The existing demineralizer system consists of an anionic and a cationic ion exchanger, and is used to provide demineralized water for boiler makeup for the existing Units 5 through 7. Upon installation of Unit 8, and the retirement of Units 5 and 6, the

demineralizer will have sufficient capacity to supply makeup water for the Unit 8 HRSG as well as the Unit 7 boiler.

Because Unit 8 will be a zero discharge system, the process water system will discharge no pollutants.

3.6 CHEMICAL AND BIOCIDE WASTE

Units 7 and 8 will produce various chemical wastewaters, none of which will be discharged to the environment. As indicated on Figures 3.5-1 and 3.5-2, these wastewaters include the following:

- Clean Floor Drains
- Potentially Oily Floor Drains
- Laboratory Wastes
- Boiler/HRSG Blowdown
- Demineralizer Regeneration Wastewaters
- Metal Cleaning Wastes

Metal cleaning will be performed by outside contractors who remove their waste products from the site. Water from potentially oily floor drains will be routed through oil/water separators, then sent to transfer sumps along with the other flows mentioned above, except for metal cleaning wastes. Water from the transfer sumps will be pumped to the cooling tower basin if Unit 8 is operating; otherwise, it will be pumped to the wastewater collection tank.

The wastewater treatment system will withdraw water from the wastewater collection tank for processing. It will normally produce 147 gpm of high purity distillate (<10 mg/l TDS) for reuse.

3.7 SOLID AND HAZARDOUS WASTE

3.7.1 Solid Wastes

Solid wastes generated from the Purdom Station will include the following:

1. Zero discharge wastewater treatment system solids,
2. Waste oils,
3. Plant refuse, and
4. Used air inlet filters.

The zero discharge wastewater treatment system will produce up to 50,000 pounds of solid waste per day, at a moisture content of approximately 28 percent. The solid waste stream will include 1,700 pounds/hour of crystallizer solids (solids content not less than 80 percent) and 383 pounds/hour of crystallizer purge (solids content approximately 35 percent). Solid waste will be disposed of off site.

A preliminary estimate indicates that this solid waste will be about 28 percent water and 72 percent solids. The solids portion is expected to have the following composition:

Constituent	Percent by Weight
Sodium	28.6
Chloride	45.1
Magnesium	1.8
Calcium	5.4
Potassium	0.3
Bicarbonate	15.8
Sulfate	2.9

Waste oil will be generated from the oil/water separators described in Section 3.6. The volume of this material is estimated to be less than 200 gallons per month. The material is presently being recovered and disposed of off site by an outside contractor. Future disposal is anticipated to be by the same process.

Plant refuse, including scrapings from the intake screens (mostly grass) and spent demineralizer resins, is collected on site and periodically removed by an outside contractor, who disposes of it at an off-site sanitary landfill. The quantity of this material is expected to decrease with the proposed Project, due to the elimination of Units 5 and 6.

It is estimated that inlet air filter elements will require changing about every 30 months, resulting in an annual average solid waste generation volume of about 10 cubic yards. These filter elements are very similar in nature to household air filters except that they are larger.

3.7.2 Hazardous Wastes

The Purdom Station does not routinely produce any hazardous wastes. Paints, solvents, and metal cleaning solutions are selected to produce nonhazardous wastes. Purdom Unit 8 will continue to avoid the production of hazardous wastes.

3.8 ON-SITE DRAINAGE SYSTEM

3.8.1 Environmental Regulations

On-site drainage is regulated by federal, state, and local regulations. Federal regulation is accomplished through general NPDES stormwater permits. As part of the operational general permit, the facility is required to update the plant Stormwater Pollution Prevention Plan (SWPPP) annually. Areas subject to construction activities are covered under a construction general permit, which calls for an erosion and sedimentation control plan to be implemented during construction.

State regulations are encoded in Chapter 62-25, F.A.C., rules of the FDEP. These rules generally require retention, or detention with filtration, of the first half-inch of runoff for projects such as this which affect less than 100 acres; or percolation of the runoff from a 3-year 1-hour storm. They also encourage the prevention of increasing flows or pollution loadings to existing stormwater management facilities.

Local regulations require the use of a 25-year 24-hour design storm, and the implementation of an erosion and sedimentation control plan during construction.

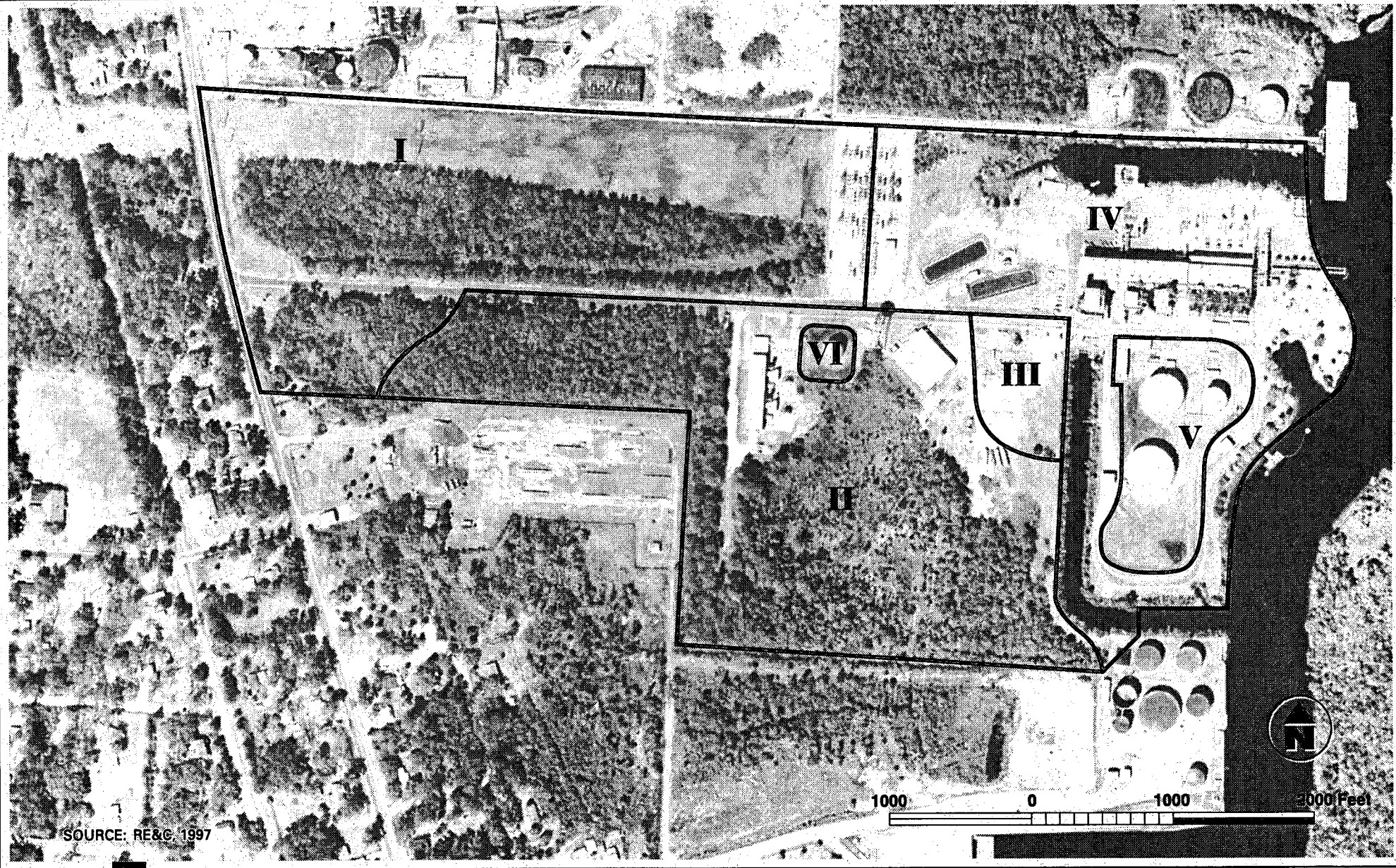
The Northwest Florida Water Management District (NWFWMD) has not been delegated authority by FDEP for stormwater management.

3.8.2 Design Parameters

Existing site drainage has been described in Section 2.3.4-1. The six drainage areas that comprise the site are shown on Figure 3.8.2-1 . Areas I, II, and III are unaffected by industrial activity, and drain respectively to outfalls OSN 007, OSN 010, and OSN 008 as described in Section 2.3.4-1. Area IV runoff is also unaffected by industrial activity, and drains mainly as sheet flow to the intake and discharge canals, and to the St. Marks River. Areas V and VI are the secondary containments for oil storage tanks. Runoff from Area V is detained and released through valved pipes, if it meets water quality limits, to the St. Marks River. Runoff from Area VI is similarly released to Wetlands Number VI (see Figure 2.3.4-41). The areas which will be affected by the Project are I, II, III and IV for construction, and II and III during operation. Based on the regulatory parameters discussed in Subsection 3.8.1, the design storm is the 24-hour event with a 25-year return frequency. This storm is about 9 inches (see Section 2.3.7). The design detention/retention volume is the first one-half inch of runoff. Based on the Unit 8 footprint area of about 2.4 acres, this volume is about 4,350 cubic feet.

3.8.3 Construction Phase Stormwater Runoff

Construction runoff in Area I will be that associated with the installation of the new effluent pipeline, the relocation of the gas yard, and the upgrading of the gas line (if required) along the plant road. Construction runoff in Area II will be that associated with the installation of the new effluent pipeline, the upgrading of the gas line (if required), the relocation of the gas yard, and the installation of the new unit. Construction runoff in Area III will be that associated with the installation of the new unit. Construction runoff in Area IV will be that associated with



CITY OF TALLAHASSEE

SITE DRAINAGE AREAS

PURDOM UNIT 8 PROJECT – ST MARKS FLORIDA

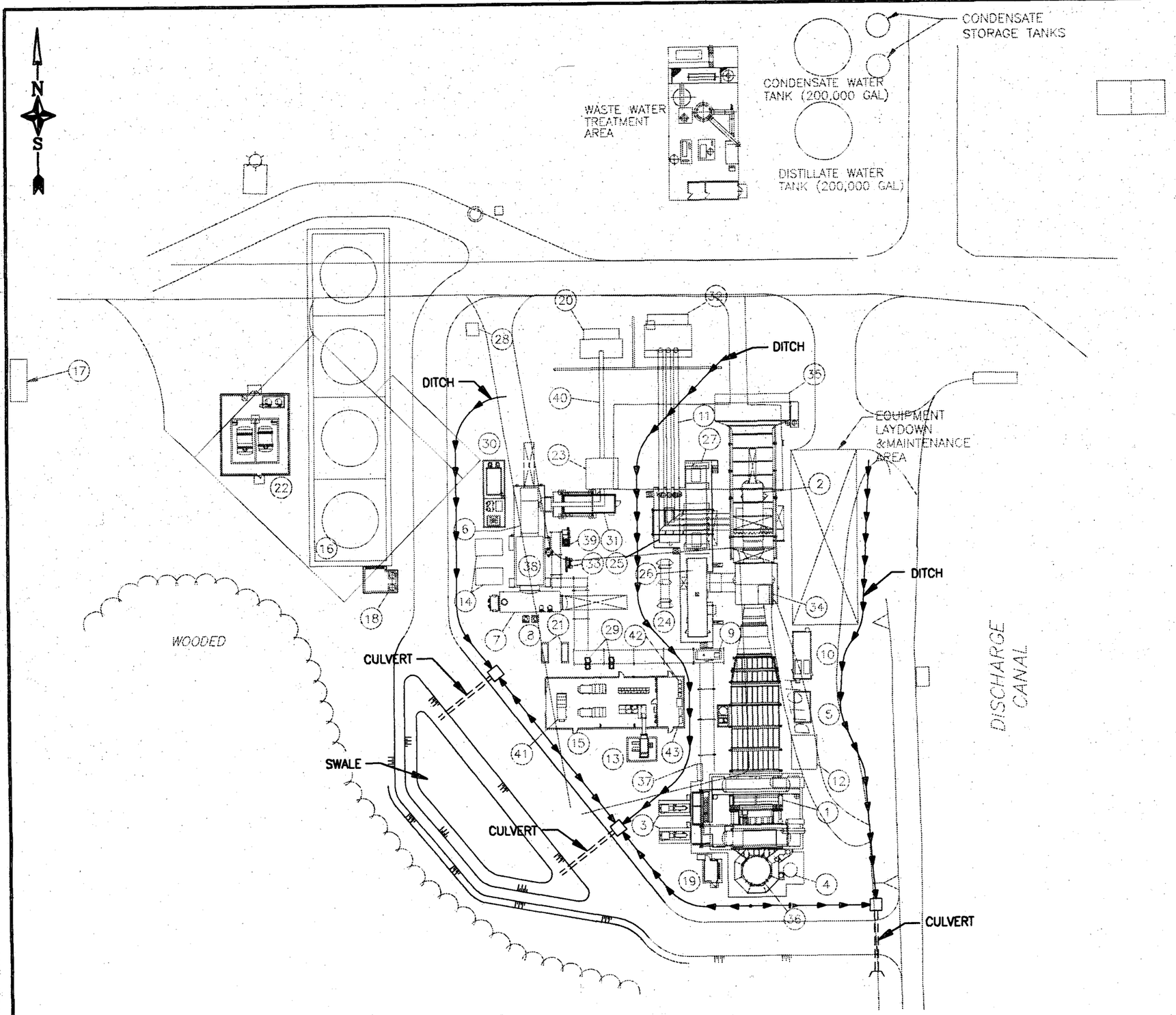
Figure

3.8.2-1

installation of the zero discharge wastewater treatment system. Construction-affected runoff will follow existing drainage patterns, and will be controlled through the use of silt fences and hay bales.

3.8.4 Operational Phase Stormwater Runoff

The Unit 8 stormwater management system is shown on Figure 3.8.4-1. Rainfall in potentially oily areas of the facility will be isolated and routed to the cooling tower basin via oil/water separators. Non-contaminated runoff from the western and central Unit 8 area will be collected by a ditch system and conveyed via culverts to the swale to the southwest. Non-contaminated runoff from the eastern portion of the Unit 8 area will be collected in a ditch and conveyed via a culvert to existing outfall OSN 008. The swale is trapezoidal in plan view with lengths of about 145 and 75 feet, and a width of about 50 feet. Its depth is about 1.5 feet. It will have a volume in excess of one-half inch of runoff from the Unit 8 footprint, and will detain the runoff and then disperse it as sheet flow to the existing Wetland Number VI. The volume and peak flow of runoff to be routed to OSN 008 are approximately equal to those presently being discharged to OSN 007. The increase in area to drain to Wetland Number VI due to the Project will be about 1.6 acres (from the existing 57.2 acres to about 58.8 acres), an increase of less than 3 percent.



LEGEND:

1. HEAT RECOVERY STEAM GENERATOR
2. COMBUSTION TURBINE GENERATOR
3. FEEDWATER PUMPS
4. BLOWDOWN TANK
5. WATER WASH SKID
6. STEAM TURBINE GENERATOR
7. CONDENSER
8. CONDENSATE PUMPS
9. CO2 FIRE PROTECTION SKID
10. WATER INJECTION SKID
11. ISO PHASE BUS DUCT
12. HRSG CHEMICAL FEED SYSTEM
13. AUXILIARY TRANSFORMER
14. VACUUM PUMPS
15. SWITCHGEAR BUILDING
16. COOLING TOWER
17. FUEL OIL TRANSFER PUMPS
18. CIRCULATING WATER PUMPS
19. CONTINUOUS EMISSIONS MONITORING SYSTEM
20. STEAM TURBINE GENERATOR MAIN STEPUP TRANSFORMER
21. CLOSED COOLING WATER HEAT EXCHANGERS
22. COOLING TOWER CHEMICAL FEED SYSTEM
23. GENERATOR BREAKER
24. STATIC START SKID
25. COMBUSTION TURBINE GENERATOR BUS ACCESSORY COMPARTMENT
26. ACCESSORY MODULE
27. PACKAGED ELECTRICAL ELECTRONIC CONTROL CABINET
28. NATURAL GAS FILTER/SCRUBBER
29. CLOSED COOLING WATER PUMPS
30. STEAM TURBINE GENERATOR LUBE OIL SKID
31. STEAM TURBINE GENERATOR BUS ACCESSORY COMPARTMENT
32. COMBUSTION TURBINE GENERATOR MAIN STEPUP TRANSFORMER
33. GLAND STEAM CONDENSER
34. COMBUSTION TURBINE
35. INLET FILTER
36. STACK
37. SAMPLE PANEL
38. STEAM TURBINE
39. GLAND STEAM CONTROL VALVE SKID
40. NON SEGREGATED BUS DUCT
41. COOLING TOWER LOAD CENTER
42. BAILEY CONTROL CABINETS
43. STEAM TURBINE GENERATOR CONTROL CABINETS

60 0 60 120

SCALE IN FEET

SOURCE: RE&C, 1997

UNIT 8 STORM WATER MANAGEMENT SYSTEM

PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 3.8.4-1

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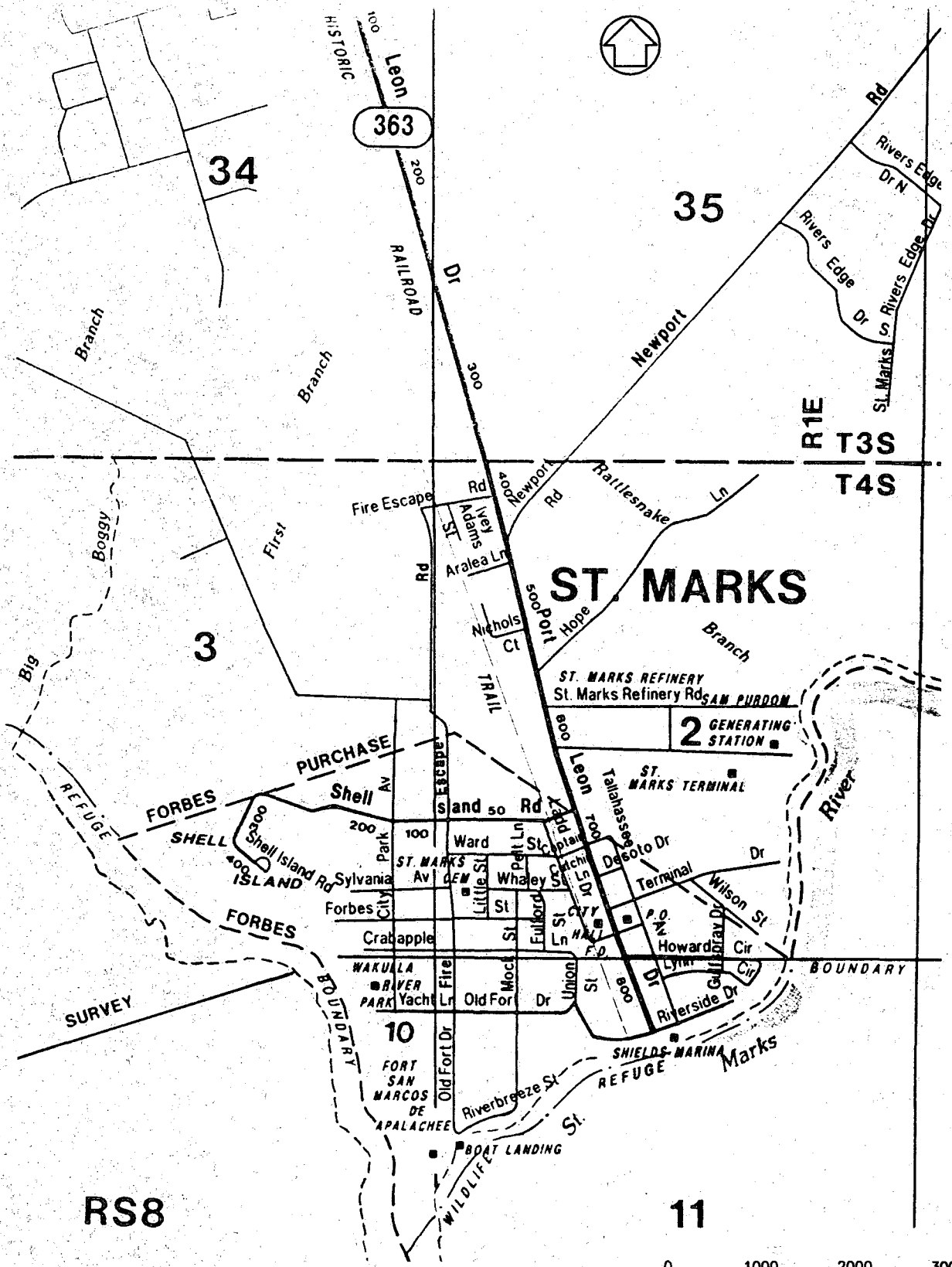
3.9 MATERIALS HANDLING

Roads within the site vicinity are shown on Figure 3.9-1, and in the Tallahassee region on Figure 3.9-2. Facility access for all traffic is via Port Leon Drive (SR 363). The site access road deadends at the west end of the site at Port Leon Drive.

Heavy equipment will ultimately be delivered to the site on trucks. This equipment is estimated to consist of one combustion turbine (about 400,000 pounds), one combustion turbine generator (about 450,000 pounds), several HRSG modules (about 300,000 pounds each) and two transformers (about 450,000 pounds each). This heavy equipment will be delivered to the site and immediately installed in its permanent location. The City of Tallahassee is pursuing the rental of up to 7 acres of cleared land within 1 mile of the site to serve as this temporary storage (laydown) area for smaller components. Upland portions of the site may also be used for equipment laydown.

Although ultimate site delivery will be by truck, much of the equipment will likely be shipped to the Tallahassee area by railroad, and then transferred to trucks for site delivery. The City may widen a short section of the existing plant entrance road near SR 363.



SOURCE: MAP & GLOBE STORES, INC, 1996
RE&C, 1997

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APPROX SCALE IN FEET

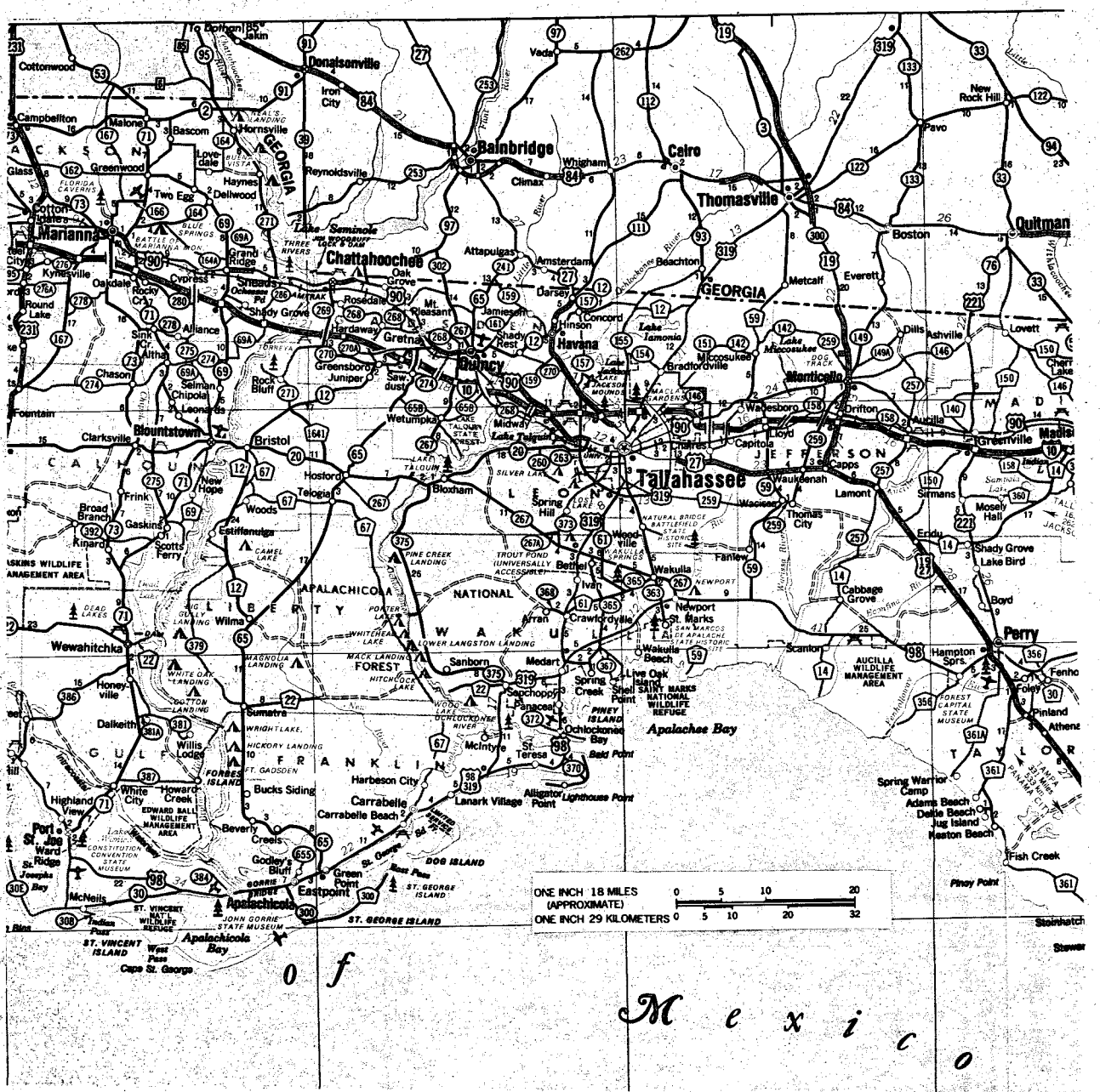
CITY OF TALLAHASSEE

ROADS WITHIN THE SITE VICINITY

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 3.9-1

PLOT DATE MAR 1, 1997 C:\15840002\----\00000-47.DWG



SOURCE : FlaDOT, 1995

CITY OF TALLAHASSEE

ROADS WITHIN THE TALLAHASSEE REGION

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 3.9-2

PLOT DATE: FEB 28, 1997 C:\15840002\----\00000-46.DWG

3.10 OTHER PLANT FEATURES

3.10.1 Fire Protection and Detection Systems

A complete and integrated fire protection system will be provided for Unit 8. It will consist of an underground yard distribution system serving fire hydrants and water-based fire suppression systems, and portable fire extinguishers. The fire protection system will be engineered and designed in accordance with the requirements of the National Fire Protection Association (NFPA) codes and applicable Wakulla County codes and regulations.

3.10.1.1 Water Supplies

Water for the fire protection system will be provided from the existing facility fire protection system. A minimum of 1,850 gpm will be available at the interface point with the existing fire protection system.

3.10.1.2 Underground Fire Water Distribution System

The underground fire protection water distribution system will be installed in conformance with the requirements of NFPA Standard 24 and will extend to all Unit 8 operating areas, with local configuration around the unit to provide multi-directional supply for high reliability. Post indicating valves will be provided in the distribution system for adequate isolation of the loop and branch lines. The distribution piping will be designed and sized to provide required fire protection system water flows and pressures.

Wet barrel type hydrants, equipped with two 2.5-inch diameter outlets and one 5-inch pumper connection will be provided along the distribution system at approximately 250-foot intervals. Each fire hydrant will be provided with an individual gate valve in curb box. An adequate supply of fire hose, nozzles, auxiliary equipment, and tools in accordance with NFPA Standard 24 will be provided in an approved equipment hose enclosure located adjacent to each hydrant.

Hose threads will be National Standard Thread (NST), in accordance with NFPA. Approved fire protection pipe, fittings, and valves will be used for the distribution system piping.

3.10.1.3 Fire Suppression Systems

The following areas will be protected by water spray systems:

- Main and Auxiliary Transformers
- Steam Turbine Lube Oil Systems
- Steam Turbine Generator Bearings
- Cooling Tower

Water spray systems will comply with requirements of NFPA Standards 15, 13 and 214. The density of water coverage for all deluge systems will be 0.25 gpm per square foot of equipment area protected. Extinguishment will be by surface cooling and will provide 100 percent spray

coverage of the surface area to be protected. The density of coverage for the cooling towers will be 0.50 gpm per square foot of area under the fan deck.

Alarm bell stations and manual breakglass pull stations for the transformer and cooling tower water spray systems will be located outdoors.

Each water spray system will be designed for automatic actuation through a heat-actuated fire detectors/pneumatic detection system located at and around the hazard areas, through manual actuation by a local pull station, or push-button actuation at the deluge system control panel. Nozzles will provide protection well in excess of the immediate hazard area and will be placed in position to obtain proper coverage. All spray nozzles near the transformer bushings will be carefully placed to avoid flash-overs at the bushings or to the piping. All nozzles will be supported on frames independent of the transformers and bus ducts.

3.10.1.4 Fire Detection and Alarm Systems

Fire detection, alarm, actuation, and signaling systems will be designed in accordance with NFPA 70, 72, and 72E. A main fire control panel (MFCP) will be provided from which the operator will monitor all fire protection and detection systems. It will indicate the condition of all fire alarm and detection circuits, water suppression system operation and readiness and have manual switches for overrides. The MFCP will be provided with emergency power upon loss of normal power.

3.10.1.5 Portable and Wheeled Fire Extinguishers

Portable fire extinguishers will be provided throughout Unit 8 and will be Underwriters Laboratory listed or Factory Mutual approved and will be labeled accordingly. Extinguishers will be provided in readily accessible locations in conformance with NFPA Standard 10. Four-wheeled fire extinguishers will be provided in the turbine area. Selection of extinguisher capacity and extinguishing agent type will be based on the review of the hazard to be protected, evaluation of typical fires which might be experienced, and the characteristics of the agent and its decomposition products, such as effectiveness on the hazard, effects on personnel or equipment, and cleanup after use.

3.10.2 Hurricane Evacuation Plan

The need for evacuation of the Purdom Station due to hurricanes and tropical storms is currently evaluated on a case-by-case basis and depends on the magnitude of the storm and where the storm is projected to make landfall in relation to tides. For example, if a hurricane is projected to make landfall east of the Purdom Station, or west but not in conjunction with a high tide, staffing will likely be maintained. This practice will not change.

If needed, evacuation occurs in stages. Nonessential staff are allowed to go home first. Operations and management staff will remain as long as some units continue to operate. First the steam units will be shut down, and staff will move to the gas turbine building, located on higher ground at the station site, and continue to operate the gas turbines. If roads are projected to become impassable, an evacuation order will be issued. The gas turbine units will be shut down, the site will be secured, and all staff will evacuate. In the event of an evacuation order, specific

written procedures are in place to guide the Purdom operations staff through shutting down the units and securing the site.

3.10.3 St. Marks Oil Spill Cooperative

The Purdom Station is a member of a local cooperative for oil spill response known as the St. Marks Oil Spill Cooperative. The membership is comprised of seven businesses in the St. Marks area that are fixed base marine transportation-related operations capable of transferring oil from a vessel with a 250-barrel capacity or more. The purpose of the cooperative is to develop, maintain and improve procedures for mutual assistance and cooperation in the control of oil spill emergencies.

The cooperative is a not-for-profit organization, which is state-certified as a first responder for oil spills in Wakulla County. Each individual company stores and maintains spill response equipment to be used cooperatively in the event of an oil spill.

The co-op conducts drills and exercises on a continuous basis to sharpen response times and to ensure readiness of personnel and equipment at all times. Rapid response is the key factor in control of a spill. Current members are the City of Tallahassee, Stratus Oil, Murphy Oil USA, St. Marks Refinery, McKenzie Services, McKenzie Tank Lines, and Coastal Fuel Marketing, Inc. Barry Colvin of the City of Tallahassee is the current vice president of the organization.

Participation in the St. Marks Oil Spill Cooperative will continue with the operation of Unit 8.

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4.1 LAND IMPACT

4.1.1 General Construction Impacts

The portions of the site that will be affected by the construction of Purdom Unit 8 are discussed in Section 3.8 and are shown on Figure 4.1-1. As described in Section 3.8, a total of up to 4 acres will be affected by the construction of the combined cycle unit itself, about 0.1 acre will be affected by the construction of the zero discharge wastewater treatment system, about 0.1 acre will be affected by the new gas yard, and about 2 acres will be affected by the construction of the effluent and gas pipelines. East of State Road 363 on the northwest corner of the Purdom site, a temporary construction parking area will be constructed. Other on-site non-forested uplands may be used for construction laydown and/or construction parking. In addition, up to 7 acres of non-forested off-site land (see Section 3.9) may be rented for construction laydown and/or construction parking. Construction laydown and/or parking areas will be cleared of vegetation (if any exists), and heavily traveled areas will be stabilized with shell or rock. Other more lightly traveled areas will be seeded with grass to prevent erosion. They will be surrounded with erosion and sedimentation control features such as temporary berms, silt fences, and/or hay bales as required by the Project Erosion and Sedimentation Control Plan.

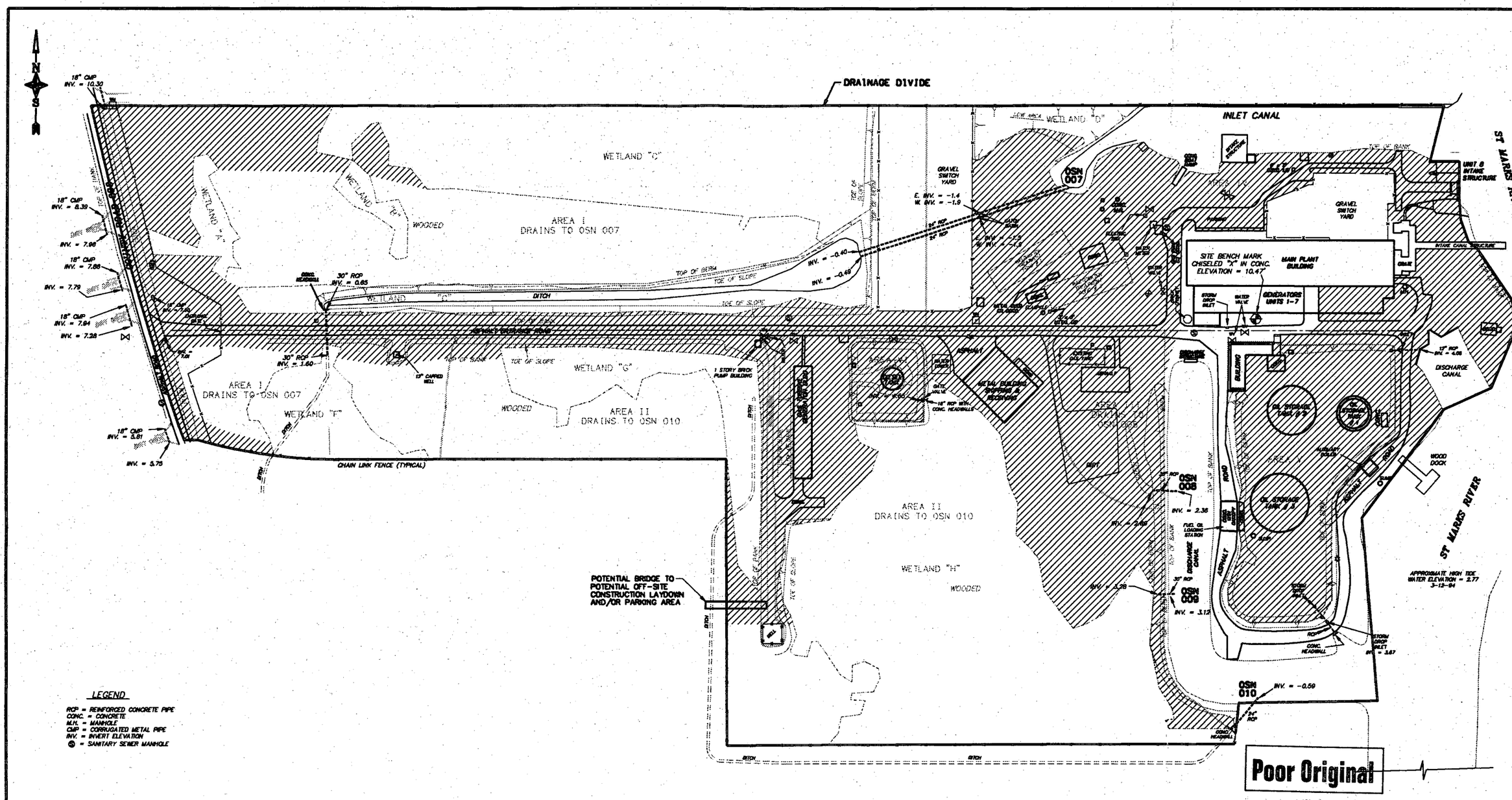
Permanently affected areas include the combined cycle unit footprint and the zero discharge wastewater treatment system. The pipeline construction areas will only be affected temporarily. None of these areas will require more than minimal clearing because they are within the vicinity of the existing Purdom Station. Wooded areas on site have intentionally been avoided to the greatest extent practicable in the design to preserve the natural habitat and maintain the natural buffer from adjoining properties. These areas will also be surrounded with erosion and sedimentation control features such as temporary berms, silt fences, and/or hay bales as required by the Project Erosion and Sedimentation Control Plan.

There will be no use of explosives during construction of Purdom Unit 8.

The impacts of creating on-site and off-site material laydown areas will be minimal, temporary, and associated mainly with minor clearing and grading for proper drainage, if necessary, and the installation of erosion and sedimentation controls.

There will be no construction of new permanent roads that connect off site. There will be no new on-site railroads. The existing facility access road will be modified slightly to allow installation of the cooling tower (see Figure 3.2-2) and extended around the Unit 8 footprint to provide access to the new equipment. The City also may widen a short segment of this road near State Road 363. Fugitive dust generation from traffic and/or excavation will be minimized through the use of water sprinkling, as necessary.

There will be no excavation or filling to change facility grade, except as required to achieve the desired drainage system. Major foundation mats will be supported by augured, cast-in-place concrete piles. Small amounts of excavation may be required in the Unit 8 footprint to allow for



SOURCE: RE&C, 1997

ON-SITE AREAS POTENTIALLY AFFECTED BY CONSTRUCTION

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 4.1-1

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installation of piping, electrical duct banks, transformer and storage tank secondary containment structures, culverts and manholes. Any excess of this material should be clean debris.

Dewatering may be required during installation of below-grade equipment. This activity should be minimal so that dewatering effects from shallow well points or pumpage will be confined to a relatively small area surrounding the dewatering site. The effluent from the dewatering operation will be routed overland through grassed areas to existing permitted stormwater outfalls.

Waste materials will be disposed of in accordance with applicable regulations. Construction wastes, such as scrap wood and metal, will be transferred to a specified storage area on the site where they will be separated and stockpiled for salvage. General waste materials (i.e., typical of municipal solid wastes) will be collected in appropriate waste collection containers for disposal at an independently permitted off-site landfill.

During construction, the construction labor force will use portable chemical toilets. All sanitary sewage will be pumped frequently from the individual toilets as needed and transported to an approved disposal facility by a licensed contractor.

Waste oil from construction vehicles and equipment will be collected in appropriate containers and transported off-site for recycling or disposal at an approved facility. The approved disposal facility will be an existing facility that has been previously permitted for commercial recycling or disposal of waste oils.

Individual contractors will be responsible for handling any hazardous materials required to perform their tasks and hazardous wastes resulting from their use. This responsibility includes the proper off-site disposal of such wastes.

4.1.2 Roads

There will be no permanent new roads connecting the site to state roads. During the construction phase of the Project, temporary unpaved roads may be constructed with shell or gravel for access to temporary parking and material storage areas. The areas disturbed during the construction of these temporary roads will be restored after the construction of Unit 8.

4.1.3 Flood Zones

The 100-year flood elevation within the City of St. Marks has been set by FEMA in their Flood Insurance Study (FEMA, 1979), as described in Section 2.1.5. That elevation is 12.4 feet mean sea level (ft msl). All proposed facilities have been designed so that they are either above, or floodproofed to, that elevation. This design satisfies the requirements of the National Flood Insurance Act of 1968, the Flood Disaster Protection Act of 1973, and local regulations.

FEMA indicates that since 1843 (a period of 153 years), there has never been a flood in St. Marks that exceeded elevation 12 ft msl. They also describe the principal flood problem in St. Marks as surges upstream due to the influence of hurricanes in the Gulf of Mexico. As a result, they recommend that no structures be placed in the river channel as that would cause potential flood problems. As Purdom Unit 8 does not propose any construction in the river channel, it will not adversely impact adjacent surface water flood elevations or flows, and will not cause any adverse flooding or related impacts to off-site property.

4.1.4 Topography and Soils

Current topographic features at the Purdom Station reflect past and present power-plant-related activities. The existing grade is approximately 5 to 10 feet above msl, except for isolated wetland areas which will be preserved in their present state. The Project does not propose any filling that would require either a state or federal dredge and fill permit. Only minimal filling or excavation will be required, as described in Section 4.1.1 above.

No adverse impact to soil stability or bearing strength is anticipated because foundations will be supported by cast-in-place concrete piles; therefore, overall subsidence of the land area will be negligible. Slight settlement may take place in areas of construction, but this will be moderate and localized in extent. It is not anticipated that sinkhole formation will be enhanced.

Construction-related changes in site topography will not have any adverse effect on aesthetics or viewshed. Since the elevations after construction will not be increased, no significant topographical changes will be observable from off-site locations.

Construction activities will alter runoff in several parts of the site; however, no adverse effects are anticipated from this alteration. Surface water runoff will be controlled through the use of temporary berms, hay bales and silt fences, and then routed to the same locations it presently reaches. Because the area is relatively impermeable anyway, no significant changes in percolation rates are expected.

Groundwater levels will not be affected by modifications to soil percolation from construction activities at the site due to the close proximity of surface water canals and the interconnection between these surface water bodies and the underlying aquifer.

4.2 IMPACT ON SURFACE WATER BODIES AND USES

4.2.1 Impact Assessment

The surface waters which potentially could be affected by site preparation and construction activities include the St. Marks River, the intake and discharge canals, and the on-site wetlands. The primary potential impacts from site preparation and construction are erosion and sedimentation due to the exposure of unvegetated soils to rainfall.

Runoff from areas of the site not disturbed by construction activities (about 90% of the site or about 57 acres) will continue to be directed to the existing drainage systems within the area. Runoff from areas of the site disturbed by construction activities (about 6 acres), and construction laydown and/or parking areas (up to 7 acres), will be controlled through the use of Best Management Practices (BMPS) as described in Section 3.8, including the installation of temporary berms, silt fences, and hay bales between construction areas and receiving waters. These BMPS will be included in the site Erosion and Sedimentation Control Plan.

Erosion will be controlled by compaction of soils, construction of ditches and berms, maintenance of relatively flat grades, vegetation, and other appropriate erosion control techniques. Sedimentation will be controlled during construction by use of sediment control basins and traps, filter berms, hay or straw bales, and other applicable devices as appropriate.

Based on the limited discharge quantity and treated nature of runoff to surface water bodies associated with construction activities, adverse impacts to surface waters are anticipated to be negligible.

Following the completion of construction, laydown, parking, and other non-paved areas will be replanted with appropriate ground cover.

A final potential impact to surface waters from construction activities is related to dewatering. Dewatering activities may be required during below-grade construction and will be accomplished by localized pumping of the shallow aquifer to lower the water table. Discharge rates from dewatering will not exceed 500 gpm (0.72 MGD) and will not occur for more than 180 days. The quality of the dewatering release essentially will be identical to the groundwater currently discharging to the river naturally during the wet season. For this reason, no significant impact to water quality in the St. Marks River or the on-site wetlands is expected.

Impacts from the use of chemicals or cleanup of spillage of chemicals or oil and grease will be mitigated through proper handling and disposal practices. Until the zero discharge wastewater treatment system is operational, all wastewater resulting from preoperation and cleaning activities will be either treated in the existing station low volume waste treatment system, or disposed of off site by an appropriately licensed contractor. Construction contractors will be required to implement practices to assure spills are minimized. This will include the designation of specific areas for fueling and maintenance. These areas will be located so that any spills, if they do occur, will not be adjacent to surface waters. If any spills occur, immediate cleanup will be performed with ultimate disposal in an approved facility.

The Purdom Unit 8 Project does not include any construction activities within waters of the state. There will be no dredging or filling, and no construction of shoreside facilities since these facilities are already present at the site. The new makeup water pumps will be located in an existing intake structure.

4.2.2 Measuring and Monitoring Program

Because the Project is not expected to have any impacts on surface waters of the state, monitoring programs have not been proposed.

4.3 GROUNDWATER IMPACTS

4.3.1 Impact Assessment

Activities associated with construction of Purdom Unit 8 are not expected to have any adverse impacts on local groundwater resources. Because the Purdom Station will no longer utilize groundwater as its major source of process and equipment cooling water, the only construction activity affecting groundwater will be the abandonment of the existing well field.

Construction of Unit 8 may require short-term temporary dewatering to complete one or more of the following activities:

- Stormwater retention ponds and drainageways;
- Sumps, underground pipes, duct banks, transformer and storage tank secondary containment structures, culverts, and manholes; and
- Selected foundations.

The duration of these dewatering activities and the limited extent of the excavations will prevent off-site areas from being impacted. In addition, the clayey nature of near surface sediments above the deposits of the Floridan aquifer system will likely prevent significant quantities of water from being withdrawn during short-term dewatering activities.

As discussed in Section 4.2.1, construction contractors will be required to implement practices to minimize spills. Maintenance and refueling will be performed only in designated areas. Spills or hazardous material releases will be managed in an approved manner, in accordance with local, state, and federal regulations.

4.3.2 Measuring and Monitoring Programs

Groundwater monitoring is not proposed as part of construction for the Purdom Unit 8. Only very limited construction dewatering activities are planned which will have no off-site impacts. Additionally, impacts to wetland areas located on site are not expected. Assessment and recovery of any spills or hazardous materials releases will be conducted in accordance with Florida Department of Environmental Protection (FDEP) requirements.

4.4 ECOLOGICAL IMPACTS

4.4.1 Impact Assessment

4.4.1.1 Land Cover and Vegetation

Project development activities will almost exclusively involve land cover and vegetation community changes on those portions of the site which were previously filled and cleared or significantly disturbed by development of the existing Purdom Station. Dewatering activities will not affect wetlands on or adjacent to the site. A narrow area along the southwest portion of the site and land associated with the gas meter station will involve some clearing of shrub or tree vegetation. There is also the potential for some minor site clearing south of the proposed Unit 8 stack once the final design is complete. Project facilities and site areas included in these modifications are shown on Figures 3.2-1, and 3.3-1, and 4.1-1.

4.4.1.2 Environmental Protection Plans

Environmental management and protection plans will be prepared for construction activities. These plans will be used to protect ecological resources adjacent to the area where power plant facilities are to be constructed. Appropriate procedures include:

- Protection of wetlands and forested uplands adjacent to Project development, and
- Soil erosion and sedimentation control measures.

Protection of Wetlands and Forested Uplands Adjacent to Project Activities

The Project is designed to avoid these areas to the greatest extent practicable. Erosion control devices such as silt screens or hay bales will be utilized to prevent erosion that would affect wetlands and forested uplands.

Soil Erosion and Sedimentation Control Measures

In those areas where there is a potential for off-site runoff and soil erosion into site wetlands, the following procedures will be used:

- Barriers are planned and will be maintained for erosion control throughout construction. The proposed barriers will consist of anchored hay bales, a filter fabric, or other suitable material.
- Contractors will be required to implement temporary stabilization measures to control loss of topsoil, sedimentation in watercourses, and deterioration of water quality.
- Contractors will be required to submit erosion control plans to the construction manager prior to construction. These plans will detail the erosion controls for clearing and grubbing, excavation, and final grading within access roads, haul roads, the work site, and any temporary on-site staging areas.

- Disturbed areas not otherwise stabilized will be mulched and/or seeded as soon as practicable. Areas to be seeded will employ quick-germinating varieties such as rye grass which will provide cover and soil retention properties.
- Exposed drainages will be sodded or mulched and seeded immediately after each phase of disturbance.
- Physical soil stabilizers will be used where appropriate to protect exposed soil from rainfall or runoff; these might include straw, wood chips, netting or hay.
- Sediment filter devices will be installed to prevent siltation or accumulation of debris.

There will be a site environmental monitor to assure compliance with environmental control procedures.

4.4.1.3 Aquatic Ecology

An assessment of the environmental effects of the construction of Purdom Unit 8 on local aquatic habitats was conducted. Construction effects on aquatic ecosystems were assessed regarding:

- Habitat area loss or modification;
- Water quality changes in the vicinity of the site (e.g., turbidity, siltation); and
- Protected species effects.

Aquatic habitats will not be lost due to construction since construction will not occur within the St. Marks River or any other body of water. All project-related construction activities will be conducted at least 50 feet away from the St. Marks River. Increased turbidity and siltation in these waterbodies is possible during construction due to eroded materials being transported by surface runoff. By using proper construction techniques and erosion control (silt fencing, and hay bales) these increases in turbidity and siltation will be minimized. With these controls in place, aquatic or marine protected species will not be impacted by the construction activities of Unit 8.

4.4.1.4 Vegetation Communities

An assessment of Purdom Unit 8 construction effects on wetlands and terrestrial ecological resources was conducted. The effects were assessed on the basis of the following factors:

- Changes in quality and acreages of wildlife habitat; and
- Possible loss of rare, threatened, or endangered species or their habitats.

Areas to be developed for this project are almost entirely cleared and do not represent viable wildlife habitat. The only areas where some clearing will occur are a portion of the land for the natural gas meter station, the potential temporary bridge across a ditch near the existing gas turbine units (which would lead to a potential equipment laydown area and/or parking), and potentially the upland area south of the proposed Unit 8 stack. The total area to be cleared is expected to be less than 2 acres. Dominant land cover is pine and saw palmetto and old field

vegetation. If installed, the bridge structure would be removed following construction, and the land would be allowed to revert to its natural pre-construction condition.

4.4.1.5 Threatened and Endangered Animal Species

Construction of this Project is not expected to affect protected animal species populations. No terrestrial or wetland threatened and endangered species or species of special concern that are listed by the U.S. Fish and Wildlife Service (USFWS) or the Florida Game and Fresh Water Fish Commission (FGFWFC) were found in the construction area. Likewise, habitat for these species was not found in these areas.

Considerable human activity occurs in the area to be developed. This activity is associated with existing routine site maintenance and operation. Construction activity will not significantly add to the effect of this activity on local ecological resources.

4.4.1.6 Threatened and Endangered Plant Species

Construction of this Project is not expected to affect protected plant species populations. Plants listed as endangered by the Florida Department of Agriculture and Consumer Services (FDACS) or USFWS were not found on the site. Plant species listed as threatened by the USFWS were not found on the proposed site.

4.4.2 Monitoring Programs

Monitoring programs are not needed because of the minimal impact to biota anticipated.

4.5 AIR IMPACTS

4.5.1 Air Quality Impacts

During the construction period, unavoidable air pollutant emissions are likely to occur from various construction-related activities. The most prevalent construction emissions are fugitive dust. However, minor emissions of oxides of nitrogen (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter (TSP and PM_{10}), and volatile organic compounds (VOCs) are also likely during construction. Emissions of these pollutants generally are minimized through standard control measures.

4.5.1.1 Fugitive Dust

Fugitive emissions are defined in Rule 62-210.200(136), F.A.C., as "those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening." Fugitive dust, one component of fugitive emissions, is generally defined as natural and/or man-associated dusts that become airborne due to the forces of wind or human activity. Construction-phase fugitive dust emissions will be generated during site grading and excavation, and due to vehicular activity.

The quantities of fugitive dust emitted by the site construction vehicular traffic will be dependent on a number of factors, including the frequency of operations, specific operations being conducted, weather, and soil conditions. During the earthwork operations, dust control measures will be in force and will typically require moisture conditioning of the soils in the excavation and compaction areas and along the defined roadways between these areas.

4.5.1.2 Other Air Pollutant Emissions

It is anticipated that total gaseous emissions during construction will be extremely small. Potential sources of VOC emissions include evaporative losses associated with on-site painting, refueling of construction equipment, and the application of adhesives and waterproofing chemicals. The frequency and extent of these activities are limited and they will have minimal impact on air quality.

Exhaust emissions from construction equipment will also contain small amounts of NO_x, SO_2, CO, TSP, PM_{10}, and VOCs resulting from incomplete combustion of fuel. However, due to the nature of heavy-duty diesel-powered construction vehicles, which allow for more complete combustion and less volatile fuels than spark-ignited engines, these emissions are relatively low.

Open burning is not anticipated since the site for Unit 8 is already cleared, and construction debris will be hauled off to a landfill rather than being burned. Thus, air pollutant emissions due to open burning are not anticipated. Also, since an on-site concrete batch plant is not planned, there will be no fugitive emissions from such a plant.

4.5.2 Air Quality Control Methods

The impact of heavy construction activities and site preparation on air quality will be short-term and confined to the immediate vicinity of the construction activity. This is primarily because

most of the fugitive dust created by construction traffic consists of relatively large particles (i.e., larger than those which constitute PM_{10}). These large particles tend to settle quickly rather than remain suspended for transport over long distances.

Job site guidelines for minimizing emissions of fugitive dust from identifiable construction sources will include a combination of the following techniques:

- Contractors will be instructed to comply with any applicable state and local regulations governing open-bodied trucks hauling sand, gravel, or soil between on-site and off-site areas. This could include providing covers or moistening the load with water and wheel washing to reduce dusting.
- Areas disturbed during construction will be stabilized by mulching or seeding as soon as practicable.
- When construction occurs on bare ground, water (possibly together with non-hazardous wetting agents) will be used as necessary to help suppress dust.
- Temporary vehicular surfaces of crushed rock will be used in high traffic areas. Areas not subject to heavy traffic or continual disturbance will be wetted down as needed using nontoxic substances to help suppress dust.
- Sandblasting operations will be localized to minimize effects on adjacent work areas. Protective covers will also be utilized where practicable.

Because of mitigative measures which will be employed, it is not expected that vehicular emissions or fugitive dust will present any significant air quality problems during the construction period.

4.5.3 Ambient Air Quality Monitoring Program

Air quality monitoring for construction-related fugitive dust or other air pollutants is not proposed. Periodic visual inspections of the job site will be conducted to ensure compliance with guidelines for minimizing emissions of fugitive dust during construction of the proposed facility.

4.6 IMPACT ON HUMAN POPULATIONS

4.6.1 Introduction

The Purdom Generating Station is located in an industrial area of the City of St. Marks. It is bordered by lands designated for industrial use to the south, mixed use to the west, and industrial and agricultural use to the north. New construction will take place on the interior of the generating station about one quarter mile from the nearest residences. Access to the site is via a driveway which connects directly to State Road (SR) 363. Most of the residential and commercial areas of the City of St. Marks lie to the south of the Purdom Generating Station and will not be affected by traffic from the Project, except to the extent that construction workers eat and drink at local establishments or rent a place to stay locally.

The impact of construction traffic on Wakulla and Leon County roadways is discussed in Section 4.6.2. The impact of construction noise is discussed in Section 4.6.3. Construction employment and wages are discussed in Section 4.10.

The socioeconomic impact of project construction and operation is discussed in detail in Chapter 7. As discussed in Chapter 7, there will be a temporary increase in demand for housing by relocating construction workers. Although housing supply in Wakulla and Leon Counties would appear to be sufficient to accommodate those construction workers, available lodgings close to the Purdom Station are not sufficient. Therefore, it is possible that new development will occur in Wakulla County to take advantage of this short-term demand.

4.6.2 Construction Traffic Impacts

Traffic impacts during the Purdom Unit 8 construction phase consist of construction worker travel and associated construction deliveries. During the construction period, the existing facility will remain in operation and is not expected to create additional traffic. Therefore, construction traffic impacts exclude traffic from the existing Purdom Station operation.

The construction traffic impact analysis assumes commencement of construction in January 1999, and completion of construction in May 2000. On average, approximately 150 workers will be employed during the construction period, with a peak employment in the third quarter of 1999 of 225 construction workers and 15 management employees (RE&C, 1997).

The construction work force consists of daily commuters and weekly commuters. Daily commuters live within an approximately 1 to 1.5 hour drive, while weekly commuters will seek lodging in the area. The daily commuters make up approximately 60 percent of the work force at the peak, or 135 construction workers, while the weekly commuters are approximately 40 percent of the work force, or 90 construction workers. The weekly commuters will find local area lodging in campgrounds, trailer parks, motels, or other similar lodging facilities.

The management work force consists of daily commuters, with the majority residing in the Tallahassee area.

4.6.2.1 Study Area

Roadways and intersections included in this analysis were identified in a manner consistent with local, regional, and state policy. In Wakulla County, the traffic study area includes roadways under Florida Department of Transportation (FDOT) jurisdiction where the peak hour directional construction traffic may approximate 5 percent or more of the peak hour directional flow at Level of Service C. These flow values are defined by the FDOT *1995 Level of Service Standards and Guidelines Manual for Planning* (FDOT, 1995). The study area also includes roadways under the jurisdiction of Wakulla County, where project traffic may approximate 5 percent or more of their adopted peak hour directional Level of Service D standard. Furthermore, the study area includes Leon County roadways that carry construction related traffic of 1 percent or more of the peak hour peak direction service volume at the adopted level of service.

4.6.2.2 Year 1999 Construction Project Traffic Impact

Two separate conditions must be met before a project traffic impact is deemed to occur. First, there is a significance test and second, an adversity test. The significance test is met if a significant amount of project traffic occurs on a given roadway. As mentioned above, Wakulla County growth management defines their significance level as 5 percent of the service volume at the adopted transportation level of service. Leon County, however, defines a significant impact as 1 percent of the service volume at the adopted level of service in peak hour and in the peak direction. On a typical roadway section, for example, the adopted Level of Service D may establish a peak hour flow rate of 800 vehicles in one direction per hour. If a development loads 40 or more vehicles on a Wakulla County roadway (800 times 5%), this would constitute a "significant" impact on the roadway. In Leon County, 8 peak hour directional trips (800 times 1%) would constitute a "significant" impact.

Regarding the second part of the traffic impact analysis test, a roadway section must be operating in an adverse condition, meaning worse than the adopted level of service standard. Since the terms "above" or "below" the level of service standard can be somewhat ambiguous, the terms "better than" or "worse than" the level of service standard are used when discussing traffic flow issues. Using the roadway example, with an 800 vehicle per hour service volume at Level of Service D, if the road is operating at 810 vehicles per hour, then it is operating at a level of service condition that is worse than the adopted Level of Service D standard. For analysis purposes, the level of service is generally documented using current traffic counts along with background traffic growth rates and project traffic. These two volumes are summed to finally determine whether a project passes or fails the future adversity test.

In summary, for project traffic to have an impact on a roadway section, it must have a significant impact equal to or greater than the stated threshold and the roadway must be projected to operate in an adverse condition, worse than the adopted level of service standard.

In preparation for the traffic impact analysis, traffic volume data were collected on those Wakulla County roadways where the Project traffic is expected to be 5 percent or more of the adopted maximum service volume. These existing volumes, together with the expected

IMAGE QUALITY

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construction Project traffic, were used to determine whether the Project will have an impact on area roadways.

The existing hourly traffic volumes on significantly impacted roadways were multiplied by FDOT's 1995 weekly volume adjustment factors to approximate average annual peak hour directional traffic volume for 1996. In addition, a growth rate was applied to Project future peak hour traffic volumes. These growth rates were determined by the Apalachee Regional Planning Council (ARPC) and are noted in Table 4.6.2-1.

TABLE 4.6.2-1
ARPC GROWTH FACTORS

Roadway	Segment	ARPC Annual Growth Rate	Annual Growth Rate Used in Study
SR 363	St. Marks to US 98	-0.59%	+2.00%
	US 98 to Leon County Line	+3.33%	+3.33%
US 98	US 319 to Spring Creek Road	+4.62%	+4.62%
	Spring Creek Road to SR 363	+4.62%	+4.62%
	SR 363 to Jefferson County Line	-1.58%	+2.00%

Source: ARPC, 1996

The ARPC growth factors noted in the table provide the present traffic volume trends, including two negative growth patterns. For the purpose of this study, however, a conservative growth factor of +2.0 percent was used for those roadway segments with a negative growth rate. This is due to unknown future economic conditions and other factors that may cause an increase in future traffic volumes. A projection of future background afternoon (PM) peak hour traffic volumes, based on the 1995 FDOT traffic volume adjustment factor and the annual growth rates is shown in Table 4.6.2-2.

4.6.2.3 Plant Construction Traffic

The PM peak hour directional traffic volumes during the construction phase of the project were estimated through a trip generation, distribution, and assignment process. As stated previously, the peak construction employment period will occur during the third quarter of 1999 with a maximum of 240 construction-related employees present at the site. The construction contractor, Raytheon Engineers and Constructors (RE&C, 1997), anticipates that the construction employees will normally work one shift from approximately 7:00 AM to 3:30 PM, Monday through Friday.

Trip Generation

Trip generation rates were estimated using information obtained from similar construction projects. The construction phase trip generation rate of the Florida Power Corporation (FPC) Polk County Site (FPC, 1992) was used for this traffic analysis. Their trip generation rate during the PM peak hour was based on an auto occupancy factor of 1.5 for construction employees as experienced at other construction sites. Therefore, the exiting construction traffic for the Purdom Unit 8 construction phase is approximately 160 vehicles during the PM peak hour. The FPC Polk County Site study indicated an entering traffic ratio of 8 percent compared to exiting

TABLE 4.6.2-2
1999 PM PEAK HOUR BACKGROUND TRAFFIC VOLUMES

Roadways	DIR[1]	State Road No.	Date of Count	1996 PM Peak Directional Hourly Vol.	1995 Weekly Adjustment Factor	ARPC Annual Growth Rate in %	1999 PM Peak Directional Hourly Vol.
Woodville Hwy.							
St. Marks to Project Site	SB	SR 363	6/24-28/96	66	0.92	2.00%	64
Project Site to US 98	NB	SR 363	9/10/96	105	1.04	2.00%	116
US 98 to SR 267	NB	SR 363	9/10/96	189	1.04	3.33%	217
SR 267 to Leon Co line	NB	SR 363	9/10/96	242	1.04	3.33%	277
US 98							
US 319 to Spring Creek Rd.	WB	SR 30	9/10/96	231	1.04	4.62%	275
Spring Creek Rd. to SR 363	WB	SR 30	9/10/96	231	1.04	4.62%	275
SR 363 to Jefferson Co line	EB	SR 30	9/10/96	115	1.04	2.00%	127

(1) NB = Northbound
SB = Southbound
EB = Eastbound
WB = Westbound

Source: Hall Planning and Engineering, 1997

traffic. Therefore, miscellaneous traffic entering the site is estimated at 13 vehicles prior to the PM peak hour, mainly consisting of deliveries or other miscellaneous traffic.

The traffic analysis for the Purdom Station focuses on the PM peak hour in accordance with requirements of Wakulla and Leon Counties. The end of the work shift at 3:30 PM occurs just prior to the PM peak hour. Therefore, only the trips exiting the plant will be analyzed during the PM peak hour. The entering trips arrive prior to the end of the work shift, before the PM peak hour. A summary of the roadway PM peak hour traffic is provided in Table 4.6.2-3.

TABLE 4.6.2-3
SITE TRIPS DURING PM PEAK HOUR OF ROADWAY

Employees	240
PM Peak:	
Enter	0
Exit	160
Total	160

Source: Hall Planning and Engineering, 1997

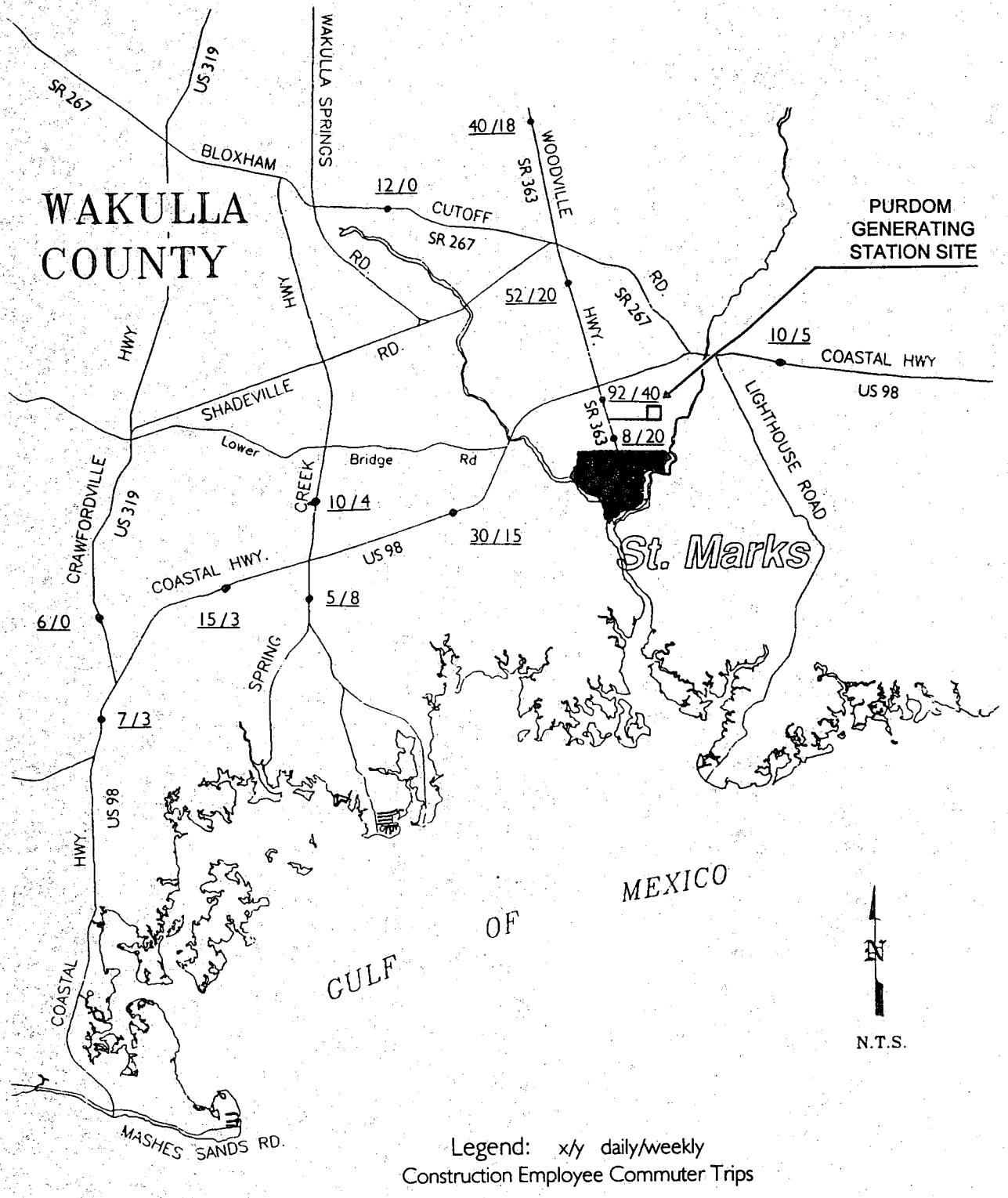
Distribution and Assignment

The distribution analysis of PM peak hour exiting trips is separated into daily commuters and weekly commuters due to their different travel patterns. It is expected that the daily commuters have a travel pattern similar to the existing facility workers which are distributed throughout the area. The daily commuters, however, may have a somewhat longer trip length than employees since they do not live in the immediate vicinity of the plant. The weekly commuters are expected to find lodging within one-half hour driving time from the construction site. These lodging facilities are expected to include motels in Shell Point, along Woodville Highway, and in south Tallahassee. They will also include campground and trailer parks in St. Marks or along US 98 near Wakulla Station.

Using this distribution process, trips were assigned to the roadway network as shown on Figures 4.6.2-1 and 4.6.2-2, and Tables 4.6.2-4, 4.6.2-5, and 4.6.2-6. The tables show the analysis results for each roadway segment.

The construction traffic impact in Wakulla County is summarized in Table 4.6.2-4. The estimated 1999 peak hour, directional, non-project traffic and PM peak project traffic are shown in the table. The Project trips are also shown as a percentage of the adopted level of service flow rate. The last columns show the cumulative nonproject and Project trips for all significantly affected roadways (Project impact equal to or greater than 5 percent of the adopted level of service flow rate) and the resulting level of service expected in the build-out year 1999. No data are shown for the non-significantly affected roadways, per the Wakulla County Comprehensive Plan standards.

The construction traffic impact in Leon County is summarized in Table 4.6.2-5 for Leon County controlled roadways and in Table 4.6.2-6 for City of Tallahassee controlled roadways in accordance with their Comprehensive Plan. As shown in the tables, only the Capital Circle segment from Woodville Highway to Crawfordville Road in Leon County carries Project traffic



Legend: x/y daily/weekly
Construction Employee Commuter Trips

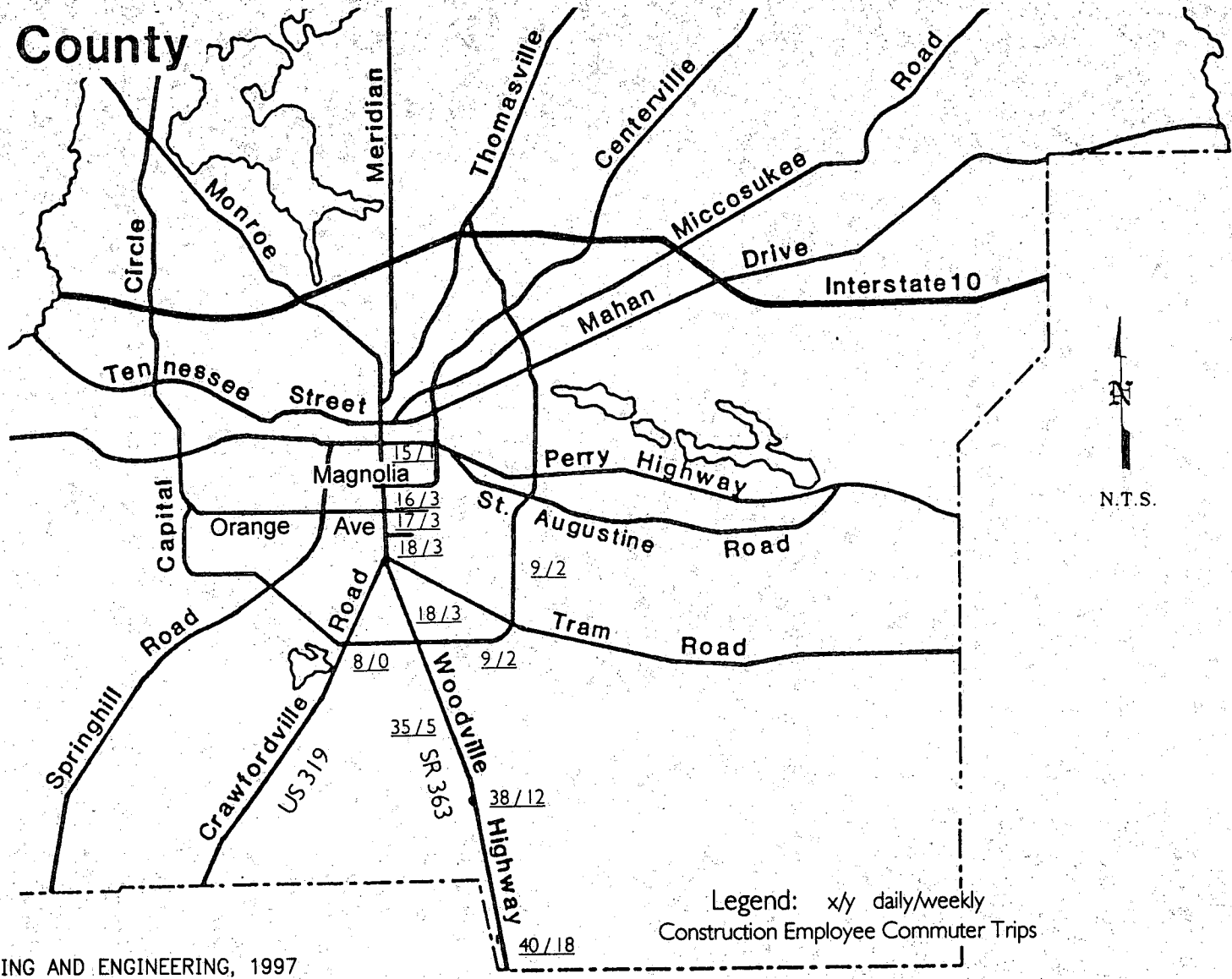
SOURCE: HALL PLANNING AND ENGINEERING, 1997

CITY OF TALLAHASSEE

PURDOM STATION
1999 CONSTRUCTION TRAFFIC
IN WAKULLA COUNTY
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
4.6.2-1

PLOT DATE FEB 25, 19976 C:\15840002\---\00000-22.DWG



SOURCE: HALL PLANNING AND ENGINEERING, 1997

4.6-7

CITY OF TALLAHASSEE

PURDOM STATION
1999 CONSTRUCTION TRAFFIC
IN LEON COUNTY
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
4.6.2-2

TABLE 4.6.2-4
PM PEAK HOUR EXITING CONSTRUCTION TRAFFIC VOLUMES
(WAKULLA COUNTY ROADWAYS)

	DIR [1]	State Road No	Daily LOS C	Peak Directional Hourly Vol. @ LOS C	Non-Peak Directional Hourly Vol. @ LOS C	5% of Hourly LOS C	1999 PM Peak Directional Non-project Traffic	"Daily Commuter" PM Peak Project Traffic	"Weekly Commuter" PM Peak Project Traffic	Total PM Peak Project Trips	Project Trips as % of LOS	Background + Project Trips	Peak Directional LOS with Project Trips for Significantly Effected Roadways
FDOT Roadways:													
Woodville Highway.													
Project Site to St. Marks	SB	SR 363	8200		360	18	64	8	20	28	7.8%	92	B
Project Site to US 98	NB	SR 363	8200	460		23	116	92	40	132	28.7	248	B
US 98 to SR 267	NB	SR 363	8200		360	18	217	52	20	72	20.0%	289	C
SR 267 to Leon Co line	NB	SR 363	8200		360	18	277	40	18	58	16.1%	335	C
US 98													
SR 375 to US 319	WB	SR 30/61	9200		380	19	[2]	7	3	10	2.6%	[2]	
US 319 to Spring Creek Rd.	WB	SR 30	8200		360	18	275	15	3	18	5.0%	293	C
Spring Creek Rd. to SR 363	WB	SR 30	8200		360	18	275	30	15	45	12.5%	320	C
SR 363 to Jefferson Co line	EB	SR 30	8200		360	18	127	10	5	15	4.2%	142	B
SR 267													
SR 363 to US 319	WB	SR 267	8200		360	18	[2]	12	0	12	3.3%	[2]	
US 319													
SR 30 to Forest Tower	NB	SR 61	8200		360	18	[2]	6	0	6	1.7%	[2]	
Wakulla Co. Roadways:													
Spring Creek Highway:													
Shell Point Rd to US 98	SB	CR 365	10700	600	470	24	[2]	5	8	13	2.8%	[2]	
US 98 to Lower Bridge Rd.	NB	CR 365	10700	600	470	24	[2]	10	4	14	3.0%	[2]	

[1] NB = Northbound
SB = Southbound
EB = Eastbound
WB = Westbound

[2] Non-significant roadway, as impact is less than 5%.

Source: Hall Planning and Engineering, 1997

TABLE 4.6.2-5
PM PEAK HOUR EXITING CONSTRUCTION TRAFFIC VOLUMES
(LEON COUNTY ROADWAYS)

Roadway	Segment	PK Dir	Seg #	1995-96 PM PK PK Dir[1]	LOS	"Daily Commuter" PM Peak Project Traffic	"Weekly Commuter" PM Peak Project Traffic	Total PM Peak Project Trips
Capital Circle	Blair Stone Ext. To Satellite Off.	PD	161	SB	D	0	0	0
Capital Circle	Satellite Off. To Blair Stone Ext.		161-1	NB	D	9	2	11
Capital Circle	Tram To Woodville	PD	170	WB	D	0	0	0
Capital Circle	Woodville To Tram		170-1	EB	D	9	2	11
Capital Circle	Woodville To Crawfordville	PD	180	WB	D	8	0	8
Capital Circle	Crawfordville To Woodville		180-1	EB	D	0	0	0
Capital Circle	Springhill To Crawfordville	PD	190	EB	D	0	0	8
Capital Circle	Crawfordville To Springhill		190-1	WB	D	8	0	0
Oak Ridge Road	Wakulla Springs To Woodville	PD	601	EB	C	0	0	0
Oak Ridge Road	Woodville To Wakulla Springs		601-1	WB	C	2	3	5
Woodville Highway	Four Points To Capital Circle	PD	840	SB	D	0	0	0
Woodville Highway	Capital Circle To Four Points		840-1	NB	D	18	3	21
Woodville Highway	Capital Circle To Oak Ridge	PD	850	SB	C	0	0	0
Woodville Highway	Oak Ridge To Capital Circle		850-1	NB	C	35	5	40
Woodville Highway	Oak Ridge To Natural Bridge Road	PD	860	SB	C	0	0	0
Woodville Highway	Natural Bridge Rd To Oak Ridge		860-1	NB	C	38	12	50
Woodville Highway	Natural Bridge Road To Wakulla Co.	PD	870	SB	C	0	0	0
Woodville Highway	Wakulla Co. To Natural Bridge Rd		870-1	NB	C	40	18	58

(1) NB = Northbound
SB = Southbound
EB = Eastbound
WB = Westbound
PD = Peak Direction

Source: Hall Planning and Engineering, 1997

TABLE 4.6.2-6
PM PEAK HOUR EXITING CONSTRUCTION TRAFFIC VOLUMES
(TALLAHASSEE ROADWAYS)

Seg #	PK Dir	Road	Segment	DIR[1]	LOS	"Daily Commuter" PM Peak Project Traffic	"Weekly Commuter" PM Peak Project Traffic	Total PM Peak Project Trips
2161	PD	Capital Circle	Blair Stone Ext to Cap Office Prk	SB	D	0	0	0
2160		Capital Circle	Cap Office Prk to Blair Stone Ext.	NB	D	9	2	11
2171	PD	Capital Circle	Cap Office Prk to Woodville Hwy	SW	D	0	0	0
2170		Capital Circle	Woodville Hwy to Cap Office Prk	NE	D	9	2	11
2180	PD	Capital Circle	Crawfordv. Rd to Woodv. Hwy	EB	D	0	0	0
2181		Capital Circle	Woodv. Hwy to Crawfordv. Rd	WB	D	8	0	8
4691	PD	Monroe Street	Paul Russell to Gaile Ave.	SB	D	0	0	0
4690		Monroe Street	Gaile Ave. to Paul Russell	NB	D	18	3	21
4701	PD	Monroe Street	Orange to Paul Russell	SB	D	0	0	0
4700		Monroe Street	Paul Russell to Orange	NB	D	17	3	20
4711	PD	Monroe Street	Magnolia to Orange	SB	D	0	0	0
4710		Monroe Street	Orange to Magnolia	NB	D	16	3	19
4721	PD	Monroe Street	Palmer to Magnolia	SB	D	0	0	0
4720		Monroe Street	Magnolia to Palmer	NB	D	15	1	16

(1) NB = Northbound
SB = Southbound
EB = Eastbound
WB = Westbound
PD = Peak Direction

Source: Hall Planning and Engineering, 1997

in the peak direction. For all other segments in Leon County or in the city limits of Tallahassee, the Project traffic is in the non-peak direction, and therefore not significant.

4.6.2.4 Construction Truck Traffic

During construction, the peak truck traffic days will coincide with the placing of concrete at the Project site. A maximum of 20 concrete trucks are expected to deliver concrete to the site in a single day (RE&C, 1997). During these same days, few other major deliveries will be scheduled as they would conflict with the concrete placement. To anticipate a worst-case scenario, however, 5 miscellaneous deliveries are included based on an assumption of 25 percent of the concrete truck traffic.

The construction truck trip impact is evaluated from 6:00 AM to 6:00 PM. Although these hours are in excess of the regular shift periods of the construction crews, these hours reflect a worst-case scenario during which the truck traffic deliveries could occur on the peak truck traffic days.

The truck classification count performed on September 9, 1996, has been adjusted to reflect projected truck volumes on SR 363 in the year 1999. The FDOT weekly adjustment factor and the expected traffic growth factor, discussed in Section 4.6.2.2, have been applied to arrive at the 1999 truck traffic volumes. Subsequently, the southbound and northbound volumes are projected at 157 and 143 truck trips respectively, resulting in a total of 300 non-project truck trips between the hours of 6:00 AM and 6:00 PM (see Appendix 10.6.2).

In summary, the increase of Project construction truck traffic on SR 363 will consist of 25 southbound and 25 northbound trips, over and above the projected 157 southbound and 143 northbound non-project truck trips on the roadway, a worst-case increase of about 17 percent.

4.6.2.5 Conclusion

Several roadway segments in Wakulla County meet the significance test of Project traffic equal to or exceeding 5 percent. These segments, however, do not meet the adversity test because the cumulative non-project and Project traffic volumes yield an acceptable level of service of C or higher.

One segment in Leon County carries Project construction traffic in the peak direction during the PM peak hour. This segment is on Capital Circle from Woodville Highway to Crawfordville Road. The Project traffic volume on this segment is, however, below the 1 percent significance level and, therefore, does not significantly impact this segment. All other segments within Leon County carry Project construction traffic in the non-peak direction; therefore, these segments are not considered to be significant either. Analysis is not required for segments where traffic is not significant in accordance with the Comprehensive Plan rules. Based on the application of significance thresholds and level of service analysis for those roadways where Project traffic exceeds the significance threshold, Project traffic during construction will not adversely impact area roadways, and no mitigation is required.

4.6.2.6 References

ARPC (Apalachee Regional Planning Council). 1996. City of St. Marks 1995 Levels of Service on State Roads. May 1996.

ARPC. 1996. Wakulla County 1995 Levels of Service on State Roads. May 1996.

City of Tallahassee. Concurrency Management System, Policy and Procedures Manual.

City of Tallahassee Electric Utilities. 1996. Telephone conversation between Gordon King, Plant Supervisor, City of Tallahassee, St. Marks, Florida, and Henk Koornstra, Hall Planning & Engineering, Tallahassee, Florida, December 19, 1996 and January 15, 1997.

FDOT (Florida Department of Transportation). 1995. Florida's Level of Service Standards and Guidelines Manual for Planning. Tallahassee, Florida.

FPC (Florida Power Corporation). 1992. Site Certification Application (SCA) for Polk County Site. St. Petersburg, Florida.

Hall Planning & Engineering. 1997. Project Data. Tallahassee, Florida.

Leon County Concurrency Management Policies and Procedures Manual.

RE&C (Raytheon Engineers and Constructors). 1997. Project Data. Norcross, Georgia.

Wakulla County Comprehensive Plan - Traffic Element.

4.6.3 Construction Noise Impacts

4.6.3.1 Analysis

The construction of a power plant can be divided into five distinct phases for purposes of assessing potential noise impacts (Barnes et al., 1976). These include:

- Site preparation, including grading and excavation;
- Concrete pouring;
- Steel erection;
- Machinery installation;
- Site cleanup and plant start-up.

During the initial site preparation and foundation excavation phase, heavy diesel-powered earth-moving equipment is the major source of noise. This equipment includes dozers, graders, sheepsfoot roller compactors, dump trucks, backhoes, and front-end loaders. The typical quantities for a project such as this, and noise levels of such equipment are presented in Table 4.6.3-1. Typical usage factors for each are also presented in the table. The usage factor is the fraction of time that equipment operates during a work shift.

TABLE 4.6.3-1
MAJOR NOISE SOURCES
DURING PLANT CONSTRUCTION

Equipment	Typical Number	Usage Factor[1]	Average Sound Level at 50 Feet (dBA)
Crawler Crane	4	0.16	83
Cherry Picker	10	0.16	79
Fork Lift	2	0.16	79
Bulldozer	2	0.40	80
Gradall	1	0.08	85
Compactor	2	0.10	74
Front-end Loader	4	0.40	79
Backhoe	2	0.16	85
Dump Truck	2-12	0.40	91
Flat Bed Truck	2-20	0.10	91
Concrete Truck	0-6	0.40	85
Tractor Trailers	0-4	0.10	91
Pickup Truck	10	0.40	58
Man Lift	4	0.16	79
Scissor Lift	4	0.16	74
Air Compressor	2	1.00	81
Welder	9	1.00	78
Track Loader	6	0.16	80

[1] Fraction of time equipment is operating during shift.

Source: Raytheon Engineers & Constructors, 1997 (for quantities)
EPA, 1971 (for usage factors and sound levels)

Equipment used during the concrete pouring stage includes concrete trucks, cranes, and some earth-moving equipment for backfilling foundations. The steel erection phase requires the use of cranes in varying sizes, air compressors, welders, material delivery trucks, concrete trucks, and front-end loaders. The machinery installation phase requires the same types of equipment as the steel erection phase.

The final phase, consisting generally of site cleanup and plant start-up activities, is typically about 10 decibels (dBA) quieter than the other phases (Barnes et al., 1976), except during the short periods of time when the steam lines are being cleaned. This activity requires that high pressure steam be blown through the lines to remove scale and welding debris in order to prevent such material from passing through the steam turbines where they could damage the blades. The steam is vented directly to the atmosphere through a temporary bypass line constructed specifically for that purpose. Cleaning of the steam lines will require multiple steam blows with a duration of 1 to 15 minutes per blow over a period of several weeks. A peak sound level at 50 feet of approximately 129 dBA will be produced. In setting the steam safety valves, steam will be released for about 6 minutes with a corresponding sound pressure level at 50 feet of 121 dBA.

The discharge pipe for the temporary steam blow activity will be directed horizontally to the east, away from the community, to reduce levels at the nearest residence to about 82 dBA. The

activity will clearly attract attention, but the duration of the sound will be short, will only be performed during the day, and the levels will not be high enough to cause any hearing loss. Proper notification to area residents will alleviate any concern that might otherwise be generated.

In addition to this assessment of steam blowing impacts, the noise impacts have been assessed for the two generally loudest phases of construction which are the site preparation and steel erection stages. The estimated levels at the nearest residence are 68 and 66 dBA, respectively, based on a summation of equipment noise levels and quantities appropriate to each phase from Table 4.6.3-1. A conservative attenuation factor was then applied to determine the expected noise levels at the nearest residence. Each of these construction phases has a duration of 3 to 5 months. Noise levels during the other phases will be 5 to 10 dBA lower.

These levels are not sufficiently high to interfere with speech or cause any hearing loss. The state guideline recognizes that construction unavoidably produces more noise than normal and addresses it by restricting nighttime and weekend construction that would create a disturbance. Consequently, activities that could create a noise disturbance will be avoided at night between 10 p.m. and 7 a.m. Construction is by nature a temporary activity and any associated noise impacts will be short-term. Comparison with the EPA noise guidelines is not appropriate for construction noise because of its temporary, short-term nature.

The construction work force and material delivery vehicular traffic levels and, consequently, the traffic noise impact levels, will vary in relation to the size of the work force. The peak work force will occur during the third quarter of 1999 and consist of 240 personnel. The resulting 160 cars (at an occupancy factor of 1.5) represent an increase in traffic volume of 89 percent on SR 363 during the peak afternoon hour during the shift change (HPE, 1997). The resulting increase in traffic noise levels would be less than 3 dBA, which is insignificant and would be barely noticeable. Increases in traffic noise levels will be even less during the other hours.

Heavy trucks delivering materials to the site will produce noise that will add incrementally to noise from the existing truck traffic, which is primarily oil tankers associated with other enterprises in the City of St. Marks. It is estimated that during the peak construction delivery days, approximately 20 concrete delivery trucks and 5 other delivery trucks will enter and leave the site (RE&C, 1997). This represents an increase over existing truck traffic of about 17 percent which is equivalent to an increase in noise levels of less than 1 dBA. This small increase is also insignificant. None of the material delivery trucks are expected to go south of the facility entrance into the commercial/residential area of the City of St. Marks.

4.6.3.2 References

Barnes, J., Miller, L., and Wood E. 1976. Prediction of Noise from Power Plant Construction (Draft). Schenectady, New York. June 1976.

HPE (Hall Planning and Engineering). 1997. Project Data. Tallahassee, Florida.

RE&C (Raytheon Engineers and Constructors). 1997. Project Data. Norcross, Georgia.

EPA (U.S. Environmental Protection Agency). 1971. Noise from Construction Equipment and Operations, Building Equipment and Home Appliances. Washington, DC. Dec 31, 1971

4.7 IMPACT ON LANDMARKS AND SENSITIVE AREAS

Construction will occur in the interior of the existing Purdom Station. Therefore, no construction-related environmental impact is expected on those areas identified in Section 2.2.5. Long term, aesthetics along the St. Marks River shoreline will be improved with the removal of the old boilers from Units 1 through 4, which is ongoing, and with the installation of landscaping in accordance with the City of St. Marks Land Development Code (draft). As discussed in Section 4.5, fugitive dust emissions will be properly controlled so that no impact on visibility will occur in the vicinity of the nearby Aucilla Wildlife Management Area or the St. Marks National Wildlife Refuge. Likewise, due to attenuation with distance, construction noise will not affect the quality of the recreational experience at either of those locations.

4.8 IMPACTS ON ARCHEOLOGICAL AND HISTORIC SITES

4.8.1 Analysis

No archeological or historic sites have been identified within the Purdom Station site. The Division of Historical Resources (DHR) has stated that "conditioned upon the construction of the new pipeline within the existing road prisms, it is the opinion of this office that the proposed Project will have no effect on historic properties listed, or eligible for listing in the *National Register of Historic Places,* or otherwise of historical or architectural value" (DHR, 1996). The DHR has commented on two potential routes for the proposed reclaimed water pipeline (DHR, 1997) These routes are discussed in Section 6.1.

4.8.2 References

DHR (Division of Historical Resources, Florida Department of State). 1996. Letter from George W. Percy, Director, Division of Historical Resources and State Historic Preservation Officer, to Jennette Curtis, City of Tallahassee. September 23, 1996.

DHR (Division of Historical Resources, Florida Department of State). 1997. Letter from George W. Percy, Director, Division of Historical Resources and State Historic Preservation Officer, to Jennette Curtis, City of Tallahassee. January 30, 1997.

4.9 SPECIAL FEATURES

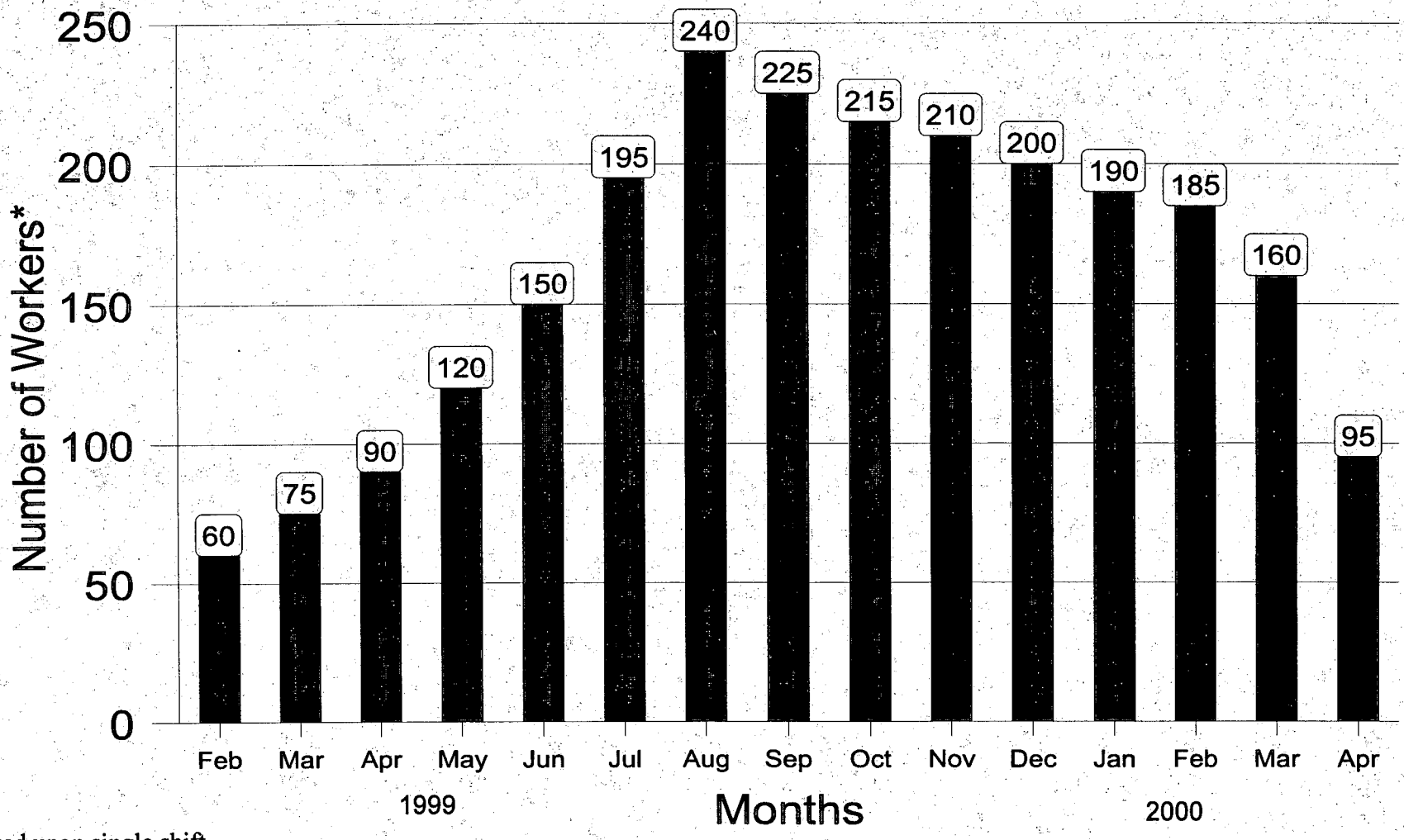
There are no unusual products, raw materials, garbage disposal services, incinerator effluents, or residues produced during construction that may have an influence on the environment and ecological systems of the Purdom Station site and the adjacent areas.

4.10 BENEFITS FROM CONSTRUCTION

The construction of Purdom Unit 8 will result in increased employment in the City of St. Marks through direct construction jobs, and in Wakulla and Leon Counties through indirect jobs in service and support industries. Construction is expected to begin in early 1999 and continue into the second quarter of 2000. Over the approximate 15-month construction period, construction employment will average 160 persons and peak at 240 persons (see Figure 4.10-1).

Construction wages will amount to approximately $7 million during 1999 and over $2 million in 2000 (nominal dollars). Indirect employment will occur primarily in the following sectors of the local economy: retail and wholesale trade, business services, health services, miscellaneous services, and eating and drinking establishments. According to the U.S. Department of Commerce's Regional Input-Output Modeling System (RIMS) II, 118 indirect jobs will be generated in Wakulla and Leon counties on average during the 1999-2000 construction period as a result of the construction of Purdom Unit 8. Indirect earnings are estimated at $6.6 million (1997 dollars).

Further discussion of the economic effects of the construction and operation of the Purdom Unit 8 Project is included in Chapter 7.



*Based upon single shift

Source: Raytheon Engineers & Constructors, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

ESTIMATED CONSTRUCTION MANPOWER
BY MONTH

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
4.10-1

4.11 VARIANCES

Construction related variances are not expected to be required. Construction of Purdom Unit 8 will meet all applicable local, state, and federal guidelines.

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5.1 EFFECTS OF THE OPERATION OF THE HEAT DISSIPATION SYSTEM

The Purdom Unit 8 Project is designed with no thermal discharge to waters of the state. Information relative to 316 Demonstrations associated with the Purdom Station is presented in Appendix 10.1.1.

5.1.1 Temperature Effect on Receiving Body of Water

Unit 8 will have no thermal discharge to any receiving body of water. The only temperature effects will be from the permanent shut-down of Units 5 and 6. This will result in the shrinking of the thermal plume from that of Units 5 through 7, which crossed the full surface width of the river when measured on July 19, 1996 (see Figure 2.3.4-24), to less than half the width of the river when only Unit 7 operates, as measured on July 21, 1996 (see Figure 2.3.4-25). The existing combustion turbines (GT1 and GT2) will continue to operate; however, their impacts on the thermal plume are insignificant. Although the Florida Department of Environmental Protection (FDEP) and the U.S. Environmental Protection Agency (EPA) have found the existing thermal plume to result in acceptable environmental impacts, a lessening of that plume can only result in lesser impacts.

Unit 8 will have a withdrawal of makeup water from the St. Marks River; however, that withdrawal will be offset by the cessation of once-through cooling water withdrawals from the St. Marks River for Units 5 and 6. The amount of water withdrawn for Unit 8 for make-up to the cooling tower and boiler/HRSG, and for NO_x control when firing oil, will average approximately 343 million gallons per year. The amount withdrawn for once-through cooling for Units 5 and 6 during the last 12-month period of record was 13,543 million gallons.

The maximum Unit 8 withdrawal rate (936 gallons per minute (gpm)) will take water from the top 1.5 feet of the river, at an average velocity of about 0.14 feet per second. This is only about one-half to one-fourth of the 0.26 to 0.43 feet per second presently entering the Units 5 and 6 intake structures when those units are operating (see Section 2.3.4.1). This velocity will only occur over a cross-sectional area of about 15 square feet, as opposed to about 500 square feet now affected when Units 5 and 6 operate. Again, this reduction in velocity and area will result in a reduction in impacts.

5.1.2 Effects on Aquatic Life

The dominant factor controlling the water temperature in the Wakulla River is the discharge from Wakulla Springs. The spring water is believed to keep the river temperature above 62° F (16.8° C) all year, which provides suitable temperatures for manatees that remain in the area during winter. Thus, any manatees that might be influenced by the Unit 7 thermal discharge during autumn to remain in the area during winter will be able to find a natural thermal refuge in the Wakulla River at any time when Unit 7 does not operate.

5.1.2.1 References

Hydrologic Almanac of Florida. 1981. United States Geological Survey Open File Report 81-1107.

5.1.3 Biological Effects of Modified Circulation

The modifications conducted at the Purdom facility as described in Section 3.5.1 will result in a zero discharge closed loop cooling tower system to dissipate waste heat from Unit 8. The permanent shut-down of Units 5 and 6 and the replacement of the existing four high volume intake water pumps with one lower volume intake water pump (see Section 2.3.4) will reduce the cooling water intake from the St. Marks River to approximately one-twelfth of the current intake volumes at the location (see Section 3.5). Decreased intake volumes and pumping rates will reduce the amount of impingement and entrainment of aquatic organisms. Discharges from the Unit 5 discharge structure will be eliminated with the shutdown of the unit.

Intake rates at the Unit 7 intake structure would remain consistent with current volumes and velocities while the unit is in operation. In all likelihood, Unit 7 would operate at no more than current production levels (see Section 2.3.4). Impingement and entrainment of aquatic organisms will remain consistent with current levels or could be reduced due to a reduction in Unit 7 operation.

Flow rates within the Unit 6 and 7 discharge canal will be reduced with the shut-down of Unit 6 (see Section 2.3.4). Flows into the discharge canal would be limited to periods of Unit 7 and/or existing combustion turbines (GT1 and GT2) operation (peak demand periods) only. The reduction in flow rates should pose no adverse impact to the aquatic life of the St. Marks River.

The net overall effect of the Project on the Purdom Station impacts will be a reduction of impingement and entrainment of aquatic organisms.

In an agreement with the City of St. Marks, the Purdom Station has agreed to utilize the effluent from the City of St. Marks Wastewater Treatment Facility as a source of make-up water for the Unit 8 cooling water system. This will eliminate the discharge from the Wastewater Treatment Facility to the St. Marks River and improve water quality immediately downstream of that facility.

5.1.4 Effects of Offstream Cooling

The cooling tower will operate at temperatures ranging from about 12 to about 20° F above the ambient air wet bulb temperature. The cooling tower will produce plumes of saturated air that will cool and produce visible vapor plumes on some days. Because of the exit velocity imparted to the plumes from the mechanical draft fans of the cooling tower, and their buoyancy, they will only rarely reach ground level. Therefore, no significant impacts to transportation (either land or waterborne) are expected.

Cooling tower blowdown will be recycled in the zero discharge wastewater treatment system and will not be released to the environment.

Cooling tower drift emission rates and their control technology are presented in Section 3.4. Air quality impacts of cooling tower drift are presented in Section 5.6. Because the Purdom Station is within 4 miles of Appalachee Bay, natural airborne salt drift is expected to be present in significant quantities. This expectation is supported by the presence on and near the site of salt-tolerant vegetation. Therefore, impacts of salt drift on the on-site and off-site lands and water bodies are expected to be insignificant.

Purdom Unit 8 will recycle domestic wastewater from the City of St. Marks Wastewater Treatment Facility. Because all of the outflow from that Wastewater Treatment Facility will go to the Purdom Station, and none of it will be discharged to waters of the state, the effluent will no longer be de-chlorinated. The maintenance of a significant chlorine residual (greater than 2 mg/l) in the effluent pipeline will result in a chlorine contact time in excess of 1 hour. This disinfection will be sufficient to prevent any biological or health impacts from the cooling tower drift.

5.1.5 Measurement Program

Because Unit 8 is a zero discharge unit, no additional monitoring beyond that already required by the Purdom Station National Pollutant Discharge Elimination System (NPDES) Permit (see Appendix 10.1.2) is proposed.

5.2 EFFECTS ON CHEMICAL AND BIOCIDE DISCHARGES

5.2.1 Industrial Wastewater Discharges

After the installation and start-up of Purdom Unit 8, the Purdom Station will have no discharge of industrial wastewaters to waters of the state except for once through cooling water from Unit 7 and the existing combustion turbines (GT1 and GT2). The present discharge of non-thermal industrial wastewaters from Units 5 through 7 will cease, and those wastewaters from the remaining active Units (7 and 8) will be recycled for use within the units. Thus, the net impact from the Project will be positive (i.e., the elimination of existing industrial wastewater discharges).

5.2.2 Cooling Tower Blowdown

The Project will not discharge cooling tower blowdown to waters of the state. Consequently, this section is not applicable.

5.2.3 Measurement Programs

The proposed surface water measurement program is discussed in Section 5.1.5. No additional monitoring is proposed.

5.3 IMPACTS ON WATER SUPPLIES

5.3.1 Surface Water

The withdrawal of up to 936 gpm (2.1 cubic feet per second (cfs)) of surface water from the St. Marks River represents 0.6 % of the 7 consecutive day low flow with a 10 year recurrence interval (7Q10). That 7Q10 was presented in Section 2.3.4.1 as 347 cfs (155,734 gpm). The impact of this withdrawal will be insignificant.

The on-site drainage system (see Section 3.8) is designed to maintain existing stormwater runoff volumes at approximately the existing rate, while keeping peak runoff flows at or below existing levels. Therefore, no measurable changes to surface water flows in and out of on-site wetlands, or to off-site waterbodies, are expected.

5.3.2 Groundwater

Construction and operation of Purdom Unit 8 will have no adverse impacts to groundwater resources in the study area. During the last year, the Purdom Station utilized approximately 162,200 gallons per day (gpd) of groundwater for boiler makeup, service water, and small equipment auxiliary cooling. The water is withdrawn from the Upper Floridan aquifer system by two wells operating in tandem. To reduce groundwater impacts in the vicinity of their wellfield, the Purdom Station rotates the usage of wells 6 and 8 with wells 7 and 9 on a monthly basis. This groundwater withdrawal will be eliminated when Purdom Unit 8 is constructed. The existing Purdom Station wellfield will be retired from service and properly abandoned with operation of Purdom Unit 8. This reduction in groundwater use by the Purdom Station will have a positive impact on local groundwater resources and help to preserve the fresh groundwater resources which are available locally.

Although Purdom Unit 8 will be constructed in a recharge area for the Floridan aquifer system, the site is presently classified as industrial and the construction activities at the Purdom Station will not result in a significant increase in the paved acreage. A surface water recharge swale will be constructed to capture any additional site runoff and allow it to enter the ground as recharge and to prevent any significant new discharges to surface water bodies. Thus, there will not be a loss in aquifer recharge or a significant increase in surface water runoff due to construction of this new facility. The only waste storage facility will be a natural gas liquids storage tank (see Section 3.3). This tank will have impervious secondary containment to protect the groundwater (see Section 3.7).

The operation of Purdom Unit 8 will generate several waste streams as discussed in Sections 3.6 and 3.7. These wastes will include waste oil, steam generator blowdown, solvent parts cleaning waste, floor and laboratory drain waste, demineralizer regeneration waste, and solid waste such as dry filter cake from the zero discharge facility and air filters. Only the solid waste (dry filter cake) from the zero discharge wastewater treatment system is a new waste. All of the solid wastes will be temporarily stored on site in safe storage areas until they can be scheduled for pick-up and delivered off site to an approved disposal facility. Waste oil and solvent parts

cleaning waste will be picked up for recycling by an approved contractor. Other liquid wastes will be recycled through the on-site wastewater treatment system.

5.3.2.1 Groundwater Impact Modeling Results

A simple groundwater flow model (described in Appendix 10.6.3) was constructed to model the expected impact of retiring the City of Tallahassee's Purdom Station wellfield. The model was constructed using the USGS's MODFLOW aquifer simulation model. A series of simulations were executed using this model to characterize the current groundwater usage and the expected groundwater impacts resulting from retiring the Purdom Station wellfield. The results of the model simulations executed without withdrawals from the existing Purdom Station wellfield predicted that potentiometric water levels of the Upper Floridan aquifer in the vicinity of the City's wellfield will be approximately 1 foot higher than they are currently with the wellfield operating. The model simulation also predicted that the size of the cone of depression created by several large water users in this area (including the Purdom Station) will be decreased (Figure 5.3.2-1). The current elliptical-shaped cone of depression near the Purdom Station wellfield is approximately 4,000 feet wide and 5,800 feet long, encompassing an area of approximately 360 acres (see Figure 2.3.2-5). When the Purdom Station wellfield is removed from service, this area of depressed potentiometric water levels will shrink to a more circular feature approximately 2,800 feet in diameter encompassing approximately 180 acres (Figure 5.3.2-1). After retirement of the Purdom Station wellfield, the local cone of depression will only be about 50 percent of its present size.

5.3.3 Drinking Water

The Floridan aquifer system provides the primary drinking water supply for areas surrounding the Purdom Station. The Purdom Station currently uses groundwater from the Floridan aquifer system for industrial purposes including boiler makeup water at the plant. The design of Purdom Unit 8 eliminates altogether the use of groundwater for industrial purposes. The existing City of Tallahassee wellfield owned and operated for the Purdom Station will be retired. This will result in an average of 162,200 gpd of additional water available in the Floridan aquifer system locally for other beneficial uses.

The Purdom Station currently obtains potable water from the City of St. Marks public supply system, which withdraws water from the Floridan aquifer. After the retirement of Units 5 and 6, and the addition of Unit 8, the number of personnel at the plant will be reduced slightly (see Section 7). Based on this slight staff reduction, a small reduction of potable water use at the Purdom Station will also occur.

5.3.4 Leachate and Runoff

The only potential aqueous groundwater discharge from the site will be stormwater from the retention swale and from the on-site wetlands. There are no proposed solid fuel or waste storage areas on site. There are no active septic tanks on site.

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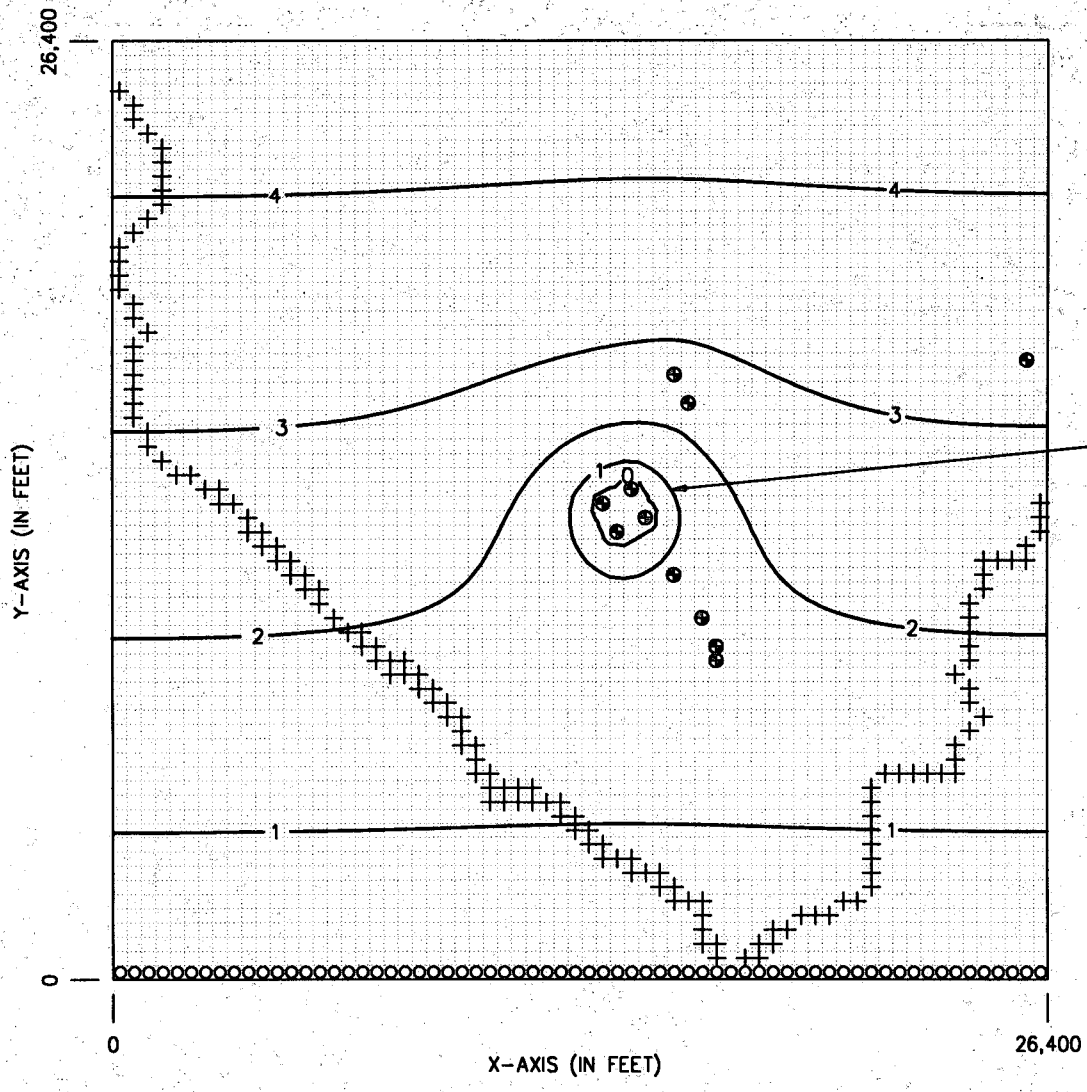

LEGEND

RIVER

WELL

DRAINS

N
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0 1 MILE

APPROXIMATE GRAPHIC SCALE

Poor Original

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

GROUNDWATER MODEL
FUTURE CONDITIONS - OPERATION OF PURDOM UNIT 8

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
5.3.2-1

The oil handling and storage areas have spill containment. Physical and procedural methods for spill prevention and containment are identified in the Purdom Station's existing Facility Response Plan.

5.3.5 Measurement Programs

No measurement programs are proposed for either surface or groundwaters.

5.4 SOLID/HAZARDOUS WASTE DISPOSAL IMPACTS

5.4.1 Solid Waste

Generation of solid wastes is discussed in Section 3.7.1. Because all solid wastes generated on site will be disposed of at an off-site licensed landfill designed and permitted to accept such wastes, there will be no significant impacts from these wastes.

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5.4.2 Hazardous Wastes

As described in Section 3.7.2, there are no hazardous wastes routinely generated at the Purdom Station, and there will be no hazardous wastes with the proposed Unit 8. During unusual events such as chemical metal cleaning of a boiler or heat recovery system generator (HRSG), the specialty contractor performing the special activity will be responsible for disposing of any hazardous wastes (not presently anticipated) resulting from their activities.

5.5 SANITARY AND OTHER WASTE DISCHARGES

Sanitary wastes from the Purdom Station will continue to be sent to the City of St. Marks Wastewater Treatment Facility. There will be no other waste discharge systems. As the Purdom Station work force will decline slightly with the operation of Unit 8, the generation of sanitary wastes will also decline slightly. Thus, there will be no impacts from the sanitary or other waste discharge systems.

If Unit 8 is not permitted and constructed, the City of St. Marks will continue to discharge their effluent to the St. Marks River.

5.6 AIR QUALITY IMPACTS

5.6.1 Impact Assessment

5.6.1.1 Introduction

This section provides an air quality impact assessment for the Project as described in Chapter 3. It is a summary of the more detailed air quality analysis presented in the PSD Report, which is provided in Appendix 10.1.5 (Attachment PGS-06 to the air permit application).

This section provides a discussion of the pollutants analyzed and indicates which pollutants are subject to the new source review requirements of Rule 62-212.400(5), F.A.C. The modelling methodology used in the air quality impact assessment is described along with the meteorological data used as input. The emission parameters for the proposed Unit 8 are provided as well as the emission changes to existing units and the resulting net emission changes. Listings of emissions information for other sources included in the analyses are provided. The receptor grids used in the modelling are presented and the background concentrations used in the ambient air quality standards (AAQS) analyses are specified. Finally, the results of the modelling analyses are provided, with comparisons to the allowable Prevention of Significant Deterioration (PSD) increments, AAQS, and draft Florida Ambient Reference Concentrations (FARCs) (FDEP, 1995a) for hazardous air pollutants. An additional impacts analysis is included which summarizes air quality impacts due to induced growth; air quality impacts on vegetation, soils, and wildlife; and air quality impacts on visibility.

5.6.1.2 Project Description

General Description

The proposed Purdom Unit 8 Project will consist of the construction of a new combined cycle combustion turbine and cooling tower at the existing Purdom Generating Station. The new unit will provide a nominal 250 MW of new generating capacity to the site. The unit will fire pipeline quality natural gas as the primary fuel, with Number 2 (0.05% S) diesel fuel oil as the secondary fuel and will function as a base load unit, operating as many as 8,760 hours per year. The combustion turbine selected is a General Electric (GE) Model MS7231FA dry low NO_x unit. A simplified flow diagram (20° F, 60% relative humidity, sea level pressure) is provided in Figure 5.6.1-1. The site layout is depicted on Figures 3.1-1 and 3.1-2. The profile of Unit 8 is depicted on Figures 3.1-3.

During natural gas firing operations, NO_x emissions will be controlled through the use of staged combustion with GE dry low NO_x combustors. During fuel oil firing, NO_x emissions will be controlled by use of water injection to reduce peak flame temperature. SO_2 and sulfuric acid mist (H_2SO_4) emissions will be limited through the primary use of pipeline quality natural gas, the secondary use of Number 2 (0.05% S) diesel fuel oil, and through the "facility-wide cap," such that emissions of SO_2 do not exceed 80 tons per year. Carbon monoxide (CO), volatile organic compounds (VOCs) and particulate matter (TSP and PM_{10}) emissions will be controlled through combustion inlet air filtration, good combustion practices, and the primary use of natural gas.

IMAGE QUALITY

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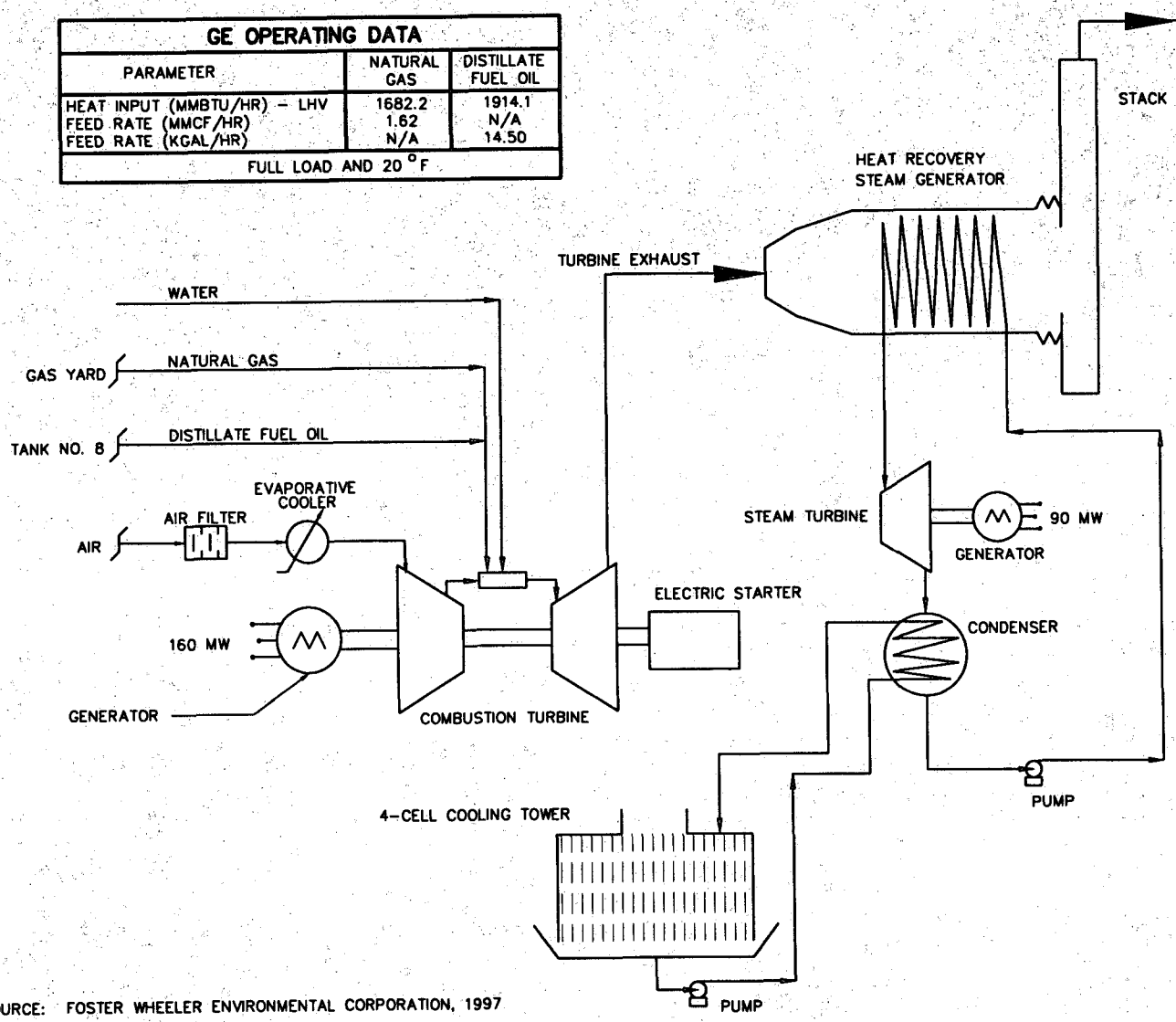
GE OPERATING DATA		
PARAMETER	NATURAL GAS	DISTILLATE FUEL OIL
HEAT INPUT (MMBTU/HR) - LHV	1682.2	1914.1
FEED RATE (MMCF/HR)	1.62	N/A
FEED RATE (KGAL/HR)	N/A	14.50
FULL LOAD AND 20 °F		

EU13 - EXHAUST PARAMETERS
EXHAUST TEMP. - 171 TO 203 °F
STACK HEIGHT - 200'
SO2 EMISSIONS - 80 TPY
NOx EMISSIONS - 467 TPY
OPACITY - 20% EXCEPT AS ALLOWED



SOURCE: FOSTER WHEELER ENVIRONMENTAL CORPORATION, 1997

CITY OF TALLAHASSEE

SIMPLIFIED PROCESS FLOW DIAGRAM

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 5.6.1-1

Trace metal emissions (e.g., lead (Pb), beryllium (Be), arsenic (As), mercury (Hg) and fluoride (Fl)) will be minimized by using natural gas as the primary fuel. Particulate matter emissions from the cooling tower will be controlled through the use of drift eliminators.

Proposed Unit 8 Emissions and Stack Parameters

The estimated stack emissions and exhaust parameters that are representative of the advanced combustion turbine design (General Electric, 1996) proposed for the Project are presented in Tables 5.6.1-1 through 5.6.1-6 for the nominal 160 MW combustion turbine unit. These tables present emissions and stack parameters for both the natural gas and fuel oil cases for three ambient temperatures: 20°F, 59°F, and 95°F. The GE data sheets which form the basis for these tables are contained in Appendix A of the PSD Report in SCA Section 10.1.5. These tables include emissions data for both the regulated criteria air pollutants (NO_x, CO, SO_2, PM_{10}, VOC and Pb) and the regulated noncriteria air pollutants listed in Table 212.400-2 of Rule 62-212.400, F.A.C. Together these are referred to as the PSD regulated pollutants.

A review of the combustion turbine design information in Tables 5.6.1-1 through 5.6.1-6 indicates that highest criteria air pollutant emission rates occur when burning Number 2 (0.05% S) diesel fuel oil. Combustion of natural gas and Number 2 (0.05% S) diesel fuel oil result in similar exhaust gas flow rates and stack exit temperatures, which directly influence plume rise.

The proposed Project will also include a cooling tower. The cooling tower will primarily utilize St. Marks River water for makeup and will emit some "drift" water droplets containing the same dissolved and suspended solids which exist in the makeup water, concentrated approximately 5 times. The drift droplets begin to evaporate as soon as they leave the cooling tower and some of the smaller droplets will evaporate completely before they hit the ground, leaving a very small particle (consisting of the dissolved and suspended solids from the makeup water). These particulates can be dispersed by the wind and are considered among the particulate matter emissions from the Project.

Proposed Project Emissions

The proposed Project includes the reduction of emissions from existing units as well as the addition of the Unit 8 combustion turbine and cooling tower. This section provides a summary of the Project emissions increases and decreases for the various PSD regulated pollutants. A discussion of the "facility-wide cap" for annual emissions of SO_2 and NO_x is also provided.

Current Plant Permits and Emissions

The Purdom Station currently has three valid FDEP air permits. Operation Permit No. A065-24827 establishes operating, testing, recordkeeping, and reporting requirements for the existing combustion turbines (GT1 and GT2), and limits maximum annual hours of operation for each combustion turbine. This permit does not establish any specific limitations on allowable emission rates, but it does so indirectly through a sulfur content limitation on the fuel which may be used. Permit No. AO65-242831 establishes operating, testing, recordkeeping and reporting requirements for Units 5, 6 and 7; establishes allowable emission rates for particulate matter (TSP) and SO_2; and provides for continuous operation of the boilers. The emission rate for particulate matter (TSP) is not to exceed 0.1 lb/mmBtu heat input during normal operation and

TABLE 5.6.1-1
COMBINED CYCLE UNIT 8
ESTIMATED[1] PERFORMANCE ON NATURAL GAS (100% LOAD)

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,682.2	1,563.2	1,467.7
Evaporative Cooler	Off	Off	On
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	31	29	26
Oxides of Nitrogen (NO_x) (at 15% O_2) (9ppmvd)	62	58	54
Sulfur Dioxide (SO_2) [3]	51	47	44
Particulate Matter (PM_{10})	9	9	9
Volatile Organic Compounds (non-methane HC)	3	2.8	2.6
Lead (Pb)	N/A	N/A	N/A
Asbestos	N/A	N/A	N/A
Beryllium (Be)	N/A	N/A	N/A
Mercury (Hg) [4]	1.31E-06	1.22E-06	1.14E-06
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl)	N/A	N/A	N/A
Sulfuric Acid Mist (H_2SO_4)[5]	5.1	4.7	4.4
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	190	193	198
Stack Gas Exit Velocity (ft/sec)	80	75	70

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Sulfur dioxide emissions based on 10 grains/100 SCF total sulfur in natural gas and 95% conversion.
(4) Emission factor from (EPRI, 1994)
(5) H_2SO_4 emissions based on 5% of sulfur in fuel.

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997

TABLE 5.6.1-2
COMBINED CYCLE UNIT 8
ESTIMATED [1] PERFORMANCE ON NATURAL GAS (75% LOAD)

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,360.7	1,274.4	1,202.1
Evaporative Cooler	Off	Off	Off
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	28	26	24
Oxides of Nitrogen (NO_x) (at 15% O_2) (9 ppmvd)	50	47	44
Sulfur Dioxide (SO_2)[3]	41	38	36
Particulate Matter (PM_{10})	9	9	9
Volatile Organic Compounds (non-methane HC)	2.4	2.2	2.2
Lead (Pb)	N/A	N/A	N/A
Asbestos	N/A	N/A	N/A
Beryllium (Be)	N/A	N/A	N/A
Mercury (Hg) [4]	1.06E-06	9.94E-07	9.38E-07
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl)	N/A	N/A	N/A
Sulfuric Acid Mist (H_2SO_4)[5]	4.1	3.8	3.6
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	171	185	190
Stack Gas Exit Velocity (ft/sec)	63	61	57

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Sulfur dioxide emissions based on 10 grains/100 SCF total sulfur in natural gas and 95% conversion.
(4) Emission factor from (EPRI, 1994)
(5) H_2SO_4 emissions based on 5% of sulfur in fuel.

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997.

TABLE 5.6.1-3
COMBINED CYCLE UNIT 8
ESTIMATED [1] PERFORMANCE ON NATURAL GAS (50% LOAD)[4]

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,083.5	1,020.4	965
Evaporative Cooler	Off	Off	Off
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	56	53	50
Oxides of Nitrogen (NO_x) (at 15% O_2) (9 ppmvd)	39	37	35
Sulfur Dioxide (SO_2)[3]	23	31	29
Particulate Matter (PM_{10})	9	9	9
Volatile Organic Compounds (non-methane HC)	2.8	2.6	2.8
Lead (Pb)	N/A	N/A	N/A
Asbestos	N/A	N/A	N/A
Beryllium (Be)	N/A	N/A	N/A
Mercury (Hg) [5]	8.45E-07	7.96E-07	7.53E-07
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl)	N/A	N/A	N/A
Sulfuric Acid Mist (H_2SO_4)[6]	3.3	3.1	2.9
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	171	176	183
Stack Gas Exit Velocity (ft/sec)	51	50	47

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Sulfur dioxide emissions based on 10 grains/100 SCF total sulfur in natural gas and 95% conversion.
(4) At 95°F, the minimum load at which 9 ppm can be achieved is approximately 55% rather than 50%.
(5) Emission factor from (EPRI, 1994).
(6) H_2SO_4 emissions based on 5% of sulfur in fuel.

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997.

TABLE 5.6.1-4
COMBINED CYCLE UNIT 8
ESTIMATED [1] PERFORMANCE ON NUMBER 2 (0.05% S) DIESEL FUEL OIL
(100% LOAD)

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,914.1	1,779.5	1,659.5
Evaporative Cooler	Off	Off	On
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	104	96	89
Oxides of Nitrogen (NO_x) (at 15% O_2) (42 ppmvd)[3]	347	322	297
Sulfur Dioxide (SO_2) [4]	98	92	85
Particulate Matter (PM_{10})	17	17	17
Volatile Organic Compounds (non-methane HC)	8	7.5	6.6
Lead (Pb)[5]	1.11E-01	1.03E-01	9.25E-02
Asbestos	N/A	N/A	N/A
Beryllium (Be)[5]	6.32E-04	5.87E-04	5.26E-04
Mercury (Hg)[5]	1.74E-03	1.62E-03	1.45E-03
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl) [6]	2.03	1.89	1.69
Sulfuric Acid Mist (H_2SO_4)[4]	10	10	9
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	198	201	205
Stack Gas Exit Velocity (ft/sec)	85	80	75

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Based on FBN content of 0.015% or less. Maximum FBN content = 0.03% = an additional 12ppmvd NO_x above 42 ppmvd.
(4) Sulfur dioxide and sulfuric acid mist based on firing Number 2 (0.05% S) diesel fuel oil; 95% S conversion to SO_2, 5% conversion to H_2SO_4.
(5) Emission estimates from U.S. EPA (1993).
(6) Emission estimate based on City of Tallahassee oil analysis

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997

TABLE 5.6.1-5
COMBINED CYCLE UNIT 8
ESTIMATED [1] PERFORMANCE ON NUMBER 2 (0.05% S) DIESEL FUEL OIL
(75% LOAD)

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,567	1,465.5	1,313.3
Evaporative Cooler	Off	Off	Off
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	101	97	94
Oxides of Nitrogen (NO_x) (at 15% O_2) (42 ppmvd)[3]	281	263	235
Sulfur Dioxide (SO_2)[4]	80	75	67
Particulate Matter (PM_{10})	17	17	17
Volatile Organic Compounds (non-methane HC)	8.5	8	7.5
Lead (Pb)[5]	9.09E-02	8.05E-02	7.62E-02
Asbestos	N/A	N/A	N/A
Beryllium (Be)[5]	5.17E-04	4.84E-04	4.33E-04
Mercury (Hg)[5]	1.43E-03	1.33E-03	1.20E-03
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl) [6]	1.66	1.55	1.39
Sulfuric Acid Mist (H_2SO_4)[4]	8	8	7
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	186	190	196
Stack Gas Exit Velocity (ft/sec)	65	62	59

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Based on FBN content of 0.015% or less. Maximum FBN content = 0.03% = an additional 12ppmvd NO_x above 42 ppmvd.
(4) Sulfur dioxide and sulfuric acid mist based on firing Number 2 (0.05% S) diesel fuel oil; 95% S conversion to SO_2, 5% conversion to H_2SO_4.
(5) Emission estimates from U.S. EPA (1993).
(6) Emission based on City of Tallahassee oil analysis

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997

TABLE 5.6.1-6
COMBINED CYCLE UNIT 8
ESTIMATED [1] PERFORMANCE ON NUMBER 2 (0.05% S) DIESEL FUEL OIL
(50% LOAD)

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,219.9	1,148.9	1027.3
Evaporative Cooler	Off	Off	Off
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	192	189	177
Oxides of Nitrogen (NO_x) (at 15% O_2) (42pmvd)[3]	217	204	182
Sulfur Dioxide (SO_2)[4]	62	60	53
Particulate Matter (PM_{10})	17	17	17
Volatile Organic Compounds	12.5	12.5	12.5
Lead (Pb)[5]	7.08E-02	6.6E-02	5.96E-02
Asbestos	N/A	N/A	N/A
Beryllium (Be)[5]	4.03E-04	3.79-04	3.39E-04
Mercury (Hg)[5]	1.11E-03	1.05E-03	9.35E-04
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl)[6]	1.29	1.22	1.09
Sulfuric Acid Mist (H_2SO_4)[4]	7	6	6
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	176	181	188
Stack Gas Exit Velocity (ft/sec)	50	51	48

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Based on FBN content of 0.015% or less. Maximum FBN content = 0.03% = an additional 12ppmvd NO_x above 42 ppmvd.
(4) Sulfur dioxide and sulfuric acid mist based on firing Number 2 (0.05% S) diesel fuel oil; 95% S conversion to SO_2, 5% conversion to H_2SO_4.
(5) Emission estimates from U.S. EPA (1993).
(6) Emission based on City of Tallahassee oil analysis

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997

0.3 lb/mmBtu during certain operating conditions (soot blowing) when firing Number 6 fuel oil. The maximum allowable emission rate for SO_2 is 1.87 lb/mmBtu. The Title V Operating Permit Application requests an SO_2 emission limit of 1.3 lb/mmBtu for Units 5 and 6 applicable to the liquid fuel oil portion of total heat input. Permit No. 1290001-002-AC establishes operating, testing, recordkeeping and reporting requirements for the auxiliary boiler. It limits the boiler to operation when the existing Units 5, 6, and 7 are not operating and further limits annual operations to 2,000 hours. The NSPS recordkeeping and reporting requirements of 40 CFR 60, Subpart Dc apply to the auxiliary boiler.

Table 5.6.1-7 presents the permitted (allowable) emission rates in tons per year for Units 5 through 7 and the two existing combustion turbines (GT1 and GT2) in accordance with the particulate matter and SO_2 limitations contained in the respective operating permits. This table also presents past actual annual emissions of particulate matter, SO_2, NO_x, CO, VOC, and Pb, as well as the other pollutants covered by the PSD regulations (Rule 62-212.400 F.A.C.). This table includes emissions generated by the three boilers and two existing combustion turbines based on actual operation and fuel usage data averaged over the last two years.

Proposed Project Net Emission Changes

As indicated earlier, the Project includes the reduction of emissions from existing units to offset the emissions of some of the pollutants associated with Unit 8. Units 5 and 6 will be permanently shut down early and their emissions will cease. In addition, federally enforceable emissions caps for SO_2 and NO_x covering the proposed Unit 8, existing Unit 7, the existing combustion turbines (GT1 and GT2), and the new auxiliary boiler are being requested. These "facility-wide caps" will require annual emissions of SO_2 and NO_x to remain at or below current actuals of those pollutants from Units 5, 6 and 7, and from the existing combustion turbines (GT1 and GT2), as indicated in Table 5.6.1-7.

In order to determine the "worst case" annual emissions from the Project under the proposed facility-wide caps, eleven potential operating scenarios were identified. These scenarios, while not intended to represent limits on the facility, are believed to bracket the expected operating ranges of the individual units at the site. In all these scenarios, the two existing combustion turbines (GT1 and GT2) were assumed to operate at the same level as they have in the most recent two years (August 1994 through July 1996). Thus, their pollutant emissions have been assumed to be constant, except for SO_2 (where a decrease is expected as a result of a change from 0.4% S to 0.05% S fuel). The new auxiliary boiler was conservatively assumed to operate at its permitted limit of 2,000 hours per year and the cooling tower was conservatively assumed to operate at full capacity. The variables in these scenarios were fuel type and operating hours of Units 7 and 8. The hours of operation will be limited by the proposed facility-wide caps for SO_2 and NO_x. A summary of the scenarios is provided in Table 5.6.1-8. The details are presented in the PSD application which is included as Appendix 10.1.5. Table 5.6.1-9 presents a summary of the proposed Project net emission changes. Table 5.6.1-10 provides estimates of maximum future emissions of the hazardous air pollutants.

TABLE 5.6.1-7
Recent Air Pollutant Emissions (Allowables and Actuals)(14) (tons/year)

	UNIT 5				UNIT 6				UNIT 7				GT1 & GT2(16, 17)				UNITS 5, 6, 7 & GTs	
Pollutant	Actual Fuel Oil	Actual Nat. Gas	Actual Totals	Allowable Totals(1)	Actual Fuel Oil	Actual Nat. Gas	Actual Totals	Allowable Totals(1)	Actual Fuel Oil	Actual Nat. Gas	Actual Totals	Allowable Totals(1)	Actual Fuel Oil	Actual Nat. Gas	Actual Totals	Allowable Totals(1)	Actual Totals	Allowable Totals(1)
Particulate Matter (TSP)(2)(3)	0.01	1.24	1.25	164.30	0.17	1.22	1.39	164.30	2.30	5.28	7.58	340.00	0.04	0.39	0.43	NR	10.65	668.60(18)
PM_{10}	0.01	1.24	1.25	164.30	0.17	1.22	1.39	164.30	2.30	5.28	7.58	340.00	0.04	0.39	0.43	NR	10.65	668.60(18)
Sulfur Dioxide (5)	0.30	0.22	0.52	1710.00(4)	3.53	0.22	3.75	1710.00(4)	74.60	0.93	75.53	5100.00	0.23	0.01	0.24	687.61	80	9207.61
Nitrogen Oxides(6)	0.05	68.08	68.13	NR	1.44	139.22	140.66	NR	(15)	(15)	251.24	NR	0.50	5.96	6.46	NR	467	NR
Carbon Monoxide(7)	0.01	9.90	9.91	NR	0.11	10.13	10.24	NR	2.24	42.24	44.48	NR	0.04	1.49	1.53	NR	66.16	NR
Volatile Organic Compounds(8)	0.00	0.29	0.29	NR	0.02	0.30	0.32	NR	0.34	1.49	1.83	NR	0.01	0.32	0.33	NR	2.77	NR
Lead(9)	3.3E-5	NA	3.3E-5	NR	0.001	NA	0.001	NR	0.01	NA	0.01	NR	0.00	N/A	0.00	NR	0.011	NR
Asbestos	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	N/A	N/A	N/A	NR	NA	NR
Beryllium(10)	0.00	NA	0.00	NR	0.00	NA	0.00	NR	0.0003	NA	0.0003	NR	0.00	N/A	0.00	NR	0.0003	NR
Mercury(11)	5.4E-6	1.9E-7	5.6E-6	NR	1.0E-4	2.0E-7	1.0E-4	NR	0.002	8.2E-7	0.002	NR	6.59E-07	1.2-E-08	6.66E-07	NR	0.002	NR
Vinyl Chloride	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NR
Fluorides(12)	1.8E-4	NA	1.8E-4	NR	0.003	NA	0.003	NR	0.072	NA	0.072	NR	0.00	0.00	NA	NR	0.08	NR
Sulfuric Acid Mist(13)	0.01	0.03	0.04	NR	0.13	0.03	0.16	NR	2.71	0.11	2.82	NR	NA	NA	NA	NR	3.02	NR
Hydrogen Sulfide	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NR
Total Reduced Sulfur	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NR
Reduced Sulfur Compounds	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NR

Period of Record: August 1994-July 1996. All actual fuel usage data for Units 5 and 6 and data through March 1995 for Unit 7 is obtained from monthly generation reports. Fuel usage data for Unit 7 after March 1995 is based on the continuous emissions monitoring system (CEMS).

NR - No restrictions NA - No emissions information available or no emissions expected.

(1) Allowable totals based on emissions limitations contained in State of Florida Permit Numbers A065-242831 and A065-242827

(2) It is assumed that all PM emissions are that of PM_{10}.

(3) Actual PM emissions from the boilers for fuel oil are based on the most recent PM test results during both normal and sootblowing operations and actual fuel usage. PM emissions from the boilers for natural gas are based on an AP-42 factor and actual fuel usage.

(4) Allowable SO_2 emissions based on requested SO_2 emissions limitation of 1.3 lb/mmBtu.

(5) Actual SO_2 emissions for fuel oil are based on an AP-42 formula, percent sulfur in the fuel oil (as-burned analyses for the boilers) and actual fuel usage. SO_2 emissions for natural gas are based on the sulfur content (FGT data) and the actual natural gas usage.

(6) Actual NO_x emissions for fuel oil and natural gas for Units 5 and 6 are based on an AP-42 factor and actual fuel usage. NO_x emissions for Unit 7 are based on CEMS lb/mmBtu data and total actual fuel usage.

(7) Actual CO emissions are based on AP-42 factors and actual fuel usage.

(8) Actual VOC emissions are based on AP-42 factors and actual fuel usage.

(9) Actual lead emissions are based on AP-42 factors and actual fuel usage.

(10) Actual beryllium emissions are based on AP-42 factors and actual fuel usage.

(11) Actual mercury emissions for fuel oil are based on AP-42 factors and actual fuel usage. Actual mercury emissions for natural gas are based on an EPRI (1994) factor (no AP-42 factor available) and actual fuel usage.

(12) Actual fluoride emissions for boilers are based on an analysis of a fuel sample (no AP-42 factor available) for fluoride and actual fuel usage.

(13) Actual sulfuric acid mist emissions for boilers on fuel oil are based on the AP-42 factor for sulfur trioxide and actual fuel usage; actual sulfuric acid mist emission for boilers on natural gas are based on ten percent of sulfur dioxide and actual fuel usage.

(14) Actual emissions are based on current estimates and emission factors.

(15) The CEMS data on which actual NO_x emissions are based does not distinguish between oil and natural gas consumption.

(16) Actual fuel oil and natural gas emission rate values reflect the sum of emissions from both combustion turbines.

(17) Actual emissions are based on AP-42 factors and actual fuel usage

(18) Allowable totals shown do not include the particulate emissions from the two combustion turbines since Permit A065-242827 has no limit for particulates.

TABLE 5.6.1-8
FUTURE POTENTIAL OPERATING SCENARIOS
UNDER THE FACILITY-WIDE CAPS

Scenario	Hours of Operation				Controlling Pollutant(1)
	Unit 7		Unit 8		
	Fuel Oil	Natural Gas	Fuel Oil	Natural Gas	
1	126	0	0	8,760	SO_2
2	0	0	1,735	0	SO_2
3	137	0	0	0	SO_2
4	219	0	0	8,760	SO_2
5	0	2,852	0	8,760	NO_x
6	239	0	0	0	SO_2
7	0	6,409	0	0	NO_x
8	151	0	500	8,260	SO_2
9	0	1,928	500	8,260	NO_x
10	164	0	425	7,021	SO_2
11	0	2,600	425	7,021	NO_x

(1) Controlling pollutant is that pollutant whose emissions would reach the facility-wide cap under this scenario.
(2) Hours are estimated at full load operation.

Source: Foster Wheeler Environmental, 1997

Scenario 1	Unit 8 as controlling unit, operating 8,760 hours on natural gas/Unit 7 firing No. 6 oil SO_2 limit 1.87 lb/mmBtu (Unit 7 hours limited by SO_2 cap)
Scenario 2	Unit 8 as controlling unit, operating max hours on No. 2 fuel oil/no operation of Unit 7 (Unit 8 hours limited by SO_2 cap)
Scenario 3	Unit 7 as controlling unit, max hours on No. 6 fuel oil 1.87 lb/mmBtu/no operation of Unit 8 (Unit 7 hours limited by SO_2 cap)
Scenario 4	Unit 8 as controlling unit, operating 8,760 hours on natural gas/Unit 7 operating on No. 6 oil assume typical S content (approx 0.95 lb/mmBtu) (Unit 7 hours limited by SO_2 cap)
Scenario 5	Unit 8 as controlling unit, operating 8,760 hours on natural gas/Unit 7 operation on natural gas (Unit 7 hours limited by NO_X cap)
Scenario 6	Unit 7 as controlling unit, max hours on No. 6 fuel oil assume typical S content (approx 0.95 lb/mmBtu)/ no operation of Unit 8 (Unit 7 hours limited by SO_2 cap)
Scenario 7	Unit 7 as controlling unit, max hours on natural gas/ no operation of Unit 8 (Unit 7 hours limited by NO_X cap)
Scenario 8	Unit 8 as controlling unit, operating 8,260 hours on natural gas & 500 hr on No. 2 Oil/Unit 7 on No. 6 oil typical S content 1% (approx 0.95 lb/mmBtu) (Unit 7 hours limited by SO_2 cap)
Scenario 9	Unit 8 as controlling unit, operating 8,260 hours on natural gas & 500 hr on No. 2 oil/Unit 7 on natural gas (Unit 7 hours limited by NO_X cap)
Scenario 10	Unit 8 as controlling unit, operating 7,021 hrs on natural gas & 425 hr on No. 2 oil/Unit 7 on No. 6 oil assume typical S content 1% (approx 0.95 lb/mmBtu) (Unit 7 hours limited by SO_2 cap)
Scenario 11	Unit 8 as controlling unit (85% cap.) operating 7,021 hours on natural gas & 425 hr on No. 2 oil/Unit 7 on natural gas (Unit 7 hours limited by NO_X cap)

TABLE 5.6.1-9
MAXIMUM (WORST CASE) EMISSIONS AND NET EMISSIONS INCREASES FROM PROJECT

Pollutant	Annual Emissions (tons/year)	Scenario	Net Emissions Increase (tons/yr)
Carbon Monoxide (CO)	193	9	127
Nitrogen Oxides (NO_x)	467	7	0.0
Sulfur Dioxide (SO_2)	80	6	0.0
Ozone (VOCs)	14.7	9	11.9
Particulate Matter (TSP)	59.0	4	48.3
Particulate Matter (PM_{10})	59.0	4	48.3
Total Reduced Sulfur	N/A	N/A	N/A
Reduced Sulfur Compounds	N/A	N/A	N/A
Sulfuric Acid Mist (H_2SO_4)	8.7	2	5.6
Fluorides (Fl)	1.64	2	1.56
Vinyl Chloride	NA	N/A	N/A
Lead (Pb)	0.091	2	0.08
Mercury (Hg)	0.0024	2	0.0004
Asbestos	NA	N/A	N/A
Beryllium (Be)	0.00052	2	0.00022

NA - No emissions information available or no emissions expected.

Source: Foster Wheeler Environmental 1997

TABLE 5.6.1-10
MAXIMUM (WORST CASE) EMISSIONS OF HAZARDOUS AIR POLLUTANTS (UNIT 7, UNIT 8, GT1, GT2, COOLING TOWER AND AUX BOILER)

Pollutant	Maximum Estimated Emissions (tons/yr)
Arsenic (As)	8.59E-03
Cadmium (Cd)	3.53E-03
Chromium (Cr)	7.36E-02
Manganese (Mn)	5.17E-01
Nickel (Ni)	1.88E-00
Cobalt (Co)	1.43E-02
Antimony (Sb)	3.45E-02
Vanadium (V)	1.32E-01
Polycyclic Organic Material (POM)	3.76E-02
Benzo(a)pyrene (BaP)	6.36E-06
Benzene	6.21E-03
Toluene	2.01E-02
Selenium (Se)	8.30E-03
Hydrochloric Acid (HCl)	1.18E+01
Dioxin (2,378 TCDD)	1.39E-08
Formaldehyde (HCOH)	2.61E-01

Source: Foster Wheeler Environmental, 1997

5.6.1.3 Air Quality Review Requirements and Applicability

The following discussion pertains to the federal and state air quality regulatory requirements and their applicability to the Project. These regulations must be satisfied before the proposed facility can be constructed and begin operation.

National and Florida Ambient Air Quality Standards (NAAQS/FAAQS)

The applicable federal (NAAQS) and Florida (FAAQS) ambient air quality standards and PSD increments are presented in Table 5.6.1-11. These ambient air quality standards have been promulgated for six pollutants, known as the "criteria" pollutants: NO_2, CO, SO_2, PM_{10}, O_3, and Pb. The primary NAAQS/FAAQS were promulgated to protect the public health, and the secondary NAAQS/FAAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Wakulla County is an "attainment" area for all criteria pollutants, meaning that existing concentrations are below the primary and secondary standards.

PSD Increments/Classifications

In promulgating the 1977 Clean Air Act (CAA) Amendments, Public Law 95-95, Congress specified that certain increases above an air quality "baseline concentration" level for SO_2 and TSP would constitute "significant deterioration." The magnitudes of the allowable increases, or "increments," depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications were designated based on criteria established in the CAA Amendments of 1977. Initially, Congress designated PSD areas as Class I (international parks, national wilderness areas, memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would allow greater deterioration than Class II areas, were designated. EPA subsequently incorporated the requirements for classifications and area designations into the PSD regulations.

On October 17, 1988, the EPA promulgated regulations to prevent significant deterioration due to NO_x emissions and established PSD increments for NO_2 concentrations. On June 3, 1993, EPA promulgated regulations which revised the PSD increments for particulate matter from TSP to PM_{10}. This change became effective on June 3, 1994. The allowable PSD increments for SO_2, PM_{10}, and NO_2 are presented in Table 5.6.1-11. The FDEP has adopted the EPA PSD classification system and the allowable PSD increments for SO_2, PM_{10}, and NO_2.

Most of Wakulla County and the surrounding counties are designated as PSD Class II areas for SO_2, PM_{10}, and NO_2. The Purdom Station is located approximately 0.6 km north of the nearest boundary of the St. Marks National Wilderness Area and 28.6 km east of the nearest boundary of the Bradwell Bay National Wilderness Area, the nearest PSD Class I areas. The National Wilderness Areas are those portions of the St. Marks National Wildlife Refuge and Apalachicola National Forest which have been officially designated as wilderness. The location of the Purdom Station with respect to these two Class I areas is depicted in Figure 5.6.1-2.

TABLE 5.6.1-11
AMBIENT AIR QUALITY STANDARDS
AND PSD INCREMENTS

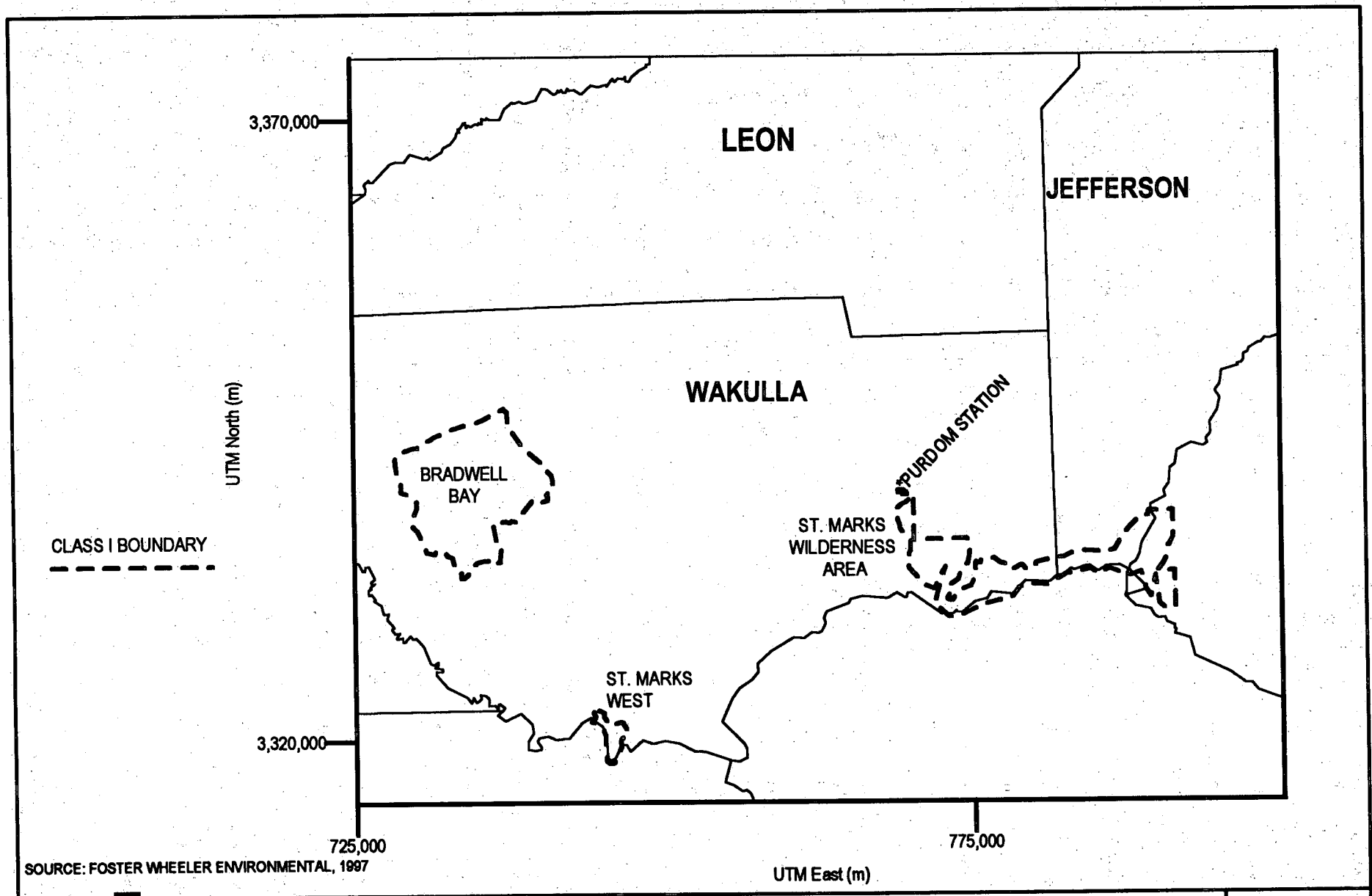
Pollutant	Averaging Time	Federal NAAQS ($\mu g/m^3$)	Florida FAAQS ($\mu g/m^3$)	Class I PSD Increment ($\mu g/m^3$)	Class II PSD Increment ($\mu g/m^3$)
Carbon Monoxide (CO)	1-hour	40,000	40,000	N/A	N/A
	8-hour	10,000	10,000	N/A	N/A
Nitrogen Dioxide (NO_2)	Annual	100	100	2.5	25
Sulfur Dioxide (SO_2)	3-hour	1,300	1,300	25	512
	24-hour	365	260	5	91
	Annual	80	60	2	20
Particulate Matter (PM_{10})	24-hour	150	150	8	30
	Annual	50	50	4	17
Ozone (O_3)[(1)]	1-hour	235	235	N/A	N/A
Lead (Pb)	Calendar Quarter	1.5	1.5	N/A	N/A

(1) Ozone values are associated with emissions of VOCs and NO_x.

Note: Short-term standards and increments (i.e., those with averaging times less than quarterly) can be exceeded once per year and still be in compliance.

N/A = No PSD increments exist for these pollutants.
$\mu g/m^3$ = micrograms per cubic meter

Sources: 40 CFR 50; Rule 62-204.260, F.A.C.; Rule 62-204.240, F.A.C.



SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

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PURDOM UNIT 8
CLASS I AREAS - LOCATION MAP
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 5.6.1-2

PSD Review Requirements

Under the EPA and FDEP PSD permit review requirements, all major new or modified existing sources of air pollutants located in attainment areas and regulated under the Clean Air Act (CAA) must be reviewed and approved. A "major stationary source" is defined as any one of 28 specified source categories which has the potential to emit 100 tons per year (TPY) or more, or any other stationary source which has the potential to emit 250 TPY or more of any air pollutant regulated under the CAA. Fossil fuel-fired steam electric plants of more than 250 mmBtu/hr of heat input comprise one of the 28 specified source categories. Thus, the existing Purdom steam units meet the 100 TPY threshold criterion. The term "potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. The potential emissions from the existing units exceed 100 TPY. Therefore, the Purdom Station is considered an existing major stationary source. Modifications to major sources are considered "major modifications" if they will increase the potential to emit by more than the PSD significant emission rates listed in Table 212.400-2 of Rule 62-212.400, F.A.C., or by any amount if the source is located within 10 km of a Class I area and the impact would be greater than 1 $\mu g/m^3$ (24-hour average) in the Class I area (Rule 62-212.400(2)(d)4a(ii), F.A.C.). These PSD significance levels are summarized in Table 5.6.1-12. The net changes in emissions from the proposed Project will exceed the PSD significant emission thresholds for some pollutants (CO, PM_{10}, and TSP) and thus subject the Project to PSD review for these pollutants. Nevertheless, a PSD analysis is being done for all pollutants expected to be emitted.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified source located in an attainment area. The PSD regulations are contained in Rule 62-212.400, F.A.C. Major sources and modifications are required to undergo the following analyses under PSD review for each air pollutant emitted in significant quantities:

- A control technology analysis;
- An air quality impacts analysis; and
- An additional impacts analysis.

In addition to these analyses, a new source must also be reviewed with respect to Good Engineering Practice (GEP) stack height regulations (EPA, 1985a) adopted by FDEP (Rule 62-210.550, F.A.C.), New Source Performance Standards (NSPS), and any state emission standards.

5.6.1.4 Air Quality Modelling Approach

This section summarizes the air quality modelling protocol and input parameters utilized in the air impact determinations presented in Section 5.6.1.12. Descriptions of the models, meteorology, options selected, listings of modelling parameters for the proposed Project, receptor locations, and step-by-step procedures that were used to develop the necessary projected impacts are discussed.

TABLE 5.6.1-12
MAXIMUM ANNUAL NET CHANGE IN EMISSIONS AND PSD SIGNIFICANCE VALUES

Pollutant	Net Increase In Emissions[1] (TPY)	PSD Significance Criterion (TPY)	PSD Review Required (Yes/No)
Carbon Monoxide (CO)	127	0[2]	Yes
Nitrogen Oxides (NO_x)	0	0[2]	No
Sulfur Dioxide (SO_2)	0	0[2]	No
Particulate Matter (PM_{10})	48.3	15	Yes
Total Suspended Particulates (TSP)	48.3	25	Yes
Volatile Organic Compounds (VOCs)	11.9	40	No
Lead (Pb)	0.08	0.6	No
Asbestos	N/A	0.007	No
Beryllium (Be)	0.00022	0.0004	No
Mercury (Hg)	0.0004	0.1	No
Vinyl Chloride	N/A	1	No
Total Fluorides (Fl)	1.6	3	No
Sulfuric Acid Mist (H_2SO_4)	5.6	7	No
Total Reduced Sulfur	N/A	10	No
Reduced Sulfur Compounds	N/A	10	No

(1) Based on worst case scenarios.

(2) Due to the proximity to the Class I area, lower criteria apply for those pollutants with a minimum projected 24-hour average impact of 1.0 mg/m^3 or more in the Class I area, as per Rule 62-212.400(2)(f)(1), F.A.C.

NA = No emissions information available or no emissions expected.
TPY = Tons per year

Source: Foster Wheeler Environmental, 1997

Pollutants Covered

The required modelling analysis is limited to those pollutants that were determined to be subject to PSD review. As indicated in Table 5.6.1-12, these pollutants include particulate matter (TSP and PM_{10}) and CO. Although the proposed source emissions of particulate matter (TSP) are shown in Table 5.6.1-12 to be above the PSD significant emission rates, there are no ambient air quality standards nor PSD significant impact levels or increments for that pollutant. Hence, there is no required air quality impact assessment for particulate matter (TSP). Required conventional modelling for compliance with AAQS and PSD increments was, therefore, restricted to PM_{10} and CO for AAQS, and to PM_{10} for PSD. However, in the interest of providing a more complete picture of Project impacts, the City voluntarily chose to model the proposed Project for all PSD regulated pollutants with quantifiable emissions for which ambient standards, PSD increments or draft FARCs exist. Therefore, the PSD regulated pollutants covered by some phase of the modelling analyses include: SO_2, NO_2, particulate matter (TSP and PM_{10}), CO, Pb, Be, Hg, and Fl. The PSD increment consumption modelling covered SO_2, NO_2, and PM_{10}. Modelling for compliance with AAQS covered SO_2, NO_2, PM_{10}, CO, and Pb. The remaining PSD regulated pollutants, Be, Hg, and Fl, were covered in the modelling of hazardous air pollutants (HAPs). Certain HAPs are not subject to PSD review but are covered by the draft FARCs (FDEP, 1995a). Those for which emission estimates were available for this Project (antimony, arsenic, cadmium, chromium, cobalt, manganese, nickel, selenium, vanadium, polycyclic organic matter, benzo-a-pyrene, benzene, toluene, hydrochloric acid, dioxin, and formaldehyde (HCOH)) were also included in the air quality impact analysis.

General Modelling Approach

A modelling protocol was prepared by the applicant and submitted to FDEP for review (COT, 1996). The FDEP approved the modelling protocol prior to commencement of the air quality impact assessment (FDEP, 1996c).

The air quality impact assessment consisted of a proposed source significant impact area analysis, a PSD increment consumption analysis, an ambient air quality standards impact analysis, and an additional impacts analysis. In addition, the need for ambient monitoring was evaluated. These analyses are discussed in greater detail below. The modelling approach followed EPA and FDEP modelling guidelines for determining compliance with applicable PSD increments, AAQS, and the draft FARCs. EPA modelling guidance is provided in the Guideline on Air Quality Models (40 CFR 51, Appendix W) as well as the Draft New Source Review Workshop Manual (EPA, 1990a). FDEP guidance on conducting the analyses is provided in Rule 62-212.400, F.A.C.

The general modelling approach for each air quality impact analysis commenced with a significance level impact phase. Then screening and refined multi-source modelling phases were conducted. The major difference between the latter two phases is the receptor grid used when predicting concentrations and the number of meteorological data periods evaluated. In general, concentrations for the screening phase were predicted using a coarse mesh receptor grid and a five-year meteorological data base. The screening phase identified the critical receptors associated with the highest and highest second-high short-term concentrations for all applicable

pollutants and averaging periods. The predicted concentrations at those critical receptors were evaluated in greater detail in the refined phase of the analysis.

The refined phase of the analysis was performed by predicting concentrations using a fine mesh receptor grid centered over each of the critical receptors identified in the screening phase of the modelling analysis. This approach was used to ensure that valid highest second-high (critical) short-term concentrations were obtained for comparison to applicable air quality standards and PSD increments.

Dispersion Model Selection and Options

The most current version of the Industrial Source Complex (ISC3) dispersion model (Version 96113) available was used to evaluate the emissions from the proposed units. This model was downloaded from the EPA Technology Transfer Network (TTN), Support Center for Regulatory Air Models (SCRAM) bulletin board. The model and its use are covered in the Users Guide (EPA, 1995a). A description of the model is presented in Appendix 10.6.6.

The ISC3 short term (ISCST3) model has rural and urban options which affect the wind speed profile exponent law, dispersion rates, and mixing-height formulations used in calculating ground-level concentrations. The criteria used to determine when the rural or urban mode is appropriate are based on land use near the proposed plant's surroundings (Auer, 1978). If the land use is classified as heavy industrial, light-moderate industrial, commercial, or compact residential for more than 50 percent of the area within a 3 km radius centered on the proposed source, the urban option should be selected. Otherwise, the rural option is more appropriate.

Based on the use of USGS topographic maps, it has been concluded that the land use within a 3 km radius of the Purdom Station is consistent with the use of the rural rather than the urban options.

The regulatory default mode for all of the program control parameters was used in the ISCST3 model as approved by FDEP. The ISCST3 model was applied without terrain adjustment data because the area in which the Purdom Generating Station is located has very little relief (e.g., a net change in ground level elevation in the range of only 10-20 feet). The ISCST3 model's building downwash options were applied to all on site sources, but since the stack for the proposed Unit 8 will be greater than calculated GEP stack height (but within the allowed 65 meter default value), downwash modelling was not required for Unit 8.

The air quality impact assessment for particulate matter assumed that all particulate matter emissions were PM_{10} emissions. This assumption simplified the particulate matter modelling analysis (i.e., no separate analyses for TSP and PM_{10}) and resulted in a potentially conservative approach to modelling PM_{10} impacts.

5.6.1.5 Meteorological Data

The air quality modelling analysis used hourly preprocessed National Weather Service (NWS) surface meteorological data from Tallahassee, Florida and concurrent twice-daily mixing heights from Apalachicola, Florida for the years 1985 to 1989. These are the locations and years recommended by FDEP. The preprocessed hourly meteorological data file for each year of record used in the analysis obtained from FDEP contained randomized wind direction, wind speed,

ambient temperature, atmospheric stability using the Turner (1970) stability classification scheme, and mixing heights. The anemometer height of 6.7 meters, used in the modelling analysis, was obtained from NWS Local Climatological Data summaries for Tallahassee. A summary of wind direction and wind speed frequencies stratified by atmospheric stability class for this five year meteorological data set is contained in Appendix 10.5.6.

5.6.1.6 Emissions Inventory - Unit 8

Short-Term Emissions - PSD Regulated Pollutants

The emissions inventories for the proposed Unit 8 for both the primary fuel (natural gas) and the secondary fuel (Number 2 (0.05% S) diesel fuel oil) are presented in Tables 5.6.1-13 and 5.6.1-14. The pollutant emission rates shown in these tables are representative of BACT as demonstrated in Section 3.4.

The proposed source worst-case fuel/load/temperature scenarios were determined by first conducting preliminary modelling. Preliminary modelling runs were conducted using one year of meteorology (the first year of the data set provided by FDEP - 1985) at three ambient temperatures (95°F, 59°F, and 20°F) and three combustion turbine loads (100%, 75%, and 50%) for both clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil. Thus, there were a total of 18 preliminary modelling runs conducted using the 1985 meteorological data set. A summary of the preliminary modelling runs is presented in Section 5.6.1.12. As a result of these preliminary runs, it was determined that the 20°F and 50 percent load while firing Number 2 (0.05% S) diesel fuel oil combination produced the "worst case" predicted ground-level ambient air quality impacts for the short-term averaging periods for all pollutants. The emission rates and stack parameters for these conditions are highlighted in bold type in Table 5.6.1-14.

Long-Term Emissions - PSD Regulated Pollutants

The annual emissions from the proposed Unit 8 are limited by the need to maintain annual emissions of SO_2 and NO_x within facility-wide caps. Depending upon fuel choice, availability, and the need to run other units, Unit 8 could run continuously or very infrequently. If Unit 8 were to be utilized as much as possible, it could run the full year (8,760 hours) when firing natural gas or for up to 1,735 hours at full load when firing Number 2 (0.05% S) diesel fuel and stay within the facility-wide caps for SO_2 and NO_x. The annualized emissions for these two cases are presented in Table 5.6.1-15. As indicated, the stack parameters associated with 59°F and 100% load were used for these tables and the associated annual modelling, as they are more representative of annual average conditions than the 20°F, 50% load cases used for the short-term modelling.

Emissions of Hazardous Air Pollutants

The emission rates from Unit 8 for the draft FARCs were estimated for both short-term and long-term averaging periods. Short-term emission rates were based upon firing Number 2 (0.05% S) diesel fuel oil and the 20°F, 50% load stack parameters were used. Long-term emission rates were based on Number 2 (0.05% S) diesel fuel oil firing (up to 1,735 hours) and

TABLE 5.6.1-13
PROPOSED UNIT 8 SHORT-TERM EMISSIONS INVENTORY
NATURAL GAS FIRING

Load (%)	Ambient Temp (°F)	Ts (°K)	Vs (m/sec)	Emission Rates (grams/sec)								
				SO_2 [1]	PM/PM_{10} [2]	NO_x	CO [2]	Pb	Be	Fl	H_2SO_4	Hg
100	20	361	24.54	6.37	1.14	7.82	3.91	N/A	N/A	N/A	0.64	1.33E-06
	59	362	22.99	5.91	1.14	7.31	3.66	N/A	N/A	N/A	0.59	1.22E-06
	95	365	21.24	5.55	1.14	6.81	3.28	N/A	N/A	N/A	0.56	1.14E-06
75	20	356	19.34	5.15	1.14	6.31	3.53	N/A	N/A	N/A	0.52	1.06E-06
	59	358	18.59	4.82	1.14	5.93	3.28	N/A	N/A	N/A	0.48	9.94E-07
	95	361	17.52	4.55	1.14	5.55	3.03	N/A	N/A	N/A	0.46	9.38E-07
50	20	350	15.63	4.10	1.14	4.92	7.06	N/A	N/A	N/A	0.41	8.45E-07
	59	353	15.61	3.86	1.14	4.67	6.68	N/A	N/A	N/A	0.39	7.96E-07
	95	357	14.35	3.65	1.14	4.41	6.31	N/A	N/A	N/A	0.36	7.53E-07

(1) Based on 10 grains/100 SCF total sulfur in natural gas.

(2) Pollutants for which PSD is triggered.

Stack UTM Coordinates: 769.611 km - East
3,339.767 km - North

Stack height = 60.97 m
Ts - Stack exit temperature (see table above)
Vs - Stack exit velocity (see table above)
Stack diameter = 5.0 m

N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1996

TABLE 5.6.1-14
PROPOSED UNIT 8 SHORT-TERM EMISSIONS INVENTORY
NUMBER 2 (0.05% S) DIESEL FUEL OIL FIRING

Load (%)	Ambient Temp (°F)	Ts (°K)	Vs (m/sec)	Emission Rates (grams/sec)								
				SO_2[1]	PM/PM_{10}[2]	NO_x	CO[2]	Pb	Be	Fl	H_2SO_4	Hg
100	20	365	25.90	12.36	2.14	43.76	13.12	1.40E-02	7.97E-05	2.56E-01	1.26	1.74E-03
	59	367	24.24	11.60	2.14	33.17	12.11	1.30E-02	7.41E-05	2.38E-01	1.26	1.62E-03
	95	368	22.20	10.34	2.14	29.64	10.97	1.17E-02	6.64E-05	2.13E-01	1.14	1.45E-03
75	20	359	19.66	10.09	2.14	35.44	12.74	1.15E-02	6.52E-05	2.10E-01	1.01	1.43E-03
	59	361	19.03	9.46	2.14	33.17	12.23	1.07E-02	6.10E-05	1.96E-01	1.01	1.33E-03
	95	364	18.01	8.45	2.14	29.64	11.85	9.61E-03	5.47E-05	1.76E-01	0.88	1.20E-03
50	**20**	**353**	**15.38**	**7.82**	**2.14**	**27.37**	**24.21**	**8.92E-03**	**5.08E-05**	**1.63E-01**	**0.88**	**1.11E-03**
	59	356	15.50	7.56	2.14	25.73	23.84	8.40E-03	4.78E-05	1.54E-01	0.76	1.05E-03
	95	360	14.77	6.68	2.14	22.95	22.32	7.51E-03	4.28E-05	1.37E-01	0.76	9.35E-04

(1) Based on 0.05% sulfur in fuel oil.

(2) Pollutants for which PSD is triggered.

Stack UTM Coordinates: 769.611 km - East
3,339.767 km - North

Stack height = 60.97 m

Ts - Stack exit temperature (see table above)
Vs - Stack exit velocity (see table above)
Stack diameter = 5.0 m

Source: Foster Wheeler Environmental, 1996

TABLE 5.6.1-15
PROPOSED UNIT 8 LONG-TERM EMISSIONS INVENTORY
NATURAL GAS AND NUMBER 2 (0.05% S) DIESEL FUEL OIL FIRING
(59° F 100% LOAD)

Pollutant	Natural Gas[1]			Fuel Oil[2]		
	tons/year	lb/hr	grams/sec	tons/year	lb/hr	grams/sec
Sulfur Dioxide (SO_2)	6[3]	1.4[3]	0.2[3]	80[4]	18.3[4]	2.3[4]
Particulate Matter (PM_{10})	39.4	9	1.1	14.7	3.4	0.4
Oxides of Nitrogen (NO_x)	254	58	7.3	279.3	63.8	8
Lead (Pb)	0	0	0.00	8.95E-02	2.04E-02	2.58E-03

(1) Assumes 8,760 hrs of operation.

(2) Assumes 1,735 hours of full load operation based on SO_2 facility-wide cap.

(3) Based on 0.32 grains/100 scf total sulfur in natural gas, annual average

(4) Based on 0.05% sulfur in fuel oil

Stack height = 60.97 m
Stack diameter = 5.0 m
Stack exit velocity = 22.99 m/s on natural gas
= 24.24 m/s on fuel oil
Stack exit temperature = 362°K on natural gas
= 367°K on fuel oil

Stack UTM Coordinates: 769.611 km East
3,339.767 km North

Source: Foster Wheeler Environmental, 1997

59°F, 100% load stack parameters. Emissions of formaldehyde were treated differently since emissions of this pollutant are higher on natural gas than on fuel oil. The estimated short-term and long-term emission rates for the draft FARC pollutants are summarized in Table 5.6.1-16.

5.6.1.7 Emissions Inventory - The Project

As indicated in Section 5.6.1.2, the "worst-case" emissions from the Project were determined based on an evaluation of 11 possible operating scenarios. The Project includes the permanent shut down of Units 5 and 6, reduced operation of existing Unit 7, and the continued operation of the existing combustion turbines (GT1 and GT2) and the auxiliary boiler, in addition to the operation of Unit 8. The 11 operating scenarios were developed to bracket the expected operating ranges of the individual operating units at the Purdom Station while maintaining compliance with the proposed facility-wide caps on emissions of SO_2 and NO_x. The existing combustion turbines, the auxiliary boiler, and the cooling tower were not included in the operating scenarios as their operations were assumed to remain constant for all scenarios.

The emission rates used in the different modelling analyses vary because these different analyses are based on comparisons of future emissions with current or PSD baseline emissions, as appropriate. The current emissions were based on the period August 1994 through July 1996, the latest two-year period for which data were available when this analysis commenced (see Appendix B of the PSD Report). The baseline emissions are pollutant specific due to differences in the baseline dates. For SO_2 and PM_{10}, the baseline period was calendar years 1976 and 1977, the two year period preceding the December 27, 1977 minor source PSD baseline date for SO_2 and PM_{10}. For NO_2, the baseline period was calendar years 1986 and 1987, the two year period preceding the March 28, 1988 PSD baseline date for NO_2. As Units 1 through 4 have been permanently shut down, Units 5 and 6 will be permanently shut down, and the existing combustion turbines will have their fuel sulfur content reduced, their emission reductions expand the increment for PSD modelling purposes.

Appendix C of the PSD Report contains copies of the spreadsheets and calculations used to determine the short-term and long-term emission rates for the various units associated with the Project for the various modelling analyses. These emission rates are summarized in Tables 5.6.1-17 and 5.6.1-18 for the PSD regulated pollutants and the FARCs, respectively.

5.6.1.8 Emissions Inventory - Off-site Sources

The results of the proposed source significant impact area analysis (which is described in Section 5.6.1.12) indicated that the proposed facility's air quality impacts could be above the significant impact levels only for PM_{10} and NO_2 at off-site locations. The ISCST3 projected impact area for PM_{10} and NO_2 was a 0.3 km radius circle from the proposed source. Typically only the background sources for these two pollutants would need to be considered, but the City of Tallahassee chose to expand this analysis to all the criteria pollutants. As a result, a full emissions inventory was requested from FDEP.

An inventory of sources in the surrounding counties of Gadsden, Leon, Jefferson, Wakulla and Taylor was provided by the FDEP (1996a).

TABLE 5.6.1-16
PROPOSED UNIT 8 DRAFT FARCS EMISSIONS INVENTORY

Pollutant	Short-Term[1]		Long-Term[2]		
	lb/hr	grams/sec	tons/year	lb/hr	grams/sec
Arsenic (As)	5.98E-03	7.54E-04	7.56E-03	1.73E-03	2.18E-04
Beryllium (Be)	4.03E-04	5.08E-05	5.09E-04	1.16E-04	1.47E-05
Cadmium (Cd)	5.12E-03	6.46E-04	6.48E-03	1.48E-03	1.87E-04
Chromium (Cr)	5.73E-02	7.23E-03	7.26E-02	1.66E-02	2.09E-03
Lead (Pb)	7.08E-02	8.92E-03	8.95E-02	2.04E-02	2.58E-03
Manganese (Mn)	4.15E-01	5.23E-02	5.25E-01	1.20E-01	1.51E-02
Mercury (Hg)	1.11E-03	1.40E-04	1.40E-03	3.21E-04	4.04E-05
Nickel (Ni)	1.46E+00	1.85E-01	1.85E+00	4.23E-01	5.33E-02
Cobalt (Co)	1.11E-02	1.40E-03	1.40E-02	3.21E-03	4.04E-04
Antimony (Sb)	2.68E-02	3.38E-03	3.40E-02	7.75E-03	9.78E-04
Vanadium (V)	5.37E-03	6.77E-04	6.79E-03	1.55E-03	1.96E-04
Polycyclic Organic Matter (POM)	2.93E-02	3.69E-03	3.71E-02	8.46E-03	1.07E-03
Benzo(a)Pyrene (BaP)	4.95E-06	6.24E-07	6.27E-06	1.43E-06	1.80E-07
Benzene	1.43E-03	1.81E-04	1.81E-03	4.14E-04	5.22E-05
Toluene	1.29E-02	1.63E-03	1.63E-02	3.73E-03	4.70E-04
Selenium (Se)	6.47E-03	8.15E-04	8.18E-03	1.87E-03	2.36E-04
Hydrochloric Acid (HCl)	9.22E+00	1.16E+00	1.17E+01	2.66E+00	3.36E-01
Hydrogen Fluoride (HF)	1.29E+00	1.63E-01	1.64E+00	3.74E-01	4.71E-02
Hydrogen Dioxin (378TCDD)	1.08E-08	1.36E-09	1.37E-08	3.12E-09	3.94E-10
Formaldehyde (HCOH)	2.61E-02	3.29E-03	4.96E-02	1.13E-02	1.43E-03

(1) Fuel oil firing at 20°F 50% load (worst case impact condition) except formaldehyde which is based on firing natural gas.

(2) Assumes 1,735 hours of operation on fuel at 59°F 100% load, except formaldehyde, which is based on firing natural gas 8,760 hours.

Stack height = 60.97 m
Stack diameter = 5.0 m
Stack exit velocity = 15.38 m/s on fuel oil (20°F 50% load)
Stack exit temperature = 353°K on fuel oil (20°F 50% load)
Stack UTM Coordinates: 769.611 km East
3,339.767 km North

Source: Foster Wheeler Environmental, 1996

TABLE 5.6.1-17
PURDOM STATION PSD REGULATED POLLUTANT EMISSION RATES USED FOR MODELLING (g/sec)

Analysis	Pollutant	Averaging Period	Unit 1	Unit 2	Unit 3	Units 4	Unit 5	Unit 6	Unit 7	GT1/ GT2[1]	Unit 8	Cooling Tower	Aux Boiler
Significant Impact	SO_2	Short	0.00	0.00	0.00	0.00	-49.18	-49.18	0.00	-10.29	7.82	NA	NA
	SO_2	Long	0.00	0.00	0.00	0.00	-0.01	-0.11	0.12	0.00	0.00	NA	2.89E-04
	PM_{10}	Short	0.00	0.00	0.00	0.00	-4.73	-4.73	0.00	0.00	2.14	0.30	NA
	PM_{10}	Long	0.00	0.00	0.00	0.00	-0.04	-.04	0.03	0.00	1.14	0.30	2.99E-03
	NO_2	Long	0.00	0.00	0.00	0.00	-1.96	-4.05	5.95	0.00	0.00	NA	6.75E-02
	CO	Short	0.00	0.00	0.00	0.00	-1.26	-1.26	0.00	0.00	12.11	NA	NA
Monitoring Exemption	PM_{10}	Short	0.00	0.00	0.00	0.00	-4.73	-4.73	0.00	0.00	2.14	0.30	NA
	CO	Short	0.00	0.00	0.00	0.00	-1.26	-1.26	0.00	0.00	12.11	NA	NA
PSD Class II	SO_2	Short	0.00	-39.88	-39.88	-39.88	-104.04	-104.04	-68.92	-10.29	7.82	NA	NA
	SO_2	Long	0.00	-0.31	-0.84	-0.79	-22.66	-26.08	-95.39	-0.03	0.00	NA	2.89E-04
	PM_{10}	Short	0.00	-1.81	-1.81	-1.81	-4.73	-4.73	0.00	0.00	2.14	0.30	NA
	PM_{10}	Long	0.00	-0.01	-0.04	-0.04	-1.04	-1.19	-4.46	0.01	2.30	0.30	2.99E-03
	NO_2	Long	0.00	0.00	0.00	0.00	-0.52	-1.25	11.98	0.17	0.00	NA	6.75E-02
PSD Class I	SO_2	Short	0.00	-39.88	-39.88	-39.88	-104.04	-104.04	-68.92	-10.29	7.82	NA	NA
	SO_2	Long	0.00	-0.31	-0.84	-0.79	-22.66	-26.08	-95.39	-0.03	0.00	NA	2.89E-04
	PM_{10}	Short	0.00	-1.81	-1.81	-1.81	-4.73	-4.73	0.00	0.01	2.14	0.30	NA
	PM_{10}	Long	0.00	-0.01	-0.04	-0.04	-1.04	-1.19	-4.46	0.17	2.30	0.30	2.99E-03
	NO_2	Long	0.00	0.00	0.00	0.00	-0.52	-1.25	11.98	0.00	0.00	NA	6.75E-02
AAQS	SO_2	Short	0.00	0.00	0.00	0.00	0.00	0.00	146.45	1.47	7.82	NA	NA
	SO_2	Long	0.00	0.00	0.00	0.00	0.00	0.00	2.30	0.01	0.00	NA	2.89E-04
	PM_{10}	Short	0.00	0.00	0.00	0.00	0.00	0.00	9.79	1.09	2.14	0.30	NA
	PM_{10}	Long	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.01	1.14	0.30	6.75E-02
	NO_2	Long	0.00	0.00	0.00	0.00	0.00	0.00	13.18	0.21	0.00	NA	2.99E-03
	CO	Short	0.00	0.00	0.00	0.00	0.00	0.00	2.61	1.38	12.11	NA	NA
	Pb	Short	0.00	0.00	0.00	0.00	0.00	0.00	0.0152	0.000167	0.0089	NA	NA
Stack Parameters:													
Height (m)			26	26	26	26	38.1	38.1	54.9	11.6	60.97	13.4	8.5
Diameter (m)			1.95	1.95	1.95	1.95	3.96	3.96	2.74	3.05	5	10.08	0.61
Temperature (°K)			478	478	478	478	447	447	422	744	varies[2]	305	450
Velocity (m/s)			5.89	5.89	5.89	5.89	7.23	7.23	14.44	25.56	varies[2]	7.09	6.47

(1) Short-term emission rate for GT1 and GT2 are for each unit and long-term emission rates are a total of GT1 and GT2.
(2) Temperature and velocity vary with ambient temperature and operating load (see Tables 5.6.1-1 through 5.6.1-6).

Source: Foster Wheeler Environmental, 1997

TABLE 5.6.1-18
PURDOM STATION DRAFT FARC POLLUTANT EMISSION RATES USED IN MODELLING (grams/sec)

Pollutant	Averaging Period	Unit 7	GT1/GT2(1)	Unit 8	Cooling Tower	Aux Boiler
Arsenic (As)	Short	8.93E-03	1.41E-04	7.54E-04	NA	NA
Beryllium (Be)	Short	3.29E-04	9.49E-06	5.08E-05	NA	NA
Cadmium (Cd)	Short	3.62E-03	1.21E-04	6.46E-04	NA	NA
Chromium (Cr)	Short	1.00E-02	1.35E-03	7.23E-03	NA	NA
Lead (Pb)	Short	1.52E-02	1.67E-03	8.92E-03	NA	NA
Manganese (Mn)	Short	5.80E-03	9.49E-03	5.08E-02	NA	NA
Mercury (Hg)	Short	2.51E-03	2.62E-05	1.40E-04	NA	NM
Nickel (Ni)	Short	1.82E-01	3.45E-02	1.85E-01	NA	NA
Cobalt (Co)	Short	9.48E-03	2.62E-04	1.40E-03	NA	NA
Antimony (Sb)	Short	3.60E-03	6.32E-04	3.38E-03	NA	NA
Vanadium (V)	Short	1.39E-01	1.26E-04	6.77E-04	NA	NA
Polycyclic Organic Matter (POM)	Short	3.21E-04	6.90E-04	3.69E-03	NA	NA
Benzo (a) Pyrene (Ben(a)P)	Short	2.98E-07	1.17E-07	6.24E-07	NA	NA
Benzene	Short	8.61E-05	3.38E-05	1.81E-04	NA	NA
Toluene	Short	7.75E-04	3.04E-04	1.63E-03	NA	NA
Selenium (Se)	Short	2.98E-03	1.52E-04	8.15E-04	NA	NA
Hydrochloric Acid (HCl)	Short	4.40E-01	2.17E-01	1.16E+00	NA	NA
Hydrogen Fluoride (HF)	Short	8.35E-02	3.05E-02	1.63E-01	NA	NA
Dioxin (378TCDD)	Short	6.53E-10	2.55E-10	1.36E-09	NA	NA
Formaldehyde (HCOH)	Short	3.17E-02	6.14E-04	3.29E-03	NA	NA
Arsenic (As)	Long	2.44E-04	1.61E-06	0.00E+00	NA	NA
Beryllium (Be)	Long	0.00E+00	1.08E-07	1.47E-05	NA	NA
Cadmium (Cd)	Long	0.00E+00	1.38E-06	1.87E-04	NA	NA
Chromium (Cr)	Long	0.00E+00	1.54E-05	2.09E-03	NA	NA
Lead (Pb)	Long	2.66E-04	1.90E-05	2.58E-03	NA	NA
Manganese (Mn)	Long	0.00E+00	1.08E-04	1.47E-02	NA	NA
Mercury (Hg)	Long	6.85E-05	2.99E-07	0.00E+00	NA	3.76E-10
Nickel (Ni)	Long	0.00E+00	3.94E-04	5.33E-02	NA	NA
Cobalt (Co)	Long	0.00E+00	2.99E-06	4.04E-04	NA	NA
Antimony (Sb)	Long	0.00E+00	7.22E-06	9.78E-04	NA	NA
Vanadium (V)	Long	3.79E-03	1.44E-06	0.00E+00	NA	NA
Poly Cyclic Organic Matter (POM)	Long	0.00E+00	7.88E-06	1.07E-03	NA	NA
Benzo (a) Pyrene (Ben(a)P)	Long	0.00E+00	1.33E-09	1.80E-07	NA	NA
Benzene	Long	2.04E-05	3.85E-07	1.58E-04	NA	NA
Toluene	Long	5.73E-04	3.47E-06	0.00E+00	NA	NA
Selenium (Se)	Long	0.00E+00	1.74E-06	2.36E-04	NA	NA
Hydrochloric Acid (HCl)	Long	0.00E+00	2.48E-03	3.36E-01	NA	NA
Hydrogen Fluoride (HF)	Long	0.00E+00	3.47E-04	4.71E-02	NA	NA
Dioxin (378TCDD)	Long	0.00E+00	2.91E-12	3.94E-10	NA	NA
Formaldehyde (HCOH)	Long	8.02E-04	7.01E-06	6.70E-03	NA	NA

(1) Short-term emission rate for GT1 and GT2 are for each unit and long-term emission rates are a total of GT1 and GT2.

NA - No emission data available or no emissions expected.
NM - Not modified as the auxiliary boiler will not run simultaneously with Unit 7 or Unit 8.

Source: Foster Wheeler Environmental, 1997

A screening technique known as the "Screening Threshold" method (North Carolina DNR, 1985) was applied to sources located within 50 km from the Purdom Station. The method is described in the PSD Report (Appendix 10.1.5). The existing source emissions inventory was also sorted with respect to PSD increment consuming and expanding sources and all sources for the AAQS analysis.

The completed existing source emissions inventories were submitted to FDEP for review and were determined to be acceptable for input to the ISCST3 model (FDEP, 1997a). The AAQS source and PSD source emissions inventories used in the air quality modelling analysis are presented in Tables 5.6.1-19 and 5.6.1-20, respectively. The emissions for all applicable pollutants in those tables are in terms of maximum allowable or "potential" emissions in order to evaluate worst-case emissions scenarios for those sources from both AAQS and PSD increment impact standpoints.

5.6.1.9 Receptor Locations

Receptor Grids for Site Vicinity

Ambient concentrations were determined for the significant impact area and monitoring exemption analyses for receptors in a polar grid consisting of 36 radial directions at 10 degree intervals at distances listed below (in kilometers) from the site origin, the proposed stack location for Purdom Unit 8 (UTM coordinates 769.611 km East 3,339.767 km North):

1.0	3.5	6.0
1.5	4.0	7.0
2.0	4.5	8.0
2.5	5.0	9.0
3.0	5.5	10.0

Receptors from these polar grids which fell within the Project site boundaries were not included but 57 additional receptors were placed around the site boundary. A total of 632 receptors were used in the modelling. Figure 5.6.1-3 presents the location of the site boundary and polar receptors.

For the monitoring exemption request, Class II PSD, and AAQS analyses, an additional 11x11 (121 point) receptor grid with a spacing of 100m was placed over the critical impact receptor as determined from the preliminary runs. Special grids were used for the 3-hour, 24-hour, and annual SO_2 AAQS analyses covering receptors within the Primex Technologies (formerly Olin) site boundaries. The details of all of the receptor grids are depicted in figures in the PSD report.

Receptor Grid for Class I PSD Analysis

The modelling for the St. Marks and Bradwell Bay National Wilderness Areas analyses used receptor grids approved by FDEP (1996b). The St. Marks National Wilderness Area analysis used a total of 68 receptors, including receptors spaced at 75m intervals along the northern boundary as requested by the USFWS. A total of 18 receptors were used in the modelling analysis of the Bradwell Bay Wilderness Area. The receptors used in the Class I PSD analysis

TABLE 5.6.1-19
ADDITIONAL SOURCES SELECTED FOR PURDOM UNIT 8 AAQS MODELLING ANALYSIS

Owner	Zone	North (Km)	East (Km)	Eu Id	Description	Hs (Ft)	Ds (Ft)	Ts (Of)	Flow Acfm	Vs (Ft/S)		Lb/Hr	Tpy
Mckenzie Service Co	16	3338.4	769.3	1	North Boiler (300 hp)	21	1.7	375	3965	29	CO	0.1449	0.169
Mckenzie Service Co	16	3338.4	769.3	1	North Boiler (300 hp)	21	1.7	375	3965	29	NO_X	1.59	1.86
Mckenzie Service Co	16	3338.4	769.3	1	North Boiler (300 hp)	21	1.7	375	3965	29	PB	0.0001	0.0001
Mckenzie Service Co	16	3338.4	769.3	1	North Boiler (300 hp)	21	1.7	375	3965	29	PM	0.0087	0.0102
Mckenzie Service Co	16	3338.4	769.3	1	North Boiler (300 hp)	21	1.7	375	3965	29	SO_2	0.115	0.134
Mckenzie Service Co	16	3338.4	769.3	2	South Boiler (100 hp)	21	0.7	375	1322	57	CO	0.1449	0.169
Mckenzie Service Co	16	3338.4	769.3	2	South Boiler (100 hp)	21	0.7	375	1322	57	NO_X	1.59	1.86
Mckenzie Service Co	16	3338.4	769.3	2	South Boiler (100 hp)	21	0.7	375	1322	57	PB	0.0001	0.0001
Mckenzie Service Co	16	3338.4	769.3	2	South Boiler (100 hp)	21	0.7	375	1322	57	PM	0.0087	0.0102
Mckenzie Service Co	16	3338.4	769.3	2	South Boiler (100 hp)	21	0.7	375	1322	57	SO_2	0.05	0.07
Mckenzie Service Co	16	3338.4	769.3	3	Cleaver Brooks Package Boiler	39	1.7	430	5018	36	CO	0.45	1.97
Mckenzie Service Co	16	3338.4	769.3	3	Cleaver Brooks Package Boiler	39	1.7	430	5018	36	NO_X	3.16	13.8
Mckenzie Service Co	16	3338.4	769.3	3	Cleaver Brooks Package Boiler	39	1.7	430	5018	36	PB	.00013	.00057
Mckenzie Service Co	16	3338.4	769.3	3	Cleaver Brooks Package Boiler	39	1.7	430	5018	36	PM	1.27	5.56
Mckenzie Service Co	16	3338.4	769.3	3	Cleaver Brooks Package Boiler	39	1.7	430	5018	36	SO_2	15.06	66
Primex Technologies (formerly Olin)	16	3342.2	767.6	1	North Sweetie Barrel (Venturi Scrubber & 2nd Stage Packed Column	6	1.1	72	2640	46	PM	0.285	1.25
Primex Technologies (formerly Olin)	16	3342.2	767.6	2	Northeast Sweetie Barrel (Venturi Scrubber & 2nd Stage Packed Column	6	1.1	72	2640	46	PM	0.009	0.039
Primex Technologies (formerly Olin)	16	3342.2	767.6	3	Mixing Ventilation System	50	0.5	85	1000	84	PM	2.283	10
Primex Technologies (formerly Olin)	16	3342.2	767.6	4	Boiler #1, Cleaver-Brooks	35	2	322	10100	53	CO	0.6467	2.8325
Primex Technologies (formerly Olin)	16	3342.2	767.6	4	Boiler #1, Cleaver-Brooks	35	2	322	10100	53	NO_X	31.16	7.1136
Primex Technologies (formerly Olin)	16	3342.2	767.6	4	Boiler #1, Cleaver-Brooks	35	2	322	10100	53	PB	0.0002	0.001
Primex Technologies (formerly Olin)	16	3342.2	767.6	4	Boiler #1, Cleaver-Brooks	35	2	322	10100	53	PM	3.88	16.995
Primex Technologies (formerly Olin)	16	3342.2	767.6	4	Boiler #1, Cleaver-Brooks	35	2	322	10100	53	SO_2	51.82	224.62
Primex Technologies (formerly Olin)	16	3342.2	767.6	6	Boiler #2, Cleaver-Brooks	35	2	322	10100	53	CO	2.8325	0.6467
Primex Technologies (formerly Olin)	16	3342.2	767.6	6	Boiler #2, Cleaver-Brooks	35	2	322	10100	53	NO_X	7.1136	31.16
Primex Technologies (formerly Olin)	16	3342.2	767.6	6	Boiler #2, Cleaver-Brooks	35	2	322	10100	53	PB	0.0002	0.001
Primex Technologies (formerly Olin)	16	3342.2	767.6	6	Boiler #2, Cleaver-Brooks	35	2	322	10100	53	PM	3.88	16.995
Primex Technologies (formerly Olin)	16	3342.2	767.6	6	Boiler #2, Cleaver-Brooks	35	2	322	10100	53	SO_2	51.82	224.62
Primex Technologies (formerly Olin)	16	3342.2	767.6	7	Salt Coating & Glazing Facility (Venturi & Packed Scrubbers)	15	0.8	77	1350	44	PM	0.32	1.4
Primex Technologies (formerly Olin)	16	3342.2	767.6	9	Uncoated Powder (Wet Scrubber & Baghouse)	15	0.8	77	1350	44	PM	2.3	10
Primex Technologies (formerly Olin)	16	3342.2	767.6	10	Propellant Salt Coater Process Venturi Scrubber and 2nd Stag	26	0.7	70	1350	58	PM	4	16.8
St.Marks Refinery,Inc.	16	3340.1	769	6	Boiler #1 Fuel Oil #5	85	2	500	9990	52	CO	0.9272	4.0611
St.Marks Refinery,Inc.	16	3340.1	769	6	Boiler #1 Fuel Oil #5	85	2	500	9990	52	NO_X	10.2	44.68
St.Marks Refinery,Inc.	16	3340.1	769	6	Boiler #1 Fuel Oil #5	85	2	500	9990	52	PB	0.0007	0.0031
St.Marks Refinery,Inc.	16	3340.1	769	6	Boiler #1 Fuel Oil #5	85	2	500	9990	52	PM	1.8544	8.1223
St.Marks Refinery,Inc.	16	3340.1	769	6	Boiler #1 Fuel Oil #5	85	2	500	9990	52	SO_2	21.9	191.3
St.Marks Refinery,Inc.	16	3340.1	769	7	Boiler #2 Fuel Oil	85	1.7	500	9990	73	CO	0.9272	4.061
St.Marks Refinery,Inc.	16	3340.1	769	7	Boiler #2 Fuel Oil	85	1.7	500	9990	73	NO_X	10.2	44.67
St.Marks Refinery,Inc.	16	3340.1	769	7	Boiler #2 Fuel Oil	85	1.7	500	9990	73	PB	0.0007	0.0031

TABLE 5.6.1-19
ADDITIONAL SOURCES SELECTED FOR PURDOM UNIT 8 AAQS MODELLING ANALYSIS

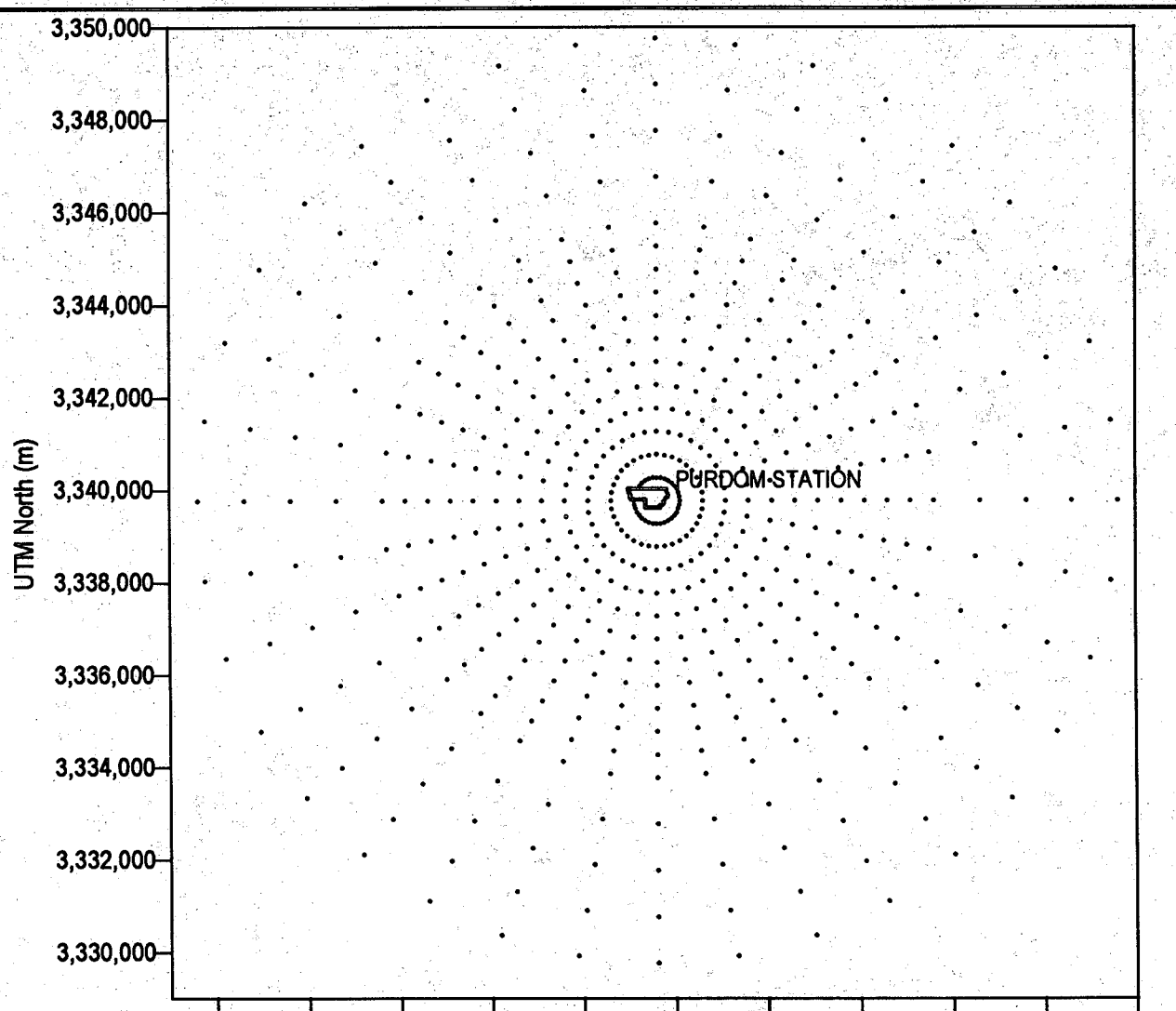
Owner	Zone	North (Km)	East (Km)	Eu Id	Description	Hs (Ft)	Ds (Ft)	Ts (Of)	Flow Acfm	Vs (Ft/S)		Lb/Hr	Tpy
St.Marks Refinery,Inc.	16	3340.1	769	7	Boiler #2 Fuel Oil	85	1.7	500	9990	73	PM	10	43.83
St.Marks Refinery,Inc.	16	3340.1	769	7	Boiler #2 Fuel Oil	85	1.7	500	9990	73	SO_2	21.84	95.66
St.Marks Refinery,Inc.	16	3340.1	769	12	Crude Heater F 101	83	5	850	8719	7	CO	0.714	3.1273
St.Marks Refinery,Inc.	16	3340.1	769	12	Crude Heater F 101	83	5	850	8719	7	NO_X	7.854	34.4005
St.Marks Refinery,Inc.	16	3340.1	769	12	Crude Heater F 101	83	5	850	8719	7	PM	0.5141	2.2517
St.Marks Refinery,Inc.	16	3340.1	769	12	Crude Heater F 101	83	5	850	8719	7	SO_2	20.48	29.7596
St.Marks Refinery,Inc.	16	3340.1	769	13	Crude Heater F-201	87	3	850	8719	20	CO	0.714	3.1273
St.Marks Refinery,Inc.	16	3340.1	769	13	Crude Heater F-201	87	3	850	8719	20	NO_X	7.854	34.4005
St.Marks Refinery,Inc.	16	3340.1	769	13	Crude Heater F-201	87	3	850	8719	20	PM	0.5141	2.2517
St.Marks Refinery,Inc.	16	3340.1	769	13	Crude Heater F-201	87	3	850	8719	20	SO_2	20.48	29.7596
St.Marks Refinery,Inc.	16	3340.1	769	14	Crude Heater F-202	60	2.3	850	3500	14	CO	0.7	3.066
St.Marks Refinery,Inc.	16	3340.1	769	14	Crude Heater F-202	60	2.3	850	3500	14	NO_X	2.8	12.264
St.Marks Refinery,Inc.	16	3340.1	769	14	Crude Heater F-202	60	2.3	850	3500	14	PB	0.0012	0.0052
St.Marks Refinery,Inc.	16	3340.1	769	14	Crude Heater F-202	60	2.3	850	3500	14	PM	0.06	0.2628
St.Marks Refinery,Inc.	16	3340.1	769	14	Crude Heater F-202	60	2.3	850	3500	14	SO_2	20.48	24.97
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	CO	29.61	129.7
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	NO_X	396.9	1738.4
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	PB	.175	.767
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	PM	78.79	345.1
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	SO_2	675.342	2958
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	2	Combustion Turbine Hopkins #1 Gt Peaking Unit	29	9.2	803	457557	114	CO	3.52	15.4
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	2	Combustion Turbine Hopkins #1 Gt Peaking Unit	29	9.2	803	457557	114	NO_X	51.28	224.6
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	2	Combustion Turbine Hopkins #1 Gt Peaking Unit	29	9.2	803	457557	114	PM	2.78	12.2
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	2	Combustion Turbine Hopkins #1 Gt Peaking Unit	29	9.2	803	457557	114	SO_2	14.75	64.6
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	3	Combustion Turbine Hopkins #2 Gt Peaking Unit	30	14.7	875	698716	68	CO	5.75	25.2
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	3	Combustion Turbine Hopkins #2 Gt Peaking Unit	30	14.7	875	698716	68	NO_X	83.54	365.9
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	3	Combustion Turbine Hopkins #2 Gt Peaking Unit	30	14.7	875	698716	68	PB	0.026	0.113
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	3	Combustion Turbine Hopkins #2 Gt Peaking Unit	30	14.7	875	698716	68	PM	4.54	19.9
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	3	Combustion Turbine Hopkins #2 Gt Peaking Unit	30	14.7	875	698716	68	SO_2	24.06	105.4
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	CO	77.5	339
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	NO_X	750	3055
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	PB	0.451	1.976
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	PM_{10}	232.5	411.1
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	SO_2	3260	14300

Note: See Table 5.6.1-17 for emission parameters for the Purdom Station.
Source: FDEP, 1996a

TABLE 5.6.1-20
ADDITIONAL SOURCES SELECTED FOR PURDOM UNIT 8 PSD MODELLING ANALYSIS

Owner	Zone	North (Km)	East (Km)	Eu Id	Description	Hs (Ft)	Ds (Ft)	Ts (Of)	Flow Acfm	Vs (Ft/S)		Lb/Hr	Tpy
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	SO_2	-1806.3	-7912*
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	SO_2	3260	14300
Tallahassee City Hopkins Generating Station	16	3371.7	747.4	4	Unit #2	250	14	260	691358	74	PM_{10}	232.5	411.1

*Hopkins #1 is increment expanding; therefore emissions for the PSD modelling analysis are based on reducing emissions from 2.75 lb/mmBtu to 0.75 lb/mmBtu.
Note: See Table 5.6.1-17 for emission parameters for the Purdom Station.
Source: FDEP, 1996a



SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

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PURDOM PROJECT
COARSE GRID - ISCST3 MODELLING RECEPTORS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 5.6.1-3

are depicted on Figures 5.6.1-4 and 5.6.1-5. The refined analysis included additional receptors to insure the maximum impact was determined. These additional receptors are specific to the pollutant modeled, and consisted of a grid of 121 points spaced 100 meters apart, centered over the location of the highest second-high impact. The exception to this 100m spacing was the northernmost boundary of the St. Marks National Wilderness Area. When the highest second-high impact was located there, the fine grid consisted of four additional receptors spaced 15m apart on each side of the highest second-high impact location.

5.6.1.10 Other Air Quality Modelling Issues

Building Downwash Effects

The procedures used for addressing the effects of building downwash are those recommended in the *User's Guide for the Industrial Source Complex (ISC3) Dispersion Models* (EPA, 1995a). The heights and coordinates of the major structures on the site along with the stack parameters of each source were input into the EPA Building Profile Input Program (BPIP) (EPA, 1995b). The program provides GEP stack height information as well as direction-specific building dimensions for each source. These direction-specific building dimensions for 36 radial directions (10 degree segments) are input into the ISCST3 model and are used in the determination of building downwash.

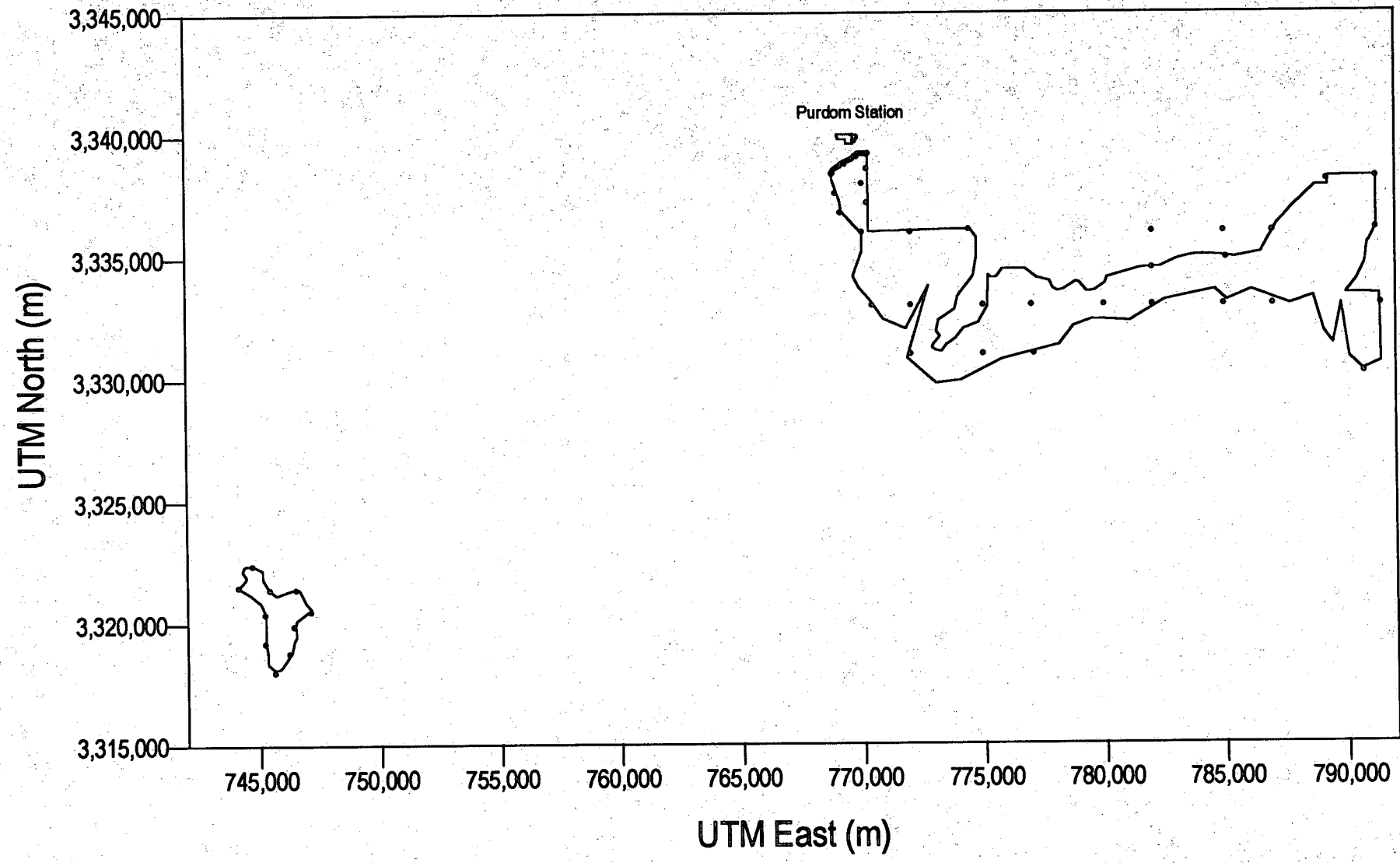
Based on the building dimensions of the proposed Unit 8 and existing structures at the Purdom Station, the proposed Unit 8 stack height of 60.97 meters was found to be above the calculated GEP height of 60.0 meters and within the allowable default GEP height of 65 meters determined by the BPIP Program, and therefore in compliance with the FDEP stack height policy.

FARCS Modelling

Rather than modelling the emissions from each current or proposed unit individually, a simpler approach to the FARCS modelling was chosen. Emissions from all future units (Unit 7, Unit 8, GT1 and GT2, and the auxiliary boiler) were grouped together and were assumed to be emitted from a single stack. The stack parameters for Unit 7 were chosen for the modelling after an analysis using the "merged stack parameters procedure" outlined in *The South Carolina Air Quality Modelling Guidelines* (SCDHEC, 1993). Modelling was initially done with a unit emission rate of 1 gram/second to identify a maximum concentration for the three averaging periods of interest (8-hours, 24-hours, and annual). Then the results were scaled using the emission rates contained in Table 5.6.1-18 to obtain predicted maximum concentrations for each hazardous air pollutant.

Auxiliary Boiler Modelling

Emissions from the recently permitted auxiliary boiler were modeled using the general procedures described in Section 5.6.1.4. For short-term model runs, the auxiliary boiler was modelled separately from Units 7 and 8 since an existing permit condition prohibits it from running at the same time as the existing steam generating units. Long-term analyses of the project did include the emissions from the auxiliary boiler along with the other sources. A



SOURCE: FOSTER WHEELER ENVIRONMENTAL CORPORATION

CITY OF TALLAHASSEE

PURDOM PROJECT - PSD CLASS I ANALYSIS
ISCST3 MODELLING RECEPTORS
ST. MARKS WILDERNESS AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
5.6.1-4

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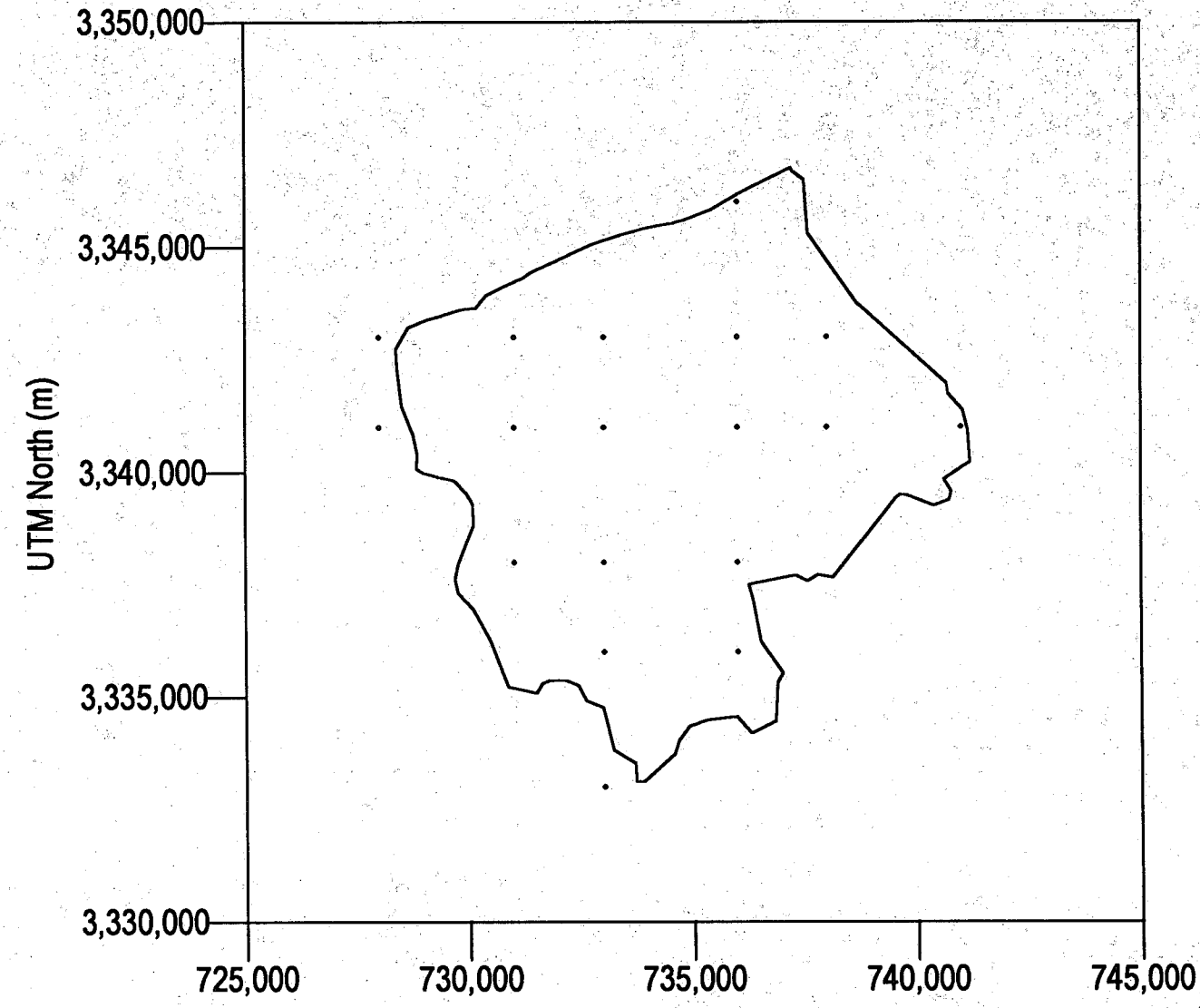

SOURCE: FOSTER WHEELER ENVIRONMENTAL CORPORATION

CITY OF TALLAHASSEE

PURDOM PROJECT - PSD CLASS I ANALYSIS
ISCST3 MODELLING RECEPTORS
BRADWELL BAY WILDERNESS AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
5.6.1-5

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revised permit condition is proposed which would prohibit the operation of the auxiliary boiler simultaneously with Unit 7 or 8 after completion of compliance testing on Unit 8.

5.6.1.11 Background Air Quality Monitoring Data

Background air quality concentrations to be utilized in the modelling analyses were compiled from the data presented in Section 2.3.7 and from recommendations by FDEP (1996). A summary of the background values was presented in Table 2.3.7-7. Many of the values in Table 2.3.7-7 are considered to be very conservative estimates (i.e., overestimates) of background concentrations in the site vicinity because they are more representative of larger urban areas or of areas in the vicinity of major existing sources of air pollutants. All major sources in the vicinity of the Purdom Station are explicitly included in the modelling; adding background concentrations representative of locations near major sources is essentially "double-counting," an especially conservative approach.

5.6.1.12 Air Quality Impact Analysis Results

This section summarizes the results of the modelling analyses conducted. It is organized into subsections dealing with the predicted impacts of the proposed Project by itself, predicted PSD increment consumption, predicted concentrations with respect to the NAAQS/FAAQS, and predicted concentrations of hazardous air pollutants versus FDEP's draft FARC levels (FDEP, 1995a). A discussion of the potential air quality impacts of the auxiliary boiler is included.

Normally, this section would present the results of modelling Project impacts only for those pollutants which trigger PSD review in accordance with Rule 62-212.400(2)(f)2, F.A.C. However, in the interest of providing a more complete understanding of the air quality impacts of the proposed Project, modelling results are provided for all regulated pollutants for which emissions information is available.

Proposed Project Only

As indicated earlier, the Project is a major modification of a major stationary source. It consists of the addition of Unit 8, the permanent shut down of Units 5 and 6, and restrictions on other sources in order to maintain SO_2 and NO_x emissions within the requested facility-wide caps. Therefore, both emissions increases and decreases are considered in the analysis of impacts of the Project by itself.

Worst-Case Operation Analysis

As indicated in Section 5.6.1.6, the proposed Unit 8 was evaluated for both the primary fuel, clean pipeline quality natural gas, and the secondary fuel, Number 2 (0.05% S) diesel fuel oil, to determine the worst-case impacts. Modelling was done using one year (1985) of meteorology and three loads (100%, 75%, and 50%). Since emissions and stack parameters from combustion turbine units are temperature dependent, modelling was also conducted at temperatures of 20°F, 59°F, and 95°F to determine the worst-case operating scenarios. For the 95°F case on natural gas, the lowest load evaluated was 55 percent as the combustion turbine is not expected to operate below this load at that temperature on natural gas. The results of this analysis for the 18

combinations of temperature and load are presented in Table 5.6.1-21 for NO_2, SO_2, CO and PM_{10}.

As a result of these model runs, it was determined that the maximum off-site impacts occur when firing Number 2 (0.05% S) diesel fuel oil at 50 percent load at 20°F. Although some other load/temperature combinations come close, this combination produced the highest impacts for all pollutants modeled and all averaging times. As a result, the emission characteristics and stack parameters associated with this condition were used in all subsequent analyses for short-term impacts. However, this condition was not used for modelling annual average impacts as this condition is clearly not realistic for longer averaging times. Instead, the 100 percent load, 59°F case was selected as representing a more realistic annual average condition for the Project. Unit 8 is projected to be operated at base (100%) load as much as possible due to its efficiency, and the 59°F case is a conservative representation of the annual average site temperature of about 67°F.

Worst-case operation for the Project was based on the worst-case conditions as defined above for Unit 8 in combination with emissions and stack parameters associated with 100 percent load operation of the other units involved for short-term analyses. For long-term (annual average) analyses, the annual worst-case conditions defined above for Unit 8 were combined with annual average emissions and stack parameters consistent with 100 percent load operation of the other units. Thus, Units 5, 6, Unit 7; the existing combustion turbines (GT1 and GT2); the auxiliary boiler; and the cooling tower were modelled at 100 percent load.

Significant Impact Area Analysis

Once the worst-case operating scenarios were determined, the next step in the analysis was to determine the significant impact area for each pollutant with an associated PSD increment or FAAQS/NAAQS for the Project. The significant impact area is defined in the EPA draft New Source Review Workshop Manual (EPA, 1990b) as the circular area whose radius is equal to the greatest distance from the proposed source to which modelling shows that the proposed source will have a significant impact, based upon EPA-defined significance values, which are pollutant specific. The significant impact areas thus define the distances beyond which the impacts from the proposed source will be "insignificant" and need not be analyzed in conjunction with existing sources.

The results of the significant impact area analyses are presented in Table 5.6.1-22. As indicated in Table 5.6.1-22, the only pollutants for which there were predicted significant impacts off Purdom Station property are NO_2 and PM_{10} for Class II PSD purposes. They both have a significant impact area radius of less than 0.3 km. Thus, no further analysis is required for any of the other regulated pollutants. However, as indicated earlier, the City has chosen to provide the PSD and FAAQS/NAAQS analyses for all of the regulated pollutants despite the insignificance of the Project impacts.

Monitoring Exemption Analysis

As indicated earlier, the monitoring exemption request analysis was restricted to PM_{10} and CO. (There is no monitoring de minimis level for particulate matter (TSP)). After the "worst case" temperature/load condition was determined for Unit 8, the proposed Project (including the permanent shut down of Units 5 & 6) was modelled using all applicable sources

TABLE 5.6.1-21
PURDOM UNIT 8 WORST-CASE LOAD/TEMPERATURE ANALYSIS

Fuel	Load (%)	Temp (°F)	Maximum NO_2 ($\mu g/m^3$)	Maximum SO_2 ($\mu g/m^3$)			Maximum CO ($\mu g/m^3$)		Maximum PM_{10} ($\mu g/m^3$)	
			Annual	3-Hour	24-Hour	Annual	1-Hour	8-Hour	24-Hour	Annual
Natural Gas	100	95	0.06	0.26	0.06	0.005	4.3	0.9	0.14	0.010
Natural Gas	100	59	0.06	0.28	0.06	0.005	4.7	1.0	0.14	0.010
Natural Gas	100	20	0.06	0.29	0.07	0.005	5.0	1.1	0.14	0.009
Natural Gas	75	95	0.06	0.24	0.06	0.005	4.5	1.0	0.17	0.012
Natural Gas	75	59	0.06	0.25	0.06	0.005	4.9	1.1	0.17	0.012
Natural Gas	75	20	0.07	0.27	0.07	0.005	5.3	1.1	0.17	0.012
Natural Gas	≈55	95	0.06	0.30	0.06	0.005	12.1	2.6	0.21	0.015
Natural Gas	50	59	0.06	0.28	0.06	0.005	12.8	2.8	0.21	0.015
Natural Gas	50	20	0.07	0.32	0.07	0.005	13.6	2.9	0.21	0.016
Number 2 (0.05%S) Diesel Fuel Oil	100	95	0.26	5.0	1.3	0.08	14.1	3.0	0.26	0.02
Number 2 (0.05%S) Diesel Fuel Oil	100	59	0.30	5.5	1.4	0.09	15.4	3.2	0.26	0.02
Number 2 (0.05%S) Diesel Fuel Oil	100	20	0.31	6.3	1.4	0.10	16.7	3.1	0.22	0.02
Number 2 (0.05%S) Diesel Fuel Oil	75	95	0.30	4.5	1.2	0.09	17.6	3.7	0.30	0.02
Number 2 (0.05%S) Diesel Fuel Oil	75	59	0.34	5.0	1.3	0.10	18.1	3.8	0.30	0.02
Number 2 (0.05%S) Diesel Fuel Oil	75	20	0.36	5.4	1.4	0.10	18.9	3.9	0.30	0.02
Number 2 (0.05%S) Diesel Fuel Oil	50	95	0.29	4.0	1.2	0.09	34.9	8.7	0.39	0.03
Number 2 (0.05%S) Diesel Fuel Oil	50	59	0.33	5.9	1.3	0.10	45.4	9.3	0.38	0.03
Number 2 (0.05%S) Diesel Fuel Oil	50	20	0.37	6.3	1.4	0.11	46.4	9.9	0.39	0.03

Results based on 1985 meteorological data.
Highest concentrations shaded.

Source: Foster Wheeler Environmental, 1997

TABLE 5.6.1-22
SUMMARY OF CLASS II PSD SIGNIFICANT IMPACT AREA CONCENTRATIONS

							Receptor Location[3]		Preliminary Maximum[1] Concentration by Year				
Pollutant	Averaging Period	Highest[1] Modelled Concentration ($\mu g/m^3$)	Significance Value[2] ($\mu g/m^3$)	Signficant Off-site Impact	Distance to Signficant Impact Value	Period (yymmddhh)	East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	0.051	25	No	none	89051416	768670	3340109	0.038	0.035	0.042	0.034	0.051
Sulfur Dioxide (SO_2)	24-hr	0.023	5	No	none	89051424	768670	3340109	0.013	0.011	0.011	0.011	0.023
Sulfur Dioxide (SO_2)	Annual	0.024	1	No	none	87	769766	3339709	0.0046	0.013	0.024	0.023	0.013
Particulate Matter (PM_{10})	24-hr	6.5	5	Yes	< 0.3 Km	86112524	769399	3340018	3.8	6.5	5.4	5.5	3.9
Particulate Matter (PM_{10})	Annual	0.35	1	No	none	86	769766	3340018	0.17	0.35	0.28	0.35	0.18
Nitrogen Dioxide (NO_2)	Annual	6.1	1	Yes	< 0.3 Km	87	769766	3339709	1.7	3.3	6.1	5.6	3.7
Carbon Monoxide (CO)	1 hr	21.9	2000	No	none	89072611	768977	3340015	18.4	17.7	19.5	17.4	21.9
Carbon Monoxide (CO)	8-hr	5.1	500	No	none	87071216	769610	3337767	3.4	4.6	5.1	4.2	4.3

(1) Short-term values are highest rather than highest second high concentrations for this analysis.
(2) Rule 62-210.200(256), F.A.C.
(3) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

on site. The net changes in emission rates associated with the modification were determined by subtracting the current actual emission rates (August 1994 - July 1996) from the future emission rates. A summary of unit specific emission rates is included as Table 5.6.1-17. Each of the pollutants was modelled using five years of meteorological data and the receptors indicated in Section 5.6.1.5. The results of this preliminary modelling are presented in Table 5.6.1-23.

As indicated in the modelling protocol, an additional refined receptor grid was added, centered on the receptor which contained the highest predicted impact from the preliminary modelling runs.

These more refined receptor grids were used with the year of meteorological data which produced the highest preliminary impact. The "worst case" load and ambient temperature combinations described above were also used in the refined analysis. The results are also presented in Table 5.6.1-23. As indicated, the maximum predicted concentrations due to the Project are all below the monitoring de minimis levels and monitoring is not required.

Class II Area PSD Increment Analysis

In addition to the emissions from the proposed Project listed in Table 5.6.1-17, the emissions from the other PSD increment consuming and increment expanding sources identified in Table 5.6.1-20 were included in the modelling. The results are presented in Table 5.6.1-24. As indicated in the table, the maximum predicted Class II PSD increment consumption in the vicinity of the proposed Project is well within the allowable values for all averaging times.

Class I Area PSD Increment Analysis

As the proposed Project will be located close to both the St. Marks National Wilderness Area and the Bradwell Bay National Wilderness Area, both designated as Class I PSD areas by Rule 62-204.360(4)(b), F.A.C., the impacts of the proposed Project were modeled for both areas. An analysis was conducted with the ISCST3 model of Class I area impacts using the other PSD increment consuming and expanding sources contained in Table 5.6.1-20 in addition to the proposed Project. The results of that analysis are presented in Tables 5.6.1-25 and 5.6.1-26 for the two Class I areas. As indicated, the PSD Class I impacts are within the allowable increments for all pollutants and averaging times.

AAQS Analysis

The AAQS analysis consisted of modelling the impacts of the proposed source together with background concentrations to determine if the totals will be within the FAAQS and, therefore also within the NAAQS. Background concentrations consist of a modeled component (modeled impacts of significant existing sources) and a monitored component (based upon the concentrations presented in Table 2.3.7-7). The existing sources which were included in the modelling were identified in Table 5.6.1-19. The results of the analysis are summarized in Table 5.6.1-27. As indicated in the table, maximum concentrations for all pollutants for all averaging periods will be below the FAAQS, and therefore, also below the NAAQS.

TABLE 5.6.1-23
MONITORING EXEMPTION ANALYSIS

Pollutant	Averaging Period	Maximum[1] Refined Concentration ($\mu g/m^3$)	Monitoring De Minimis Level[2] ($\mu g/m^3$)	Monitoring Required	Preliminary Maximum[1] Concentration by Year				
					1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Particulate Matter (PM_{10})	24-hr	6.5	10	No	3.8	6.5	5.4	5.5	3.9
Carbon Monoxide (CO)	8-hr	5.4	575	No	3.4	4.6	5.1	4.2	4.3

(1) Short-term values are highest second high values for this analysis.
(2) Rule 62-212.400, F.A.C. - Table 212.400-3

Source: Foster Wheeler Environmental, 1997

TABLE 5.6.1-24
SUMMARY OF CLASS II PSD INCREMENT ANALYSIS

					Receptor Location[4]		Preliminary Maximum[1] Concentration by Year				
Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	Class II PSD Increment[2] ($\mu g/m^3$)	Period (yymmddhh)	East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	14.4	512	89121612	765689	3349564	9.4	12.3	9.1	7.4	13.5
Sulfur Dioxide (SO_2)	24-hr	2.4	91	86021524	768047	3348630	2.0	2.4	1.8	1.6	2.3
Sulfur Dioxide (SO_2)	Annual	<0.00001[3]	20	N/A	N/A	N/A	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Particulate Matter (PM_{10})	24-hr	3.3	30	87121424	769399	3340018	3.2	2.9	3.3	3.1	1.8
Particulate Matter (PM_{10})	Annual	0.32	17	86	769399	3340018	0.12	0.32	0.22	0.31	0.12
Nitrogen Dioxide (NO_2)	Annual	6.2	25	87	769766	3339709	1.9	3.5	6.2	5.8	4.0

(1) Short-term values are highest second high concentrations for this analysis.
(2) Rule 62-204.260, F.A.C.
(3) Maximum impact zero or negative due to increment expanding sources
(4) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

TABLE 5.6.1-25
SUMMARY OF ST. MARKS NWA CLASS I PSD INCREMENT ANALYSIS

					Receptor Location[4]		Preliminary Maximum[1] Concentration by Year				
Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	Class I PSD Increment[2] ($\mu g/m^3$)	Period (yymmddhh)	East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	10.7	25	86011106	774900	3336300	7.1	9.5	9.2	8.6	8.0
Sulfur Dioxide (SO_2)	24-hr	2.7	5	86110124	743600	3322000	1.3	2.3	2.1	2.4	1.6
Sulfur Dioxide (SO_2)	Annual	<0.00001[3]	2	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Particulate Matter (PM_{10})	24-hr	0.73	8	88022424	745900	3321900	0.42	0.68	0.63	0.70	0.46
Particulate Matter (PM_{10})	Annual	0.11	4	87	744200	3322900	0.020	0.064	0.11	0.10	0.053
Nitrogen Dioxide (NO_2)	Annual	0.91	2.5	87	769760	3339160	0.36	0.58	0.91	0.79	0.60

(1) Short-term values are highest second high values for this analysis.
(2) Rule 62-204.260, F.A.C.
(3) Maximum impact zero or negative due to increment expanding sources
(4) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

TABLE 5.6.1-26
SUMMARY OF BRADWELL BAY NWA CLASS I PSD INCREMENT ANALYSIS

					Receptor Location[4]		Preliminary Maximum[1] Concentration by Year				
Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	Class I PSD Increment[2] ($\mu g/m^3$)	Period (yymmddhh)	East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	16.9	25	87110324	737500	3343500	8.2	15.6	16.2	11.1	10.7
Sulfur Dioxide (SO_2)	24-hr	4.9	5	86113024	736300	3343000	1.8	4.9	4.5	3.0	1.9
Sulfur Dioxide (SO_2)	Annual	<0.00001[3]	2	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Particulate Matter (PM_{10})	24-hr	0.0023	8	85080224	736500	3346500	0.0023	0.0019	0.0013	0.0020	0.00039
Particulate Matter (PM_{10})	Annual	0.16	4	87	741500	3341100	0.030	0.10	0.15	0.12	0.066
Nitrogen Dioxide (NO_2)	Annual	0.57	2.5	87	741500	3341500	0.16	0.37	0.54	0.45	0.25

(1) Short-term values are highest second high values for this analysis.
(2) Rule 62-204.260, F.A.C.
(3) Maximum impact zero or negative due to increment expanding sources.
(4) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

TABLE 5.6.1-27
SUMMARY OF FAAQS ANALYSIS

Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	Background ($\mu g/m^3$)	Max[1] Modelled + Background ($\mu g/m^3$)	FAAQS[2] ($\mu g/m^3$)	Period (yymmddhh)	Receptor Location[3] East (m)	Receptor Location[3] North (m)	Preliminary Maximum[1] Concentration by Year 1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	402.1	183	585	1300	86031203	767338	3344831	296.6	306.9	289.3	304.9	253.6
Sulfur Dioxide (SO_2)	24-hr	137.2	71	208	260	86051824	767438	3342731	88.9	98.2	94.9	96.0	92.6
Sulfur Dioxide (SO_2)	Annual	25.7	9	35	60	87	768943	3339624	11.6	15.1	21.0	19.4	14.9
Particulate Matter (PM_{10})	24-hr	83.8	47	131	150	89061024	767881	3342365	40.0	40.1	402.0	49.7	51.4
Particulate Matter (PM_{10})	Annual	19.1	22.4	42	50	87	767611	33411995	5.6	5.5	6.6	5.6	6.5
Nitrogen Dioxide (NO_2)	Annual	21.4	14	35	100	87	767511	3341895	5.1	7.4	10.4	9.1	6.8
Carbon Monoxide (CO)	1 hr	103.1	8050	8153	40000	85090112	769362	3339793	103.1	28.2	28.1	27.0	28.7
Carbon Monoxide (CO)	8-hr	16.3	5290	5306	10000	86072916	767460	3342348	8.3	13.3	10.1	11.6	8.7
Lead (Pb)	24-hr	0.011	0.03	0.04	1.5	87062724	769610	3338267	0.0064	0.010	0.011	0.011	0.0084

(1) Short-term values are highest second high values for this analysis.
(2) Rule 62-204.240, F.A.C.
(3) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

Air Toxics Analysis

The analysis of Project impacts versus the draft FARCs involved combining all future Purdom Station emissions (Unit 7, Unit 8, GT1 and GT2 and the auxiliary boiler) as a single source and modelling at a unit emission rate (1 gram/second). These maximum impacts for the three averaging times were scaled using the short-term and annual expected emission rates for the various pollutant. Predicted concentrations are provided in Table 5.6.1-28. As indicated, all concentrations are below the draft FARCs.

Auxiliary Boiler

The auxiliary boiler was modelled separately from the other sources in the short-term analyses as it will not be permitted to operate in conjunction with Units 7 and 8. The results of modelling the auxiliary boiler alone are included in Table 5.6.1-29. As indicated, the maximum short-term impacts of the auxiliary boiler are very small in comparison with allowable PSD increments and FAAQS/NAAQS. Annual impacts were not computed as they were already included in all of the long-term impact analyses discussed above.

5.6.1.13 Additional Impacts Analysis

The PSD guidelines indicate that, in addition to demonstrating that the proposed source will neither cause nor contribute to violations of the applicable PSD increments and AAQS, an additional impacts analysis must be conducted for those pollutants subject to PSD review (CO and particulate matter (TSP and PM_{10})). However, the City has chosen to include other pollutants in the analysis to provide additional information. The additional impacts analysis includes an analysis of air quality impacts due to growth induced by the Project, an analysis of air quality impacts on soils and vegetation, and a discussion of Project impacts on visibility. These analyses are included in Section 8 of the PSD report (Appendix 10.1.5). A brief summary is included here.

Impacts Due to Growth

There may be some temporary residential growth associated with construction of the Purdom Unit 8 Project, but there is little potential for new residential or industrial development nearby as a result of the new facility. Although it is not possible to reliably quantify the emissions and impacts resulting from the new development, they are expected to be small and well-distributed throughout the area.

Vegetation, Soils, and Wildlife Analyses

The focus of the vegetation, soils, and wildlife portions of the additional impacts analysis section of a PSD application is typically on any nearby Class I areas. However, for this application, it has been broadened to constitute an air quality related values (AQRV) analysis covering the Class II area around the Purdom Station as well as pollutants in addition to those which trigger PSD review. As has been demonstrated earlier, the proposed Project will neither cause nor contribute to violations of the Class I PSD increments (nor the AAQS) in the St. Marks National Wilderness Area and the Bradwell Bay National Wilderness Area. The City has agreed to evaluate Project impacts on air quality-related values (AQRV) identified by the Federal Land Managers (FLMs)

TABLE 5.6.1-28
MAXIMUM MODELLED HAZARDOUS AIR POLLUTANT CONCENTRATIONS VERSUS DRAFT FARCS

Pollutant	8-Hour			24-Hour			Annual		
	Maximum[1] Modelled Conc ($\mu g/m^3$)	Draft FARC[2] ($\mu g/m^3$)	Acceptable	Maximum[1] Modelled Conc ($\mu g/m^3$)	Draft FARC[2] ($\mu g/m^3$)	Acceptable	Maximum[1] Modelled Conc ($\mu g/m^3$)	Draft FARC[2] ($\mu g/m^3$)	Acceptable
Arsenic (As)	9.85E-03	0.1	Yes	5.42E-03	0.02	Yes	1.78E-05	2.30E-04	Yes
Beryllium (Be)	3.94E-04	0.02	Yes	2.17E-04	0.005	Yes	1.07E-06	4.20E-04	Yes
Cadmium (Cd)	4.45E-03	0.02	Yes	2.45E-03	0.005	Yes	1.36E-05	5.60E-04	Yes
Chromium (Cr)	1.97E-02	0.5	Yes	1.09E-02	0.1	Yes	1.52E-04	N/A	Yes
Lead (Pb)	2.71E-02	0.5	Yes	1.49E-02	0.1	Yes	2.07E-04	9.00E-02	Yes
Manganese (Mn)	7.46E-02	50	Yes	4.11E-02	12	Yes	1.07E-03	5.00E-02	Yes
Mercury (Hg)	2.67E-03	0.1	Yes	1.47E-03	0.02	Yes	4.97E-06	3.01E-01	Yes
Nickel (Ni)	4.31E-01	10	Yes	2.37E-01	2.4	Yes	3.89E-03	4.20E-03	Yes
Cobalt (Co)	1.13E-02	0.5	Yes	6.20E-03	0.1	Yes	2.95E-05	N/A	Yes
Antimony (Sb)	8.15E-03	5	Yes	4.49E-03	1.2	Yes	7.14E-05	3.00E-01	Yes
Vandium (V)	1.38E-01	0.5	Yes	7.59E-02	0.1	Yes	2.73E-04	2.00E+01	Yes
Polycyclic Organic Matter (POM)	5.33E-03	N/A	Yes	2.93E-03	N/A	Yes	7.79E-05	N/A	Yes
Benzo(a)Pyrene (BaP)	1.14E-06	N/A	Yes	6.28E-07	N/A	Yes	1.32E-08	3.00E-04	Yes
Benzene	3.30E-04	30	Yes	1.82E-04	7	Yes	1.29E-05	1.20E-01	Yes
Toluene	2.97E-03	1880	Yes	1.64E-03	448	Yes	4.17E-05	4.00E+02	Yes
Selenium (Se)	4.05E-03	2	Yes	2.23E-03	0.5	Yes	1.72E-05	N/A	Yes
Hydrochloric Acid (HCl)	2.01E+00	70	Yes	1.11E+00	17	Yes	2.45E-02	7.00E+00	Yes
Hydrogen Fluoride (HF)	3.04E-01	26	Yes	1.67E-01	6.2	Yes	3.69E-03	N/A	Yes
Dioxin (378TCDD)	2.50E-09	N/A	Yes	1.37E-09	N/A	Yes	2.88E-11	2.20E-08	Yes
Formaldehyde (HCOH)	3.58E-02	3.7	Yes	1.97E-02	0.9	Yes	5.41E-04	7.70E-02	Yes

(1) Maximum values are highest rather than highest second-high values for this analysis.
(2) FDEP, 1995

Source: Foster Wheeler Environmental, 1997

TABLE 5.6.1-29
SUMMARY OF AUXILIARY BOILER ANALYSIS

Pollutant	Avg Period	Maximum Concentration ($\mu g/m^3$)	Preliminary Maximum[1] Concentration by Year				
			1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	0.80	0.74	0.78	0.77	0.80	0.73
Sulfur Dioxide (SO_2)	24-hr	0.49	0.20	0.44	0.41	0.49	0.40
Particulate Matter (PM_{10})	24-hr	6.4	2.6	5.7	5.4	6.4	5.1
Carbon Monoxide (CO)	1 hr	161.0	161.0	109.4	77.1	81.2	156.4
Carbon Monoxide (CO)	8-hr	53.5	29.6	45.0	53.5	49.6	40.8

[1] Maximum values are highest second high concentrations for this analysis.

Source: Foster Wheeler Environmental, 1997

as a part of the application. AQRVs have not been specifically identified by the USFWS for the St. Marks NWA; however, the USFS has identified two AQRVs for the Bradwell Bay NWA, fresh air (lack of odor) and vegetation (FWENC, 1997a). Operation of the proposed Project will not result in any odors in the NWAs, hence the AQRV fresh air (lack of odor) is not addressed further in the following analysis. Since specific AQRVs have not been identified for the St. Marks NWA, this AQRV analysis evaluates the effects of air quality on general vegetation types and wildlife found on both the St. Marks NWA and the Bradwell Bay NWA.

The Project was designed such that there would be no increase in either NO_2 or SO_2 emissions and the following impacts analysis essentially evaluates how the existing ambient air quality (the Project and existing sources) would affect vegetation and soils.

For St. Marks NWA, vegetation type AQRVs and their representative species types have been defined as:

- Estuarine Habitat - black needlerush, salt marsh cordgrass
- Forested Wetland - red maple, swamp tupelo, sweet bay, and pond cypress
- Upland Forest - slash pine, blackberries, winged sumac, hollies, and saw palmetto

For Bradwell Bay, vegetation type AQRVs and their representative species types have been defined as:

- Upland Forest - slash pine, loblolly pine
- Forested Wetland - sweet gum, slash pine, water oak, red bay, black willow, pond cypress, bald cypress, saw palmetto

Wildlife AQRVs included: endangered species, waterfowl, marsh and water birds, shorebirds, reptiles and mammals.

A screening approach was used which compared the maximum predicted ambient concentrations of air pollutants of concern from the Project with "effect threshold limits" for both vegetation and wildlife as reported in the scientific literature. It was recognized that effect threshold information is not available for all species found in either the St. Marks NWA or Bradwell Bay NWA, although studies have been performed on a few of the common species and on other similar species which can be used as models. In conducting the assessment, both direct (fumigation) and indirect (soil accumulation/uptake) exposures were considered for flora, and direct exposure (inhalation) was considered for wildlife. Maximum concentrations and depositions were predicted using the ISCST3 model and five years of meteorological data as described earlier.

Since background air quality monitoring data are not available for either of the Class I Areas, background values for the criteria pollutants were estimated based on monitoring data from regional air quality monitoring locations as listed in Table 2.3.7-7. This is a conservative approach since the monitors are either near point sources or in more urban areas than the Class I Areas. These background concentrations were added to predicted future concentrations resulting from operation of the Project and totals are compared with the appropriate effect threshold limits. The detailed analysis is contained in Section 8.3 of the PSD report found in Appendix 10.1.5.

The following media were considered with respect to impacts of the following parameters:

Vegetation	Soil	Wildlife
Carbon Monoxide	Lead	Sulfur Dioxide
Particulates	Beryllium	Nitrogen Dioxide
Nitrogen Dioxide	Arsenic	Ozone
Sulfur Dioxide	Antimony	Particulates
Ozone	Cadmium	
SO_2 - NO_2 Synergism	Chromium	
SO_2 - O_3 Synergism	Cobalt	
Sulfur and Nitrogen Deposition	Manganese	
	Nickel	
	Vanadium	

Based on the analysis, the Project is not expected to cause any adverse impacts on vegetation, soils, or wildlife.

Visibility Impacts

Section 169A of the CAA Amendments of 1977 provides for implementation of guidelines to prevent visibility impairment in mandatory PSD Class I areas. The guidelines are intended to protect the aesthetic quality of these pristine areas from reduction in visual range and atmospheric discoloration due to various pollutants. As agreed to by the FDEP, the USFWS, and the USFS (USFWS, 1996), only emissions of PM_{10} were considered for the visibility analysis since there will be no net increase in annual emissions of SO_2 and NO_x. Further, the USFS agreed that due to the small increase in annual emissions of PM_{10} proposed, a regional haze analysis is not warranted (USFWS, 1997).

Potential Project impacts on visibility in the nearest Class I areas were to be evaluated using the VISCREEN Version 1.01 (88341) model (EPA, 1988b) in accordance with the modelling protocol (COT, 1996). However, it was determined that this and other more refined visibility models can only evaluate visibility impacts for short-term averaging periods using short-term emission rates. For the proposed Project, the future maximum short-term PM_{10} emission rates will be lower than the current values. Intuitively, this should result in some short-term improvement in visibility. However, since the VISCREEN model is not programmed to address emission reductions, the extent of the short-term improvements cannot be evaluated quantitatively.

5.6.2 Monitoring Programs

5.6.2.1 Ambient Monitoring

Air Quality Modelling Assessment

In order to determine if the proposed Project's impacts would be insignificant and therefore be eligible for both pre- and post-construction monitoring exemptions under the Prevention of Significant Deterioration (PSD) rules (Rule 62-212.400(3)(e) F.A.C.), a modelling analysis was conducted. This analysis used procedures described in EPA's New Source Review Workshop

Manual (Draft) (EPA, 1990), as well as the Project-specific modelling procedures and protocol accepted by FDEP. The FDEP approved the City's request for a preconstruction monitoring exemption on February 19, 1997 (FDEP, 1997).

Post-Construction Monitoring Exemption Request

As indicated in Table 5.6.1-23, the maximum modelled ambient impacts of the Project are below the monitoring de minimis levels of Table 212.400-3, which indicates that post-construction monitoring exemptions for PM_{10} and CO should be granted in accordance with Rule 62-212.400(3)(e), F.A.C.

5.6.2.2 Continuous Emissions Monitoring

This section describes the continuous emissions monitoring system (CEMS) proposed for Unit 8. The proposed monitoring system is consistent with the requirements of 40 CFR 75, Continuous Emissions Monitoring, and 40 CFR 60 Subpart GG (NSPS).

Oxides of Nitrogen

A CEMS for NO_x will be installed and operated in accordance with 40 CFR 75.10. The system will consist of a NO_x pollutant concentration monitor and an O_2 or CO_2 diluent gas monitor, with a data acquisition system capable of measuring and recording NO_x concentration (ppm) and NO_x emission rate (lb/mmBtu). Water to fuel ratio will also be recorded (by a separate monitoring system) in accordance with 40 CFR 60 Subpart GG.

Sulfur Dioxide

SO_2 will be monitored using the alternate method presented in 40 CFR 75.11(d)(2). This alternate method is detailed in 40 CFR 75 Appendix D. (SO_2 emissions will be calculated assuming a 95 percent conversion of sulfur to SO_2 in accordance with the GE data sheets for the purpose of demonstrating compliance with the facility-wide cap.) Fuel meters and an approved custom fuel monitoring schedule will be used to track fuel usage and sulfur content.

Other Pollutants

CO_2 will be monitored in accordance with 40 CFR 75 Appendix G. No other pollutants require monitoring under 40 CFR Part 75 nor FDEP rules.

Compliance with Facility-wide caps

These CEMS, fuel flow monitors, and the custom fuel monitoring schedule together with the existing Unit 7 CEMS for SO_2 and NO_x and existing combustion turbine fuel flow monitors (and emission factors) will be sufficient to demonstrate compliance with the requested facility-wide caps on annual emissions of SO_2 and NO_x.

5.6.2.3 Performance Tests

40 CFR 60 Subpart GG establishes limitations on NO_x and SO_2 emissions. Compliance with these limitations must be demonstrated within 60 days of achieving the maximum production

rate but not later than 180 days after the initial start-up. These performance tests include NO_x emissions, fuel nitrogen content and fuel sulfur content. Performance testing will be in accordance with the 40 CFR 60.335 test methods and procedures.

5.6.3 References

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USFWS (U.S. Fish & Wildlife Service). 1997. Letter to Hamilton S. Oven, FDEP, Tallahassee, FL from Ellen M. Porter, USFWS, Denver, CO. January 21, 1997.

USFWS. 1996. Memo to USFWS Regional Director, Region 4, Atlanta, GA from Sandra V. Silva, USFWS, Denver, CO. October 4, 1996 (confirming meeting discussion of September 25, 1996).

5.7 NOISE

Potential noise impacts have been assessed for residential receptors around the project site considering the new Unit 8, the existing Unit 7, and the existing combustion turbines (GT1 and GT2). Unit 8 was conservatively assumed to operate 100 percent of the time, Unit 7 to operate for 30 percent of the time (also conservative), and the two combustion turbines to operate for 100 hours each per year, which is representative of the most recent two year period of record as well as expected future operations). Noise levels were annualized per the methodology employed by the EPA guideline document (EPA, 1974).

Noise levels were predicted for five receptor locations using a computer model (see Appendix 10.6.7) which employed the noise level specifications of the major plant components plus the existing noise levels from Unit 7 and the combustion turbines as input data (see Section 2.3.8). The model was also used as a design tool to aid in identifying equipment which required additional noise control to permit the total plant to meet the design noise limit. The design noise limit for Unit 8 was selected such that the noise, when combined with noise from the existing units, would not exceed the EPA guideline level at the nearest residence to the station. Various noise control measures have been incorporated into the project design to limit noise to the desired level.

5.7.1 Design Noise Level

The EPA guideline is the most stringent of available guidelines that could be applied to the project. The next most applicable criteria, which were not selected, would have allowed levels up to 6.4 dBA higher. The EPA guideline is not a noise standard because it was developed without regard to cost or feasibility of compliance and does not have regulatory status. It is simply a goal that, if achieved, would provide low noise levels that would be found acceptable to most people living in quiet rural areas.

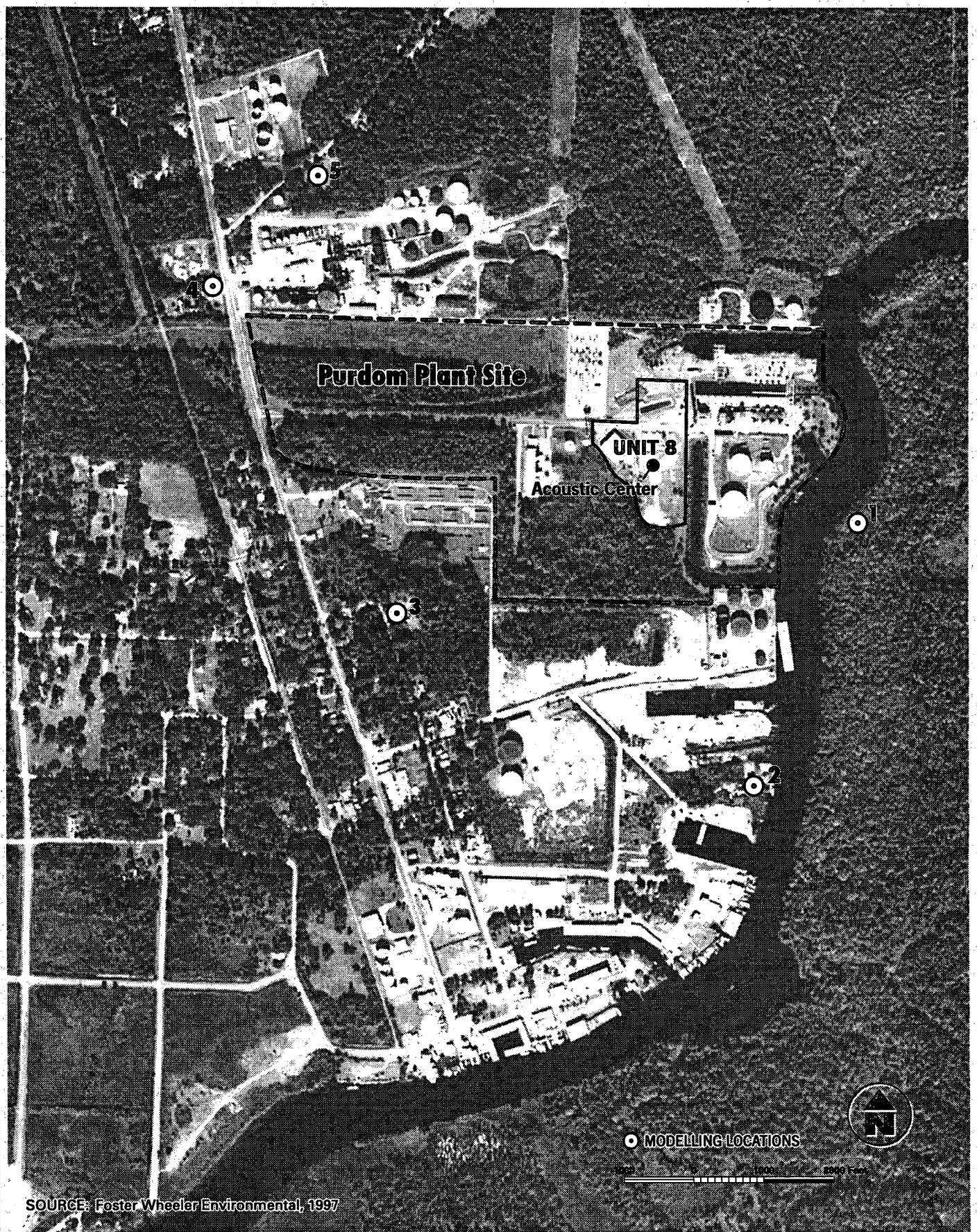
The EPA guideline level is an annualized day/night noise level (L_{dn}) of 55 decibel (dBA) (EPA, 1974). The L_{dn} level is computed by adding a 10 dBA adjustment to the nighttime hours between 10 p.m. and 7 a.m. to account for the greater sensitivity of people to noise at night. The adjusted nighttime levels are then averaged with the daytime levels to compute the L_{dn}. For sources of continuous noise, such as power plants, an L_{dn} of 55 dBA is equal to a continuous or "equivalent" level (L_{eq}) of 48.6 dBA. Thus, this 48.6 dBA level is used as the design noise level for the project. The project is designed to achieve this level at the nearest residence.

5.7.2 Receptors

The five locations used in the noise model as receptors are shown on the map of the area on Figure 5.7.2-1. The distances, in feet, between each receptor and the Unit 8 or Purdom Station acoustic center located in the proposed power island area are provided in Table 5.7.2-1.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.



CITY OF TALLAHASSEE

NOISE MODELLING LOCATIONS (1 – 5)

PURDOM UNIT 8 PROJECT – ST MARKS FLORIDA

Figure 5.7.2-1

TABLE 5.7.2-1 NOISE MODEL RECEPTOR LOCATIONS	
Receptor	**Distance from Plant Acoustic Center (ft)**
No. 1 - East Bank of St. Marks River	1,000
No. 2 - Nearest Residence to South	1,730
No. 3 - Nearest Residence to Southwest	1,500
No. 4 - Nearest Residence to West	2,300
No. 5 - Nearest Residence to Northwest	2,100
Source: Foster Wheeler Environmental, 1997	

Locations 2 through 5 are at the nearest residences in different directions from the Purdom Station. They are adjacent to the noise monitoring locations described in Section 2.3.8. Noise levels at the most distant residences shown on Figure 5.7.2-1 would be up to 6 dBA lower than those predicted in the following sections for the nearest residences.

Location 1 is across the St. Marks River from the Purdom Station at the nearest point within the Aucilla Wildlife Management Area from Unit 8. The location was selected to identify the highest noise level to which wildlife might be exposed. Noise levels further into this area would decrease rapidly. Since there are no residences in the Wildlife Management Area, the EPA guideline does not apply, but potential impacts to the wildlife are assessed.

5.7.3 Noise Sources

The noise sources for Unit 8 were divided into three different "groups" and seven individual equipment items based upon how the equipment is being bid and supplied. Noise levels of the existing units which will remain in operation after the startup of Unit 8 are also included. The locations of the new and existing facilities are shown on the Plot Plan (see Figure 3.2-1). Specified noise levels for the groups and the individual equipment items are presented in Table 5.7.3-1.

TABLE 5.7.3-1 PURDOM UNIT 8 PROJECT EQUIPMENT SOUND LEVELS	
Equipment	**Sound Level (dBA) @ Reference Distance (ft)**
Power Island (GT/STG + Auxiliaries)	58 @ 400 (550' from center)
Cooling Tower	54 @ 400 (430' from center)
Zero Discharge Wastewater Treatment System	60 @ 100 (150' from center)
Circulating Water Pumps	85 @ 3
Cooling Tower Makeup Pumps	85 @ 3
Boiler Feed Pumps	85 @ 3
Condensate Pumps	85 @ 3
Auxiliary Cooling Water Pumps	85 @ 3
Condenser Air Ejectors	85 @ 3
Fuel Oil Transfer Pumps	85 @ 3
Existing Unit 7	52/47[(1)] @ 750
Existing GT1 & GT2	63/44[(1)] @ 1030
[(1)] Measured Instantaneous Level/Calculated Annualized Level Source: Equipment specifications	

The first group is the Unit 8 power island which includes the new combustion turbine, the HRSG, the steam turbine, associated electrical generators and much of the support equipment. The entire group of equipment can be covered by a single noise specification since it will be supplied by only one vendor. A level of 58 dBA at 550 feet from the acoustic center was determined to be appropriate to allow the entire project to meet the design goal. Known noise control measures include a silencer on the turbine air inlet and an acoustic enclosure for the combustion turbine. The HRSG will act as an effective silencer for the exhaust gases. Any other measures required to meet the noise specification will be determined by the vendor.

The second group is the mechanical draft cooling tower. Noise sources include the four fans and motors and the waterfall noise. Since this will also be supplied by a single vendor, a single noise specification will cover the entire unit. A level of 54 dBA at 430 feet from the center of the tower was developed as the specification. Potential noise control measures include low-speed fans and/or splash baffles.

The zero discharge wastewater treatment system is the third group and its noise sources could include numerous pumps, a vapor compressor, an evaporator, a crystallizer, and a deaerator. As above, a single vendor will supply the complete facility. A level of 60 dBA at 150 feet from the center of the facility will be specified and will be met using standard noise control measures such as placing equipment in a building, providing low-noise components, insulating piping, and providing silencers on vents.

Seven individual equipment items for Unit 8 were identified as noise sources that were not included in any of the three groups described above. These items will be bid and supplied by various vendors and each includes its own noise specification. The items include the circulating water pumps, cooling tower makeup pumps, boiler feed pumps, condensate pumps, auxiliary cooling water pumps, condenser air ejector, and the fuel oil transfer pump. The first item will be located at the cooling tower, the second item will be at the Unit 8 intake structure, and the other five will be within the power island. All of these items are specified to have a noise limit of 85 dBA at 3 feet. Various methods are available for making the equipment meet this level and the respective suppliers will determine the most appropriate method. Each piece of equipment was treated individually in the noise modeling.

The last two groups of equipment are the existing Unit 7, which was treated as a single noise source, and the two existing combustion turbines which were also treated as a single source. The noise model input data for these two facilities were developed from data measured during the noise survey described in Section 2.3.8. The reduced operating times of these two facilities were factored into the noise levels produced to provide the annualized values needed for comparison with the EPA guideline.

Facility-related traffic was not included in the modeling because the noise will be insignificant. The traffic will include privately owned vehicles of the employees and service vehicles. Approximately one to two trucks per day will be required to haul away solid waste material produced by the zero discharge wastewater treatment system, and its impact on annualized noise will be insignificant.

The "NoiseCalc" computer model (Driscoll, 1984) that was used for this analysis requires octave band levels for each noise source. This is because different frequencies are attenuated at different rates by the atmosphere, trees, and other features. Octave band levels for the Unit 8 equipment

were obtained from the *Electric Power Plant Environmental Noise Guide* (EEI, 1984). Octave band levels for the existing units were measured directly during the 1994 noise survey.

5.7.4 Noise Modeling Results

The results of the noise modeling at each of the five receptor locations are presented in Table 5.7.4-1. A day/night level is not shown for Receptor 1 on the east bank of the river because there are no residences in the wildlife area and the day/night measure is only applicable to people. The predicted level of 53.3 dBA is actually lower than the current level because Units 5 and 6 will not be operating and the new Unit 8 will be located farther from the river.

L_{eq} levels of 43.7 dBA to 48.6 dBA were calculated for the four residential locations. These are all equal to or below the design noise level of 48.6 dBA. The corresponding day/night levels range from 50.1 dBA to 55.0 dBA, which are also all equal to or below the EPA guideline of 55 dBA. As expected, the highest predicted level occurs at Receptor 3 which is the nearest residence to the plant. All other residential locations will experience even lower levels of noise.

TABLE 5.7.4-1
NOISE MODELING RESULTS

Receptor	Equivalent Sound Level (dBA)	Day/Night Sound Level (dBA)
No. 1 - East Bank of St. Marks River	53.3	N.A.
No. 2 - Nearest Residence to South	46.3	52.7
No. 3 - Nearest Residence to Southwest	48.6	55.0
No. 4 - Nearest Residence to West	43.7	50.1
No. 5 - Nearest Residence to Northwest	45.3	51.7

Source: Foster Wheeler Environmental, 1997

5.7.5 Impact Assessment

No noise impact is expected at any residence in the City of St. Marks because the plant has been designed and will be built to comply with the most stringent appropriate noise guideline. The expected levels differ little from existing noise levels, and any change, if noticeable, will not be significant.

The wildlife area on the east side of the river will also experience little change, if any, in noise levels. Thus, no noise impact is expected. Furthermore, noise levels could increase substantially in the wildlife area without having an adverse impact. Research has found that animals adapt quickly to high noise environments, such as around airports, and that continuous type noise, such as that from power plants, has no demonstrated effects (EPA, 1971).

5.7.6 Compliance Determination

Since much of this analysis is based on noise specifications rather than actually selected equipment, a noise survey will be conducted soon after plant start-up to verify achievement of the design goal. Should the overall level exceed the design limit, additional noise control measures will be applied where necessary to achieve the goal.

5.7.7 References

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5.8 CHANGES IN NONAQUATIC SPECIES POPULATIONS

5.8.1 Impact Assessment

Long-term changes in populations of important wetland and upland species as a result of the Purdom Unit 8 Project are not expected. Power plant modifications will take place in previously disturbed areas.

5.8.2 Monitoring Program

Monitoring of site nonaquatic species will not be necessary.

5.9 OTHER PROJECT OPERATION EFFECTS (TRAFFIC)

Upon completion of the Purdom Unit 8 project construction, transportation-related effects of normal operation will be less than the current operating condition. This is due primarily to greater efficiency of the new unit and concurrent permanent shut-down of Units 5 and 6. A reduction in staff of approximately 25 percent is expected because of the Project (from 51 to 37 total staff).

5.9.1 Plant Operation Traffic

Trips associated with operation of the power station were analyzed using current employee and non-employee trip patterns resulting in a trip distribution and assignment impact. This procedure is adopted, as no changes in shift periods or shift work are expected.

5.9.1.1 Employee Trip Generation

Shifts at the Purdom Station consist of maintenance, staff support, and operations personnel. Maintenance and staff support personnel work either 8-hour or 10-hour shifts beginning at 7:00 AM and ending at 3:30 PM or 5:30 PM, respectively. Employees choosing the 10-hour shift have a Monday or Friday off each week. These day shifts consist of up to 25 people resulting in up to 50 commuting trips per day.

A separate and distinct "operating" shift occurs on a 24-hour basis with two 12-hour shifts. One shift operates the Purdom Station between 6:00 AM and 6:00 PM, consisting of 5 employees. The other shift works from 6:00 PM to 6:00 AM with the same number of employees. This results in 20 commuting trips per day for the operating staff.

After completion of the Purdom Unit 8 construction phase, it is expected that the permanent work force of the Purdom Station will be reduced by approximately 25 percent. This reduction yields a reduction in commuting and lunch hour trips of approximately 20 trips per day.

Existing traffic counts at the main gate yield approximately 200 one-way trips per day. With 35 employees making 2 trips per day, 70 commuting trips (50 maintenance and 20 operating) are expected. Traffic counts at the main gate also show approximately 10 trips occur during lunch periods. The 70 commuting trips plus 10 lunch trips equal 80 employee-related trips.

5.9.1.2 Non-Employee Trip Generation

Subtracting the employee trips from the total 200 daily trips counted at the driveway, this yields approximately 120 non-employee related trips to and from the Purdom Station per day. This non-employee trip making is expected to lower after construction of Unit 8 is completed. No specific data on this non-employee trip reduction is available at this time. Therefore, a worst-case scenario will be assumed for these trips to remain at the current level in the future.

5.9.1.3 Trip Distribution and Assignment

No change is expected between the distribution pattern of the Purdom Station employee and non-employee trips, prior to or after completion of Purdom Unit 8 construction.

The distribution and assignment process of the PM peak hour trips relied heavily on the residence locations of the current Purdom Station employees. This data was provided by zip codes, allowing for an areawide distribution and a subsequent trip assignment.

5.9.1.4 Operations Truck Traffic

The existing truck traffic pattern into and out of the site is not expected to change significantly after completion of the construction phase. The existing regular truck deliveries will continue to occur because most of them are not related to the number of employees employed on the site. They mainly consist of parcel deliveries, trash pick-up, vending machine restocking, uniform cleaning services, and other similar deliveries. Fuel deliveries would only occur in case of emergencies, thus are not part of a daily truck traffic pattern.

The only minor change in the truck traffic pattern is the daily removal of filter cake material to the off-site landfill. This is considered an insignificant increase in the truck activity (less than 1 percent) from a traffic perspective. Therefore, the operations truck traffic flow is not analyzed in detail.

5.9.2 Conclusion

With a reduction in total staffing at the upgraded Purdom Station and no significant change in trip distribution expected, the roadway impact will be somewhat reduced over current levels, because the existing 200 daily trips to and from the Purdom Station will be reduced to below 180 daily trips.

Therefore, the operation phase of the Project does not require any mitigation as its impact is presently existing on the roadway network.

5.10 ARCHEOLOGICAL SITES

In the event that during post-construction activities there is any reason to believe that an archeological site has been located on the Purdom Station site, all ground-disturbing activity within the immediate vicinity of the discovery will be halted and the Division of Historical Resources (DHR) will be notified. No ground-disturbing activities will take place in the immediate vicinity of the discovery until DHR has advised that they may resume.

5.11 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF STATE AND LOCAL RESOURCES

The addition of Purdom Unit 8 to the City's system will result in only minor additional commitments of environmental resources for the operating life of the Unit. The majority of environmental resources required by the Project are either already committed to use by the existing Purdom facility or will be balanced by environmental improvements. The principal resources used will be land, PSD increment, and surface waters for cooling.

Of the total Purdom Station site (63 acres), approximately 4 mostly cleared upland acres already used to support the Purdom facility will be used by the Project. In contrast to a new generating facility constructed on a green-field site, the Purdom Unit 8 Project will be significantly more efficient in the use of land per new MW generated. Indeed, the Project's use of land is, for the most part, a reuse of already committed resources.

Purdom Unit 8 will largely use PSD increments that will be freed up by the permanent shutdown of existing Purdom Units 5 and 6, the anticipated reduced utilization of Unit 7 and the existing gas turbines, and the City's commitment to burn clean fuels. The small increased consumption of PSD increment by particulate matter emissions will be partially the result of the Unit 8 cooling tower, which is balanced by the reduced thermal impact of the Purdom Station on the St. Marks River.

Finally, Purdom Unit 8 will result in a relatively small surface water consumptive use (maximum of only 0.6 percent of the flow of the St. Marks River) for process and cooling water. This increase in surface water consumption is balanced by the elimination of the consumptive use of groundwater from the existing wellfield by the Purdom Station and the recycling of domestic and industrial wastewater.

Given the need for the facility, as expressed in Section 1, the Purdom Unit 8 Project efficiently and effectively minimizes the use of state and local resources. Benefits of the project are discussed in Section 7.1.

5.12 VARIANCES

Variances from applicable federal, state, or local standards do not appear to be required.

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CHAPTER 6

LINEAR FACILITIES

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6.1 RECLAIMED WATER PIPELINE

6.1.1 Project Introduction

The Purdom Unit 8 Project will include a 0.9-mile, single 6-inch diameter reclaimed water pipeline to support its operations. The pipeline will originate at the City of St. Marks Wastewater Treatment Facility (WWTF) and terminate at the Purdom Station. Section 3.5 describes the methodology by which this waste stream was selected for reuse within the Project. The corridors were chosen to maximize the use of existing unpaved roadways. The entire preferred corridor follows existing road cross sections including the road shoulder, drainage features, etc. The alternative corridor is slightly shorter, but includes two short stretches of about 875 feet (total) that do not follow a roadway.

At the present time, the City of St. Marks discharges its treated wastewater into the St. Marks River. The mean flow of this discharge has been estimated at 0.02 million gallons per day (MGD).

Based on the full design flow rate of 0.05 MGD, a distance on the order of 0.9 mile, and a static lift of about 10 feet, a 6-inch diameter pipe will be adequate. For this pipe, a permanent right-of-way width of about 30 feet will be adequate.

6.1.2 Corridor Location and Layout

The pipeline corridor proposed for certification is depicted on Figure 6.1.2-1. The preferred corridor route originates at the City of St. Marks WWTF and runs east about 200 feet to Mock Street. It then proceeds north on Mock Street for about 2,055 feet to Whaley Street, then turns east for about 590 feet to Ladd Drive. The corridor then heads northwest along Ladd Drive for about 747 feet to Shell Island Road, then turns east for about 300 feet to SR 363. The corridor then heads northwest along SR 363 for about 670 feet where it enters the Purdom Station. The total length of the reclaimed water pipeline is about 0.9 mile.

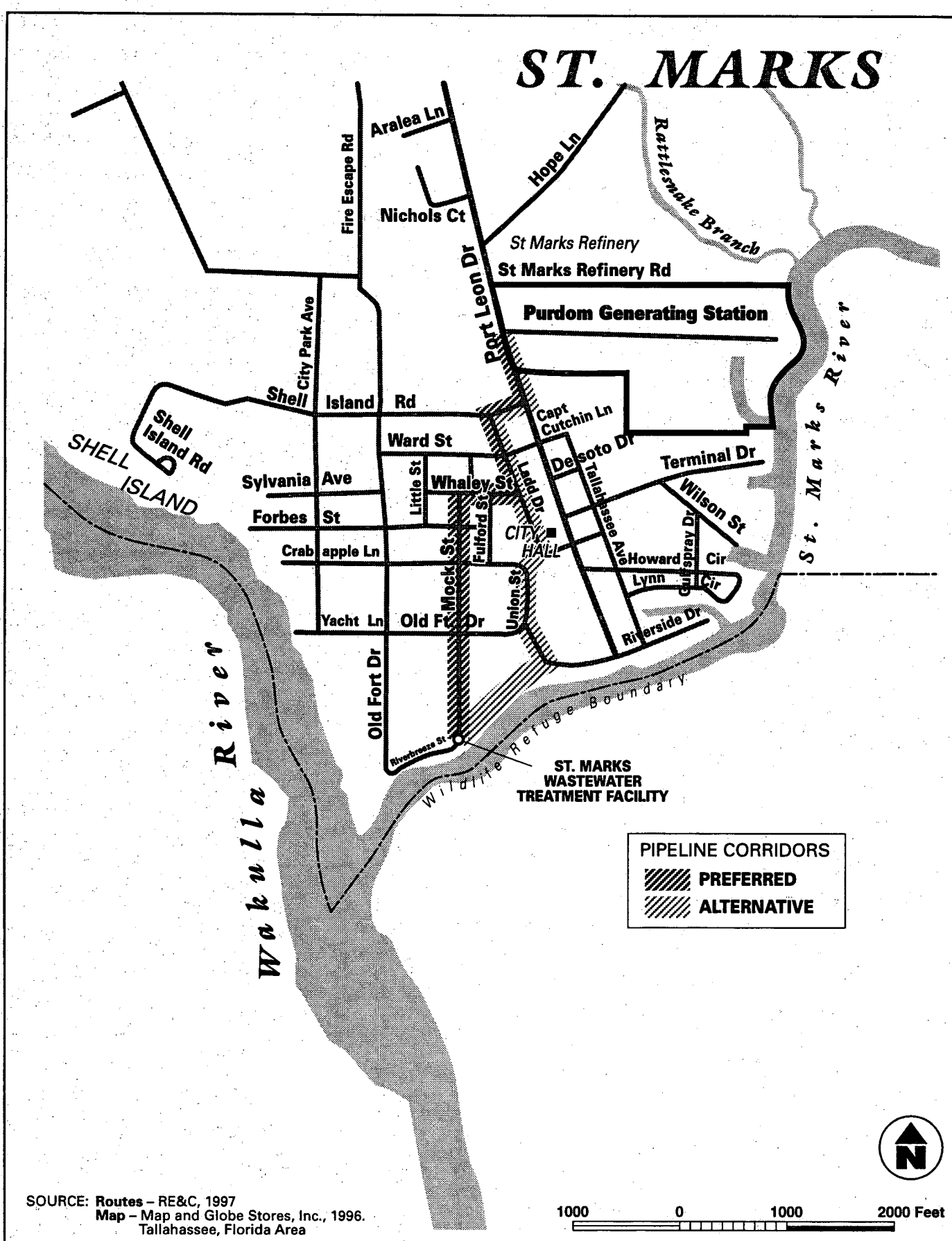
The alternate corridor route originates at the City of St. Marks WWTF and proceeds northeast about 745 feet to Riverside Drive and then northwest along Riverside Drive for about 470 feet to Union Street, then turns north for about 540 feet to Ladd Drive. The corridor then heads northwest along Ladd Dr. for about 1,360 feet to Shell Island Road, then turns east for about 300 feet to SR 363. The corridor then heads northwest along SR 363 for about 670 feet where it enters the Purdom Station. The total length of the reclaimed water pipeline is about 0.8 mile. A portion between Union Street and Ladd Drive (130 feet) is not along any roadway as is another portion (about 745 feet) between the City of St. Marks WWTF and Riverside Drive.

6.1.3 Reclaimed Water Pipeline and Road Design Characteristics

The pipe will be Schedule 80 polyvinyl chloride (PVC), or a similar design. Schedule 80 has a maximum outside diameter of 6.625 inches and a minimum wall thickness of 0.432 inch.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.



SOURCE: **Routes** – RE&C, 1997
Map – Map and Globe Stores, Inc., 1996. Tallahassee, Florida Area

CITY OF TALLAHASSEE

PURDOM 8 PREFERRED AND ALTERNATIVE RECLAIMED WATER PIPELINE CORRIDOR ROUTE

PURDOM UNIT 8 PROJECT – ST MARKS FLORIDA

Figure 6.1.2-1

Because of the pipe material (PVC meeting ASTM Standard D-1785), neither coating (internal or external) nor cathodic protection will be required. The pipe will be buried under at least 30 inches of cover in a trench that will likely only be 12 inches wide. Burial will be deeper where required to pass under ditches or roads. The pipe will be contained within a steel or concrete sleeve where it passes under the Tallahassee-St. Marks Historic Railroad State Trail and SR 363. These sleeves will be installed by the jack and bore method.

An access road for construction and maintenance will not be needed for this facility.

6.1.4 Cost Projections

Cost projections for the pipeline on an average per foot basis are about $55.

6.1.5 Corridor Selection Process

The preferred corridor for this pipeline from the City of St. Marks WWTF to the Purdom Station was selected and evaluated by the following:

- Consultants with expertise in power plant engineering, routing of linear facilities, land use planning, and environmental permitting
- Representatives of City of Tallahassee Electric and Water Utilities
- Representatives of the State Historic Preservation Officer

The corridor selection process incorporated land use, environmental, engineering, and cost considerations. The selection methodology employed was designed to be:

- Sensitive to land use and environmental conditions
- Objective in decision making
- Responsive to regulatory requirements

The corridor selection process consisted of two stages: Identification of Corridor Selection Criteria, and Evaluation of Candidate Corridors.

6.1.5.1 Identification of Corridor Selection Criteria

A corridor study area was selected which was bounded on the west by Old Fort Drive/Fire Escape Road, on the south and on the east by the St. Marks River, and on the north by St. Marks Refinery Road. This study area encompassed the origin and termination points and provided a broad enough area within which two corridor routes could be identified for evaluation. The study area covered about 0.7 square mile.

Eleven criteria were identified as being the most relevant for selection and evaluation of routes for underground pipeline facilities in the study area. These criteria were applied in various levels of emphasis to the corridor selection process as noted below.

The exclusion criteria preclude routing of the corridor. Minimization and avoidance criteria represent those routing parameters where their presence or occurrence in the corridor is

considered negative from an environmental, engineering, or licensing standpoint. Favorable criteria refer to locations where corridor alignments are generally preferred.

Exclusion

- Residences

Avoidance or Minimization Where Appropriate

- Wetlands
- Forested habitats
- Construction of new access roads
- Number of landowners
- Cost
- Length of corridor
- Commercial/industrial facilities with existing buried pipelines
- Cultural resources

Favorable

- Common corridor utilization
- Corridor along existing roadways

6.1.5.2 Evaluation of Candidate Corridors

Two general candidate corridor routes with small variations within each were identified (Figure 6.1.2-1). These corridor routes were selected based primarily upon the presence of existing linear facilities (i.e., roads, distribution lines, etc.). Rights-of-way were considered to be conducive to the collocation of, or adjacent positioning of, the pipeline, since this avoids any need to construct new access roads.

All alternative corridors share an existing linear facility. Distinctive features of each alternative corridor are as follows:

Preferred Corridor Route

The preferred corridor, beginning at the southern end, encompasses unpaved roads (Mock Street, Whaley Street, and Ladd Drive) for about 3,592 feet, and 970 feet of paved roads (Shell Island Road and SR 363). No crossing of wetlands or forested habitat is needed. All of the pipeline can be within City of St. Marks right-of-way except crossings under the Tallahassee-St. Marks Historic Railroad State Trail and under SR 363.

Alternate Corridor Route

The alternate corridor involves an additional section of paved road (540 feet) along Union Street. It also includes a crossing of a forested wetland area between Union Street and Ladd Drive. The

alternate corridor is common with the preferred corridor from the junction of Whaley Street and Ladd Drive to the Purdom Station. It is shorter than the preferred corridor by about 317 feet.

Conclusion

After a review of these corridors, the preferred corridor was selected. This corridor is clearly superior to the other corridor from an ecological resources perspective. The alternate corridor was not preferred because of its forested land crossing, increased length along paved roads, and portion that is privately owned. The preferred corridor was the best route based on balancing all considerations, including engineering, cost, ecological resources, and land use.

6.1.6 Socio-Political Environment of the Corridor Area

6.1.6.1 Governmental Jurisdictions

Both the preferred and alternate routes for the proposed reclaimed water pipeline are located entirely within the corporate limits of the City of St. Marks. Parks and recreation areas located within one-half mile of the proposed corridors include the San Marco de Apalache Historic Site, the Wakulla River Park Area, the St. Marks River Park Area, the St. Marks National Wildlife Refuge, the Aucilla Wildlife Management Area, the Florida National Scenic Trail, and the Historic Big Bend Saltwater Paddling Trail. They are shown in relation to the proposed pipeline routes on Figure 6.1.6-1.

6.1.6.2 Zoning and Land Use Plans

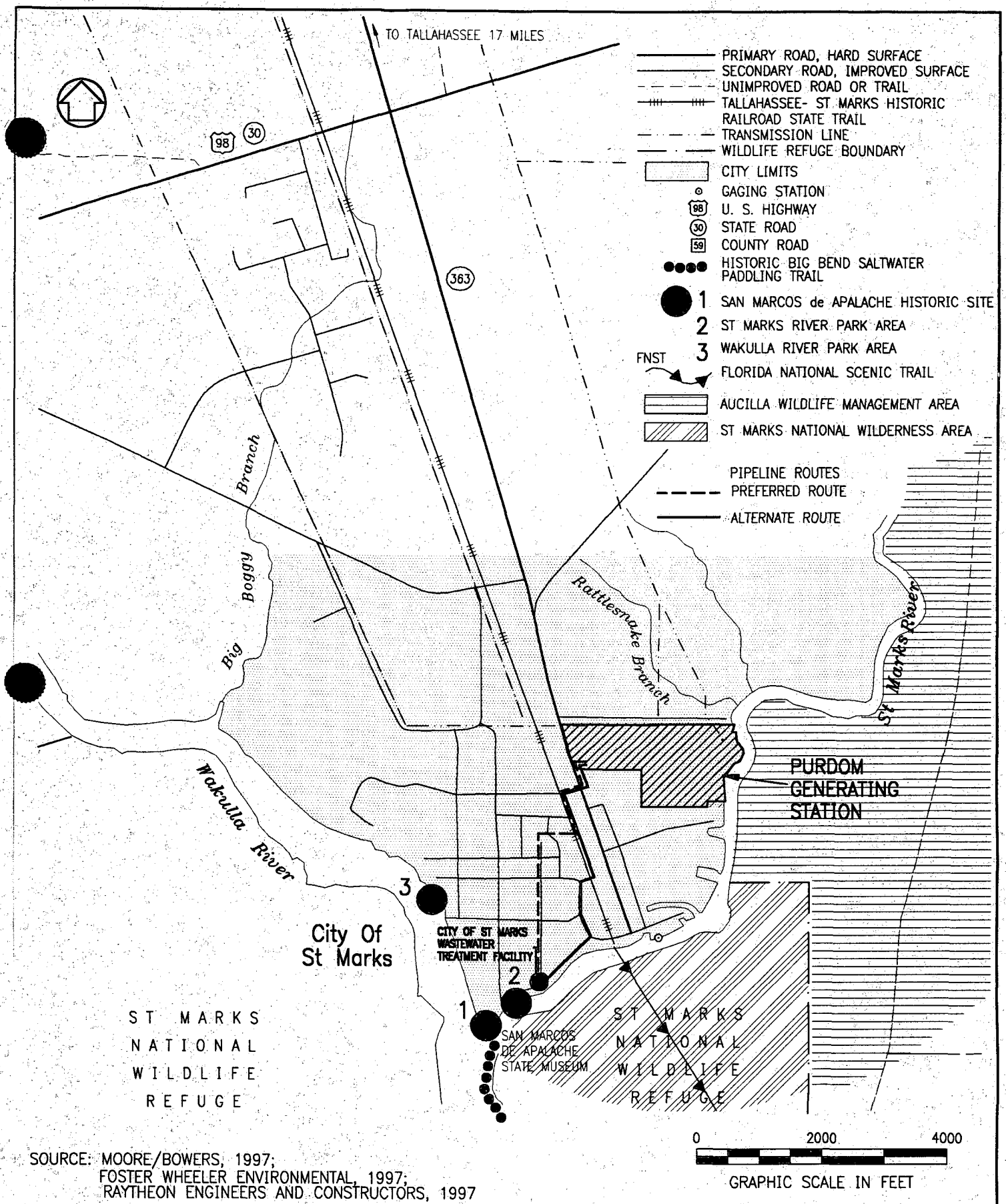
The effluent pipeline routes are shown in relation to the City of St. Marks Future Land Use Map on Figure 6.1.6-2. The pipeline is proposed to be located within or along city streets that follow the boundaries of Industrial, Commercial, Mixed, Public Buildings/Grounds, Recreation/ Conservation, and Residential future land use categories.

Policy 1.2.4 of the Future Land Use Element of the St. Marks Comprehensive Plan states:

> "Public Utilities needed to provide essential service to existing and future land uses in the City of St. Marks shall be permitted in all of the land use classifications established by this plan" (SMCC, 1990).

As discussed in Section 2.2.2 of this SCA, zoning districts in the City of St. Marks correspond to the Future Land Use Map of the St. Marks Comprehensive Plan. Thus, the zoning districts crossed by the proposed pipeline routes are the same as the future land use categories listed above. With respect to allowable uses within zoning districts, Section 2.01.01 of the St. Marks Land Development Code (draft) states:

> "The land use districts and classifications defined in the Future Land Use Element of the City Comprehensive Plan and delineated on the Future Land Use Map shall be the determinants of permissible activities on any parcel in the jurisdiction" (CSM, 1990).



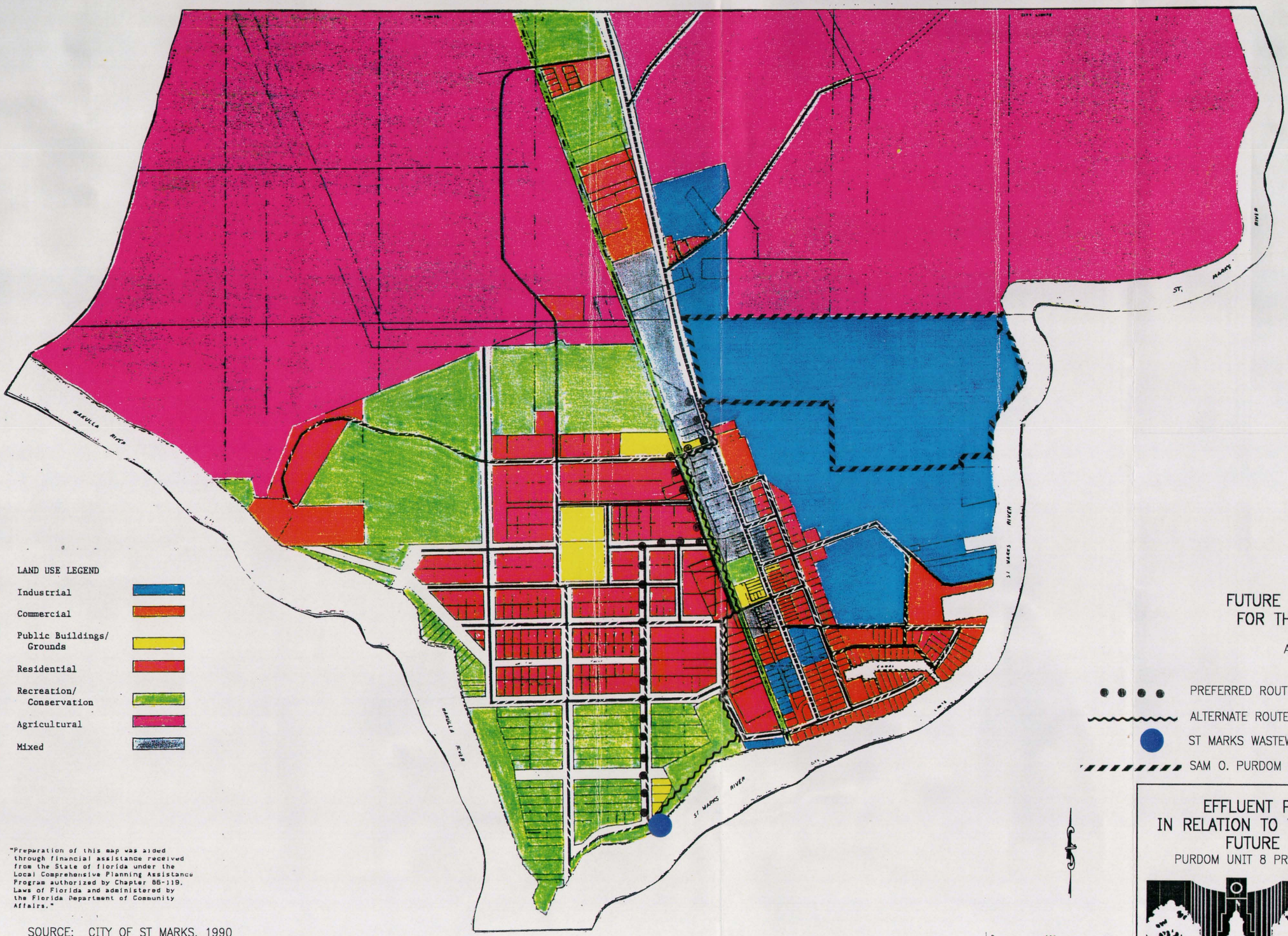
SOURCE: MOORE/BOWERS, 1997;
FOSTER WHEELER ENVIRONMENTAL, 1997;
RAYTHEON ENGINEERS AND CONSTRUCTORS, 1997

CITY OF TALLAHASSEE

GOVERNMENTAL JURISDICTIONS, PARKS, RECREATION AREAS AND CONSERVATION LANDS WITHIN .5 MILES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6.1.6-1



FUTURE LAND USE MAP
FOR THE YEAR 2000

August 1990

"Preparation of this map was aided through financial assistance received from the State of Florida under the Local Comprehensive Planning Assistance Program authorized by Chapter 86-119, Laws of Florida and administered by the Florida Department of Community Affairs."

SOURCE: CITY OF ST MARKS, 1990
RAYTHEON ENGINEERS AND CONSTRUCTORS, 1997
MOORE/BOWERS, 1997

EFFLUENT PIPELINE ROUTES
IN RELATION TO THE CITY OF ST MARKS'
FUTURE LAND USE MAP
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure
6.1.6-2

The St. Marks Land Development Code (draft) does not otherwise address utility facilities such as underground pipelines. Based on the language in the St. Marks Comprehensive Plan, public utilities such as the proposed pipeline are allowed in all zoning districts.

6.1.6.3 Easements, Title, Agency Works

When crossings of state roads are made, they must conform to the specifications outlined in FDOT's *Utility Accommodation Manual* (FDOT, 1993). SR 363 is the only state road to be crossed by the proposed pipeline. Approval to cross the Tallahassee-St. Marks Historic Railroad State Trail will need to be obtained from the State of Florida. Since the pipeline is expected to be within or along city streets, permission is required from the City of St. Marks. No other easements, title, or agency works permits are expected to be required.

6.1.6.4 Vicinity Scenic, Cultural, and Natural Landmarks

The significance of the parks, recreation areas, and the historic site located in the vicinity of the proposed pipeline is discussed in Section 2.2.5.

6.1.6.5 Archaeological and Historic Sites

Previously recorded archaeological sites WA406 and WA108 are located in close proximity to the preferred reclaimed water pipeline corridor (DHR, 1996). The former is a prehistoric site, the latter is a historic period military cemetery. According to the SHPO, no other historic or archaeological sites are known likely to exist within either the preferred or alternate pipeline corridors.

6.1.7 Bio-Physical Environment of the Corridor Area

6.1.7.1 Land Use/Vegetation

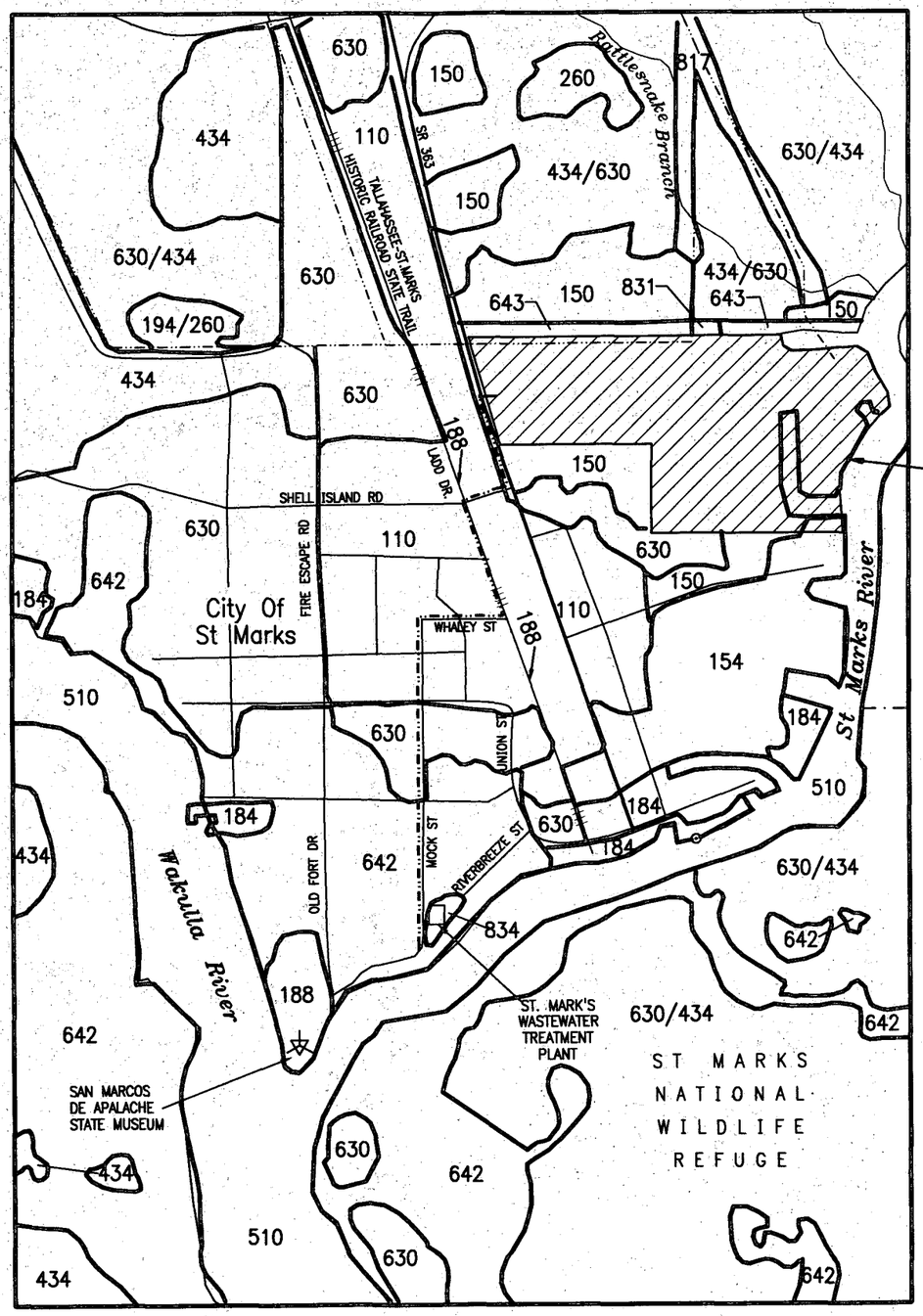
Land use and vegetation of the preferred corridor and the alternate route and vicinity are presented on Figure 6.1.7-1. Mapped information is labeled using the Florida Land Use and Cover Classification System (FLUCCS) (FDOT, 1985). An aerial photograph (scale 1 inch = 1,000 feet) showing the preferred corridor and the area extending at least 0.5 mile from each corridor edge is presented on Figure 6.1.7-2.

6.1.7.2 Affected Waters and Wetlands

No surface waters or wetlands will be affected by construction of this line. Water quality in the St. Marks and Wakulla Rivers will improve with elimination of discharge from the City of St. Marks WWTF.

6.1.7.3 Ecology

The pipeline will be constructed in existing roads through mostly developed areas of the City of St. Marks. Minimal natural habitat conditions will be encountered along the route.



PURDOM GENERATING STATION
(SEE FIGURE 2.3.5-1)

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

LEGEND

———	PRIMARY ROAD, HARD SURFACE
———	SECONDARY ROAD, IMPROVED SURFACE
- - - - - - -	UNIMPROVED ROAD OR TRAIL
—||||—	BIKE TRAIL
—·—·—	TRANSMISSION LINE
—·—·—	PREFERRED CORRIDOR ROUTE
⊙	GAGING STATION
110	RESIDENTIAL, LOW DENSITY
150	INDUSTRIAL
154	OIL AND GAS PROCESSING
184	MARINAS AND FISH CAMPS
188	HISTORICAL SITES
194	OTHER OPEN LAND
260	OTHER OPEN LANDS (RURAL)
434	HARDWOOD-CONIFER MIXED
510	STREAMS AND WATERWAYS
630	WETLAND FORESTED MIXED
641	FRESHWATER MARSHES
642	SALTWATER MARSH
643	WET PRAIRIES
817	OIL, WATER, OR GAS LONG DISTANCE TRANSMISSION LINES
831	ELECTRICAL POWER FACILITIES
832	ELECTRICAL POWER TRANSMISSION LINES
834	SEWAGE TREATMENT

N
W E
0 1000 FT

VEGETATION AND LAND USE WITHIN
PIPELINE CORRIDOR
STUDY AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure
6.1.7-1

PLOT DATE MAR 4, 1997 C:\15840002\----\00000-50.DWG

CITY OF TALLAHASSEE

PURDOM 8 PREFFERED RECLAIMED WATER PIPELINE CORRIDOR ROUTE

PURDOM UNIT 8 PROJECT – STMARKS FLORIDA

Figure 6.1.7-2

6.1.7.4 Other Environmental Features

No other environmental features associated with the pipeline warrant discussion.

6.1.8 Effects of Right-of-Way Preparation and Pipeline Construction

6.1.8.1 Construction Techniques

Pipeline construction activities differ slightly from pipeline to pipeline but generally include the following which are described in more detail below:

- Surveying and right-of-way preparation
  - Ditching/trenching
  - Installation
  - Testing
  - Right-of-way restoration
- Other specialized activities may take place such as:
  - Boring and installation of road and ditch crossings
  - Installation of pumping station and two wooden utility poles
  - Installation of valve assemblies

Surveying and Right-of-Way Preparation

The only clearing required will be small bushes and brush. Where needed, the right-of-way will first be cleared in accordance with the contract specifications and permit or regulatory limitations.

Next, the top soil layer within the right-of-way will be stripped where excavation will occur with a dozer, grader, or backhoe and bermed to one side of the working strip. The work platform is then graded to provide smooth access to all equipment used in the following phases of construction.

Right-of-Way Restoration

During construction, topsoil will be saved to be spread back over the stripped area during right-of-way restoration following pipe installation. Once the pipeline is buried in place, the stripped topsoil, when present, will be spread back in place to its original location and topography. Mulching and/or seeding will be undertaken as necessary to quickly stabilize soils which formerly had a vegetation cover.

6.1.8.2 Impact on Water Bodies and Uses

No construction is proposed in Waters of the State. With erosion control measures, such as anchored hay bales, in effect, water bodies and their uses will not be impacted.

6.1.8.3 Solid Wastes

All construction solid wastes will be collected and removed for recycling or off-site disposal in compliance with all applicable regulations.

6.1.8.4 Changes to Vegetation, Wildlife, and Aquatic Life

No significant permanent changes to animal and plant populations are expected. Most of the corridor is currently in road right-of-way or early successional landcovers.

6.1.8.5 Impact on Human Populations

All facilities of the pipeline installed in a state road right-of-way will be designed and constructed in accordance with the FDOT *Utility Accommodation Manual*, 1993. Construction will begin in 1999 and is expected to take approximately 2 months to complete.

The pipeline routes follow city streets which are lightly traveled. The use of existing rights-of-way and the short duration of construction activities in any given location should minimize any inconvenience which might occur.

6.1.8.6 Impact on Regional Scenic, Cultural, and Natural Landmarks

Since the pipeline is an underground facility and will be constructed along or within city streets, there will be no impacts to regional scenic, cultural, or natural landmarks located near the route.

6.1.8.7 Impact on Archeological and Historic Sites

Both the preferred and alternate corridor routes have been reviewed by the Division of Historical Resources (DHR). The review included a January 28, 1997, on-site visit by DHR staff. Based on that review, DHR concluded (DHR, 1997) that use of the preferred route would have no effect on significant historic properties (including archeological sites) provided construction is confined to existing road and trail rights-of-way, and is located within the road surfaces or within 6 feet of road edges. It is anticipated that construction will conform to these requirements. Should construction require activities outside of these areas, pre-construction subsurface testing by a professional archeologist will be carried out in accordance with the recommendation of DHR.

DHR has also concluded that use of the alternate corridor would have no effect on significant historic properties provided construction in the area between Riverside Drive and the City of St. Marks WWTF is contained within existing fill deposits.

Both alternates include construction of a pumping station at the City of St. Marks WWTF. A previously recorded prehistoric archeological site may be located in the same general vicinity. It is anticipated that construction in this area will be confined to existing fill deposits. However, to insure that archeological remains are not disturbed, a professional archeologist will monitor construction in this area.

6.1.9 Post-Construction Impacts and Effects of Maintenance

6.1.9.1 Maintenance Techniques

The primary regular maintenance activity will consist of a visual inspection of the right-of-way. These patrols can be carried out on foot and by vehicle. These inspections will ensure that no activity detrimental to the safety of the pipeline is taking place within, or in the vicinity of, the right-of-way. During the life of a pipeline, repairs that would require heavy equipment and materials to be mobilized should not be necessary. If such repairs do become necessary, they would take place on an emergency basis and be of very short duration.

6.1.9.2 Right-of-Way Uses

No changes in right-of-way uses from those in effect now are expected.

6.1.9.3 Changes in Species Populations

The habitat types along the corridor are significantly disturbed. No important species populations occur in these habitats.

No threatened or endangered animals or species of special concern are known to require land occupied in the corridor. No known endangered plant populations occur in the corridor. Consequently, no measurable changes to populations of important species are expected as the result of right-of-way maintenance.

6.1.9.4 Effects of Public Access

Public access will remain unchanged from current conditions.

6.1.10 References

CSM (City of St. Marks). 1990. City of St. Marks Land Development Code (draft). Prepared for the City of St. Marks by Edward Waters Associates, Tallahassee, Florida.

DHR (Division of Historical Resources, Florida Department of State). 1997. Letter from George W. Percy, Director, Division of Historical Resources and State Historic Preservation Officer, to Jennette Curtis, City of Tallahassee. January 30, 1997.

DHR. 1996. Letter from George W. Percy, Director, Division of Historic Resources and State Historic Preservation Officer, to Jennette Curtis, City of Tallahassee. December 19, 1996.

FDOT (Florida Department of Transportation). 1993. Utility Accommodation Manual. Tallahassee, Florida.

FDOT. 1985. Florida Land Use and Cover Classification System. Tallahassee, Florida.

SMCC (St. Marks City Commission). 1990. St. Marks Comprehensive Plan. Prepared for the City of St. Marks by Edward Waters Associates, Tallahassee, Florida.

6.2 ELECTRIC TRANSMISSION LINES

6.2.1 Introduction

The addition of Unit 8 will not require the construction of new transmission lines. Currently, the City operates three 115 kV transmission lines (Lines 1, 2 and 3) from the Purdom Station to the City's electric distribution system (see Figure 6.2.1-1). The electric and magnetic fields associated with those transmission lines vary depending on right-of-way width, structure type and conductor type. In all cases, the maximum field strengths, within the entire rights-of-way, are below the edge of right-of-way standards established in Rule 62-814 F.A.C (i.e., 2 kilovolts per meter (kV/m) for an electric field and 150 milliGauss (mG) for a magnetic field at the edge of the right-of-way).

Lines 1 and 2 are currently conductored with 4/0 American Wire Gage (AWG) copper. Lines 1 and 2 were originally constructed using both single pole and H-frame structures. To prevent the disruption of the City's electric system if one of these lines were to fail following the addition of Purdom Unit 8, certain segments of Lines 1 and 2 will have to be reconductored with 477 mcm aluminum conductor steel reinforced (ACSR). Current plans are to reconductor segments 1A and 2A (see Figure 6.2.1-1). These segments of transmission line are constructed utilizing only H-frame structures.

6.2.2 Existing Rights-of-Way

The planned reconductoring of existing transmission lines will not require the addition or expansion of any new rights-of-way nor will it require new structures. The normal operating voltage of these transmission lines will remain at the current 115 kV. The typical transmission line right-of-way for these segments is 100 feet with the structure located at the centerline of the right-of-way. However, in some areas, the transmission line is collocated adjacent to a road right-of-way. In these cases, the transmission line structure is located closer to the edge of the right-of-way.

6.2.3 Reconductoring Methods

Reconductoring will be accomplished in a phased approach using standard wire-pulling equipment. Access for the equipment will be obtained along the rights-of-way from public roads and existing access easements. It is not anticipated that any wetlands will have to be traversed by the wire pulling equipment. No clearing of mature trees or wetland vegetation will be required for the reconductoring of these transmission line segments. In the event ground cover is disturbed, appropriate turbidity prevention measures will be implemented in areas of potential runoff. All removed conductor and other debris within the right-of-way resulting from the wire pulling operation will be removed and recycled or disposed of in appropriate permitted facilities.

The transmission lines will be reconductored one at a time to allow for continued operation of the Purdom facility. There is no engineering requirement to replace or upgrade any of the existing structures during the reconductoring of these line segments. However, consistent with the City's

routine maintenance policies, some of the structures might be replaced prior to or during the reconductoring if they are found to be in a deteriorated condition.

6.2.4 Environmental Effects

6.2.4.1 Electric and Magnetic Fields

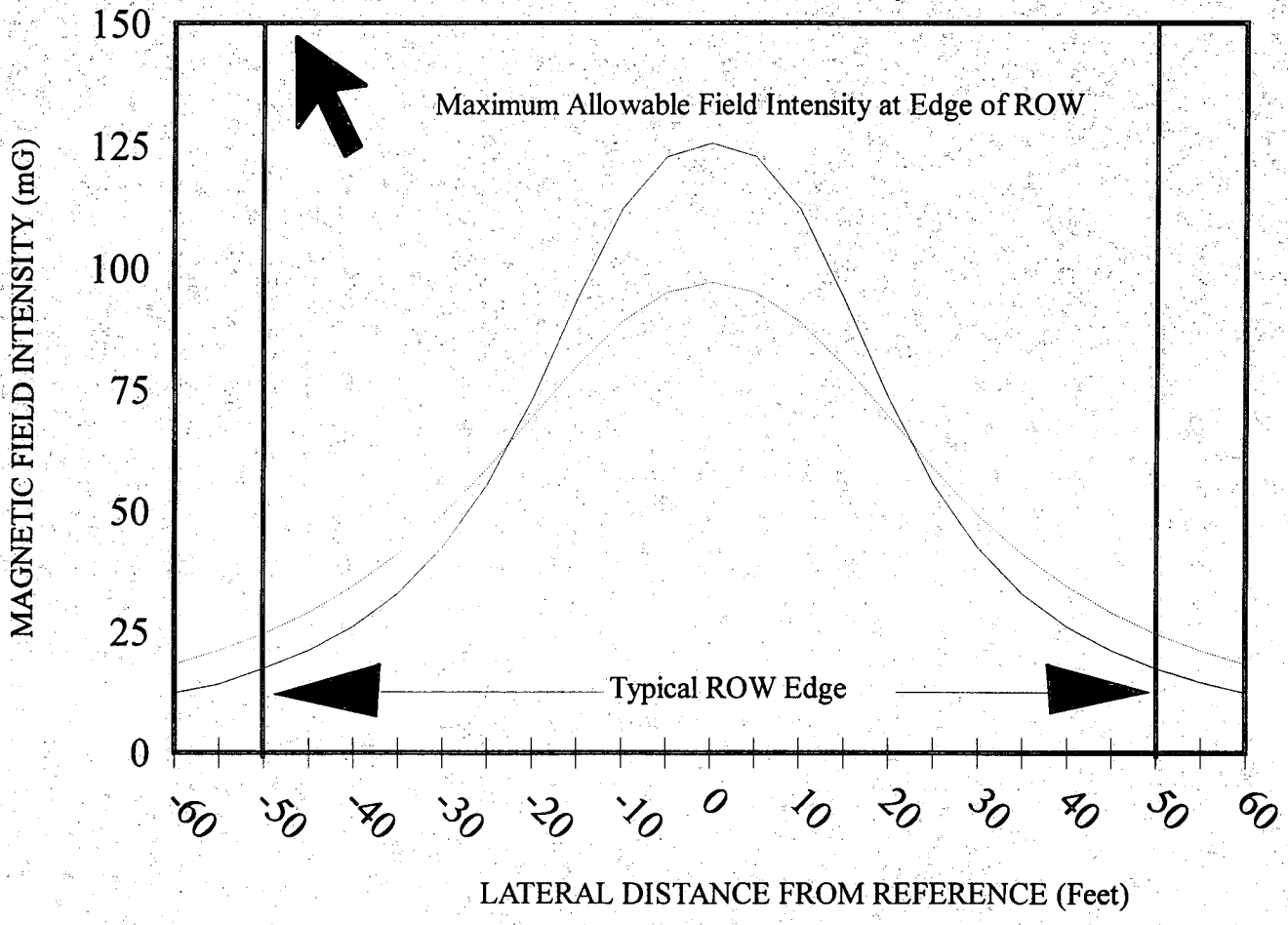
The City has performed modeling to determine the electric and magnetic fields (EMF) associated with the reconductored transmission lines in accordance with Rule 62-814 F.A.C. This modeling was completed utilizing The Southern California Edison (SCE) Electric and Magnetic Field (EMF) Program. Pursuant to Rule 62-814.460 (1) (c), on December 26, 1996, the City requested an Equivalency Determination for the use of the SCE EMF model from the Florida Department of Environmental Protection Office of Siting Coordination. On January 27, 1997, the Office of Siting Coordination advised the City that use of the SCE EMF model was approved as an alternative for demonstrating compliance with the provisions of Rule 62-814, F.A.C. (FDEP, 1997)

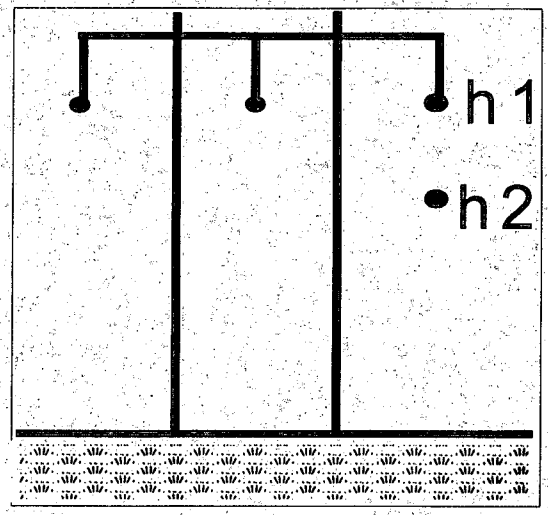
For the purposes of this modeling, a "worst case" determination was made by utilizing the manufacturer's maximum current rating (MCR) for the conductor in conjunction with the worst case temperature/loading combination and the minimum clearance to earth. This overstates the current loading for the line segments since the City designs the loading on transmission lines to be below the manufacturer's MCR. In all cases, the lines are constructed and will be reconductored to meet the applicable sections of the National Electrical Safety Code (ANSI C-2; 1992). Considering that transmission lines are seldom, if ever, operated at the City's maximum design current rating, much less the manufacturer's maximum current rating (the worst-case condition assumed for purposes of modeling), the actual electric and magnetic field levels actually experienced along these transmission lines will be well below the calculated results. The following cases were modeled for the electric and magnetic fields to show the potential change in field strength from the existing to the future conductors and operations:

- 4/0 copper - 380 amps MCR - H frame structure (horizontal configuration): represents existing conductor and operations for segments 1A & 2A.
- 477 ACSR - 640 amps MCR - H frame structure (horizontal configuration): represents future conductor and operations for segments 1A and 2A.

The results of the modeling cases are depicted in Figures 6.2.4-1 and 6.2.4-2.

The modeling results show that for all locations within the rights-of-way, both the maximum identified electric field and the maximum identified magnetic field for the reconductored transmission lines will be well below the maximum allowable field intensity at the edge of right-of-way limits established in Rule 62-814 F.A.C.





h1 = 41 feet
h2 = 29 feet (477 ACSR)
19 feet (4/0 Copper)

— 4/0 - Existing
··· 477 ACSR - Future

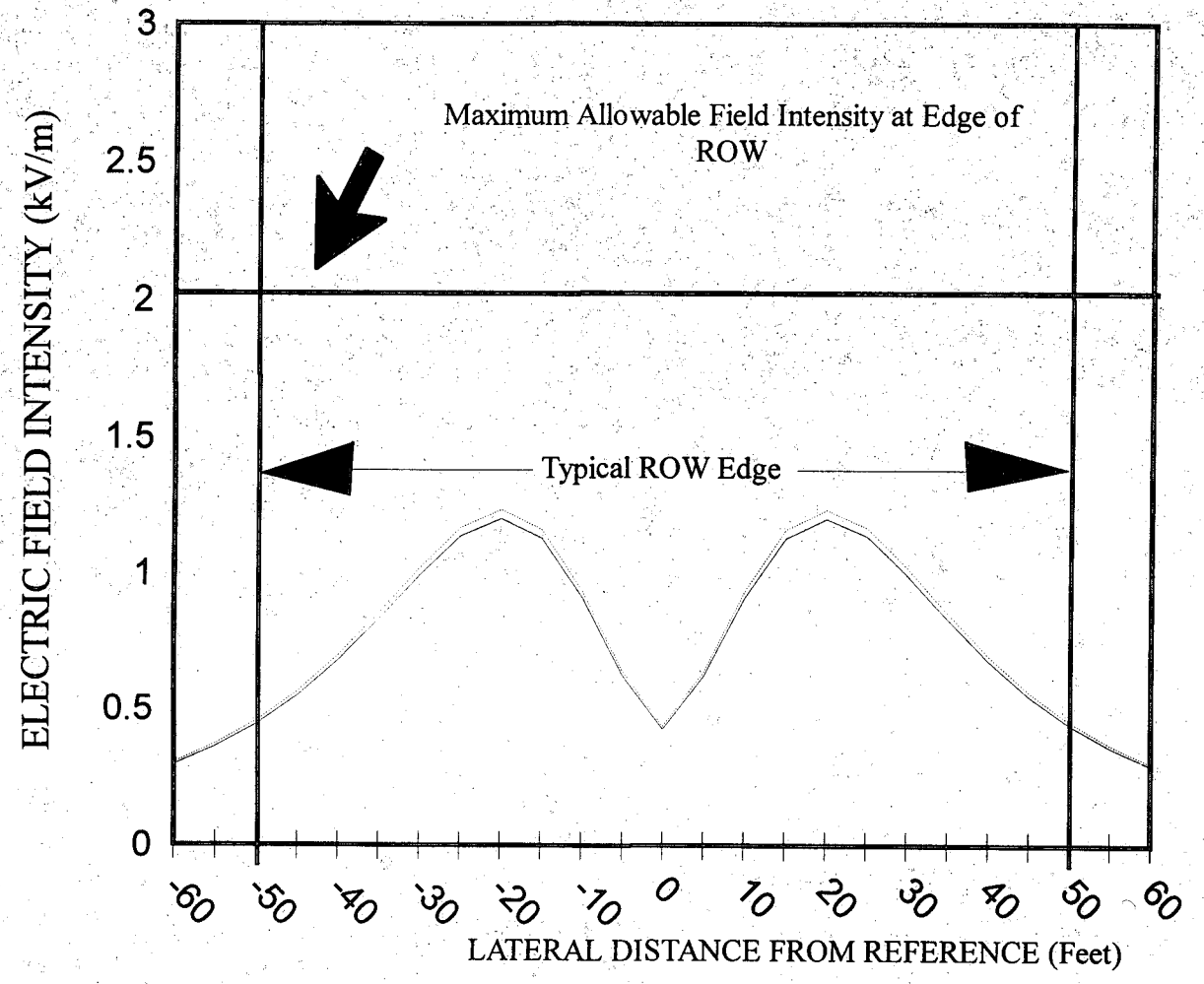
NOTE: Modeled worse case values. Actual values are likely to be lower.
0 -- Center of Structure
SOURCE: CITY OF TALLAHASSEE, 1997

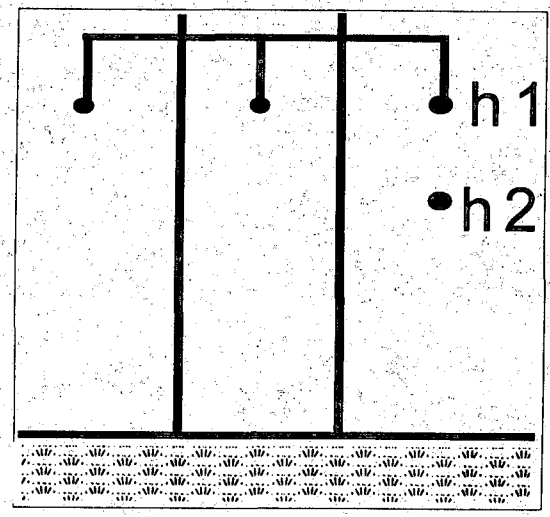
h1 -- height of conductor attachment to structure
h2 -- minimum conductor height

CITY OF TALLAHASSEE

LINES 1A AND 2A
H-FRAME STRUCTURES
MAGNETIC FIELDS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
6.2.4-1





h1 = 36 feet
h2 = 27 feet (477ACSR)
27 feet (336 ACSR)

336 - Current
477 ACSR - Future

NOTE: Modeled worse case values. Actual values are likely to be lower.
0 -- Center of Structure
SOURCE: CITY OF TALLAHASSEE, 1997

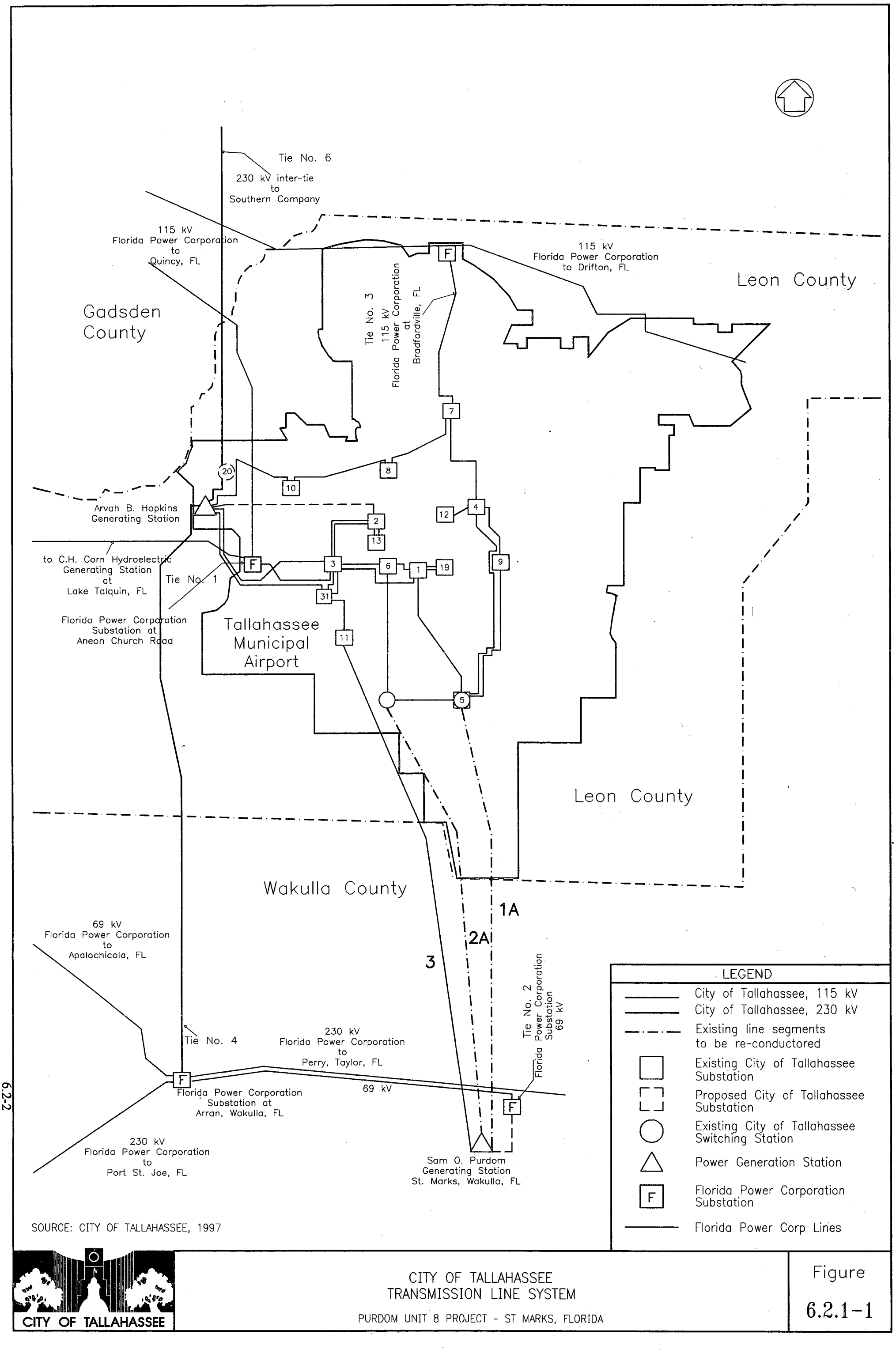
h1 -- height of conductor attachment to structure
h2 -- minimum conductor height

CITY OF TALLAHASSEE

LINES 1A AND 2A
H-FRAME STRUCTURES
ELECTRIC FIELDS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
6.2.4-2

PLOT DATE MAR 4, 1997 C:\15840002\----\00000-24.DWG



SOURCE: CITY OF TALLAHASSEE, 1997

CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
TRANSMISSION LINE SYSTEM

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
6.2.1-1

6.2-2

6.2.4.2 Transmission Line Maintenance

Maintenance of the City's transmission system consists of right-of-way maintenance and structure/line maintenance. Right-of-way mowing is performed annually and tree trimming is completed on a "cyclic" basis targeted at maintaining 20 foot clearance from the conductors in all directions. No broadcast application of herbicides is utilized; however, tree stumps are treated with a cut stump herbicide (currently Garlon 4) to prevent resprouting. Transmission line maintenance involves aerial inspection quarterly, inspections after major storms, and climbing inspections of each line every four years. Repairs of any structures or lines are performed during periods of off-peak loads.

The proposed reconductoring of the transmission lines will not require the City to alter its maintenance practices.

6.2.5 References

FDEP (Florida Department of Environmental Protection). 1997. Letter from Hamilton S. Oven, P.E., Administrator, Siting Coordination Office. January 27, 1997.

6.3 NATURAL GAS PIPELINE LATERAL

6.3.1 Project Introduction

Fuel for the Purdom 8 Project will be brought to the site from an existing natural gas pipeline lateral of the Florida Gas Transmission Company (FGT). It may be necessary for FGT to make some improvements at the existing lateral to provide gas at the required pressure to support Unit 8 at the Purdom Station under all ambient conditions. These improvements include a hot tap connection of the lateral to FGT's 36-inch main line and a hydrostatic testing of the existing lateral to certify it for the increased pressure. There is also a potential for increasing the existing lateral size or installing a "loop" on a portion of the existing lateral. A "loop" is essentially a parallel pipeline which is installed along an existing pipeline in order to decrease the overall pipeline system resistance and allow more gas to flow through the line. Any pipeline lateral upgrade permitting process would be separate from the Purdom 8 Site Certification process and would be performed by FGT. Hence, only a summary of potential lateral upgrade environmental effects is presented here.

6.3.2 Existing Right-of-Way

The existing pipeline extends south of US 319 and follows SR 363 on the east side and terminates at the Purdom facility. The existing pipeline passes through rural areas of Woodville and Wakulla, which contain residential (low density) areas, industrial areas, forested wetlands, and forested uplands (hardwood-conifer mixed). There are two meter stations south of US 319.

FGT may install a "loop" of about three miles in length along the lateral in an area between the meter station and the Purdom site. This "loop" is expected to be within the existing pipeline right-of-way, but its exact location has not been determined. It is the preference of the City of Tallahassee to have this structure along the existing pipeline south of US 98. This location of the "loop" will be in areas where minimal environmental impacts are likely to occur. As noted previously, permitting of this feature will be undertaken by FGT.

6.3.3 Construction Methods

The pipeline facilities will be designed, constructed, operated, and maintained in accordance with the U.S. Department of Transportation (DOT) regulations, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*, *Guidelines to be Followed by Natural Gas Pipeline Companies in the Planning, Clearing, and Maintenance of Rights-of-Way and the Construction of Aboveground Facilities*, and other applicable federal and state regulations.

Prior to initiating any construction-related activities, FGT would survey the route within the existing right-of-way. Construction would occur in an existing right-of-way; the contractors would require minimal clearing.

If the "loop" is off of the Purdom site, FGT may install temporary bridges or culverts across creeks and ditches on the working side of the right-of-way. These features will not be encountered if the "loop" is on site.

Trenching includes excavation to provide a trench of specified width and depth for the pipe. Trenching would be completed using ditching machines, backhoes, or in some instances draglines. Hand digging may be used to locate and cross under buried utilities.

After ditching is complete, pipe sections would be strung along the trench, bent to fit the contour of the trench, aligned, welded together, and placed on temporary supports along the edge of the trench. The welded sections of pipe would then be lowered into the trench and the trench would be backfilled with previously excavated soil. Backfill would be compacted to avoid potential subsequent settling that could leave surface depressions.

Markers showing the location of the loop would be placed at fence crossings and road crossings. These markers would identify the owner of the pipeline and would contain emergency information. Special markers to provide information and guidance to aerial patrol pilots would also be erected.

As much restoration as possible would be accomplished during backfilling and grading operations. Grading would be performed in such a manner as to minimize effects on natural drainage. The pipeline would be hydrostatically tested to ensure its capability of withstanding the operating pressure for which it was designed.

6.3.4 Environmental Effects

The loss of rare, threatened, or endangered plant and animal species is not expected to occur. Vegetation along the right-of-way does not provide viable wildlife habitat. There would be only minimal clearing of the rights-of-way, thus minimal adverse effect on natural habitats. There would be no additional or expanded gas meter stations that would otherwise require more clearing.

The route follows existing rights-of-way. Disturbance to human populations is expected to be minimal. The short duration of construction activities in any given location should minimize any inconveniences due to noise, traffic, and fugitive dust. During the earthwork operation, dust control measures would be in force and would typically require moisture conditioning of the soils in the excavation and compaction areas.

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CHAPTER 7

ECONOMIC AND SOCIAL EFFECTS OF PROJECT CONSTRUCTION AND OPERATION

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7.1 SOCIOECONOMIC BENEFITS

Due to the limited availability of goods and services, the economic impact of the Project in Wakulla County is likely to be small. Except for the short-term impact on eating and drinking establishments and temporary housing during the construction phase of the Project, most goods and services supportive of power plant construction and operation will probably be purchased in Leon County and elsewhere. Leon County is, by far, the dominant economy of the region. For example, employment in Leon County in 1990 was almost 15 times greater than in Wakulla County. While jobs, goods, and services are more abundant in Leon County, Wakulla County is prized for its natural qualities and recreational amenities which are appreciated and used by residents of Leon and other surrounding counties. In addition, many Wakulla County residents hold jobs in Leon County. Over 60 percent of the Wakulla County workforce is estimated to commute to Tallahassee to work. Consequently, there exists a complementary relationship between Leon County, as the economic center of the region, and surrounding counties, including Wakulla, where a more natural, less developed rural environment is enjoyed by residents and visitors alike.

Accordingly, the City of Tallahassee has committed, with the Purdom Unit 8 Project, to spend significant Project resources not only to avoid adversely impacting the environment at the Purdom Station, but to improve it. By eliminating wastewater and reducing cooling water discharges to the St. Marks River, maintaining air quality, and improving the aesthetics of the Purdom Station along the St. Marks River shoreline, the Project will protect and enhance the chief economic asset of Wakulla County, its natural beauty and environmental character.

The economic impact analysis presented below focuses on the impact of Project construction on the local economy (i.e., the City of St. Marks and Wakulla County) and the long-term impact of the Project on the City of Tallahassee's fiscal resources. The long-term impact on the local economy will be to maintain employment at the Purdom Station at a higher level than would have occurred without the Project. Although some of the impact of the Project's construction phase is expected to be felt in Leon County, the magnitude of that impact relative to the Tallahassee economy is expected to be small.

For purposes of calculating the magnitude and distribution of the economic impacts of Project construction and operation, the following assumptions were made:

- Construction labor is expected to be drawn primarily from north Florida in the area between Tallahassee and Jacksonville. Union locals from which Raytheon Engineers & Constructors will requisition craftsmen are located in Jacksonville for most trades. The only exceptions are laborers, who will be drawn from a local in Orlando; electricians, who will be dispatched from a Gainesville local; and pipefitters, who will be dispatched from a Tallahassee local.
- Throughout the construction period, about half the construction craft workers are expected to commute daily to the Purdom Station from their current residences. The other half are expected to commute weekly to temporary residences in the City of St. Marks and Wakulla County. Based on the crafts that will be on site at the peak of construction

and their dispatch locations, the split is expected to be about 60 percent commuting daily and 40 percent commuting weekly.

- Approximately 15 construction management personnel will be assigned to the Project for the duration of the construction period. Those workers will likely relocate to Tallahassee and commute daily to the Purdom Station from Tallahassee.
- Due to the relatively low unemployment rate in Wakulla County, any new indirect jobs created during the Project's construction phase are expected to be filled by newcomers to the area (or by local residents who leave jobs that are then filled by newcomers). Therefore, the construction activity will likely attract new residents to Wakulla County; however, since the economic activity is temporary, the increase in population could also be temporary.
- Job retention at the Purdom Station is a long-term beneficial impact of the Project. However, since these jobs are already filled, there will be no population impact from the direct or indirect jobs associated with Project operation.
- The households of the Purdom Station employees whose jobs are retained after Unit 8 is operational will be geographically distributed according to the same pattern as the households of the current facility work force. Again, there will be no population impact from the direct or indirect jobs associated with Project operation.

Social and economic benefits of the Purdom Unit 8 Project include the following:

- Potential cost savings to City of Tallahassee electric customers
- Potential increases in City of Tallahassee revenues
- Increased St. Marks and Wakulla County revenues
- New construction jobs and payroll
- Retention of jobs and payroll at the Purdom Station
- Indirect effects of new and retained jobs and payroll spending
- Increased spending on goods and services during Project construction and operation

The following sections describe these benefits in greater detail and present estimates of their magnitude and duration.

7.1.1 Benefits to Electric System Ratepayers and/or City of Tallahassee Residents

The Purdom Unit 8 Project will increase the efficiency of the City of Tallahassee's electric system and result in cost savings. These cost savings can be used to reduce electric rates or increase the amount of the transfer of electric system revenues to the City of Tallahassee General Fund. No determination has yet been made as to the disposition of the projected cost savings. That decision will be made by the Tallahassee City Commission sometime in the future. For purposes of projecting ***potential*** benefits to electric system ratepayers and/or residents of the City of Tallahassee, the following analysis assumes, on the one hand, that 100 percent of the cost savings will be used for electric rate reduction, and, on the other hand, that 100 percent of the

cost savings will be treated as excess revenues, allowing an increase in the contribution to the General Fund for enhanced municipal services, reduced taxes, or both.

Cost savings in the first year of operation of Purdom Unit 8 (2001) are estimated at about $12 million over the previous full year without the Project. If 100 percent of the cost savings were applied to rate reduction and evenly distributed among all classes of customers, the average residential customer could expect up to an 11 percent reduction in his or her monthly bill.

In fiscal year 1996 (ending September 30, 1996) the City electric system generated approximately $35.5 million for the General Fund. This amounted to approximately 35 percent of the total revenues for general government services including police and fire protection, parks and recreation, etc. Electric system revenues are vitally important to the City of Tallahassee since 55 percent of the property within the City limits is government-owned and, therefore, tax-exempt.

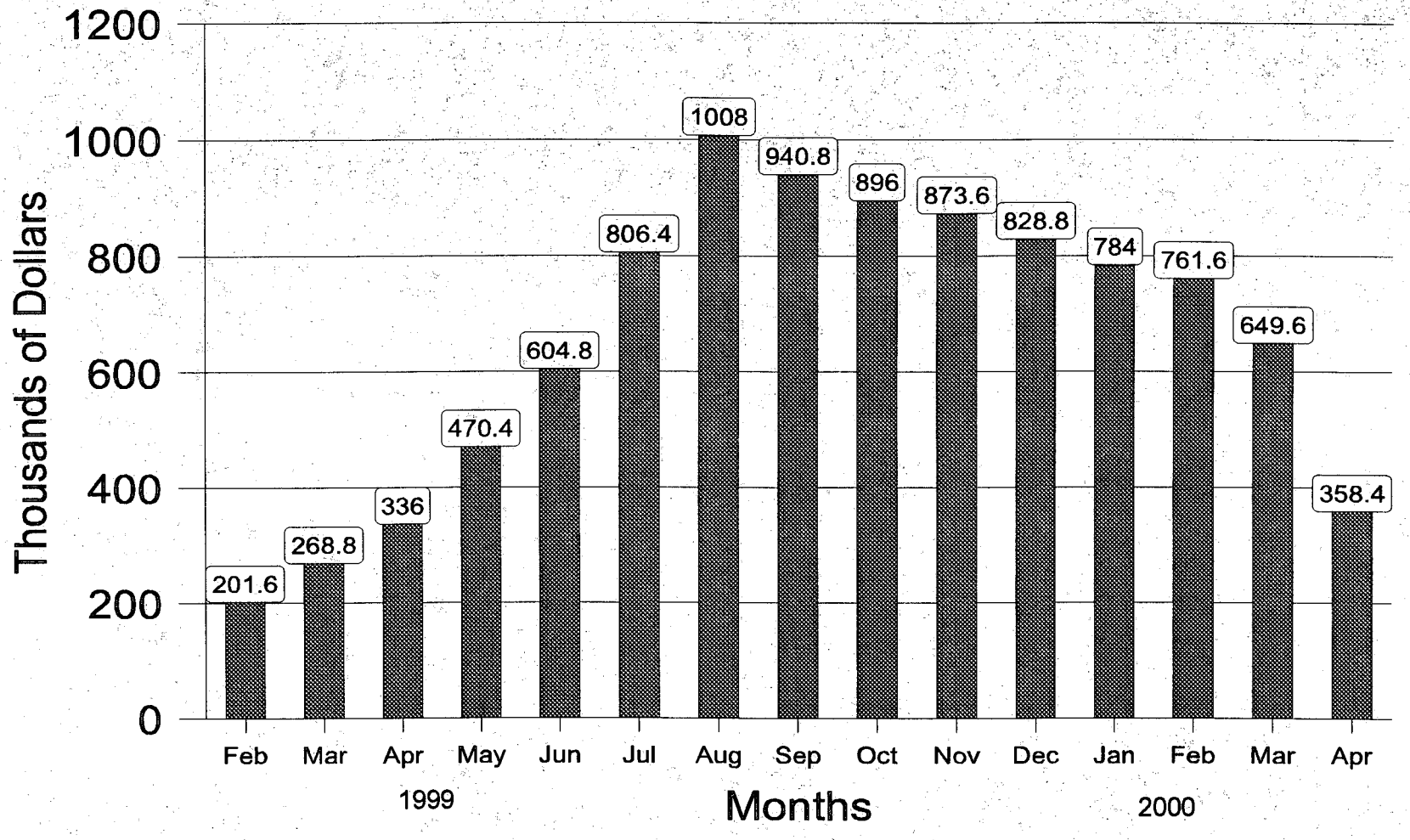
Assuming 100 percent of the cost savings from implementation of the Purdom Unit 8 Project goes to increase electric system revenues, the contribution to the General Fund could increase by about 24 percent over 1996 levels, or about $8.5 million in 1996 dollars.

7.1.2 Temporary and Permanent Jobs

The estimated direct construction employment by month during the period from February 1999 through April 2000 is shown on Figure 4.10-1. The average direct employment during construction is estimated at 160 workers, with the peak employment of 240 occurring in the third quarter of 1999. Using Regional Input-Output Modeling System (RIMS II) multipliers available from the U.S. Department of Commerce for a two-county area consisting of Leon and Wakulla Counties, it is estimated that 0.7378 indirect jobs will be created for every direct construction job. Therefore, on average, there will be approximately 118 indirect jobs during the 1999-2000 construction period. The industries in the two-county area likely to benefit most from this temporary employment increase include retail and wholesale trade, business services, health services, miscellaneous services, and eating and drinking places.

As shown on Figure 7.1.2-1, direct construction payroll is estimated at over $7.2 million during 1999 and about $2.6 million during the first quarter of 2000. (All payroll values are presented in nominal dollars.) According to the RIMS II, earnings associated with the indirect jobs in Wakulla and Leon Counties are expected to amount to approximately $6.6 million in 1997 dollars.

Employment at the Purdom Generating Station will actually be reduced with the installation of Unit 8 because of the coincident retirement of Units 5 and 6. Currently, about 50 people are employed at Purdom Generating Station. After Units 5 and 6 are retired and Unit 8 is operational, employment at the station is expected to be about 37. However, this 37-person work force will be larger than it would be if Unit 8 were not built (i.e., about 12 jobs will be saved as a result of the Project). Payroll at the station after Unit 8 is operational will be nearly $1.8 million per year (2001 dollars).



Source: Raytheon Engineers & Constructors, 1996. Moore/Bowers, 1997.

CITY OF TALLAHASSEE

ESTIMATED PAYROLL BY MONTH
IN NOMINAL DOLLARS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
7.1.2-1

7.1.3 Sales Revenues

Construction purchases in the two-county area on hardware, small parts, lumber, and other similar supplies are conservatively estimated at $300,000 over the construction period. During 1996, the Purdom Generating Station purchased approximately $10,500 in goods and services from local businesses in Wakulla County. After Unit 8 is constructed, these purchases can be expected to decrease somewhat due to the fact that older facilities at the station will be replaced by newer facilities, requiring fewer of the type of small repairs which required spending in 1996. Also, with fewer personnel, spending on things like food and gasoline is likely to be a little less.

7.1.4 Government Revenues

Because of the tax-exempt status of the Purdom Generating Station, no property tax revenues are or will be generated from the facility. The City of Tallahassee and/or the construction contractor, Raytheon Engineers & Constructors, can be expected to pay some fees for services provided by the City of St. Marks and Wakulla County during the construction and operation of Unit 8. These fees will include charges for process water supplied by the City of St. Marks and building permit fees and payments for disposal of construction debris to Wakulla County.

Incremental increases in demand for municipal services such as law enforcement, fire protection and emergency medical services, ambulance service, and growth management may be expected because of the Project. The estimate of costs for these services is discussed in Section 7.2.

The City of Tallahassee will also donate its water tower at the Purdom Station to the City of St. Marks to enhance that city's water storage capabilities.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

7.2 SOCIOECONOMIC COSTS

7.2.1 Temporary External Costs

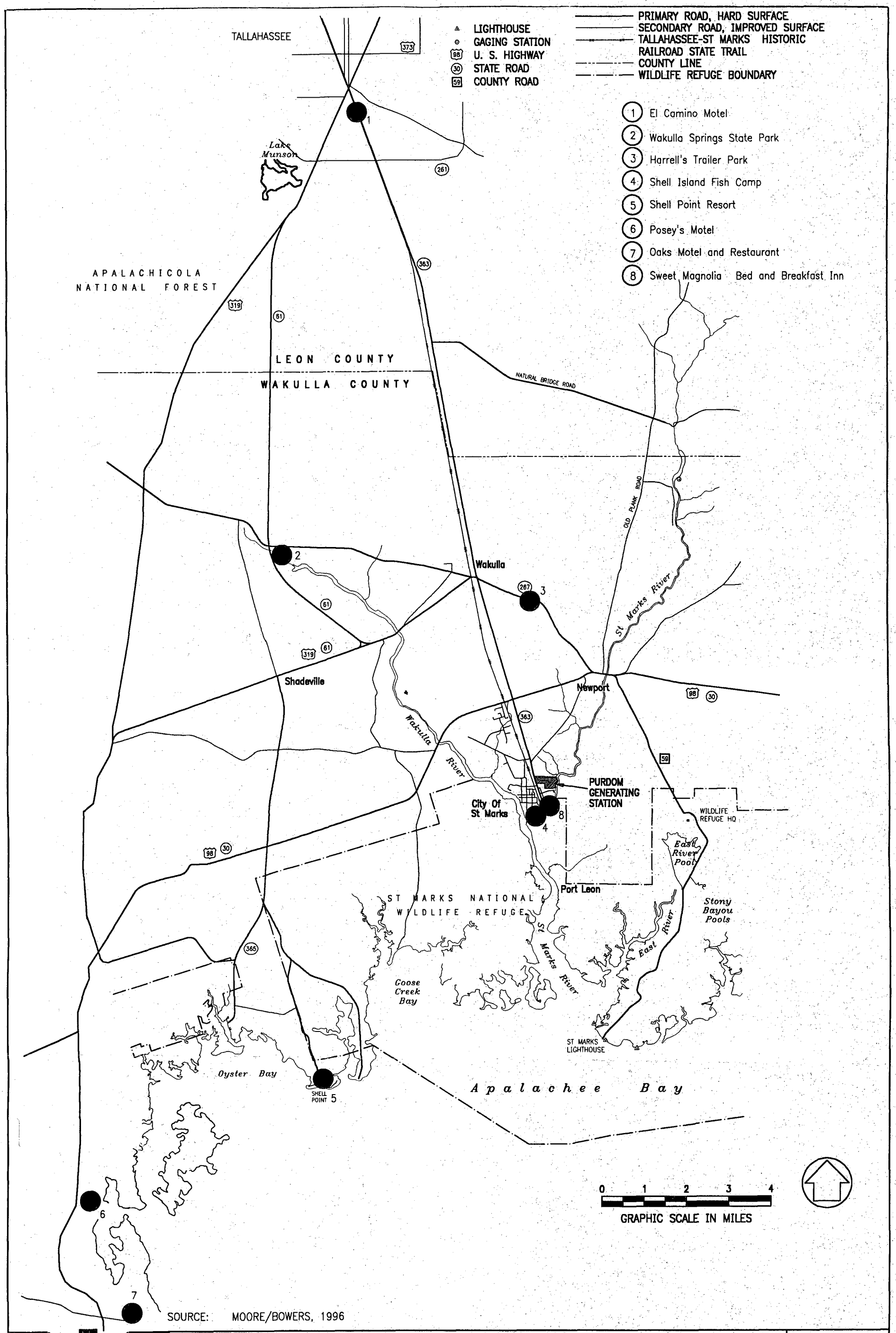
The average number of construction workers seeking temporary housing near the Purdom Station is estimated at 80. At or near the peak of construction, this number will probably be no greater than 110 to 120. The location of lodgings in and around the City of St. Marks is shown on Figure 7.2.1-1. According to a survey of seven motels and trailer parks in the area, the number of existing units is 164, and average year-round occupancy rates ranged from 15 to 95 percent. Considering those factors, it is estimated that about 60 units would be available for rental by the Purdom Unit 8 construction workers (see Table 7.2.1-1). Although there may be a shortage of temporary housing in the immediate vicinity of the Purdom Station, the 1996 Florida Statistical Abstract reports 18,812 apartment units and 24,710 hotel and motel units in Leon County. Therefore, no actual shortage of housing is expected.

TABLE 7.2.1-1
TEMPORARY HOUSING AVAILABILITY
IN ST MARKS AND VICINITY

Establishment	Total No. of Units	Avg Year-Round Occupancy Rate	No. of Units Available
Shell Point Resort Shell Point Road & Hwy 98, Shell Point	26 rooms	65% full	9
Shell Island Fish Camp Shell Island Road, St. Marks	24 rooms 4 cabins	80% full	5
El Camino Motel 3705 Woodville Hwy, Tallahassee	27 rooms	43% full	15
Oaks Motel & Restaurant 52 Coastal Highway, Panacea	19 rooms	62% full	7
Harrell's Trailer Park Near SR 267 and SR 363	5 Trailers	95% full	0
Posey's Motel US 98, Panacea	25 rooms	80% full	16
Wakulla Springs State Park SR 267 and CR 61	27 rooms	80% full	5
Sweet Magnolia Bed & Breakfast 803 Port Leon Drive, St. Marks	7 rooms	15% full	6
TOTAL	164	—	63

Source: Moore/Bowers, 1997

As indicated in Section 4.6.1, no roadway improvements are expected to be required to accommodate the construction traffic. Other public service fees and costs expected to be paid or incurred during construction of Unit 8 at the Purdom site include those for police protection, fire protection and emergency medical services, ambulance service, building inspection, solid waste disposal, and growth management. The following are hypothetical estimates of service



SOURCE: MOORE/BOWERS, 1996

CITY OF TALLAHASSEE

LOCATIONS OF LODGINGS IN ST MARKS AND VICINITY
1" = 2 MILES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 7.2.1-1

requirements attributable to the construction of the Purdom Unit 8 Project. They are intended to provide an order of magnitude estimate of short-term public service costs and fees. For example, estimates based on the full construction worker population as a percentage of the residential population of Wakulla County or the City of St. Marks are conservatively high since only about half the construction work force is expected to relocate and become temporary residents of Wakulla County.

- Police - Additional police services may be required due to the presence of the construction work force. Based on the 1996 calls for service to the Wakulla County Sheriff's Office and the budget for FY 1997, the average cost of a call for service was about $135. The number of calls for service, 23,881, in relation to the population of Wakulla County suggests a factor of 1.4 calls per person. Based on an average of 160 construction workers throughout the construction period, calls for police service may be expected to increase by about 224 per year times the duration of the construction period, which is 1.25 years, for a total cost of $37,800.

- Fire Protection and Emergency Medical Services - A similar methodology was used to estimate the cost of fire protection and emergency medical services during construction. No fire calls are expected at the station based on past history and the on-site safety features and fire fighting capability at Purdom Station. The City of St. Marks Volunteer Fire Department serves a population of about 1,000 and made 145 runs in Fiscal Year 1996. Based on the population of the service area, this amounted to 0.145 runs per person. With the average increase in population associated with the construction work force, fire runs can be expected to increase by 23 per year. At a cost of $147 per run, this cost would amount to about $3,400 per year, or about $4,200 for the entire construction period.

- Ambulance Service - Raytheon's accident history on similar construction projects was used to project the need for ambulance service during the construction of Purdom Unit 8. A first-aid station will be maintained on site to handle minor injuries. Based on Raytheon's experience, about one incident per month will require off-site medical treatment. At a cost of $680 per ambulance run, this cost would amount to approximately $10,200.

- Building Inspection - The City of St. Marks relies on Wakulla County for building inspection. Based on the square footage of buildings to be constructed (as opposed to the installation of power generating equipment) for Purdom Unit 8 and the Wakulla County schedule of permit fees, it is estimated building inspection costs could amount to approximately $1,300. Electrical and plumbing inspection fees are estimated at $900.

- Growth Management - Due to the fact that motels and trailer parks in the vicinity of St. Marks are insufficient to accommodate all the construction workers likely to seek temporary housing, new development may be proposed to capture a share of that temporary housing market. Based on the Wakulla County Planning Director's estimate of time spent on zoning and development review matters within the Wakulla County Planning Department, the estimated cost of a zoning case is $1,100. Assuming the Project

will generate one new zoning case in Wakulla County, project-related costs for growth management could amount to $1,100.

- Solid Waste Collection and Disposal - During construction, the Project will require collection and disposal of office type waste and construction debris. Office waste will be collected by a private contractor. The estimated cost of collection and disposal of construction debris by Wakulla County is $3,700.
- General Administration - For an estimate of general administrative costs, a factor was developed using the county administration plus county commission budget as a percentage of the total budget for Fiscal Year 1997. That factor, approximately 4 percent, was applied to the total estimated cost of services that could be provided by Wakulla County. Using this method, the estimated project-related cost for general county administration in Wakulla County is $2,400.

In the City of St. Marks the cost of government per capita in Fiscal Year 1997 is approximately $283. Using this factor and counting the full construction work force as new residents of St. Marks, the cost of government could increase by about $41,500 in 1999 and by about $15,100 in 2000.

The total estimated costs of public services and facilities during Project construction, based on the methodology outlined in the paragraphs above, is approximately $61,600 for Wakulla County and $56,600 for the City of St. Marks.

7.2.2 Long-Term External Costs

7.2.2.1 Land Use and Demographics

Long term social and economic costs associated with Project operation will be minimal due to the fact that the Project consists of the installation of a new, efficient, natural gas fired unit at an existing generating station. There will be no changes in land use and no increase in population since employment at the Purdom Station will actually decline from about 50 persons to 37. However, since the population of the City of St. Marks is estimated to have declined from 1990 to 1995, the continued viability of the Purdom Station may have a long-term beneficial impact on the community by helping to stabilize employment and demographic trends.

7.2.2.2 Public Services and Facilities

Long-term continuing impact on public facilities and services is limited to costs incurred to upgrade the City of St. Marks water system to supply the new unit at the Purdom Station with back-up process water. There will be no other long-term costs to local government because there will be no increase in permanently employed workers at the Purdom Station.

Purdom Unit 8 will depend on the City of St. Marks water system for back-up process water supply. The incremental capital cost for system improvements necessary to provide the back-up water supply is estimated at $25,000 to $35,000, to be paid by the City of Tallahassee as part of the Purdom Unit 8 Project. In addition, the City of Tallahassee will be billed for water actually used. Current water rates are $15 for the first 6,000 gallons and $1.15 per 1,000 gallons over

6,000. Water will be stored on site at Purdom Station for use when the unit is run on diesel fuel. Since this is likely to occur only for short durations, the City of Tallahassee would only call on the back-up supply from the City of St. Marks in unusual circumstances. For example, one possible scenario would be similar to the situation that occurred during a winter freeze in 1989. Natural gas supplies were interrupted for three days due to extremely cold weather at the gas fields. Under that scenario, the on-site tank would supply necessary process water for the first day. For the next two days, the City of Tallahassee would draw on the City of St. Marks' back-up process water supply at the rate of 77 gpm. The total bill for this usage, based on current City of St. Marks rates, would be $263.

7.2.2.3 Aesthetic and Scenic Values

With one exception, the changes at the Purdom Station are not expected to significantly impact the visual environment. The new equipment is similar in form and shape to the existing equipment. All new equipment will be located in the existing facility area, set back from the road, property lines and the St. Marks River, and screened by existing vegetation and existing facility equipment from surrounding areas.

The proposed stack height is 200 feet. This is slightly taller than the two existing stacks located to the northeast of the proposed improvements. The following paragraphs present the results of a visual impact assessment, considering the potential opportunity for viewing of the proposed facilities from the St. Marks River.

With the City of Tallahassee committing to reuse the existing Unit 5 and 6 intake structure for the Unit 8 intake, no new intake structure is required. Therefore, there will not be an impact to the recreational use of the river.

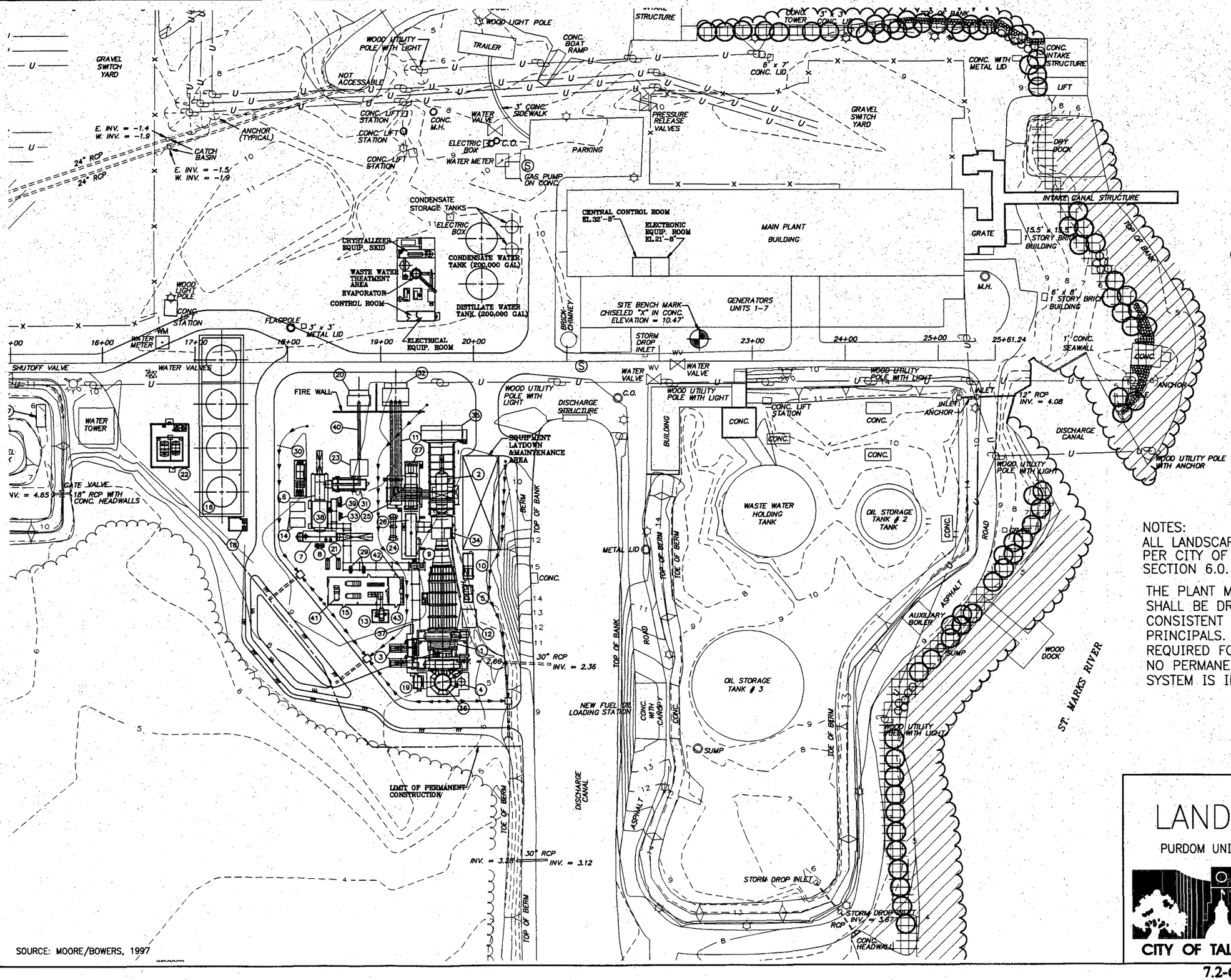
Landscape Description

The Purdom Station site is bounded by industrial uses to the north and south, SR 363 to the west and the St. Marks River and Aucilla Wildlife Management Area to the east. The existing station will be modified to include a new generating unit located between the existing equipment and a wooded area to the southwest. There is an existing forested area, 1,250 to 1,500 feet long (approximately 0.25 mile) and 500 to 650 feet wide, between the Purdom Station site and SR 363. Uses which occur fronting on SR 363 include auto repair, motel, and fuel storage and distribution facilities. Uses to the north and south consist primarily of fuel storage tanks and forested woodlands on either side of the generating station.

Landscape Plan

The landscape plan for the Project is presented in Figure 7.2.2-1. The site is already well buffered with native vegetation along most of its perimeter, including the frontage on SR 363. The only exception is the easterly portion of the north property line.

To further harmonize the Purdom Station with its surroundings and to satisfy any buffering, landscaping and planting requirements of the City of St. Marks, the landscape plan proposes the following:



SOURCE: MOORE/BOWERS, 1997

LEGEND

- CANOPY TREE
- UNDERSTORY TREE
- SHRUB
- 25 FT PLANTED BUFFER
- SHORELINE PROTECTION ZONE

NOTES:
ALL LANDSCAPING SHALL BE INSTALLED PER CITY OF ST MARKS CODE REQUIREMENTS SECTION 6.0.

THE PLANT MATERIALS USED SHALL BE DROUGHT TOLERANT AND CONSISTENT WITH XERISCAPE PRINCIPALS. WATER SHALL BE REQUIRED FOR ESTABLISHMENT, BUT NO PERMANENT IRRIGATION SYSTEM IS INCLUDED.

N

SCALE: 1" = 100'

LANDSCAPE PLAN

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 7.2.2-1

- To buffer the easterly portion of the north property line: designation of a 10-foot wide buffer and planting of 28 canopy trees, 10 understory trees and 96 shrubs clustered near the St. Marks River to provide the maximum screening effect for recreational users of the River; and
- Planting along the shoreline of the St. Marks River: 43 canopy trees, 11 understory trees, and 114 shrubs in a 25-foot wide strip, 1,141 feet long.

(Note: Landscape quantities were derived based on the City of St. Marks Land Development Code (draft) buffer designs appropriate to this type of use and setting.)

Visual Impact Analysis

Proposed Development Features

The Purdom Station will add one new stack 200 feet in height. The site currently has two stacks, 180 and 125 feet in height. Unit 8 associated buildings and equipment are all expected to be less than 90 feet in height. The planned improvements are located west of existing facility equipment, reducing the visual impact from the St. Marks River, the nearest opportunity for viewing.

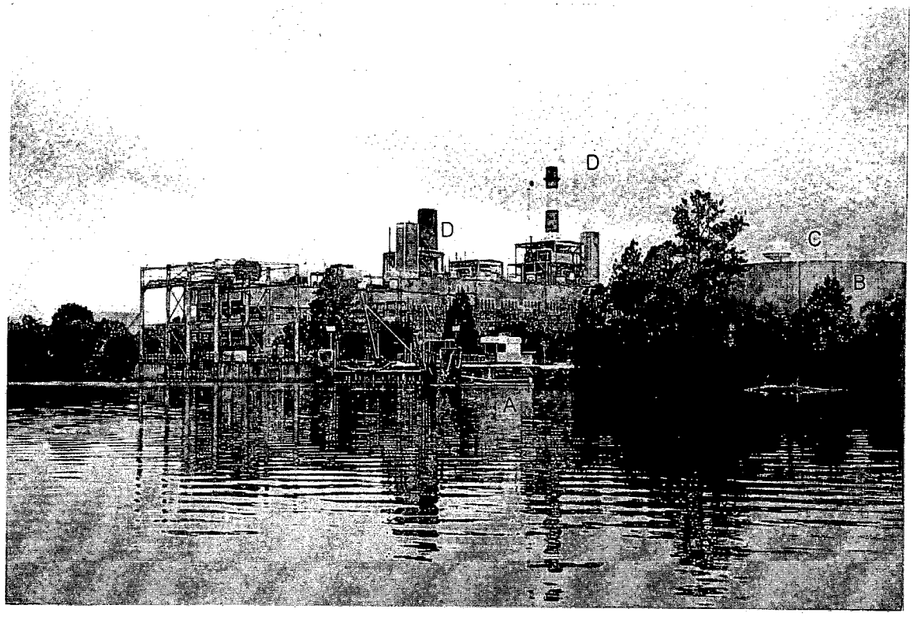
Line-of-Sight Determinations

The purpose of this analysis was to determine key viewpoint areas where the proposed Project would be seen, partially seen, and not seen. To determine these areas, line-of-sight drawings were prepared by establishing landscape control points. In order to determine the key viewpoints, the number of times the Project will be observed, the duration of the view, the number of observers viewing the Project, and the distance over which the Project will be seen were considered. Aerial photographs were used as a data source for existing vegetation.

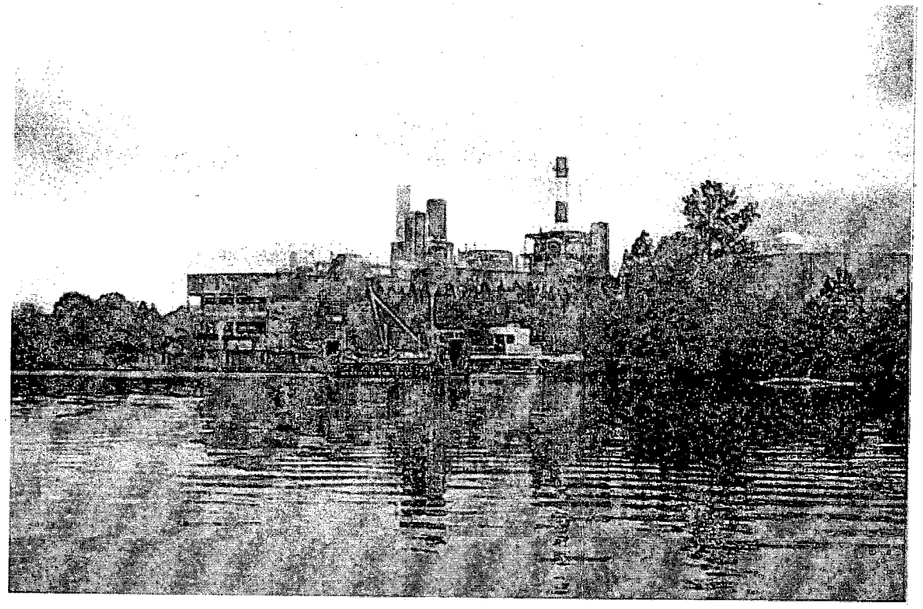
Key Viewpoint Analysis

In addition to viewpoints from the St. Marks River, nearby locations which may have a view of the Project are expected to be limited to industrial use areas. Key viewpoints were determined based on analysis of available land use data and field observations. Prior to the field work, a copy of the Project site plan was superimposed on a current aerial photograph of the site in order to locate key viewpoints. Field observations provided a photographically documented observer's image of the Project site and surroundings from the various key viewpoints. Selected photographs were used in assessing potential visual impacts of the proposed Project on recreationists along the St. Marks River.

The recreationist's view from the St. Marks River east of the Purdom Station was determined to be the worst-case view and a visual simulation was prepared for that key viewpoint. Figure 7.2.2-2 is a photographic simulation of the view of the Project to observers from the worst-case viewpoint along the River. The simulation depicts existing conditions and vegetation with the addition of the Unit 8 improvements. At the time of this writing the existing Purdom Station is undergoing renovation which includes the elimination of a steel structure located along the riverfront. This will be a significant improvement to the visual environment. In addition, the visible structures are anticipated to be screened from view to a large extent along the river upon maturity of a 25-foot-wide landscape buffer. Once the buffer is in place, the view depicted in the



EXISTING CONDITIONS



PHOTOGRAPHIC SIMULATION
(UPON COMPLETION OF PURDOM UNIT 8 PROJECT)

NOTE: VIEW LOOKING SOUTHWEST FROM ST. MARKS RIVER

SOURCE: RAYTHEON ENGINEERS & CONSTRUCTORS, 1997; MOORE/BOWERS, 1997

A: DOCK FACILITY (PART OF INDUSTRIAL USE TO THE NORTH)

B: STORAGE TANK (PART OF INDUSTRIAL USE TO THE NORTH)

C: PURDOM GENERATING STATION'S WATER TOWER

D: EXISTING STACK

CITY OF TALLAHASSEE

PHOTOGRAPIC SIMULATION OF SAM O. PURDOM GENERATING STATION

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 7.2.2-2

simulation will be visible, primarily for the recreationist heading south on the river, for only a short distance. Since the river curves to the east north of the Purdom Station, a view of the facility is not possible until after the recreationist heads south, reducing the opportunity for viewing.

7.3 REFERENCES

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Wakulla County Community Development. 1997. Telephone Conversation between F. Evans, Assistant Planning Director, Crawfordville, Florida and A. Moore, Moore/Bowers, Tampa, Florida. February 25, 1997.

Wakulla County Community Development. 1997. Telephone Conversation between E. Mills, Planning Director, Crawfordville, Florida and A. Moore, Moore/Bowers, Tampa, Florida. February 25, 1997.

Wakulla County Sheriff's Office. 1997. Telephone Conversation between Major Langston, Crawfordville, Florida, and A. Moore, Moore/Bowers, Tampa, Florida. January 9, 1997.

Wakulla County Community Services. 1996. Telephone Conversation between C. Murray, Crawfordville, Florida, and A. Moore, Moore/Bowers, Tampa, Florida. December 19, 1996.

Wakulla County Board of County Commissioners. 1996. FY 1996-1997 Tentative Operating General Fund Budget Summary. Crawfordville, Florida.

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SITE AND DESIGN ALTERNATIVES

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8. SITE AND DESIGN ALTERNATIVES..... 8-1

8. SITE AND DESIGN ALTERNATIVES

This optional chapter is not being submitted as part of the Site Certification Application because it is not anticipated that an Environmental Impact Statement required by the National Environmental Policy Act will be necessary for this Project.

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COORDINATION

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9. COORDINATION 9-1

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TABLE 9-1
FEDERAL, STATE, REGIONAL, AND LOCAL GOVERNMENT AGENCY CONTACTS

Date	Agency	Contact	Type of Contact	Subject	Project Representative
11/07/95	City of St. Marks	Mayor and City Manager	Meeting	Project overview	COT
12/05/95	Wakulla County	Commissioner Blanchard, Administrator J. McCue	Meeting	Project overview	COT
05/09/96	City of St. Marks	C. Shields, R. Leclere	Meeting	Overview of project and process	COT
05/15/96	FDEP	B. Oven	Telephone	Project briefing	COT
05/21/96	FDEP; FPSC	B. Oven, S. Palmer, W. Parker-Garvin, A. Rushanan, C. Holladay, A. Linero; L. Colson	Meeting	Overview of project and process	COT
05/22/96	FPSC	L. Colson	Telephone	Cost	COT
06/27/96	City of St. Marks	Commissioners	Meeting	St. Marks issues	COT
06/28/96	USFWS	S. Silva	Telephone	Air quality issues	COT
06/28/96	FGFWFC	Staff	Letter	Scientific collection permit	FWENC
07/02/96	USFWS	J. White, S. Meadows, J. Reinman, J. Fox, V. Urban, R. Will	Meeting	St. Marks National Wildlife Refuge issues	FWENC; COT; RE&C
07/02/96	USFWS	J. White et al	Telephone	St. Marks NWR issues	FWENC; COT; RE&C
07/03/96	USGS	Receptionist	Meeting	List of Publications, Pub. Order Forms	RE&C
07/03/96	FGS	Receptionist	Meeting	List of Publications, Pub. Order Forms	RE&C
07/09/96	USFWS	S. Silva	Telephone	Air quality issues	FWENC
07/10/96	FDEP	John Watt	Telephone	QAPP	COT, RE&C, FWENC
07/11/96	FDEP	Buck Oven	Telephone	QAPP and NPDES Information	COT, RE&C, FWENC
07/11/96	Wakulla County	J. C. Murray, B. Newman	Meeting	Wakulla County issues	COT
07/11/96	FDEP	B. Oven	Telephone	QAPP and NPDES permit information	FWENC
07/12/96	FGIF	C. Mesing	Telephone	St. Marks River Fisheries Collection Methods	FWENC
07/12/96	FDEP	S. Adams	Telephone	Marine Fisheries Collection Permit	FWENC
07/12/96	FGIF	D. Jones	Telephone	Scientific Collection Permit/Collection Methods	FWENC
07/15/96	FDEP	S. Adams	Telephone	Marine Fisheries Collection Permit	FWENC
07/16/96	City of St. Marks; Wakulla County	J. McCue, O. Vick	Meeting	Purdom site visit; effluent data	COT
07/16/96	St. Marks NWR	J. White	Letter	St. Marks NWR Issues	COT
07/18/96	FDEP	S. Adams	Meeting	Obtain Salt Water Sampling Permit	FWENC
07/22/96	FGFWFC	Charles Mesing	Meeting	Electro-shocking	FWENC

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FEDERAL, STATE, REGIONAL, AND LOCAL GOVERNMENT AGENCY CONTACTS

Date	Agency	Contact	Type of Contact	Subject	Project Representative
07/26/96	USFS	A. Colaninno, W. Ebaugh, D. Wergowske	Meeting/Follow-up Letter 8/2/96	USFS issues	FWENC; COT
07/26/96	FNAI	Staff	File Review	Protected species occurrence in site region	FWENC
07/29/96	City of St. Marks	C. Shields	Letter	Project Plans	COT
07/29/96	Wakulla Co.	J. McCue	Letter	Project Plans	COT
08/02/96	USFS	A. Colaninno	Letter	Apalachicola NF isues	COT
08/05/96	Wakulla County	Commissioners and Staff	Meeting	Wakulla County issues	COT
08/15/96	City of St. Marks; Wakulla County	O. Vick; J. McCue, E. Mills, C. Murray, R. Merrit (PSG)	Meeting/Follow-up Letter 8/12/96	St. Marks/Wakulla County issues	FWENC; COT; RE&C; HGSS; M/B
08/16/96	FPS	A. Gregory	Telephone & Letter	Outdoor Recreation Plan	M/B
08/19/96	NWFWMD; FDEP	A. Chelette; E. Hemment, D. Cairns, P. Ryan; T. Macmillan; M. Castellanos	Meeting	NWFWMD issues	FWENC; COT; RE&C
08/20/96	ARPC	B. Cambric	Telephone	Maps of regional resources	M/B
08/21/96	St. Marks NWR	J. White	Letter	RARE & Federal designated critical habitat areas	M/B
08/22/96	FDEP	C. Holladay	Telephone	Ambient values; Class I receptors	FWENC
08/23/96	BAR	S. Amiss	Letter	Archaeological landmarks or landmark zones	M/B
08/23/96	NWFWMD	G. Fisher	Telephone	Maps of Save Our Rivers land	M/B
08/23/96	FDEP Bureau of Coastal and Aquatic Managed Areas	L. Nall	Telephone	National estuarine sanctuaries	M/B
08/23/96	Fla Dept of Labor Economic Research	J. Homes	Telephone	Labor Force Summaries	M/B
08/27/96	City of St. Marks	J. Carlson	Telephone	Mailing list	COT
08/27/96	National Resource Conservation Service	Staff	Letter	Soil survey	FWENC
08/28/96	FDEP	R. Cantrell	Telephone	Wetlands jurisdictional determination	FWENC
08/29/96	FDEP	B. Oven	Telephone	Filing fee; associated facilities	HGSS
08/30/96	FDEP	R. Cantrell	Telephone	Wetlands jurisdictional determination	FWENC

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FEDERAL, STATE, REGIONAL, AND LOCAL GOVERNMENT AGENCY CONTACTS

Date	Agency	Contact	Type of Contact	Subject	Project Representative
08/30/96	FPSC; FGFWFC; ARPC; USFS; USFWS; City of St. Marks; Wakulla Co.; FDOS; Leon Co.; DCA; FDOT; NWFWMD; FPS	R. Floyd; D. Bailey; C. Blume; A. Colaninno; J. White; O. Vick; J. Carlson; J. McCue; L. Kammerer; P. Alam; P. Darst; S. Whitmire; D. Cairns; J. Jenkins	Letter	Permitting Process Kickoff Meeting	COT
09/04/96	FDEP	C. Holladay	Telephone	Class I receptor information	FWENC
09/05/96	FDOT; NWFWMD; DCA; FPSC; FGFWFC; ARPC; USFS; USFWS; City of St. Marks; Wakulla County: FDOS	S. Whitmire; T. Macmillan; P. Darst; R. Floyd; D. Bailey; C. Blume; W. Ebaugh; J. White; O. Vick; J. McCue; L. Kammerer	Telephone	Permitting Process Kick Off Meeting	COT
09/10/96	FDEP; FPSC; FDOT; ARPC; USFS; NWFWMD; USFWS; FGFWFC; City of St. Marks; Wakulla Cty; DCA; FDOS	B. Oven; R. Floyd; J. Campbell; S. Whitmire; M. Donovan; C. Blume; R. Cambric; W. Ebaugh; E. Hemmert; J. White; R. McCann; C. Shields, C. Daggett; O. Vick; P. Darst; L. Kammerer; T. Bell, F. Wettstein; W. Congdon; J. Mandrup; P. Ralleston; D. Griffin; C. Collette; C. Diltz; A. Linero; M Castello; M. Castellanos; A. Rushanan	Meeting/Follow-up Letters dated 9/10/96 and 9/18/96	Project overview and Preliminary Plan of Study	FWENC; COT; HGSS; M/B
09/10/96	FDEP	R. Hendrickson	Letter	Florida Wild and Scenic Rivers Act	M/B
09/10/96	USFS	D. Wergowske	Letter	Plan of Study/AQ Modeling Protocol	COT
09/10/96	USFWS	E. Porter	Letter	Plan of Study/AQ Modeling Protocol	COT

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FEDERAL, STATE, REGIONAL, AND LOCAL GOVERNMENT AGENCY CONTACTS

Date	Agency	Contact	Type of Contact	Subject	Project Representative
09/10/96	FDEP (copies to FDOT, DCA, ARPC, USFWS, Wakulla Co., FDOS, NWFWMD, FGFWFC, USFS, City of St. Marks, Leon Co)	B. Oven	Letter	Plan of Study	COT
09/11/96	Wakulla Co.	J. McCue	Letter	Plan of Study comments	COT
09/11/96	Leon Co.	P. Alam	Letter	Plan of Study comments	COT
09/11/96	Leon Co.	P. Alam	Letter	Plan of Study/AQ Modeling Protocol	COT
09/12/96	FDEP	A. Linero	Telephone	Air Modeling Protocol	COT
09/13/96	FNAI	B. Lenczewski	Letter	Land holdings	M/B
09/13/96	USFWS	J. White	Letter	Upcoming Air Quality Meeting	COT
09/17/96	Fla Dept of Labor Economic Research	S. Patterson	Telephone	Employment Figures	M/B
9/16-17/96	NWFWMD	Library	Review/Copy Documents	Documents	RE&C
9/17/96	City of St. Marks	City Manager	Deliver Letter	Map of City	RE&C
09/18/96	City of St. Marks; Wakulla County	C. Shields; O. Vick	Meeting	Community Open House	COT
09/20/96	NPS	J. Viemont	Telephone	Visibility Modeling	FWENC
09/24/96	Water Resources Data Collection	M. Arnesto	Telephone	Fla waters, aquatic preserves, estuarine sanctuaries	M/B
09/24/96	Wakulla Co Library System	D. Jones	Telephone	Library locations	M/B
09/24/96	Wakulla Co Sheriff's Office	Officer Slater	Telephone	Law enforcement coverage	M/B
09/25/96	FDEP; USFWS; USFS	B. Oven, M. Costello, C. Holladay, W. Leffler, J. Brown, A. Linero, H. Estevez; J. Reinman; E. Porter; W. Ebaugh, D. Wergowske	Meeting	Air quality	FWENC; COT; HGSS
09/27/96	Wakulla Co.	J. McCue	Telephone	Wakulla Co. budget	M/B

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FEDERAL, STATE, REGIONAL, AND LOCAL GOVERNMENT AGENCY CONTACTS

Date	Agency	Contact	Type of Contact	Subject	Project Representative
10/02/96	Wakulla Co Community Development	E. Mills	Telephone	Confirm status of data	M/B
10/03/96	FDEP	R. Cantrell	Letter	Wetlands jurisdictional	COT
10/07/96	FDEP	C. Diltz	Telephone	Plan of Study comments	FWENC
10/07/96	FGFWFC	D. Bailey	Telephone	Plan of Study comments	FWENC
10/07/96	USFS	W. Ebaugh	Telephone	Plan of Study comments	FWENC
10/07/96	FDEP	F. Wettstein	Telephone	Plan of Study comments	FWENC
10/07/96	DCA	P. Darst	Telephone	Plan of Study comments	FWENC
10/07/96	FDEP	D. Bickner	Telephone	Details of FDEP Wetlands delineation	FWENC
10/08/96	FDEP	D. Griffin	Telephone	Plan of Study comments	FWENC
10/08/96	St. Marks NWR	J. White	Telephone	Plan of Study comments	FWENC
10/09/96	FDEP	M. Castello	Telephone	Plan of Study comments	FWENC
10/09/96	NWFWMD	T. Macmillan	Telephone	Plan of Study comments	FWENC
10/11/96	City of St. Marks	City Manager	Telephone	Set Up Tour of WWTF	RE&C
10/11/96	DCA	P. Darst	Telephone	Plan of Study comments (noise)	FWENC
10/14/96	FDEP	R. Clarke	Telephone	Plan of Study comments	COT
10/14/96	FDEP	R. Cantrell	Letter	Wetlands jurisdictional	COT
10/15/96	FDEP	J. Brown, P. Comer, J. Holtom	Meeting	Air quality - Title V	FWENC; COT; HGSS
10/16/96	DCA	P. Darst	Telephone	Plan of Study comments	FWENC
10/16/96	FDEP	Fred Noble	Telephone	NPDES Permits	RE&C
10/17/96	City of St. Marks	City Manager	Meeting	Tour of WWTF	RE&C
10/17/96	USFS	D. Wergowske	Telephone	Plan of Study comments	FWENC
10/17/96	FDEP	A. Rushanan	E-mail	Plan of Study comments	FWENC
10/17/96	FDEP	J. Holtom	Letter	Plan of Study	COT
10/18/96	FDEP	Bill Evans/Neil Rogers	Telephone	NPDES Permits	RE&C
10/18/96	FDEP	F. Noble, B. Evans, N. Rogers	Telephone	Potential sources of reclaim/reuse water for cooling tower	RE&C
10/21/96	FDEP	C. Holladay	Telephone	Class I Significant Impact levels	FWENC
10/24/96	FDEP	D. Bickner	Telephone	Scheduling of FDEP site visit	FWENC
10/24/96	USFS	K. Siderits	Fax	Plan of Study comments	FWENC
10/28/96	FDOT	A. Roberts	Telephone	FAA requirements	FWENC
10/28/96	FAA	W. Carpenter	Telephone	FAA requirements	FWENC
10/29/96	FDEP	Rachel Mills/ Joe Hand	Telephone	305b Report	RE&C

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Date	Agency	Contact	Type of Contact	Subject	Project Representative
10/31/96	ARPC; Wakulla County	Planning Council Members, J. McCue	Meeting/Follow-up Letter dated 11/15/96	Project briefing	COT
11/01/96	FGFWFC	A. Williams	Letter	Federally Designated Critical Habitat areas	M/B
11/04/96	FDEP	C. Holladay	Telephone	Emissions inventory	FWENC
11/04/96	FDEP	Receptionist	Meeting	305b Report	RE&C
11/06/96	FDEP (copies to FDOT, DCA, USFWS, NWFWMD, ARPC, FGFWFC, FDOS, Wakulla Co., USFS, City of St. Marks, Leon Co.)	B. Oven	Letter	Responses to comments/Final Plan of Study	COT
11/07/96	FDEP	Joe Hand	Meeting	305b Report	RE&C
11/12/96	ACOE	J. Hendricks	Telephone	Corps jurisdictional wetlands determination needs by the project and protocol for implementing the determination	FWENC
11/14-15/96	ACOE	Jacqueline Griffin	e-mail	Data Request	RE&C
11/18/96	SWFWMD	Sid Flannery	Telephone	Reclaimed Water	RE&C
11/19/96	Wakulla Co. Community Development	F. Evans	In Person	Maps	M/B
11/21/96	ACOE	Paul Bradley	Telephone	Data Request	RE&C
11/21/96	FDEP	S. Labie	Letter	QAPP	COT
11/27/96	NWFWMD	S. Barrett	Telephone	Revised printout of well users in Wakulla Co.	FWENC
11/27/96	Wakulla Co Fire/EMS	C. Murray	Telephone	Schedule for public input	M/B
12/96	FDEP-Quality Assurance	A. Tindle	Telephone	QAPP	FWENC
12/03/96	FGFWFC	B. Ftys	Telephone	Critical habitat areas See 11/1/96 Williams	M/B

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FEDERAL, STATE, REGIONAL, AND LOCAL GOVERNMENT AGENCY CONTACTS

Date	Agency	Contact	Type of Contact	Subject	Project Representative
12/3/96	FDEP	Trudy Bell	Telephone	Plan of Study	RE&C
12/06/96	FACIR	Kaye	Telephone	Local Govt Financial Information Handbook	M/B
12/06/96	USDOC - Bureau of Economic Analysis	E. Repice	Telephone	RIMS II Multipliers	M/B
12/13/96	FDEP	C. Holladay	Telephone	Emissions inventory/background data	FWENC
12/16/96	USFS	D. Caffin	Telephone	Florida National Scenic Trail	M/B
12/16/96	Wakulla Co Engineering	C. Fleming	Telephone	Solid Waste, Wastewater & Water	M/B
12/17/96	City of St. Marks; Wakulla Co.	O. Vick, C. Shields; E. Mills, Commissioner Nettles	Meeting	St. Marks/Wakulla County issues	FWENC; COT; RE&C; HGSS
12/17/96	FDEP	A. Allen	Telephone	Emissions inventory missing data	FWENC
12/19/96	Wakulla Co. Health Dept	Helen	Telephone	Medical Services	M/B
12/19/96	Wakulla Co.	C. Murray	Telephone	Ambulance service costs	M/B
12/20/96	FDEP	C. Holladay	Letter	Emission inventory	FWENC
12/26/96	City of St. Marks	O. Vick	Telephone	Land Use Map	M/B
12/26/96	FDEP	T. Singleton	Telephone	SWMM Plan Monitoring	RE&C
12/30/96	FDEP	T. Rogers	Telephone	Visibility SIP	FWENC
01/02/97	City of St. Marks	O. Vick	Letter	Volunteer Fire Dept.	M/B
01/06/97	FDEP	T. Egan	Telephone	Air quality monitoring	FWENC
01/07/97	Wakulla Co.	E. Mills	Telephone	Impact fees	M/B
01/07/97	City of St. Marks	O. Vick	Telephone	St. Marks Land Development Code	M/B
01/08/97	USFWS	L. Zussy	Telephone	Hunting status on refuge	FWENC
01/08/97	St. Marks NWR	V. Urban	Telephone	Hunting status on refuge and Aucilla Wildlife Mgmt Area	FWENC
01/08/97	St. Marks NWR	J. Fort	Telephone	Hunting status on refuge and Aucilla Wildlife Mgmt Area	FWENC
01/09/97	FDEP (copies to USFWS, USFS)	B. Oven	Letter	Air quality approach	COT
01/09/97	Wakulla Co. Sheriff	Major M. Langston	Telephone	Public service costs	M/B
01/10/97	Wakulla Co.	S. Burke	Telephone	Public service costs - Wakulla Co. Landfill	M/B
01/10/97	Wakulla Co. Sheriff	K. Day	Telephone	Public service costs	M/B

TABLE 9-1
FEDERAL, STATE, REGIONAL, AND LOCAL GOVERNMENT AGENCY CONTACTS

Date	Agency	Contact	Type of Contact	Subject	Project Representative
01/13/97	Wakulla Co.	J. Ross	Telephone	Public service costs - building permit feees	M/B
01/15/97	FDEP (copies to USFWS, USFS)	B. Oven	Letter	Monitoring exemption request	COT
01/15/97	USFWS	E. Porter	Telephone	Air quality approach	COT
01/15/97	FDEP	C. Holladay	Telephone/Fax	Emission inventory, modelling negative emission sources for PSD	FWENC
01/15/97	City of St. Marks	O. Vick	Telephone	Land development code adoption	M/B
01/15/97	City of St. Marks	O. Vick	Letter	Landscaping ordinances	M/B
01/15/97	Wakulla Co.	E. Mills	Letter	Development fee schedule	M/B
01/16/97	City of St. Marks	O. Vick	Telephone	Service area population	M/B
01/17/97	USDOC, Bureau of Economic Analysis	E. Repice	Letter	RIMS II multipliers - Leon and Wakulla Counties	M/B
01/28/97	Wakulla Co.	S. Burke	Telephone	Solid waste	M/B
01/28/97	Wakulla Co.	E. Mills	Telephone	Land development code & comp plan updates	M/B
01/28/97	City of St. Marks	O. Vick	Telephone	Solid waste collection	M/B
02/19/97	FDEP	C. Holladay	Telephone	Follow-up on Monitoring Exemption Request & Emission Inventory approval	FWENC
02/06/97	FDEP	B. Oven	Telephone	Need application for SCA	FWENC
02/19/97	EPA	J. Touma	Telephone	Use of negative emission rates in the VISCREEN Model	FWENC
02/24/97	USFWS	R. Turner	Telephone	Thermal attractant to manatees from the Purdom site following operation of Unit 8	FWENC

Key:

COT	City of Tallahassee
FWENC	Foster Wheeler Environmental Corporation
HGSS	Hopping Green Sams & Smith
M/B	Moore/Bowers
RE&C	Raytheon Engineers and Constructors

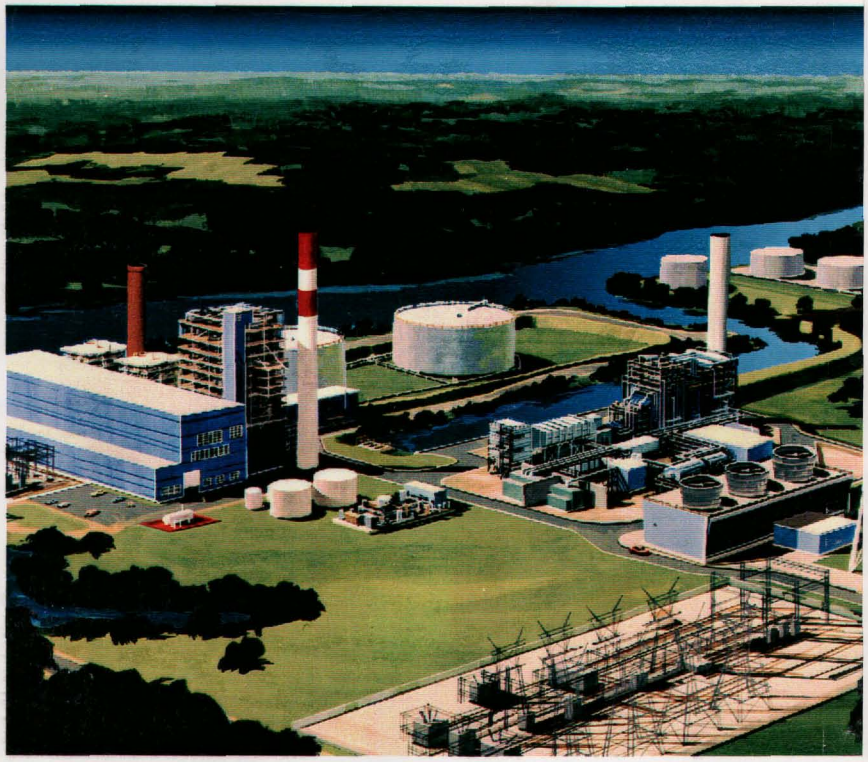
ACOE	U.S. Army Corps of Engineers
ARPC	Apalachee Regional Planning Council
BAR	Bureau of Archaeological Research
DCA	Department of Community Affairs
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FACIR	Florida Advisory Commission on Intergovernmental Relations
FDEP	Florida Department of Environmental Protection
FDOS	Florida Department of State
FDOT	Florida Department of Transportation
FGFWFC	Florida Game & Fresh Water Fish Commission
FGIF	Florida Game & Inland Fish
FGS	Florida Geological Survey
FNAI	Florida Natural Areas Inventory
FPS	Florida Park Service
FPSC	Florida Public Service Commission
NPS	National Park Service
NWFWMD	NorthWest Florida Water Management District
NWR	National Wildlife Refuge
USDOC	U.S. Department of Commerce
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service
USGS	U.S. Geological Service

CITY OF TALLAHASSEE

Purdom Unit 8 Site Certification Application

VOLUME 2

CITY OF TALLAHASSEE

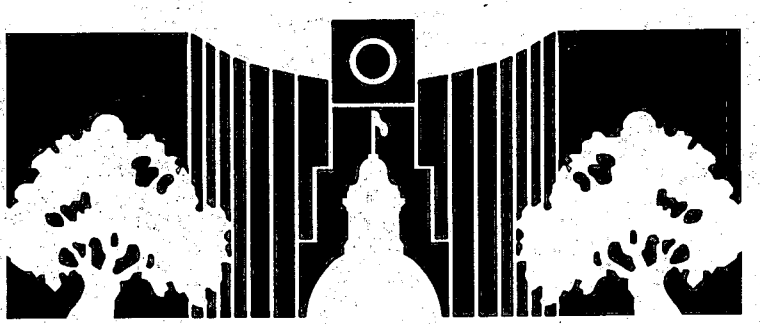


Purdom Unit 8 Site Certificatio

VOLUME 2

Raytheon Engineers &
Constructor

MOORE/BOWERS



CITY OF TALLAHASSEE

SITE CERTIFICATION APPLICATION

PURDOM UNIT 8

MARCH 1997

VOLUME 2

Cover Art by Ouida Vick

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- 1.5 OTHER CONSIDERATIONS
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10. APPENDICES

10.1 FEDERAL PERMIT APPLICATIONS OR APPROVALS

The Purdom Unit 8 Project does not require any federal permits. As the NPDES permitting program has been recently (May 1, 1995) delegated to FDEP and the station is still operating under the EPA-issued NPDES Permit, NPDES-related information is presented in the following sections.

10.1.1 316 Demonstrations

Section 316(a) of the Clean Water Act (CWA) addresses the permitting of thermal discharges that can allow alternative thermal effluent limitations that are less stringent than the limitations required under section 402(a) of the CWA. Similarly, Section 316(b) of the CWA addresses the permitting of intake structures that meet the "best technology available for minimizing adverse environmental impact". Purdom Units 5, 6, and 7 are all covered under the existing NPDES Permit for the Purdom Station (see Section 10.1.2). That permit states that the City of Tallahassee is authorized to discharge from the Purdom Generating Station to the St. Marks River "in compliance with the provisions of the Clean Water Act..." That permit authorizes the discharge of once-through cooling water and auxiliary cooling water from Units 1-5 via outfall serial number 001; and once-through cooling water and auxiliary cooling water from Units 6 and 7, and cooling water from combustion turbines 1 and 2, via outfall serial number 002. Based on this permit, the provisions of Section 316 of the CWA have already been satisfied for the existing units.

As Unit 8 will have no thermal discharge, and no new intake structure, it requires no new 316 Demonstrations.

10.1.2 NPDES Applications/Permits

Following is a copy of the Purdom Generating Station NPDES Permit Number FL0025526, issued on September 29, 1992 by the U.S.EPA. Following that are copies of two submittals dated November 3, 1995, and April 26, 1996, which constitute the City of Tallahassee's application to renew the Purdom Generating Station NPDES Permit under the FDEP's authority to administer the NPDES permitting program in Florida as of May 1, 1995.

The addition of Purdom Unit 8 and the accompanying retirement of Purdom Units 5 and 6 will result in the elimination of the outfalls with serial numbers 001, 005, and 006. Additionally, outfall serial number 002 will see a reduction in flow of approximately 36% (see Sections 2.3.4-1 and 3.5.1) with the retirement of Unit 6.

During the transition period when Units 5 and 6 are being permanently shut down and Unit 8, including the zero discharge wastewater treatment system, is being tested prior to commercial operation, the City of Tallahassee may use the existing low-volume wastewater treatment system to treat wastewater resulting from preoperation and cleaning activities. Any discharge from that treatment will meet the existing NPDES permit limits.

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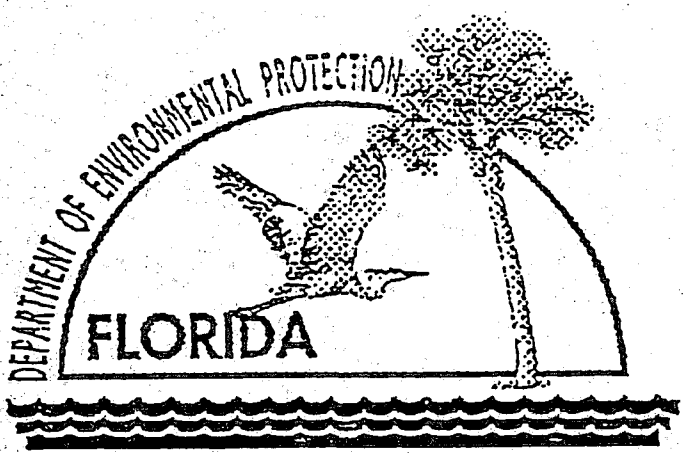

WASTEWATER APPLICATION FORM 2ES

PERMIT TO DISCHARGE NON-PROCESS WASTEWATER
FROM NEW OR EXISTING
INDUSTRIAL WASTEWATER FACILITIES
TO SURFACE WATERS

Poor Original

CITY OF TALLAHASSEE
ELECTRIC DEPARTMENT

SAM O. PURDOM GENERATING STATION

NPDES PERMIT RENEWAL APPLICATION

SUBMITTED: NOVEMBER 1, 1995

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D – FORM 2CS, Part IV D & E Responses

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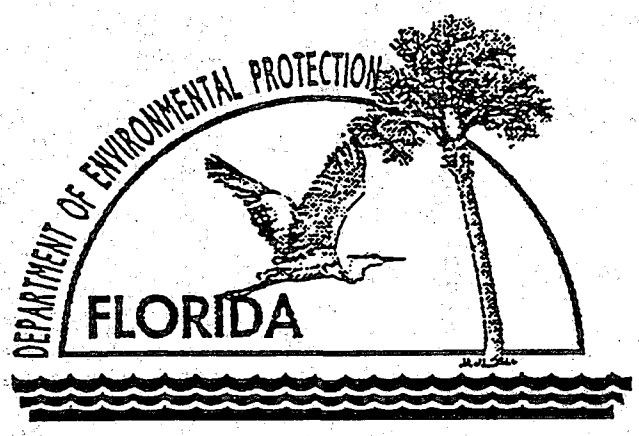
G – MSDS Sheets for Dechlorination

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.



WASTEWATER PERMIT APPLICATION FORM 1 GENERAL INFORMATION

This form must be completed by all persons applying for a permit to operate a domestic or industrial wastewater facility. See Form 1 to determine which other application forms you will need.

WASTEWATER PERMIT APPLICATION FORM 1 GENERAL INFORMATION

I IDENTIFICATION NUMBER:

Facility ID FL0025526

II CHARACTERISTICS:

INSTRUCTIONS: Complete the questions below to determine whether you need to submit any permit application forms to the Department of Environmental Protection. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the blank in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if you activity is excluded from permit requirements. See Section B of the instructions. See also, Section C of the instructions for definitions of the terms used here.

SPECIFIC QUESTIONS	YES	NO	FORM ATTACHED
A. Is this facility a domestic wastewater facility which results in a discharge to surface or ground waters?		X	NA
B. Does or will this facility (either existing or proposed) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters?		X	NA
C. Does or will this facility (other than those describe in A. or B.) discharge process wastewater, or non-process wastewater regulated by effluent guidelines or new source performance standards, to surface waters?	X		2ES 2CS
D. Does or will this facility (other than those described in A. or B.) discharge process wastewater to ground waters?		X	NA
E. Does or will this facility discharge non-process wastewater, not regulated by effluent guidelines or new source performance standards, to surface waters?		X	NA
F. Does or will this facility discharge non-process wastewater to ground waters?		X	NA
G. Does or will this facility discharge stormwater to surface waters?	X		EPA GENERAL PERMIT
H. Is this facility a non-discharging/closed loop recycle system?		X	NA

Attachment

III NAME OF FACILITY: (40 characters and spaces)

Sam O. Purdom Generating Station

Facility ID FL0025526

V FACILITY CONTACT: (A. 30 characters and spaces)

A. Name and Title (Last, first, & title)	B. Phone (area code & no.)
King, Gordon - Plant Supervisor	(904) 891-5905

V FACILITY MAILING ADDRESS: (A. 30 characters and spaces; B. 25 characters and spaces)

A. Street or P.O. Box:	667 Port Leon Drive		
B. City or Town:	St. Marks	State: Fl.	Zip Code: 32355

VI FACILITY LOCATION: (A. 30 characters and spaces; B. 24 characters and spaces; C. 3 spaces (if known); D. 25 characters and spaces; E. 2 spaces; F. 9 spaces)

A. Street, Route or Other Specific Identifier:	667 Port Leon Drive		
B. County Name:	Wakulla	C. County Code (if known):	NA
D. City or Town:	St. Marks	E. State: Fl.	F. Zip Code: 32355

VII SIC CODES: (4-digit, in order of priority)

1. Code #:	(Specify)	4911	2. Code #:	(Specify)	NA
3. Code #:	(Specify)	NA	4. Code #:	(Specify)	NA

VIII OPERATOR INFORMATION: (A. 40 characters and spaces; B. 1 character; C. 1 character (if other, specify); D. 12 characters; E. 30 characters and spaces; F. 25 characters and spaces; G. 2 characters; H. 9 characters)

A. Name:	City of Tallahassee	B. Is the name in VIII A. the owner? (Yes:) No:	
C. Status of Operator: F = Federal; S = State; P = Private; O = Other; M = Public (other than F or S)	(code) M	(specify) Municipal	D. Phone No.: 891-8850
E. Street or P. O. Box:	300 South Adams Street		
F. City or Town:	Tallahassee	G. State: Fl. H. Zip Code:	32301

IX INDIAN LANDS: Is the facility located on Indian lands? Yes: __ No X

Facility ID FL0025526

EPA STORMWATER GENERAL PERMIT

X EXISTING ENVIRONMENTAL PERMITS:

A. NPDES Permit No.	B. UIC Permit No.	C. Other (specify)	D. Other (specify)
FL0025526	NA	IWW IO65-188446	FLR 00A317

XI MAP: Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements. SEE Attachment B

XII NATURE OF BUSINESS (provide a brief description)

This facility produces electricity, utilizing steam generation for the City of Tallahassee. The facility has seven fossil fuel boilers, fired by natural gas and/or No. 6 fuel oil, producing steam which drives condensing type turbine generators. There are also two combustion turbine generators used as peaking units.

XIII CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

J. Sam Bell, Jr.

A. Name (type or print)

Assistant City Manager - Utility Services

Official Title (type or print)

J. Sam Bell, Jr.

B. Signature

11/1/95

C. Date Signed

FORM
2ES

APPLICATION FOR PERMIT TO DISCHARGE NON-PROCESS WASTEWATER TO SURFACE WATERS

Facility I.D. Number: FL0025526

ase type or print in black ink. If additional space is needed for your answer, use plain sheets and attach to the application form.

Receiving Waters

For each outfall, list the latitude and longitude, name and classification of the receiving water(s).

Outfall No.	Latitude			Longitude			Receiving Water (name and class.)
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
001	30	09	44	84	11	54	St. Marks River - Class III

Discharge Date (If a new discharger, the date you expect to begin discharging.)

II. Type of Waste

A. Check the general type(s) of wastes discharged.

__ Sanitary Wastes __ Restaurant or Cafeteria Wastes x Non-contact Cooling Water

__ Other Non-process Wastewater _____ (identify)

x Once-through __ Recycled __ Number of Cycles.

B. If any cooling water additives are used, list them (attach additional sheets as necessary). Briefly describe their composition if this information is available.

Chlorine
Powerline 3680 or
Sodium Thiosulfate
} Dechlorinating Agents (See Attachment G)

IV. Effluent Characteristics (see instructions) Facility ID No. FL0025526

A. Existing Sources - Provide measurements for the parameters listed in the left-hand column below, unless waived by the Department.

B. New Dischargers - Provide estimates for the parameters listed in the left-hand column below, unless waived by the Department. Instead of the number of measurements taken, provide the source of estimated values.

Pollutant or Parameter	(1) Maximum Daily Value (include units)		(2) Average Daily Value (last year)(include units)		(3)	(4)
	Mass mg/l	Concentration Units	Mass mg/l	Concentration Units		
Biochemical Oxygen Demand (BOD)	<0.23	<2.0	<0.11	<2.0	1	Tons
Total Suspended Solids (TSS)	0.58	5.0	0.26	5.0	1	Tons
Fecal Coliform	NOT BELIEVED PRESENT					
Total Residual Chlorine*	0	0	0	0	1	Tons
Oil and Grease	<0.58	<5.0	<0.58	<5.0	1	Tons
Chemical Oxygen Demand (COD)	2.56	22.0	1.17	22.0	1	Tons
Total Organic Carbon (TOC)	0.37	3.2	0.17	3.2	1	Tons
Ammonia (as N)	<0.002	<0.016	<0.0008	<0.016	1	Tons
Discharge Flow	Value: 27.9		12.7		365/yr	MGD
pH (give range)	Value: ----		---			
Temperature (Winter)	Deg. C 85.9		Deg. C 76.2		365/yr	°F
Temperature (Summer)	Deg. C 91.5		Deg. C 81.6		365/yr	°F

*If believed present or if sanitary waste is discharged. **If chlorine is used.

V. Except for leaks or spills, will the discharge described in this form be intermittent or seasonal? __ Yes X No
If yes, briefly describe the frequency of flow and duration.

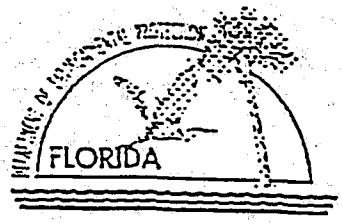
VI. Treatment System (Describe briefly any treatment system(s) used or to be used)

Dechlorinated using Betz PowerLine 3680 or
Sodium Thiosulfate as the dechlorinating agent

VII. Other Information (Optional)
Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations. Attach additional sheets, if necessary.

None

FORM
2ES



APPLICATION FOR PERMIT TO DISCHARGE NON-PROCESS WASTEWATER TO SURFACE WATERS

Facility I.D. Number: FL0025526

ase type or print in black ink. If additional space is needed for your answer, use plain sheets and attach to the application form.

Receiving Waters

For each outfall, list the latitude and longitude, name and classification of the receiving water(s).

Outfall No.	Latitude			Longitude			Receiving Water (name and class.)
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
002	30	09	43	84	12	00	St. Marks River - Class III

. Discharge Date (If a new discharger, the date you expect to begin discharging.)

I. Type of Waste

. Check the general type(s) of wastes discharged.

__ Sanitary Wastes __ Restaurant or Cafeteria Wastes x Non-contact Cooling Water

__ Other Non-process Wastewater: _____ (identify)

. x Once-through __ Recycled __ Number of Cycles.

. If any cooling water additives are used, list them (attach additional sheets as necessary). Briefly describe their composition if this nformation is available.

Chlorine
PowerLine 3680 or } Dechlorinating Agents (See Attachment G)
Sodium Thiosulfate

IV. Effluent Characteristics (see instructions) Facility ID No. FL0025526

A. Existing Sources - Provide measurements for the parameters listed in the left-hand column below, unless waived by the Department.

B. New Dischargers - Provide estimates for the parameters listed in the left-hand column below, unless waived by the Department. Instead of the number of measurements taken, provide the source of estimated values.

Pollutant or Parameter	(1) Maximum Daily Value (include units)		(2) Average Daily Value (last year)(include units)		(3)	(4)
	Mass mg/l	Units	Mass mg/l	Units		
Biochemical Oxygen Demand (BOD)	0.73	2.0	0.44	2.0	1	Tons
Total Suspended Solids (TSS)	1.83	5.0	1.11	5.0	1	Tons
Fecal Coliform	Not Believed Present					
Total Residual Chlorine	0	0	0	0	1	Tons
Oil and Grease	1.83	5.0	1.11	5.0	1	Tons
Chemical Oxygen Demand (COD)	9.52	26.0	5.78	26.0	1	Tons
Total Organic Carbon (TOC)	2.34	6.4	1.42	6.4	1	Tons
Ammonia (as N)	0.010	0.026	0.006	0.026	1	Tons
Discharge Flow	Value: 87.8 MGD		53.3 MGD		365/yr	MGD
pH (give range)	Value: 8.1		7.4		365/yr	pH units
Temperature (Winter)	Deg. C 86.5		Deg. C 71.4		365/yr	°F
Temperature (Summer)	Deg. C 93.3		Deg. C 80.6		365/yr	°F

*If believed present or if sanitary waste is discharged. **If chlorine is used.

V. Except for leaks or spills, will the discharge described in this form be intermittent or seasonal? __ Yes X No
If yes, briefly describe the frequency of flow and duration.

VI. Treatment System (Describe briefly any treatment system(s) used or to be used)

Dechlorination using Betz PowerLine 3680 or
Sodium Thiosulfate as the dechlorinating agent

VII. Other Information (Optional)
Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations. Attach additional sheets, if necessary.

None

VIII-A CERTIFICATIONS FOR NEW OR MODIFIED FACILITIES

This is to certify the engineering features of this pollution control project have been designed by me and found to be in conformity with sound 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 of the Department. It is also agreed that the undersigned, if authorized by the owner, will furnish the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signature

Name (please type)

(Affix Seal)

Company Name

Address:

Florida Registration No.

Telephone No. Date:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name & Official Title (type or print)

Telephone No. (area code & no.)

Signature

Date Signed

VIII-B CERTIFICATIONS FOR PERMIT RENEWALS

This is to certify the engineering features of this pollution control project have been examined by me and found to be in conformity with sound 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 of the Department.

Signature

Ben Cowart

Name (please type)

(Affix Seal)

City of Tallahassee

Company Name

Address: 300 S. Adams St.

Tallahassee, FL 32301

Florida Registration No. 43905

Telephone No. 904/891-8729 Date: 11/1/95

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

J. Sam Bell, Jr.
Assistant City Manager, Utility Services

Name & Official Title (type or print)

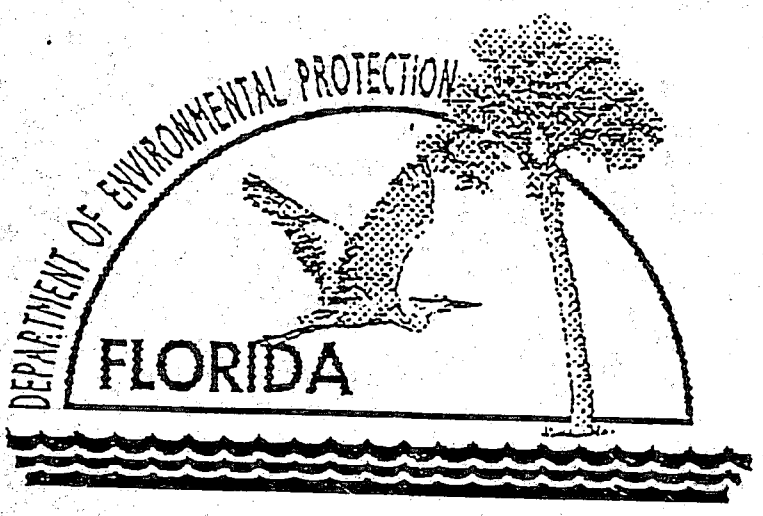
(904) 891-8850

Telephone No. (area code & no.)

Signature

11/1/95

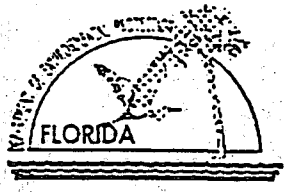
Date Signed



WASTEWATER APPLICATION FORM 2CS

PERMIT TO DISCHARGE PROCESS WASTEWATER
FROM NEW OR EXISTING
INDUSTRIAL WASTEWATER FACILITIES
TO SURFACE WATER

FORM
2CS



WASTEWATER APPLICATION FOR PERMIT TO DISCHARGE PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO SURFACE WATERS

Facility I.D. Number: FL0025526

Please print or type information in the appropriate areas.

OUTFALL LOCATION For each outfall, list the X,Y coordinates and the name of the receiving water.
(latitude/longitude to the nearest 15 seconds)

A. Outfall No. (list)	B. Latitude			C. Longitude			D. Name of Receiving Water
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
005	30	09	48	84	11	54	St. Marks River - Class III

I OUTFALL DESIGN

A. Outfall No.	B. Design Configuration and Construction Materials	C. Distance from shore	D. Diameter	E. Elevation of Discharge Invert (MSL)	F. Receiving Water Depth at POD (MSL)
005	PVC PIPE	15 ft.	8 in.	15 ft.	10 ft.

III RECEIVING WATER INFORMATION

For each surface water that will receive effluent, supply the following information:

A. Name of Receiving Water	B. Check One		C. Classification (See Ch. 62-302, F.A.C.)	D. Type of Receiving Water (canal, river, lake, etc.)
	Fresh	Salt or Brackish		
St. Marks River	X		III	River

E. Minimum 7-day 10-year low flow of the receiving water at each outfall (if appropriate). Not Appropriate (tidal influence)

F. Identify and describe the flow of effluent from each outfall to a major body of water. A suitably marked map or aerial photograph may be used. (SEE ATTACHMENT B)

G. Do you request a mixing zone under Rule 62-4.244, F.A.C.? If yes, for what parameters or pollutants? No

IV FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures. (SEE ATTACHMENT C)

B. For each outfall, provide a description of:

1. All operations contributing wastewater to the effluent; including process wastewater, sanitary wastewater, cooling water, and stormwater runoff;

2. The average flow contributed by each operation; and

3. The treatment received by the wastewater.

Use the space on the next page. Continue on additional sheets, if necessary.

(1) Outfall # (List)	(2) Operation(s) Contributing Flow		(3) Treatment		
	(a) Operation (list)	(b) Avg. Flow & Units	(a) Description	(b) List Code from Table 2CS-1	
005	Metal Cleaning	0.0304MGD	Treatment Pond	1-O	1-G
	Waste Pond:		mixing, Flocculation	1-U	4-A
	Air Heater Wash		sedimentation and		
	Unit 5/twice/yr	(0.0083)	discharge		
	Unit 6/twice/yr	(0.0083)			
	Unit 7/twice/yr	(0.0138)			

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?
X Yes (complete the following table) __ No (go to D. below)

(1) Outfall # (List)	(2) Operation(s) Contributing Flow (List)	(3) Frequency		(4) Flow				
		(a) Days per Week (specify avg.)	(b) Months per Yr. (specify avg.)	(a) Flow Rate (in mgd)		(b) Total Volume (specify with units) MGD		(c) Duration (in days)
				Long Term Avg.	Max. Daily	Long Term Avg.	Max. Daily	
005	Metal Cleaning	----	---	0.01	0.0304	0.01	0.304	3
	Waste Pond Discharge							

D. Describe practices to be followed to ensure adequate wastewater treatment during emergencies such as power loss and equipment failures causing shutdown of pollution abatement equipment of the proposed/permitted facilities. (SEE ATTACHMENT D)

E. List the method(s) and location(s) of flow measurement. (SEE ATTACHMENT D)

V PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

X Yes (complete Item V-B) __ No (go to Section VI)

B. Are the limitations in the applicable guideline expressed in terms of production (or other measure of operation)?

__ Yes (complete Item V-C) X No (go to Section VI)

C. If you answered "yes" to Item V-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. Affected Outfalls (list outfall nos.)
a. Quantity per Day	b. Units of Measure	c. Operation, Product, Materials, Etc. (specify)	
NA		NONE	

VI IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement order, enforcement compliance schedule letter, stipulations, court orders, and grant or loan conditions.

__ Yes (complete the following table) X No (go to Item VI-B)

1. Identification of Condition, Agreement, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	a. No.	b. Source of Discharge		a. Required	b. Projected

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

__ Mark "X" if description of additional control programs is attached.

VII INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding—Complete one set of tables for each outfall – Annotate the outfall number in the space provided. NOTE: Tables VII-A, VII-B, and VII-C are included on separate sheets number VII-1 through VII-9.

D. Use the space below to list any of the pollutants listed in Table 2CS-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. Pollutant	2. Source	1. Pollutant	2. Source
NONE			

VIII POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item VII-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or by-product?

__ YES (list all such pollutants below) X NO (go to IX)

IX BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

X YES (identify the test(s) and describe their purposes below) __ NO (go to Section X)

FDEP performed toxicity test downstream of plant discharge in 1995

X CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

X YES (list the name, address, telephone number, and certification number of, and pollutants analyzed by each such laboratory or firm below)

__ NO (go to Section XI)

A. Name	B. Address	C. Telephone (area code & no.)	D. Pollutants Analyzed (list)
City of Tallahassee Water Quality Lab	3805 Springhill Rd. Tallahassee, FL 32301-6502	(904) 891-1200	Volatiles, Acid, Base/Neutral
Savannah Lab	2846 Industrial Plaza Dr. Tallahassee, FL	(904) 878-3994	BOD5, COD, Nitrite/Nitrate, O&G, Sulfate, TKN, TOC, TON, TRC, Phosphorus, Total Phenolics

SAM O. PURDOM GENERATING STATION
NPDES PERMIT NO. FL0025526

METALS CLEANING WASTE POND
NPDES OUTFALL - 005
FORM 2CS, VII A, B AND C

Analytical data for this outfall is unavailable at this time due to insufficient effluent for discharge and rainfall dilution.

Composite sampling and Form 2CS, VII A, B and C analysis will occur during the next pond discharge and will be submitted to the Department at that time.

FORM
2CS

FLORIDA

WASTEWATER APPLICATION FOR PERMIT TO DISCHARGE PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO SURFACE WATERS

Facility I.D. Number: FL0025526

Please print or type information in the appropriate areas.

OUTFALL LOCATION For each outfall, list the X,Y coordinates and the name of the receiving water. (latitude/longitude to the nearest 15 seconds)

A. Outfall No. (list)	B. Latitude			C. Longitude			D. Name of Receiving Water
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
006	30	09	48	84	11	54	St. Marks River - Class III

I OUTFALL DESIGN

A. Outfall No.	B. Design Configuration and Construction Materials	C. Distance from shore	D. Diameter	E. Elevation of Discharge Invert (MSL)	F. Receiving Water Depth at POD (MSL)
006	PVC PIPE	15 ft.	8 in.	15 ft.	10 ft.

III RECEIVING WATER INFORMATION

For each surface water that will receive effluent, supply the following information:

A. Name of Receiving Water	B. Check One		C. Classification (See Ch. 62-302, F.A.C.)	D. Type of Receiving Water (canal, river, lake, etc.)
	Fresh	Salt or Brackish		
St. Marks River	X		Class III	River

E. Minimum 7-day 10-year low flow of the receiving water at each outfall (if appropriate). Not Appropriate (tidal influence)

F. Identify and describe the flow of effluent from each outfall to a major body of water. A suitably marked map or aerial photograph may be used. (SEE ATTACHMENT B)

G. Do you request a mixing zone under Rule 62-4.244, F.A.C.? If yes, for what parameters or pollutants? NO

IV FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures. (SEE ATTACHMENT C)

B. For each outfall, provide a description of:

1. All operations contributing wastewater to the effluent; including process wastewater, sanitary wastewater, cooling water, and stormwater runoff;

2. The average flow contributed by each operation; and

3. The treatment received by the wastewater.

Use the space on the next page. Continue on additional sheets, if necessary.

(1) Outfall # (List)	(2) Operation(s) Contributing Flow		(3) Treatment		
	(a) Operation (list)	(b) Avg. Flow & Units	(a) Description	(b) List Code from Table 2CS-1	
006	Low Volume	0.12 MGD	Treatment Pond	1-O	1-G
	Waste Pond		mixing, flocculation	1-U	4-A
	Boiler Blowdown	(0.0008 MGD)	sedimentation, and		
	Auxiliary Cooling	(0.0058 MGD)	discharge		
	Demineralizer Waste	(0.0035 MGD)			
	Plant Sumps & Drains	(0.1099 MGD)			

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

X Yes (complete the following table) __ No (go to D. below)

(1) Outfall # (List)	(2) Operation(s) Contributing Flow (List)	(3) Frequency		(4) Flow				
		(a) Days per Week (specify avg.)	(b) Months per Yr. (specify avg.)	(a) Flow Rate (in mgd)		(b) Total Volume (specify with units) MGD		(c) Duration (in days)
				Long Term Avg.	Max. Daily	Long Term Avg.	Max. Daily	
006	Low Volume Waste Pond			0.20	0.56	0.20	0.56	18
	(SEE ATTACHMENT D)							

D. Describe practices to be followed to ensure adequate wastewater treatment during emergencies such as power loss and equipment failures causing shutdown of pollution abatement equipment of the proposed/permitted facilities. (SEE ATTACHMENT D)

E. List the method(s) and location(s) of flow measurement. (SEE ATTACHMENT D)

V PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

X Yes (complete Item V-B) __ No (go to Section VI)

B. Are the limitations in the applicable guideline expressed in terms of production (or other measure of operation)?

__ Yes (complete Item V-C) X No (go to Section VI)

C. If you answered "yes" to Item V-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. Affected Outfalls (list outfall nos.)
a. Quantity per Day	b. Units of Measure	c. Operation, Product, Materials, Etc. (specify)	
		NONE	

VI IMPROVEMENTS

Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement order, enforcement compliance schedule letter, stipulations, court orders, and grant or loan conditions.

__ Yes (complete the following table) _X_ No (go to Item VI-B)

1. Identification of Condition, Agreement, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	a. No.	b. Source of Discharge		a. Required	b. Projected

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

__ Mark "X" if description of additional control programs is attached.

I[illegible]TAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding—Complete one set of tables for each outfall – Annotate the outfall number in the space provided. NOTE: Tables VII-A, VII-B, and VII-C are included on separate sheets number VII-1 through VII-9.

D. Use the space below to list any of the pollutants listed in Table 2CS-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. Pollutant	2. Source	1. Pollutant	2. Source
NONE			

VIII POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item VII-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or by-product?

__ YES (list all such pollutants below) x NO (go to IX)

IX BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

x YES (identify the test(s) and describe their purposes below) __ NO (go to Section X)

FDEP conducted toxicity downstream of plant discharges during 1995

X CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

x YES (list the name, address, telephone number, and certification number of, and pollutants analyzed by each such laboratory or firm below)

__ NO (go to Section XI)

A. Name	B. Address	C. Telephone (area code & no.)	D. Pollutants Analyzed (list)
City of Tallahassee Water Quality Lab	3805 Springhill Rd. Tallahassee, FL 32310-6502	(904) 891-1200	Volatiles, Acid, Base/Neutral
Savannah Labs	2846 Industrial Place Dr. Tallahassee, FL	(904) 878-3994	BOD5, COD, Nitrate/Nitrite, O&G, Sulfate, TKH, TOC, TON, TRC, Phosphorus, Total Phenolics

CONNECTION TO REGIONAL POTW NA

A. Indicate the relationship between this project and area regional planning for wastewater treatment. List steps to be taken for this industrial wastewater facility to become part of an area-wide wastewater treatment system.

XII-A CERTIFICATIONS FOR NEW OR MODIFIED FACILITIES NA

This is to certify the engineering features of this pollution control project have been designed by me and found to be in conformity with sound 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 of the Department. It is also agreed that the undersigned, if authorized by the owner, will furnish the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

_____
Signature

_____
Name (please type)

(Affix Seal)

_____
Company Name

Address: _____

_____

_____

Florida Registration No. _____

Telephone No. _____ Date: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____
Name & Official Title (type or print)

_____
Telephone No. (area code & no.)

_____
Signature

_____
Date Signed

DEP Form 62-620.910(5)
Effective November 29, 1994

II-B CERTIFICATIONS FOR PERMIT RENEWALS

This is to certify the engineering features of this pollution control project have been examined by me and found to be in conformity with sound 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 of the Department.

Ben A Cowart
Signature

Ben Cowart
Name (please type)

(Affix Seal)

City of Tallahassee
Company Name

Address: 300 S. Adams St.
Tallahassee, FL 32301

Florida Registration No. 43905

Telephone No. 904/891-8729 Date: 11/1/95

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

J. Sam Bell, Jr.
Assistant City Manager, Utility Services
Name & Official Title (type or print)

J Sam Bell Jr
Signature

(904) 891-8787
Telephone No. (area code & no.)

11/1/95
Date Signed

PLEASE PRINT OR TYPE ONLY: You may report some or all of this information on separate sheets (use the same format) instead of completing these pages. SEE INSTRUCTION

VII INTAKE AND EFFLUENT CHARACTERISTICS

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. Pollutant	2. Effluent							3. Units		4. Intake (optional)		
	a. Max. Daily Value		b. Max. 30 day Value		c. Annual Avg. Value		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avg. Value		b. No. of Analyses
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
a. Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	<2.0	0.005	<2.0	0.005	<2.0	0.002	1	mg/L	Tons			
b. Chemical Oxygen Demand (COD)	22	0.05	22	0.05	22	0.02	1	mg/L	Tons			
c. Total Organic Carbon (TOC)	2.7	0.006	2.7	0.006	2.7	0.002	1	mg/L	Tons			
d. Total Suspended Solids (TSS)	11.8	0.02	11.8	0.02	4.7	0.004	11	mg/L	Tons			
e. Total Nitrogen (as N)	0.37	0.0009	0.37	0.0009	0.37	0.0003	1	mg/L	Tons			
f. Total Phosphorus (as P)	0.17	0.0004	0.17	0.0004	0.17	0.0001	1	mg/L	Tons			
g. Ammonia (as N)	<0.007	0.00002	<0.007	0.00002	<0.007	0.000006	1	mg/L	Tons			
h. Flow - actual or projected	Value 0.56		Value 0.56		Value 0.20		11	MGD	MGD	Value		
i. Flow - design	Value		Value		Value					Value		
j. Specific Conductivity	Value		Value		Value					Value		
k. Temperature (winter)	Value		Value		Value			°C		Value		
l. Temperature (summer)	Value		Value		Value			°C		Value		
m. pH	Min. 6.4	Max. 8.5	Min. 6.4	Max. 8.5			11	STANDARD UNITS				

PART B - Mark "X" in column 2a for each pollutant you know or have reason to believe is present. Mark "X" in column 2b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is lis either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantit data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additonal details and requirements.

1. Pollutant and CAS No. (if available)	2. Mark "X"		3. Effluent							4. Units		5. Intake (optional)		
	a. believed present	b. believed absent	a. Maximum Daily Value		b. Max. 30 Day Value (if available)		c. Long Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avg. Value		b. No. of Analyse
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
a. Bromide (24959-67-9)	X		<1.0	<0.002	<1.0	<0.0008	<1.0	<0.0008	1	mg/L	Tons			
b. Chlorine, Total Residual	X		0	0						mg/L	Tons			
c. Color	X		10						1	Color Units	--			
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		BDL											
f. Nitrate-Nitrite (as N)	X		<0.001	<0.00000	<0.001	<0.000008	<0.001	<0.000008	1	mg/L	Tons			

Form 62-620.910(5)(c), Effective November 29, 1994

Item VII-B Contd.

Facility I.D. No. FL0025526 Outfall No. 006

1. Pollutant and CAS No. (if available)	2. Mark "X" a. Believed present	2. Mark "X" b. Believed absent	3. Effluent a. Maximum Daily Value (1) Concentration	3. Effluent a. Maximum Daily Value (2) Mass	3. Effluent b. Max. 30-day Value (if available) (1) Concentration	3. Effluent b. Max. 30-day Value (if available) (2) Mass	3. Effluent c. Long Term Avg. Value (if available) (1) Concentration	3. Effluent c. Long Term Avg. Value (if available) (2) Mass	3. Effluent d. No. of Analyses	4. Units a. Concentration	4. Units b. Mass	5. Intake (optional) a. Long Term Average Value (1) Concentration	5. Intake (optional) a. Long Term Average Value (2) Mass	5. Intake (optional) b. No. of Analyses
g. Nitrogen, Total Organic (as N)	X		0.36	0.0008	0.36	0.0003	0.36	0.0008	1	mg/L	Tons			
h. Oil and Grease	X		BDL						11	mg/L	Tons			
i. Phosphorus, Total (as P) (7723-14-0)	X		0.17	0.0004	0.17	0.0001	0.17	0.0001	1	mg/L	Tons			
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X												
(3) Radium, Total		X												
(4) Radium 226, Total		X												
k. Sulfate (as SO_4) (14808-79-8)	X		383	0.89	383	0.89	383	0.03	1	mg/L	Tons			
l. Sulfide (as S)	X		BDL						1	mg/L	Tons			
m. Sulfite (as SO_3) (14265-45-3)	X		9.0	0.02	9.0	0.02	9.0	0.008	1	mg/L	Tons			
n. Surfactants	X		BDL							mg/L	Tons			
o. Aluminum, Total (7429-90-5)	X		BDL							mg/L	Tons			
p. Barium, Total (7440-39-3)	X		BDL							mg/L	Tons			
q. Boron, Total (7440-42-8)	X		0.8	0.002	0.8	0.002	0.8	0.0007	1	mg/L	Tons			
r. Cobalt, Total (7440-48-4)	X		BDL						1	mg/L	Tons			
s. Iron, Total (7439-89-6)	X		BDL						1	mg/L	Tons			
t. Magnesium, Total (7439-95-4)	X		1440	3.36	1440	3.36	1440	1.2	1	mg/L	Tons			
u. Molybdenum, Total (7439-98-7)	X		BDL							mg/L	Tons			
v. Manganese, Total (7439-96-5)	X		BDL							mg/L	Tons			
w. Tin, Total (7440-31-5)	X		BDL							mg/L	Tons			
x. Titanium, Total (7440-32-6)	X		BDL							mg/L	Tons			

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2a for all fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2a (secondary industries, non-process wastewater outfalls, and non-required GC/MS fr mark "X" in column 2b for each pollutant you know or have reason to believe is present. Mark "X" in column 2c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one anlysis for that pollutnat if you know or have reason to believe it will be discharged in concer of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4,dinitrophenol, or 2-methyl-4,6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is e to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)	
	a. Testing required	b. Believed present	c. Believed absent	a. Maximum Daily Value (1) Concentration	(2) Mass	b. Max. 30 day Value (if available) (1) Concentration	(2) Mass	c. Long Term Avg. Value (if available) (1) Concentration	(2) Mass	d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value (1) Concentration	(2) Mass
METALS, CYANIDE, AND TOTAL PHENOLS														
1M. Antimony, Total (7440-36-0)		X		0.0007	0.000002	0.0007	0.0000006	0.0007	0.0000006	1	mg/L	Tons		
2M. Arsenic, Total (7723-14-0)		X		0.00						1	mg/L	Tons		
3M. Beryllium, Total (7440-41-7)		X		0.0002	0.000005	0.0082	0.000082	0.0002	0.0000082	1	mg/L	Tons		
4M. Cadmium, Total (7440-43-9)		X		0.001	0.0000005	0.0002	0.0000002	0.0002	0.0000002	1	mg/L	Tons		
5M. Chromium, Total (7440-47-3)		X		0.001	0.000002	0.001	0.000008	0.001	0.0000008	1	mg/L	Tons		
6M. Copper, Total (7440-50-8)		X		0.017	0.00004	0.017	0.00001	0.017	0.00001	1	mg/L	Tons		
7M. Lead, Total (7439-92-1)		X		0.0003	0.0000007	0.0003	0.0000003	0.0003	0.0000003	1	mg/L	Tons		
8M. Mercury, Total (7439-97-6)		X		0.0005	0.000001	0.0005	0.000001	0.0005	0.000001	1	mg/L	Tons		
9M. Nickel, Total (7440-02-0)		X		0.013	0.00003	0.013	0.00001	0.013	0.00001	1	mg/L	Tons		
10M. Selenium, Total (7782-49-2)		X		0.00						1	mg/L	Tons		
11M. Silver, Total (7440-22-4)		X		0.00						1	mg/L	Tons		
12M. Thallium, Total (7440-28-0)		X		0.0002	0.0000005	0.0002	0.000002	0.0002	0.0000002	1	mg/L	Tons		
13M. Zinc, Total (7440-66-6)		X		0.020	0.00005	0.020	0.00002	0.020	0.00002	1	mg/L	Tons		
14M. Cyanide, Total (57-12-5)		X		0.025	0.00006	0.025	0.00002	0.025	0.00002	1	mg/L	Tons		
15M. Phenols, Total		X		0.010						1	mg/L	Tons		
DIOXIN														
2,3,7,8-Tetrachlorodibenzo P-Dioxin (1746-01-6)		X		BDL						1	mg/L	Tons		

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value (1) Concentration	a. Maximum Daily Value (2) Mass	b. Max. 30-day Value (if available) (1) Concentration	b. Max. 30-day Value (if available) (2) Mass	c. Long Term Avrg. Value (if available) (1) Concentration	c. Long Term Avrg. Value (if available) (2) Mass	d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value (1) Concentration	a. Long Term Average Value (2) Mass	b. No. Analyses
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-98-2)		X		BDL						1	mg/L	Tons			
23V. 1,1,2,2-Tetrachloroethane (79-34-5)		X		BDL						1	mg/L	Tons			
24V. Tetrachloroethylene (127-18-4)		X		BDL						1	mg/L	Tons			
25V. Toluene (108-88-3)		X		BDL						1	mg/L	Tons			
26V. 1,2-Trans-Dichloroethylene (156-60-5)		X		BDL						1	mg/L	Tons			
27V. 1,1,1-Trichloroethane (71-55-6)		X		BDL						1	mg/L	Tons			
28V. 1,1,2-Trichloroethane (79-00-5)		X		BDL						1	mg/L	Tons			
29V. Trichloroethylene (79-01-6)		X		BDL						1	mg/L	Tons			
30V. Trichloro-fluoromethane (75-69-4)		X		BDL						1	mg/L	Tons			
31V. Vinyl Chloride (75-01-4)		X		BDL						1	mg/L	Tons			
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)		X		BDL						1	mg/L	Tons			
2A. 2,4-Dichlorophenol (120-83-2)		X		BDL						1	mg/L	Tons			
3A. 2,4-Dimethylphenol (105-67-9)		X		BDL						1	mg/L	Tons			
4A. 4,6-Dinitro-O-Cresol (534-52-1)		X		BDL						1	mg/L	Tons			
5A. 2,4-Dinitrophenol (51-28-5)		X		BDL						1	mg/L	Tons			
6A. 2-Nitrophenol (88-75-5)		X		BDL						1	mg/L	Tons			
7A. 4-Nitrophenol (100-02-7)		X		BDL						1	mg/L	Tons			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value (1) Concentration	(2) Mass	b. Max. 30 day Value (if available) (1) Concentration	(2) Mass	c. Long Term Avg. Value (if available) (1) Concentration	(2) Mass	d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value (1) Concentration	(2) Mass	b. No. of Analyses
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene (71-43-2)		X		BDL						1	mg/L	Tons			
4V. Bis (Chloromethyl) Ether (542-88-1)		X		BDL						1	mg/L	Tons			
5V. Bromoform (75-25-2)		X		BDL						1	mg/L	Tons			
6V. Carbon Tetrachloride (56-23-5)		X		BDL						1	mg/L	Tons			
7V. Chlorobenzene (108-90-7)		X		BDL						1	mg/L	Tons			
8V. Chlorodi-bromomethane (124-48-1)		X		BDL						1	mg/L	Tons			
9V. Chloroethane (75-00-3)		X		BDL						1	mg/L	Tons			
10V. 2-Chloro-ethylvinyl Ether (110-75-8)		X		BDL						1	mg/L	Tons			
11V. Chloroform (67-66-3)		X		BDL						1	mg/L	Tons			
12V. Dichloro-bromomethane (75-27-4)		X		BDL						1	mg/L	Tons			
13V. Dichloro-difluoromethane (75-71-8)		X		BDL						1	mg/L	Tons			
14V. 1,1-Dichloroethane (75-34-3)		X		BDL						1	mg/L	Tons			
15V. 1,2-Dichloroethane (107-06-2)		X		BDL						1	mg/L	Tons			
16V. 1,1-Dichloroethylene (75-35-4)		X		BDL						1	mg/L	Tons			
17V. 1,2-Dichloropropane (78-87-5)		X		BDL						1	mg/L	Tons			
18V. 1,3-Dichloropropylene (542-75-6)		X		BDL						1	mg/L	Tons			
19V. Ethylbenzene (100-41-4)		X		BDL						1	mg/L	Tons			
20V. Methyl Bromide (74-83-9)		X		BDL						1	mg/L	Tons			
21V. Methyl Chloride (74-87-3)		X		BDL						1	mg/L	Tons			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30 Day Value (If available)		c. Long Term Avrg. Value (If available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No. of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Base/Neutral Compounds Contd.															
14B. 4-Bromophenyl Phenyl Ether (101-55-3)		X		BDL						1	mg/L	Tons			
15B Butyl Benzyl Phthalate (85-68-7)		X		BDL						1	mg/L	Tons			
16B. 2-Chloronaphthalene (91-58-7)		X		BDL						1	mg/L	Tons			
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)		X		BDL						1	mg/L	Tons			
18B. Chrysene (218-01-9)		X		BDL						1	mg/L	Tons			
19B. Dibenzo *(a,h)* Anthracene (53-70-3)		X		BDL						1	mg/L	Tons			
20B. 1,2-Dichlorobenzene (95-50-1)		X		BDL						1	mg/L	Tons			
21B. 1,3-Dichlorobenzene (541-73-1)		X		BDL						1	mg/L	Tons			
22B. 1,4-Dichlorobenzene (106-46-7)		X		BDL						1	mg/L	Tons			
23B. 3,3'-Dichlorobenzidine (92-94-1)		X		BDL						1	mg/L	Tons			
24B. Diethyl Phthalate (84-66-2)		X		BDL						1	mg/L	Tons			
25B. Dimethyl Phthalate (131-11-3)		X		BDL						1	mg/L	Tons			
26B. Di-N-Butyl Phthalate (84-74-2)		X		BDL						1	mg/L	Tons			
27B. 2,4-Dinitrotoluene (121-14-2)		X		BDL						1	mg/L	Tons			
28B. 2,6-Dinitrotoluene (606-20-2)		X		BDL						1	mg/L	Tons			
29B. Di-N-Octyl Phthalate (117-84-0)		X		BDL						1	mg/L	Tons			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Acid Compounds Cntd.															
8A. P-Chloro-M-Cresol (59-50-7)		X		BDL						1	mg/L	Tons			
9A. Pentachlorophenol (87-86-5)		X		BDL						1	mg/L	Tons			
10A. Phenol (108-95-2)		X		BDL						1	mg/L	Tons			
11A. 2,4,5-Trichloro-phenol (88-06-2)		X		BDL						1	mg/L	Tons			
GC/MS Fraction - Base/Neutral Compounds															
1B. Acenaphthene (83-32-9)		X		BDL						1	mg/L	Tons			
2B. Acenaphtylene (208-96-8)		X		BDL						1	mg/L	Tons			
3B. Anthracene (120-12-7)		X		BDL						1	mg/L	Tons			
4B. Benzidine (92-87-5)		X		BDL						1	mg/L	Tons			
5B. Benzo *(a)* Anthracene (56-55-3)		X		BDL						1	mg/L	Tons			
6B. Benzo *(a)* Pyrene (50-32-8)		X		BDL						1	mg/L	Tons			
7B. 3,4-Benzo-fluoranthene (205-99-2)		X		BDL						1	mg/L	Tons			
8B. Benzo *(ghi)* Perylene (191-24-2)		X		BDL						1	mg/L	Tons			
9B. Benzo *(k)* Fluoranthene (207-08-9)		X		BDL						1	mg/L	Tons			
10B. Bis *(2-Chloroethoxy)* Methane (111-91-1)		X		BDL						1	mg/L	Tons			
11B. Bis *(2-Chloroethyl)* Ether (111-44-4)		X		BDL						1	mg/L	Tons			
12B. Bis *(2-Chloroisopropyl)* Ether (102-60-1)		X		BDL						1	mg/L	tons			
13B. Bis *(2-Ethylhexyl)* Phthalate (117-81-7)		X		BDL						1	mg/L	Tons			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value (1) Concentration	(2) Mass	b. Max. 30 Day Value (If available) (1) Concentration	(2) Mass	c. Long Term Avrg. Value (If available) (1) Concentration	(2) Mass	d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value (1) Concentration	(2) Mass	b. No. of Analyses
GC/MS Fraction - Acid Compounds Contd.															
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)		X		BDL						1	mg/L	Tons			
31B. Fluoranthene (206-44-0)		X		BDL						1	mg/L	Tons			
32B. Fluorene (86-73-7)		X		BDL						1	mg/L	Tons			
33B. Hexachlorobenzene (118-74-1)		X		BDL						1	mg/L	Tons			
34B. Hexachlorobutadiene (87-68-3)		X		BDL						1	mg/L	Tons			
35B. Hexachlorocyclopentadiene (77-47-4)		X		BDL						1	mg/L	Tons			
36B. Hexachloroethane (67-72-1)		X		BDL						1	mg/L	Tons			
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)		X		BDL						1	mg/L	Tons			
38B. Isophorone (78-59-1)		X		BDL						1	mg/L	Tons			
39B. Naphthalene (91-20-3)		X		BDL						1	mg/L	Tons			
40B. Nitrobenzene (98-95-9)		X		BDL						1	mg/L	Tons			
41B. N-Nitrosodimethylamine (62-75-9)		X		BDL						1	mg/L	Tons			
42B. N-Nitrosodi-N-Propylamine (621-64-7)		X		BDL						1	mg/L	Tons			
43B. N-Nitrosodiphenylamine (86-30-6)		X		BDL						1	mg/L	Tons			
44B. Phenanthrene (85-01-8)		X		BDL						1	mg/L	Tons			
45B. Pyrene (129-00-0)		X		BDL						1	mg/L	Tons			
46B. 1,2,4-Trichlorobenzene (120-82-1)		X		BDL						1	mg/L	Tons			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30 Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No. of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Pesticides															
1P. Aldrin (309-00-2)			X												
2P. -BHC (319-84-6)			X												
3P. -BHC (319-85-7)			X												
4P. -BHC (58-89-9)			X												
5P. -BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. -Endosulfan (115-29-7)			X												
12P. -Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-92-4)			X												
16P. Heptachlor (76-44-8)			X												
17P. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			X												
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X												
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X												
23P. PCB-1260 (11096-82-5)			X												

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30 Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No. of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Pesticides															
24P. PCB-1016 (12674-11-2)			X												
25P. Toxaphene (8001-35-2)			X												

U.S. Environmental . .tion Agency
National Pollutant Discharge .ination System (NPDES)
STORM WATER GENERAL PE.IT COVERAGE NOTICE

December 31, 1992

Dear Operator:

Your Notice of Intent (NOI) for the facility noted below has been processed by the U.S. Environmental Protection Agency. This facility is authorized to discharge storm water associated with industrial or construction activity under the terms and conditions imposed by EPA's NPDES storm water general permit issued for use in the state of Florida. Your facility's NPDES storm water permit number is FLR00A317.

EPA's storm water general permit requires certain storm water pollution prevention and control measures, possible monitoring and reporting, and annual inspections. Among the conditions and requirements of this permit, you must prepare and implement a pollution prevention plan (PPP) that is tailored to your industrial or construction site. Enclosed is a summary guidance document designed to assist you in the development and implementation of your PPP. The summary is organized according to the phases of the pollution prevention planning process. A set of worksheets and an example of a pollution prevention plan are provided for your assistance. As a facility authorized to discharge under this storm water general permit, all terms and conditions must be complied with to maintain coverage and avoid possible penalties.

ATTACHMENT A

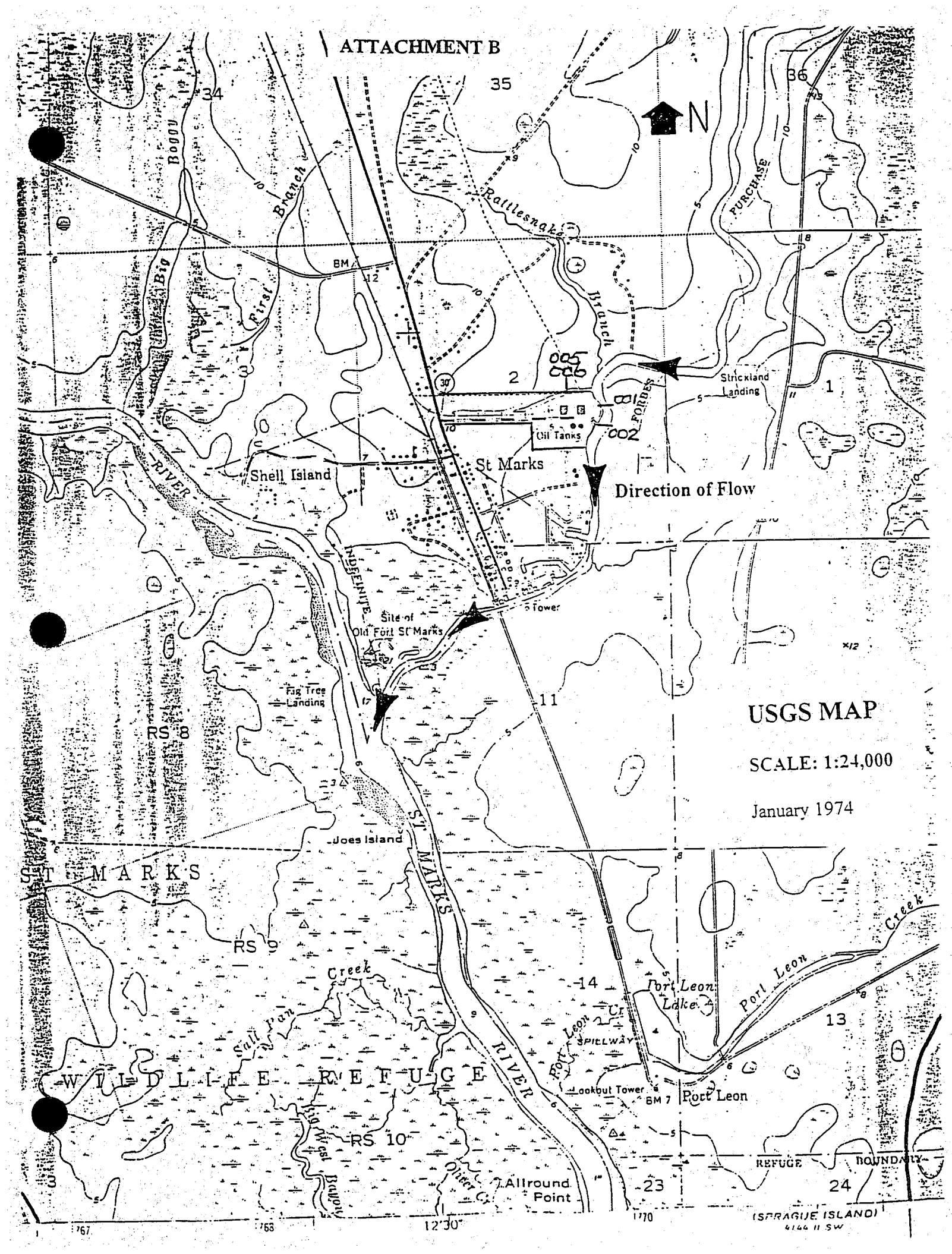
FACILITY:

Sam O Purdom Generating Stati
Po Box 8
Saint Mark, FL 32355-

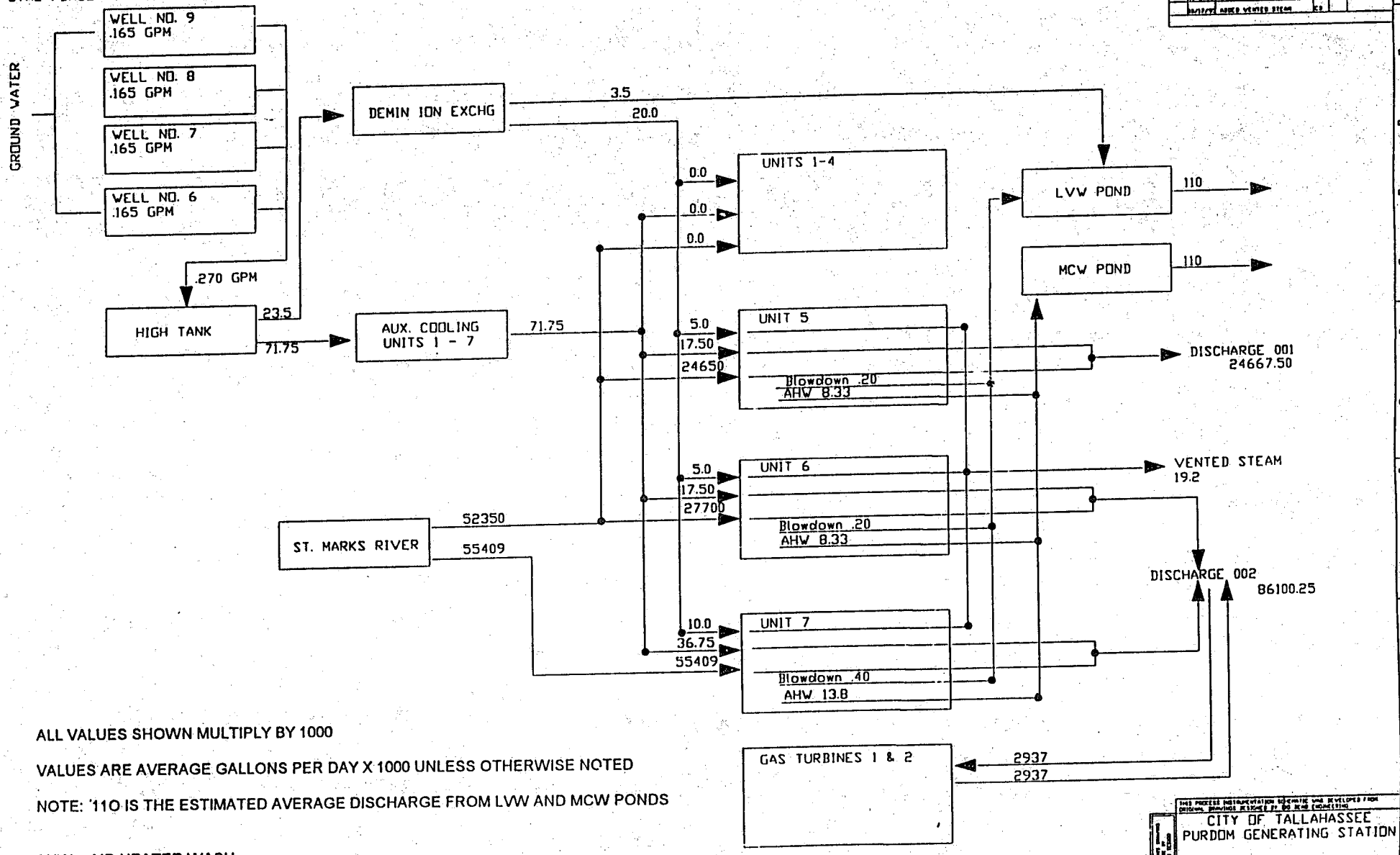
OPERATOR:

City Of Tallahassee
300 South Adams St
Tallahassee, FL 32301-

If you have general questions concerning the storm water program, or need to obtain a copy of the permit, please call the Storm Water Hotline at (703) 821-4823.


ATTACHMENT B
N
Direction of Flow
USGS MAP
SCALE: 1:24,000
January 1974
St Marks
Shell Island
Oil Tanks
Strickland Landing
Site of Old Fort St Marks
Fig Tree Landing
Joes Island
Port Leon
Port Leon Lake
Lookout Tower
BM 7
Allround Point
Sprague Island
Refuge Boundary
Big Blue Branch
First Branch
Rattlesnake Branch
Purchase Creek
Ingenuite Creek
St Marks River
Salt Pan Creek
Oyster Bayou
Port Leon Creek
Port Leon Spillway
RS 8
RS 9
RS 10
ST MARKS
WILDLIFE REFUGE

CTAL-PDMCOMMON-SK111



ALL VALUES SHOWN MULTIPLY BY 1000

VALUES ARE AVERAGE GALLONS PER DAY X 1000 UNLESS OTHERWISE NOTED

NOTE: '110 IS THE ESTIMATED AVERAGE DISCHARGE FROM LVW AND MCW PONDS

AHW – AIR HEATER WASH
LVW – LOW VOLUME WASTE POND
MCW – METAL CLEANING WASTE POND

CITY OF TALLAHASSEE
PURDOM GENERATING STATION

WATER FLOW SCHEMATIC

CITY OF TALLAHASSEE

CTAL-PDMC
1-SK111

Attachment C

ATTACHMENT D
FORM 2CS
OUTFALLS 005/006

PART IV - D

Due to the low volumes of waste treated in the metals cleaning and low volume waste ponds located at the Purdom Generating Station, the ponds are treated and discharged with a sufficient amount of volume available to account for emergencies such as power loss or equipment failure.

PART IV - E

Flow measurement of the metals cleaning and low volume waste ponds occurs at the discharge of the waste treatment system. A magnetic flowtube and transmitter located in the waste treatment system discharge line prior to the point of discharge is used to record discharge flow amounts.

* Flows listed in Part IV (B) (1) for Outfall 006 (LVW pond) are normal flow values. Flows reported in Part IV (C) are actual flow values which were inflated due to discharge of hydrostatic test water. Hydrostatic testing of on site oil tanks was required to comply with the regulatory requirements of Rule FAC 62-762 and American Petroleum Institute (API) 653.

Rationale:

These products are utilized in small quantities and generally dissipate in the boiler prior to being discharged in boiler blowdown.

Outfall 006
PART I
SECTION A.4.e
PAGE: I-4

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: end of discharge line from Ponds 1 and 2 prior to actual discharge to the receiving waters.

CHANGE TO:

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: **In the** discharge line from Ponds 1 and 2 prior to actual discharge to the receiving waters.

Rationale:

See: PART I
SECTION A.3.d
PAGE: I-3

PART I
SECTION B.
PAGE: I-5

Schedule of Compliance

CHANGE TO:

Delete Requirement

Rationale:

The Purdom Generating Station has fulfilled the requirements for development and implementation of the Best Management Practices Plan. This section is no longer necessary.

PART III
SECTION A.
PAGE: III-1

Environmental Protection Agency
Region IV
Enforcement Section
Water Permits and Enforcement Branch
Water Management Division
345 Courtland St., N.E.
Atlanta, Georgia 30365

CHANGE TO:

Florida Department of Environmental Protection
Self - Monitoring Subsection
Mailstation 3551
2600 Blairstone Rd.
Tallahassee, Florida 32399-2400

Rationale:

None Needed

Rationale:

Outfall 002 at the City of Tallahassee's Sam O.Purdom Generating Station discharges once-through, non-contact cooling water to the St. Marks River. Only chlorination/dechlorination occurs prior to the water reentering the river. Results of quarterly analysis for these parameters previously submitted to the Department on the monthly Discharge Monitoring Reports indicates a maximum annual value of 0.40 mg/l for Iron and 0.004 mg/l for copper. Both of these values are significantely below the permitted limits, and substantiates the request for no monitoring.

Outfall 005
PART I
SECTION: A.3.a.
PAGE: I-3

Total Suspended Solids - Discharge Limit - 30 mg/l (ave.) - 100 mg/l (max) Frequency - 1/Discharge - Sample Type - 8 hr. Composite

CHANGE TO:

Total Suspended Solids - Discharge Limit - 30 mg/l (ave.) - 100 mg/l (max)
Frequency - 1/Discharge - Sample Type - **Grab**

Rationale:

During the preceeding year of analysis the maximum recorded value for this discharge was 8.6 mg/l with an annual average discharge value of 4.3 mg/l. The City believes grab sampling conducted once per discharge will adequately reflect the actual amount of total suspended solids of the pond effluent.

PURDOM GENERATING STATION
NPDES PERMIT No. FL0025526

BASIS OF FACT SHEET

OUTFALL - 002
PART I, A.2.a
PAGE I-2

Total Residual Chlorine - Discharge Limit - 0.01 mg/l Sample: 1/Discharge - Grab

CHANGE TO:

Total Residual Chlorine - Discharge Limit - 0.01 mg/l
Sample: 1/ Discharge - **Multiple** Grab

Rationale:

This revision is necessary to better reflect the actual testing that occurs during chlorination.

OUTFALL 002
PART 1, A.2.a
PAGE 1-2

[1] Conditions of State Permit

Change to:

Delete

Rationale:

The permits are being combined, therefore this footnote is no longer required.

Outfall 005
PART I
SECTION: A.3.d
PAGE: I-3

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: end of discharge line from Ponds 1 and 2 prior to actual discharge to the receiving waters.

CHANGE TO:

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: **In the** discharge line from Ponds 1 and 2 prior to actual discharge to the receiving waters.

Rationale:

Samples of the effluent from the metals cleaning waste pond located at the Purdom plant are taken from the waste treatment facility discharge line prior to discharge to the St. Marks River. The actual end of the discharge line is approximately twenty feet into the river and could present a safety hazard during sample collection. The City believes this wording change fulfills the intent of the sampling requirements.

Outfall 006
PART I
SECTION A.4.c
PAGE: I-4

The permittee is authorized to discharge hydroquinone in boiler blowdown, boiler lay up water or other similar "cold discharges" (described on Page 2, Item 5 of the Amendment to the Fact Sheet) without limitation or monitoring requirements.

CHANGE TO:

Discharge of boiler chemicals used for corrosion/scaling control and to reduce oxygen levels is authorized without limitations or monitoring requirements.

ATTACHMENT E

Attached please find a marked up version of NPDES Permit FL0025526. This permit reflects changes to the existing permit requested by the City of Tallahassee and a Basis of Fact sheet supporting the requested changes.

PERMIT NO. FL0025526
Major Non-POTW

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended (33 U.S.C. 1251 et seq.; the "Act"),

City of Tallahassee
City Hall
Tallahassee, Florida 32301-1731

is authorized to discharge from a facility located at

Sam O. Purdom Generating Station
~~State Road 363~~ 667 PORT LEON DRIVE
Wakulla County, St. Marks, Florida 32355

to receiving waters named

St. Marks River

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein. The permit consists of this cover sheet, Part I 5 pages, Part II 16 pages, Part III 3 pages, and Part IV 2 pages.

This permit shall become effective on January 1, 1993.

This permit and the authorization to discharge shall expire at midnight, September 30, 1997.

9/29/92
Date Issued

for Jamuett Seabaugh
W. Ray Cunningham, Director
Water Management Division

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Final

1. During the period beginning on the effective date of this permit and lasting through the term o the permit, the permittee is authorized to discharge from outfall serial number 001: once-throu cooling water and auxiliary equipment cooling water from Units 1-5 to the St. Marks River.

a. Such discharges shall be limited and monitored by the permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS	
	Daily Average	Daily Maximum	Instantaneous Maximum	Measurement Frequency	Sample Type
Flow, MGD	Report	Report	N/A	Daily	Hourly Log
Discharge Temperature, °F	90.0	95.0	N/A	Continuous [1]	Recorder
Total Residual Chlorine (TRC), mg/l	N/A	N/A	0.01	1/Discharge	Multiple Grabs [2]
Total Time of Chlorine Addition, minutes/day	N/A	120	N/A	Daily	Log

b. Limitations and monitoring requirements for TRC are not applicable for any period in which chlorine is not added to Unit 5.

c. Discharge of chlorine from the chlorination of Units 1-4, to waters of the U.S., is not authori by this permit.

d. Auxiliary equipment cooling water from Unit 1-5 may be discharged without limitations or monitoring requirements.

e. Samples taken in compliance with the monitoring requirements specified above shall be taken at following locations: Flow at the plant intake; temperature and TRC at the throat of the discha structure from Units 1-5; chlorine addition at point of addition.

[1] Readings shall be taken 2 per each operating shift from continuous temperature recorders and averaged for daily average.

[2] Multiple grabs shall consist of grab samples collected at approximately the beginning of the period of TRC discharge and once per 15 minutes thereafter until the end of the period of TRC discharge.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Final

2. During the period beginning on the effective date of this permit and lasting through the term c the permit, the permittee is authorized to discharge from outfall serial number 002: once-throu cooling water and auxiliary equipment cooling water from Units 6 and 7, and cooling water from Combustion Turbines 1 and 2 to the St. Marks River.

a. Such discharges shall be limited and monitored by the permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS	
	Daily Average	Daily Maximum	Instantaneous Maximum	Measurement Frequency	Sample Type
Flow, MGD	Report	Report	N/A	Daily	Hourly Log
Discharge Temperature, °F ~~[1]~~	90.0	95.0	N/A	Continuous ~~[1,~~2]	Recorder
Total Residual Chlorine (TRC), mg/l ~~[1]~~	N/A	N/A	0.01	1/Discharge	~~Grab~~ MG
~~Copper (Total Recoverable), mg/l [1]~~	~~N/A~~	~~N/A~~	~~0.03~~	~~1/Quarter~~	~~8-Hr. Compos~~
~~Iron (Total), mg/l [1]~~	~~N/A~~	~~N/A~~	~~1.0~~	~~1/Quarter~~	~~8-Hr. Compos~~

DELETE

b. The pH [1] shall not be less than 6.0 standard units nor greater than 8.5 standard units and sh be monitored daily by a grab sample.

c. Limitations and monitoring requirements for TRC are not applicable for any period in which chlorine is not added to Units 6 and 7.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at following location: at the center of the discharge canal for Units 6 and 7, opposite the gas turbine intake structure ~~[1]~~.

~~[1] Conditions of the State permit.~~

[2] Readings shall be taken 2 per each operating shift from continuous temperature recorders and averaged for daily average.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Final

3. During the period beginning on the effective date of this permit and lasting through the term o the permit, the permittee is authorized to discharge from outfall serial number 005: chemical a non-chemical metal cleaning wastes to Pond No. 1 to the St. Marks River.

a. Such discharges shall be limited and monitored by the permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow, MGD	Report	Report	Continuous [1]	Flow Indicator
Total Suspended Solids, mg/l	30.0	100.0	1/Discharge	~~Composite [2]~~ GRAB
Oil and Grease, mg/l	N/A	5.0	1/Discharge	Grab
Copper (Total), mg/l	N/A	0.03	1/Discharge	Grab
Iron (Total), mg/l	1.0	1.0	1/Discharge	Grab

b. The pH shall not be less than 6.0 standard units nor greater than 8.5 standard units and shall monitored 1/month by a grab sample.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at following location: ~~end of~~ discharge line from Ponds 1 and 2 prior to actual discharge to the receiving waters. IN THE

[1] Flow shall be measured continuously throughout the period of discharge.

~~[2] Samples shall be taken at the beginning, middle, and end of period of discharge.~~

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Final

4. During the period beginning on the effective date of this permit and lasting through the term o the permit, the permittee is authorized to discharge from outfall serial number 006: low volume wastes including boiler blowdown, demineralizer regeneration wastewater, and laboratory samplin wastewater to Pond No. 2 to the St. Marks River.

a. Such discharges shall be limited and monitored by the permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow, MGD	Report	Report	Daily	Flow Indicator
Total Suspended Solids, mg/l	30.0	100.0	1/Discharge	Grab
Oil and Grease, mg/l	N/A	5.0	1/Discharge	Grab

b. The pH shall not be less than 6.0 standard units nor greater than 8.5 standard units and shall monitored 1/month by a grab sample.

c. The permittee is authorized to discharge ~~hydroquinone~~ DEP APPROVED boiler CHEMICALS in boiler blowdown, boiler lay-up water o other similiar "cold discharges" ~~(described on Page 2, Item 5 of the Admendment to the Fact She~~ ~~without~~ WITHOUT limitation or monitoring requirements.

d. There shall be no discharge of floating solids or visible foam in other than trace amounts.

e. Samples taken in compliance with the monitoring requirements specified above shall be taken at following locations: ~~end of~~ discharge line from Ponds 1 and 2 prior to actual discharge to the receiving waters. IN THE

DELETE

SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

   a. Operational level attained . . . . Effective Date (ED) of Permit

   b. BMP Plan (see Part IV of the permit)

      (1) Develop BMP Plan - Six months after ED

      (2) Implement BMP Plan - Eighteen months after ED

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

Part II

STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

Any person who violates a permit condition is subject to a civil penalty not to exceed $25,000 per day for each violation. Any person who negligently violates any permit condition is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment for not more than 1 year, or both. Any person who knowingly violates permit conditions is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both. Also, any person who violates a permit condition may be assessed an administrative penalty not to exceed $10,000 per violation with the maximum amount not to exceed $125,000. [Ref: 40 CFR 122.41(a)]

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, terminated, or revoked for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in any conditions that requires either temporary interruption or elimination of the permitted discharge; or

d. Information newly acquired by the Agency indicating the discharge poses a threat to human health or the environment.

If the permittee believes that any past or planned activity would be cause for modification or revocation and reissuance under 40 CFR 122.62, the permittee must report such information to the Permit Issuing Authority. The submittal of a new application may be required of the permittee. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

5. Toxic Pollutants

Notwithstanding Paragraph A-4, above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation of such pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" Section B, Paragraph B-3, and "Upsets" Section b, Paragraph B-4, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 or the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

10. Onshore or Offshore Construction

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any waters of the United States.

11. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

12. Duty to Provide Information

The permittee shall furnish to the Permit Issuing Authority, within a reasonable time, any information which the Permit Issuing Authority may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Permit Issuing Authority upon request, copies of records required to be kept by this permit.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the condition of this permit.

3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass means the intentional diversion of waste streams from any portion of a treatment facility, which is not a designed or established operating mode for the facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations.

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Paragraphs c. and d. of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass; including an evaluation of the anticipated quality and effect of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section D, Paragraph D-8 (24-hour notice).

d. Prohibition of bypass

(1) Bypass is prohibited and the Permit Issuing Authority may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(c) The permittee submitted notices as required under Paragraph c. of this section.

(2) The permit Issuing Authority may approve an anticipated bypass, after considering its adverse effects, if the Permit Issuing Authority determines that it will meet the three conditions listed above in Paragraph d.(1) of this section.

4. Upsets

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventive maintenance, or careless or improper operation. An upset constitutes an affirmative defense to an action brought for non-compliance with such technology based permit limitation if the requirements of 40 CFR 122.41(n)(3) are met.

5. Removed Substances

This permit does not authorize discharge of solids, sludge, filter backwash, or other pollutants removed in the course of treatment of control of wastewaters of the United States unless specifically limited in Part 1.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Permit Issuing Authority.

2. Flow Measurements

Appropriate flow measurements devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ±10% from the true discharge rates throughout the range of expected discharge volumes. Once-through condenser cooling water flow which is monitored by pump logs, or pump hour meters as specified in Part I of this permit and based on the manufacture's pump curves shall not be subject to this requirement. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references:

(1) "A Guide of Methods and Standards for the Measurement of Water Flow", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD catalog No. C13.10:421.)

(2) "Water Measurement Manual", U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by catalog No. 127.19/2:W29/2, Stock No. S/N 24003-0027.)

(3) "Flow Measurement in Open Channels and Closed Conduits", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST.)

(4) "NPDES Compliance Flow Measurement Manual", U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-77, September 1981, 135 pp. (Available from the General Service Administration (8BRC), Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO. 80255.)

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or imprisonment for not more than 2 years, or both.

5. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by the Permit Issuing Authority at any time.

6. Record Contents

Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling of measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analysis.

7. Inspection and Entry

The permittee shall allow the permit Issuing Authority, or a authorized representative, upon the presentation of credentials and other documents as may be required by law, to;

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit.

c. Inspect at reasonable time any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Change in Discharge

The permittee shall give notice to the Permit Issuing Authority as soon as possible of any planned physical alterations or additions to the permitted Facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source; or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Section D, Paragraph D-10(a).

2. Anticipated Noncompliance

The permittee shall give advance notice to the Permit Issuing Authority of any planned change in the permitted facility or activity which may result in noncompliance with permit requirements. Any maintenance or facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall be scheduled during noncritical water quality periods and carried out in a manner approved by the Permit Issuing Authority.

3. Transfer of Ownership or Control

A permit may be automatically transferred to another if:

a. The permittee notifies the Permit Issuing Authority of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

c. The Permit Issuing Authority does not notify the existing permittee of his or her intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph b.

4. Monitoring Reports

See Part III of this permit.

5. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased frequency shall also be indicated.

6. Averaging of Measurements

Calculations for limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Permit Issuing Authority in the permit.

7. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

8. Twenty-Four Hour Reporting

The permittee shall orally report any noncompliance which may endanger health or the environment, within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including the exact dates and times; and if the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance. The Permit Issuing Authority may verbally waive the written report, on a case-by-case basis, when the oral report is made.

The following violations shall be included in the 24 hour report when they might endanger health or the environment:

a. An unanticipated bypass which exceeds any effluent limitation in the permit.

b. Any upset which exceeds any effluent limitation in the permit.

9. Other Noncompliance

The permittee shall report in narrative form, all instances of noncompliance not previously reported under Section D, Paragraphs D-2, D-4, D-7, and D-8 at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D-8.

10. Changes in Discharges of Toxic Substances

The permittee shall notify the Permit Issuing Authority as soon as it knows or has reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic substance(s) (listed at 40 CFR 122, Appendix D, Table II and III) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony; or

(3) Five (5) times the maximum concentration value reported for that pollutant(s) in the application.

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant (listed at 40 CFR 122, Appendix D. Table II and III) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred Micrograms per liter (500 ug/l);

(2) One milligram per liter (1 mg/l) for antimony; or

(3) Ten (10) times the maximum concentration value reported for that pollutant(s) in the permit application.

11. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit. The Permit Issuing Authority may grant permission to submit an application less than 180 days in advance but not later than the permit expiration date.

Where EPA is the Permit Issuing Authority, the terms and conditions of this permit are automatically continued in accordance with 40 CFR 122.6, only where the permittee has submitted a timely and complete application for a renewal permit and the Permit Issuing Authority is unable through no fault of the permittee to issue a new permit before expiration date.

12. Signatory Requirements

All applications, reports, or information submitted to the Permit Issuing Authority shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or (2) the manager of one or more manufacturing production facilities employing more than 250 persons or having gross annual sales or expenditures exceeding 25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agencies by either a principal executive officer or ranking elected official..

b. All reports required by the permit and other information requested by the Permit Issuing Authority shall be signed by.a person described above or by a duly authorized representative only if:

(1) The authorization is made in writing by person described above;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may this be either a named individual or any individual occupying a named position.); and

(3) The written authorization is submitted to the Permit Issuing Authority.

c. Certification. Any person signing a document under paragraphs (a) or (b) of this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

13. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Permit Issuing Authority. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

14. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under the Clean Water Act, shall, upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than 2 years, or both.

SECTION E. DEFINITIONS

1. Permit Issuing Authority

The Regional Administrator of EPA Region IV or his designee, unless at some time in the future the State receives authority to administer the NPDES program and assumes jurisdiction over the permit; at which time, the Director of the State program receiving the authorization becomes the issuing authority.

2. Act

"Act" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117, and 100-4, 33 U.S.C. 1251 et seq.

3. Mass/Day Measurements

a. The "average monthly discharges" is defined and the total mass of all daily discharges sampled and/or measured during a calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such month. It is therefore, and arithmetic mean found by adding the weights of the pollutant found each day of the month and then dividing this sum by the number of days the tests were reported. The limitation is identified as "Daily Average" or "Monthly Average" in Part I of the permit and the average monthly discharge value is reported in the "Average" column under "Quantity" on the Discharge Monitoring Report (DMR).

b. The "average weekly discharge" is defined as the total mass of all daily discharges sampled and/or measured during the calendar week on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such week. It is, therefore, an arithmetic mean found by adding the weights of pollutants found each day of the week and then dividing this sum by the number of days the tests were reported. This limitation is identified as "Weekly Average" in Part I of the permit. Enter the highest weekly average of sample measurements obtained during the reporting period in the "Maximum" column under "Quantity" on the DMR.

c. The "maximum daily discharge" is the total mass (weight) of a pollutant discharged during a calendar day. If only one sample is taken during any calendar day the weight of pollutant calculated from it is the "maximum daily discharge". This limitation is identified as "Daily Maximum", in Part I of the permit and the highest such value recorded during the reporting period is reported in the "Maximum" column under "Quantity" on the DMR.

d. The "average annual discharge" is a rolling average equal to the arithmetic mean of the mass measured in all discharges sampled and/or measured during consecutive reporting periods which comprise one year. For parameters that are measured at least once per month, the annual average shall be computed at the end of each month and is equal to the arithmetic mean of the monthly average of the month being reported and the monthly average of each of the previous eleven months. This limitation is defined as "Annual Average" in Part I of the permit and the average annual discharge value is reported in the "Average" column under "Quantity" on the DMR.

4. Concentration Measurements

a. The "average monthly concentration", other than for fecal coliform bacteria, is the sum of the concentrations of all daily discharges sampled and/or measured during a calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such month (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or in the case of grab samples is the arithmetic mean (weighted by flow value) of all the samples collected during that calendar day. This limitation is identified as "Monthly Average" or "Daily Average" under "Other Limits" in Part I of the permit and the average monthly concentration value is reported under the "Average" column under "Quality" of the DMR.

b. The "average weekly concentration", other than for fecal coliform bacteria, is the sum of the concentrations of all daily discharges sampled and/or measured during a calendar week on which daily discharges are sampled and measured divided by the number of daily discharges sampled and/or measured during such week (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or in the case of grab samples is the arithmetic mean (weighted by flow value) of all the samples collected during that calendar day. This limitation is identified as "Weekly Average" under "Other Limits" in Part I of the permit. Enter the highest weekly average of sample measurements obtained during the reporting period in the "Maximum" column under "Quality" on the DMR.

c. The "maximum daily concentration" is the concentration of a pollutant discharged during a calendar day. It is identified as "Daily Maximum" under "Other Units" in Part I of the permit and the highest such value recorded during the reporting period is reported under the "Maximum" column under "Quality" on the DMR.

d. The "average annual concentration", other than fecal coliform bacteria, is the rolling average equal to the arithmetic mean of the effluent or influent samples collected during consecutive reporting periods which comprise one year. For parameters that are measured at least once per month, the annual average shall be computed at the end of each month and is equal to the arithmetic mean of the monthly average of the month being reported and the monthly average of each of the previous eleven months. This limitation is identified as "Annual Average" under "Other Limits" in Part I of the permit and the average annual concentration value is reported under the "Average" column under "Quality" on the DMR.

5. Other Measurements

a. The effluent flow expressed as million gallons per day (MGD) is the 24 hour average flow averaged monthly. It is the arithmetic mean of the total daily flows recorded during the calendar month. Where monitoring requirements for flow are specified in Part I of the permit the flow rate values are reported in the "Average" column under "Quantity" on the DMR.

b. An "instantaneous flow measurement" is a measure of flow taken at the time of sampling, when both the sample and flow will be representative of the total discharge.

c. Where monitoring requirements for pH, dissolved oxygen or fecal coliform bacteria are specified in Part I of the permit, the values are generally reported in the "Quality or Concentration" column on the DMR.

d. The "average annual discharge" for fecal coliform bacteria shall be calculated in the same manner as that for mass limitations (see item II.E.3.d.).

6. Types of Samples

a. Composite Samples: A "composite sample" is a combination of not less than 8 influent or effluent portions, of at least 100 ml, collected over the full time period specified in Part I.A. The composite sample must be flow proportioned by either time interval between each aliquot or by volume as it relates to effluent flow at the time of sampling or total flow since collection of the previous aliquot. Aliquots may be collected manually or automatically.

b. Grab Samples: A "grab sample" is a single influent or effluent portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the total discharge.

7. Calculation of Means

a. Arithmetic Mean: The "arithmetic mean" of any set of values is the summation of the individual values divided by the number of individual values.

b. Geometric Mean: The "geometric mean" of any set of values is the N^{th} root of the product of the individual values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

c. Weighted by Flow Value: "Weighted by flow value" means the summation of each concentration times its respective flow divided by the summation of the respective flows.

8. Calendar Day

A "calendar day" is defined as the period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

9. Hazardous Substance

A "hazardous substance" means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the Clean Water Act.

10. Toxic Pollutants

A "toxic pollutant" is any pollutant listed as toxic under Section 307(a)(1) of the Clean Water Act.

Part III

r Requirements

Reporting of Monitoring Results

toring results obtained for each calendar month shall be
narized for that month and reported on a Discharge Monitoring
ort (DMR) Form (EPA No. 3320-1), postmarked no later than the 28th
of the month following the completed calendar month. (For
mple, data for January shall be submitted by February 28th.)
ied copies of these, and all other reports required by Section D
Part II, "Reporting Requirements," shall be submitted to the
mit Issuing Authority at the following address:

~~Environmental Protection Agency~~
~~Region IV~~
~~Enforcement Section~~
~~Water Permits and Enforcement Branch~~
~~Water Management Division~~
~~345 Courtland Street, N.E.~~
~~Atlanta, GA 30365~~

Florida Dept. of Env. Protection
Self-Monitoring Subsection
Mailstation 3551
2600 Blairstone Rd.
Tallahassee, Florida
32399-2400

no discharge occurs during the reporting period, sampling
uirements of this permit do not apply. The statement "No
ge" shall be written on the DMR form. If, during the term of
permit, the facility ceases discharge to surface waters, the
mit Issuing Authority and the Florida Department of Environmental
ulation (FDER) shall be notified immediately upon cessation of
charge. This notification shall be in writing.

Reopener Clause

s permit shall be modified, or alternatively, revoked and
ssued, to comply with any applicable effluent standard or
itation issued or approved under Sections 301(b)(2)(C) and (D),
(b)(2), and 307(a)(2) of the Clean Water Act, as amended, if the
luent standard or limitation so issued or approved:

a. Contains different conditions or is otherwise more stringent than any condition in the permit; or

b. Controls any pollutant not addressed in the permit.

e permit as modified or reissued under this paragraph shall also
ntain any other requirements of the Act then applicable.

C. Polychlorinated Biphenyl Compounds

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

D. Toxic Compounds

Discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any wastestream which may ultimately be released to lakes, rivers, streams, or other waters of the United States is prohibited, unless specifically authorized elsewhere in this permit. This requirement is not applicable to products used for lawn and agricultural purposes or to the use of herbicides if used in accordance with labeled instructions and any applicable State permit. Discharge of chlorine from the use of chlorine gas, sodium hypochlorite, or other similar chlorination compounds for disinfection in plant potable water and service water systems and in sewage treatment is authorized, as are discharges from the uses of similiar compounds for biofouling control in once-through cooling water, OSNs 001 (Unit 5) and 002 (Units 6 and 7).

The company shall notify the Director in writing requesting a permit modification not later than six (6) months prior to instituting use of any biocide (other than chlorine for Units 5, 6, and 7) or chemical used in cooling systems which may be toxic to aquatic life. Such notification shall include:

1. Name and general composition of biocide or chemical,
2. Frequency of use,
3. Quantities to be used,
4. Proposed effluent concentration, and
5. Acute and/or chronic toxicity data (including laboratory reports) for all available aquatic species, and
6. Product Data Sheet, and
7. Product Label

EPA shall review the above information to determine if a major permit modification is necessary. Discharge associated with the use of such biocide or chemical is not authorized without prior approval by the Director.

E. Unauthorized Discharges

There shall be no discharge to waters of the United States of low volume wastes (except as provided for OSN 006); non-chemical or chemical metal cleaning wastes (except as provided for OSN 005); runoff from plant including fly ash/botom ash storage or disposal areas (including runoff resulting from rainfall exceeding the 10-year, 24-hour storm event); fly and/or bottom ash transport water; and sanitary wastes.

F. Storm Water from Diked Petroleum Storage of Handling Areas

The permittee is authorized to discharge storm water from diked petroleum storage or handling areas, provided the following conditions are met:

Such discharges shall be limited and monitored by the permittee as specified below:

1. The facility shall have a valid Spill Prevention Control and Countermeasure (SPCC) Plan pursuant to 40 CFR Part 112.

2. In draining the diked area, a portable oil skimmer or similar device or absorbent material shall be used to remove oil and grease (as indicated by the presence of a sheen) immediately prior to draining.

3. Monitoring records shall be maintained in the form of a log and shall contain the following information, as a minimum:

   a. Date and time of discharge;
   b. Estimated volume of discharge;
   c. Initials of person making visual inspection and authorizing discharge; and
   d. Observed conditions of storm water discharged.

d. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of a visible oil sheen at any time.

G. Burning Toxic and Hazardous Wastes

Discharge of any waste resulting from the combustion of toxic, hazardous, or metal cleaning wastes to any waste stream which ultimately discharges to waters of the United States is prohibited, unless specifically authorized elsewhere in this permit.

PART IV

BEST MANAGEMENT PRACTICES CONDITIONS

SECTION A. GENERAL CONDITIONS

1. BMP Plan

For purposes of this part, the terms "pollutant" or "pollutants" refer to any substance listed as toxic under Section 307(a)(1) of the Clean Water Act (the "Act"), oil, as defined in Section 311(a)(1) of the Act, and any substance listed as hazardous under Section 311 of the Act. The permittee shall develop and implement a Best Management Practices (BMP) plan which prevents, or minimizes the potential for the release of pollutants from ancillary activities, including material storage areas; plant site runoff; in-plant transfer, process and material-handling areas; loading and unloading operations; and sludge and waste disposal areas, to the waters of the United States through plant site runoff; spillage or leaks; sludge or waste disposal; or drainage from raw material storage.

2. Implementation

The plan shall be developed within six months after the effective date of this permit and shall be implemented as soon as practicable but not later than 18 months after the effective date of the permit, unless a later date is specified by the Director. The permittee shall submit written notification of compliance or non-compliance with these requirements to the Permit Issuing Authority in accordance with Part I.B. of the permit.

3. General Requirements

The BMP plan shall:

a. Be documented in narrative form, and shall include any necessary plot plans, drawings or maps.

b. Establish specific objectives for the control of pollutants.

(1) Each facility component or system shall be examined for its potential for causing a release of significant amounts of pollutants to waters of the United States due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural conditions (e.g., precipitation), or other circumstances to result in significant amounts of

pollutants reaching surface waters, the plan should include a prediction of the direction, rate of flow, and total quantity of pollutants which could be discharged from the facility as a result of each condition or circumstance.

c. Establish specific best management practices to meet the objectives identified under paragraph b of this subsection, addressing each component or system capable of causing a release of significant amounts of pollutants to the waters of the United States, and identifying specific preventative or remedial measures to be implemented.

d. Include any special conditions established in Section B of this part.

e. Be reviewed by plant engineering staff and plant manager.

4. Documentation

The permittee shall maintain the BMP plan at the facility and shall make the plan available to the Permit Issuing Authority upon request.

BMP Plan Modification

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of pollutants.

6. Modification for Ineffectiveness

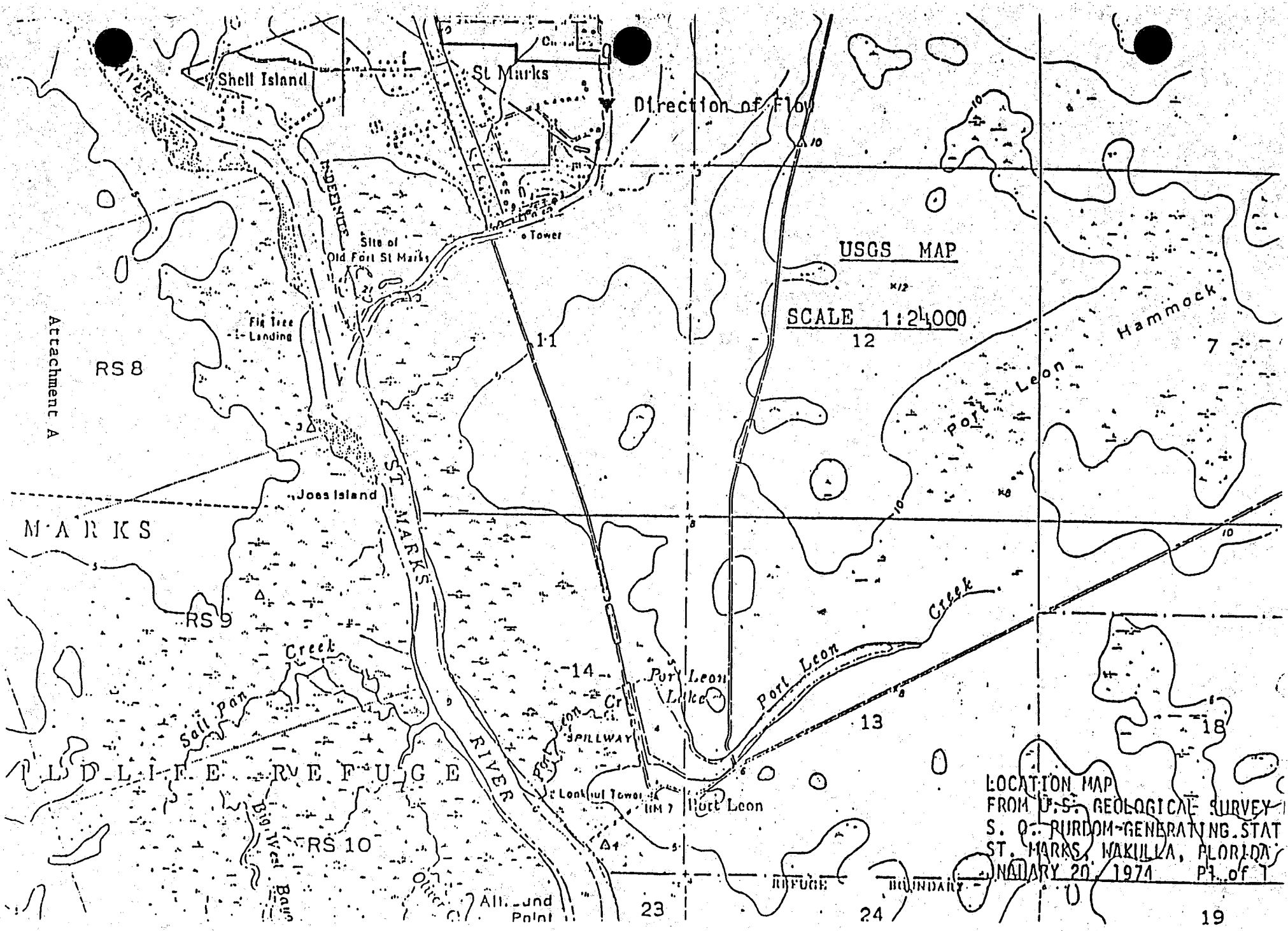
If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of significant amounts of pollutants to surface waters and the specific objectives and requirements under paragraph b and c of Subsection 3, the permit shall be subject to modification pursuant to 40 CFR § 122.62 or § 122.63 to incorporate revised BMP requirements. Any such permit modification shall be subject to review in accordance with the procedures for evidentiary hearings set forth in 40 CFR Part 124.

SECTION B. SPECIAL CONDITIONS

NONE.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.



ATTACHMENT XI

ATTACHMENT F

Attached please find a marked up version of the City of Tallahassee's Purdom Generating Station existing Industrial Wastewater Permit No. IO65-188446. This permit indicates requested changes to the existing permit and a Basis of Fact sheet supporting the requested changes.

JUN 5 1991

Florida Department of Environmental Regulation

Northwest District • 160 Governmental Center • Pensacola, Florida 32501-5794

Lawton Chiles, Governor

Carol M. Browner, Secretary

JENNETTE CURTIS
ENV. SERVICES ADMIN.

PERMITTEE:

~~Mr. P. R. Ellis~~
~~Production Superintendent~~
City of Tallahassee

I.D. Number: 1065MO2695
Permit/Certification Number: IO65-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996
County: Wakulla
Latitude/Longitude: 30°09'45"N/84°11'49"W
Section/Township/Range: 2/4-S/1-E
Project: Sam O. Purdom Generating Station

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-4, 17-302 and 17-660. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Operate a seven unit steam turbine electrical generating station with treated wastewater discharges into the St. Marks River. Wastewater from boiler blowdown, air preheater wash, and other minor process streams are discharged into the river after pretreatment in holding ponds. Condenser cooling water and demineralized wastewater are also discharged into the river.

Operation shall be in accordance with the renewal application and supporting documents received by the Department on October 29, December 14, 1990 and March 29, 1991.

Recycled Paper

PERMITTEE:

r. P. R. Ellis

I.D. Number: 1065M02695
Permit/Certification Number: I065-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions", and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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

3. As provided in Subsections 403.087(6) and 403.722(5), 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. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use 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.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

PERMITTEE:

Mr. P. R. Ellis

I.D. Number: 1065M02695
Permit/Certification Number: I065-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of this permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. 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 provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

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.

9. 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 involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

PERMITTEE:

r. P. R. Ellis

I.D. Number: 1065M02695
Permit/Certification Number: I065-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

GENERAL CONDITIONS:

10. The 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.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-730.300, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically, unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurement;
- the person responsible for performing the sampling or measurement;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

PERMITTEE:

Mr. P. R. Ellis

I.D. Number: 1065MO2695
Permit/Certification Number: IO65-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

GENERAL CONDITIONS:

14. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

15. Operation of the wastewater facilities shall be under the fulltime supervision of a person who is qualified by formal training and/or practical experience in the field of water pollution control.

16. All analyses and reports on the monitoring of water quality required by this permit shall be submitted to the Northwest District Office, Department of Environmental Regulation, 160 Governmental Center, Pensacola, Florida 32501-5794 within 20 days after the specified reporting period. A copy shall also be submitted to the Northwest District Branch Office, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

17. Solids, sludges, waste, or other pollutants removed in the course of construction, treatment, or control of effluent shall be disposed of in such a manner so as to prevent said materials from entering waters of the State. Permittee shall obtain the Department's written approval prior to disposal of these materials.

18. Sampling, monitoring and effluent limitations for this facility are as follows:

A. Outfall 001*

Parameters	Frequency***	Type of Sample	Limitation
Temperature	Continuous**	Recorder	90°F (32.2°C) (mon. Avg) 95°F (35°C) (max.)
Chlorine Residual	Daily	Grab	0.01 mg/l

PERMITTEE:

Mr. P. R. Ellis

I.D. Number: 1065MO2695
Permit/Certification Number: IO65-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

SPECIFIC CONDITIONS:

B. Outfall 002*

Parameters	Frequency	Type of Sample	Limitation
Temperature	Continuous**	Recorder	90°F (32.2°C) (mon. Avg) 95°F (35°C) (max.)
Chlorine Residual	Daily	Grab	0.01 mg/l
~~Copper~~	~~One per Quarter~~	~~8 hr. Composite~~	~~0.03 mg/l~~
~~Iron~~	~~One per Quarter~~	~~8 hr. Composite~~	~~1 mg/l~~
pH	Daily	Grab	6.0 (min.) 8.5 (max.)

C. Outfall 005*

Parameters	Frequency	Type of Sample	Limitation
Oil & Grease	~~One per Week~~ 1/DISCHARGE	Grab	5 mg/l
Total Suspended Solids	~~One per Week~~ 1/DISCHARGE	~~8 hr. Composite~~ GRAB	30 mg/l (mon. Avg) 100 mg/l (max.)
Copper	One per Quarter	~~8 hr. Composite~~ GRAB	0.03 mg/l
Iron	One per Quarter	~~8 hr. Composite~~ GRAB	1 mg/l
pH	Daily	Grab	6.0 (min.) 8.5 (max.)

*Sampling point 001 is located at the throat of the discharge structure from units 1-5. Use reporting code 1065X10128 for this point. Sampling point 002 is located at the center of the discharge canal for units 6 and 7 opposite the turbine intake structure. Use reporting code 1065X10131 for this point. Sampling point 005 ~~is a faucet on unit 7 intake structure~~. Use reporting code 1065X10133 for this point.

AND 006 IS IN THE WASTEWATER DISCHARGE LINE.

Florida Department of Environmental Regulation

Northwest District • 160 Governmental Center • Pensacola, Florida 32501-5794

Lawton Chiles, Governor

Carol M. Browner, Secretary

DEC 2 3 1992

Mr. Robert E. McGarrah
Production Superintendent
City of Tallahassee Electric Department
Route 4, Box 448
Tallahassee, Florida 32304

RECEIVED

DEC 23 1992

BUREAU OF ENVIRONMENTAL AFFAIRS

Dear Mr. McGarrah:

In accordance with Ms. Jennette Curtis' request, permit number IO65-188446 is modified as follows:

Add

Subparagraph D is added to Specific Condition 18.

D. Outfall 006*

Parameters	Frequency	Type of Sample	Limitations
Oil & Grease	~~One per Week~~ 1/DISCHARGE	Grab	5 mg/l
Total Suspended	~~One per Week~~ 1/DISCHARGE	~~8 Hr. Composite~~ GRAB	30 mg/l (Mon. Avg.)
Solids			100 mg/l (Max.)
pH	Daily	Grab	6.0 (min.) 8.5 (max.)

*Sampling point 006 is identical to sampling point 005.

This letter shall be attached to and become a part of permit number IO65-188446.

Sincerely,

Bobby A. Cooley
District Director

BAC/nmt

Recycled Paper

PERMITTEE:

Mr. P. R. Ellis

I.D. Number: 1065MO2695
Permit/Certification Number: IO65-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

SPECIFIC CONDITIONS:

**Two temperature readings shall be taken from the continuous temperature recorders on each operating shift. The average of these readings will be used in determining the monthly average discharge temperature. The average and maximum daily temperature readings shall be reported on the monthly operation report.

***The analytical results of all samples taken shall be reported on the ~~monthly operation report.~~ DISCHARGE MONITORING REPORT.

19. Prior to commencement of the Chlorination/Dechlorination specified in Jennette D. Curtis' letter dated March 26, 1991, a 96 hour static screening acute toxicity test shall be performed on the once through condenser cooling water. Following testing, two additional 96 hour shall be performed at a 30 day interval. Testing shall be accomplished in accordance with Attachment 1.

DELETE
~~20. The permittee shall conduct, on an annual basis during the first two weeks in August, Benthic Macroinvertebrate monitoring in the St. Marks River, above and below the points of discharge. Testing shall be accomplished in accordance with Attachment 2.~~

21. Polychlorinated Biphenyl compounds such as those commonly used for transformer fluid are specifically prohibited in the discharge.

~~22. Prior to sixty (60) days before the expiration date of this permit, the permittee shall apply for a renewal of the permit on proper forms and in a manner prescribed by the Department.~~

23. The Department telephone number for reporting problems, malfunctions or exceedances under this permit is (904) 436-8300, day or night, and for emergencies involving a significant threat to human health or the environment is (904) 488-1320. For routine business, telephone (904) 436-8380 during normal working hours.

Expiration date:

May 1, 1996

Issued this 31st day of May, 1991.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

ROBERT V. KRIEGEL
Deputy Assistant Secretary

Attachment 1 to Permit Number IO65-188446

Biomonitoring Program

In accordance with specific condition 19 of this permit, the permittee shall initiate the tests described below to evaluate toxicity of the discharge from the once through condenser cooling water.

1. The permittee shall conduct 96 hour static screening toxicity tests on the test species Ceriodaphnia and Fathead minnow (Pimephales promelas), once prior to dechlorination on samples of 100% whole effluent. Two samples shall be taken after initiation of the dechlorination process during the year. Such static screening tests will be conducted on each of four grab samples of effluent collected over a 24 hour period in order to catch any peaks of toxicity and to account for diurnal variations in effluent quality. Results on 100% effluent for each grab sample shall be reported. The results of each toxicity test shall be submitted to FDER.

Once the permittee has demonstrated to the satisfaction of FDER that there are no effluent toxicity, the above requirement may be deleted.

2. If any such bimonthly screening test indicates toxicity (less than 50% survival of test organisms in 100% effluent) is found in any sample of effluent, further confirmatory acute static toxicity testing involving the determination of 96 hour LC_{50} values with 95 percent confidence limits will be required. A minimum of two (2) such 96 hour confirmatory tests are required to be conducted within 30 days form the date that any screening test indicates the presence of toxicity. Preferably, the first of these confirmatory tests shall be initiated within 48 hours of a failed screening test. The second confirmatory test shall be initiated at least seven days after completion of the first confirmatory test. Such tests shall be conducted using that test species which exhibited the most toxicity in the screening tests above, and shall be taken at the same time of day and day of the week during which the greatest toxicity was exhibited. Alternately, testing involving the use of 96 hour flow-through toxicity tests may also be required in place of the static tests, if the toxicity demonstrated in the screening tests show substantial variability over time. The results of each toxicity test shall be submitted to FDER concurrently with monthly discharge monitoring reports.

3. All test procedures, and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms.

IPA-600/4-85/013 and/or Quality Assurance Manual for Performing Acute Toxicity Tests, FDER Biology Section. If the test organisms specified in Part 2 are unavailable or unsuitable for use in the toxicity tests, appropriate substitutes from the list of recommended test organisms in the above referenced bioassay manuals may be used. This and any other deviation from the standard bioassay procedures, shall be submitted to FDER for review and approval prior to use.

4. If either of the above confirmatory tests indicate that the wastewaters are being discharged in violation of FAC 17-3 or 17-4 toxicity limits, the permittee shall submit to the FDER a toxicity control plan and accompanying implementation schedule within 90 days of the finalization of the acute toxicity study results. The control plan shall include appropriate measures such as the establishment or re-evaluation of a pretreatment program, the use of dechlorination, additional wastewater treatment, or changes in the operation of the facility to reduce the toxicity of the wastewater discharge to acceptable levels.

DELETE

~~Attachment 2 to Permit Number IO65-188446~~

Benthic Macroinvertebrate Monitoring

The permittee shall provide biological data from the receiving waters above (control) and below (test site) the permitted point of discharge. Macroinvertebrate assemblages shall be collected with Hester-Dendy type artificial substrates incubated in the receiving waters for 28 days. Organisms retained on the artificial substrates after washing through a Number 30 standard sieve shall be analysed for number of species present, number of individuals per Taxa, total number of individuals in the sample, number per Meter^2, and Shannon-Weaver species diversity . Three replicates will be incubated at each site. Each replicate and the composite of all three shall be treated as stated above. The raw data, a discussion of results and conclusion shall be submitted to FDER within 90 days after completion of species identification.

PURDOM GENERATING STATION
I.D. No. IO65M2695
NPDES Permit No. FL0025526

BASIS OF FACT SHEET

Specific Condition: 16

All analysis and reports on the monitoring of water quality required by this permit shall be submitted to the Northwest District Office, Department of Environmental Regulation, 160 Governmental Center, Pensacola, Florida 32501-5794 within 20 days after the specified reporting period. A copy shall also be submitted to the Northwest District Branch Office, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

CHANGE TO:

All analysis and reports on the monitoring of water quality required by this permit shall be submitted to the Northwest District Office, Department of Environmental Regulation, 160 Governmental Center, Pensacola, Florida 32501-5794 within **28** days after the specified reporting period. A copy shall also be submitted to the Northwest District Branch Office, **2815 Remington Green Circle, Suite A, Tallahassee, Florida 32308-1513.**

Rationale:

The City of Tallahassee believes the reporting date for NPDES reports should be the 28th day of the month following the reporting period to maintain continuity with established EPA reporting practices.

Specific Condition: 18
SECTION: A.
Outfall 001

Chlorine Residual -	Sample Frequency	Daily
	Sample Type	Grab
	Limitation	0.01mg/l

CHANGE TO:

Chlorine Residual -	Sample Frequency	Each Application
	Sample Type	**Multiple** Grab
	Limitation	0.01mg/l

Rationale:

This revision is necessary to better reflect the actual testing that occurrs during chlorination.

Specific Condition: 18
SECTION: B.
Outfall 002

Chlorine Residual -	Sample Frequency	Each Application
	Sample Type	Grab
	Limitation	0.01mg/l

CHANGE TO:

Chlorine Residual -	Sample Frequency	Each Application
	Sample Type	**Multiple** Grab
	Limitation	0.01mg/l

Rationale:

SEE: Specific Condition: 18
SECTION A.
Outfall 001

Specific Condition: 18
SECTION B.
Ooufall 002

Copper	Discharge Limit - 0.03mg/l	Sample - 1/Quarter 8hr. Composite
Iron	Discharge Limit - 1.0mg/l	Sample - 1/Quarter 8hr. Composite

CHANGE TO:

Delete Test Requirement.

Rationale:

Outfall 002 at the City of Tallahassee's Sam O.Purdom Generating Station discharges once-through, non-contact cooling water to the St. Marks River. Only chlorination/dechlorination occurrs prior to the water reentering the river. Results of quarterly analysis for these parameters previously submitted to the Department on the monthly Discharge Monitoring Reports indicates a maximum annual value of 0.40 mg/l for Iron and 0.004 mg/l for copper. Both of these values are significantely below the permitted limits, and substantiates the request for no monitoring.

Specific Condition: 18
SECTION: C.
Outfall: 005

Parameter	Frequency	Type Sample	Limitation
oil & grease	one per week	Grab	5mg/l
Total Suspended Solids	one per week	8hr. Composite	30mg/l(mon. Avg) 100 mg/l (max)
copper	one per quarter	8hr. Composite	0.03 mg/l
Iron	one per quarter	8hr. Composite	1 mg/l
pH	Daily	Grab	6.0 (min) 8.5 (max)

CHANGE TO:

Parameter	Frequency	Type Sample	Limitation
oil & grease	**1/Discharge**	Grab	5mg/l
Total Suspended Solids	**1/Discharge**	**Grab**	30mg/l(mon. Avg) 100 mg/l (max)
copper	one per quarter	**Grab**	0.03 mg/l
Iron	one per quarter	**Grab**	1 mg/l
pH	**1/Discharge**	Grab	6.0 (min) 8.5 (max)

Rationale:

As approved by FDEP.

Specific Condition: 18
SECTION: D.
Outfall 006

Parameters	Frequency	Type Sample	Limitations
oil & grease	one per week	grab	5 mg/l
Total Suspended Solids	one per week	8 hr. Composite	30 mg/l (mon. avg) 100 mg/l (max)
pH	Daily	grab	6.0 (min) 8.5 (max)

CHANGE TO:

Parameters	Frequency	Type Sample	Limitations
oil & grease	**1/discharge**	grab	5 mg/l
Total Suspended Solids	**1/discharge**	**grab**	30 mg/l(mon. avg) 100 mg/l (max)
pH	**1/discharge**	grab	6.0 (min) 8.5 (max)

Rationale:

As approved by FDEP.

Specific Condition: 20

The permittee shall conduct, on an annual basis during the first two weeks in August, Benthic Macroinvertebrate monitoring in the St. Marks River, above and below the points of discharge. Testing shall be accomplished in accordance with attachment 2.

CHANGE TO:

Delete Specific Condition 20.

Rationale:

The City of Tallahassee's Purdom Generating Station has conducted annual Benthic Macroinvertebrare testing of the St. Marks River since 1991. Results of all tests, based on the Shannon-Weaver diversity Index, indicate no adverse impact by the Purdom Generating Plant discharges on the macroinvertebrate communities in the study area.

The City believes it has adequately demonstrated that the Purdom Generating Station discharges are not harming the macroinvertebrate communities and that this test requirement should be deleted.

Specific Condition: 22

Prior to sixty (60) days before the expiration date of this permit, the permittee shall apply for a renewal of the permit on proper forms and in a manner prescribed by the Department.

CHANGE TO:

Delete Specific Condition 22

Rationale:

This Condition no longer applies. 62-620.335 F.A.C. requires application for permit renewal 180 days prior to expiration.

Attachment G

Attached please find the dechlorinating agent Materials Safety Data Sheets used in the once-through cooling system.

BETZ INDUSTRIAL
4636 SOMERTON ROAD, TREVOSE, PA. 19047

BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

BETZ 3680

UCT [redacted]

EFFECTIVE DATE 05-18-89
PRINTED: 9/21/89
REV:SEC.3

)UCT APPLICATION : WATER-BASED DECHLORINATION AGENT.

--SECTION 1----------HAZARDOUS INGREDIENTS----------

)RMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC)UCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE 'ED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE CHRONIC HAZARDS OF THIS FORMULATION.

AMMONIUM BISULFITE***CAS#10192-30-0;CORROSIVE(EYES);IRRITANT(SKIN);
PEL:NONE;TLV:NONE.

---SECTION 2----------TYPICAL PHYSICAL DATA----------

: AS IS (APPROX.) 4.9
.PT.(DEG.F): >200 SETA(CC)
POR PRESSURE(mmHG): 35
SC cps@70F: 26
AP.RATE: <1 ETHER=1
YSICAL STATE: LIQUID

ODOR: MILD
SP.GR.(70F)OR DENSITY: 1.406
VAPOR DENSITY(AIR=1): <1
%SOLUBILITY(WATER): 100
APPEARANCE: YELLOW
FREEZE POINT(DEG.F): 10

---SECTION 3----------REACTIVITY DATA----------

BLE. BETZ TANK CLEAN-OUT CATEGORY 'B'

IERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

[redacted]T: POWERLINE 3680 EFFECTIVE DATE 05-18-89

----SECTION 4----------HEALTH HAZARD EFFECTS----------

CUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE
CORROSIVE TO SKIN

CUTE EYE EFFECTS ***
CORROSIVE TO THE EYES

CUTE RESPIRATORY EFFECTS ***
MISTS/AEROSOLS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

HRONIC EFFECTS OF OVEREXPOSURE***
NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

EDICAL CONDITIONS AGGRAVATED ***
NOT KNOWN

YMPTOMS OF EXPOSURE ***
CAUSES SEVERE IRRITATION,BURNS OR TISSUE ULCERATION WITH SUBSEQUENT SCARRING.

-----SECTION 5----------FIRST AID INSTRUCTIONS----------

SKIN CONTACT***
REMOVE CLOTHING.WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER FOR 15 MIN.IMMEDIATELY CONTACT PHYSICIAN

F[redacted]ONTACT***
MMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

NHALATION EXPOSURE***
REMOVE VICTIM FROM CONTAMINATED AREA.APPLY NECESSARY FIRST AID TREATMENT.IMMEDIATELY CONTACT A PHYSICIAN.

INGESTION***
DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DILUTE CONTENTS OF STOMACH.INDUCE VOMITING BY ONE OF THE STANDARD METHODS.IMMEDIATELY CONTACT A PHYSICIAN

-----SECTION 6----------SPILL,DISPOSAL AND FIRE INSTRUCTIONS---------

SPILL INSTRUCTIONS***
VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***
WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT
PRODUCT(AS IS)-
INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***
[redacted]IREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).
DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

EFFECTIVE DATE 05-18-89

(ODUCT: POWERLINE 3680

----SECTION 7----------SPECIAL PROTECTIVE EQUIPMENT----------
3E PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
ESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.
ENTILATION PROTECTION***
ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
ECOMMENDED RESPIRATORY PROTECTION***
IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE RESPIRATOR WITH ACID GASSES CARTRIDGES AND DUST/MIST PREFILTERS
ECOMMENDED SKIN PROTECTION***
GAUNTLET-TYPE RUBBER GLOVES,CHEMICAL RESISTANT APRON
WASH OFF AFTER EACH USE.REPLACE AS NECESSARY
ECOMMENDED EYE PROTECTION***
SPLASH PROOF CHEMICAL GOGGLES.FACE SHIELD

----SECTION 8----------STORAGE AND HANDLING PRECAUTIONS----------
TORAGE INSTRUCTIONS***
KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.
PROTECT FROM FREEZING.KEEP AWAY FROM ACIDS AND BASES.
ANDLING INSTRUCTIONS***
MEDIATELY REMOVE CONTAMINATED CLOTHING,WASH BEFORE REUSE
CORROSIVE TO SKIN.CORROSIVE TO EYES.
****
HIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD
AROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)
****

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY
...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:
752 GALLONS DUE TO AMMONIUM BISULFITE
...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: D002=CORROSIVE
...DOT HAZARD CLASSIFICATION: CORROSIVE TO SKIN
...DOT SHIPPING DESIGNATION IS: NA2693 AMMONIUM BISULFITE SOLUTION

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO
CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 313 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE)
...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
N[illegible]/HMIS : HEALTH - 3 ; FIRE - 0 ; REACTIVITY - 0 ; SPECIAL - CORR ; PE - D

ALLIED UNIVERSAL CORP.
8350 N.W. 93 St., Miami, Fl. 33166
Tel 305-888-2623, Fax 305-885-4671

NSF AQUA GUARD

SODIUM HYPOCHLORITE SOLUTION UN1791

Date Revised: 91 11 01

MATERIAL SAFETY DATA SHEET

Index: PPD 003E/91C

EMERGENCY TELEPHONE NUMBER BEEPER 1-800-397-9192

PRODUCT IDENTIFICATION

Product Name: Sodium Hypochlorite Solution
Chemical Name: Sodium Hypochlorite
Synonyms: Soda Bleach Liquor; Javel Water
Chemical Family: Chlorite
Molecular Formula: NaOCl
Product Use: Water Purification

REGULATORY SECTION

Controlled Products Regulations (WHMIS) Classification: D-2B: Toxic (skin sensitizer); E: Corrosive.

OSHA Hazard Communication (29CFR 1910.1200) Classification: Skin sensitizer; E: Corrosive

CANADIAN TDG ACT SHIPPING DESCRIPTION

Shipping Name: Hypochlorite solution
Shipping Class/Division: 8 (9.2)
Product Identification No (PIN): UN1791
Packing Group: III

U.S. DOT Classification: Corrosive Material

NFPA Classification:
- Health (blue): 2
- Flammability (red): 0
- Reactivity (yellow): 2
- Special hazards: OXY

Read the entire MSDS for the complete hazard evaluation of this product.
Certified to ANSI/NSF Standard 60. Maximum Use in Potable Water: 250 mg/L.

HAZARDOUS INGREDIENTS OF MATERIAL

Hazardous Ingredients	%	ACGIH TLV	CAS No.
Sodium Hypochlorite	10-30	1 ppm	7681-52-9

PHYSICAL PROPERTIES

Physical State: Liquid
Appearance And Odour: Clear, greenish-yellow aqueous solution with a strong chlorine odour
Odour Threshold: No data
Boiling Point: Slowly decomposes at 40°C to NaCl and $NaClO_3$
Melting/Freezing Point: -25°C for 11% solution
Vapour Pressure: 17.5 mmHg at 20°C
Specific Gravity: 1.22 @ 15.5°C (water = 1 @ 4°C)
Vapour Density: No data
Bulk Density: 1220 kg/m^3 approx at 15°C
Evaporation Rate: No data
Solubility: Miscible in all proportions. Also soluble in alcohol, glycol
% Volatile by Volume: No data
pH: 12
Coefficient of water/oil distribution: No data
Sensitivity to Mechanical Impact: No data
Rate of Burning: No data
Explosive Power: No data
Sensitivity to Static Discharge: Not expected to be sensitive to static discharge

REACTIVITY DATA

Stability:
Under Normal Conditions: Stable. Becomes unstable at temperatures above 40°C. when in sunlight and when in contact with certain metals.
Under Fire Conditions: Unstable
Hazardous Polymerization: Will not occur

Conditions to Avoid: Temperatures above 40 °C, sunlight

Materials to Avoid: Strong acids, strong caustic, ammonia, oxidizable materials, urea, nickel, copper, tin, manganese, iron.

Hazardous Decomposition or Combustion Products: Chlorine (contact with acids); oxygen (contact with metals).

FIRE AND EXPLOSION DATA

Flash Point (method): Non-flammable
Autoignition Temperature: Not applicable
Flammability Limits in air (%): UEL: Not applicable LEL: Not applicable

Fire Extinguishing Media: Use appropriate media to extinguish surrounding fire

Fire Fighting Procedures: Full protection equipment, including a self-contained breathing apparatus, should be worn. Remove storage vessels from fire zone. Use water spray to cool containers and to disperse vapours.

Other Fire or Explosion Hazards: Material is non-flammable but is decomposed by heat and light causing a pressure build-up in containers which could result in an explosion. When heated or in contact with acids, it may release Chlorine. Vigorous reaction with oxidizable or organic materials may result in fire.

TOXICOLOGICAL AND HEALTH DATA

Recommended Exposure Limit: ACGIH TLV-TWA: 1ppm (as Chlorine)

Toxicological Data: Sodium Hypochlorite LC_{50} (inhalation, rat) = 293 ppm for 1 hour (1)
LD_{50} (oral, rat) greater than 8190 mg/kg (2)
LD_{50} (dermal, rabbit) greater than 10000 mg/kg (2)

Carcinogenicity Data: The ingredients of this product are not listed as carcinogens by NTP, (National Toxicology Program), not regulated as carcinogens by OSHA, (Occupational Safety and Health Administration), and have not been evaluated by IARC, (International Agency for Research on Cancer) or ACGIH (American Conference of Governmental Industrial Hygienists).

Reproductive Effects: No information is available and no adverse reproductive effects are anticipated.

Mutagenicity Data: No information is available and no adverse mutagenic effects are anticipated.

Teratogenicity/Fetotoxicity Data: No information is available and no adverse teratogenic effects are anticipated.

Synergistic Materials: None known

Effects of exposure when:

Inhaled: Chlorine gas may be evolved which causes irritation of the nose and upper respiratory tract, headache and coughing. Other symptoms of overexposure include nausea, vomiting, dizziness, shortness of breath, cyanosis and chest pain. Exposure to high concentrations of chlorine can cause decrease in lung function, bronchopneumonia, pulmonary edema which may be delayed in onset, unconsciousness and death.

In contact with the skin: Can cause severe local irritation, burns and blisters. Prolonged or repeated contact with dilute solutions may bleach skin or cause dermatitis.

In contact with the eyes: Can cause irritation, severe burns and permanent corneal damage resulting in blindness.

Ingested: Burning and pain in the mouth, throat and abdomen. Vomiting, diarrhea, and perforation of the esophagus and stomach lining may occur. May cause low blood pressure, circulatory collapse and death.

Other Health Effects: Corrosive effects on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures following any exposure is essential.

Sensitization is the process whereby a biological change occurs in the individual because of previous exposure to a substance and, as a result, the individual reacts more strongly when subsequently exposed to the substance. Once sensitized, an individual can react to extremely low airborne levels, even below the TLV, or to skin contact.

First Aid Procedures when:

In contact with the skin: Flush skin with running water for a minimum of 20 minutes. Start flushing while removing contaminated clothing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.

In contact with the eyes: Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.

Ingested: If victim is alert and not convulsing, rinse out mouth and give 1/2 to 1 glass of water to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility.

Emergency Medical Care: This product contains materials that may cause severe pneumonitis if aspirated. If ingestion has occurred less than 1 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed. Pulmonary edema due to Chlorine Gas inhalation is possible and may be delayed. Steroid therapy, if given early, may be effective in preventing or alleviating edema.

Medical conditions that may be aggravated by exposure to this product include asthma, bronchitis, emphysema and other lung diseases and chronic nose, sinus or throat conditions. In the event of skin or eye contact, rapid and thorough flushing is essential.

PREVENTIVE MEASURES

Recommendations listed in this section indicate the type of equipment which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls: Local exhaust ventilation preferred to maintain concentrations in air below applicable exposure limits.

Respiratory Protection: NIOSH/MSHA approved air-purifying respirator equipped with Chlorine cartridges for concentrations up to 5 ppm. Air supply respirator for higher or unknown concentrations.

Skin Protection: Gloves and protective clothing made from rubber should be impervious under conditions of use. User should verify impermeability under normal conditions of use prior to general use.

Eye Protection: Use chemical safety goggles when there is potential for eye contact

Other Personal Protective Equipment: Rubber boots and apron if required. Safety showers and eyewash fountains should be installed in storage and handling areas.

Handling Procedures and Equipment: Only use approved containers made out of tinted glass, polyethylene and FRP. Protect containers against physical damage

Storage Temperature (°C): Below 29°C and above freezing point (see PHYSICAL PROPERTIES page 1).

Storage Requirements: Store in a cool (below 29°C) dry, well-ventilated area away from incompatibles (see Section REACTIVITY DATA) and direct sunlight. Vented containers must be used and must be kept closed when not being used. Long-term storage is impossible without decomposition.

(5)

Other Precautions: Use only with adequate ventilation and avoid breathing vapours/mists. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use.

ENVIRONMENTAL PROTECTION DATA

Steps to be taken in the event of a spill or leak: Ventilate enclosed spaces. Collect product for recovery or disposal. For release to land, or storm water runoff, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Collect contaminated soil and water, and absorbent for treatment or disposal. For recovery, pump into polyethylene containers. Notify applicable government authority if release is reportable or could adversely affect the environment.

Environmental Effects: Harmful to aquatic life at low concentrations. May be an aesthetic nuisance due to colour.

Deactivating Chemicals: Use Sodium Sulphite, Sodium Bisulphite or diluted Hydrogen Peroxide to reduce the material. Ensure there is no Cl_2 residual, before neutralizing Caustic solution with weak solution of HCl or H_2SO_4.

Waste Disposal Methods: Consult federal, provincial, state and local regulations on chemical waste disposal. Do not dispose of waste with normal garbage, or to sewer systems. May be possible to neutralize, flush and disperse.

ADDITIONAL INFORMATION AND SOURCES USED

1. ICI Technical Manual Data Sheet, 'Sodium Hypochlorite'.
2. SAX, N.I., Dangerous Properties of Industrial Materials, 4th Ed., (1975)
3. RTECS-Registry of Toxic Effects of Chemical Substances, On-line search, Canadian Centre for Occupational Health and Safety RTECS database, Vol I-V, 1985-1986 edition, Doris V. Sweet, Ed., National Institute for Occupational Safety and health, U.S. Dept. of Health and Human Services, Cincinnati, 1987.
4. "CHEMINFO", through "CCINFOdisc", Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
5. Supplier's Material Safety Data Sheets.
6. Dreisbach, Robert H., Handbook of Poisoning, 11th ed., Lange Medical Publications, Los Altos, California, 1983.
7. The British Columbia Drug and Poison Information Centre, Poison Managements Manual, Canadian Pharmaceutical Association, Ottawa, 1981.

The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Allied Universal will not be liable for any damages, losses, injuries or consequential damages which may result from the use or reliance on any information contained herein. This Material Safety Data Sheet is valid for three years.

Date issued: 91 11 01
Date revised: 91 11 01
MSDS index no: FPD 003E/91C

M A T E R I A L S A F E T Y D A T A S H E E T

Jones Chemicals, Inc.
80 Munson Street
LeRoy, New York 14423
(and Principal Cities)

For information, please contact the Jones Chemicals facility in your area at (904)355 -0662 or the Jones Chemicals Corporate Laboratory in Caledonia, New York at (716) 538-2311.

In the event of a transportation emergency,
Call CHEMTREC: (800) 424-9300

SECTION I - IDENTIFICATION

TRADE NAME: Sodium Hypochlorite Solution (Industrial Use)
CHEMICAL NAME: Sodium Hypochlorite
FORMULA: NaOCl
DOT SHIPPING NAME: Hypochlorite Solution
DOT HAZARD CLASS: Corrosive Material
UN/NA NUMBER: UN 1791
DOT LABEL: Corrosive
DOT PLACARD: Corrosive
REPORTABLE QUANTITY: Sodium Hypochlorite: 100 Pounds/45.4 Kilograms
CAS NUMBER: 7681-52-9

NFPA DESIGNATION: The NFPA has not rated sodium hypochlorite.

SECTION II - HAZARDOUS INGREDIENTS

MATERIAL	% BY WEIGHT	CAS NO.	OSHA PEL	ACGIH TLV
dium Hypochlorite	12.5 minimum	7681-52-9	Not applicable	Not applicable
dium Hydroxide	2.0 minimum	1310-73-2	3 2 mg/m ceiling	3 2 mg/m ceiling
ert Ingredients	Balance	Not applicable	Not applicable	Not applicable

CARCINOGENICITY STATUS: NTP - No, IARC - No, OSHA - No.

SECTION III - PHYSICAL DATA

APPEARANCE: Yellow-green liquid
BOILING POINT: 219°F (104°C) for 12.5% NaOCl by wt.
FREEZING POINT: - 11°F (- 24°C) for 12.5% NaOCl by wt.
ODOR: Chlorine
PH: 12.5 - 13.5 s.u. @ 25°C
VISCOSITY (Cs): 2.15 @ 23°C for 12.5% NaOCl by wt.
PERCENT VOLATILE BY VOLUME: Variable water plus products of decomposition.
SOLUBILITY IN WATER: Complete
SPECIFIC GRAVITY (Water=1): 1.224 @ 20°C for 14.15 % NaOCl by wt.
VAPOR DENSITY (AIR=1): Not available
VAPOR PRESSURE (mm Hg): Variable water plus products of decomposition.

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT (Test method): Not applicable
AUTO IGNITION TEMPERATURE: Not applicable
FLAMMABLE LIMITS IN AIR (Volume %): Not applicable
EXTINGUISHING MEDIA: Flood with water or carbon dioxide (CO_2)
SPECIAL FIRE FIGHTING PROCEDURES: Use National Institute of Occupational Safety & Health (NIOSH) approved respirator with acid type canister or use self-contained breathing apparatus.
Unusual fire and explosion hazards: material is a strong oxidizer. Contact with combustibles may initiate or promote combustion. Acid and heat accelerate decomposition. Decomposition products may include chlorine.

SECTION V - HEALTH HAZARD INFORMATION

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

No medical conditions are known to be aggravated by exposure.

ROUTES OF EXPOSURE

INHALATION: Fumes from spills are very irritating to mucous membranes. Very little hazard from properly stored solution.
SKIN CONTACT: Severe irritant, reddening of skin, skin damage.
SKIN ABSORPTION: Same as skin contact.
EYE CONTACT: Severe irritant; corrosive.
INGESTION: Causes irritation of membranes of the mouth, throat, and stomach pain and possible ulceration. LD_{50} (oral, rat) for 12.5% NaOCl is approximately 5 g/kg body weight.

EFFECTS OF OVEREXPOSURE

ACUTE OVEREXPOSURE

SWALLOWING: See "ingestion" under routes of exposure.
SKIN CONTACT: Irritant, reddening of skin, skin damage.
INHALATION: Fumes from spills are very irritating to mucous membranes.
EYE CONTACT: Extreme irritant, corrosive.

CHRONIC OVEREXPOSURE

EYE: Can cause damage.
SKIN: Can cause damage, chemical burns.

EMERGENCY AND FIRST AID PROCEDURES

EYES: If in eyes, flush with water for at least fifteen (15) minutes. Get medical attention.
SKIN: If on skin, wash with plenty of soap and water for at least fifteen (15) minutes. Get medical attention.
INHALATION: Remove to fresh air. Call a physician if exposure is severe.
INGESTION: If swallowed, drink large quantities of milk, or gelatin solution or, if these are not available, drink large quantities of water. Do NOT give vinegar or other acids. Do NOT induce vomiting. Get prompt medical attention.

SECTION VI - REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

Solutions are fairly stable in concentrations below 10%. Stability decreases with concentration, heat, light, exposure, decrease in pH, and contamination with heavy metals, such as nickel, cobalt, copper, and iron.

INCOMPATIBILITY

Acids, alcohols, amines, ammonia, chlorinated isocyanurates, combustibles, cyanides, detergents, ethers, hydrocarbons, oxidizable materials, reducing agents. Corrosive to most metals.

DECOMPOSITION PRODUCTS

Hypochlorous Acid (HOCl), chlorine, hydrochloric acid. Composition depends upon temperature and decrease in pH. Additional decomposition products, which depend upon pH, temperature and time, are sodium chloride, sodium chlorate and oxygen.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

Will not occur.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Cleanup personnel must wear proper protective equipment (See Section VIII). Contain in diked area. Neutralize with sodium bisulfite or ferrous salt solutions. Place neutralized material in DOT specification approved container(s). Flush area with large amounts of water. Comply with all Federal, State and Local reporting requirements.

WASTE DISPOSAL

Contact Federal, State, County, and Local environmental regulators for guidance regarding proper disposal.

SECTION VIII - SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS

Local exhaust is recommended.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Use National Institute of Occupational Safety and Health (NIOSH) or Mine Safety and Health Administration (MSHA) approved respirator appropriate for this product when permissible exposure limits are exceeded.
EYES: Use chemical goggles and face shield.
GLOVES: Use rubber or neoprene gloves.
OTHER: Use rubber splash apron and rubber boots. Safety shower and eye wash fountain should be located nearby.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING

DANGER: This product is corrosive and may cause severe skin irritation or chemical burns to broken skin. Causes eye damage. Do not get in eyes, on skin or on clothing. Wear goggles and face shield and rubber gloves when handling this product. Wash after handling. Avoid breathing vapors. Vacate poorly ventilated areas as soon as possible. Do not return until odors have dissipated.

PROPER STORAGE AND DISPOSAL REQUIREMENTS

Store in a cool, dry area away from direct sunlight. In case of spill, flood area with large quantities of water. Rinse empty container thoroughly with water and either return to manufacturer or discard by placing in trash collection or burying in an approved landfill. Product or rinseate that cannot be used, should be diluted with water and disposed of in a sanitary sewer. Do not contaminate food, or feed by storage, disposal or cleaning of equipment. STORE IN AN UPRIGHT POSITION.

OTHER PRECAUTIONS

STRONG OXIDIZING AGENT: Mix only with water according to label directions. Mixing this product with gross filth such as feces, urine, etc., or with ammonia, acids, detergents or other chemicals may release hazardous gases irritating to eyes, lungs and mucous membranes.

ADDITIONAL REGULATORY CONCERNS

EPA: May not be used for disinfection or sanitization without prior approval by EPA. Repackagers must obtain EPA registration and establishment numbers.

FIFRA: This product is regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) if used as a disinfectant or sanitizer.

TSCA: Included in the Toxic Substances Control Act (TSCA) Inventory Of Chemical Substances.

MSDS PREPARED BY: Jones Chemicals, Inc.
100 Sunny Sol Blvd.
Caledonia, New York 14423
Corporate Laboratory
(716) 538-2311

ISSUE DATE: 3/2/90
SUPERCEDES ISSUE DATED: 12/12/89

The information herein is given in good faith but no warranty, expressed or implied is made.

CITY HALL
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TALLAHASSEE, FL
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RON WEAVER
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SCOTT MADDOX
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Commissioner
STEVE MEISBURG
Commissioner
STEVEN C. BURKETT
City Manager
ROBERT B. INZER
City Treasurer-Clerk
JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

April 26, 1996

CERTIFIED MAIL: P 117 025 438

Mr. Craig Diltz, P.E.
Industrial Wastewater Section
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: City of Tallahassee
Purdom Generating Station, NPDES Permit No. FL0025526
NPDES Application - Additional Information Submittal

Dear Mr. Diltz:

Please find enclosed, four (4) originals of the additional information requested in Mr. Phil Coram's letter dated December 13, 1995 for the City of Tallahassee's Sam O. Purdom Generating Station's NPDES renewal application. The following information is being submitted at this time:

1. As per further discussions between you and Mr. Phil Bucci, Environmental Specialist, please disregard the Form 2ES previously submitted for OSN 001 and 002. Form 2CS for OSN 001 and 002 is enclosed. A description of the chlorination/dechlorination system indicating frequency and dosage amounts may be found in Attachment A.

2. Form 2CS for OSN 006 is also enclosed including the information requested for 2CS IV A,B, & C. Attachment B is the line diagram requested for 2CS, Part IV A. (Form 1 and attachments were previously submitted in the original application dated November 3, 1995.) Form 2CS was previously submitted on November 3, 1995 for OSN 005. It is our understanding that OSN 005 characterization will be addressed in the permit.

As allowed by General Instruction C of Form 2CS and with your approval, the City performed sampling and analysis on OSN 002 and applied the analytical results to OSN 001(except for physical data and analysis previously submitted on Form 2ES). OSN 002 was sampled instead of OSN 001, as required in Item 2 of the request for additional information, due to discharge availability for sampling and analysis. Both outfalls are once through cooling water and are substantially similar discharges.

Printed on Recycled Paper with Soy Ink

If you have any questions concerning these documents please do not hesitate to contact me at 891-8850.

Sincerely,

Jennette Curtis

Jennette Curtis
Environmental Services Administrator

JDC/PB/js

Enclosures

xc: Martin P. Black, AICP, Business and Utility Support Services Manager
Rob McGarrah, Production Superintendent
Gordon King, Purdom Plant Supervisor
John Gentry, Environmental Engineer
Bill Evans, Northwest District Department of Environmental Protection

FORM
2CS

WASTEWATER APPLICATION FOR PERMIT TO DISCHARGE PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO SURFACE WATERS

Facility I.D. Number: FL0025526

Please print or type information in the appropriate areas.

OUTFALL LOCATION For each outfall, list the X,Y coordinates and the name of the receiving water. (latitude/longitude to the nearest 15 seconds)

A. Outfall No. (list)	B. Latitude			C. Longitude			D. Name of Receiving Water
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
001	30	09	44	84	11	54	ST. MARKS RIVER

II OUTFALL DESIGN

A. Outfall No.	B. Design Configuration and Construction Materials	C. Distance from shore	D. Diameter	E. Elevation of Discharge Invert (MSL)	F. Receiving Water Depth at POD (MSL)
001	CONCRETE	5FT	4FT	0	0

Facility I.D. Number: FL0025526

RECEIVING WATER INFORMATION

For each surface water that will receive effluent, supply the following information:

A. Name of Receiving Water	B. Check One		C. Classification (See Ch. 62-302, F.A.C.)	D. Type of Receiving Water (canal, river, lake, etc.)
	Fresh	Salt or Brackish		
ST. MARKS RIVER		X	CLASS III	RIVER

E. Minimum 7-day 10-year low flow of the receiving water at each outfall (if appropriate). (NOT APPROPRIATE - TIDAL INFLUENCE).

F. Identify and describe the flow of effluent from each outfall to a major body of water. A suitably marked map or aerial photograph may be used. (SEE FORM I).

G. Do you request a mixing zone under Rule 62-4.244, F.A.C.? If yes, for what parameters or pollutants? NO.

FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of:

1. All operations contributing wastewater to the effluent; including process wastewater, sanitary wastewater, cooling water, and stormwater runoff;

2. The average flow contributed by each operation; and

3. The treatment received by the wastewater.

Use the space on the next page. Continue on additional sheets, if necessary.

Outfall # (List)	(2) Operation(s) Contributing Flow		(3) Treatment		
	(a) Operation (list)	(b) Avg. Flow & Units	(a) Description	(b) List Code from Table 2CS-1	
001	ONCE THRU COOLING WATER FROM UNITS 1-5	36.0 MGD	MIXING	1-0	
	AUXILLARY COOLING - UNITS 5	0.02MGD	MIXING	1-0	

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

Facility ID No.: FL0025526 Outfall No. 001

LEASE PRINT OR TYPE ONLY: You may report some or all of this information on separate sheets (use the same format) instead of ompleting these pages. SEE INSTRUCTIONS.

II INTAKE AND EFFLUENT CHARACTERISTICS

ART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. Pollutant	2. Effluent							3. Units		4. Intake (optional)		
	a. Max. Daily Value		b. Max. 30-day Value		c. Annual Avg. Value		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avg. Value		b. No. of Analyses
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
. Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	<2.0	<0.30	<2.0	<0.23	<2.0	<0.16	1	mg/l	TONS			
). Chemical Oxygen Demand COD)	22	9.30	22	2.56	22	1.17	1	mg/l	TONS			
. Total Organic Carbon (TOC)	3.2	0.48	3.2	0.37	3.2	0.17	1	mg/l	TONS			
). Total Suspended Solids (TSS)	5.0	0.75	5.0	0.58	5.0	0.26	1	mg/l	TONS			
. Total Nitrogen (as N)	0.251	0.04	0.251	0.03	0.251	0.01	1	mg/l	TONS			
. Total Phosphorus (as P)	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	1	mg/l	TONS			
e. Ammonia (as N)	0.016	0.002	0.016	0.002	0.016	0.0008	1	mg/l	TONS			
f. Flow - actual or projected	Value 36.0		Value 27.9		Value 12.7		365	MGD	MGD	Value		
g. Flow - design	Value 36.0		Value 36.0		Value 36.0		365	MGD	MGD	Value		
h. Specific Conductivity	Value 267		Value 267		Value 267		1	UMHOS		Value		
i. Temperature (winter)	Value 27.6		Value 24.3		Value 23.9		180	°C		Value		
j. Temperature (summer)	Value 33.1		Value 28.1		Value 26.6		180	°C		Value		
k. pH	Min. 6.0	Max. 8.5	Min. 6.0	Max. 8.5			-	STANDARD UNITS				

PART B - Mark "X" in column 2a for each pollutant you know or have reason to believe is present. Mark "X" in column 2b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additonal details and requirements.

1. Pollutant and CAS No. (if available)	2. Mark "X"		3. Effluent						d. No. of Analyses	4. Units		5. Intake (optional)		
	a. believed present	b. believed absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avg. Value (if available)			a. Concentration	b. Mass	a. Long Term Avg. Value		b. No. of Analyses
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
a. Bromide (24959-67-9)	X		0.003	0.0005	0.003	0.0003	0.003	0.0002	1	mg/l	TONS			
b. Chlorine, Total Residual		X	BDL						1	mg/l	TONS			
c. Color	X		35		35		35		1	COLOR	UNITS			
d. Fecal Coliform		X	39		39		39		1	org/100 mL	-			
e. Fluoride (16984-48-8)	X		0.248	0.037	0.248	0.029	0.248	0.013	1	mg/l	TONS			
Xf. Nitrate-Nitrite (as N)	X		0.138	0.035	0.138	0.017	0.138	0.007	1	mg/l	TONS			

X

1. Pollutant and CAS No. (if available)	2. Mark "X"		3. Effluent							4. Units		5. Intake (optional)		
	a. believed present	b. believed absent	a. Maximum Daily Value		b. Max. 30-day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value		b. No. of Analyses
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
g. Nitrogen Total Organic (as N)	X		0.232	0.035	0.232	0.027	0.232	0.012	1	mg.l	TONS			
h. Oil and Grease		X	BDL						1	mg/l	TONS			
i. Phosphorus, Total (as P) (7723-14-0)	X	X	BDL						1	mg/l	TONS			
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X												
(3) Radium, Total		X												
(4) Radium 226, Total		X												
k. Sulfate (as SO_4) (14808-79-8)	X		110	16.52	110	12.81	110	5.83	1	mg/l	TONS			
l. Sulfide (as S)		X	BDL						1	mg/l	TONS			
m. Sulfite (as SO_3) 14265-45-3)		X												
n. Surfactants		X	BDL						1	mg/l	TONS			
o. Aluminum, Total (7429-90-5)	X		0.11	0.02	0.11	0.01	0.11	0.006	1	mg/l	TONS			
p. Barium, Total (7440-39-3)		X	BDL						1	mg/l	TONS			
q. Boron, Total (7440-42-8)	X		0.21	0.03	0.21	0.02	0.21	0.01	1	mg/l	TONS			
r. Cobalt, Total (7440-48-4)		X	BDL						1	mg/l	TONS			
s. Iron, Total (7439-89-6)	X		0.087	0.013	0.087	0.010	0.087	0.0005	1	mg/l	TONS			
t. Magnesium, Total (7439-95-4)	X		0.063	0.009	0.063	0.007	0.063	0.003	1	mg/l	TONS			
u. Molybdenum, Total (9-98-7)	X		0.002	0.0003	0.002	0.0002	0.002	0.0001	1	mg/l	TONS			
v. Manganese, Total (7439-96-5)	X		0.010	0.002	0.010	0.001	0.010	0.0005	1	mg/l	TONS			
w. Tin, Total (7440-31-5)		X	BDL						1	mg/l	TONS			
x. Titanium, Total (7440-32-6)		X	BDL						1	mg/l	TONS			

ART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2a for all GC/MS fractions that pply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2a (secondary industries, non-process wastewater outfalls, and non-required GC/MS fractions), mark "X" in column 2b for ach pollutant you know or have reason to believe is present. Mark "X" in column 2c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If ou mark column 2b for any pollutant, you must provide the results of at least one anlysis for that pollutnat if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for :rolein, acrylonitrile, 2,4,dinitrophenol, or 2-methyl-4,6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 pb or greater. Otherwise, for pollutants for which you mark column2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please :view each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value		b. Max. 30-day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value		b. No. of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X		X	BDL						1	mg/l	TONS			
2M. Arsenic, Total (7723-14-0)	X		X	BDL						1	mg/l	TONS			
3M. Beryllium, Total (7440-41-7)	X		X	BDL						1	mg/l	TONS			
4M. Cadmium, Total (7440-43-9)	X		X	BDL						1	mg/l	TONS			
5M. Chromium, Total (7440-47-3)	X	X		0.001	0.0001	0.001	0.00001	0.001	0.00005	1	mg/l	TONS			
6M. Copper, Total (7440-50-8)	X	X		0.001	0.0001	0.001	0.00001	0.001	0.00005	1	mg/l	TONS			
7M. Lead, Total (7439-92-1)	X		X	BDL						1	mg/l	TONS			
8M. Mercury, Total (7439-97-6)	X		X	BDL						1	mg/l	TONS			
9M. Nichel, Total (7440-02-0)	X		X	BDL						1	mg/l	TONS			
10M. Selenium, Total (7782-49-2)	X	X		0.002	0.0003	0.002	0.0002	0.002	0.0001	1	mg/l	TONS			
11M. Silver, Total (7440-22-4)	X		X	BDL						1	mg/l	TONS			
12M. Thallium, Total (7440-28-0)	X		X	BDL						1	mg/l	TONS			
13M. Zinc, Total (7440-66-6)	X	X		0.004	0.003	0.024	0.003	0.024	0.001	1	mg/l	TONS			
14M. Cyanide, Total (57-12-5)	X		X	BDL						1	mg/l	TONS			
15M. Phenols, Total	X		X	BDL						1	mg/l	TONS			
DIOXIN															
2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1764-01-6)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value (1) Concentration	a. Maximum Daily Value (2) Mass	b. Max. 30-day Value (if available) (1) Concentration	b. Max. 30-day Value (if available) (2) Mass	c. Long Term Avrg. Value (if available) (1) Concentration	c. Long Term Avrg. Value (if available) (2) Mass	d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value (1) Concentration	a. Long Term Average Value (2) Mass	b. No. of Analyses
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene (71-43-2)	X		X	BDL						1	mg/l	TONS			
4V. Bis (Chloromethyl) Ether (542-88-1)	X		X	BDL						1	mg/l	TONS			
5V. Bromoform (75-25-2)	X		X	BDL						1	mg.l	TONS			
6V. Carbon Tetrachloride (56-23-5)	X		X	BDL						1	mg/l	TONS			
7V. Chlorobenzene (108-90-7)	X		X	BDL						1	mg/l	TONS			
8V. Chlorodi-bromomethane (124-48-1)	X		X	BDL						1	mg/l	TONS			
9V. Chloroethane (75-00-3)	X		X	BDL						1	mg/l	TONS			
10V. 2-Chloro-ethylvinyl Ether (110-75-8)	X		X	BDL						1	mg/l	TONS			
11V. Chloroform (67-66-3)	X		X	BDL						1	mg/l	TONS			
12V. Dichloro-bromomethane (75-27-4)	X		X	BDL						1	mg/l	TONS			
13V. Dichloro-difluoromethane (75-71-8)	X		X	BDL						1	mg/l	TONS			
14V. 1,1-Dichloroethane (75-34-3)	X		X	BDL						1	mg/l	TONS			
15V. 1,2-Dichloroethane (107-06-2)	X		X	BDL						1	mg/l	TONS			
16V. 1,1-Dichloroethylene (75-35-4)	X		X	BDL						1	mg/l	TONS			
17V. 1,2-Dichloropropane (78-87-5)	X		X	BDL						1	mg/l	TONS			
18V. 1,3-Dichloropropylene (542-75-6)	X		X	BDL						1	mg/l	TONS			
19V. Ethylbenzene (100-41-4)	X		X	BDL						1	mg/l	TONS			
20V. Methyl Bromide (74-83-9)	X		X	BDL						1	mg/l	TONS			
21V. Methyl Chloride (74-87-3)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value		b. Max. 30-day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value		b. No. of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-98-2)	X		X	BDL						1	mg/l	TONS			
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X		X	BDL						1	mg/l	TONS			
24V. Tetrachloroethylene (127-18-4)	X		X	BDL						1	mg/l	TONS			
25V. Toluene (108-88-3)	X		X	BDL						1	mg/l	TONS			
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X		X	BDL						1	mg/l	TONS			
27V. 1,1,1-Trichloroethane (71-55-6)	X		X	BDL						1	mg/l	TONS			
28V. 1,1,2-Trichloroethane (79-00-5)	X		X	BDL						1	mg/l	TONS			
29V. Trichloroethylene (79-01-6)	X		X	BDL						1	mg/l	TONS			
30V. Trichloro-fluoromethane (75-69-4)	X		X	BDL						1	mg/l	TONS			
31V. Vinyl Chloride (75-01-4)	X		X	BDL						1	mg/l	TONS			
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X		X	BDL						1	mg/l	TONS			
2A. 2,4-Dichlorophenol (120-83-2)	X		X	BDL						1	mg/l	TONS			
3A. 2,4-Dimethylphenol (105-67-9)	X		X	BDL						1	mg/l	TONS			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X		X	BDL						1	mg/l	TONS			
5A. 2,4-Dinitrophenol (51-28-5)	X		X	BDL						1	mg/l	TONS			
6A. 2-Nitrophenol (88-75-5)	X		X	BDL						1	mg/l	TONS			
7A. 4-Nitrophenol (100-02-7)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Acid Compounds Contd.															
8A. P-Chloro-M-Cresol (59-50-7)	X		X	BDL						1	mg/l	TONS			
9A. Pentachlorophenol (87-86-5)	X		X	BDL						1	mg/l	TONS			
10A. Phenol (108-95-2)	X		X	BDL						1	mg/l	TONS			
11A. 2,4,5-Trichloro-phenol (88-06-2)	X		X	BDL						1	mg/l	TONS			
GC/MS Fraction - Base/Neutral Compounds															
1B. Acenaphthene (83-32-9)	X		X	BDL						1	mg/l	TONS			
2B. Acenaphtylene (208-96-8)	X		X	BDL						1	mg/l	TONS			
3B. Anthracene (120-12-7)	X		X	BDL						1	mg/l	TONS			
4B. Benzidine (92-87-5)	X		X	BDL						1	mg/l	TONS			
5B. Benzo *(a)* Anthracene (56-55-3)	X		X	BDL						1	mg/l	TONS			
6B. Benzo *(a)* Pyrene (50-32-8)	X		X	BDL						1	mg/l	TONS			
7B. 3,4-Benzo-fluoranthene (205-99-2)	X		X	BDL						1	mg/l	TONS			
8B. Benzo *(ghi)* Perylene (191-24-2)	X		X	BDL						1	mg/l	TONS			
9B. Benzo *(k)* Fluoranthene (207-08-9)	X		X	BDL						1	mg/l	TONS			
10B. Bis *(2-Chloroethoxy)* Methane (111-91-1)	X		X	BDL						1	mg/l	TONS			
11B. Bis *(2-Chloroethyl)* Ether (111-44-4)	X		X	BDL						1	mg/l	TONS			
12B. Bis *(2_Chloroisopropyl)* Ether (102-60-1)	X		X	BDL						1	mg/l	TONS			
13B. Bis *(2-Ethylhexyl)* Phthalate (117-81-7)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Base/Neutral Compounds Contd.															
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	X		X	BDL						1	mg/l	TONS			
15B Butyl Benzyl Phthalate (85-68-7)	X		X	BDL						1	mg/l	TONS			
16B. 2-Chloronaphthalene (91-58-7)	X		X	BDL						1	mg/l	TONS			
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	X		X	BDL						1	mg/l	TONS			
18B. Chrysene (218-01-9)	X		X	BDL						1	mg/l	TONS			
19B. Dibenzo *(a,h)* Anthracene (53-70-3)	X		X	BDL						1	mg/l	TONS			
20B. 1,2-Dichlorobenzene (95-50-1)	X		X	BDL						1	mg/l	TONS			
21B. 1,3-Dichlorobenzene (541-73-1)	X		X	BDL						1	mg/l	TONS			
22B. 1,4-Dichlorobenzene (106-46-7)	X		X	BDL						1	mg/l	TONS			
23B. 3,3'-Dichlorobenzidine (92-94-1)	X		X	BDL						1	mg/l	TONS			
24B. Diethyl Phthalate (84-66-2)	X		X	BDL						1	mg/l	TONS			
25B. Dimethyl Phthalate (131-11-3)	X		X	BDL						1	mg/l	TONS			
26B. Di-N-Butyl Phthalate (84-74-2)	X		X	BDL						1	mg/l	TONS			
27B. 2,4-Dinitrotoluene (121-14-2)	X		X	BDL						1	mg/l	TONS			
28B. 2,6-Dinitrotoluene (606-20-2)	X		X	BDL						1	mg/l	TONS			
29B. Di-N-Octyl Phthalate (117-84-0)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Acid Compounds Contd.															
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	X		X	BDL						1	mg/l	TONS			
31B. Fluoranthene (206-44-0)	X		X	BDL						1	mg/l	TONS			
32B. Fluorene (86-73-7)	X		X	BDL						1	mg/l	TONS			
33B. Hexachlorobenzene (118-74-1)	X		X	BDL						1	mg/l	TONS			
34B. Hexachlorobutadiene (87-68-3)	X		X	BDL						1	mg/l	TONS			
35B. Hexachlorocyclopentadiene (77-47-4)	X		X	BDL						1	mg/l	TONS			
36B. Hexachloroethane (67-72-1)	X		X	BDL						1	mg/l	TONS			
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	X		X	BDL						1	mg/l	TONS			
38B. Isophorone (78-59-1)	X		X	BDL						1	mg/l	TONS			
39B. Naphthalene (91-20-3)	X		X	BDL						1	mg/l	TONS			
40B. Nitrobenzene (98-95-9)	X		X	BDL						1	mg/l	TONS			
41B. N-Nitrosodimethylamine (62-75-9)	X		X	BDL						1	mg/l	TONS			
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X		X	BDL						1	mg/l	TONS			
43B. N-Nitrosodiphenylamine (86-30-6)	X		X	BDL						1	mg/l	TONS			
44B. Phenanthrene (85-01-8)	X		X	BDL						1	mg/l	TONS			
45B. Pyrene (129-00-0)	X		X	BDL						1	mg/l	TONS			
46B. 1,2,4-Trichlorobenzene (120-82-1)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Pesticides															
1P. Aldrin (309-00-2)			X												
2P. -BHC (319-84-6)			X												
3P. -BHC (319-85-7)			X												
4P. -BHC (58-89-9)			X												
5P. -BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. -Endosulfan (115-29-7)			X												
12P. -Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-92-4)			X												
16P. Heptachlor (76-44-8)			X												
17P. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)	X		X	BDL						1	mg/l	TONS			
19P. PCB-1254 (11097-69-1)	X		X	BDL						1	mg/l	TONS			
20P. PCB-1221 (11104-28-2)	X		X	BDL						1	mg/l	TONS			
21P. PCB-1232 (11141-16-5)	X		X	BDL						1	mg/l	TONS			
22P. PCB-1248 (12672-29-6)	X		X	BDL						1	mg/l	TONS			
23P. PCB-1260 (11096-82-5)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Pesticides															
24P. PCB-1016 (12674-11-2)	X		X	BDL						1	mg/l	TONS			
25P. Toxaphene (8001-35-2)	X		X	BDL						1	mg/l	TONS			

FORM
2CS

WASTEWATER APPLICATION FOR PERMIT TO DISCHARGE PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO SURFACE WATERS

Facility I.D. Number: FL0025526

Please print or type information in the appropriate areas.

I OUTFALL LOCATION For each outfall, list the X,Y coordinates and the name of the receiving water. (latitude/longitude to the nearest 15 seconds)

A. Outfall No. (list)	B. Latitude			C. Longitude			D. Name of Receiving Water
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
002	30	09	43	84	12	00	ST. MARKS RIVER

II OUTFALL DESIGN

A. Outfall No.	B. Design Configuration and Construction Materials	C. Distance from shore	D. Diameter	E. Elevation of Discharge Invert (MSL)	F. Receiving Water Depth at POD (MSL)
002	CONCRETE	5FT	8FT	0	0

Facility I.D. Number: FL0025526

I RECEIVING WATER INFORMATION

For each surface water that will receive effluent, supply the following information:

A. Name of Receiving Water	B. Check One		C. Classification (See Ch. 62-302, F.A.C.)	D. Type of Receiving Water (canal, river, lake, etc.)
	Fresh	Salt or Brackish		
ST. MARKS RIVER		X	CLASS III	RIVER

E. Minimum 7-day 10-year low flow of the receiving water at each outfall (if appropriate). (NOT APPROPRIATE - TIDAL INFLUENCE).

F. Identify and describe the flow of effluent from each outfall to a major body of water. A suitably marked map or aerial photograph may be used. (SEE FORM I).

G. Do you request a mixing zone under Rule 62-4.244, F.A.C.? If yes, for what parameters or pollutants? NO.

WS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of:

1. All operations contributing wastewater to the effluent; including process wastewater, sanitary wastewater, cooling water, and stormwater runoff;

2. The average flow contributed by each operation; and

3. The treatment received by the wastewater.

Use the space on the next page. Continue on additional sheets, if necessary.

(1) Outfall # (List)	(2) Operation(s) Contributing Flow		(3) Treatment		
	(a) Operation (list)	(b) Avg. Flow & Units	(a) Description	(b) List Code from Table 2CS-1	
002	ONCE THRU COOLING WATER FROM UNITS 6 AND 7	53.3 MGD	MIXING	1-0	
	DEMINERALIZER	0.0035 MGD	MIXING	1-0	
	GAS TURBINE 1 and 2 DISCHARGE	2.94 MGD	MIXING	1-0	
	AUXILLARY COOLING - UNITS 6 AND 7	0.048MGD	MIXING	1-0	

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

__ Yes (complete the following table) X No (go to D. below)

(1) Outfall # (List)	(2) Operation(s) Contributing Flow (List)	(3) Frequency		(4) Flow				
		(a) Days per Week (specify avg.)	(b) Months per Yr. (specify avg.)	(a) Flow Rate (in mgd)		(b) Total Volume (specify with units)		(c) Duration (in days)
				Long Term Avg.	Max. Daily	Long Term Avg.	Max. Daily	
	NA							

D. Describe practices to be followed to ensure adequate wastewater treatment during emergencies such as power loss and equipment failures causing shutdown of pollution abatement equipment of the proposed/permitted facilities. (Sufficient amounts of dechlorinating agents are utilized to assure no chlorine is discharged.)

st the method(s) and location(s) of flow measurement. BAILEY - DCS CONTINUOUS MONITOR IN DISCHARGE CANAL.

V PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

X Yes (complete Item V-B) __ No (go to Section VI)

B. Are the limitations in the applicable guideline expressed in terms of production (or other measure of operation)?

__ Yes (complete Item V-C) X No (go to Section VI)

C. If you answered "yes" to Item V-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. Affected Outfalls (list outfall nos.)
a. Quantity per Day	b. Units of Measure	c. Operation, Product, Materials, Etc. (specify)	
		NA	

OVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement order, enforcement compliance schedule letter, stipulations, court orders, and grant or loan conditions.

__ Yes (complete the following table) X No (go to Item VI-B)

1. Identification of Condition, Agreement, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	a. No.	b. Source of Discharge		a. Required	B. Projected
NA					

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

X Mark "X" if description of additional control programs is attached.

VII INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding--Complete one set of tables for each outfall -- Annotate the outfall number in the space provided. NOTE: Tables VII-A, VII-B, and VII-C are included on separate sheets number VII-1 through VII-9.

D. Use the space below to list any of the pollutants listed in Table 2CS-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. Pollutant	2. Source	1. Pollutant	2. Source
NONE			

Facility I.D. Number: FL0025526

TENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item VII-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or by-product?

__ YES (list all such pollutants below) X NO (go to IX)

NA

IX BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

X YES (identify the test(s) and describe their purposes below) __ NO (go to Section X)

Scheduled five year test conducted by Florida Department of Environmental Protection

X CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

X YES (list the name, address, telephone number, and certification number of, and pollutants analyzed by each such laboratory or firm below)

__ NO (go to Section XI)

A. Name	B. Address	C. Telephone (area code & no.)	D. Pollutants Analyzed (list)
CITY WATER QUALITY LAB	3805A SPRINGHILL RD	891-1200	ALL IN ITEM VII EXCEPT BELOW
SAVANNAH LABS	2846 INDUSTRIAL PLAZA DR.	878-3994	BOD, FECAL COLIFORM

Facility I.D. Number: FL0025526

NNECTION TO REGIONAL POTW

A. Indicate the relationship between this project and area regional planning for wastewater treatment. List steps to be taken for this industrial wastewater facility to become part of an area-wide wastewater treatment system.

NONE

XII-A CERTIFICATIONS FOR NEW OR MODIFIED FACILITIES

This is to certify the engineering features of this pollution control project have been designed by me and found to be in conformity with sound 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 of the Department. It is also agreed that the undersigned, if authorized by the owner, will furnish the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

_____
Signature

_____
Company Name

_____
Name (please type)

Address: _____

_____

_____

(Affix Seal)

Florida Registration No. _____

Telephone No. _____ Date:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____
Name & Official Title (type or print)

_____
Signature

_____
Telephone No. (area code & no.)

_____
Date Signed

DEP Form 62-620.910(5)
Effective November 29, 1994

XII-B CERTIFICATIONS FOR PERMIT RENEWALS

[redacted] is to certify the engineering features of this pollution control project have been examined by me and found to be in conformity with sound 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 of the Department.

Signature

BEN COWART
Name (please type)

(Affix Seal)

CITY OF TALLAHASSEE
Company Name

Address: JACKSON BLUFF ROAD

TALLAHASSEE, FLORIDA

Florida Registration No. 43905

Telephone No. 891-8729 Date:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

[redacted]

J. SAM BELL, JR.
ASSISTANT CITY MANAGER, UTILITY SERVICES
Name & Official Title (type or print)

Signature

Date Signed

(904) 891-8580
Telephone No. (area code & no.)

[redacted]

PLEASE PRINT OR TYPE ONLY: You may report some or al of this information on separate sheets (use the same format) instead of ompleting these pages. SEE INSTRUCTIONS.

VII INTAKE AND EFFLUENT CHARACTERISTICS

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. Pollutant	2. Effluent							3. Units		4. Intake (optional)		
	a. Max. Daily Value		b. Max. 30-day Value		c. Annual Avg. Value		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avg. Value		b. No. of Analyses
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
a. Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	<2.0	<0.73	<2.0	<0.73	<2.0	<0.45	1	mg/l	TONS			
b. Chemical Oxygen Demand (COD)	26	9.52	26	9.52	26	5.78	1	mg/l	TONS			
c. Total Organic Carbon (TOC)	6.4	2.34	6.4	2.34	6.4	1.42	1	mg/l	TONS			
d. Total Suspended Solids (TSS)	6.0	2.20	6.0	2.20	6.0	1.33	1	mg/l	TONS			
e. Total Nitrogen (as N)	0.251	0.09	0.251	0.09	0.251	0.06	1	mg/l	TONS			
f. Total Phosphorus (as P)	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	1	mg/l	TONS			
e. Ammonia (as N)	0.019	0.007	0.019	0.007	0.019	0.007	1	mg/l	TONS			
f. Flow - actual or projected	Value 87.8		Value 87.8		Value 53.3		365	MGD	MGD	Value		
g. Flow - design	Value 97.9		Value 97.9		Value 97.9		365	MGD	MGD	Value		
h. Specific Conductivity	Value 258		Value 258		Value 258		1	UMHOS	-	Value		
i. Temperature (winter)	Value 28.9		Value 25.2		Value 22.2		180	°C		Value		
j. Temperature (summer)	Value 34.1		Value 32.0		Value 26.7		180	°C		Value		
k. pH	Min. 6.0	Max. 8.5	Min. 6.0	Max. 8.5			365	STANDARD UNITS				

PART B - Mark "X" in column 2a for each pollutant you know or have reason to believe is present. Mark "X" in column 2b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectl but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in you discharge. Complete one table for each outfall. See the instructions for additonal details and requirements.

1. Pollutant and CAS No. (if available)	2. Mark "X"		3. Effluent						d. No. of Analyses	4. Units		5. Intake (optional)		
	a. believed present	b. believed absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)			a. Concentration	b. Mass	a. Long Term Avg. Value		b. No. of Analyses
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
a. Bromide (24959-67-9)	X		0.003	0.001	0.003	0.001	0.003	0.0007	1	mg/l	TONS			
b. Chlorine, Total Residual		X	BDL						1	mg/l	TONS			
c. Color	X		35		35		35		1	COLOR	UNITS			
d. Fecal Coliform		X	64		64		64		1	org/100mL				
e. Fluoride (16984-48-8)	X		0.248	0.09	0.248	0.09	0.248	0.06	1	mg/l	TONS			
Xf. Nitrate-Nitrite (as N)	X		0.138	0.05	0.138	0.05	0.138	0.03	1	mg/l	TONS			

X

1. Pollutant and CAS No. (if available)	2. Mark "X"		3. Effluent						d. No. of Analyses	4. Units		5. Intake (optional)		
	a. believed present	b. believed absent	a. Maximum Daily Value		b. Max. 30-day Value (if available)		c. Long Term Avrg. Value (if available)			a. Concentration	b. Mass	a. Long Term Average Value		b. No. of Analyses
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
g. Nitrogen, Total Organic (as N)	X		0.232	0.08	0.232	0.08	0.232	0.05	1	mg.l	TONS			
h. Oil and Grease		X	BDL						1	mg/l	TONS			
i. Phosphorus, Total (as P) (7723-14-0)		X	BDL						1	mg/l	TONS			
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X												
(3) Radium, Total		X												
(4) Radium 226, Total		X												
k. Sulfate (as SO_4) (14808-79-8)	X		110	40.30	110	40.30	110	24.46	1	mg/l	TONS			
l. Sulfide (as S)		X	BDL						1	mg/l	TONS			
m. Sulfite (as SO_3) 14265-45-3)		X												
n. Surfactants		X	BDL						1	mg/l	TONS			
o. Aluminum, Total (7429-90-5)	X		0.11	0.04	0.11	0.04	0.11	0.02	1	mg/l	TONS			
p. Barium, Total (7440-39-3)		X	BDL						1	mg/l	TONS			
q. Boron, Total (7440-42-8)	X		0.21	0.08	0.21	0.08	0.21	0.05	1	mg/l	TONS			
r. Cobalt, Total (7440-48-4)		X	BDL						1	mg/l	TONS			
s. Iron, Total (7439-89-6)	X		0.087	0.03	0.087	0.03	0.087	0.02	1	mg/l	TONS			
t. Magnesium, Total (7439-95-4)	X		0.063	0.023	0.063	0.023	0.063	0.013	1	mg/l	TONS			
u. Molybdenum, Total (7439-98-7)	X		0.002	0.0007	0.002	0.0007	0.002	0.0004	1	mg/l	TONS			
v. Manganese, Total (7439-96-5)	X		0.010	0.004	0.010	0.004	0.010	0.002	1	mg/l	TONS			
w. Tin, Total (7440-31-5)		X	BDL						1	mg/l	TONS			
x. Titanium, Total (7440-32-6)		X	BDL						1	mg/l	TONS			

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2a for all GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2a (secondary industries, non-process wastewater outfalls, and non-required GC/MS fractions), mark "X" in column 2b for each pollutant you know or have reason to believe is present. Mark "X" in column 2c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutnat if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4,dinitrophenol, or 2-methyl-4,6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value		b. Max. 30-day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value		b. No. of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X		X	BDL						1	mg/l	TONS			
2M. Arsenic, Total (7723-14-0)	X		X	BDL						1	mg/l	TONS			
3M. Beryllium, Total (7440-41-7)	X		X	BDL						1	mg/l	TONS			
4M. Cadmium, Total (7440-43-9)	X		X	BDL						1	mg/l	TONS			
5M. Chromium, Total (7440-47-3)	X	X		0.001	0.0004	0.001	0.0004	0.001	0.0002	1	mg/l	TONS			
6M. Copper, Total (7440-50-8)	X	X		0.001	0.0004	0.001	0.0004	0.001	0.0002	1	mg/l	TONS			
7M. Lead, Total (7439-92-1)	X		X	BDL						1	mg/l	TONS			
8M. Mercury, Total (7439-97-6)	X		X	BDL						1	mg/l	TONS			
9M. Nichel, Total (7440-02-0)	X		X	BDL						1	mg/l	TONS			
10M. Selenium, Total (7782-49-2)	X	X		0.002	0.0007	0.002	0.0007	0.002	0.0005	1	mg/l	TONS			
11M. Silver, Total (7440-22-4)	X		X	BDL						1	mg/l	TONS			
12M. Thallium, Total (7440-28-0)	X		X	BDL						1	mg/l	TONS			
13M. Zinc, Total (7440-66-6)	X			0.024	0.008	0.024	0.008	0.024	0.005	1	mg/l	TONS			
	X		X	BDL						1	mg/l	TONS			
15M. Phenols, Total	X		X	BDL						1	mg/l	TONS			
DIOXIN															
2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1764-01-6)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value		b. Max. 30-day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value		b. No. of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene (71-43-2)	X		X	BDL						1	mg/l	TONS			
4V. Bis (Chloromethyl) Ether (542-88-1)	X		X	BDL						1	mg/l	TONS			
5V. Bromoform (75-25-2)	X		X	BDL						1	mg.l	TONS			
6V. Carbon Tetrachloride (56-23-5)	X		X	BDL						1	mg/l	TONS			
7V. Chlorobenzene (108-90-7)	X		X	BDL						1	mg/l	TONS			
8V. Chlorodi-bromomethane (124-48-1)	X		X	BDL						1	mg/l	TONS			
9V. Chloroethane (75-00-3)	X		X	BDL						1	mg/l	TONS			
10V. 2-Chloro-ethylvinyl Ether (110-75-8)	X		X	BDL						1	mg/l	TONS			
11V. Chloroform (67-66-3)	X		X	BDL						1	mg/l	TONS			
12V. Dichloro-bromomethane (75-27-4)	X		X	BDL						1	mg/l	TONS			
13V. Dichloro-difluoromethane (75-71-8)	X		X	BDL						1	mg/l	TONS			
14V. 1,1-Dichloroethane (75-34-3)	X		X	BDL						1	mg/l	TONS			
15V. 1,2-Dichloroethane (107-06-2)	X		X	BDL						1	mg/l	TONS			
16V. 1,1-Dichloroethylene (75-35-4)	X		X	BDL						1	mg/l	TONS			
17V. 1,2-Dichloropropane (78-87-5)	X		X	BDL						1	mg/l	TONS			
18V. 1,3-Dichloropropylene (542-75-6)	X		X	BDL						1	mg/l	TONS			
19V. Ethylbenzene (100-41-4)	X		X	BDL						1	mg/l	TONS			
20V. Methyl Bromide (74-83-9)	X		X	BDL						1	mg/l	TONS			
21V. Methyl Chloride (74-87-3)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent						d. No. of Analyses	4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value		b. Max. 30-day Value (if available)		c. Long Term Avrg. Value (if available)			a. Concentration	b. Mass	a. Long Term Average Value		b. No. of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-98-2)	X		X	BDL						1	mg/l	TONS			
23V. 1,1,2,2-Tetra-chloroethane (79-34-5)	X		X	BDL						1	mg/l	TONS			
24V. Tetrachloroethylene (127-18-4)	X		X	BDL						1	mg/l	TONS			
25V. Toluene (108-88-3)	X		X	BDL						1	mg/l	TONS			
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X		X	BDL						1	mg/l	TONS			
27V. 1,1,1-Trichloroethane (71-55-6)	X		X	BDL						1	mg/l	TONS			
28V. 1,1,2-Trichloroethane (79-00-5)	X		X	BDL						1	mg/l	TONS			
29V. Trichloroethylene (79-01-6)	X		X	BDL						1	mg/l	TONS			
30V. Trichloro-fluoromethane (75-69-4)	X		X	BDL						1	mg/l	TONS			
31V. Vinyl Chloride (75-01-4)	X		X	BDL						1	mg/l	TONS			
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X		X	BDL						1	mg/l	TONS			
2A. 2,4-Dichlorophenol (120-83-2)	X		X	BDL						1	mg/l	TONS			
3A. 2,4-Dimethylphenol (105-67-9)	X		X	BDL						1	mg/l	TONS			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X		X	BDL						1	mg/l	TONS			
5A. 2,4-Dinitrophenol (51-28-5)	X		X	BDL						1	mg/l	TONS			
6A. 2-Nitrophenol (88-75-5)	X		X	BDL						1	mg/l	TONS			
7A. 4-Nitrophenol (100-02-7)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Acid Compounds Contd.															
8A. P-Chloro-M-Cresol (59-50-7)	X		X	BDL						1	mg/l	TONS			
9A. Pentachlorophenol (87-86-5)	X		X	BDL						1	mg/l	TONS			
10A. Phenol (108-95-2)	X		X	BDL						1	mg/l	TONS			
11A. 2,4,5-Trichloro-phenol (88-06-2)	X		X	BDL						1	mg/l	TONS			
GC/MS Fraction - Base/Neutral Compounds															
1B. Acenaphthene (83-32-9)	X		X	BDL						1	mg/l	TONS			
2B. Acenaphtylene (208-96-8)	X		X	BDL						1	mg/l	TONS			
3B. Anthracene (120-12-7)	X		X	BDL						1	mg/l	TONS			
4B. Benzidine (92-87-5)	X		X	BDL						1	mg/l	TONS			
5B. Benzo *(a)* Anthracene (56-55-3)	X		X	BDL						1	mg/l	TONS			
6B. Benzo *(a)* Pyrene (50-32-8)	X		X	BDL						1	mg/l	TONS			
7B. 3,4-Benzo-fluoranthene (205-99-2)	X		X	BDL						1	mg/l	TONS			
8B. Benzo *(ghi)* Perylene (191-24-2)	X		X	BDL						1	mg/l	TONS			
9B. Benzo *(k)* Fluoranthene (207-08-9)	X		X	BDL						1	mg/l	TONS			
10B. Bis *(2-Chloroethoxy)* Methane (111-91-1)	X		X	BDL						1	mg/l	TONS			
11B. Bis *(2-Chloroethyl)* Ether (111-44-4)	X		X	BDL						1	mg/l	TONS			
12B. Bis *(2_Chloroisopropyl)* Ether (102-60-1)	X		X	BDL						1	mg/l	TONS			
13B. Bis *(2-Ethylhexyl)* Phthalate (117-81-7)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Base/Neutral Compounds Contd.															
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	X		X	BDL						1	mg/l	TONS			
15B Butyl Benzyl Phthalate (85-68-7)	X		X	BDL						1	mg/l	TONS			
16B. 2-Chloronaphthalene (91-58-7)	X		X	BDL						1	mg/l	TONS			
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	X		X	BDL						1	mg/l	TONS			
18B. Chrysene (218-01-9)	X		X	BDL						1	mg/l	TONS			
19B. Dibenzo *(a,h)* Anthracene (53-70-3)	X		X	BDL						1	mg/l	TONS			
20B. 1,2-Dichlorobenzene (95-50-1)	X		X	BDL						1	mg/l	TONS			
21B. 1,3-Dichlorobenzene (541-73-1)	X		X	BDL						1	mg/l	TONS			
22B. 1,4-Dichlorobenzene (106-46-7)	X		X	BDL						1	mg/l	TONS			
23B. 3,3'-Dichlorobenzidine (92-94-1)	X		X	BDL						1	mg/l	TONS			
24B. Diethyl Phthalate (84-66-2)	X		X	BDL						1	mg/l	TONS			
25B. Dimethyl Phthalate (131-11-3)	X		X	BDL						1	mg/l	TONS			
26B. Di-N-Butyl Phthalate (84-74-2)	X		X	BDL						1	mg/l	TONS			
27B. 2,4-Dinitrotoluene (121-14-2)	X		X	BDL						1	mg/l	TONS			
28B. 2,6-Dinitrotoluene (606-20-2)	X		X	BDL						1	mg/l	TONS			
29B. Di-N-Octyl Phthalate (117-84-0)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Acid Compounds Contd.															
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	X		X	BDL						1	mg/l	TONS			
31B. Fluoranthene (206-44-0)	X		X	BDL						1	mg/l	TONS			
32B. Fluorene (86-73-7)	X		X	BDL						1	mg/l	TONS			
33B. Hexachlorobenzene (118-74-1)	X		X	BDL						1	mg/l	TONS			
34B. Hexachlorobutadiene (87-68-3)	X		X	BDL						1	mg/l	TONS			
35B. Hexachlorocyclopentadiene (77-47-4)	X		X	BDL						1	mg/l	TONS			
36B. Hexachloroethane (67-72-1)	X		X	BDL						1	mg/l	TONS			
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	X		X	BDL						1	mg/l	TONS			
38B. Isophorone (78-59-1)	X		X	BDL						1	mg/l	TONS			
39B. Naphthalene (91-20-3)	X		X	BDL						1	mg/l	TONS			
40B. Nitrobenzene (98-95-9)	X		X	BDL						1	mg/l	TONS			
41B. N-Nitrosodimethylamine (62-75-9)	X		X	BDL						1	mg/l	TONS			
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X		X	BDL						1	mg/l	TONS			
43B. N-Nitro-sodiphenylamine (86-30-6)	X		X	BDL						1	mg/l	TONS			
44B. Phenanthrene (85-01-8)	X		X	BDL						1	mg/l	TONS			
45B. Pyrene (129-00-0)	X		X	BDL						1	mg/l	TPNS			
46B. 1,2,4-Trichlorobenzene (120-82-1)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Pesticides															
1P. Aldrin (309-00-2)			X												
2P. -BHC (319-84-6)			X												
3P. -BHC (319-85-7)			X												
4P. -BHC (58-89-9)			X												
5P. -BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. -Endosulfan (115-29-7)			X												
12P. -Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-92-4)			X												
16P. Heptachlor (76-44-8)			X												
17P. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)	X		X	BDL						1	mg/l	TONS			
19P. PCB-1254 (11097-69-1)	X		X	BDL						1	mg/l	-TONS			
20P. PCB-1221 (11104-28-2)	X		X	BDL						1	mg/l	TONS			
21P. PCB-1232 (11141-16-5)	X		X	BDL						1	mg/l	TONS			
22P. PCB-1248 (12672-29-6)	X		X	BDL						1	mg/l	TONS			
23P. PCB-1260 (11096-82-5)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Pesticides															
24P. PCB-1016 (12674-11-2)	X		X	BDL						1	mg/l	TONS			
25P. Toxaphene (8001-35-2)	X		X	BDL						1	mg/l	TONS			

FORM
2CS

WASTEWATER APPLICATION FOR PERMIT TO DISCHARGE PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO SURFACE WATERS

Facility I.D. Number: FL0025526

Please print or type information in the appropriate areas.

I OUTFALL LOCATION For each outfall, list the X,Y coordinates and the name of the receiving water.
(latitude/longitude to the nearest 15 seconds)

A. Outfall No. (list)	B. Latitude			C. Longitude			D. Name of Receiving Water
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
006	30	09	48	84	11	54	ST. MARKS RIVER

II OUTFALL DESIGN

A. Outfall No.	B. Design Configuration and Construction Materials	C. Distance from shore	D. Diameter	E. Elevation of Discharge Invert (MSL)	F. Receiving Water Depth at POD (MSL)
006	PVC PIPE	15FT	8IN.	15 FT.	10 FT.

Facility I.D. Number: FL0025526

III RECEIVING WATER INFORMATION

For each surface water that will receive effluent, supply the following information:

A. Name of Receiving Water	B. Check One		C. Classification (See Ch. 62-302, F.A.C.)	D. Type of Receiving Water (canal, river, lake, etc.)
	Fresh	Salt or Brackish		
ST. MARKS RIVER		X	CLASS III	RIVER

E. Minimum 7-day 10-year low flow of the receiving water at each outfall (if appropriate). (NOT APPROPRIATE - TIDAL INFLUENCE).

F. Identify and describe the flow of effluent from each outfall to a major body of water. A suitably marked map or aerial photograph may be used. (SEE FORM I).

G. Do you request a mixing zone under Rule 62-4.244, F.A.C.? If yes, for what parameters or pollutants? NO.

IV FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures. (SEE FORM I)

B. For each outfall, provide a description of:

1. All operations contributing wastewater to the effluent; including process wastewater, sanitary wastewater, cooling water, and stormwater runoff;

2. The average flow contributed by each operation; and

3. The treatment received by the wastewater.

Use the space on the next page. Continue on additional sheets, if necessary.

(1) Outfall # (List)	(2) Operation(s) Contributing Flow		(3) Treatment		
	(a) Operation (list)	(b) Avg. Flow & Units	(a) Description	(b) List Code from Table 2CS-1	
006	Low volume waste pond	0.12 MGD	Treatment pond mixing, flocculation, sedimentation and	1-0	1-G
	Boiler Blowdown	0.0008 MGD	discharge	1-U	4-A
	Auxillary Cooling Water	0.0058 MGD			
	Demineralizer Waste	0.0035 MGD			
	Plant Sumps & Drains	0.1099 MGD			

Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

__ Yes (complete the following table) X No (go to D. below)

(1) Outfall # (List)	(2) Operation(s) Contributing Flow (List)	(3) Frequency		(4) Flow				
		(a) Days per Week (specify avg.)	(b) Months per Yr. (specify avg.)	(a) Flow Rate (in mgd)		(b) Total Volume (specify with units)		(c) Duration (in days)
				Long Term Avg.	Max. Daily	Long Term Avg.	Max. Daily	
	NA							

D. Describe practices to be followed to ensure adequate wastewater treatment during emergencies such as power loss and equipment failures causing shutdown of pollution abatement equipment of the proposed/permitted facilities. **(Sufficient amounts of dechlorinating agents are utilized to assure no chlorine is discharged.)**

E. List the method(s) and location(s) of flow measurement. **BAILEY DCS - CONDENSER OUTLET PIPE**

V. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

X Yes (complete Item V-B) __ No (go to Section VI)

B. Are the limitations in the applicable guideline expressed in terms of production (or other measure of operation)?

__ Yes (complete Item V-C) X No (go to Section VI)

C. If you answered "yes" to Item V-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. Affected Outfalls (list outfall nos.)
a. Quantity per Day	b. Units of Measure	c. Operation, Product, Materials, Etc. (specify)	
		NA	

PROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement order, enforcement compliance schedule letter, stipulations, court orders, and grant or loan conditions.

__ Yes (complete the following table) _X_ No (go to Item VI-B)

1. Identification of Condition, Agreement, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	a. No.	b. Source of Discharge		a. Required	B. Projected
NA					

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

_X_ Mark "X" if description of additional control programs is attached.

VII INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding--Complete one set of tables for each outfall -- Annotate the outfall number in the space provided. NOTE: Tables VII-A, VII-B, and VII-C are included on separate sheets number VII-1 through VII-9.

D. Use the space below to list any of the pollutants listed in Table 2CS-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. Pollutant	2. Source	1. Pollutant	2. Source
NONE			

POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item VII-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or by-product?

__ YES (list all such pollutants below) X NO (go to IX)

NA

IX BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

X YES (identify the test(s) and describe their purposes below) __ NO (go to Section X)

Scheduled five year test conducted by Florida Department of Environmental Protection

X CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

X YES (list the name, address, telephone number, and certification number of, and pollutants analyzed by each such laboratory or firm below)

__ NO (go to Section XI)

A. Name	B. Address	C. Telephone (area code & no.)	D. Pollutants Analyzed (list)
CITY WATER QUALITY LAB	3805A SPRINGHILL RD	891-1200	ALL IN ITEM VII EXCEPT BELOW
SAVANNAH LABS	2846 INDUSTRIAL PLAZA DR.	878-3994	BOD, FECAL COLIFORM

CONNECTION TO REGIONAL POTW

A. Indicate the relationship between this project and area regional planning for wastewater treatment. List steps to be taken for this industrial wastewater facility to become part of an area-wide wastewater treatment system.

NONE

XII-A CERTIFICATIONS FOR NEW OR MODIFIED FACILITIES

This is to certify the engineering features of this pollution control project have been designed by me and found to be in conformity with sound 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 of the Department. It is also agreed that the undersigned, if authorized by the owner, will furnish the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

_____
Signature

_____
Name (please type)

(Affix Seal)

_____
Company Name

Address: _____

_____

_____

Florida Registration No. _____

Telephone No. _____ Date:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____
Name & Official Title (type or print)

_____
Telephone No. (area code & no.)

_____
Signature

_____
Date Signed

XII-B CERTIFICATIONS FOR PERMIT RENEWALS

This is to certify the engineering features of this pollution control project have been examined by me and found to be in conformity with sound 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 of the Department.

Signature

BEN COWART
Name (please type)

(Affix Seal)

CITY OF TALLAHASSEE
Company Name

Address: JACKSON BLUFF ROAD

TALLAHASSEE, FLORIDA

Florida Registration No. 43905

Telephone No. 891-8729 Date:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

J. SAM BELL, JR.
ASSISTANT CITY MANAGER, UTILITY SERVICES
Name & Official Title (type or print)

Signature

Date Signed

(904) 891-8580
Telephone No. (area code & no.)

Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?
X Yes (complete the following table) _ No (go to D. below)

(1) Outfall # (List)	(2) Operation(s) Contributing Flow (List)	(3) Frequency		(4) Flow				
		(a) Days per Week (specify avg.)	(b) Months per Yr. (specify avg.)	(a) Flow Rate (in mgd)		(b) Total Volume (specify with units)		(c) Duration (in days)
				Long Term Avg.	Max. Daily	Long Term Avg.	Max. Daily	
006	Low Volume Waste Pond			0.20 MGD	0.56 MGD	0.20 MGD	0.56 MGD	

D. Describe practices to be followed to ensure adequate wastewater treatment during emergencies such as power loss and equipment failures causing shutdown of pollution abatement equipment of the proposed/permitted facilities. (SEE ATTACHMENT D)

E. List the method(s) and location(s) of flow measurement. (SEE ATTACHMENT D)

PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

X Yes (complete Item V-B) _ No (go to Section VI)

B. Are the limitations in the applicable guideline expressed in terms of production (or other measure of operation)?

_ Yes (complete Item V-C) X No (go to Section VI)

C. If you answered "yes" to Item V-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. Affected Outfalls (list outfall nos.)
a. Quantity per Day	b. Units of Measure	c. Operation, Product, Materials, Etc. (specify)	
		NONE	

IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement order, enforcement compliance schedule letter, stipulations, court orders, and grant or loan conditions.

__ Yes (complete the following table) X No (go to Item VI-B)

1. Identification of Condition, Agreement, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	a. No.	b. Source of Discharge		a. Required	B. Projected
NA					

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

__ Mark "X" if description of additional control programs is attached.

VII. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding--Complete one set of tables for each outfall -- Annotate the outfall number in the space provided. NOTE: Tables VII-A, VII-B, and VII-C are included on separate sheets number VII-1 through VII-9.

D. Use the space below to list any of the pollutants listed in Table 2CS-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. Pollutant	2. Source	1. Pollutant	2. Source
NONE			

POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item VII-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or by-product?

__ YES (list all such pollutants below) X NO (go to IX)

NA

IX BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

X YES (identify the test(s) and describe their purposes below) __ NO (go to Section X)

Scheduled five year test conducted by Florida Department of Environmental Protection

X CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

X YES (list the name, address, telephone number, and certification number of, and pollutants analyzed by each such laboratory or firm below)

__ NO (go to Section XI)

A. Name	B. Address	C. Telephone (area code & no.)	D. Pollutants Analyzed (list)
CITY WATER QUALITY LAB	3805A SPRINGHILL RD	891-1200	ALL IN ITEM VII EXCEPT BELOW
SAVANNAH LABS	2846 INDUSTRIAL PLAZA DR.	878-3994	BOD, COD, Nitrate/Nitrite, 0&G,Sulfate, TKN, TOC, TON, TRC, P and Total Phenolics

PLEASE PRINT OR TYPE ONLY: You may report some or all of this information on separate sheets (use the same format) instead of completing these pages. SEE INSTRUCTIONS.

VII INTAKE AND EFFLUENT CHARACTERISTICS

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. Pollutant	2. Effluent							3. Units		4. Intake (optional)		
	a. Max. Daily Value		b. Max. 30-day Value		c. Annual Avg. Value		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avg. Value		b. No. of Analyses
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
a. Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	<2.0	<0.005	<2.0	<0.005	<2.0	<0.002	1	mg/l	TON			
b. Chemical Oxygen Demand (COD)	22	0.05	22	0.05	22	0.02	1	mg/l	TON			
c. Total Organic Carbon (TOC)	2.7	0.006	2.7	0.006	2.7	0.002	1	mg/l	TON			
d. Total Suspended Solids (TSS)	11.8	0.02	11.8	0.02	4.7	0.004	11	mg/l	TON			
e. Total Nitrogen (as N)	0.37	0.0009	0.37	0.0009	0.37	0.0003	1	mg/l	TON			
f. Total Phosphorus (as P)	0.17	0.0004	0.17	0.0004	0.17	0.0001	1	mg/l	TON	t		
e. Ammonia (as N)	<0.007	<0.00002	<0.007	<0.0002	<0.007	<0.000006	1	mg/l	TON			
f. Flow - actual or projected	Value 0.56		Value 0.56		Value 0.20		11	MGD	MGD	Value		
g. Flow - design	Value 0.75		Value 0.75		Value 0.75		-	MGD	MGD	Value		
h. Specific Conductivity	Value -		Value -		Value -		-	-	-	Value		
i. Temperature (winter)	Value -		Value -		Value -		-	°C		Value		
j. Temperature (summer)	Value -		Value -		Value -		-	°C		Value		
k. pH	Min. 6.4	Max. 8.5	Min. 6.4	Max. 8.5			11	STANDARD UNITS				

PART B - Mark "X" in column 2a for each pollutant you know or have reason to believe is present. Mark "X" in column 2b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additonal details and requirements.

1. Pollutant and CAS No. (if available)	2. Mark "X"		3. Effluent							4. Units		5. Intake (optional)		
	a. believed present	b. believed absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avg. Value		b. No. of Analyses
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
a. Bromide (24959-67-9)	X		BDL						1	mg/l	TON			
b. Chlorine, Total Residual		X	BDL						1	mg.l	TON			
c. Color	X		10.0						1	COLOR	UNITS			
d. Fecal Coliform	X		26						1	org/100mL				
e. Fluoride (16984-48-8)	X	X	BDL						1	mg/l	TON			
f. Nitrate-Nitrite (as N)		X	BDL						1	mg/l	TON			

1. Pollutant and CAS No. (if available)	2. Mark "X"		3. Effluent							4. Units		5. Intake (optional)		
	a. believed present	b. believed absent	a. Maximum Daily Value		b. Max. 30-day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value		b. No. of Analyses
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
g. Nitrogen, Total Organic (as N)	X		0.36	0.0008	0.36	0.0003	0.36	0.0008	1	mg/l	TON			
h. Oil and Grease	X	X	BDL											
i. Phosphorus, Total (as P) (7723-14-0)	X		0.17	0.0004	0.17	0.0001	0.17	0.0001	1	mg/l	TON			
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X												
(3) Radium, Total		X												
(4) Radium 226, Total		X												
k. Sulfate (as SO_4) (14808-79-8)	X		3.03	0.68	3.03	0.68	3.03	0.0003	1	mg/l	TON			
l. Sulfide (as S)	X		0.0004	0.0000009	0.0004	0.0000009	0.0004	0.0000003	1	mg/l	TON			
m. Sulfite (as SO_3) 14265-45-3)		X												
n. Surfactants		X	BDL						1	mg/l	TON			
o. Aluminum, Total (7429-90-5)	X		0.058	0.0001	0.058	0.0001	0.058	0.00004	1	mg/l	TON			
p. Barium, Total (7440-39-3)	X		0.042	0.00010	0.042	0.00010	0.042	0.00004	1	mg/l	TON			
q. Boron, Total (7440-42-8)		X	BDL						1	mg/l	TON			
r. Cobalt, Total (7440-48-4)		X	BDL						1	mg/l	TON			
s. Iron, Total (7439-89-6)	X		0.58	0.001	0.058	0.001	0.58	0.0005	1	mg/l	TON			
t. Magnesium, Total (7439-95-4)	X		0.017	0.00004	0.017	0.00004	0.017	0.00001	1	mg/l	TON			
u. Molybdenum, Total (7439-98-7)	X		0.028	0.00007	0.028	0.00007	0.028	0.00002	1	mg/l	TON			
v. Manganese, Total (7439-96-5)	X		0.048	0.0001	0.048	0.0001	0.048	0.00004	1	mg/l	TON			
w. Tin, Total (7440-31-5)	X	X	0.00	0.00	0.00	0.00	0.00	0.00	1	mg/l	TON			
x. Titanium, Total (7440-32-6)		X	BDL						1	mg/l	TON			

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2a for all GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2a (secondary industries, non-process wastewater outfalls, and non-required GC/MS fractions), mark "X" in column 2b for each pollutant you know or have reason to believe is present. Mark "X" in column 2c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one anlysis for that pollutnat if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4,dinitrophenol, or 2-methyl-4,6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value		b. Max. 30-day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value		b. No. of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			0.0007	0.000002	0.0007	0.0000006	0.0007	0.0000006	1	mg.l	TONS			
2M. Arsenic, Total (7723-14-0)	X		X	BDL						1	mg/l	TONS			
3M. Beryllium, Total (7440-41-7)	X			0.0002	0.000005	0.0002	0.000005	0.0002	0.0000002	1	mg/l	TONS			
4M. Cadmium, Total (7440-43-9)	X			0.001	0.0000005	0.0002	0.0000002	0.0002	0.0000002	1	mg/l	TONS			
5M. Chromium, Total (7440-47-3)	X			0.001	0.000002	0.001	0.0000008	0.001	0.0000008	1	mg/l	TONS			
6M. Copper, Total (7440-50-8)	X			0.017	0.00004	0.017	0.00001	0.017	0.00001	1	MG/L	TONS			
7M. Lead, Total (7439-92-1)	X			0.0003	0.0000007	0.0003	0.0000003	0.0003	0.0000003	1	mg/l	TONS			
8M. Mercury, Total (7439-97-6)	X			0.0005	0.000001	0.0005	0.000001	0.0005	0.000001	1	mg/l	TONS			
9M. Nichel, Total (7440-02-0)	X			0.013	0.00003	0.013	0.00001	0.013	0.00001	1	mg/l	TONS			
10M. Selenium, Total (7782-49-2)	X		X	BDL						1	mg/l	TONS			
11M. Silver, Total (7440-22-4)	X		X	BDL						1	mg/l	TONS			
12M. Thallium, Total (7440-28-0)	X			0.0002	0.0000005	0.0002	0.0000002	0.0002	0.0000002	1	mg/l	TONS			
13M. Zinc, Total (7440-66-6)	X			0.020	0.00005	0.020	0.00002	0.020	0.00002	1	mg/l	TONS			
14M. Cyanide, Total (57-12-5)	X			0.025	0.00006	0.025	0.00002	0.025	0.00002	1	mg/l	TONS			
15M. Phenols, Total	X			0.010	0.00002	0.010	0.00002	0.010	0.00002	1	mg/l	TONS			
DIOXIN															
2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1764-01-6)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value (1) Concentration	a. Maximum Daily Value (2) Mass	b. Max. 30-day Value (if available) (1) Concentration	b. Max. 30-day Value (if available) (2) Mass	c. Long Term Avrg. Value (if available) (1) Concentration	c. Long Term Avrg. Value (if available) (2) Mass	d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value (1) Concentration	a. Long Term Average Value (2) Mass	b. No. of Analyses
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene (71-43-2)	X		X	BDL						1	mg/l	TONS			
4V. Bis (Chloromethyl) Ether (542-88-1)	X		X	BDL						1	mg/l	TONS			
5V. Bromoform (75-25-2)	X		X	BDL						1	mg/l	TONS			
6V. Carbon Tetrachloride (56-23-5)	X		X	BDL						1	mg/l	TONS			
7V. Chlorobenzene (108-90-7)	X		X	BDL						1	mg/l	TONS			
8V. Chlorodi-bromomethane (124-48-1)	X		X	BDL						1	mg/l	TONS			
9V. Chloroethane (75-00-3)	X		X	BDL						1	mg/l	TONS			
10V. 2-Chloro-ethylvinyl Ether (110-75-8)	X		X	BDL						1	mg/l	TONS			
11V. Chloroform (67-66-3)	X		X	BDL						1	mg/l	TONS			
12V. Dichloro-bromomethane (75-27-4)	X		X	BDL						1	mg/l	TONS			
13V. Dichloro-difluoromethane (75-71-8)	X		X	BDL						1	mg/l	TONS			
14V. 1,1-Dichloroethane (75-34-3)	X		X	BDL						1	mg/l	TONS			
15V. 1,2-Dichloroethane (107-06-2)	X		X	BDL						1	mg/l	TONS			
16V. 1,1-Dichloroethylene (75-35-4)	X		X	BDL						1	mg/l	TONS			
17V. 1,2-Dichloropropane (78-87-5)	X		X	BDL						1	mg/l	TONS			
18V. 1,3-Dichloropropylene (542-75-6)	X		X	BDL						1	mg/l	TONS			
19V. Ethylbenzene (100-41-4)	X		X	BDL						1	mg/l	TONS			
20V. Methyl Bromide (74-83-9)	X		X	BDL						1	mg/l	TONS			

21V. Methyl Chlorid (74-87-3)	X		X	BDL							1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. testing required	b. believed present	c. believed absent	a. Maximum Daily Value		b. Max. 30-day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Average Value		b. No. of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-98-2)	X		X	BDL						1	mg/l	TONS			
23V. 1,1,2,2-Tetra-chloroethane (79-34-5)	X		X	BDL						1	mg/l	TONS			
24V. Tetrachloroethylene (127-18-4)	X		X	BDL						1	mg/l	TONS			
25V. Toluene (108-88-3)	X		X	BDL						1	mg/l	TONS			
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X		X	BDL						1	mg/l	TONS			
27V. 1,1,1-Trichloroethane (71-55-6)	X		X	BDL						1	mg/l	TONS			
28V. 1,1,2-Trichloroethane (79-00-5)	X		X	BDL						1	mg/l	TONS			
29V. Trichloroethylene (79-01-6)	X		X	BDL						1	mg/l	TONS			
30V. Trichloro-fluoromethane (75-69-4)	X		X	BDL						1	mg/l	TONS			
31V. Vinyl Chloride (75-01-4)	X		X	BDL							mg/l	TONS			
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X		X	BDL						1	mg/l	TONS			
2A. 2,4-Dichlorophenol (120-83-2)	X		X	BDL						1	mg/l	TONS			
3A. 2,4-Dimethylphenol (105-67-9)	X		X	BDL						1	mg/l	TONS			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X		X	BDL						1	mg/l	TONS			
5A. 2,4-Dinitrophenol (51-28-5)	X		X	BDL						1	mg/l	TONS			
6A. 2-Nitrophenol (88-75-5)	X		X	BDL						1	mg/l	TONS			
7A. 4-Nitrophenol (100-02-7)	X		X	BDL						1	mg/l	TONS			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Acid Compounds Contd.															
8A. P-Chloro-M-Cresol (59-50-7)	X		X	BDL						1	mg/l	TON			
9A. Pentachlorophenol (87-86-5)	X		X	BDL						1	mg/l	TON			
10A. Phenol (108-95-2)	X		X	BDL						1	mg/l	TON			
11A. 2,4,5-Trichloro-phenol (88-06-2)	X		X	BDL						1	mg/l	TON			
GC/MS Fraction - Base/Neutral Compounds															
1B. Acenaphthene (83-32-9)	X		X	BDL						1	mg/l	TON			
2B. Acenaphtylene (208-96-8)	X		X	BDL						1	mg/l	TON			
3B. Anthracene (120-12-7)	X		X	BDL						1	mg/l	TON			
4B. Benzidine (92-87-5)	X		X	BDL						1	mg/l	TON			
5B. Benzo *(a)* Anthracene (56-55-3)	X		X	BDL						1	mg/l	TON			
6B. Benzo *(a)* Pyrene (50-32-8)	X		X	BDL						1	mg/l	TON			
7B. 3,4-Benzo-fluoranthene (205-99-2)	X		X	BDL						1	mg/l	TON			
8B. Benzo *(ghi)* Perylene (191-24-2)	X		X	BDL						1	mg/l	TON			
9B. Benzo *(k)* Fluoranthene (207-08-9)	X		X	BDL						1	mg.l	TON			
10B. Bis *(2-Chloroethoxy)* Methane (111-91-1)	X		X	BDL						1	mg/l	TON			
11B. Bis *(2-Chloroethyl)* Ether (111-44-4)	X		X	BDL						1	mg/l	TON			
12B. Bis *(2_Chloroisopropyl)* Ether (102-60-1)	X		X	BDL						1	mg/l	TON			
13B. Bis *(2-Ethylhexyl)* Phthalate (117-81-7)	X		X	BDL						1	mg/l	TON			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Base/Neutral Compounds Contd.															
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	X		X	BDL						1	mg/l	TON			
15B Butyl Benzyl Phthalate (85-68-7)	X		X	BDL						1	mg/l	TON			
16B. 2-Chloronaphthalene (91-58-7)	X		X	BDL						1	mg/l	TON			
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	X		X	BDL						1	mg/l	TON			
18B. Chrysene (218-01-9)	X		X	BDL						1	mg/l	TON			
19B. Dibenzo *(a,h)* Anthracene (53-70-3)	X		X	BDL						1	mg/l	TON			
20B. 1,2-Dichlorobenzene (95-50-1)	X		X	BDL						1	mg/l	TON			
21B. 1,3-Dichlorobenzene (541-73-1)	X		X	BDL						1	mg/l	TON			
22B. 1,4-Dichlorobenzene (106-46-7)	X		X	BDL						1	mg/l	TON			
23B. 3,3'-Dichlorobenzidine (92-94-1)	X		X	BDL						1	mg/l	TON			
24B. Diethyl Phthalate (84-66-2)	X		X	BDL						1	mg/l	TON			
25B. Dimethyl Phthalate (131-11-3)	X		X	BDL						1	mg/l	TON			
26B. Di-N-Butyl Phthalate (84-74-2)	X		X	BDL						1	mg/l	TON			
27B. 2,4-Dinitrotoluene (121-14-2)	X		X	BDL						1	mg/l	TON			
28B. 2,6-Dinitrotoluene (606-20-2)	X		X	BDL						1	mf/l	TON			
29B. Di-N-Octyl Phthalate (117-84-0)	X		X	BDL						1	mg/l	TON			

BDL
BDL
BDL

Facility I.D. No. FL0025526 Outfall No. 006

BDL 1. Pollutant and BDLCAS Number (ifBDL available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Acid Compounds Contd.															
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	X		X	BDL						1	mg/l	TON			
31B. Fluoranthene (206-44-0)	X		X	BDL						1	mg/l	TON			
32B. Fluorene (86-73-7)	X		X	BDL						1	mg/l	TON			
33B. Hexachlorobenzene (118-74-1)	X		X	BDL						1	mg/l	TON			
34B. Hexachlorobutadiene (87-68-3)	X		X	BDL						1	mg/l	TON			
35B. Hexachlorocyclopentadiene (77-47-4)	X		X	BDL						1	mg/l	TON			
36B. Hexachloroethane (67-72-1)	X		X	BDL						1	mg/l	TON			
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	X		X	BDL						1	mg/l	TON			
38B. Isophorone (78-59-1)	X		X	BDL						1	mg/l	TON			
39B. Naphthalene (91-20-3)	X		X	BDL;						1	mg/l	TON			
40B. Nitrobenzene (98-95-9)	X		X	BDL						1	mg/l	TON			
41B. N-Nitrosodimethylamine (62-75-9)	X		X	BDL						1	mg/l	TON			
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X		X	BDL						1	mg/l	TON			
43B. N-Nitro-sodiphenylamine (86-30-6)	X		X	BDL						1	mg/l	TON			
44B. Phenanthrene (85-01-8)	X		X	BDL						1	mg/l	TON			
45B. Pyrene (129-00-0)	X		X	BDL						1	mg/l	TON			
46B. 1,2,4-Trichlorobenzene (120-82-1)	X		X	BDL						1	mg/l	TON			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Pesticides															
1P. Aldrin (309-00-2)			x												
2P. -BHC (319-84-6)			x												
3P. -BHC (319-85-7)			x												
4P. -BHC (58-89-9)			x												
5P. -BHC (319-86-8)			x												
6P. Chlordane (57-74-9)			x												
7P. 4,4'-DDT (50-29-3)			x												
8P. 4,4'-DDE (72-55-9)			x												
9P. 4,4'-DDD (72-54-8)			x												
10P. Dieldrin (60-57-1)			x												
11P. -Endosulfan (115-29-7)															
12P. -Endosulfan (115-29-7)			x												
13P. Endosulfan Sulfate (1031-07-8)			x												
14P. Endrin (72-20-8)			x												
15P. Endrin Aldehyde (7421-92-4)			x												
16P. Heptachlor (76-44-8)			x												
17P. Heptachlor Epoxide (1024-57-3)			x												
18P. PCB-1242 (53469-21-9)	x		X	BDL						1	mg/l	TON			
19P. PCB-1254 (11097-69-1)	x		X	BDL						1	mg/l	TON			
20P. PCB-1221 (11104-28-2)	x		X	BDL						1	mg/l	TON			
21P. PCB-1232 (11141-16-5)	x		X	BDL						1	mg/l	TON			
22P. PCB-1248 (12672-29-6)	x		X	BDL						1	mg/l	TON			
23P. PCB-1260 (11096-82-5)	x		X	BDL						1	mg/l	TON			

1. Pollutant and CAS Number (if available)	2. Mark "X"			3. Effluent							4. Units		5. Intake (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Max. 30-Day Value (if available)		c. Long Term Avrg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long Term Avrg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS Fraction - Pesticides															
24P. PCB-1016 (12674-11-2)	X		X	BDL						1	mg/l	TON			
25P. Toxaphene (8001-35-2)	X		X	BDL						1	mg/l	TON			

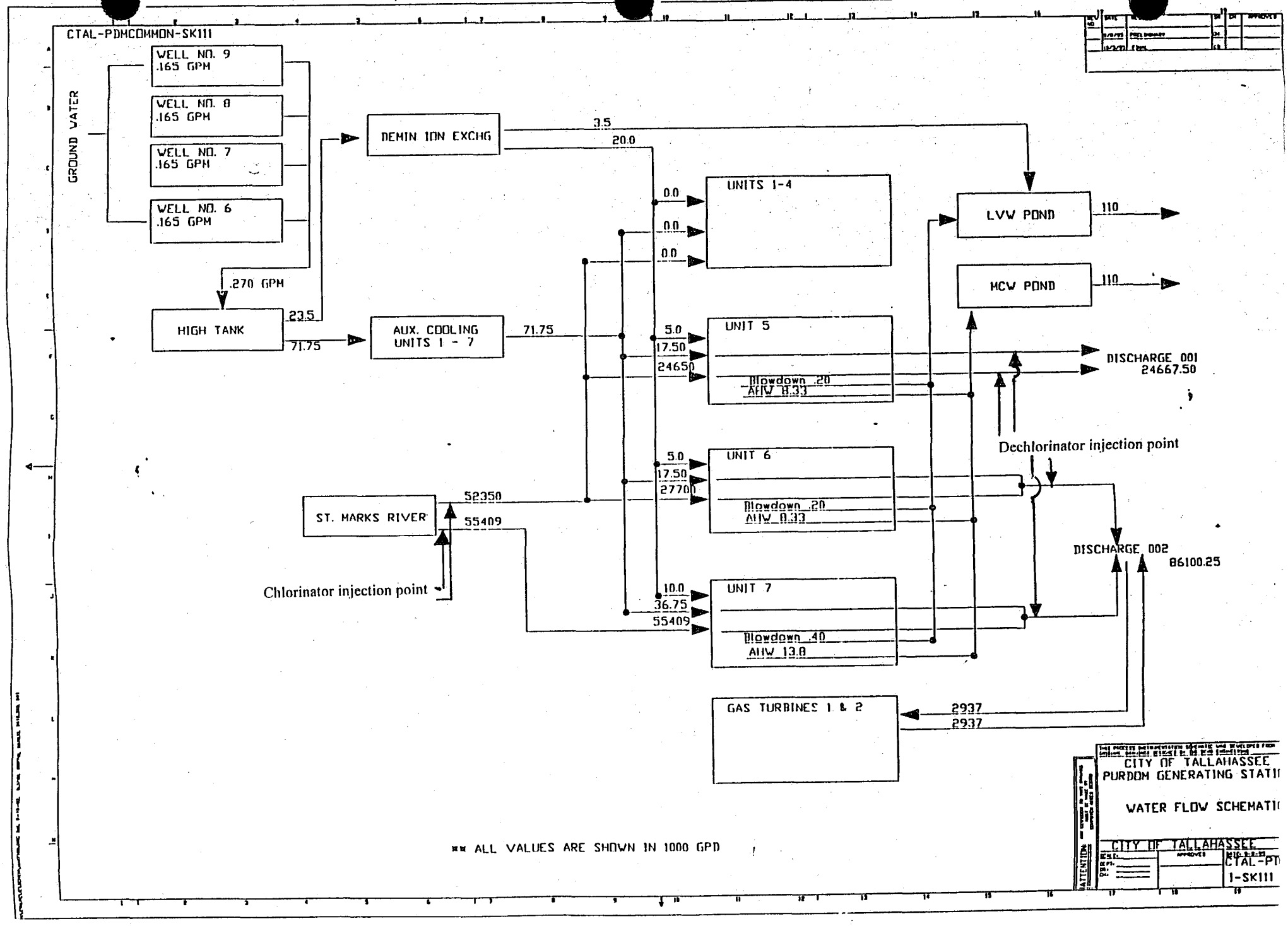
ATTACHMENT A
FORM 2CS VI B
PURDOM GENERATING STATION
OUTFALL 001/002
DECHLORINATION SYSTEM DESCRIPTION

A detailed description of the chlorination / dechlorination system to be installed at the City of Tallahassee's, Sam O. Purdom Generating Station was submitted to the Departments Northwest District Office during the previous Industrial Wastewater Construction permitting process in March 1991.

Chlorine or sodium hypochlorite will be injected into the once through cooling water upon withdrawl from the St. Marks River. Chlorinination to 8 ppm will be a batch process that occurs twice per week for two hours per day. Dechlorination will occur during these times at the condenser outlet using sodium thiosulfate or BETZ 3680.

The operational protocol is to begin the dechlorinating chemical addition at the condenser outlet immediately prior to the beginning of chlorination. An electronic interlock system will be provided to automatically shut off the chlorination pump should the dechlorinator cease operation for any reason.This will assure the chlorine discharge limit of 0.01 mg/l is not exceeded at either OSN 001 or 002.

ATTACHMENT B



Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

December 13, 1995

Gordon King
City of Tallahassee
Sam O. Purdom Generating Station
667 Port Leon Drive
St. Marks, Florida 32355

RE: City of Tallahassee
Sam O. Purdom Generating Station
FL0025526
Request for Additional Information

Dear Mr. King:

The Department has reviewed your application dated November 3, 1995 for a permit to discharge wastewater to surface waters pursuant to Rule 62-620.510(1) Florida Administrative Code (F.A.C.). The Department has determined that the application is incomplete and that the following information is needed before the application can be further processed:

1. 2ES III. B.: Provide a description on the chlorination process. Specifically the frequency and dosage amounts.

2. 2CS IV A, B, & C: As acknowledged within the permit application, intake and effluent characteristics information is incomplete. Provide the aforementioned data for outfall 006 and the unavailable data for outfall 005 will be addressed within the permit. Pursuant to Rule 62-620.420, complete Form 2CS, including appropriate Parts (of A., B., and C.) from Item VII for outfall 001.

The subject application cannot be processed until the above requested information is provided. Please submit all information requests within 30 days of receipt of this letter. If you have any questions concerning this matter, please contact Craig Diltz at (904) 488-4522.

Sincerely,

Phil Coram, P.E.
Administrator
Industrial Waterwater Section

PC/CD/wpg

cc: Bill Evans - Northwest District

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

January 10, 1996

Jennette Curtis
Environmental Services Administrator
City of Tallahassee
300 S. Adams
3rd Floor/Environmental Affairs
Tallahassee, Florida 32301

Re: City of Tallahassee-Sam O. Purdom Generating Station
NPDES Permit FL0025526
Request for Additional Information

Dear Ms. Curtis:

As discussed during recent telephone conversations with Mr. Phil Bucci, the City has agreed to analyze cooling water discharges for the pollutants applicable to the Steam Electric Power Plant Industrial Category to complete the referenced application. Therefore, the 30 day time request for the additional information is waived to allow reasonable time to obtain the analyses.

The application remains incomplete and the above requested information is needed before the application can be further processed. If you have any questions concerning this matter, please contact me at (904)488-4522.

Sincerely,

Craig Diltz, P.E.
Industrial Wastewater Section

CD/wp

cc: Phil Bucci - City of Tallahassee
Bill Evans - Northwest District

CITY OF TALLAHASSEE

CITY HALL
300 S. ADAMS ST.
TALLAHASSEE, FL
32301-1731
904/891-8100
TDD 1-800/955-8771

RON WEAVER
Mayor
SCOTT MADDOX
Mayor Pro Tem

JOHN PAUL BAILEY
Commissioner
DEBBIE LIGHTSEY
Commissioner
STEVE MEISBURG
Commissioner

STEVEN C. BURKETT
City Manager
ROBERT B. INZER
City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

June 25, 1996

CERTIFIED MAIL: P 230 286 946

Mr. Craig Diltz, P.E.
Industrial Wastewater Section
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: City of Tallahassee
Purdom Generating Station, NPDES Permit No. FL0025526
Revised Information - OSN 006

Dear Mr. Diltz:

Since the City of Tallahassee last forwarded you additional information in support of our NPDES permit application for the Purdom Generating Station, under our transmittal letter dated April 26, 1996, we have found that it will be necessary to add an Auxiliary Boiler to the Station. This boiler will provide steam to keep the Bunker "C" fuel oil in the storage system warm should the main boiler units be unable to operate. Because of the small quantities of blowdown from this auxiliary unit, and its projected infrequent use, blowdown will be transported by tanker truck to the low-volume waste pond for disposal. We are therefore updating our application by enclosing four (4) originals of the following information:

1) Revised page 2CS-17 of Form 2CS for Outfall 006 listing the Auxiliary Boiler as one of the operations contributing flow to Outfall 006. Flow is listed as a maximum of 1000 gallons per day from the unit. Because of the boiler's size and the infrequent use, actual average flow should be much less than this amount.

2) Revised Attachment B, the line diagram required by 2CS, Part IV A which now depicts flows from the Auxiliary Boiler in water flows to Outfall 006.

Please remove page 2CS-17 and Attachment B from each of the Outfall 006 NPDES permit applications for the Purdom Station that you have on file awaiting the Department's review and replace them with the revised enclosed documents. Should you have any questions concerning these documents please do not hesitate to contact me at 891-8850.

Printed on Recycled Paper with Soy Ink

Sincerely,

Jennette Curtis

Jennette Curtis
Environmental Services Administrator

Enclosures

cc: Martin P. Black, AICP, Business and Utility Support Services Manager
Rob McGarrah, Production Superintendent, w /enclosures
Gordon King, Purdom Plant Supervisor, w /enclosures
Ben Cowart, Power Plant Engineer, w/enclosures
✓John Gentry, Environmental Engineer

A:\ revtrans

PERMIT NO. FL0025526
Major Non-POTW

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended (33 U.S.C. 1251 et seq.; the "Act"),

City of Tallahassee
City Hall
Tallahassee, Florida 32301-1731

is authorized to discharge from a facility located at

Sam O. Purdom Generating Station
State Road 363
Wakulla County, St. Marks, Florida 32355

to receiving waters named

St. Marks River

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein. The permit consists of this cover sheet, Part I 5 pages, Part II 16 pages, Part III 3 pages, and Part IV 2 pages.

This permit shall become effective on January 1, 1993.

This permit and the authorization to discharge shall expire at midnight, September 30, 1997.

9/29/92
Date Issued

for W. Ray Cunningham, Director
Water Management Division

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

June 1, 1995

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Jennette D. Curtis
Environmental Services Administrator
City of Tallahassee
City Hall
300 South Adams Street
Tallahassee, FL 32301-1731

Re: City of Tallahassee
Purdom Generating Station
State I.D. 1065M02695, NPDES No. FL0025526

Dear Ms. Curtis:

On May 1, 1995, the Florida Department of Environmental Protection (Department) was granted authority by the U.S. Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System (NPDES) permitting program. Effective that date, the Department assumed permitting and enforcement authority for the NPDES permit(s) issued by EPA for point source discharges from your wastewater facility(ies) to waters of the United States. Also on May 1, the new wastewater permitting rule, Chapter 62-620, Florida Administrative Code, became effective. The rule applies to all state wastewater permitting and supersedes previous rule provisions.

Pursuant to Rule 62-620.105(10), Florida Administrative Code (F.A.C.), the EPA-issued NPDES permit and State-issued wastewater permit for each facility are being combined into one document (Order). Enclosed is an Order identifying the Department as the permitting agency, providing the address to which your monitoring reports should be sent, and assigning a new permit number to this combined document. The permittee should affix the referenced individual permits to the enclosed Order(s) as Section I (Federal NPDES permit) and Section II (State issued permit). If you recently received an NPDES permit from EPA with an effective date later than May 1, 1995, you should also attach the newly issued permit. Duplicate permit conditions will be addressed upon renewal of this Order or, in the interim, upon a request by the permittee for a substantial revision under Rule 62-620.325, F.A.C.

Pursuant to Chapter 403.087, Florida Statutes, and Rule 62-4.052, F.A.C., an initial pro-rated regulatory program and surveillance

fee is due July 30, 1995, for the facility(ies) referenced above. Each year thereafter, the annual regulatory program and surveillance fee will be due January 15. Enclosed is a work sheet identifying the annual fee(s) applicable to your facility(ies) according to information on file at our office. If you have questions about these fees, please contact this office by June 20, 1995. Invoices for the initial annual fees will be mailed after that date.

Please note that the Department did not request authorization for the federal sewage sludge management program. The EPA will issue sludge only permits for facilities with NPDES permits containing sludge management related permit conditions.

If there are any questions about your monitoring requirements or the annual fees, please contact Craig Diltz of my staff at telephone number (904) 488-4522.

Sincerely,

Richard M. Harvey
Director
Division of Water Facilities

RMH/cd/mh
Enclosures

cc: Daryll Joyner, DEP Tallahassee
Allan Johnson, DEP Pensacola

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF AGENCY ACTION

In the Matter of an Order for:

WASTEWATER PERMIT
NO. FL0025526

City of Tallahassee
City Hall
300 South Adams Street
Tallahassee, FL 32301-1731
Wakulla County

Pursuant to Rule 62-620.105(10)(a), Florida Administrative Code (F.A.C.), this order constitutes issuance of Wastewater Permit No. FL0025526 to City of Tallahassee - Purdom Generatin Station which combines NPDES permit FL0025526 (Section I) and State permit IO65- 188446 (Section II). The NPDES permit in Section I is adopted under Section 403.0885, Florida Statutes (F.S.). The State permit in Section II remains in effect under Sections 403.087 and 403.088, F.S. This agency action combining these permits is limited to identifying the Department as the permitting agency, providing addresses to send monitoring reports, providing an expiration date, and assigning a new permit number.

All permit conditions of both sections remain in effect and are unchanged. All of the conditions in Sections I and II are enforceable under Chapter 403, F.S. In addition, the conditions in Section I are enforceable under the Federal Clean Water Act by the Environmental Protection Agency.

The permittee shall continue all monitoring required by both sections of this Order. Monitoring required under Section I shall continue to be reported on EPA form 3320-1. EPA form 3320-1 for the months of April, May, and June shall be sent to the EPA. Effective with the report for the month of July 1995, the permittee shall submit EPA form 3320-1 to the Department of Environmental Protection, Mail Station 3551, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. All monitoring required under Section II shall continue to be reported on the forms required in Section II, but shall be sent to the Department at this Tallahassee address rather than to the District Office. Other than the monitoring reports for April - June, all correspondence and requests regarding Section I of this wastewater permit should be directed to this office beginning immediately.

In accordance with Rule 62-620.105, F.A.C., this Order expires on May 1, 1996, unless revised under Rule 62-620.325, F.A.C., or renewed under Rule 62-620.335, F.A.C.

A person whose substantial interests are affected by this agency action may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of receipt of this permit. Petitioner shall mail a copy of the petition to the permittee at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S. The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the permittee's name and address, the Department Permit number, and the county in which the project is located;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this agency action. Persons whose substantial interests will be affected by any decision of the Department with regard to the agency action have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

This Order is final and effective on the date filed with the Clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 62-103.070, F.A.C. Upon timely filing of a petition or a request for an extension of time

this agency action combining the existing permits will not be effective until further Order of the Department.

When the agency action is final, any party to the Order has the right to seek judicial review of the Order pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date of the Final Order is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

R M Harvey

Richard M. Harvey
Director
Division of Water Facilities

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF AGENCY ACTION and all copies were mailed by certified mail before the close of business on June 6, to the listed persons.

(Clerk Stamp)

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to s. 120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

(Clerk) (Date)

Copies furnished to: S. Shields 6-6-95

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Final

1. During the period beginning on the effective date of this permit and lasting through the term of the permit, the permittee is authorized to discharge from outfall serial number 001: once-through cooling water and auxiliary equipment cooling water from Units 1-5 to the St. Marks River.

a. Such discharges shall be limited and monitored by the permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS	
	Daily Average	Daily Maximum	Instantaneous Maximum	Measurement Frequency	Sample Type
Flow, MGD	Report	Report	N/A	Daily	Hourly Log
Discharge Temperature, °F	90.0	95.0	N/A	Continuous [1]	Recorder
Total Residual Chlorine (TRC), mg/l	N/A	N/A	0.01	1/Discharge	Multiple Grabs [2]
Total Time of Chlorine Addition, minutes/day	N/A	120	N/A	Daily	Log

b. Limitations and monitoring requirements for TRC are not applicable for any period in which chlorine is not added to Unit 5.

c. Discharge of chlorine from the chlorination of Units 1-4, to waters of the U.S., is not authorized by this permit.

d. Auxiliary equipment cooling water from Unit 1-5 may be discharged without limitations or monitoring requirements.

e. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: Flow at the plant intake; temperature and TRC at the throat of the discharge structure from Units 1-5; chlorine addition at point of addition.

[1] Readings shall be taken 2 per each operating shift from continuous temperature recorders and averaged for daily average.

[2] Multiple grabs shall consist of grab samples collected at approximately the beginning of the period of TRC discharge and once per 15 minutes thereafter until the end of the period of TRC discharge.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Final

2. During the period beginning on the effective date of this permit and lasting through the term of the permit, the permittee is authorized to discharge from outfall serial number 002: once-through cooling water and auxiliary equipment cooling water from Units 6 and 7, and cooling water from Combustion Turbines 1 and 2 to the St. Marks River.

a. Such discharges shall be limited and monitored by the permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS	
	Daily Average	Daily Maximum	Instantaneous Maximum	Measurement Frequency	Sample Type
Flow, MGD	Report	Report	N/A	Daily	Hourly Log
Discharge Temperature, °F [1]	90.0	95.0	N/A	Continuous [1,2]	Recorder
Total Residual Chlorine (TRC), mg/l [1]	N/A	N/A	0.01	1/Discharge	Grab
Copper (Total Recoverable), mg/l [1]	N/A	N/A	0.03	1/Quarter	8-Hr. Composite
Iron (Total), mg/l [1]	N/A	N/A	1.0	1/Quarter	8-Hr. Composite

b. The pH [1] shall not be less than 6.0 standard units nor greater than 8.5 standard units and shall be monitored daily by a grab sample.

c. Limitations and monitoring requirements for TRC are not applicable for any period in which chlorine is not added to Units 6 and 7.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: at the center of the discharge canal for Units 6 and 7, opposite the gas turbine intake structure [1].

[1] Conditions of the State permit.

[2] Readings shall be taken 2 per each operating shift from continuous temperature recorders and averaged for daily average.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Final

3. During the period beginning on the effective date of this permit and lasting through the term of the permit, the permittee is authorized to discharge from outfall serial number 005: chemical and non-chemical metal cleaning wastes to Pond No. 1 to the St. Marks River.

a. Such discharges shall be limited and monitored by the permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow, MGD	Report	Report	Continuous [1]	Flow Indicator
Total Suspended Solids, mg/l	30.0	100.0	1/Discharge	Composite [2]
Oil and Grease, mg/l	N/A	5.0	1/Discharge	Grab
Copper (Total), mg/l	N/A	0.03	1/Discharge	Grab
Iron (Total), mg/l	1.0	1.0	1/Discharge	Grab

b. The pH shall not be less than 6.0 standard units nor greater than 8.5 standard units and shall be monitored 1/month by a grab sample.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: end of discharge line from Ponds 1 and 2 prior to actual discharge to the receiving waters.

[1] Flow shall be measured continuously throughout the period of discharge.

[2] Samples shall be taken at the beginning, middle, and end of period of discharge.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Final

4. During the period beginning on the effective date of this permit and lasting through the term of the permit, the permittee is authorized to discharge from outfall serial number 006: low volume wastes including boiler blowdown, demineralizer regeneration wastewater, and laboratory sampling wastewater to Pond No. 2 to the St. Marks River.

a. Such discharges shall be limited and monitored by the permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow, MGD	Report	Report	Daily	Flow Indicator
Total Suspended Solids, mg/l	30.0	100.0	1/Discharge	Grab
Oil and Grease, mg/l	N/A	5.0	1/Discharge	Grab

b. The pH shall not be less than 6.0 standard units nor greater than 8.5 standard units and shall be monitored 1/month by a grab sample.

c. The permittee is authorized to discharge hydroquinone in boiler blowdown, boiler lay-up water or other similiar "cold discharges" (described on Page 2, Item 5 of the Admendment to the Fact Shee without limitation or monitoring requirements.

d. There shall be no discharge of floating solids or visible foam in other than trace amounts.

e. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: end of discharge line from Ponds 1 and 2 prior to actual discharge to the receiving waters.

B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

a. Operational level attained . . . . Effective Date (ED) of Permit

b. BMP Plan (see Part IV of the permit)

(1) Develop BMP Plan - Six months after ED

SEE ATTACHED

— (2) Implement BMP Plan - Eighteen months after ED

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

Part II

STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

Any person who violates a permit condition is subject to a civil penalty not to exceed $25,000 per day for each violation. Any person who negligently violates any permit condition is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment for not more than 1 year, or both. Any person who knowingly violates permit conditions is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both. Also, any person who violates a permit condition may be assessed an administrative penalty not to exceed $10,000 per violation with the maximum amount not to exceed $125,000. [Ref: 40 CFR 122.41(a)]

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, terminated, or revoked for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in any conditions that requires either temporary interruption or elimination of the permitted discharge; or

d. Information newly acquired by the Agency indicating the discharge poses a threat to human health or the environment.

If the permittee believes that any past or planned activity would be cause for modification or revocation and reissuance under 40 CFR 122.62, the permittee must report such information to the Permit Issuing Authority. The submittal of a new application may be required of the permittee. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

5. Toxic Pollutants

Notwithstanding Paragraph A-4, above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation of such pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" Section B, Paragraph B-3, and "Upsets" Section b, Paragraph B-4, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 or the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

10. Onshore or Offshore Construction

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any waters of the United States.

11. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

12. Duty to Provide Information

The permittee shall furnish to the Permit Issuing Authority, within a reasonable time, any information which the Permit Issuing Authority may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Permit Issuing Authority upon request, copies of records required to be kept by this permit.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the condition of this permit.

3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass means the intentional diversion of waste streams from any portion of a treatment facility, which is not a designed or established operating mode for the facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations.

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Paragraphs c. and d. of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass; including an evaluation of the anticipated quality and effect of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section D, Paragraph D-8 (24-hour notice).

d. Prohibition of bypass

(1) Bypass is prohibited and the Permit Issuing Authority may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(c) The permittee submitted notices as required under Paragraph c. of this section.

(2) The permit Issuing Authority may approve an anticipated bypass, after considering its adverse effects, if the Permit Issuing Authority determines that it will meet the three conditions listed above in Paragraph d.(1) of this section.

4. Upsets

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventive maintenance, or careless or improper operation. An upset constitutes an affirmative defense to an action brought for non-compliance with such technology based permit limitation if the requirements of 40 CFR 122.41(n)(3) are met.

5. Removed Substances

This permit does not authorize discharge of solids, sludge, filter backwash, or other pollutants removed in the course of treatment of control of wastewaters of the United States unless specifically limited in Part 1.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Permit Issuing Authority.

2. Flow Measurements

Appropriate flow measurements devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ±10% from the true discharge rates throughout the range of expected discharge volumes. Once-through condenser cooling water flow which is monitored by pump logs, or pump hour meters as specified in Part I of this permit and based on the manufacture's pump curves shall not be subject to this requirement. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references:

(1) "A Guide of Methods and Standards for the Measurement of Water Flow", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD catalog No. C13.10:421.)

(2) "Water Measurement Manual", U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by catalog No. 127.19/2:W29/2, Stock No. S/N 24003-0027.)

(3) "Flow Measurement in Open Channels and Closed Conduits", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST.)

(4) "NPDES Compliance Flow Measurement Manual", U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-77, September 1981, 135 pp. (Available from the General Service Administration (8BRC), Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO. 80255.)

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or imprisonment for not more than 2 years, or both.

5. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by the Permit Issuing Authority at any time.

6. Record Contents

Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling of measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analysis.

7. Inspection and Entry

The permittee shall allow the permit Issuing Authority, or a authorized representative, upon the presentation of credentials and other documents as may be required by law, to;

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit.

c. Inspect at reasonable time any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Change in Discharge

The permittee shall give notice to the Permit Issuing Authority as soon as possible of any planned physical alterations or additions to the permitted Facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source; or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Section D, Paragraph D-10(a).

2. Anticipated Noncompliance

The permittee shall give advance notice to the Permit Issuing Authority of any planned change in the permitted facility or activity which may result in noncompliance with permit requirements. Any maintenance or facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall be scheduled during noncritical water quality periods and carried out in a manner approved by the Permit Issuing Authority.

3. Transfer of Ownership or Control

A permit may be automatically transferred to another if:

a. The permittee notifies the Permit Issuing Authority of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

c. The Permit Issuing Authority does not notify the existing permittee of his or her intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph b.

4. Monitoring Reports

See Part III of this permit.

5. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased frequency shall also be indicated.

6. Averaging of Measurements

Calculations for limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Permit Issuing Authority in the permit.

7. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

8. Twenty-Four Hour Reporting

The permittee shall orally report any noncompliance which may endanger health or the environment, within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including the exact dates and times; and if the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance. The Permit Issuing Authority may verbally waive the written report, on a case-by-case basis, when the oral report is made.

The following violations shall be included in the 24 hour report when they might endanger health or the environment:

a. An unanticipated bypass which exceeds any effluent limitation in the permit.

b. Any upset which exceeds any effluent limitation in the permit.

9. Other Noncompliance

The permittee shall report in narrative form, all instances of noncompliance not previously reported under Section D, Paragraphs D-2, D-4, D-7, and D-8 at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D-8.

10. Changes in Discharges of Toxic Substances

The permittee shall notify the Permit Issuing Authority as soon as it knows or has reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic substance(s) (listed at 40 CFR 122, Appendix D, Table II and III) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony; or

(3) Five (5) times the maximum concentration value reported for that pollutant(s) in the application.

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant (listed at 40 CFR 122, Appendix D. Table II and III) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred Micrograms per liter (500 ug/l);

(2) One milligram per liter (1 mg/l) for antimony; or

(3) Ten (10) times the maximum concentration value reported for that pollutant(s) in the permit application.

11. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit. The Permit Issuing Authority may grant permission to submit an application less than 180 days in advance but not later than the permit expiration date.

Where EPA is the Permit Issuing Authority, the terms and conditions of this permit are automatically continued in accordance with 40 CFR 122.6, only where the permittee has submitted a timely and complete application for a renewal permit and the Permit Issuing Authority is unable through no fault of the permittee to issue a new permit before expiration date.

12. Signatory Requirements

All applications, reports, or information submitted to the Permit Issuing Authority shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or (2) the manager of one or more manufacturing production facilities employing more than 250 persons or having gross annual sales or expenditures exceeding 25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agencies by either a principal executive officer or ranking elected official.

b. All reports required by the permit and other information requested by the Permit Issuing Authority shall be signed by.a person described above or by a duly authorized representative only if:

(1) The authorization is made in writing by person described above;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may this be either a named individual or any individual occupying a named position.); and

(3) The written authorization is submitted to the Permit Issuing Authority.

c. Certification. Any person signing a document under paragraphs (a) or (b) of this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

13. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Permit Issuing Authority. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

14. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under the Clean Water Act, shall, upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than 2 years, or both.

SECTION E. DEFINITIONS

1. Permit Issuing Authority

The Regional Administrator of EPA Region IV or his designee, unless at some time in the future the State receives authority to administer the NPDES program and assumes jurisdiction over the permit; at which time, the Director of the State program receiving the authorization becomes the issuing authority.

2. Act

"Act" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117, and 100-4, 33 U.S.C. 1251 et seq.

3. Mass/Day Measurements

a. The "average monthly discharges" is defined and the total mass of all daily discharges sampled and/or measured during a calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such month. It is therefore, and arithmetic mean found by adding the weights of the pollutant found each day of the month and then dividing this sum by the number of days the tests were reported. The limitation is identified as "Daily Average" or "Monthly Average" in Part I of the permit and the average monthly discharge value is reported in the "Average" column under "Quantity" on the Discharge Monitoring Report (DMR).

b. The "average weekly discharge" is defined as the total mass of all daily discharges sampled and/or measured during the calendar week on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such week. It is, therefore, an arithmetic mean found by adding the weights of pollutants found each day of the week and then dividing this sum by the number of days the tests were reported. This limitation is identified as "Weekly Average" in Part I of the permit. Enter the highest weekly average of sample measurements obtained during the reporting period in the "Maximum" column under "Quantity" on the DMR.

c. The "maximum daily discharge" is the total mass (weight) of a pollutant discharged during a calendar day. If only one sample is taken during any calendar day the weight of pollutant calculated from it is the "maximum daily discharge". This limitation is identified as "Daily Maximum", in Part I of the permit and the highest such value recorded during the reporting period is reported in the "Maximum" column under "Quantity" on the DMR.

d. The "average annual discharge" is a rolling average equal to the arithmetic mean of the mass measured in all discharges sampled and/or measured during consecutive reporting periods which comprise one year. For parameters that are measured at least once per month, the annual average shall be computed at the end of each month and is equal to the arithmetic mean of the monthly average of the month being reported and the monthly average of each of the previous eleven months. This limitation is defined as "Annual Average" in Part I of the permit and the average annual discharge value is reported in the "Average" column under "Quantity" on the DMR.

4. Concentration Measurements

a. The "average monthly concentration", other than for fecal coliform bacteria, is the sum of the concentrations of all daily discharges sampled and/or measured during a calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such month (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or in the case of grab samples is the arithmetic mean (weighted by flow value) of all the samples collected during that calendar day. This limitation is identified as "Monthly Average" or "Daily Average" under "Other Limits" in Part I of the permit and the average monthly concentration value is reported under the "Average" column under "Quality" of the DMR.

b. The "average weekly concentration", other than for fecal coliform bacteria, is the sum of the concentrations of all daily discharges sampled and/or measured during a calendar week on which daily discharges are sampled and measured divided by the number of daily discharges sampled and/or measured during such week (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or in the case of grab samples is the arithmetic mean (weighted by flow value) of all the samples collected during that calendar day. This limitation is identified as "Weekly Average" under "Other Limits" in Part I of the permit. Enter the highest weekly average of sample measurements obtained during the reporting period in the "Maximum" column under "Quality" on the DMR.

c. The "maximum daily concentration" is the concentration of a pollutant discharged during a calendar day. It is identified as "Daily Maximum" under "Other Units" in Part I of the permit and the highest such value recorded during the reporting period is reported under the "Maximum" column under "Quality" on the DMR.

d. The "average annual concentration", other than fecal coliform bacteria, is the rolling average equal to the arithmetic mean of the effluent or influent samples collected during consecutive reporting periods which comprise one year. For parameters that are measured at least once per month, the annual average shall be computed at the end of each month and is equal to the arithmetic mean of the monthly average of the month being reported and the monthly average of each of the previous eleven months. This limitation is identified as "Annual Average" under "Other Limits" in Part I of the permit and the average annual concentration value is reported under the "Average" column under "Quality" on the DMR.

5. Other Measurements

a. The effluent flow expressed as million gallons per day (MGD) is the 24 hour average flow averaged monthly. It is the arithmetic mean of the total daily flows recorded during the calendar month. Where monitoring requirements for flow are specified in Part I of the permit the flow rate values are reported in the "Average" column under "Quantity" on the DMR.

b. An "instantaneous flow measurement" is a measure of flow taken at the time of sampling, when both the sample and flow will be representative of the total discharge.

c. Where monitoring requirements for pH, dissolved oxygen or fecal coliform bacteria are specified in Part I of the permit, the values are generally reported in the "Quality or Concentration" column on the DMR.

d. The "average annual discharge" for fecal coliform bacteria shall be calculated in the same manner as that for mass limitations (see item II.E.3.d.).

6. Types of Samples

a. Composite Samples: A "composite sample" is a combination of not less than 8 influent or effluent portions, of at least 100 ml, collected over the full time period specified in Part I.A. The composite sample must be flow proportioned by either time interval between each aliquot or by volume as it relates to effluent flow at the time of sampling or total flow since collection of the previous aliquot. Aliquots may be collected manually or automatically.

b. Grab Samples: A "grab sample" is a single influent or effluent portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the total discharge.

7. Calculation of Means

a. Arithmetic Mean: The "arithmetic mean" of any set of values is the summation of the individual values divided by the number of individual values.

b. Geometric Mean: The "geometric mean" of any set of values is the N^{th} root of the product of the individual values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

c. Weighted by Flow Value: "Weighted by flow value" means the summation of each concentration times its respective flow divided by the summation of the respective flows.

8. Calendar Day

A "calendar day" is defined as the period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

9. Hazardous Substance

A "hazardous substance" means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the Clean Water Act.

10. Toxic Pollutants

A "toxic pollutant" is any pollutant listed as toxic under Section 307(a)(1) of the Clean Water Act.

Part III

Other Requirements

A. Reporting of Monitoring Results

Monitoring results obtained for each calendar month shall be summarized for that month and reported on a Discharge Monitoring Report (DMR) Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed calendar month. (For example, data for January shall be submitted by February 28th.) Signed copies of these, and all other reports required by Section D of Part II, "Reporting Requirements," shall be submitted to the Permit Issuing Authority at the following address:

Environmental Protection Agency
Region IV
Enforcement Section
Water Permits and Enforcement Branch
Water Management Division
345 Courtland Street, N.E.
Atlanta, GA 30365

If no discharge occurs during the reporting period, sampling requirements of this permit do not apply. The statement "No Discharge" shall be written on the DMR form. If, during the term of this permit, the facility ceases discharge to surface waters, the Permit Issuing Authority and the Florida Department of Environmental Regulation (FDER) shall be notified immediately upon cessation of discharge. This notification shall be in writing.

B. Reopener Clause

This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, as amended, if the effluent standard or limitation so issued or approved:

a. Contains different conditions or is otherwise more stringent than any condition in the permit; or

b. Controls any pollutant not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

C. Polychlorinated Biphenyl Compounds

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

D. Toxic Compounds

Discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any wastestream which may ultimately be released to lakes, rivers, streams, or other waters of the United States is prohibited, unless specifically authorized elsewhere in this permit. This requirement is not applicable to products used for lawn and agricultural purposes or to the use of herbicides if used in accordance with labeled instructions and any applicable State permit. Discharge of chlorine from the use of chlorine gas, sodium hypochlorite, or other similar chlorination compounds for disinfection in plant potable water and service water systems and in sewage treatment is authorized, as are discharges from the uses of similiar compounds for biofouling control in once-through cooling water, OSNs 001 (Unit 5) and 002 (Units 6 and 7).

The company shall notify the Director in writing requesting a permit modification not later than six (6) months prior to instituting use of any biocide (other than chlorine for Units 5, 6, and 7) or chemical used in cooling systems which may be toxic to aquatic life. Such notification shall include:

1. Name and general composition of biocide or chemical,
2. Frequency of use,
3. Quantities to be used,
4. Proposed effluent concentration, and
5. Acute and/or chronic toxicity data (including laboratory reports) for all available aquatic species, and
6. Product Data Sheet, and
7. Product Label

EPA shall review the above information to determine if a major permit modification is necessary. Discharge associated with the use of such biocide or chemical is not authorized without prior approval by the Director.

E. Unauthorized Discharges

There shall be no discharge to waters of the United States of low volume wastes (except as provided for OSN 006); non-chemical or chemical metal cleaning wastes (except as provided for OSN 005); runoff from plant including fly ash/botom ash storage or disposal areas (including runoff resulting from rainfall exceeding the 10-year, 24-hour storm event); fly and/or bottom ash transport water; and sanitary wastes.

F. Storm Water from Diked Petroleum Storage of Handling Areas

The permittee is authorized to discharge storm water from diked petroleum storage or handling areas, provided the following conditions are met:

Such discharges shall be limited and monitored by the permittee as specified below:

1. The facility shall have a valid Spill Prevention Control and Countermeasure (SPCC) Plan pursuant to 40 CFR Part 112.

2. In draining the diked area, a portable oil skimmer or similar device or absorbent material shall be used to remove oil and grease (as indicated by the presence of a sheen) immediately prior to draining.

3. Monitoring records shall be maintained in the form of a log and shall contain the following information, as a minimum:

   a. Date and time of discharge;
   b. Estimated volume of discharge;
   c. Initials of person making visual inspection and authorizing discharge; and
   d. Observed conditions of storm water discharged.

d. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of a visible oil sheen at any time.

G. Burning Toxic and Hazardous Wastes

Discharge of any waste resulting from the combustion of toxic, hazardous, or metal cleaning wastes to any waste stream which ultimately discharges to waters of the United States is prohibited, unless specifically authorized elsewhere in this permit.

PART IV

BEST MANAGEMENT PRACTICES CONDITIONS

SECTION A. GENERAL CONDITIONS

1. BMP Plan

For purposes of this part, the terms "pollutant" or "pollutants" refer to any substance listed as toxic under Section 307(a)(1) of the Clean Water Act (the "Act"), oil, as defined in Section 311(a)(1) of the Act, and any substance listed as hazardous under Section 311 of the Act. The permittee shall develop and implement a Best Management Practices (BMP) plan which prevents, or minimizes the potential for the release of pollutants from ancillary activities, including material storage areas; plant site runoff; in-plant transfer, process and material-handling areas; loading and unloading operations; and sludge and waste disposal areas, to the waters of the United States through plant site runoff; spillage or leaks; sludge or waste disposal; or drainage from raw material storage.

2. Implementation

The plan shall be developed within six months after the effective date of this permit and shall be implemented as soon as practicable but not later than 18 months after the effective date of the permit, unless a later date is specified by the Director. The permittee shall submit written notification of compliance or non-compliance with these requirements to the Permit Issuing Authority in accordance with Part I.B. of the permit.

3. General Requirements

The BMP plan shall:

a. Be documented in narrative form, and shall include any necessary plot plans, drawings or maps.

b. Establish specific objectives for the control of pollutants.

(1) Each facility component or system shall be examined for its potential for causing a release of significant amounts of pollutants to waters of the United States due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural conditions (e.g., precipitation), or other circumstances to result in significant amounts of

pollutants reaching surface waters, the plan should include a prediction of the direction, rate of flow, and total quantity of pollutants which could be discharged from the facility as a result of each condition or circumstance.

c. Establish specific best management practices to meet the objectives identified under paragraph b of this subsection, addressing each component or system capable of causing a release of significant amounts of pollutants to the waters of the United States, and identifying specific preventative or remedial measures to be implemented.

d. Include any special conditions established in Section B of this part.

e. Be reviewed by plant engineering staff and plant manager.

4. Documentation

The permittee shall maintain the BMP plan at the facility and shall make the plan available to the Permit Issuing Authority upon request.

5. BMP Plan Modification

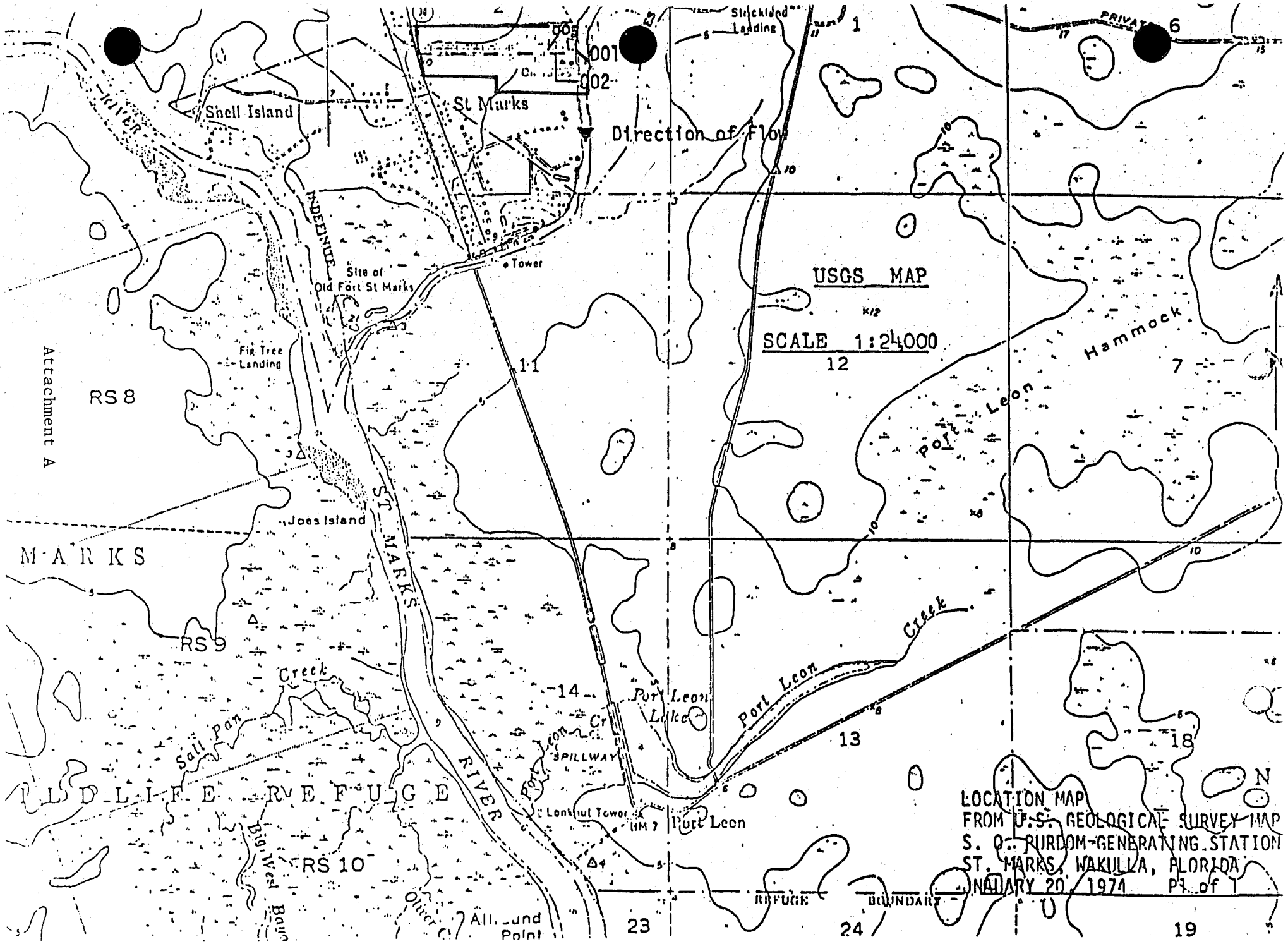
The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of pollutants.

6. Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of significant amounts of pollutants to surface waters and the specific objectives and requirements under paragraph b and c of Subsection 3, the permit shall be subject to modification pursuant to 40 CFR § 122.62 or § 122.63 to incorporate revised BMP requirements. Any such permit modification shall be subject to review in accordance with the procedures for evidentiary hearings set forth in 40 CFR Part 124.

SECTION B. SPECIAL CONDITIONS

NONE.



ATTACHMENT XI

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

AUG 05 1992

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

REF: 4WM-WPEB

Ms. Jennette Curtis
Environmental Office
Route # 4, Box 448
Tallahassee, Florida 32304

RE: Revised Draft
Sam O. Purdom Generating Station
NPDES Number FL0025526

Dear Ms. Curtis:

In accordance with Title 40, Code of Federal Regulations (C.F.R.) Section 124.10(c)(1)(i), enclosed is the Public Notice which the Environmental Protection Agency (EPA) has distributed pertaining to the EPA's tentative decision on your National Pollutant Discharge Elimination System (NPDES) permit application. All comments and objections to the draft permit must be submitted to EPA within the time period specified in the Public Notice. Only issues raised during this time period will be considered during any appeal procedures. Per 40 C.F.R. § 124.76, at the time of final permit decision, only issues raised during the public comment period by any party may be used to support an evidentiary hearing request.

The draft permit and supporting materials were previously sent to you by letter dated January 24, 1992. The draft permit referred to in the Public Notice has been changed since the previous draft permit. Changes have been made relative to comments submitted to EPA in a letter dated February 27, 1992. You will find that these revisions have been made in the NPDES permit based on most of your comments regarding the modifications in the plant treatment system. These revisions are based on the appropriate state and federal regulations. Therefore, an item by item response is not essential. Only a few exceptions and/or explanations are provided below.

Fact Sheet

1.E. The package submitted to EPA on December 9, 1991, describing the proposed dechlorination program has been approved. Submittal of this information to us meets EPA's application/reporting requirements. Limitations and/or monitoring requirements or toxicity requirements were determined

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not to be needed. The narrative description of OSN 001 in the Fact Sheet was revised to reflect the use of dechlorination. Other changes requested in certain footnotes in the permit were determined not to be necessary.

2.B. OSN 002 has been deleted from the proposed permit and OSN 002A has been renamed as OSN 002. It was determined that effluent limitations required in the State permit are appropriate for this discharge.

2.C., 2nd paragraph. The copper and iron limitations were included based on the State permit and must be appealed through State procedures. At such time, a NPDES permit modification may be requested to delete these conditions in accordance with 40 CFR § 122.62(a)(2).

The total copper limitation indicated for OSNs 001 and 002 in the proposed permit has been changed to "total recoverable" copper in accordance with FAC § 17-302.510(4) (February 13, 1992).

Permit

Page I-4 and Page I-5. For OSNs 005 and 006, limitations have been included for oil and grease, total copper, and pH based on Florida water quality standards. In cases where a water quality standard is more stringent than a technology-based effluent guideline, 40 CFR 122.44(d) requires that the NPDES permit include the water quality standard.

The specific description of the monitoring location for OSNs 005 and 006 has been indicated as the "end of the discharge line from Ponds 1 and 2 prior to actual discharge to the receiving waters," as opposed to the generic description suggested. This was agreed upon based on discussions with Neal Blount, City of Tallahassee.

Part III.E. This is a standard condition included in all NPDES permits issued in the State of Florida for the Steam Electric power generating point source category.

State certification has been requested for this permit and any more stringent requirements received from the State will be incorporated into the final permit.

If you have any comments or questions concerning this matter, please contact me at the above address or by calling (404) 347-3866.

Sincerely yours,

Darryl Williams
Environmental Engineer
Permits Section
Water Permits and Enforcement Branch
Water Management Division

Enclosures - Revised Draft Permit and/or Supporting Materials
Public Notice

cc: FDER, Tallahassee (with enclosures except PN)
FDER, Northwest District Office (with enclosures except PN)
U.S. Fish & Wildlife Service (with enclosures except PN)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

SEP 29 1992

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

REF: 4WM-WPEB

RECEIVED
OCT 2 1992

Jennette Curtis
Environmental Administrator
Environmental Office
Route #4, Box 448
Tallahassee, Florida 32304

RE: Final Issuance of NPDES Permit No. FL0025526
City of Tallahassee
Sam O. Purdom Generating Station

Dear Ms. Curtis:

Enclosed is the National Pollutant Discharge Elimination System (NPDES) permit for the above-referenced facility. This action constitutes the Environmental Protection Agency's final permit decision in accordance with Title 40, Code of Federal Regulations (C.F.R.) Section 124.15(a). The permit will become effective as specified, provided that no timely request for an evidentiary hearing is received by the Agency.

Any interested person may contest this decision by submitting a timely request for an evidentiary hearing (hearing) pursuant to the procedures at 40 C.F.R. § 124.74. If a request for a hearing is received by the Agency, following review, a determination will be made and the requester advised of the Agency's decision on the request. Until that time, please be advised that any request will render the permit ineffective pursuant to 40 C.F.R. § 124.15(b). For a new source, a new discharger, a recommencing discharger, or a facility for which an untimely permit renewal application was submitted, a hearing request renders the facility without an NPDES permit and the facility may not discharge (unless relief is granted by the Presiding Officer under 40 C.F.R. § 124.60(a)).

If the evidentiary hearing request is granted, in whole or part, to an existing source, the effect of the contested provision(s), and any other conditions not severable from those conditions, will be stayed and not subject to judicial review pending final Agency action. In this case, all provisions of the prior permit, as well as, all uncontested provisions of the reissued permit shall continue fully enforceable and effective pending final Agency action on the permit appeal. See 40 C.F.R. § 124.60.

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To request an evidentiary hearing under 40 C.F.R. § 124.74, you must submit an original and two copies of the request to the Regional Hearing Clerk at the letterhead address within thirty (30) days from service of this notice. A copy of the procedures and requirements for evidentiary hearing requests and appeals to the Administrator is enclosed.

For purposes of judicial review under the Clean Water Act, 33 U.S.C. § 1251 et seq., final Agency action on a permit does not occur unless and until a party has exhausted its administrative remedies as required by 40 C.F.R. Part 124.

Further information on procedures pertaining to the filing of an evidentiary hearing request or other legal matters may be obtained by contacting Kevin B. Smith, Assistant Regional Counsel, at (404) 347-3777.

Sincerely yours,

James H Scarbrough

for W. Ray Cunningham, Director
Water Management Division

Enclosures (3): Evidentiary Hearing Procedures
Final NPDES Permit
Amendment to Fact Sheet

cc: Florida DER (with all enclosures, except Evid. Hearing Procedures)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

Date: SEP 2 9 1992

AMENDMENT TO THE FACT SHEET AT THE TIME OF FINAL PERMIT ISSUANCE

APPLICATION NO: FL0025526

NAME OF APPLICANT: City of Tallahassee
Sam O. Purdom Generating Station

A. Changes to Permit from Draft Permit to Final Permit Stage:

A letter was received from Jennette Curtis, Environmental Affairs Administrator, City of Tallahassee (COT), dated September 3, 1992, requesting several changes to the draft permit. These comments were submitted in response to the Public Notice. COT's comments and EPA's responses are discussed below. Where appropriate, changes have been incorporated into the final issuance of the NPDES permit.

Cover Letter, Page 2

1. COMMENT

The cover letter of the August 5, 1992, NPDES Public Notice draft permit incorrectly indicated that the "total recoverable copper" limitation was applicable to OSNs 001 and 002. The correct outfalls are OSNs 002 and 005.

RESPONSE

Comment noted.

Draft Permit

2. COMMENT

Page I-1, Item A.1.a. It was requested that the monitoring frequency for total residual chlorine be changed from 1/month to 1/discharge since chlorine addition may occur at OSN 001 more than 1/month.

RESPONSE

Agreed.

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3. COMMENT

Page I-2, Item A.2.a. It was requested that the monitoring frequency for total residual chlorine be changed from daily to 1/discharge since chlorine addition to either unit discharging to OSN 002 will not occur on a daily basis.

RESPONSE

Agreed.

4. COMMENT

It was requested that the monitoring frequency for total suspended solids and oil and grease be changed from 1/month to 1/discharge since discharges from OSN 006 would not be occurring on a weekly basis.

RESPONSE

Agreed.

Part III

5. COMMENT

It was requested that hydroquinone in boiler blowdown be permitted without a discharge limitation or monitoring requirements. Although hydroquinone may be toxic to aquatic organisms at very high concentrations, available data demonstrates that hydroquinone in boiler blowdown decomposes to a neutralized state, thus preventing toxic concentrations from occurring.

RESPONSE

Comment noted. EPA has requested additional information from the permittee and cannot make a determination at this time. The permittee may send the data along with a request for a permit modification at a future date in accordance with 40 CFR 122.62.

Industrial Fact Sheet

6. The applicant name and address given on Page 1 of the draft Fact Sheet is hereby amended to read as follows:

"City of Tallahassee
City Hall
Tallahassee, FL 32301"

7. The treatment process description given on Page 2, Item E of the draft Fact Sheet is hereby amended to read as follows:

"Metal cleaning wastes (OSN 005) and low volume wastes (OSN 006) (Ponds 1 and 2, respectively) are treated by lime, caustic, and magnesium hydroxide addition consisting of mixing, flocculation, and sedimentation and discharged to the St. Marks River."

8. The basis for chlorine addition was incorrectly referenced on Page 6 of the draft Fact Sheet and is hereby changed to 40 CFR § 423.12(b)(8).

9. The basis for total suspended solids and total iron was incorrectly referenced on Page 7, Item C.3) b) and e) of the draft Fact Sheet and is hereby changed to 40 CFR § 423.12(b)(5).

10. The basis for total suspended solids was incorrectly referenced on Page 7, Item C.4)b) of the draft Fact Sheet and is hereby changed to 40 CFR § 423.12(b)(3).

B. Public Comment:

The only comment received was from the applicant (see Item A above).

C. State Certification:

State certification was requested on July 1, 1992. State certification has been waived by letter received from the Florida Department of Environmental Regulation, dated July 31, 1992.

Subpart E—Evidentiary Hearings for EPA-Issued NPDES Permits and EPA-Terminated RCRA Permits

§ 124.71 Applicability.

(a) The regulations in this subpart govern all formal hearings conducted by EPA under CWA sections 402 and 405(f), except those conducted under Subpart F. They also govern all evidentiary hearings conducted under RCRA section 3008 in connection with the termination of a RCRA permit. This includes termination of interim status for failure to furnish information needed to make a final decision. A formal hearing is available to challenge any NPDES permit issued under § 124.15 except for a general permit. Persons affected by a general permit may not challenge the conditions of a general permit as of right in further agency proceedings. They may instead either challenge the general permit in court, or apply for an individual NPDES permit under § 122.21 as authorized in § 122.28 and then request a formal hearing on the issuance or denial of an individual permit. (The Regional Administrator also has the discretion to use the procedures of Subpart F for general permits. See § 124.111).

(b) In certain cases, evidentiary hearings under this subpart may also be held on the conditions of UIC permits, or of RCRA permits which are being issued, modified, or revoked and reissued, rather than terminated or suspended. This will occur when the conditions of the UIC or RCRA permit in question are closely linked with the conditions of an NPDES permit as to

which an evidentiary hearing has been granted. See § 124.74(b)(2). Any interested person may challenge the Regional Administrator's initial new source determination by requesting an evidentiary hearing under this part. See § 122.29.

(c) PSD permits may never be subject to an evidentiary hearing under this subpart. Section 124.74(b)(2)(iv) provides only for consolidation of PSD permits with other permits subject to a panel hearing under Subpart F.

[48 FR 14264, Apr. 1, 1983, as amended at 54 FR 18786, May 2, 1989]

§ 124.72 Definitions.

For the purpose of this subpart, the following definitions are applicable:

"Hearing Clerk" means The Hearing Clerk, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC, 20460.

"Judicial Officer" means a permanent or temporary employee of the Agency appointed as a Judicial Officer by the Administrator under these regulations and subject to the following conditions:

(a) A Judicial Officer shall be a licensed attorney. A Judicial Officer shall not be employed in the Office of Enforcement or the Office of Water and Waste Management, and shall not participate in the consideration or decision of any case in which he or she performed investigative or prosecutorial functions, or which is factually related to such a case.

(b) The Administrator may delegate any authority to act in an appeal of a given case under this subpart to a Judicial Officer who, in addition, may perform other duties for EPA, provided that the delegation shall not preclude a Judicial Officer from referring any motion or case to the Administrator when the Judicial Officer decides such action would be appropriate. The Administrator, in deciding a case, may consult with and assign the drafting of preliminary findings of fact and conclusions and/or a preliminary decision to any Judicial Officer.

"Party" means the EPA trial staff under § 124.78 and any person whose request for a hearing under § 124.74 or whose request to be admitted as a party or to intervene under § 124.79 or § 124.117 has been granted.

"Presiding Officer" for the purposes of this subpart means an Administrative Law Judge appointed under 5 U.S.C. 3105 and designated to preside at the hearing. Under Subpart F other persons may also serve as hearing officers. See § 124.119.

"Regional Hearing Clerk" means an employee of the Agency designated by a Regional Administrator to establish a repository for all books, records, documents, and other materials relating to hearings under this subpart.

§ 124.73 Filing and submission of documents.

(a) All submissions authorized or required to be filed with the Agency under this subpart shall be filed with the Regional Hearing Clerk, unless otherwise provided by regulation. Submissions shall be considered filed on the date on which they are mailed or delivered in person to the Regional Hearing Clerk.

(b) All submissions shall be signed by the person making the submission, or by an attorney or other authorized agent or representative.

(c)(1) All data and information referred to or in any way relied upon in any submission shall be included in full and may not be incorporated by reference, unless previously submitted as part of the administrative record in the same proceeding. This requirement does not apply to State or Federal statutes and regulations, judicial decisions published in a national reporter system, officially issued EPA documents of general applicability, and any other generally available reference material which may be incorporated by reference. Any party incorporating materials by reference shall provide copies upon request by the Regional Administrator or the Presiding Officer.

(2) If any part of the material submitted is in a foreign language, it shall be accompanied by an English translation verified under oath to be complete and accurate, together with the name, address, and a brief statement of the qualifications of the person making the translation. Translations

of literature or other material in a foreign language shall be accompanied by copies of the original publication.

(3) Where relevant data or information is contained in a document also containing irrelevant matter, either the irrelevant matter shall be deleted or the relevant portions shall be indicated.

(4) Failure to comply with the requirements of this section or any other requirement in this subpart may result in the noncomplying portions of the submission being excluded from consideration. If the Regional Administrator or the Presiding Officer, on motion by any party or *sua sponte*, determines that a submission fails to meet any requirement of this Subpart, the Regional Administrator or Presiding Officer shall direct the Regional Hearing Clerk to return the submission, together with a reference to the applicable regulations. A party whose materials have been rejected has 14 days to correct the errors and resubmit, unless the Regional Administrator or the Presiding Officer finds good cause to allow a longer time.

(d) The filing of a submission shall not mean or imply that it in fact meets all applicable requirements or that it contains reasonable grounds for the action requested or that the action requested is in accordance with law.

(e) The original of all statements and documents containing factual material, data, or other information shall be signed in ink and shall state the name, address, and the representative capacity of the person making the submission.

§ 124.74 Requests for evidentiary hearing.

(a) Within 30 days following the service of notice of the Regional Administrator's final permit decision under § 124.15, any interested person may submit a request to the Regional Administrator under paragraph (b) of this section for an evidentiary hearing to reconsider or contest that decision. If such a request is submitted by a person other than the permittee, the person shall simultaneously serve a copy of the request on the permittee.

(b)(1) In accordance with § 124.76, such requests shall state each legal or factual question alleged to be at issue, and their relevance to the permit decision, together with a designation of the specific factual areas to be adjudicated and the hearing time estimated to be necessary for adjudication. Information supporting the request or other written documents relied upon to support the request shall be submitted as required by § 124.73 unless they are already part of the administrative record required by § 124.18.

NOTE: This paragraph allows the submission of requests for evidentiary hearings even though both legal and factual issues may be raised, or only legal issues may be raised. In the latter case, because no factual issues were raised, the Regional Administrator would be required to deny the request. However, on review of the denial the Administrator is authorized by § 124.91(a)(1) to review policy or legal conclusions of the Regional Administrator. EPA is requiring an appeal to the Administrator even of purely legal issues involved in a permit decision to ensure that the Administrator will have an opportunity to review any permit before it will be final and subject to judicial review.

(2) Persons requesting an evidentiary hearing on an NPDES permit under this section may also request an evidentiary hearing on a RCRA or UIC permit. PSD permits may never be made part of an evidentiary hearing under Subpart E. This request is subject to all the requirements of paragraph (b)(1) of this section and in addition will be granted only if:

(i) Processing of the RCRA or UIC permit at issue was consolidated with the processing of the NPDES permit as provided in § 124.4;

(ii) The standards for granting a hearing on the NPDES permit are met;

(iii) The resolution of the NPDES permit issues is likely to make necessary or appropriate modification of the RCRA or UIC permit; and

(iv) If a PSD permit is involved, a permittee who is eligible for an evidentiary hearing under Subpart E on his or her NPDES permit requests that the formal hearing be conducted under the procedures of Subpart F and the Regional Administrator finds that consolidation is unlikly to delay final permit issuance beyond the PSD one-year statutory deadline.

(c) These requests shall also contain:

(1) The name, mailing address, and telephone number of the person making such request;

(2) A clear and concise factual statement of the nature and scope of the interest of the requester;

(3) The names and addresses of all persons whom the requester represents; and

(4) A statement by the requester that, upon motion of any party granted by the Presiding Officer, or upon order of the Presiding Officer *sua sponte* without cost or expense to any other party, the requester shall make available to appear and testify, the following:

(i) The requester;

(ii) All persons represented by the requester; and

(iii) All officers, directors, employees, consultants, and agents of the requester and the persons represented by the requester.

(5) Specific references to the contested permit conditions, as well as suggested revised or alternative permit conditions (including permit denials) which, in the judgment of the requester, would be required to implement the purposes and policies of the CWA.

(6) In the case of challenges to the application of control or treatment technologies identified in the statement of basis or fact sheet, identification of the basis for the objection, and the alternative technologies or combination of technologies which the requester believes are necessary to meet the requirements of the CWA.

(7) Identification of the permit obligations that are contested or are inseverable from contested conditions and should be stayed if the request is granted by reference to the particular contested conditions warranting the stay.

(8) Hearing requests also may ask that a formal hearing be held under the procedures set forth in Subpart F. An applicant may make such a request even if the proceeding does not constitute "initial licensing" as defined in § 124.111.

(d) If the Regional Administrator grants an evidentiary hearing request, in whole or in part, the Regional Administrator shall identify the permit conditions which have been contested by the requester and for which the evidentiary hearing has been granted. Permit conditions which are not contested or for which the Regional Administrator has denied the hearing request shall not be affected by, or considered at, the evidentiary hearing. The Regional Administrator shall specify these conditions in writing in accordance with § 124.60(c).

(e) The Regional Administrator must grant or deny all requests for an evidentiary hearing on a particular permit. All requests that are granted for a particular permit shall be combined in a single evidentiary hearing.

(f) The Regional Administra (upon notice to all persons who have already submitted hearing requests) may extend the time allowed for submitting hearing requests under this section for good cause.

§ 124.75 Decision on request for a hearing.

(a)(1) Within 30 days following the expiration of the time allowed by § 124.74 for submitting an evidentiary hearing request, the Regional Administrator shall decide the extent to which, if at all, the request shall be granted, provided that the request conforms to the requirements of § 124.74, and sets forth material issues of fact relevant to the issuance of the permit.

(2) When an NPDES permit for which a hearing request has been granted constitutes "initial licensing" under § 124.111, the Regional Administrator may elect to hold a formal hearing under the procedures of Subpart F rather than under the procedures of this subpart even if no person has requested that Subpart F be applied. If the Regional Administrator makes such a decision, he or she shall issue a notice of hearing under § 124.116. All subsequent proceedings shall then be governed by §§ 124.117 through 124.121, except that any reference to a draft permit shall mean the final permit.

(3) Whenever the Regional Administrator grants a request made under § 124.74(c)(8) for a formal hearing under Subpart F on an NPDES permit that does not constitute an initial li

cense under § 124.111, the Regional Administrator shall issue a notice of hearing under § 124.116 including a statement that the permit will be processed under the procedures of Subpart F unless a written objection is received within 30 days. If no valid objection is received, the application shall be processed in accordance with §§ 124.117 through 124.121, except that any reference to a draft permit shall mean the final permit. If a valid objection is received, this subpart shall be applied instead.

(b) If a request for a hearing is denied in whole or in part, the Regional Administrator shall briefly state the reasons. That denial is subject to review by the Administrator under § 124.91.

§ 124.76 Obligation to submit evidence and raise issues before a final permit is issued.

In any case where the Regional Administrator elected to apply the requirements of § 124.14(a), no evidence shall be submitted by any party to a hearing under this Subpart that was not submitted to the administrative record required by § 124.18 as part of the preparation of and comment on a draft permit, unless good cause is shown for the failure to submit it. No issues shall be raised by any party that were not submitted to the administrative record required by § 124.18 as part of the preparation of and comment on a draft permit unless good cause is shown for the failure to submit them. Good cause includes the case where the party seeking to raise the new issues or introduce new information shows that it could not reasonably have ascertained the issues or made the information available within the time required by § 124.15; or that it could not have reasonably anticipated the relevance or materiality of the information sought to be introduced. Good cause exists for the introduction of data available on operation authorized under § 124.60(a)(2).

[49 FR 38051, Sept. 26, 1984]

§ 124.77 Notice of hearing.

Public notice of the grant of an evidentiary hearing regarding a permit shall be given as provided in § 124.57(b) and by mailing a copy to all persons who commented on the draft permit, testified at the public hearing, or submitted a request for a hearing. Before the issuance of the notice, the Regional Administrator shall designate the Agency trial staff and the members of the decisional body (as defined in § 124.78).

§ 124.78 Ex parte communications.

(a) For purposes of this section, the following definitions shall apply:

(1) "Agency trial staff" means those Agency employees, whether temporary or permanent, who have been designated by the Agency under § 124.77 or § 124.116 as available to investigate, litigate, and present the evidence, arguments, and position of the Agency in the evidentiary hearing or nonadversary panel hearing. Any EPA employee, consultant, or contractor who is called as a witness by EPA trial staff, or who assisted in the formulation of the draft permit which is the subject of the hearing, shall be designated as a member of the Agency trial staff;

(2) "Decisional body" means any Agency employee who is or may reasonably be expected to be involved in the decisional process of the proceeding including the Administrator, Judicial Officer, Presiding Officer, the Regional Administrator (if he or she does not designate himself or herself as a member of the Agency trial staff), and any of their staff participating in the decisional process. In the case of a nonadversary panel hearing, the decisional body shall also include the panel members, whether or not permanently employed by the Agency;

(3) "*Ex parte* communication" means any communication, written or oral, relating to the merits of the proceeding between the decisional body and an interested person outside the Agency or the Agency trial staff which was not originally filed or stated in the administrative record or in the hearing. *Ex parte* communications do not include:

(i) Communications between Agency employees other than between the Agency trial staff and the members of the decisional body;

(ii) Discussions between the decisional body and either:

(A) Interested persons outside the Agency, or

(B) The Agency trial staff, if all parties have received prior written notice of the proposed communications and have been given the opportunity to be present and participate therein.

(4) "Interested person outside the Agency" includes the permit applicant, any person who filed written comments in the proceeding, any person who requested the hearing, any person who requested to participate or intervene in the hearing, any participant in the hearing and any other interested person not employed by the Agency at the time of the communications, and any attorney of record for those persons.

(b)(1) No interested person outside the Agency or member of the Agency trial staff shall make or knowingly cause to be made to any members of the decisional body, an *ex parte* communication on the merits of the proceedings.

(2) No member of the decisional body shall make or knowingly cause to be made to any interested person outside the Agency or member of the Agency trial staff, an *ex parte* communication on the merits of the proceedings.

(3) A member of the decisional body who receives or who makes or who knowingly causes to be made a communication prohibited by this subsection shall file with the Regional Hearing Clerk all written communications or memoranda stating the substance of all oral communications together with all written responses and memoranda stating the substance of all oral responses.

(c) Whenever any member of the decisionmaking body receives an *ex parte* communication knowingly made or knowingly caused to be made by a party or representative of a party in violation of this section, the person presiding at the stage of the hearing then in progress may, to the extent consistent with justice and the policy of the CWA, require the party to show cause why its claim or interest in the proceedings should not be dismissed, denied, disregarded, or otherwise adversely affected on account of such violation.

(d) The prohibitions of this section begin to apply upon issuance of the notice of the grant of a hearing under § 124.77 or § 124.116. This prohibition terminates at the date of final agency action.

[48 FR 14264, Apr. 1, 1983, as amended at 49 FR 38052, Sept. 26, 1984]

§ 124.79 Additional parties and issues.

(a) Any person may submit a request to be admitted as a party within 15 days after the date of mailing, publication, or posting of notice of the grant of an evidentiary hearing, whichever occurs last. The Presiding Officer shall grant requests that meet the requirements of §§ 124.74 and 124.76.

(b) After the expiration of the time prescribed in paragraph (a) of this section any person may file a motion for leave to intervene as a party. This motion must meet the requirements of §§ 124.74 and 124.76 and set forth the grounds for the proposed intervention. No factual or legal issues, besides those raised by timely hearing requests, may be proposed except for good cause. A motion for leave to intervene must also contain a verified statement showing good cause for the failure to file a timely request to be admitted as a party. The Presiding Officer shall grant the motion only upon an express finding on the record that:

(1) Extraordinary circumstances justify granting the motion;

(2) The intervener has consented be bound by:

(i) Prior written agreements and stipulations by and between the existing parties; and

(ii) All orders previously entered in the proceedings; and

(3) Intervention will not cause undue delay or prejudice the rights of the existing parties.

§ 124.80 Filing and service.

(a) An original and one (1) copy of all written submissions relating to an evidentiary hearing filed after the notice is published shall be filed with the Regional Hearing Clerk.

(b) The party filing any submission shall also serve a copy of each submis-

sion upon the Presiding Officer and each party of record. Service shall be by mail or personal delivery.

(c) Every submission shall be accompanied by an acknowledgment of service by the person served or a certificate of service citing the date, place, time, and manner of service and the names of the persons served.

(d) The Regional Hearing Clerk shall maintain and furnish a list containing the name, service address, and telephone number of all parties and their attorneys or duly authorized representatives to any person upon request.

§ 124.81 Assignment of Administrative Law Judge.

No later than the date of mailing, publication, or posting of the notice of a grant of an evidentiary hearing, whichever occurs last, the Regional Administrator shall refer the proceeding to the Chief Administrative Law Judge, who shall assign an Administrative Law Judge to serve as Presiding Officer for the hearing.

§ 124.82 Consolidation and severance.

(a) The Administrator, Regional Administrator, or Presiding Officer has the discretion to consolidate, in whole or in part, two or more proceedings to be held under this subpart, whenever it appears that a joint hearing on any or all of the matters in issue would expedite or simplify consideration of the issues and that no party would be prejudiced thereby. Consolidation shall not affect the right of any party to raise issues that might have been raised had there been no consolidation.

(b) If the Presiding Officer determines consolidation is not conducive to an expeditious, full, and fair hearing, any party or issues may be severed and heard in a separate proceeding.

§ 124.83 Prehearing conferences.

(a) The Presiding Officer, *sua sponte*, or at the request of any party, may direct the parties or their attorneys or duly authorized representatives to appear at a specified time and place for one or more conferences before or during a hearing, or to submit written proposals or correspond for the purpose of considering any of the matters set forth in paragraph (c) of this section.

(b) The Presiding Officer shall allow a reasonable period before the hearing begins for the orderly completion of all prehearing procedures and for the submission and disposition of all prehearing motions. Where the circumstances warrant, the Presiding Officer may call a prehearing conference to inquire into the use of available procedures contemplated by the parties and the time required for their completion, to establish a schedule for their completion, and to set a tentative date for beginning the hearing.

(c) In conferences held, or in suggestions submitted, under paragraph (a) of this section, the following matter may be considered:

(1) Simplification, clarification, amplification, or limitation of the issues.

(2) Admission of facts and of the genuineness of documents, and stipulations of facts.

(3) Objections to the introduction into evidence at the hearing of any written testimony, documents, papers, exhibits, or other submissions proposed by a party, except that the administrative record required by § 124.19 shall be received in evidence subject to the provisions of § 124.85(d)(2). At any time before the end of the hearing any party may make, and the Presiding Officer shall consider and rule upon, motions to strike testimony or other evidence other than the administrative record on the grounds of relevance, competency, or materiality.

(4) Matters subject to official notice may be taken.

(5) Scheduling as many of the following as are deemed necessary and proper by the Presiding Officer:

(i) Submission of narrative statements of position on each factual issue in controversy;

(ii) Submission of written testimony and documentary evidence (e.g., affidavits, data, studies, reports, and any other type of written material) in support of those statements; or

(iii) Requests by any party for the production of additional documentation, data, or other information relevant and material to the facts in issue.

(6) Grouping participants with substantially similar interests to eliminate redundant evidence, motions, and objections.

(7) Such other matters that may expedite the hearing or aid in the disposition of the matter.

(d) At a prehearing conference or at some other reasonable time set by the Presiding Officer, each party shall make available to all other parties the names of the expert and other witnesses it expects to call. At its discretion or at the request of the Presiding Officer, a party may include a brief narrative summary of any witness's anticipated testimony. Copies of any written testimony, documents, papers, exhibits, or materials which a party expects to introduce into evidence, and the administrative record required by § 124.18 shall be marked for identification as ordered by the Presiding Officer. Witnesses, proposed written testimony, and other evidence may be added or amended upon order of the Presiding Officer for good cause shown. Agency employees and consultants shall be made available as witnesses by the Agency to the same extent that production of such witnesses is required of other parties under § 124.74(c)(4). (See also § 124.85(b)(16).)

(e) The Presiding Officer shall prepare a written prehearing order reciting the actions taken at each prehearing conference and setting forth the schedule for the hearing, unless a transcript has been taken and accurately reflects these matters. The order shall include a written statement of the areas of factual agreement and disagreement and of the methods and procedures to be used in developing the evidence and the respective duties of the parties in connection therewith. This order shall control the subsequent course of the hearing unless modified by the Presiding Officer for good cause shown.

§ 124.84 Summary determination.

(a) Any party to an evidentiary hearing may move with or without supporting affidavits and briefs for a summary determination in its favor upon any of the issues being adjudicated on the basis that there is no genuine issue of material fact for determination. This motion shall be filed at least 45 days before the date set for the hearing, except that upon good cause shown the motion may be filed at any time before the close of the hearing.

(b) Any other party may, within 30 days after service of the motion, file and serve a response to it or a countermotion for summary determination. When a motion for summary determination is made and supported, a party opposing the motion may not rest upon mere allegations or denials but must show, by affidavit or by other materials subject to consideration by the Presiding Officer, that there is genuine issue of material fact for determination at the hearing.

(c) Affidavits shall be made on personal knowledge, shall set forth facts that would be admissible in evidence, and shall show affirmatively that the affiant is competent to testify to the matters stated therein.

(d) The Presiding Officer may set the matter for oral argument and call for the submission of proposed findings, conclusions, briefs, or memoranda of law. The Presiding Officer shall rule on the motion not more than 30 days after the date responses to the motion are filed under paragraph (b) of this section.

(e) If all factual issues are decided by summary determination, no hearing will be held and the Presiding Officer shall prepare an initial decision under § 124.89. If summary determination is denied or if partial summary determination is granted, the Presiding Officer shall issue a memorandum opinion and order, interlocutory in character, and the hearing will proceed on the remaining issues. Appeals from interlocutory rulings are governed by § 124.90.

(f) Should it appear from the affidavits of a party opposing a motion for summary determination that he or she cannot for reasons stated present, by affidavit or otherwise, facts essential to justify his or her opposition, the Presiding Officer may deny the motion or order a continuance to allow additional affidavits or other information to be obtained or may make such other order as is just and proper.

10.1.3 Hazardous Waste Disposal Applications/Permits

Neither the existing units nor the Purdom Unit 8 Project require a federal hazardous waste storage or treatment permit under the Resource Conservation and Recovery Act. A discussion of the station's hazardous waste management practices is contained in Section 3.7.2.

10.1.4 Section 10 or 404 Applications/Permits

Neither the existing units nor the Purdom Unit 8 Project require a federal Section 10 or 404 permit.

10.1.5 Prevention of Significant Deterioration Application (and Title V and IV)

APPLICATION SUMMARY

The City of Tallahassee is proposing the construction of a new Unit 8 at its existing Purdom Generating Station located in Wakulla County, Florida. The proposed Unit 8 will include a combustion turbine equipped with a nonfired heat recovery steam generator (HRSG), a steam turbine/generator, a mechanical draft cooling tower, and associated facilities. The proposed unit will have a nominal generating capacity of 250 mega-Watts (MW). The combustion turbine will generate a nominal 160 MW and will be fired by either clean pipeline quality natural gas or Number 2 diesel fuel oil with a maximum sulfur content of 0.05 percent by weight. The proposed combustion turbine is an advanced General Electric (GE) unit equipped with dry low-NO_x combustors and a water injection system for minimizing emissions of oxides of nitrogen (NO_x) while firing natural gas and Number 2 diesel fuel oil, respectively. The HRSG will be a nonfired unit coupled with a steam turbine/generator with a nominal capacity of 90 MW. The mechanical draft cooling tower will be equipped with drift eliminators to minimize drift losses while reducing particulate matter (TSP & PM_{10}) emissions.

As part of the construction project, the Purdom Generating Station will be subject to federally enforceable facility-wide emission caps on sulfur dioxide (SO_2) and NO_x to be implemented following completion of the compliance testing of the Unit 8 combustion turbine. As part of the proposed project and emission caps, existing stream generating units 5 and 6 will be permanently shut down and annual operation of the existing Unit 7 steam generator, the existing combustion turbines, and the auxiliary boiler will be indirectly restricted. The proposed emission caps will hold future allowable emissions of SO_2 and NO_x to their current actual levels so that there will be no net annual increase in emissions of these pollutants. In addition, the caps will indirectly limit emissions of other pollutants including, but not limited to, carbon monoxide (CO), particulate matter (TSP & PM_{10}) volatile organic compounds (VOC), trace metals, fluorides and sulfuric acid mist. Based on the proposed emission caps and the various pollutant specific worst-case operating scenarios within those caps, the project was determined to be a major modification to an existing major source under Florida's stationary source preconstruction review regulations (Chapter 62-212, F.A.C.). As defined within the regulations, the project was determined to have net emission increases above the thresholds for CO and particulate matter (TSP & PM_{10}). These increases required evaluation of Best Available Control Technology (BACT) and an analysis of ambient impacts on the nearby Class I and II areas, the Air Quality Related Values (AQRVs), and the Ambient Air Quality Standards (AAQS).

The project is being licensed under Florida's Power Plant Siting Act. The State will be required to issue a separate Prevention of Significant Deterioration (PSD) permit. A supplemental Title V operating permit application is also required, and the City has elected to have issuance of this permit coordinated with the PPSA process.

Appendix 10.1.5 of the Site Certification Application contains the State air permit long-form application (Form 62-210.900(1)) for the PSD permit and supplemental Title application. The PSD permit application is contained within the air permit application form as Attachment PGS-06, Supplemental Information for Construction Permit Application. The facility will be operated in accordance with the current operation and construction permits, and once issued, the initial Title V permit. After the proposed unit has been constructed and the compliance testing has been

completed, the Purdom Generating Station will begin operating under the facility-wide emission caps on SO_2 and NO_x, as described in the Title V and PSD permit application attached.

As noted above, the proposed project required BACT evaluations and ambient impact analyses for CO and particulate matter (TSP & PM_{10}). In addition to these, the City instructed its engineers to evaluate BACT and the ambient impacts for all regulated pollutants emitted as a result of the project. These additional evaluations were requested to ensure that the proposed project will protect the surrounding environment to the greatest degree technically, environmentally and economically achievable. The evaluations included a BACT analysis for SO_2, NO_x, VOCs, trace metals, fluorides, and sulfuric acid mist, and ambient impact assessments for the Class I and II areas, AAQSs, AQRVs, and draft Florida Ambient Reference Concentrations (FARCs). Based on the findings of these additional evaluations, the proposed project represents a highly protective addition to the existing Purdom Generating Station.

Application Contact

Jennette Curtis
Environmental Service Administrator
City of Tallahassee, Electric Utility
300 South Adams Street, 3rd Floor
Tallahassee, Florida 32301
Phone No.: (904) 891-8850
Fax No.: (904) 891-8277

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

FLORIDA DEP LOGO

Department of Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

This section of the Application for Air Permit form identifies the facility and provides general information on the scope and purpose of this application. This section also includes information on the owner or authorized representative of the facility (or the responsible official in the case of a Title V source) and the necessary statements for the applicant and professional engineer, where required, to sign and date for formal submittal of the Application for Air Permit to the Department. If the application form is submitted to the Department using ELSA, this section of the Application for Air Permit must also be submitted in hard-copy.

Identification of Facility Addressed in This Application

Enter the name of the corporation, business, governmental entity, or individual that has ownership or control of the facility; the facility site name, if any; and the facility's physical location. If known, also enter the facility identification number.

1. Facility Owner/Company Name: **City of Tallahassee**	
2. Site Name: **Sam O. Purdom Generating Station**	
3. Facility Identification Number: **1290001**	[ ] Unknown
4. Facility Location: Street Address or Other Locator: **667 Port Leon Drive** City: **St. Marks** County: **Wakulla** Zip Code: **32355**	
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Permit Number:	
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:
   Robert E. McGarrah, Production Superintendent

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

   Organization/Firm: **City of Tallahassee, Electric Utility**
   Street Address: **2602 Jackson Bluff Road**
   City: **Tallahassee** State: **Florida** Zip Code: **32304**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: **(904) 891 - 5534** Fax: **(904) 891 - 5162**

4. Owner/Authorized Representative or Responsible Official Statement:

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

   Signature Date 3/4/97

* Attach letter of authorization if not currently on file.

Scope of Application

This Application for Air Permit addresses the following emissions unit(s) at the facility. An Emissions Unit Information Section (a Section III of the form) must be included for each emissions unit listed.

Emissions Unit ID	Description of Emissions Unit	Permit Type
EU01	**Unregulated Particulate Sources**	
EU02	**Unregulated VOC Sources**	
EU03	**Combustion Turbine No. 1**	
EU04	**Combustion Turbine No. 2**	
EU11	**Boiler No. 7**	
EU12	**Auxiliary Boiler**	
EU13	**Unit 8 Combustion Turbine**	

Purpose of Application and Category

Check one (except as otherwise indicated):

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

This Application for Air Permit is submitted to obtain:

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

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

Current construction permit number: _____

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

Operation permit to be renewed: _____

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

Current construction permit number: _____

Operation permit to be revised: _____

[X] Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. Also check Category III.

Operation permit to be revised/corrected: N/A - Operating Permit Not Yet Issued

[ ] Air operation permit revision for a Title V source for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit to be revised: _____

Reason for revision: _____

_____

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

This Application for Air Permit is submitted to obtain:

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

Current operation/construction permit number(s):

_____

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

Operation permit to be renewed: _____

[ ] Air operation permit revision for a synthetic non-Title V source. Give reason for revision; e.g., to address one or more newly constructed or modified emissions units.

Operation permit to be revised: _____

Reason for revision: _____

_____

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

This Application for Air Permit is submitted to obtain:

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

Current operation permit number(s), if any: **Operating Permit Not Yet Issued**

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

Current operation permit number(s): _____

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

Application Processing Fee

Check one:

[ ] Attached - Amount: $_____ [X] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations:

   The City of Tallahassee's Electric Department is proposing the construction of two new emissions units as part of a modification to its Purdom Generating Station. The modifications include the construction of a new 250 mega-Watt combined cycle gas turbine and an associated cooling tower. The project also includes a request for facility-wide SO_2 and NO_x caps and the permanemt shutdown of two existing steam generators (Unit Nos. 5 & 6). The project is being licensed under the Florida Power Plant Siting Act. The project, as proposed, triggers PSD for particulate matter (TSP & PM_{10}) and carbon monoxide. The Purdom Generating Station is an existing major source (PSD & Title V).

   This application is for a site certification, a Prevention of Significant Deterioration (PSD) permit and a modification to the not-yet-issued Title V Operating permit.

2. Projected or Actual Date of Commencement of Construction:
   Projected
   January 1, 1999

3. Projected Date of Completion of Construction:
   May 15, 2000

Professional Engineer Certification

1. Professional Engineer Name: **Darrel J. Graziani**
   Registration Number: **44685**

2. Professional Engineer Mailing Address:

   Organization/Firm: **Foster Wheeler Environmental Corporation**
   Street Address: **759 South Federal Highway, Suite 100**
   City: **Stuart** State: **Florida** Zip Code: **34994**

3. Professional Engineer Telephone Numbers:
   Telephone: **(561) 781-3434** Fax: **(561) 781-3411**

4. Professional Engineer Statement:

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

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

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

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

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

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

Daniel J. Kuzi — Signature

3-4-97 — Date

DANIEL JAMES GRAZIANI — Seal — Florida — NO. 44685 — STATE OF FLORIDA — REGISTERED ENGINEER

* Attach any exception to certification statement.

Poor Original

Application Contact

1. Name and Title of Application Contact:
   Jennette Curtis
   Environmental Services Administrator

2. Application Contact Mailing Address:

   Organization/Firm: **City of Tallahassee, Electric Utility**
   Street Address: **3rd Floor, 300 South Adams Street**
   City: **Tallahassee** State: **Florida** Zip Code: **32301**

3. Application Contact Telephone Numbers:
   Telephone: **(904) 891 -8850** Fax: **(904) 891-8277**

Application Comment

This package includes a Prevention of Significant Deterioration (PSD) permit application and a supplementary Title V application, which is an appendix to the Site Certification application.

Under the PSD regulations, the proposed project is classified as a major modification at an existing facility. The modification is considered major since the net increase in potential emissions of Particulate Matter (TSP), PM10, and Carbon Monoxide are greater than the PSD significant emission rates based on current actual emissions. The PSD requirements for the application of the Best Available Control Technology (BACT) is applicable only to those pollutants. The New Source Performance Standards for Gas Turbines (40 CFR 60 Subpart GG) establishes maximum short-term emission rates for Sulfur Dioxide (SO_2) and Oxides of Nitrogen (NO_x). Through the PSD and State Construction permits, the City seeks federally enforceable facility-wide caps on annual SO_2 and NO_x emissions. These proposed caps set future allowable emissions equal to the current actual emissions such that the net increase is zero. These caps also effectively minimize emission increases of other pollutants.

The City has submitted an initial Title V application to the Department as required. The initial Title V application reflects the current method of operating at the facility. The supplemental Title V application reflects the future method of operating following the installation, operation and initial compliance testing of Unit 8. The emission caps will be enforceable after the compliance testing has been completed.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: **16** East (km): **769.50** North (km): **3339.97**			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): **30/09/47** Longitude (DD/MM/SS): **84/12/10**			
3. Governmental Facility Code: **4**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s): **4911**
7. Facility Comment (limit to 500 characters):			

Facility Contact

1. Name and Title of Facility Contact: **Jennette Curtis** **Environmental Services Administrator**
2. Facility Contact Mailing Address Organization/Firm: **City of Tallahassee, Electric Utility** Street Address: **3rd Floor, 300 South Adams Street** City: **Tallahassee** State: **Florida** Zip Code: **32301**
3. Facility Contact Telephone Numbers: Telephone: **(904) 891-8850** Fax: **(904) 891-8277**

Facility Regulatory Classifications

1. Small Business Stationary Source?	[ ] Yes [X] No [ ] Unknown
2. Title V Source?	[X] Yes [ ] No
3. Synthetic Non-Title V Source?	[ ] Yes [X] No
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	[X] Yes [ ] No
5. Synthetic Minor Source of Pollutants Other than HAPs?	[ ] Yes [X] No
6. Major Source of Hazardous Air Pollutants (HAPs)?	[X] Yes [ ] No
7. Synthetic Minor Source of HAPs?	[ ] Yes [X] No
8. One or More Emissions Units Subject to NSPS?	[X] Yes [ ] No
9. One or More Emission Units Subject to NESHAP?	[ ] Yes [X] No
10. Title V Source by EPA Designation?	[ ] Yes [X] No

11. Facility Regulatory Classifications Comment (limit to 200 characters):

The Purdom Generating Station is an existing major source under Title I of the Clean Air Act. The project, as proposed, triggers PSD for particulate matter (TSP), PM10, and carbon monoxide. The application package includes a PSD (BACT) evaluation for these pollutants. The City of Tallahassee is licensing the project under the Power Plant Siting Act. As allowed under Rule 62-213.420(1)(a)2., F.A.C., the site certification application includes a supplemental Title V application.

B. FACILITY REGULATIONS

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

Rule 62-4.030 F.A.C.*	Rule 62-213.460 F.A.C.
Rule 62-4.040(1) F.A.C.*	Rule 62-213.900(1) F.A.C.
Rule 62-4.050(1),(2),(3) F.A.C.*	Rule 62-256.300 F.A.C.*
Rule 62-4.100 F.A.C.*	Rule 62-256.450 F.A.C.*
Rule 62-4.130 F.A.C.*	Rule 62-256.500 F.A.C.*
Rule 62-204.800(9)(b)8,(9)(d) F.A.C.*	Rule 62-256.600 F.A.C.*
Rule 62-210.300(2)[except (b)] F.A.C.	Rule 62-256.700 F.A.C.*
Rule 62-210.300(3)(a) F.A.C.	Rule 62-257.301 F.A.C.*
Rule 62-210.300(3)(b) F.A.C.	Rule 62-257.301 F.A.C.*
Rule 62-210.350(1);(2);(3) F.A.C.	Rule 62-257.400 F.A.C.*
Rule 62-210.370(3) F.A.C.	Rule 62-257.900 F.A.C.*
Rule 62-210.900(5) F.A.C.	Rule 62-296.320(2),(3)*,(4)(b) & (c) F.A.C.
Rule 62-212.300(1)(a);(2);(3) F.A.C.	Rule 62-297.310(7)a10 F.A.C.
Rule 62-212.400(2)(d)4,(e),(f);(3)(e);(5) & (6)(a), F.A.C.	40 CFR 61.05
Rule 62-213.205(1)[except (d) & (h)]; (4);(6) F.A.C.	40 CFR 61.12(b), (c)
Rule 62-213.300(1) F.A.C.	40 CFR 61.19
Rule 62-213.400 F.A.C.	40 CFR 61.145

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

Rule 62-213.410 F.A.C.	40 CFR 61.148
Rule 62-213.420(1)(a)1a,(b)1-4,(2)-(4)F.A.C.	40 CFR 82.42(a)(b)(1)(2)(4)(5)

* State-Only Enforceable

C. FACILITY POLLUTANTS

Facility Pollutant Information

1. Pollutant Emitted	2. Pollutant Classification
CO	**A**
NOx	**A**
PM10	**SM**
SO2	**SM**
H106	**A**
H107	**SM**
H133	**SM**
HAPs	**SM**

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Detail Information: Pollutant 1 of 2

1. Pollutant Emitted: **SO2**		
2. Requested Emissions Cap:	(lb/hour)	**80** (tons/year)
3. Basis for Emissions Cap Code: **ESCPSD**		
4. Facility Pollutant Comment (limit to 400 characters):		

The City of Tallahassee is requesting a facility wide emissions cap of 80 tons per year of sulfur dioxide. Compliance with the emissions cap will be ensured through a monitoring and tracking program (Attachment PGS-10).

Facility Pollutant Detail Information: Pollutant 2 of 2

1. Pollutant Emitted: **NOx**		
2. Requested Emissions Cap:	(lb/hour)	**467** (tons/year)
3. Basis for Emissions Cap Code: **ESCPSD**		
4. Facility Pollutant Comment (limit to 400 characters):		

The City of Tallahassee is requesting a facility wide emissions cap of 467 tons per year of oxides of nitrogen. Compliance with the emissions cap will be ensured through a monitoring and tracking program (Attachment PGS-10).

E. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements for All Applications

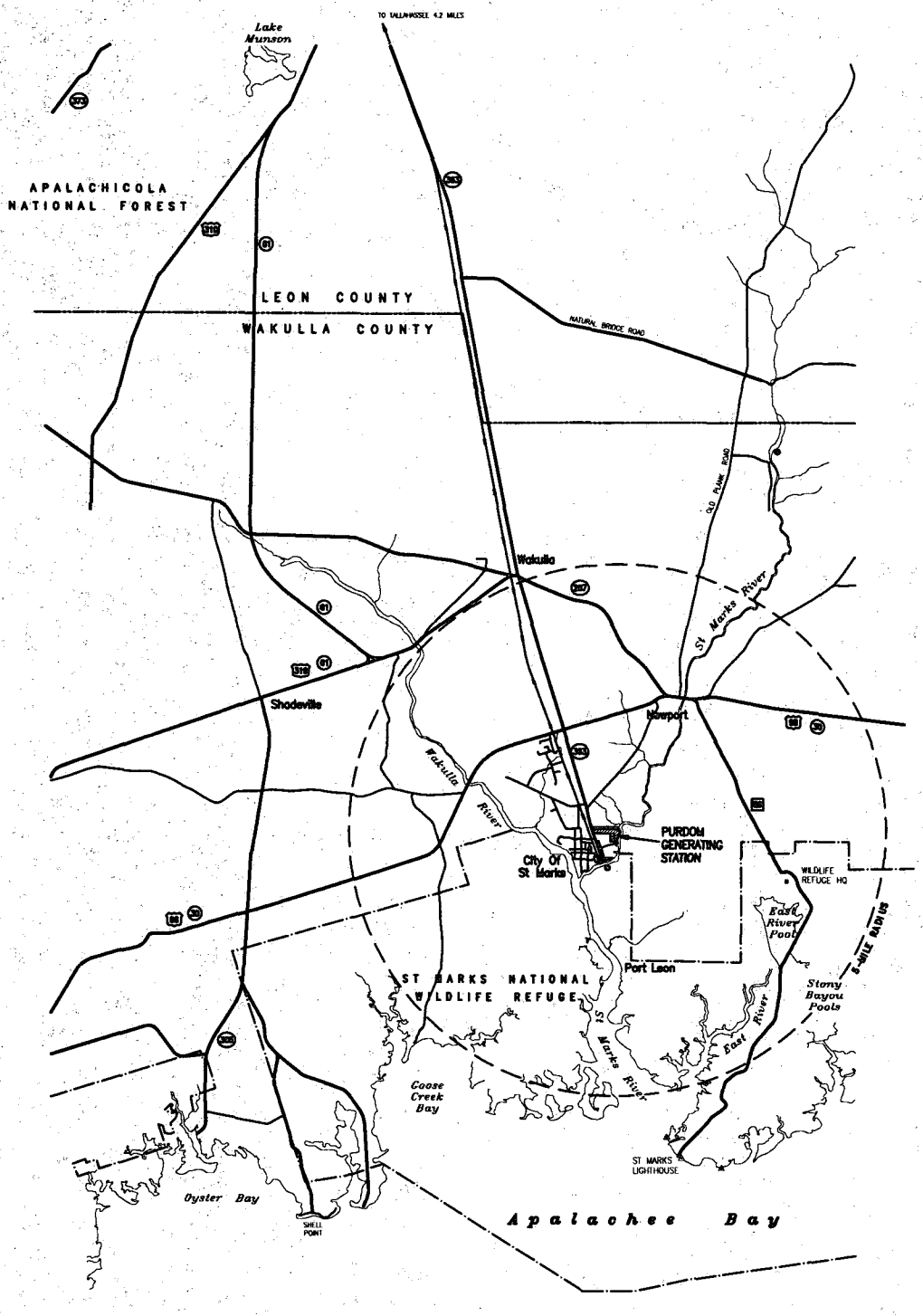
1. Area Map Showing Facility Location: [X] Attached, Document ID: PGS-01 [ ] Not Applicable [ ] Waiver Requested
2. Facility Plot Plan: [X] Attached, Document ID: PGS-02 [ ] Not Applicable [ ] Waiver Requested
3. Process Flow Diagram(s): [X] Attached, Document ID: PGS-03 [ ] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [X] Attached, Document ID: PGS-04 [ ] Not Applicable [ ] Waiver Requested
5. Fugitive Emissions Identification: [X] Attached, Document ID: PGS-05 [ ] Not Applicable [ ] Waiver Requested
6. Supplemental Information for Construction Permit Application: [X] Attached, Document ID: PGS-06 [ ] Not Applicable

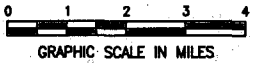
Additional Supplemental Requirements for Category I Applications Only

7. List of Proposed Exempt Activities: [X] Attached, Document ID: PGS-07 [ ] Not Applicable
8. List of Equipment/Activities Regulated under Title VI: [ ] Attached, Document ID: _____ [X] Equipment/Activities On site but Not Required to be Individually Listed [ ] Not Applicable
9. Alternative Methods of Operation: [X] Attached, Document ID: PGS-08 [ ] Not Applicable
10. Alternative Modes of Operation (Emissions Trading): [ ] Attached, Document ID: _____ [X] Not Applicable

11. Identification of Additional Applicable Requirements: [X] Attached, Document ID: PGS-09 [ ] Not Applicable
12. Compliance Assurance Monitoring Plan: [ ] Attached, Document ID:_____ [X] Not Applicable
13. Risk Management Plan Verification: [ ] Plan Submitted to Implementing Agency - Verification Attached, Document ID:_____ [ ] Plan to be Submitted to Implementing Agency by Required Date [X] Not Applicable
14. Compliance Report and Plan: [X] Attached, Document ID: PGS-10 [ ] Not Applicable
15. Compliance Certification (Hard-copy Required): [X] Attached, Document ID: PGS-11 [ ] Not Applicable

Attachment PGS-01





- LIGHTHOUSE
- GAGING STATION
- U. S. ROUTE
- STATE ROUTE
- COUNTY ROUTE
- PRIMARY ROAD, HARD SURFACE
- SECONDARY ROAD, IMPROVED SURFACE
- BIKE TRAIL
- COUNTY LINE
- WILDLIFE REFUGE BOUNDARY

CITY OF TALLAHASSEE, FLORIDA
PSD & TITLE V PERMIT APPLICATIONS
PURDOM GENERATING STATION

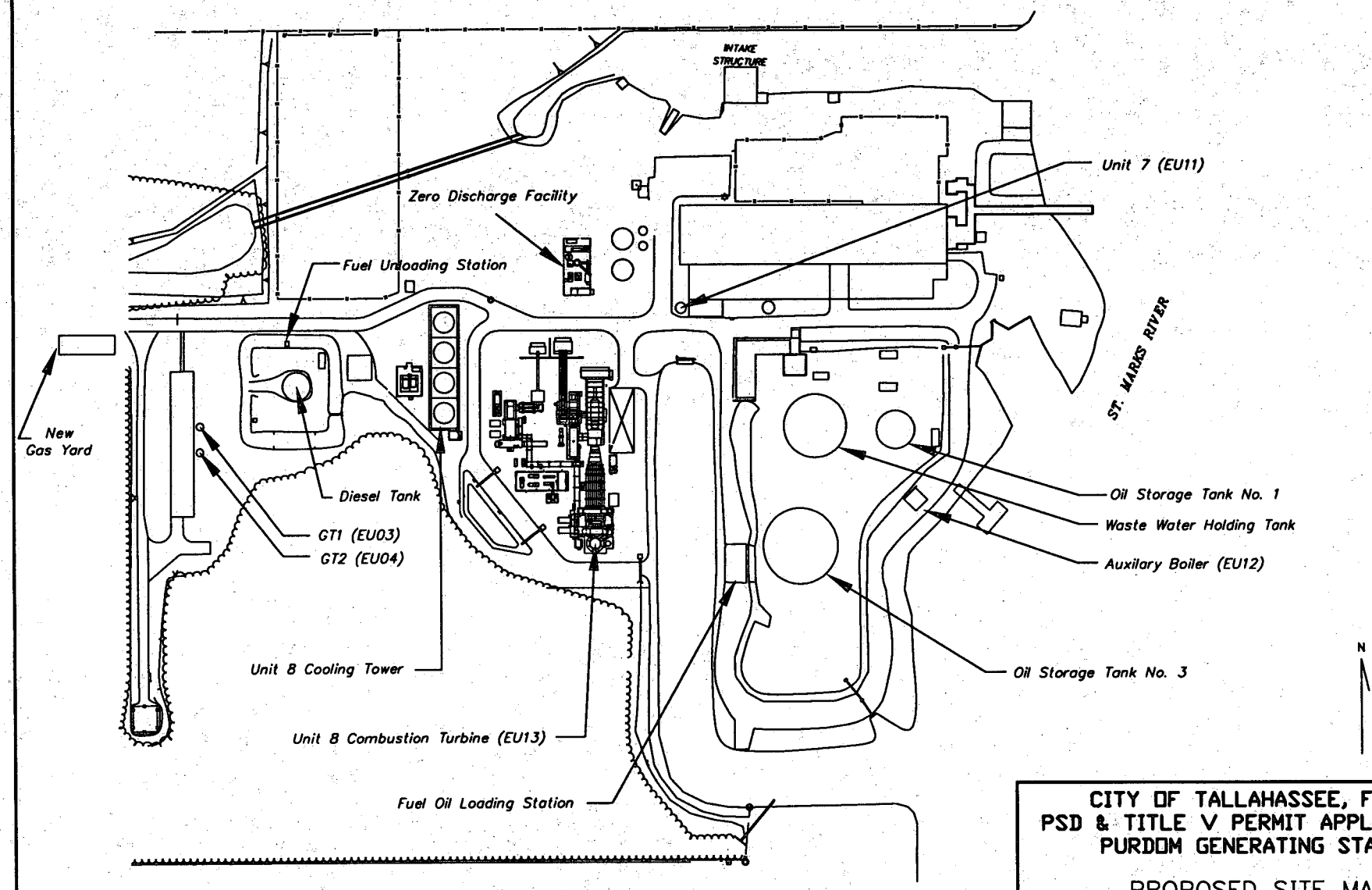
AREA MAP
PURDOM GENERATING STATION

FOSTER WHEELER ENVIRONMENTAL CORPORATION

SCALE: AS SHOWN	BY: DJG	CAD FILE NO. PAREA.DWG
DATE: 2/19/97	CKD' BY: DF REV. BY: MAE	ATTACHMENT NO. PGS-01

Drawing Reference: Cad File: 00000-03.DWG

Attachment PGS-02



Source: Raytheon Engineers & Constructors, 1997

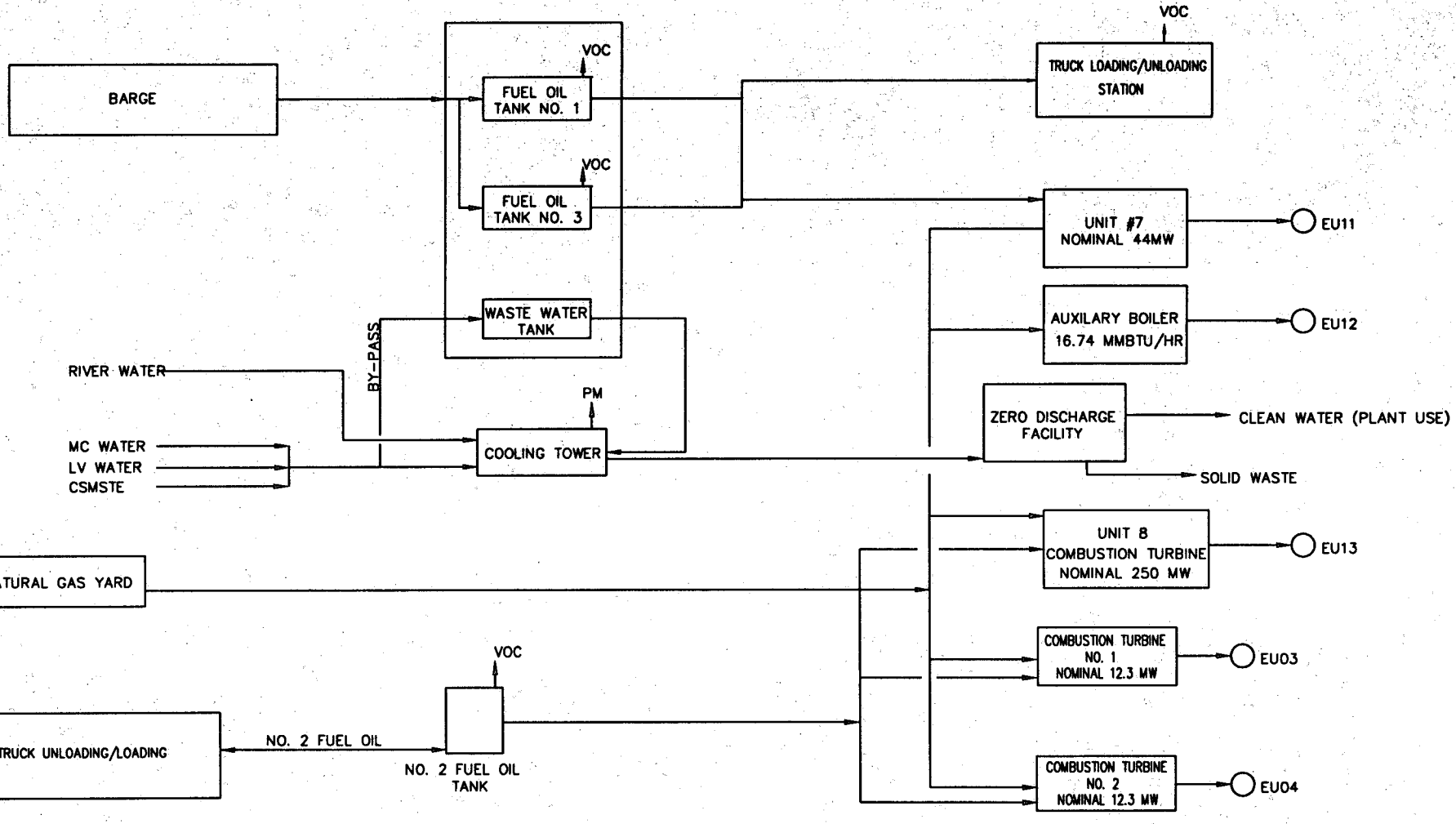
CITY OF TALLAHASSEE, FLORIDA
PSD & TITLE V PERMIT APPLICATIONS
PURDOM GENERATING STATION

PROPOSED SITE MAP

FOSTER WHEELER ENVIRONMENTAL CORPORATION

SCALE: 1" = 225' DATE: 2/26/97	BY: DJG CKD' BY: DF REV. BY: DJG	FILE NO: SITEPLAN.DWG FIGURE NO. PGS-02

Attachment PGS-03



LV WATER – LOW VOLUME DISCHARGE WATER

MC WATER – METAL CLEANING DISCHARGE WATER

CSMSTE – CITY OF ST. MARKS SEWAGE TREATMENT EFFLUENT

SOURCE: FOSTER WHEELER ENVIRONMENTAL CORPORATION, 1997

CITY OF TALLAHASSEE, FLORIDA
PSD & TITLE V PERMIT APPLICATIONS
PURDOM GENERATING STATION

PROPOSED
SIMPLIFIED PROCESS FLOW DIAGRAM
PURDOM GENERATING STATION

FOSTER WHEELER ENVIRONMENTAL CORPORATION

SCALE: N/A DATE: 2/27/97	BY: DJG CKD' BY: DF REV. BY: DJG	CAD FILE NO. PPFD.DWG FIGURE NO. PGS-03

Attachment PGS-04

As part of the initial Title V application development, the City of Tallahassee reviewed the potential sources of unconfined particulate emissions at its Purdom Generating Station. The intent of the review was to ensure that reasonable precautions were in place to prevent and/or control these potential particulate emissions. The potential sources which were identified included the following:

1. Concrete mixing;
2. Abrasive blasting
3. Aggregate handling and storage;
4. Heavy construction activities;
5. Driving on paved/unpaved roads; and
6. Spray application of surface coatings.

Based on the City of Tallahassee's review of these potential sources, the following reasonable precautions have been established to control unconfined emissions of particulate matter:

- The portable concrete mixer is operated on an as-needed basis. Reasonable precautions include enclosing the activity wherever practical.

- The abrasive blasting activities are associated with normal maintenance and corrosion control activities. These activities are also enclosed wherever practical.

- The aggregate storage piles occur on a temporary basis and are associated with miscellaneous construction activities. Water is applied on an as-needed basis to control unconfined emissions from the handling and storage of aggregate materials and the related construction activities.

Unconfined emissions associated with the limited on-site traffic are controlled through limiting vehicle speeds and unnecessary traffic within the plant grounds.

The spray applications of surface coatings are associated with normal maintenance and corrosion activities. These activities are enclosed whenever practical.

During the construction of Unit 8, unavoidable particulate matter emissions are likely to occur from various construction-related activities. Emissions of these pollutants will be minimzed using the above reasonable precautions. The quantities of fugitive dust emitted by the site construction vehicular traffic will be dependent on a number of factors, including the frequency of operations, specific operations being conducted, weather, and soil conditions.

The impact of heavy construction activities and site preparation on air quality will be short term and confined to the immediate vicinity of the construction activity. This is primarily because most of the fugitive dust created by construction traffic consists of relatively large particles (i.e., larger than those which constitute PM_{10}). These large particles tend to settle quickly rather than remain suspended for transport over long distances.

During construction activities a combination of the following techniques will be implemented:

Contractors will be instructed to comply with any applicable state and local regulations governing open-bodied trucks hauling sand, gravel, or soil between on-site and off-site areas.

Areas disturbed during construction will be stabilized by mulching or seeding as soon as practicable.

When construction occurs on bare ground, water (possibly together with non-hazardous wetting agents) will be used as necessary to help suppress dust, as needed.

Temporary vehicular surfaces of crushed rock may be used in high traffic areas. Areas not subject to heavy traffic or continual disturbance will be wetted down as needed using nontoxic substances to help suppress dust.

Sandblasting operations will be localized to minimize effects on adjacent work areas. Protective covers will also be utilized where practicable.

Surface coating activities will include the initial painting of the Combined Cycle Unit 8 and the associated facilities. As with normal surface coating operations, activities will be enclosed whenever practical.

Because of mitigative measures which will be employed, it is not expected that fugitive dust will present any significant air quality problems during the construction period.

Attachment PGS-05

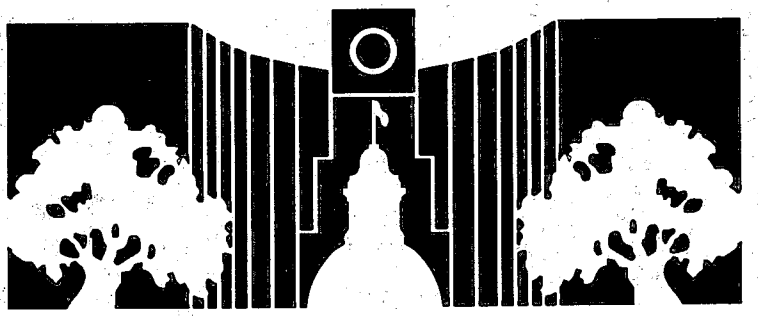
Fugitive emissions resulting from the operation of the Purdom Generating Station are generally addressed in Attachment PGS-07 of this application form, Exempt Activities. For those units or activities whose fugitive emissions exceed the emissions thresholds of Section III (G) of the application form the City has assigned an emissions unit identification number. For particulate matter, the emissions unit identification number (EU01) includes those unregulated activities which emit above the threshold. For volatile organic compounds, the emissions unit identification number (EU02) includes those unregulated activities which emit above the threshold.

Attachment PGS-06

The proposed project is subject to the preconstruction review regulations of Chapters 62-210.300, 62-212.300, and 62-212.400, F.A.C. For the facility, the supplemental information contained in this attachment includes the following data for the Prevention of Significant Deterioration (PSD) permit:

- Introduction
- Project Description
- Air Quality Review Requirements and Applicability
- Best Available Control Technology Evaluation
- Ambient Air Quality Monitoring Data Analysis
- Air Quality Modeling Approach
- Air Quality Impact Analysis Results
- Additional Impacts Analysis

The application of Best Available Control Technology (BACT) has been evaluated only for the proposed Unit 8's combustion turbine and cooling tower.



CITY OF TALLAHASSEE

PREVENTION OF SIGNIFICANT DETERIORATION REPORT

PURDOM UNIT 8

MARCH 1997

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1. INTRODUCTION

The City of Tallahassee (City) is planning to install a 250 MW (nominal), dual fuel, combined cycle combustion turbine and cooling tower at its Sam O. Purdom Generating Station in the City of St. Marks in Wakulla County. The Project includes both the addition of this new unit (Unit 8) with cooling tower and the permanent shut down of two existing units (Units 5 and 6). Figure 1-1 presents a general location map of the area and Figure 1-2 is a site location map. Figure 1-3 presents the existing Purdom site layout with the location of the proposed Unit 8 and new cooling tower identified.

The existing Purdom Generating Station consists of the retired steam electric Units 1-4 (currently being dismantled), the active steam electric Units 5-7 and their associated facilities, and two simple cycle combustion turbines (GT1 and GT2). The steam electric units can fire natural gas and/or No. 6 fuel oil while the existing combustion turbines can fire natural gas or Number 2 diesel oil. Units 5 and 6 share a common stack and Unit 7, GT1, and GT2 have their own stacks. A new, small gas-fired auxiliary boiler has recently been permitted and is being installed.

The addition of the new gas/oil fired combined cycle combustion turbine (Unit 8) is being licensed under the Florida Electrical Power Plant Siting Act (PPSA). This Prevention of Significant Deterioration (PSD) application is being submitted in conjunction with the Site Certification Application (SCA) rather than as a separate federal application because the Florida Department of Environmental Protection (FDEP) has been authorized to issue PSD permits for projects covered by the Power Plant Siting Act.

The Project design includes the reduction of emissions from existing units to offset the emissions of some of the pollutants associated with the new Unit, to the maximum extent practicable, in order to provide special air quality protection to nearby Class I PSD areas. In fact, federally enforceable emission caps for sulfur dioxide (SO_2) and oxides of nitrogen (NO_x), covering the proposed Unit 8, existing Unit 7, the existing combustion turbines (GT1 and GT2), and the new small auxiliary boiler is being sought. These "facility-wide caps" will require annual emissions of SO_2 and NO_x to remain at or below recent emission levels of these pollutants from Units 5, 6 and 7 and the two combustion turbines (GT1 and GT2).

FDEP's PSD regulations are codified in the Florida Administrative Code (F.A.C.) at Rule 62-212.400. They require a permit review and approval for new or modified existing sources that increase air pollutant emissions above specified threshold levels. These emission threshold levels will be exceeded by the Project for selected pollutants regulated by the PSD rules. As a result, the Project is subject to PSD review. The federal PSD program is implemented by FDEP through EPA approval of Florida's PSD program.

The technical information and analysis required by the federal and state PSD regulations is contained in this PSD permit application. Although this document and the application form are in an appendix to the SCA, this document has been formatted as a stand-alone PSD report. The report is divided into eight major sections. Presented in Section 2.0 is a description of the Project including both air pollutant emissions from Unit 8 and the emission reductions associated with the permanent shut down of Units 5 and 6. Air quality review requirements and applicability are presented in Section 3.0. The best available control technology (BACT) analysis is presented in

IMAGE QUALITY

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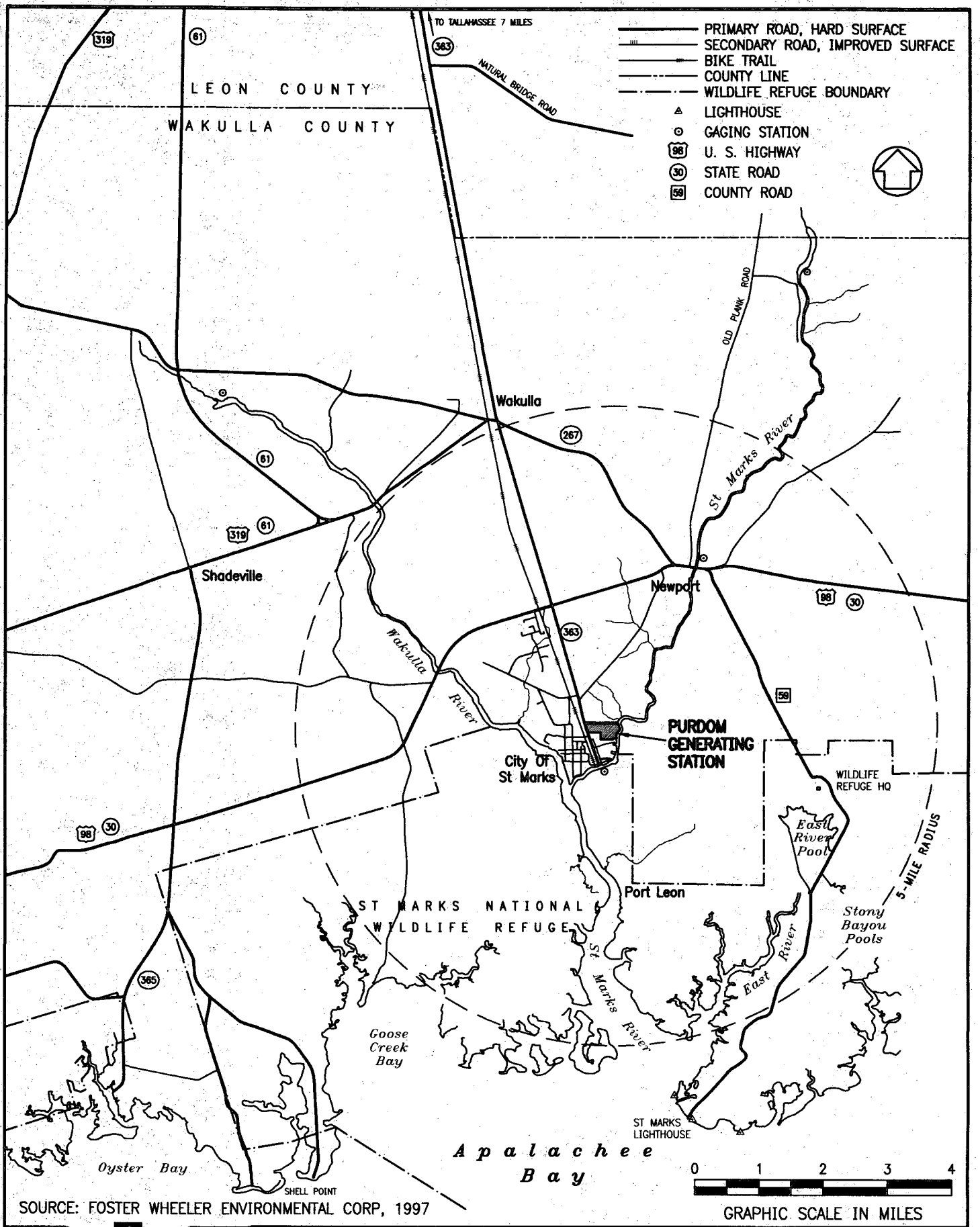

SOURCE: FOSTER WHEELER ENVIRONMENTAL CORP, 1997

CITY OF TALLAHASSEE

SITE LOCATION MAP

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 1-1

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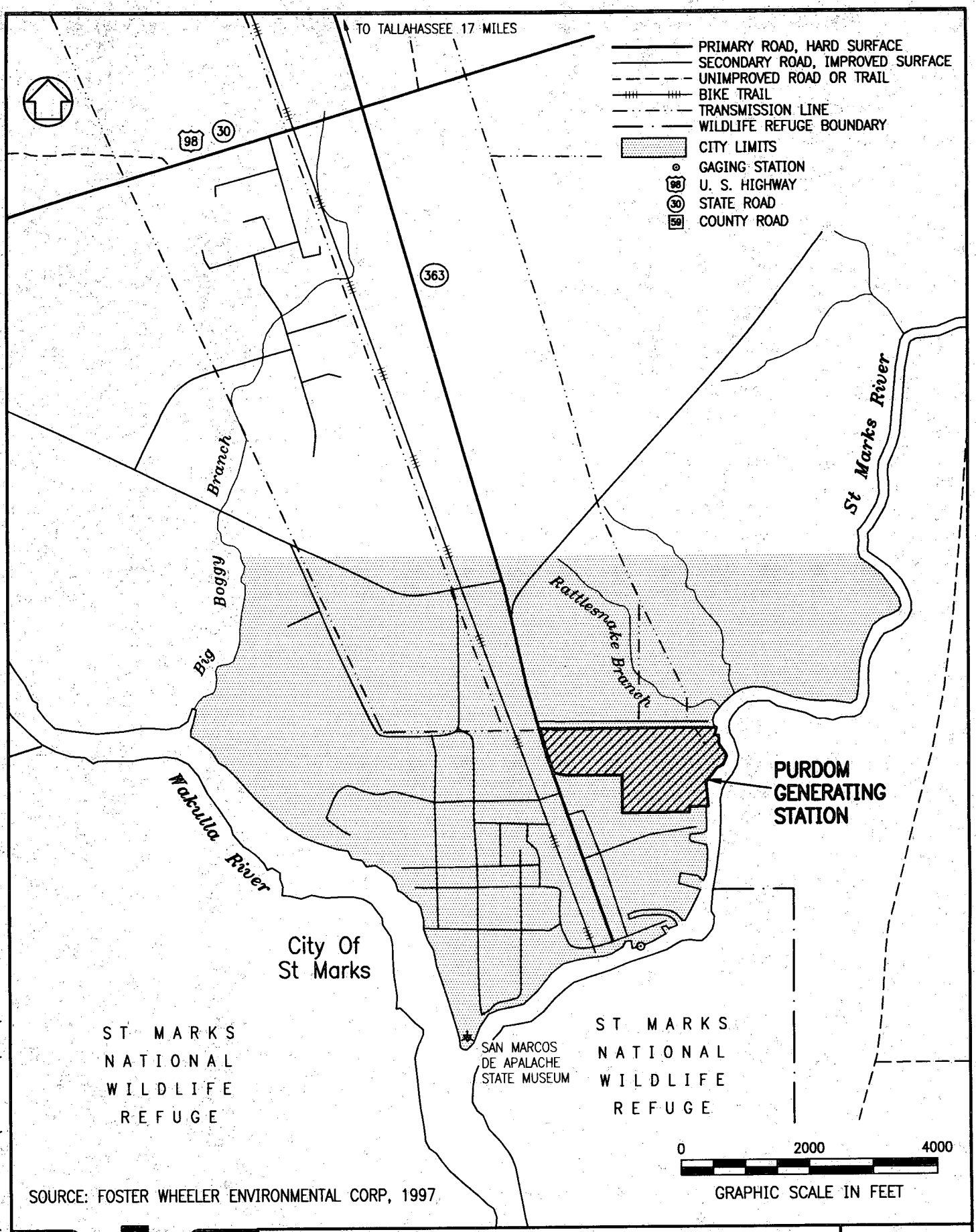

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CITY OF TALLAHASSEE

SITE LOCATION

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 1-2

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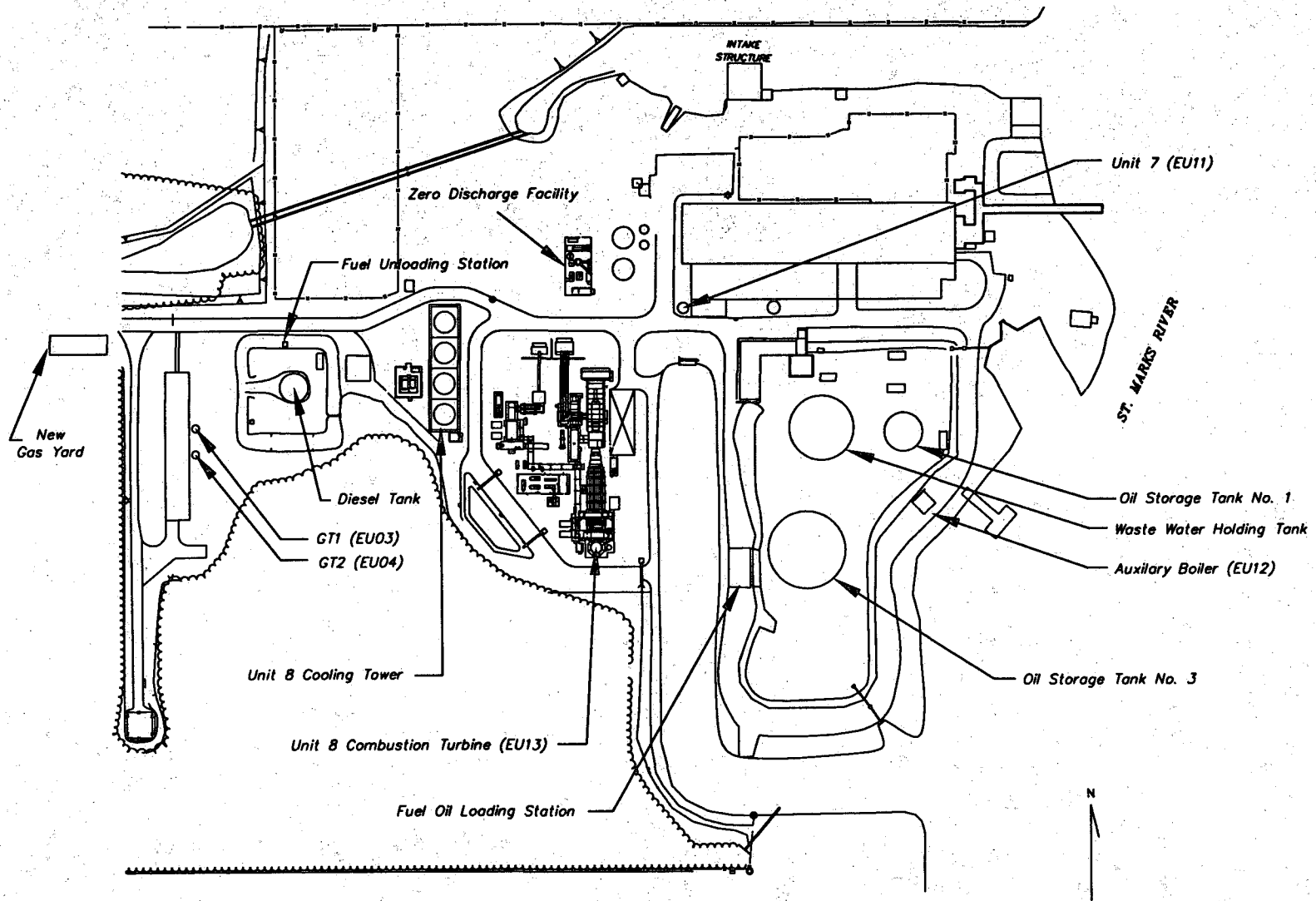

Source: Raytheon Engineers & Constructors, 1997

CITY OF TALLAHASSEE

PROPOSED SITE PLAN

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 1-3

Section 4.0. An ambient air quality monitoring data analysis is presented in Section 5.0, and the air quality modelling methodology, the results of the air quality impact assessment, and additional air quality analyses performed for the proposed Project are presented in Sections 6.0, 7.0, and 8.0, respectively. A brief conclusion is presented in Section 9.0. Section 10.0 contains a list of references and materials cited. Copies of the emissions source material and calculations are included as Appendices. This PSD report is itself an attachment (PGS-06) to the FDEP Long Form Application (FDEP Form 62-210.900(1)).

2. PROJECT DESCRIPTION

2.1 GENERAL DESCRIPTION

The proposed Purdom Unit 8 Project will consist of the construction of a new combined cycle combustion turbine and a cooling tower at the existing Purdom Generating Station. The new Unit will provide a nominal 250 MW of new generating capacity at the site. The Unit will fire pipeline quality natural gas as the primary fuel, with Number 2 (0.05% S) diesel fuel oil as the secondary fuel and will function as a base load unit, operating as many as 8,760 hours per year. The combustion turbine selected is a General Electric (GE) Model MS7231FA dry low NO_x unit. A simplified flow diagram (20° F, 60% relative humidity, sea level pressure) is provided in Figure 2-1.

During natural gas firing operations, NO_x emissions will be controlled through the use of staged combustion with GE dry low NO_x combustors. During fuel oil firing, NO_x emissions will be controlled by use of water injection to reduce peak flame temperature. SO_2 and sulfuric acid mist (H_2SO_4) emissions will be limited through the primary use of natural gas, the secondary use of Number 2 (0.05% S) diesel fuel oil, and through the "facility-wide cap," such that emissions of SO_2 do not exceed 80 tons per year. Carbon monoxide (CO), volatile organic compounds (VOCs) and particulate matter (both TSP and PM_{10}) emissions will be controlled through good combustion practices and the primary use of natural gas. Trace metal emissions (i.e., lead (Pb), beryllium (Be), arsenic (As), mercury (Hg)) and fluoride (Fl) will be minimized by using natural gas as the primary fuel. Particulate matter emissions from the cooling tower will be controlled through the use of drift eliminators.

2.2 PROPOSED UNIT 8 EMISSIONS AND STACK PARAMETERS

The estimated stack emissions and exhaust parameters that are representative of the advanced combustion turbine design (General Electric, 1996) proposed for the Project are presented in Tables 2-1 through 2-6 for the nominal 160 MW combustion turbine unit. These tables present emissions and stack parameters for both the natural gas and fuel oil cases for three ambient temperatures: 20°F, 59°F, and 95°F. GE data sheets which form the basis for these tables are contained in Appendix A. These tables include emissions data for both the regulated criteria air pollutants (NO_x, CO, SO_2, PM_{10}, VOC and Pb) and the regulated noncriteria air pollutants listed in Table 212.400-2 of Rule 62-212.400, F.A.C. Together these are referred to as the PSD regulated pollutants.

Worst-case air quality impacts due to the proposed facility are a function of both the emission rate and the plume rise. Emission rates and plume rise from all fossil fuel fired power plants are functions of plant load. However, unlike conventional steam generating units, the fuel consumption, emission rates, and plume rise from combustion turbines are also functions of ambient meteorological conditions (primarily temperature). Although it is not practical to model all possible operating scenarios for the facility, a large number of cases (combinations of load, ambient conditions and fuel types) were examined to represent the range of conditions that will occur during actual operations. The low (20° F) and high (95° F) ambient temperatures are reasonable extreme points selected to indicate the influence of compressor inlet temperature on

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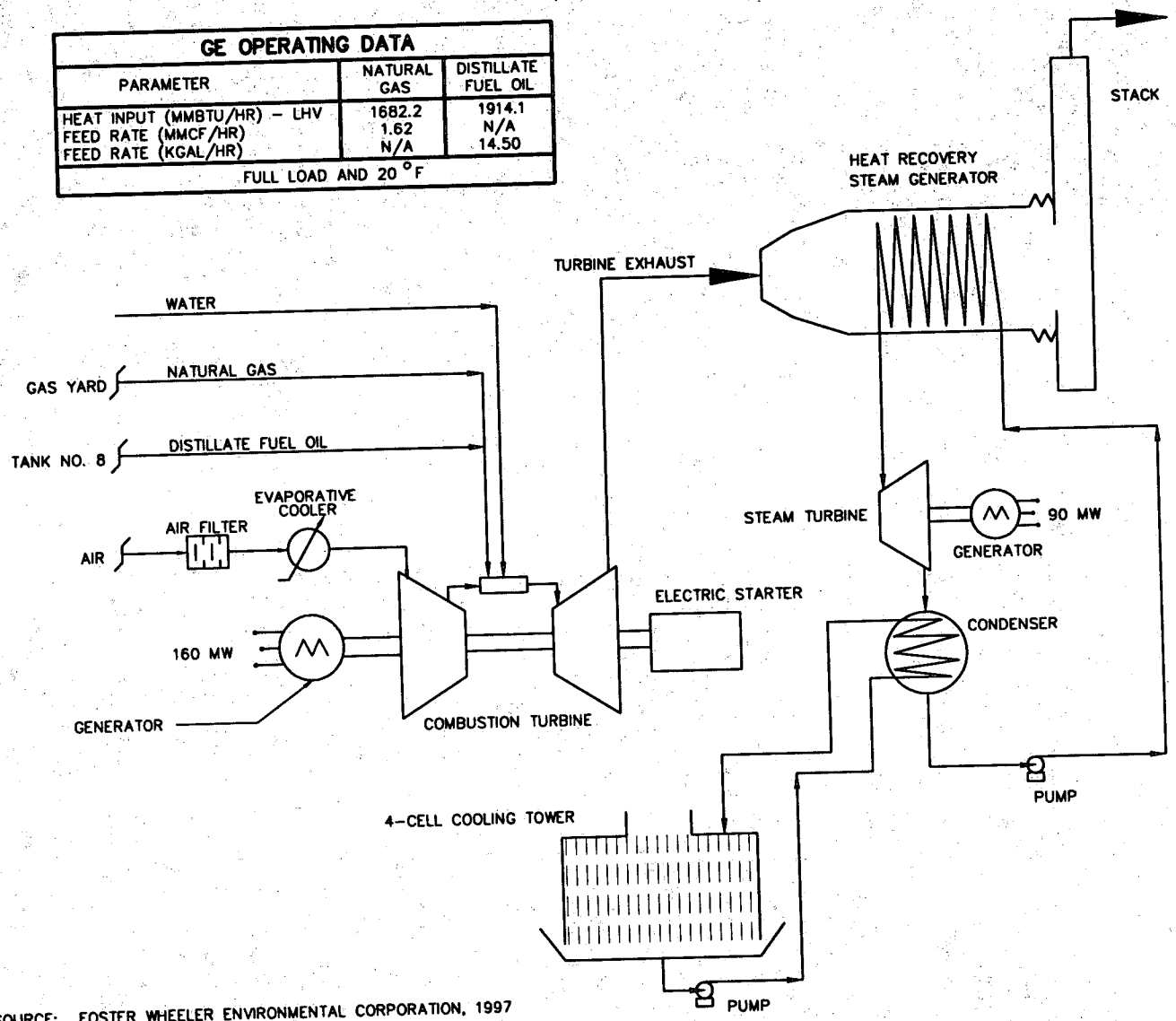
GE OPERATING DATA		
PARAMETER	NATURAL GAS	DISTILLATE FUEL OIL
HEAT INPUT (MMBTU/HR) – LHV	1682.2	1914.1
FEED RATE (MMCF/HR)	1.62	N/A
FEED RATE (KGAL/HR)	N/A	14.50
FULL LOAD AND 20 °F		

EU13 – EXHAUST PARAMETERS
EXHAUST TEMP. – 171 TO 203 °F
STACK HEIGHT – 200'
SO2 EMISSIONS – 80 TPY
NOx EMISSIONS – 467 TPY
OPACITY – 20% EXCEPT AS ALLOWED



SOURCE: FOSTER WHEELER ENVIRONMENTAL CORPORATION, 1997

CITY OF TALLAHASSEE

SIMPLIFIED PROCESS FLOW DIAGRAM

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2-1

TABLE 2-1
COMBINED CYCLE UNIT 8
ESTIMATED[1] PERFORMANCE ON NATURAL GAS (100% LOAD)

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,682.2	1,563.2	1,467.7
Evaporative Cooler	Off	Off	On
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	31	29	26
Oxides of Nitrogen (NO_x) (at 15% O_2) (9ppmvd)	62	58	54
Sulfur Dioxide (SO_2) [3]	51	47	44
Particulate Matter (PM_{10})	9	9	9
Volatile Organic Compounds (non-methane HC)	3	2.8	2.6
Lead (Pb)	N/A	N/A	N/A
Asbestos	N/A	N/A	N/A
Beryllium (Be)	N/A	N/A	N/A
Mercury (Hg) [4]	1.31E-06	1.22E-06	1.14E-06
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl)	N/A	N/A	N/A
Sulfuric Acid Mist (H_2SO_4)[5]	5.1	4.7	4.4
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	190	193	198
Stack Gas Exit Velocity (ft/sec)	80	75	70

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Sulfur dioxide emissions based on 10 grains/100 SCF total sulfur in natural gas and 95% conversion.
(4) Emission factor from (EPRI 1994)
(5) H_2SO_4 emissions based on 5% of sulfur in fuel.

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997

TABLE 2-2
COMBINED CYCLE UNIT 8
ESTIMATED [1] PERFORMANCE ON NATURAL GAS (75% LOAD)

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,360.7	1,274.4	1,202.1
Evaporative Cooler	Off	Off	Off
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	28	26	24
Oxides of Nitrogen (NO_x) (at 15% O_2) (9 ppmvd)	50	47	44
Sulfur Dioxide (SO_2)[3]	41	38	36
Particulate Matter (PM_{10})	9	9	9
Volatile Organic Compounds (non-methane HC)	2.4	2.2	2.2
Lead (Pb)	N/A	N/A	N/A
Asbestos	N/A	N/A	N/A
Beryllium (Be)	N/A	N/A	N/A
Mercury (Hg) [4]	1.06E-06	9.94E-07	9.38E-07
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl)	N/A	N/A	N/A
Sulfuric Acid Mist (H_2SO_4)[5]	4.1	3.8	3.6
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	171	185	190
Stack Gas Exit Velocity (ft/sec)	63	61	57

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Sulfur dioxide emissions based on 10 grains/100 SCF total sulfur in natural gas and 95% conversion.
(4) Emission factor from (EPRI 1994)
(5) H_2SO_4 emissions based on 5% of sulfur in fuel.

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997.

TABLE 2-3
COMBINED CYCLE UNIT 8
ESTIMATED [1] PERFORMANCE ON NATURAL GAS (50% LOAD)[4]

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,083.5	1,020.4	965
Evaporative Cooler	Off	Off	Off
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	56	53	50
Oxides of Nitrogen (NO_x) (at 15% O_2) (9 ppmvd)	39	37	35
Sulfur Dioxide (SO_2)[3]	23	31	29
Particulate Matter (PM_{10})	9	9	9
Volatile Organic Compounds (non-methane HC)	2.8	2.6	2.8
Lead (Pb)	N/A	N/A	N/A
Asbestos	N/A	N/A	N/A
Beryllium (Be)	N/A	N/A	N/A
Mercury (Hg) [5]	8.45E-07	7.96E-07	7.53E-07
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl)	N/A	N/A	N/A
Sulfuric Acid Mist (H_2SO_4)[6]	3.3	3.1	2.9
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	171	176	183
Stack Gas Exit Velocity (ft/sec)	51	50	47

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Sulfur dioxide emissions based on 10 grains/100 SCF total sulfur in natural gas and 95% conversion.
(4) At 95°F, the minimum load at which 9 ppm can be achieved is approximately 55% rather than 50%.
(5) Emission factor from (EPRI, 1994).
(6) H_2SO_4 emissions based on 5% of sulfur in fuel.

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997.

TABLE 2-4
COMBINED CYCLE UNIT 8
ESTIMATED [1] PERFORMANCE ON
NUMBER 2 (0.05% S) DIESEL FUEL OIL (100% LOAD)

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,914.1	1,779.5	1,659.5
Evaporative Cooler	Off	Off	On
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	104	96	89
Oxides of Nitrogen (NO_x) (at 15% O_2) (42 ppmvd)[3]	347	322	297
Sulfur Dioxide (SO_2) [4]	98	92	85
Particulate Matter (PM_{10})	17	17	17
Volatile Organic Compounds (non-methane HC)	8	7.5	6.6
Lead (Pb)[5]	1.11E-01	1.03E-01	9.25E-02
Asbestos	N/A	N/A	N/A
Beryllium (Be)[5]	6.32E-04	5.87E-04	5.26E-04
Mercury (Hg)[5]	1.74E-03	1.62E-03	1.45E-03
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl) [6]	2.03	1.89	1.69
Sulfuric Acid Mist (H_2SO_4)[4]	10	10	9
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	198	201	205
Stack Gas Exit Velocity (ft/sec)	85	80	75

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Based on FBN content of 0.015% or less. Maximum FBN content = 0.03% = an additional 12ppmvd NO_x above 42 ppmvd.
(4) Sulfur dioxide and sulfuric acid mist based on 0.05% sulfur by weight in fuel (future Number 2 fuel oil supply); 95% S conversion to SO_2, 5% conversion to H_2SO_4.
(5) Emission estimates from U.S. EPA (1993).
(6) Emission estimate based on City of Tallahassee oil analysis

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997

TABLE 2-5
COMBINED CYCLE UNIT 8
ESTIMATED [1] PERFORMANCE ON
NUMBER 2 (0.05% S) DIESEL FUEL OIL (75% LOAD)

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,567	1,465.5	1,313.3
Evaporative Cooler	Off	Off	Off
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	101	97	94
Oxides of Nitrogen (NO_x) (at 15% O_2) (42 ppmvd)[3]	281	263	235
Sulfur Dioxide (SO_2)[4]	80	75	67
Particulate Matter (PM_{10})	17	17	17
Volatile Organic Compounds (non-methane HC)	8.5	8	7.5
Lead (Pb)[5]	9.09E-02	8.05E-02	7.62E-02
Asbestos	N/A	N/A	N/A
Beryllium (Be)[5]	5.17E-04	4.84E-04	4.33E-04
Mercury (Hg)[5]	1.43E-03	1.33E-03	1.20E-03
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl) [6]	1.66	1.55	1.39
Sulfuric Acid Mist (H_2SO_4)[4]	8	8	7
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	186	190	196
Stack Gas Exit Velocity (ft/sec)	65	62	59

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Based on FBN content of 0.015% or less. Maximum FBN content = 0.03% = an additional 12ppmvd NO_x above 42 ppmvd.
(4) Sulfur dioxide and sulfuric acid mist based on 0.05% sulfur by weight in fuel (future Number 2 fuel oil supply); 95% S conversion to SO_2, 5% conversion to H_2SO_4.
(5) Emission estimates from U.S. EPA (1993).
(6) Emission based on City of Tallahassee oil analysis

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997

TABLE 2-6
COMBINED CYCLE UNIT 8
ESTIMATED [1] PERFORMANCE ON
NUMBER 2 (0.05% S) DIESEL FUEL OIL (50% LOAD)

CONDITIONS			
Ambient Temperature (°F)	20	59	95
Ambient Relative Humidity (%)	60	60	60
Ambient Pressure (lb/in^2)	14.7	14.7	14.7
Maximum Heat Input Rate (mmBtu/hr)[2]	1,219.9	1,148.9	1027.3
Evaporative Cooler	Off	Off	Off
EMISSIONS (lb/hr)			
Carbon Monoxide (CO)	192	189	177
Oxides of Nitrogen (NO_x) (at 15% O_2) (42pmvd)[3]	217	204	182
Sulfur Dioxide (SO_2)[4]	62	60	53
Particulate Matter (PM_{10})	17	17	17
Volatile Organic Compounds	12.5	12.5	12.5
Lead (Pb)[5]	7.08E-02	6.6E-02	5.96E-02
Asbestos	N/A	N/A	N/A
Beryllium (Be)[5]	4.03E-04	3.79-04	3.39E-04
Mercury (Hg)[5]	1.11E-03	1.05E-03	9.35E-04
Vinyl Chloride	N/A	N/A	N/A
Total Fluorides (Fl)[6]	1.29	1.22	1.09
Sulfuric Acid Mist (H_2SO_4)[4]	7	6	6
Reduced Sulfur Compounds	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A
STACK PARAMETERS			
Stack Height (ft) (AGL)	200	200	200
Stack Diameter (ft)	16.5	16.5	16.5
Stack Gas Temperature (°F)	176	181	188
Stack Gas Exit Velocity (ft/sec)	50	51	48

(1) Emission estimates based on manufacturer's data (GE, 1996).
(2) The heat input rate is based on the lower heating value of the fuel.
(3) Based on FBN content of 0.015% or less. Maximum FBN content = 0.03% = an additional 12ppmvd NO_x above 42 ppmvd.
(4) Sulfur dioxide and sulfuric acid mist based on 0.05% sulfur by weight in fuel (future Number 2 fuel oil supply); 95% S conversion to SO_2, 5% conversion to H_2SO_4.
(5) Emission estimates from U.S. EPA (1993).
(6) Emission based on City of Tallahassee oil analysis

AGL = Above ground level
N/A = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1997

combustion turbine performance and emissions/exhaust characteristics. It should be recognized, however, that the combustion turbine may operate at temperatures outside this range for short periods of time during a given year. The 59° F temperature case (the ISO standard temperature) is a conservative representation of annual average temperature conditions for the site (which is about 67°F). The 50 percent, 75 percent, and 100 percent loads represent the range of loads over which the Unit is likely to be operated on both fuels.

A review of the combustion turbine design information in Tables 2-1 through 2-6 indicates that highest criteria air pollutant emission rates occur when burning Number 2 (0.05% S) diesel fuel oil. Combustion of clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil result in similar exhaust gas flow rates and stack exit temperatures, which directly influence plume rise.

Natural gas is supplied to the site by Florida Gas Transmission Company. Currently Number 2 (0.4% S) diesel fuel oil is obtained from various suppliers and is stored in an on-site tank. Future Number 2 diesel fuel oil purchases for the Purdom Station will be of the very low sulfur (0.05%) type required by the Clean Air Act Amendments of 1990 for transportation fuel. This fuel will be utilized as the secondary fuel for the new Unit 8 and the existing combustion turbines and will be stored in the existing tank. Typical fuel analyses for natural gas and for Number 2 (0.05% S) diesel fuel oil are presented in Tables 2-7 and 2-8, respectively.

The proposed Project will also include a cooling tower. The cooling tower will primarily utilize St. Marks River water for makeup and will emit some "drift" water droplets containing the same dissolved and suspended solids which exist in the make-up water, concentrated approximately 5 times. The drift droplets begin to evaporate as soon as they leave the cooling tower and some of the smaller droplets will evaporate completely before they hit the ground, leaving a very small particle (consisting of the dissolved and suspended solids from the makeup water). These particulates can be dispersed by the wind and are considered among the particulate matter emissions from the Project.

Based on the water quality of the makeup water and the originally planned drift rate of the cooling tower (0.005 percent of the circulating water flow), the amount of dissolved and suspended solids leaving the tower in the drift droplets has been estimated to be 12 tons per year (RE&C, 1996). However, there is a wide range of drift droplet sizes leaving the tower and the larger ones will fall to the ground in the immediate vicinity of the tower. A drift droplet size distribution is presented as Figure 2-2. Since the very large droplets (i.e., those larger than about 200 microns (μm) in diameter) will fall to the ground very quickly (i.e., before the water has had a chance to evaporate), they have been eliminated from consideration as producing particulate emissions which can be dispersed by the winds. Therefore, we have reduced the contribution from the cooling tower to particulate emissions by 1.5 tons per year, resulting in a remaining total of 10.5 tons per year. Even this figure is considered to be quite conservative as the relatively humid conditions at St. Marks will often cause many of the droplets smaller than 200 μm in diameter to be deposited on the ground prior to water evaporation. Very recently, the cooling tower design drift rate has been changed to 0.002 percent of the circulating water flow. This will further reduce the particulate matter emissions from the cooling tower. As these values are conservative, revisions to the estimated cooling tower particulate matter emissions and the PM_{10} air quality impacts analysis were unnecessary.

TABLE 2-7
TYPICAL NATURAL GAS ANALYSIS[1]

Analysis	Gravimetric Breakdown (%)
Ultimate Analysis	
Carbon	64.84 - 75.25
Hydrogen	20.85 - 23.53
Oxygen	0 - 1.58
Nitrogen	0.76 - 12.90
Sulfur[2]	0 - 0.34
Ash	0.0
Proximate Analysis	
Volatile Matter	99.65 - 100.0
Fixed Carbon	0.0
Moisture	0.0 - 0.00138
Ash	0.0

(1) Heating value (HHV): 964 - 1129 Btu/ft^3
(2) Total sulfur (maximum): 10 grains/100 SCF

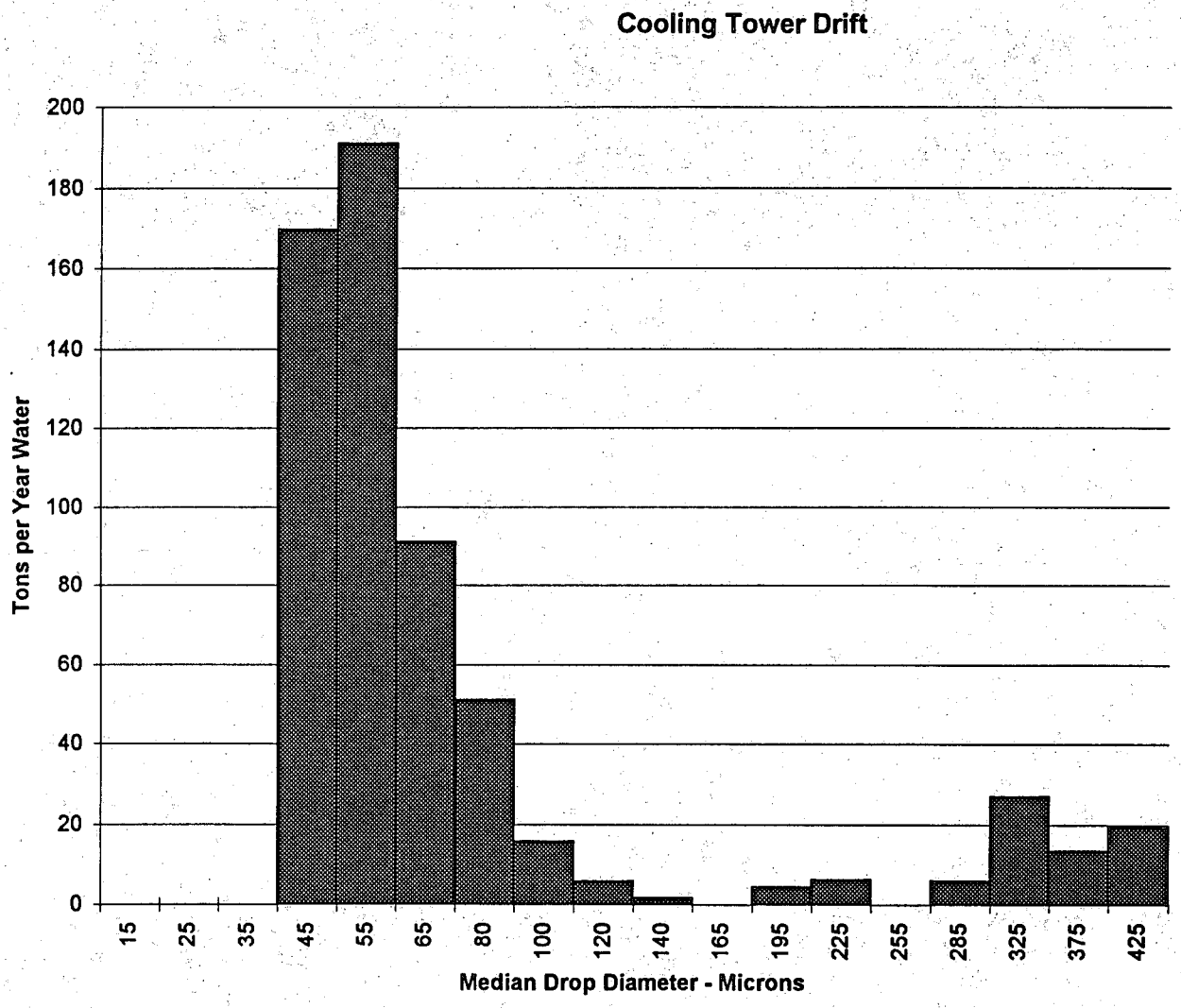
Source: Babcock & Wilcox, 1972 and RE&C, 1997

TABLE 2-8
TYPICAL FUEL OIL ANALYSIS[1]

Analysis	Gravimetric Breakdown (%)
Ultimate Analysis	
Carbon	86.1 - 88.2
Hydrogen	11.8 - 13.9
Oxygen	0.0
Nitrogen	0.0 - 0.1
Sulfur[2]	0.0 - 0.05
Ash	0.0 - 0.05
Proximate Analysis	
Volatile Matter	99.05 - 99.5
Fixed Carbon	0.25 - 1.0
Moisture	0.0 - 0.1
Ash	0.0 - 0.05

(1) Heating value (HHV): 19,170 - 19,750 Btu/lb
(2) Total sulfur (maximum) 0.05%

Source: Babcock & Wilcox, 1972 and RE&C, 1997



SOURCE: RE&C, 1996

CITY OF TALLAHASSEE

COOLING TOWER DRIFT
DROPLET SIZE DISTRIBUTION

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
2-2

2.3 SITE LAYOUT AND STRUCTURES

Figure 2-3 contains the site layout of the proposed Unit 8. Figure 2-4 depicts the profile of the proposed Unit 8.

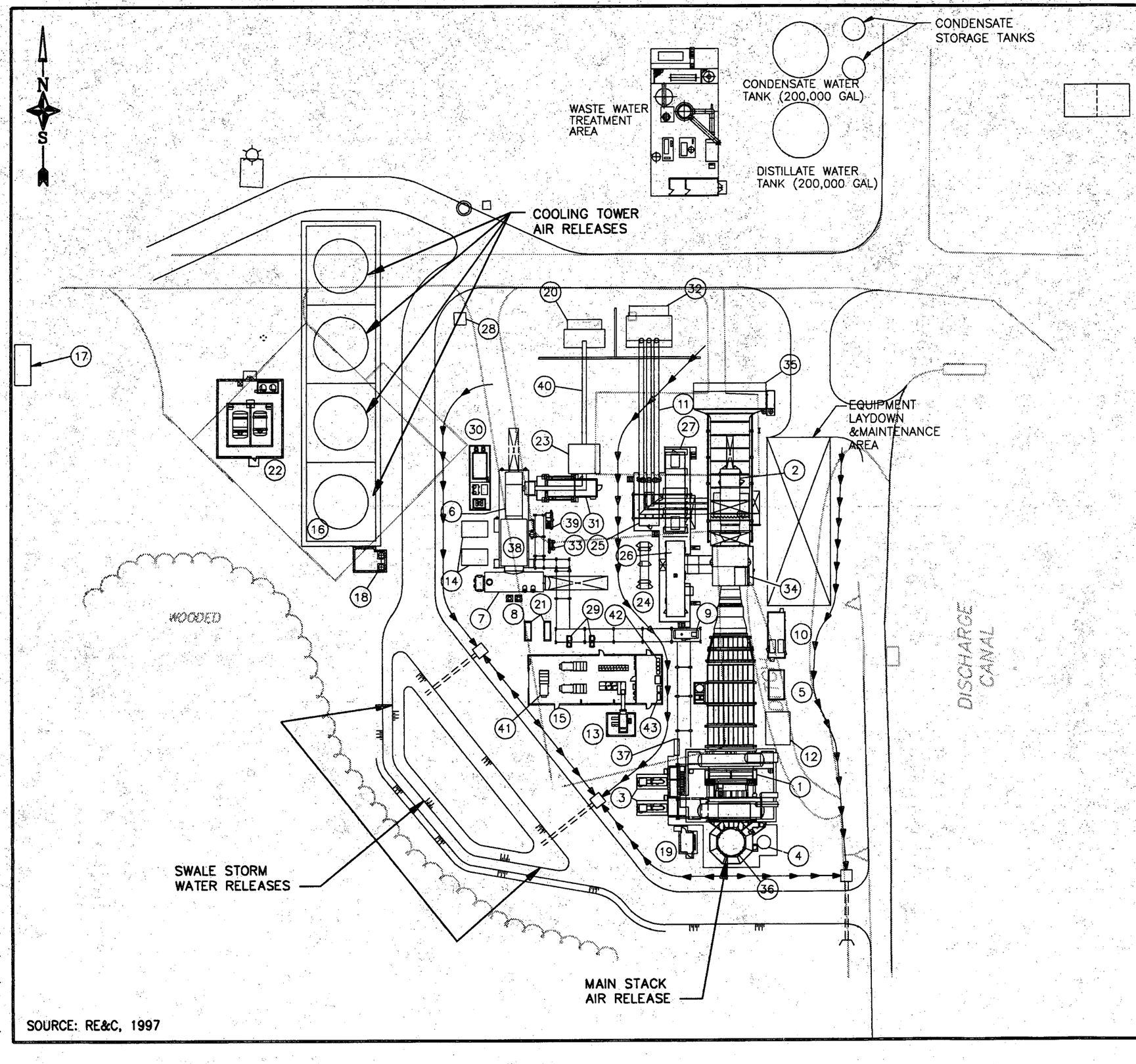
2.4 PROPOSED PROJECT EMISSIONS

The proposed Project includes the reduction of annual emissions from existing units as well as the addition of Unit 8. This section provides a summary of the Project annual emissions increases and decreases for the various PSD regulated pollutants. A discussion of the "facility-wide caps" for annual emissions of SO_2 and NO_x is also provided. Of course, short-term emission rates from existing units which will remain in operation will remain the same as they are now, except for SO_2 emissions from the existing combustion turbines (GT1 and GT2). Those will decline due to the use of the same lower sulfur Number 2 diesel fuel oil which will be the secondary fuel for Unit 8. The short-term emission rates for Unit 8 are based on BACT, as described in Section 4.

2.4.1 Current Plant Permits and Emissions

The Purdom Station currently has three valid FDEP air permits. Operation Permit No. A065-24827 establishes operating, testing, recordkeeping, and reporting requirements for the existing combustion turbines (GT1 and GT2), and limits maximum annual hours of operation for each. This permit does not establish any specific limitations on allowable emission rates, but it does so indirectly through a sulfur content limitation on the fuel which may be used. Permit No. AO65-242831 establishes operating, testing, recordkeeping and reporting requirements for Units 5, 6 and 7; establishes allowable emission rates for particulate matter and SO_2; and provides for continuous operation of the boilers. The emission rate for particulate matter is not to exceed 0.1 lb/mmBtu heat input during normal operation and 0.3 lb/mmBtu during certain operating conditions (soot blowing) when firing Number 6 fuel oil. The maximum allowable emission rate for SO_2 is 1.87 lb/mmBtu. The initial Title V Operating Permit Application requested an SO_2 emission limit of 1.3 lb/mmBtu for Units 5 and 6 when applied to the liquid fuel oil portion of total heat input. Permit No. 1290001-002-AC establishes operating, testing, recordkeeping and reporting requirements for the auxiliary boiler. It limits the boiler to operation when the existing Units 5, 6, and 7 are not operating and further limits annual operations to 2,000 hours. The NSPS recordkeeping and reporting requirements of 40 CFR 60, Subpart Dc apply to the auxiliary boiler.

Table 2-9 presents the permitted (allowable) emission rates in tons per year for Units 5 through 7 in accordance with the particulate matter and SO_2 limitations contained in the respective operating permits. This table also presents past actual annual emissions of particulate matter, SO_2, NO_x, CO, VOC, and Pb, which are known as the "criteria" pollutants, as well as the other pollutants covered by the PSD regulations (Rule 62-212.400 F.A.C.). The table includes emissions generated by the three boilers and two combustion turbines based on actual operation and fuel usage data averaged over the last two years.



SOURCE: RE&C, 1997

LEGEND:

1. HEAT RECOVERY STEAM GENERATOR
2. COMBUSTION TURBINE GENERATOR
3. FEEDWATER PUMPS
4. BLOWDOWN TANK
5. WATER WASH SKID
6. STEAM TURBINE GENERATOR
7. CONDENSER
8. CONDENSATE PUMPS
9. CO2 FIRE PROTECTION SKID
10. WATER INJECTION SKID
11. ISO PHASE BUS DUCT
12. HRSG CHEMICAL FEED SYSTEM
13. AUXILIARY TRANSFORMER
14. VACUUM PUMPS
15. SWITCHGEAR BUILDING
16. COOLING TOWER
17. FUEL OIL TRANSFER PUMPS
18. CIRCULATING WATER PUMPS
19. CONTINUOUS EMISSIONS MONITORING SYSTEM
20. STEAM TURBINE GENERATOR MAIN STEPUP TRANSFORMER
21. CLOSED COOLING WATER HEAT EXCHANGERS
22. COOLING TOWER CHEMICAL FEED SYSTEM
23. GENERATOR BREAKER
24. STATIC START SKID
25. COMBUSTION TURBINE GENERATOR BUS ACCESSORY COMPARTMENT
26. ACCESSORY MODULE
27. PACKAGED ELECTRICAL ELECTRONIC CONTROL CABINET
28. NATURAL GAS FILTER/SCRUBBER
29. CLOSED COOLING WATER PUMPS
30. STEAM TURBINE GENERATOR LUBE OIL SKID
31. STEAM TURBINE GENERATOR BUS ACCESSORY COMPARTMENT
32. COMBUSTION TURBINE GENERATOR MAIN STEPUP TRANSFORMER
33. GLAND STEAM CONDENSER
34. COMBUSTION TURBINE
35. INLET FILTER
36. STACK
37. SAMPLE PANEL
38. STEAM TURBINE
39. GLAND STEAM CONTROL VALVE SKID
40. NON SEGREGATED BUS DUCT
41. COOLING TOWER LOAD CENTER
42. BAILEY CONTROL CABINETS
43. STEAM TURBINE GENERATOR CONTROL CABINETS

60 0 60 120

SCALE IN FEET

FOOTPRINT OF THE COMBINED CYCLE UNIT

PURDOM UNIT 8 PROJECT – ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure 2-3

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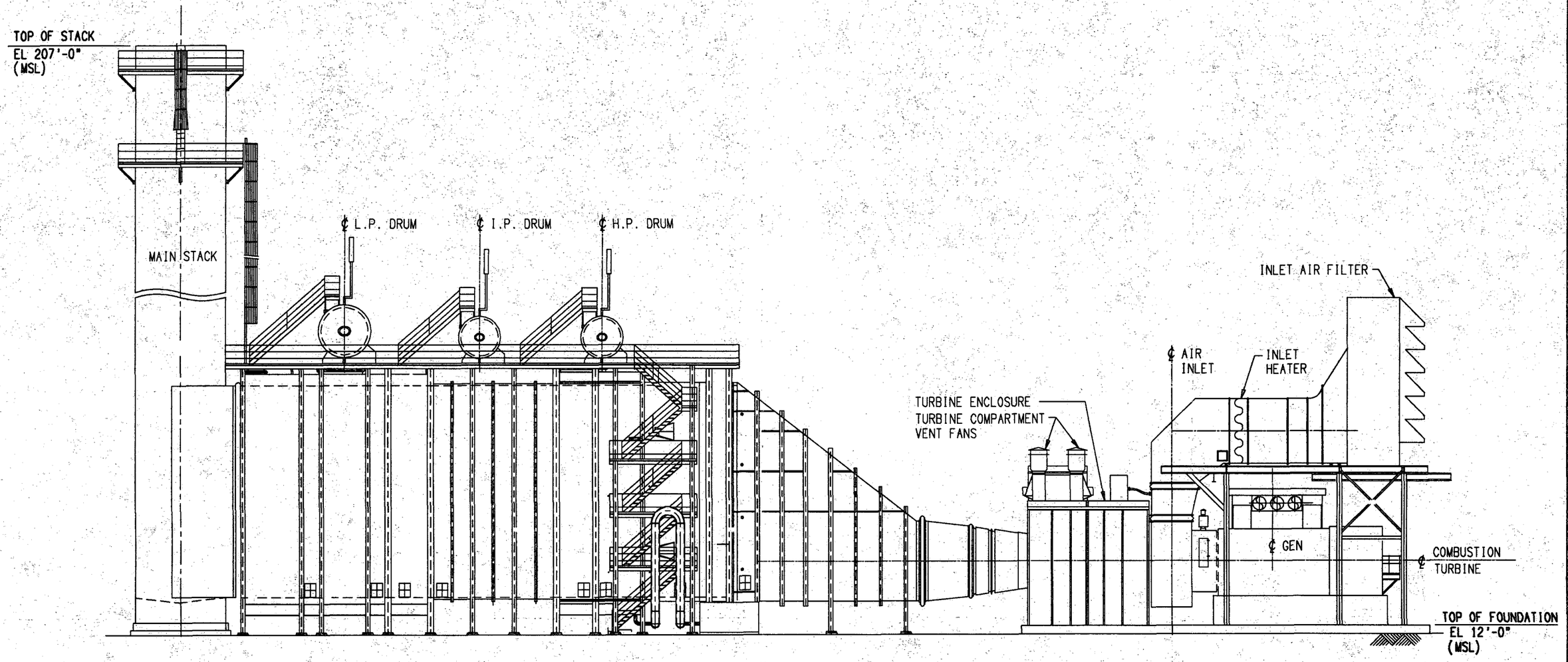

SOURCE: RE&C, 1997

CROSS SECTION
COMBINED CYCLE UNIT

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Figure
2-4

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Purdom Unit 8

TABLE 2-9
Recent Air Pollutant Emissions (Allowables and Actuals)[14] (tons/year)

	UNIT 5				UNIT 6				UNIT 7				GT1 & GT2[16, 17]				UNITS 5, 6, 7 & GTs	
Pollutant	Actual Fuel Oil	Actual Nat. Gas	Actual Totals	Allowable Totals[1]	Actual Fuel Oil	Actual Nat. Gas	Actual Totals	Allowable Totals[1]	Actual Fuel Oil	Actual Nat. Gas	Actual Totals	Allowable Totals[1]	Actual Fuel Oil	Actual Nat. Gas	Actual Totals	Allowable Totals[1]	Actual Totals	Allowable Totals[1]
Particulate Matter (TSP)[2][3]	0.01	1.24	1.25	164.30	0.17	1.22	1.39	164.30	2.30	5.28	7.58	340.00	0.04	0.39	0.43	NR	10.65	668.60[18]
PM_{10}	0.01	1.24	1.25	164.30	0.17	1.22	1.39	164.30	2.30	5.28	7.58	340.00	0.04	0.39	0.43	NR	10.65	668.60[18]
Sulfur Dioxide [5]	0.30	0.22	0.52	1710.00[4]	3.53	0.22	3.75	1710.00[4]	74.60	0.93	75.53	5100.00	0.23	0.01	0.24	687.61	80	9207.61
Nitrogen Oxides[6]	0.05	68.08	68.13	NR	1.44	139.22	140.66	NR	(15)	(15)	251.24	NR	0.50	5.96	6.46	NR	467	NR
Carbon Monoxide[7]	0.01	9.90	9.91	NR	0.11	10.13	10.24	NR	2.24	42.24	44.48	NR	0.04	1.49	1.53	NR	66	NR
Volatile Organic Compounds[8]	0.00	0.29	0.29	NR	0.02	0.30	0.32	NR	0.34	1.49	1.83	NR	0.01	0.32	0.33	NR	2.77	NR
Lead[9]	3.3E-5	NA	3.3E-5	NR	0.001	NA	0.001	NR	0.01	NA	0.01	NR	0.00	N/A	0.00	NR	0.011	NR
Asbestos	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	N/A	N/A	N/A	NR	NA	NR
Beryllium[10]	0.00	NA	0.00	NR	0.00	NA	0.00	NR	0.0003	NA	0.0003	NR	0.00	N/A	0.00	NR	0.0003	NR
Mercury[11]	5.4E-6	1.9E-7	5.6E-6	NR	1.0E-4	2.0E-7	1.0E-4	NR	0.002	8.2E-7	0.002	NR	6.59E-07	1.2-E-08	6.66E-07	NR	0.002	NR
Vinyl Chloride	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NR
Fluorides[12]	1.8E-4	NA	1.8E-4	NR	0.003	NA	0.003	NR	0.072	NA	0.072	NR	0.00	0.00	NA	NR	0.08	NR
Sulfuric Acid Mist[13]	0.01	0.03	0.04	NR	0.13	0.03	0.16	NR	2.71	0.11	2.82	NR	NA	NA	NA	NR	3.02	NR
Hydrogen Sulfide	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NR
Total Reduced Sulfur	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NR
Reduced Sulfur Compounds	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NA	NA	NR	NA	NR

Period of Record: August 1994-July 1996. All actual fuel usage data for Units 5 and 6 and data through March 1995 for Unit 7 is obtained from monthly generation reports. Fuel usage data for Unit 7 after March 1995 is based on the continuous emissions monitoring system (CEMS).

NR - No restrictions NA - No emissions information available or no emissions expected.

(1) Allowable totals based on emissions limitations contained in State of Florida Permit Numbers A065-242831 and A065-242827

(2) It is assumed that all PM emissions are that of PM_{10}.

(3) Actual PM emissions from the boilers for fuel oil are based on the most recent PM test results during both normal and sootblowing operations and actual fuel usage. PM emissions from the boilers for natural gas are based on an AP-42 factor and actual fuel usage.

(4) Allowable SO_2 emissions based on requested SO_2 emissions limitation of 1.3 lb/mmBtu.

(5) Actual SO_2 emissions for fuel oil are based on an AP-42 formula, percent sulfur in the fuel oil (as-burned analyses for the boilers) and actual fuel usage. SO_2 emissions for natural gas are based on the sulfur content (FGT data) and the actual natural gas usage.

(6) Actual NO_x emissions for fuel oil and natural gas for Units 5 and 6 are based on an AP-42 factor and actual fuel usage. NO_x emissions for Unit 7 are based on CEMS lb/mmBtu data and total actual fuel usage.

(7) Actual CO emissions are based on AP-42 factors and actual fuel usage.

(8) Actual VOC emissions are based on AP-42 factors and actual fuel usage.

(9) Actual lead emissions are based on AP-42 factors and actual fuel usage.

(10) Actual beryllium emissions are based on AP-42 factors and actual fuel usage.

(11) Actual mercury emissions for fuel oil are based on AP-42 factors and actual fuel usage. Actual mercury emissions for natural gas are based on an EPRI (1994) factor (no AP-42 factor available) and actual fuel usage.

(12) Actual fluoride emissions for boilers are based on an analysis of a fuel sample (no AP-42 factor available) for fluoride and actual fuel usage.

(13) Actual sulfuric acid mist emissions for boilers on fuel oil are based on the AP-42 factor for sulfur trioxide and actual fuel usage; actual sulfuric acid mist emission for boilers on natural gas are based on ten percent of sulfur dioxide and actual fuel usage.

(14) Actual emissions are based on current estimates and emission factors.

(15) The CEMS data on which actual NO_x emissions are based does not distinguish between oil and natural gas consumption.

(16) Actual fuel oil and natural gas emission rate values reflect the sum of emissions from both combustion turbines.

(17) Actual emissions are based on AP-42 factors and actual fuel usage

(18) Allowable totals shown do not include the particulate emissions from the two combustion turbines since Permit A065-242827 has no limit for particulates.

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2.4.2 Proposed Project Emissions

As indicated in Section 1.0, the Project includes the reduction of emissions from the existing units to offset the emissions of some of the pollutants associated with Unit 8. As part of the Project, Units 5 and 6 will be permanently shut down early and their emissions will cease. In addition, federally enforceable emission caps for SO_2 and NO_x covering the proposed Unit 8, existing Unit 7, the existing combustion turbines (GT1 and GT2), and the new auxiliary boiler are being requested. These "facility-wide caps" will require annual emissions of SO_2 and NO_x to remain at or below recent levels of those pollutants from Units 5, 6 and 7, and from the existing combustion turbines (GT1 and GT2).

In order to determine the "worst case" annual emissions from the Project under the proposed facility-wide caps, eleven potential operating scenarios were identified. These scenarios, while not intended to represent limits on the facility, are believed to bracket the expected operating ranges of the individual units at the site. In all these scenarios, the two existing combustion turbines (GT1 and GT2) were assumed to operate at the same level as they have in recent years (based on operating 100 hours each per year). Thus, their pollutant emissions have been assumed to be constant, except for SO_2 (where a decrease is expected as a result of a change from 0.4% S to 0.05% S fuel). The new auxiliary boiler was conservatively assumed to operate at its permitted limit of 2,000 hours per year and the cooling tower was conservatively assumed to operate at full capacity. The variables in these scenarios were fuel type and operating hours of Units 7 and 8. The hours of operation will be limited by the proposed facility-wide caps for SO_2 and NO_x. A brief description and summary of operating hours for each Unit on each fuel are presented in Table 2-10. This table also indicates which pollutant (SO_2 or NO_x) is the limiting or controlling pollutant with respect to the facility-wide caps.

The scenarios evaluated resulted in various estimates of annual emissions for the site, with no one scenario producing the highest emissions for all PSD regulated pollutants (see Appendix I for the calculations). A worst case (highest) emission scenario was selected for each pollutant to represent the estimated maximum future annual emissions from the site. A summary of these emissions are presented in Table 2-11. The scenario which produced the worst case emissions for each pollutant is also identified in the table. Finally, the net emissions increase for each pollutant (versus the current actual emissions identified in Table 2-9) is provided. Please note that net emission increases provided in Table 2-11 differ slightly from those provided to FDEP and others in earlier correspondence. The differences reflect final adjustments in calculations and a change in the emission factor used for fluorides from a Florida Electric Power Coordinating Group (FCG) factor to one based on an actual fuel analysis.

Project emissions were also estimated for the non-PSD regulated air pollutants which are listed as the draft Florida Ambient Reference Concentrations (FARCs) (FDEP, 1995), and for which emission factors were available. The anticipated maximum annual emissions of these hazardous air pollutants are presented in Table 2-12.

TABLE 2-10
FUTURE POTENTIAL OPERATING SCENARIOS
UNDER THE FACILITY-WIDE CAPS

Scenario	Hours of Operation				Controlling Pollutant[1]
	Unit 7		Unit 8		
	Fuel Oil	Natural Gas	Fuel Oil	Natural Gas	
1	126	0	0	8,760	SO_2
2	0	0	1,735	0	SO_2
3	137	0	0	0	SO_2
4	219	0	0	8,760	SO_2
5	0	2,852	0	8,760	NO_x
6	239	0	0	0	SO_2
7	0	6,409	0	0	NO_x
8	151	0	500	8,260	SO_2
9	0	1,928	500	8,260	NO_x
10	164	0	425	7,021	SO_2
11	0	2,600	425	7,021	NO_x

(1) Controlling pollutant is that pollutant whose emissions would reach the facility-wide caps under this scenario.
(2) Hours are estimated at full load operation.

Source: Foster Wheeler Environmental, 1997

Scenario 1	Unit 8 as controlling unit, operating 8,760 hours on natural gas/Unit 7 firing No. 6 oil SO_2 limit 1.87 lb/mmBtu (Unit 7 hours limited by SO_2 cap)
Scenario 2	Unit 8 as controlling unit, operating max hours on No. 2 fuel oil/no operation of Unit 7 (Unit 8 hours limited by SO_2 cap)
Scenario 3	Unit 7 as controlling unit, max hours on No. 6 fuel oil 1.87 lb/mmBtu/no operation of Unit 8 (Unit 7 hours limited by SO_2 cap)
Scenario 4	Unit 8 as controlling unit, operating 8,760 hours on natural gas/Unit 7 operating on No. 6 oil assume typical S content (approx 0.95 lb/mmBtu) (Unit 7 hours limited by SO_2 cap)
Scenario 5	Unit 8 as controlling unit, operating 8,760 hours on natural gas/Unit 7 operation on natural gas (Unit 7 hours limited by NO_x cap)
Scenario 6	Unit 7 as controlling unit, max hours on No. 6 fuel oil assume typical S content (approx 0.95 lb/mmBtu)/ no operation of Unit 8 (Unit 7 hours limited by SO_2 cap)
Scenario 7	Unit 7 as controlling unit, max hours on natural gas/ no operation of Unit 8 (Unit 7 hours limited by NO_x cap)
Scenario 8	Unit 8 as controlling unit, operating 8,260 hours on natural gas & 500 hr on No. 2 Oil/Unit 7 on No. 6 oil typical S content 1% (approx 0.95 lb/mmBtu) (Unit 7 hours limited by SO_2 cap)
Scenario 9	Unit 8 as controlling unit, operating 8,260 hours on natural gas & 500 hr on No. 2 oil/Unit 7 on natural gas (Unit 7 hours limited by NO_x cap)
Scenario 10	Unit 8 as controlling unit, operating 7,021 hrs on natural gas & 425 hr on No. 2 oil/Unit 7 on No. 6 oil assume typical S content 1% (approx 0.95 lb/mmBtu) (Unit 7 hours limited by SO_2 cap)
Scenario 11	Unit 8 as controlling unit (85% cap.) operating 7,021 hours on natural gas & 425 hr on No. 2 oil/Unit 7 on natural gas (Unit 7 hours limited by NO_x cap)

TABLE 2-11
MAXIMUM (WORST CASE) EMISSIONS AND NET EMISSIONS INCREASES FROM PROJECT

Pollutant	Annual Emissions (tons/year)	Scenario	Net Emissions Increase (tons/yr)
Carbon Monoxide (CO)	193	9	127
Nitrogen Oxides (NO_x)	467	7	0.0
Sulfur Dioxide (SO_2)	80	6	0.0
Ozone (VOCs)	14.7	9	11.9
Particulate Matter (TSP)	59.0	4	48.3
Particulate Matter (PM_{10})	59.0	4	48.3
Total Reduced Sulfur	N/A	N/A	N/A
Reduced Sulfur Compounds	N/A	N/A	N/A
Sulfuric Acid Mist (H_2SO_4)	8.7	2	5.6
Fluorides (Fl)	1.64	2	1.56
Vinyl Chloride	NA	N/A	N/A
Lead (Pb)	0.091	2	0.08
Mercury (Hg)	0.0024	2	0.0004
Asbestos	NA	N/A	N/A
Beryllium (Be)	0.00052	2	0.00022

N/A - No emissions information available or no emissions expected.

Source: Foster Wheeler Environmental 1997

TABLE 2-12
MAXIMUM (WORST CASE) EMISSIONS OF HAZARDOUS AIR POLLUTANTS (UNIT 7, UNIT 8, GT1, GT2, COOLING TOWER AND AUX BOILER)

Pollutant	Maximum Estimated Emissions (tons/yr)
Arsenic (As)	8.59E-03
Cadmium (Cd)	3.53E-03
Chromium (Cr)	7.36E-02
Manganese (Mn)	5.17E-01
Nickel (Ni)	1.88E-00
Cobalt (Co)	1.43E-02
Antimony (Sb)	3.45E-02
Vanadium (V)	1.32E-01
Polycyclic Organic Material (POM)	3.76E-02
Benzo (a) pyrene (BaP)	6.36E-06
Benzene	6.21E-03
Toluene	2.01E-02
Selenium (Se)	8.30E-03
Hydrochloric Acid (HCl)	1.18E+01
Dioxin (2,378 TCDD)	1.39E-08
Formaldehyde (HCOH)	2.61E-01

Source: Foster Wheeler Environmental, 1997

3. AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to the federal and state air regulatory requirements and their applicability to the Project. These regulations must be satisfied before the proposed facility can be constructed and begin operation.

3.1 NATIONAL AND FLORIDA AMBIENT AIR QUALITY STANDARDS (NAAQS/FAAQS)

The applicable federal (NAAQS) and Florida (FAAQS) ambient air quality standards are presented in Table 3-1. (PSD increments are also presented in Table 3-1, but discussed in Section 3.2.2.) These ambient air quality standards have been promulgated for six pollutants, known as the "criteria" pollutants: NO_2, CO, SO_2, PM_{10}, O_3, and Pb. The primary NAAQS/FAAQS were promulgated to protect the public health, and the secondary NAAQS/FAAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Wakulla County is an "attainment" area for all criteria pollutants, meaning that existing concentrations are below the primary and secondary standards.

3.2 PSD REVIEW REQUIREMENTS

3.2.1 General Requirements

Under the EPA and FDEP PSD permit review requirements, all major new or modified existing sources of air pollutants located in attainment areas and regulated under the Clean Air Act (CAA) must be reviewed and approved. A "major stationary source" is defined as any one of 28 specified source categories which has the potential to emit 100 tons per year (TPY) or more, or any other stationary source which has the potential to emit 250 TPY or more of any air pollutant regulated under the CAA. Fossil fuel-fired steam electric plants of more than 250 mmBtu/hr of heat input comprise one of the 28 specified source categories. Thus, the existing Purdom steam units meet the 100 TPY threshold criterion. The term "potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. The potential emissions from the existing units exceed the 100 TPY criteria. Therefore, the Purdom Station is considered a major stationary source. Modifications to major sources are considered "major modifications" if they will increase the potential to emit by more than the PSD significant emission rates listed in Table 212.400-2 of Rule 62-212.400, F.A.C., or by any amount if the source is located within 10 km of a Class I area and the impact would be greater than 1 $\mu g/m^3$ (24-hour average) in the Class I area (Rule 62-212.400(2)(d)4a(ii), F.A.C.). These PSD significance levels are summarized in Table 3-2. The net changes in emissions from the proposed Project will exceed the PSD significant emission thresholds for some pollutants (CO, PM_{10}, and TSP), and thus subject the Project to PSD review for these pollutants. Nevertheless, a PSD analysis is being done for all pollutants expected to be emitted.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified source located in an attainment area. The PSD regulations are contained in

TABLE 3-1
AMBIENT AIR QUALITY STANDARDS
AND PSD INCREMENTS

Pollutant	Averaging Time	Federal NAAQS ($\mu g/m^3$)	Florida FAAQS ($\mu g/m^3$)	Class I PSD Increment ($\mu g/m^3$)	Class II PSD Increment ($\mu g/m^3$)
Carbon Monoxide (CO)	1-hour	40,000	40,000	N/A	N/A
	8-hour	10,000	10,000	N/A	N/A
Nitrogen Dioxide (NO_2)	Annual	100	100	2.5	25
Sulfur Dioxide (SO_2)	3-hour	1,300	1,300	25	512
	24-hour	365	260	5	91
	Annual	80	60	2	20
Particulate Matter (PM_{10})	24-hour	150	150	8	30
	Annual	50	50	4	17
Ozone (O_3)	1-hour	235	235	N/A	N/A
Lead (Pb)	Calendar Quarter	1.5	1.5	N/A	N/A

(1) Ozone values are associated with emissions of VOCs and NO_x.

Note: Short-term standards and increments (i.e., those with averaging times less than quarterly) can be exceeded once per year and still be in compliance.

N/A = No PSD increments exist for these pollutants.
$\mu g/m^3$ = micrograms per cubic meter

Sources: 40 CFR 50; Rule 62-204.260, F.A.C.; Rule 62-204.240, F.A.C.

TABLE 3-2
PSD SIGNIFICANT EMISSION RATES

Pollutant	Annual Significant Emission Rate (TPY) per Table 212.400-2	Applicable Significant Emission Rate for Proposed Purdom Project [1] (TPY)
Carbon Monoxide (CO)	100	0
Oxides of Nitrogen (NO_x)	40	40
Sulfur Dioxide (SO_2)	40	40
Particulate Matter (PM_{10})	15	15
Total Suspended Particulates (TSP)	25	25
Volatile Organic Compounds (VOC)	40	40
Lead (Pb)	0.6	0.6
Asbestos	0.007	0.007
Beryllium (Be)	0.0004	0.0004
Mercury (Hg)	0.1	0.1
Vinyl Chloride	1	1
Total Fluorides (Fl)	3	3
Sulfuric Acid Mist (H_2SO_4)	7	7
Reduced Sulfur Compounds (Including H_2S)	10	10
Total Reduced Sulfur (Including H_2S)	10	10

TPY = tons per year

(1) Due to the proximity to the Class I area, any increase in emissions is considered significant for these pollutants with a maximum projected 24-hour average impact of 1.0 microgram per cubic meter or more in the Class I area, as per Rule 62-212.400(2)(f)(1), F.A.C.

Source: Rule 62-212.400, F.A.C. Table 212.400-2

Rule 62-212.400, F.A.C. Major sources and modifications are required to undergo the following analyses under PSD review for each air pollutant emitted in significant quantities:

- A control technology analysis;
- An air quality impacts analysis; and
- An additional impacts analysis.

In addition to these analyses, a new source must also be reviewed with respect to Good Engineering Practice (GEP) stack height regulations (EPA, 1985a) adopted by FDEP (Rule 62-210.550, F.A.C.), New Source Performance Standards (NSPS), and any state emission standards.

3.2.2 PSD Increments/Classifications

In promulgating the 1977 Clean Air Act (CAA) Amendments, Public Law 95-95, Congress specified that certain increases above an air quality "baseline concentration" level for SO_2 and TSP concentrations would constitute "significant deterioration." The magnitudes of the allowable increases, or "increments," depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications were designated based on criteria established in the CAA Amendments of 1977. Initially, Congress designated PSD areas as Class I (international parks, national wilderness areas, and memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would allow greater deterioration than Class II areas, were designated. EPA subsequently incorporated the requirements for classifications and area designations into the PSD regulations.

On October 17, 1988, the EPA promulgated regulations to prevent significant deterioration due to NO_x emissions and established PSD increments for NO_2 concentrations. On June 3, 1993, EPA promulgated regulations which revised the PSD increments for particulate matter from TSP to PM_{10}. This change became effective on June 3, 1994. The allowable PSD increments for SO_2, PM_{10}, and NO_2 are presented in Table 3-1. The FDEP has adopted the EPA PSD classification system and the allowable PSD increments for SO_2, PM_{10}, and NO_2.

The term "baseline concentration" is derived from federal and state PSD regulations and denotes a concentration level corresponding to a specified baseline date and contributions from certain additional baseline sources. The Florida air regulations (Rule 62-210.200, F.A.C.) define "baseline concentration" as the ambient concentration level which is predicted to exist in the baseline area at the time of the applicable minor source baseline date. Emission increases after the baseline date consume PSD increments. A baseline concentration is determined for each pollutant for which PSD increments are promulgated and a baseline date is established. The baseline concentration includes:

1. The actual emissions representative of sources in existence on the applicable minor source baseline date; and
2. The allowable emissions of major stationary sources which commenced construction before January 6, 1975, for SO_2 and TSP (now PM_{10}) concentrations, or before February 8, 1988, for NO_2 concentrations, but which were not in operation by the applicable minor source baseline date.

The applicable minor source baseline dates for Wakulla County are December 27, 1977 for SO_2 and PM_{10}, and March 28, 1988 for NO_2 (Rule 62-204.360, F.A.C.).

3.2.3 Control Technology Review

The control technology review requirements of the PSD regulations require that all applicable federal and state emission limiting standards be met and that best available control technology (BACT) be applied to control emissions from the source. The BACT requirements apply to all applicable regulated air pollutants for which the increase in emissions from the source or modification exceeds the PSD significant emission rates in Table 3-2.

The requirements for BACT were incorporated within the PSD framework in the 1977 CAA Amendments. One of the purposes of BACT is to minimize consumption of PSD increments and thereby increase the potential for future economic growth without significantly degrading air quality. Guidelines for the evaluation of BACT can be found in the draft New Source Review Workshop Manual (EPA, 1990a) and the draft Top-Down BACT Guidance Document (EPA, 1990c). These guidelines were issued by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. BACT is determined on a case-by-case basis, and BACT for a source in one area may not be the same for an identical source located in another area. BACT analyses for the same types of emissions units and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors.

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, at a minimum, demonstrate compliance with the applicable NSPS. An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy penalties, and economic costs associated with the proposed and alternative control systems; as well as the environmental benefits derived from these systems. A determination of BACT is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts.

3.2.4 Ambient Air Quality Monitoring Requirements

In accordance with the requirements of Rule 62 -212.400(5)(f), F.A.C., applications for a PSD permit generally must contain an analysis of continuous ambient air quality monitoring data in the area affected by the proposed major stationary source or major modification.

According to FDEP's rules and EPA's Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA, 1987), ambient air monitoring for a period of up to one year is generally appropriate to satisfy the PSD monitoring requirements. A minimum of four months of data are generally required. Existing data from the vicinity of the proposed source may be

utilized if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered.

The PSD regulations include an exemption in Rule 62-212.400(3)(e), F.A.C., which states that the Department will exempt a proposed major stationary source or major modification from the monitoring requirements with respect to a particular pollutant if the emissions increase of the pollutant from the source or modification would cause air quality impacts less than the de minimis air quality impact levels presented in Table 3-3.

3.2.5 Source Impact Analysis

A source impact analysis must be performed for a proposed major source or modification subject to PSD for each pollutant for which the increase in emissions exceeds the PSD significant emission rate. The PSD regulations specifically require the use of atmospheric dispersion models in performing air quality impact analyses, estimating baseline and future air quality levels, and determining compliance with NAAQS/FAAQS and allowable PSD increments. Reference EPA models must normally be used in performing the impact analysis. Use of nonreference EPA models requires regulatory agency consultation and prior approval. Guidance for the regulatory application of dispersion models is presented in the U.S. EPA Guideline on Air Quality Models (Revised) (EPA, 1993a), which has been incorporated in federal regulations as Appendix W of 40 CFR 51.

3.2.6 Additional Impacts Analysis

In addition to air quality impact analyses, the PSD regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source or modification. These analyses are generally focused primarily on nearby PSD Class I areas but should cover nearby Class II areas as well. Impacts on air quality due to general commercial, residential, industrial, and other growth related activities associated with the source must also be addressed. These analyses are required for each pollutant emitted in significant quantities.

3.3 OTHER REQUIREMENTS

In addition to the requirements of the PSD program, any new or modified source of air pollution must be reviewed with respect to the Good Engineering Practice (GEP) stack height regulations (Rule 62-210.550, F.A.C.), the federal NSPS requirements, and any state-specific emission standards.

3.3.1 Good Engineering Practice (GEP) Stack Height

The 1977 CAA Amendments require under Section 123 that the degree of emission limitation required for control of any air pollutant not be affected by a stack height that exceeds GEP, or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (EPA, 1985a). FDEP has incorporated these rules into Rule 62 -210.550, F.A.C.

TABLE 3-3
PSD *DE MINIMIS* AMBIENT AIR QUALITY IMPACT LEVELS

Pollutant	Air Quality Impact *De Minimis* Level ($\mu g/m^3$) and Averaging Time [1]
Carbon Monoxide (CO)	575 (8-hour)
Nitrogen Dioxide (NO_2)	14 (Annual)
Sulfur Dioxide (SO_2)	13 (24-hour)
Particulate Matter (PM_{10})	10 (24-hour)
Volatile Organic Compounds (Ozone)	[2]
Lead (Pb)	0.1 (3-month)
Beryllium (Be)	0.001 (24-hour)
Mercury (Hg)	0.25 (24-hour)
Vinyl Chloride	15 (24-hour)
Total Fluorides (Fl)	0.25 (24-hour)
Hydrogen Sulfide (H_2S)	0.2 (1-hour)

(1) Ambient air quality monitoring requirements for applicable pollutants are exempted if the impact of the net increase in emissions is below the applicable air quality impact *de minimis* levels.

(2) No specific air quality impact *de minimis* level is prescribed for ozone. Exemptions are granted when a proposed source's VOC emissions are less than 100 tons/year.

Source: Rule 62-212.400, F.A.C Table 212.400-3

The EPA's final stack height regulations define GEP stack height for stacks constructed after January 12, 1979, as the greater of:

(1) 65 meters, measured from the ground-level elevation at the base of the stack; or

(2) $H_g = H + 1.5\ L$

where:

H_g = GEP stack height, measured from the ground-level elevation at the base of the stack;

H = Height of nearby structure(s) measured from the ground-level elevation at the base of the stack; and

L = Lesser dimension, height or projected width of nearby structure(s).

The term "nearby" is defined by the GEP stack height regulations as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 km. Although GEP stack height regulations require that the stack height credit used in modelling for determining compliance with NAAQS/FAAQS and PSD increments not exceed the greater of the calculated or default GEP stack height, the actual stack height may be greater. In this case the proposed stack for the proposed Unit 8 is 200 feet (60.97 meters) above ground level. GEP stack height as determined by the BPIP program (EPA, 1995b) is estimated at 197 feet (60.0 meters). Thus, the proposed stack height is above the calculated GEP stack height and within the default stack height of 65 meters.

3.3.2 New Source Performance Standards (NSPS)

The CAA required the U.S. EPA to adopt standards of performance for new or modified stationary sources of air pollution. To date, the U.S. EPA has adopted regulations for approximately 60 stationary source categories. These regulations are contained in 40 CFR Part 60, and incorporated by reference in Rule 62-204.800(7), F.A.C. The Purdom Unit 8 combustion turbine is subject to a specific NSPS (Subpart GG). Any source subject to a specific NSPS is also subject to the general provisions of 40 CFR 60 Subpart A.

3.3.2.1 General Provisions

The general provisions of the NSPS regulations are found in 40 CFR 60 Subpart A. The general provisions specify the notification and recordkeeping requirements (40 CFR 60.7), compliance with standards and maintenance requirements (40 CFR 60.8 and 60.11), and the monitoring requirements (40 CFR 60.13) for each affected source.

3.3.2.2 Combustion Turbine Units

In general, combustion turbine units are covered in 40 CFR 60, Subpart GG - Standards of Performance for Stationary Gas Turbines, which establishes emission limitations on both NO_x and SO_2. The NO_x emission limitation is set by the following equation:

$$STD = 0.0075 \frac{(14.4)}{Y} + F$$

where:

STD= allowable NO_x emissions (percent by volume at 15 percent oxygen and on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NO_x emission allowance for fuel-bound nitrogen as defined below:

Fuel-Bound Nitrogen (percent by weight)	F (NO_x percent by volume)
N<0.015	0
0.015<N<0.1	0.04(N)
0.1<N<0.25	0.004 + 0.0067(N-0.1)
N>0.25	0.005

where:

N = the nitrogen content of the fuel (percent by weight).

Use of the equation results in emission limitations of 97 parts per million on a dry volume basis (ppmvd) at 15 percent oxygen for the proposed unit when fired on natural gas. For example, if fired on fuel oil with a fuel-bound nitrogen percent of 0.03 percent, the applicable emission limitation is 98 ppmvd. The SO_2 emission limitations are set at 150 ppmvd corrected to 15 percent oxygen in the exhaust stream for a fuel sulfur content less than or equal to 0.8 percent by weight.

3.3.2.3 Excess Emissions

The EPA has adopted general and specific recordkeeping and reporting requirements relating to excess emissions in 40 CFR 60.7(b) and 40 CFR 60.334(c). The EPA requirements specify maintaining records and submittal of a semi-annual report (calendar year) on excess emissions associated with start-ups, shutdowns, malfunctions, low water-to-fuel ratio, and fuel sulfur content greater than 0.8% by weight. The reporting requirement includes submittal of the semi-annual report even when no excess emissions occur. EPA has not adopted any specific limits on the number of hours excess emissions are allowed during start-up, shut down or malfunctions from combustion turbine units regulated under 40 CFR Part 60 Subpart GG.

3.3.3 Acid Rain Regulations

The Acid Rain Regulations adopted pursuant to Title IV of the 1990 CAA amendments establish requirements on units emitting SO_2 and NO_x. These provisions include allowances, permits, reporting, monitoring, and record keeping and are found in 40 CFR Parts 72, 73, and 75. The proposed Unit 8 will be a "new unit" under the Phase II requirements of the Acid Rain Program. The City has sufficient SO_2 allowances to cover the SO_2 emissions from Unit 8.

3.3.4 State-Specific and General Emission Standards

In addition to federal requirements, FDEP has adopted specific and general emission limiting and performance standards. These standards may be found in Rule 62-296, F.A.C. The requirements of these standards must be met along with any federal PSD or NSPS limitation or requirement.

3.3.4.1 General Emission Standards

The FDEP has adopted general particulate matter emission limits, as well as general pollutant emission limits (Rule 62-296.320, F.A.C.). These limits apply when no specific emission standard is applicable. For the combustion turbine, a general opacity limit of not greater than or equal to 20 percent opacity applies as well as a prohibition on emitting air pollutants that cause or contribute to an objectionable odor.

3.3.4.2 Combustion Turbine Units

The FDEP has not adopted any state-specific emission standards in Chapter 62-296, F.A.C. relating to the operation of a combustion turbine unit. The FDEP has adopted the NSPS requirements of Subparts A and GG by reference in Rule 62-204.800(7), F.A.C. Based on the current FDEP rules, the combustion turbine unit must meet the NSPS requirements as discussed in Section 3.3.2.2.

3.3.4.3 Excess Emissions

The FDEP has adopted standards relating to excess emissions in Rule 62-210.700, F.A.C. The rule allows excess emissions resulting from startup, shutdown, or malfunction of any source as long as best operational practices are applied and the excess emissions do not exceed two hours in any 24-hour period unless authorized by FDEP. The FDEP can authorize different excess emission limits from other sources on a case-by-case basis.

3.4 SOURCE APPLICABILITY

3.4.1 Nonattainment Applicability

The PSD new source review regulations of Rule 62-212.400, F.A.C. rather than the nonattainment preconstruction review regulations of Rule 62-212.500, F.A.C. apply to the proposed Project due to the attainment status for Wakulla County with respect to all criteria air pollutants. Further, the Project site is not within 50 km of any designated nonattainment areas and is therefore not within the "area of influence" of any nonattainment area. Therefore, no nonattainment area rules apply to the proposed Project.

3.4.2 PSD Classification

Most of Wakulla County and the surrounding counties are designated as PSD Class II areas for SO_2, PM_{10}, and NO_2. The Purdom Station is located approximately 0.6 km north of the nearest boundary of the St. Marks National Wilderness Area and 28.6 km east of the nearest boundary of the Bradwell Bay National Wilderness Area, the nearest PSD Class I areas. The National Wilderness Areas are those portions of the St. Marks National Wildlife Refuge and Apalachicola

National Forest which have been officially designated as wilderness. The location of the Purdom Station with respect to these two Class I areas is depicted on Figure 3-1.

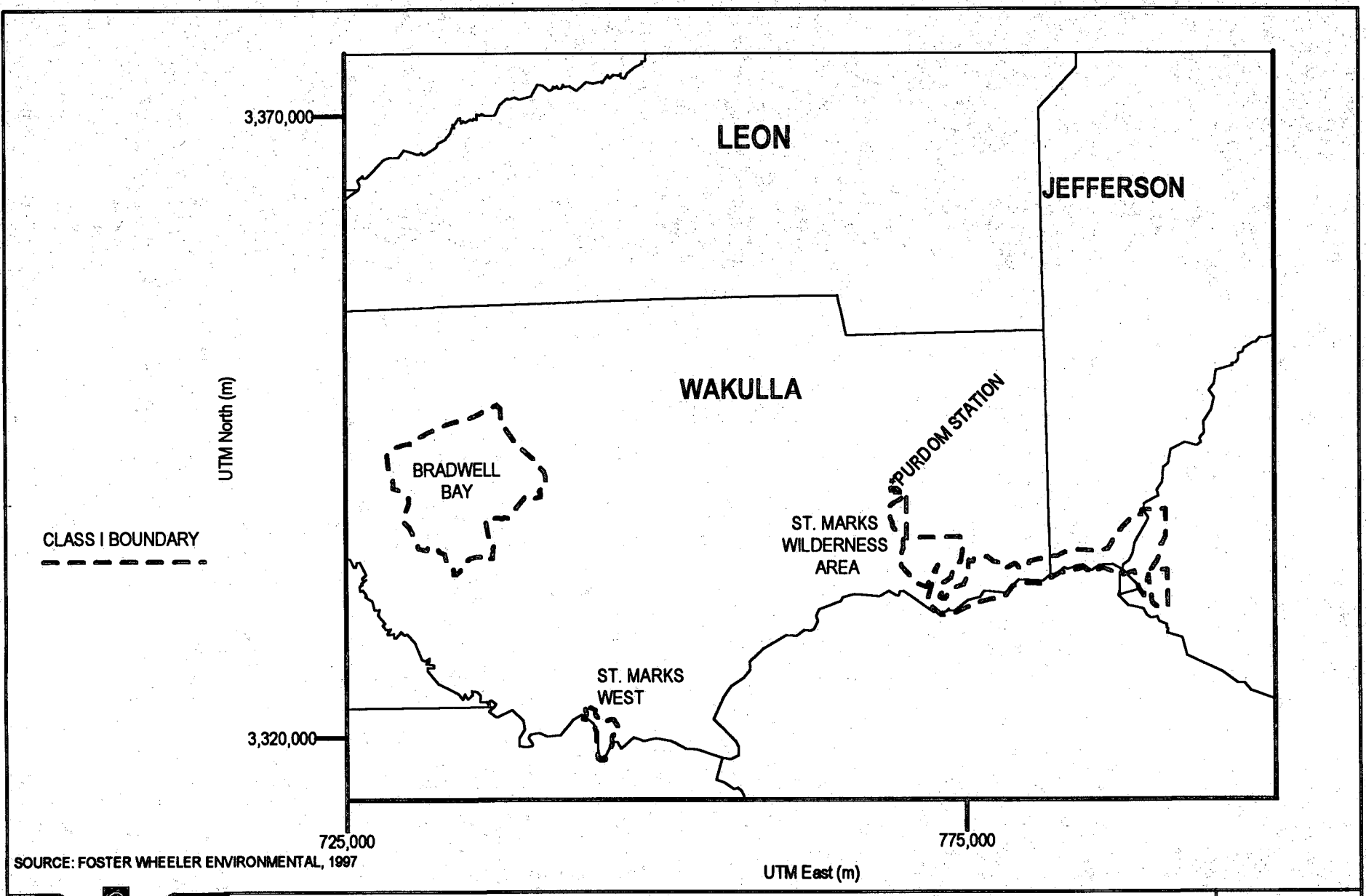
3.4.3 Pollutant Applicability

Pollutant applicability for the proposed Project is addressed in Sections 2.0 and 4.0, and briefly summarized here. The proposed Project is considered to be a major modification of a major existing source under the PSD regulations. PSD review is required for any regulated pollutant for which the net increase in emissions exceeds the appropriate PSD significant emission rates presented in Table 3-2. As shown in Table 3-4, the potential emissions for the proposed facilities will exceed the PSD significant emission rates for the following regulated pollutants: particulate matter (TSP and PM_{10}) and CO. The proposed Project is subject to PSD review for only these pollutants. Nevertheless, a PSD review for all regulated air pollutants has been performed and is included in this PSD report.

3.4.4 Ambient Air Quality Monitoring

Based upon the net increase in emissions from the proposed facility (presented in Table 3-4), a PSD preconstruction ambient air monitoring analysis may be required as part of the air quality impact analysis, for CO and particulate matter (TSP and PM_{10}). However, if the net increase in a source's impact of a pollutant is less than the *de minimis* air quality impact level, as shown in Table 3-3, then an exemption from the preconstruction ambient air quality monitoring requirement is granted for that pollutant. In addition, if an acceptable ambient air monitoring method for the pollutant has not been established by EPA, monitoring is not required.

Preliminary modelling was conducted to indicate those pollutants which could be exempted from the monitoring requirement. As verified by the revised modelling analysis described in Sections 6.0 and 7.0, the increases in air quality impacts for CO and PM_{10} resulting from the proposed Project are predicted to fall below the *de minimis* impact levels presented in Table 3-3. There is no longer a *de minimis* impact level for particulate matter (TSP) in Table 212.400-3 of Rule 62-212.400 F.A.C. Therefore, monitoring is not required for any of the pollutants for which PSD review applies (CO and particulate matter (TSP and PM_{10})). It may be noted that predicted impacts for the other pollutants in Table 3-3 for which emissions data were available were all below the *de minimis* levels in Table 3-3. Thus, monitoring would not be appropriate for those additional pollutants either.



SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

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PURDOM UNIT 8
CLASS I AREAS - LOCATION MAP
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 3-1

TABLE 3-4
MAXIMUM ANNUAL NET CHANGE IN EMISSIONS
AND PSD SIGNIFICANCE VALUES

Pollutant	Net Increase In Emissions[1] (TPY)	PSD Significance Criterion (TPY)	PSD Review Required (Yes/No)
Carbon Monoxide (CO)	127	0[2]	Yes
Nitrogen Oxides (NO_x)	0.0	0[2]	No
Sulfur Dioxide (SO_2)	0.0	0[2]	No
Particulate Matter (PM_{10})	48.3	15	Yes
Particulate Matter (TSP)	48.3	25	Yes
Volatile Organic Compounds (VOCs)	11.9	40	No
Lead (Pb)	0.080	0.6	No
Asbestos	N/A	0.007	No
Beryllium (Be)	0.00022	0.0004	No
Mercury (Hg)	0.00040	0.1	No
Vinyl Chloride	N/A	1	No
Total Fluorides (Fl)	1.6	3	No
Sulfuric Acid Mist (H_2SO_4)	5.6	7	No
Total Reduced Sulfur	N/A	10	No
Reduced Sulfur Compounds	N/A	10	No

(1) Based on worst case scenarios.

(2) Due to the proximity to the Class I area, lower criteria apply for those pollutants with a minimum projected 24-hour average impact of 1.0 mg/m^3 or more in the Class I area.

NA = No emissions information available or no emissions expected.
TPY = Tons per year

Source: Foster Wheeler Environmental, 1997

4. BEST AVAILABLE CONTROL TECHNOLOGY

4.1 INTRODUCTION

Under both federal and state PSD programs, PSD review is triggered for a modification to an existing major facility that results in a significant net emissions increase. As part of the proposed Project, federally enforceable facility-wide caps on the annual emissions of sulfur dioxide (SO_2) and oxides of nitrogen (NO_x) are being proposed to hold the facility's future emissions of these pollutants to their current actual levels. Because of this commitment, the Project will net out of PSD review for these pollutants. To determine the worst-case emissions of other pollutants from the Project under the proposed facility-wide caps, eleven potential operating scenarios were identified. These scenarios, while not intended to represent limits on the facility, bracket the expected operating ranges of the individual units within the facility. Based on the proposed SO_2 and NO_x caps and the various pollutant-specific worst-case operating scenarios within those caps, the Project will also net out of PSD review for volatile organic compounds (VOCs), sulfuric acid mist (H_2SO_4), lead (Pb), mercury (Hg), beryllium (Be), and total fluorides (Fl). PSD review was triggered for only carbon monoxide (CO) and particulate matter (TSP & PM_{10}). The PSD applicability analysis is summarized in Table 3-4, and the supporting calculations for the current actual emissions and future allowable emissions are contained in Appendices B and C.

Because PSD was triggered for CO and particulate matter (TSP & PM_{10}), the Best Available Control Technology (BACT) requirements of Rule 62-213.400(6), F.A.C., will apply to new and modified emission units for which a net emissions increase of these pollutants is expected to occur. This BACT analysis therefore addresses control strategies for CO and particulate matter (TSP & PM_{10}) emissions from the Unit 8 combustion turbine, and for particulate matter (TSP & PM_{10}) emissions from the cooling tower. In addition, the BACT analysis includes an evaluation for all PSD pollutants emitted from the combustion turbine to ensure that the proposed Project incorporates the most appropriate control strategies, regardless of the applicability of the BACT requirements.

4.2 BACT PROCEDURES

The Florida PSD regulations require, among other things, that a proposed new facility or major modification: (a) comply with all applicable emission limitations contained in Chapter 62-296, F.A.C., and Title 40 of the Code of Federal Regulations Parts 60 and 61 (40 CFR Parts 60 and 61); and (b) apply BACT for each pollutant subject to PSD review. As defined in Rule 62-210.200(40), F.A.C., BACT is:

> "An emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems and techniques (including cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant."

In order to ensure consistent BACT determinations, and provide guidance to state and local regulatory programs as well as the regulated community, the EPA published guidance for conducting BACT determinations. The guidance includes the following documents:

- *Draft Top-Down BACT Summary* (EPA, 1990c)
- *Draft New Source Review Manual* (EPA, 1990a)
- *OAQPS Control Cost Manual, Fourth Edition* (EPA, 1990d)

Currently the FDEP requires applicants to follow the EPA's draft "top-down" procedures when conducting BACT evaluations, which are done on a case-by-case basis. These draft procedures have recently been formally proposed by EPA as part of the New Source Review Reform Package (61 Federal Register (FR) 38250, 7/23/96).

The "top-down" process requires initial consideration of the most stringent control technologies available, which may then be eliminated based on unacceptable source-specific energy, environmental, or economic impacts. This analysis includes technology transfers when applicable. For combustion turbines, the technical feasibility and economic impacts associated with the most stringent control technologies are typically the determinative factors. For the proposed Project, the economic impact analyses followed the procedures outlined in the above references.

4.2.1 Most Stringent Control Technologies

The "top-down" process begins with the identification of various control technologies and strategies available to reduce emission levels of the pollutants subject to PSD review. The following sources were reviewed for identification of control technologies available for the proposed Project:

- California BACT Clearinghouse
- EPA BACT/LAER Clearinghouse
- Recent FDEP BACT Determinations
- EPA's Alternative Controls Techniques Document -- "Emissions from Stationary Gas Turbines" (EPA, 1993b)

These sources provide the best information related to available control technologies and the most stringent emission limitations. The EPA BACT/LAER Clearinghouse data was downloaded from EPA's electronic bulletin board and a query was run on "internal combustion." A separate query was run for the cooling tower. The results of the combustion turbine query are contained in Appendix D. Table 4-1 lists the most stringent control technologies and emission limitations identified by the review for the various PSD pollutants.

The most stringent control technologies and strategies identified are as follows:

- Fuel Quality
- Good Combustion Practices

TABLE 4-1
MOST STRINGENT CONTROL TECHNOLOGIES AND EMISSION LIMITATIONS IDENTIFIED IN EPA BACT/LAER CLEARING-HOUSE

Pollutant	Control Technology	Emission Limitations
Carbon Monoxide (CO)[1]	Oxidation Catalyst	Natural Gas - 1.8 ppmvw Fuel Oil - 2.6 ppmvw
Particulate Matter (TSP)[2]	Combustion Air Filtration, Good Combustion Practices & Fuel Quality	Natural Gas - 0.0048 lb/mmBtu Fuel Oil - 0.0089 lb/mmBtu
PM_{10}[2]	Combustion Air Filtration, Good Combustion Practices & Fuel Quality	Natural Gas - 0.0048 lb/mmBtu Fuel Oil - 0.0089 lb/mmBtu
Sulfur Dioxide (SO_2)[3]	Fuel Quality	Natural Gas - 10 gr/100 scf Fuel Oil - 0.05% Sulfur by Weight
Nitrogen Oxides (NO_x)[4]	Select Catalytic Reduction	Natural Gas - 3.5 ppmvd Fuel Oil - 10 ppmvd
Volatile Organic Compounds (VOC)[5]	Good Combustion Practices	Natural Gas - 1.5 ppmvw Fuel Oil - 3 ppmvw
Benzene	Good Combustion Practices	No Limitations
Sulfuric Acid Mist (H_2SO_4)	Fuel Quality	Natural Gas - 10 gr/100 scf Fuel Oil - 0.05% Sulfur by Weight
Trace Metals Lead Beryllium Mercury Arsenic	Fuel Quality	No Limitations
Total Fluorides (Fl)	Fuel Quality	No Limitations
Cooling Tower (TSP & PM_{10})[6]	Drift Eliminator	0.002 Percent of Recirculation Water

Notes: Pollutants presented in bold and italics are subject to BACT.

(1) EPA BACT/LAER (NJ-0017) - LAER Determination
(2) EPA BACT/LAER (NC-0059) - BACT Determination (Includes TSP and PM_{10})
(3) EPA BACT/LAER (GA-0063) - BACT Determination
(4) EPA BACT/LAER (NY-0044) - LAER Determination
(5) EPA BACT/LAER (NJ-0013) - LAER Determination
(6) EPA BACT/LAER (NY-0005) - BACT Determination

gr/scf - grains per standard cubic foot
ppmvw - parts per million volume on a wet basis
ppmvd - parts per million volume on a dry basis corrected to 15 percent oxygen
BACT - Best Available Control Technology
LAER - Lowest Achievable Emission Rate

Source: Foster Wheeler Environmental, 1997

- Combustion Techniques
- Add-On Air Pollution Control Systems

The "top-down" evaluation included a review of each control technology and strategy including combinations, technology transfers, and the associated emission limitations.

4.2.2 Most Stringent Emission Limitations

Associated with each most stringent control technology is an emission limitation. These emission limitations form the basis of the BACT evaluation. For the proposed Unit 8 combustion turbine, the General Electric (GE) operating and emissions data are contained within Appendix A. These data represent the base case for the BACT evaluation. Table 4-2 provides a comparison between the emission levels of the Unit 8 combustion turbine and the cooling tower, and those of the most stringent control technologies for all PSD pollutants.

4.3 REQUIREMENTS AND ASSUMPTIONS

Under the requirements of the "top-down" process, the City has evaluated the technological feasibility, economic impacts, energy impacts, and environmental impacts of each of the various control technologies and strategies. These impacts were used to determine the overall feasibility of a control strategy.

For the pollutants requiring an economic impact evaluation, annual emissions from the Unit 8 combustion turbine were estimated based on 8,760 hours of operation and reasonably expected future operations of the unit. Because the short-term emission rates for the unit vary based on fuel type, load, and ambient temperature, certain assumptions were made. For CO and VOCs, the short-term emission rates increase with decreasing load; for all other pollutants, the short-term emission rates remain unchanged or increase with load. The short-term rates generally increase with lower ambient temperatures. An ambient temperature of 59° F was used, which is conservative since the average annual ambient temperature at the site is about 67° F. For the economic analyses that were required, base-case annual emissions from the Unit 8 combustion turbine were based on GE emissions data (Appendix A) and the following reasonable assumptions:

For CO and VOCs, the unit was assumed to operate for 8,260 hours on clean pipeline quality natural gas and 500 hours on Number 2 (0.05% S) diesel fuel oil. Based on future expected operations, the unit was conservatively assumed to operate at 50 percent load for 19 percent of those hours, and at 100 percent load for the remainder of the hours. At these emission levels, the unit can operate within the proposed facility-wide SO_2 and NO_x caps.

For NO_x, the unit was assumed to operate at 100 percent load for 8,260 hours on clean pipeline quality natural gas and 500 hours on Number 2 (0.05% S) diesel fuel oil.

TABLE 4-2
PROJECT EMISSION LEVELS
VERSUS MOST STRINGENT EMISSION LIMITATIONS

Pollutant	Potential Project Emission Levels	Most Stringent Emission Limitations
Carbon Monoxide[1]	Natural Gas -9 ppmvw Fuel Oil - 30 ppmvw	Natural Gas - 1.8 ppmvw Fuel Oil - 2.6 ppmvw
Particulate Matter (TSP)[2]	Natural; Gas - 0.0058 lb/mmBtu Fuel Oil - 0.0096 lb/mmBtu	Natural Gas - 0.0048 lb/mmBtu Fuel Oil - 0.0089 lb/mmBtu
PM_{10}[2]	Natural; Gas - 0.0058 lb/mmBtu Fuel Oil - 0.0096 lb/mmBtu	Natural Gas - 0.0048 lb/mmBtu Fuel Oil - 0.0089 lb/mmBtu
Sulfur Dioxide	Natural Gas - 10 gr/100 scf Fuel Oil - 0.05% Sulfur by Weight	Natural Gas - 10 gr/100 scf Fuel Oil - 0.05% Sulfur by Weight
Sulfuric Acid Mist	Natural Gas - 10 gr/100 scf Fuel Oil - 0.05% Sulfur by Weight	Natural Gas - 10 gr/100 scf Fuel Oil - 0.05% Sulfur by Weight
Nitrogen Oxides	Natural Gas - 9 ppmvd Fuel Oil - 42 ppmvd +	Natural Gas - 3.5 ppmvd Fuel Oil - 10 ppmvd
Volatile Organic Compounds[3]	Natural Gas - 1.4 ppmvw Fuel Oil -3.5 ppmvw	Natural Gas - 1.5 ppmvw Fuel Oil - 3 ppmvw
Cooling Tower (TSP & PM_{10})	0.002 % - Recirculation Water	0.002 % - Recirculation Water

Notes: Pollutants presented in bold and italics are subject to BACT.

(1) CO emissions vary with load and an allowance is requested.
(2) BACT levels are equal to most stringent limits of 9 lb/hr for natural gas and 17 lb/hr for No. 2 fuel oil
(3) VOC emissions vary with load and an allowance is requested.

FBN - Fuel Bound Nitrogen
gr/scf - grains per standard cubic foot
ppmvw - parts per million volume on a wet basis
ppmvd - parts per million volume on a dry basis corrected to 15 % oxygen

Source: Foster Wheeler Environmental, 1997

The calculations used to estimate the base-case annual emissions of CO, VOCs, and NO_x are contained in Appendix E.

The cooling tower's conceptual design incorporates drift eliminators, allows for operation at eight cycles of concentration, and reduces drift losses to 0.002 percent of the cooling tower water recirculation rate. Annual emissions of particulate matter (TSP and PM_{10}) were based on continuous 100 percent load operation and the conceptual design.

4.4 CARBON MONOXIDE EMISSIONS

CO is formed within a combustion turbine through the incomplete combustion of liquid and gaseous fuels. High temperatures, adequate excess air, and good fuel/air mixing during combustion minimize CO emissions. CO formation is therefore a function of the unit's overall combustion efficiency, which is a measure of the percentage of carbon and hydrogen within a fuel that is converted to carbon dioxide and water. Complete or 100 percent conversions are only theoretical, so that products of incomplete combustion, including CO, are formed. The Unit 8 combustion turbine, as proposed, includes advanced GE dry-low NO_x combustor technology that maximizes NO_x reductions while minimizing CO and VOC emissions by varying the parameters which impact combustion efficiency. For the BACT analysis, the base-case CO emissions were estimated at 167 tons per year from the combustion turbine.

The combined use of good combustion practices and an oxidation catalyst was identified as the most stringent control technology currently available to control CO emissions. Combustion turbines equipped with an oxidation catalyst have had CO emissions limited to levels of about 2 and 3 ppm while firing natural gas and Number 2 fuel oil, respectively. For the proposed Unit 8 combustion turbine, this control equipment is known to be technologically feasible, but has been shown to have unacceptable economic, energy, and environmental impacts. "Good combustion practices" are typically determined to be the appropriate control technology for projects not required to meet the most stringent control technology's "Lowest Achievable Emission Rate" (LAER) limits that apply in nonattainment areas. The impacts of the control strategies are discussed in the following subsections.

4.4.1 Summary of Technologies Evaluated

The following control technologies were evaluated based on their control effectiveness:

- Oxidation Catalyst to reduce CO emissions by 90 percent; and
- Combustion controls to ensure good combustion.

Combustion controls represent the base case. Table 4-3 presents the emission levels associated with the base case and the 90 percent control level.

TABLE 4-3
CARBON MONOXIDE EMISSIONS

Emission Basis	Emission Levels					
	100% Load			50% Load		
	ppmvw	lb/hr	tons/yr	ppmvw	lb/hr	tons/yr
CO - Base Case						
Natural Gas Firing	9	29	97.01	25	53	41.59
No. 2 Fuel Oil Firing	30	96	19.44	90	189	8.98
CO - Option 1 (90% Control)						
Natural Gas Firing	NA	2.9	9.70	NA	5.3	4.16
No. 2 Fuel Oil Firing	NA	9.6	1.94	NA	18.9	0.90
Ambient Temperature (°F)	59	59	59	59	59	59
Load (%)	100	100	100	50	50	50
Natural Gas Firing (hours)	6,690.6	6,690.6	6,690.6	1,569.4	1,569.4	1,569.4
No. 2 Fuel Oil Firing (hours)	405	405	405	95	95	95
Net Reductions (TPY)						
CO Option 1 - 150.32 Tons per Year						

NA - Not Available

Source: Foster Wheeler Environmental, 1997

4.4.2 Energy Impacts

An oxidation catalyst will result in a reduction in a combined cycle combustion turbine's overall performance and output capacity. The main loss is also associated with the additional pressure drop across the catalyst bed. This pressure drop can range from 1 to 2 inches of water and can also reduce the unit's overall output by as much as 0.5 percent (1.25 MW). Although the energy impact may be measurable, it is not, by itself, considered significant enough to reject the control technology. Costs associated with the energy loss are included within the economic analysis.

4.4.3 Environmental Impacts

The environmental impacts resulting from the use of an oxidation catalyst can include increases of sulfur trioxide (SO_3) emissions and waste disposal. Increased SO_3 emissions are a result of the conversion of SO_2 to SO_3 in the presence of the oxidation catalyst. Water vapor within the exhaust gases can react with this additional SO_3 to form H_2SO_4. In addition, the disposal of the spent catalyst every two years also would place additional burdens on available landfill space. These potential environmental impacts alone were not considered significant enough to reject the control technology.

4.4.4 Economic Impacts

The economic impacts were based on the costs of an oxidation catalyst in accordance with the procedures outlined in the EPA's *"Cost Control Manual"* (EPA, 1990d) and the draft *'New Source Review Workshop Manual"* (EPA, 1990a). Tables 4-4 and 4-5 contain the capital and operating cost factors used in the oxidation catalyst and later selective catalytic reduction (SCR) analyses.

Engelhard provided an estimated oxidation catalyst system cost of $830,000 for the 90 percent reduction of CO emissions, with a warranty period of two years. (Appendix F). Seventy-five percent of this system's cost was reported to be associated with the catalyst, including replacement. The design criteria were based on firing Number 2 (0.05 % Sulfur) diesel fuel oil at 50 percent load and meeting the 2 and 3 ppm LAER limits for gas and oil firing.

The economic analysis reduces capital and operating costs to annualized values based on a twenty-year economic life of the Project and a 7.25 percent return. On this basis, an oxidation system would add approximately $1.5 million to the capital cost of the Project.

The total levelized annual costs for the Project would increase by about $1.2 million per year, resulting in an incremental removal cost of approximately $7,720 per ton. Table 4-6 summarizes the economic analysis for the oxidation catalyst, and Appendix G contains the economic calculations. The cost per ton for controlling CO emissions through the use of an oxidation catalyst is prohibitively expensive. This result is consistent with other recent BACT determinations by FDEP where good combustion practices were determined to be BACT. The use of good combustion practices to minimize CO emissions is therefore proposed as BACT for the Unit 8 combustion turbine.

TABLE 4-4
BACT EVALUATION CAPITAL COST FACTORS

Cost Item	Cost Factor	Reference
Direct Costs (DC)		
Purchased Equipment Costs (PEC)		
Catalyst System	As Estimated, A	Vendor Quote
Instrumentation	0.05 X A	(EPA, 1990d)
State Sales Taxes	0.06 X A	State Sales Tax
Freight	0.05 X A	(EPA, 1990d)
PEC Subtotal	1.16 X A = B	
Direct Installation Costs (DIC)		
Foundations & Supports	0.08 X B	(Ulrich, 1984)
Labor	0.14 X B	(EPA, 1990d)
Electrical	0.04 X B	(EPA, 1990d)
Piping	NA	Vendor Quote
Insulation	NA	Vendor Quote
Painting	0.01 X B	EPA, 1990d)
DIC Subtotal	0.27 X B	(EPA, 1990d)
Site Preparation	NA	-
Buildings	NA	-
Total DC	1.27 X B	-
Indirect Costs (IDC)		
Engineering	0.10 X B	(EPA, 1990d)
Construction Overhead	0.05 X B	(EPA, 1990d)
Contractor Fees	0.10 X B	(EPA, 1990d)
Contingencies	0.03 X B	(EPA, 1990d)
Start-Up	0.02 X B	(EPA, 1990d)
Performance Testing	0.01 X B	(EPA, 1990d)
Total IDC	0.53 X B	-
Total Capital Investment (TCI)	1.84 X B	

References:

EPA, 1990d: "OAQPS Control Cost Manual" 4th Edition
Ulrich, 1984: "A Guide to Chemical Engineering Process Design and Economics"

Source: Foster Wheeler, 1997

TABLE 4-5
BACT EVALUATION OPERATING COST FACTORS

Direct Annual Costs, $/Yr	Factor	Reference
Operating Labor	(1)	(COT & EPA, 1993b)
Supervisory Labor	15 % Of Operating Labor	(EPA, 1993b)
Maintenance Labor And Materials	(2)	(EPA, 1993b)
Catalyst Replacement (CR)	(3)	Vendor Estimates
Catalyst Disposal	$15/CF	(EPA, 1993b)
Aqueous Ammonia	$360/Ton	(EPA, 1993b)
Dilution System	NA	(EPA, 1993b)
Electricity	NA	(EPA, 1993b)
Performance Loss	(4)	(EPA, 1993b)
Blower	NA	(EPA, 1993b)
Production Loss	NA	(EPA, 1993b)
Indirect Annual Costs, $/Yr		
Overhead	60% of all labor main.	(EPA, 1990d)
Insurance & Administration	costs	(EPA, 1990d)
Capital Recovery	2.5% of TCI	NA
	CRF x (TCI - CR)	

Chemical Engineering Plant Cost Indices
1990 - 357.9
1993 - 359.2
Sept. 1996 - 383.9
Capital Recovery Factor (CRF)@ I=7.25%,n = 20: 0.0962

(1) Operating labor was estimated based on $27.82 per hour with 0.5 and 1 hours per shift for the CO and SCR, respectively.
(2) Maintenance labor and materials were estimated at 2 times the operating labor for CO and the formula: 1,250 (MW) + 25,800 for SCR.
(3) The Oxidation catalyst replacement cost was estimated at 75 percent of the total price quote while the SCR catalyst replacement cost was estimated between $300,000 and $350,000 per year.
(4) The performance loss was based on 0.5 percent of the unit's output and $0.06 per kilowatt.

Source: References as indicated

TABLE 4-6
CO BACT ECONOMIC SUMMARY

Cost Item	Cost Factor	Reference	Cost ($1996)
Direct Costs (DC)			
Purchased Equipment Costs (PEC)			
Ox Cat. & Auxiliary Equipment	**As Estimated, A**	**Vendor Quote**	**$830,000.00**
Instrumentation	0.05 X A	(EPA, 1990d)	$41,500.00
State Sales Taxes	0.06 X A	State Sales Tax	$49,800.00
Freight	0.05 X A	(EPA, 1990d)	$41,500.00
PEC Subtotal	1.16 X A = B		**$962,800.00**
Direct Installation Costs (DIC)			
Foundations & Supports	0.08 X B	(Ulrich, 1984)	$77,024.00
Labor	0.14 X B	(EPA, 1990d)	$134,792.00
Electrical	0.04 X B	(EPA, 1990d)	$38,512.00
Piping	NA		
Insulation	NA		
Painting	0.01 X B	(EPA, 1990d)	$9,629.00
DIC Subtotal	0.27 X B		**$259,956.00**
Site Preparation	NA	NA	NA
Buildings	NA	NA	NA
Total DC	1.27 X B		**$1,222,756.00**
Indirect Costs (IDC)			
Engineering	0.10 X B	(EPA, 1990d)	$96,280.00
Construction Overhead	0.05 X B	(EPA, 1990d)	$48,140.00
Contractor Fees	0.10 X B	(EPA, 1990d)	$96,280.00
Contingencies	0.03 X B	(EPA, 1990d)	$28,884.00
Start-Up	0.02 X B	(EPA, 1990d)	$19,256.00
Performance Testing	0.01 X B	(EPA, 1990d)	$9,628.00
Total IDC	0.53 X B	-	**$298,468.00**
Total Capital Investment (TCI)	1.84 X B		**$1,521,224.00**

TABLE 4-6
CO BACT ECONOMIC SUMMARY

Cost Item		Cost Factor	Reference	Cost ($1996)
Operating Cost Factors For Oxidation Catalyst				
Chemical Engineering Plant				
Cost Index				
1990	357.6			
1993	359.2			
Sept. '96	383.9			
Capital Recovery Factor (CRF) @ I=7.25%,N=20: 0.0962				
Direct Annual Costs, $/Yr		**Factor**	**Reference**	**Costs, $/Yr**
	Operating Labor	$27.82/Hr @ .5hr/12hr-Shift	(COT &EPA, 1990d)	$10,154
	Supervisory Labor	15 % Of Operating Labor	(EPA, 1990d)	$1,523
	Maintenance Labor And Materials	2 X $25.60/Hr @ 0.5hr/12hr-Shift	(EPA, 1990d)	$20,309
	Catalyst Replacement (CR)	9 X 0.75 X A X CRF	Vendor	$539,156
	Catalyst Disposal	$15/CF	(EPA, 1993b)	$172,309
	Electricity	NA		NA
	Performance Loss	0.50%	(EPA, 1990d)	$272,462
				$1,015,912
Indirect Annual Costs, $/Yr				
	Overhead	60% Of All Labor Main. Costs	(EPA, 1990d)	$19,192
	Insurance & Administration	2.5%Of TCI	(EPA, 1990d)	$38,031
	Capital Recovery	CRF X (TCI - CR)	NA	$86,489
				$143,711
Total Annual Costs, $/Yr				**$1,159,623**
Total Net Reductions (TPY)		**Factor**		
	Carbon Monoxide	90 % Reduction		150.32
Incremental Cost Effectiveness, $/Ton				**$7,714**

COT - City of Talahassee
EPA, 1990a - OAQPS Control Cost Manual
NA - Not Applicable

Source: Foster Wheeler Environmental, 1997

4.5 PARTICULATE MATTER (TSP) AND PM_{10}

4.5.1 Combustion Turbine

Emissions of particulate matter (TSP and PM_{10}) result from inert materials within the fuel, products of incomplete combustion, and inert materials within the combustion turbine inlet air. The New Source Performance Standards (NSPS) for combustion turbines, 40 CFR 60 Subpart GG do not establish emission limits for particulate matter. All of the particulates emitted from the combustion turbine are expected to be less than 10 microns in diameter. Thus, the emissions of TSP equal the emissions of PM_{10} and further discussion of particulate matter will refer to PM_{10}.

The combustion turbine has PM_{10} emissions levels of 9 lb/hr (0.0058 lb/mmBtu) while firing clean pipeline quality natural gas and 17 lb/hr (0.0096 lb/mmBtu), while firing Number 2 (0.05 % S) diesel fuel oil, exclusive of background concentrations per the GE data sheets. These factors are based more on the uncertainties in PM_{10} stack testing methods than on the expectation of large quantities of inert materials within the combustion turbine inlet air or the fuel (GE, 1996a). Since inert materials can cause turbine damage resulting in additional downtime and maintenance, combustion turbines are normally fired with clean fuels such as natural gas and Number 2 fuel oil. Air filtration systems are also employed to avoid the introduction of inert materials into the combustion turbine through the inlet air. In addition, good combustion practices are followed for both environmental and economic reasons.

As noted in Table 4-1, the most stringent control technology associated with combustion turbines for PM_{10} is a combination of fuel quality, good combustion practices, and combustion turbine inlet air filtration. Add-on air pollution control strategies such as baghouses, scrubbers, and electrostatic precipitators (ESPs) have not been used on combustion turbines and their use as a transfer technology has been neither deemed technically nor economically feasible for combustion turbines due to anticipated back pressure problems. The emission levels associated with the most stringent controls were based on a North Carolina BACT determination of 9 lb/hr and 17 lb/hr when firing natural gas and Number 2 fuel oil, respectively. The Unit 8 combustion turbine has PM_{10} emission levels equal to those associated with the most stringent technology. Therefore, no further energy, environmental, or economic analysis was required. For the combustion turbine, BACT for the PM_{10} emissions is proposed as combustion turbine inlet air filtration, good combustion practices, and the use of clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil.

4.5.2 Cooling Tower

Emissions of particulate matter (TSP and PM_{10}) result from the direct contact between the cooling water and the air passing through it. As the air and water make contact, some water may become entrained within the air stream and carried out of the tower as "drift" droplets, which is known as drift loss. The cooling water, and consequently the drift droplets, typically contain dissolved and suspended solids. These solids constitute the particulate matter within the droplet and are considered in calculating the total PM_{10} emissions. The amount of drift loss depends on the number and size of the droplets produced within the cooling tower and is related to the

overall design of the cooling tower. Typically, larger droplets will fall to the ground near the tower while smaller droplets may evaporate, leaving the solids suspended within the atmosphere. The amount of particulate emissions including TSP and PM_{10} depends on the amount of drift loss and the concentration of solids within the cooling tower water.

To reduce drift losses from cooling towers, and therefore indirectly lower particulate emissions, drift eliminators can be incorporated into the tower design. A single BACT determination for a cooling tower was identified in the control technology review, establishing drift eliminators as BACT, with an emission limitation of 0.002 percent of the recirculating water flow. The proposed cooling tower for the Purdom Station will incorporate drift eliminators, operate at 8 cycles of concentration, and reduce drift losses to 0.002 percent of the cooling tower recirculation rate. BACT for particulate matter emissions from the cooling tower is therefore proposed as the use of drift eliminators.

4.6 OTHER POLLUTANTS

In addition to the pollutants subject to BACT, evaluations of the Unit 8 combustion turbine's emissions of other PSD pollutants was also conducted, although not required by the applicable regulations. These other pollutants included SO_2, H_2SO_4, NO_x, VOC, Fl, and trace metals. The findings regarding each of these pollutants are discussed in the following sections.

4.6.1 Sulfur Dioxide and Sulfuric Acid Mist

Sulfur dioxide emissions are a direct result of the oxidation of the various sulfur compounds contained within the fuel stream. Both natural gas and Number 2 fuel oil contain some sulfur compounds. In either case, the oxidation process follows the general chemical reaction:

$$S + O_2 \Rightarrow SO_2$$

Sulfuric acid mist is the result of the oxidation of SO_2 to SO_3 and the subsequent reaction with moisture to form H_2SO_4. This process follows the following general chemical reactions:

$$2SO_2 + O_2 \Rightarrow 2SO_3$$

$$SO_3 + H_2O \Rightarrow H_2SO_4$$

Combustion of both clean pipeline quality natural gas and the Number 2 (0.05% Sulfur) diesel fuel oil will result in emissions of SO_2 and H_2SO_4. Because SO_2 and H_2SO_4 emissions are directly proportional to the sulfur content of the fuel, they can be controlled through fuel quality. The most stringent SO_2 and H_2SO_4 emission standards for combustion turbines are related to fuel quality. The SO_2 and H_2SO_4 emissions from the Unit 8 combustion turbine are based on GE data which project that 95 percent of the sulfur in the fuel would be emitted as SO_2 and the remaining 5 percent emitted as H_2SO_4.

The Unit 8 combustion turbine will fire clean pipeline quality natural gas as the primary fuel with Number 2 (0.05% Sulfur) diesel fuel oil as the secondary fuel, which meets the most stringent emission levels reported. In addition, the use of the Number 2 fuel oil with a sulfur content of 0.05 percent by weight is well within the NSPS requirements of Subpart GG, which specifies a maximum sulfur content of 0.8 percent by weight.

4.6.2 Oxides of Nitrogen

Emissions of NO_x from combustion turbines are generated by two primary mechanisms known as "fuel NO_x" and "thermal NO_x." Fuel NO_x is related to the nitrogen content of the fuels fired in the combustion turbine. Most solid and liquid fuels contain some quantities of nitrogen within their chemical structure, known as fuel bound nitrogen (FBN), which when burned can produce NO_x emissions or "fuel NO_x." Within combustion turbines, FBN is only a concern when firing fuel oils, since clean pipeline quality natural gas typically contains little or no FBN. The production of fuel NO_x can follow the generalized chemical reaction:

$$C_xH_yN + zO_2 \Rightarrow xCO_2 + (y/2)H_2O + NO_x$$

Fuel NO_x represents a relatively small but measurable portion of the overall NO_x emissions generated by a combustion turbine. For combustion turbines, NSPS Subpart GG establishes a base NO_x emissions standard of 75 parts per million by volume on a dry basis (ppmvd) corrected to 15 percent oxygen at ISO ambient conditions. This standard includes additional allowances for the heat rate and for FBN. The FBN allowances are presented in Table 4-7.

TABLE 4-7
FUEL BOUND NITROGEN ALLOWANCES

FBN (% wt)	Allowance (NO_x percent by Volume)
FBN ≤ 0.015	0
0.015 ≤ FBN ≤ 0.1	0.04(FBN)
0.1 ≤ FBN ≤ 0.25	0.004+0.0067(FBN-0.1)
FBN > 0.25	0.005

Source: 40 CFR 60 Subpart GG - New Source Performance Standards for Stationary Gas Turbines

The second mechanism by which NO_x emissions are formed within a combustion turbine is known as "thermal NOx" and is a result of the dissociation of nitrogen (N_2) and Oxygen (O_2) in the combustion air and the subsequent reactions to form NO_x. The Zeldovich mechanism has been proposed for this reaction and is based on the following general equations:

Dissociation

$$N_2 \Leftrightarrow 2N\bullet$$

$$O_2 \Leftrightarrow 2O\bullet$$

Reaction

$$N_2 + 3O\bullet \Leftrightarrow 2NO + O\bullet$$

$$O_2 + N\bullet \Leftrightarrow NO + O\bullet$$

$$N\bullet + O\bullet \Leftrightarrow NO$$

The dissociation reactions, which produce elemental nitrogen and oxygen, are favored under conditions of high temperatures and pressures. Combustion controls focus on reducing thermal NO_x production by reducing the peak flame temperatures within the combustion zone. Peak flame temperatures are controlled by either wet injection systems or by varying the stoicheometric ratio of the combustion air and fuels within the combustion zones. Wet injection

systems involve the injection of either water or steam into the combustion zone to act as a heat sink and lower flame temperatures. Varying the stoicheometric ratios through staged combustion reduces flame temperatures and the nitrogen concentrations within the combustion zone. This later technique forms the basis of the dry low-NO_x combustors offered by various manufacturers. Appendix A contains information provided by General Electric on its dry-low NOx development program, a technical paper on dry-low NOx technology, and the emissions data sheets for the proposed Unit.

For Unit 8, NO_x emission levels of 9 ppmvd (0.037 lb/mmBtu) while firing clean pipeline quality natural gas and 42 ppmvd (0.181 lb/mmBtu) while firing Number 2 (0.05% S) diesel fuel oil have been guaranteed up to a maximum of 0.015 percent FBN. Thermal NO_x emissions will be controlled by the use of an advanced dry low-NO_x combustor while firing clean pipeline quality natural gas and water injection while firing Number 2 (0.05% Sulfur) diesel fuel oil, respectively. The proposed emission limits are well below those of 40 CFR 60 Subpart GG and also below those considered BACT in recent FDEP determinations. However, the proposed combustion turbine's NO_x levels are above those associated with the most stringent emission limitations (3.5 ppmvd - national gas & 10 ppmvd - fuel oil) placed on projects located within non-attainment areas. As such, the costs associated with the installation of an add-on air pollution control technology were examined.

Add-on air pollution control systems for reducing emissions of NO_x from combustion sources include selective catalytic reduction (SCR) and selective noncatalytic reduction (SNCR). Currently, SCR in combination with either wet injection or dry low-NO_x technologies is the most efficient control technology employed to control NO_x emissions from combustion turbines. Combustion turbines equipped with SCR systems have demonstrated compliance with emission limits as low as 3.5 ppmvd and 10 ppmvd, corrected to 15 percent O_2, while firing natural gas and Number 2 fuel oil, respectively. Because of the current temperature limitations of the available SNCR systems, their use on combustion turbines is not considered to be technologically feasible. Therefore, the evaluation addressed only SCR as an available add-on control technology for NO_x.

As part of the evaluation, the economic impact of an SCR system was considered. The economic impact analysis followed EPA's suggested procedures. A vendor quote was received for an SCR system, with a three-year catalyst warranty. (Appendix H). The quote estimated the initial capital cost for an SCR system to be $1,676,000. In addition to this initial cost, the vendor estimated additional costs of $300,000 to $350,000 per year for catalyst replacement. The SCR design criteria was based on meeting the 3.5 and 10 ppmvd LAER limits for all gas and oil firing.

The economic impacts analysis reduced capital and operating costs to annualized values based on a twenty-year economic life of the Project and a 7.25 percent return. The analysis indicated that an SCR system would add approximately $3.1 million to the overall capital cost of the Project. The total levelized annual costs for the Project would increase by about $1.5 million per year, resulting in an incremental removal cost of approximately $7,225 per ton. (The economic calculations are provided in Appendix G). Based on the economics impacts alone, it was determined that controlling NO_x emissions through an SCR system would be prohibitively expensive, consistent with other recent BACT deteriminations by FDEP.

In addition to the economic impacts, the use of an SCR system would result in a reduction in the combined cycle combustion turbine's performance and output capacity. The main loss is associated with the additional pressure drop across the ammonia injection grid and the catalyst bed. This pressure drop can range from 2 to 5 inches of water and can reduce the overall unit output by as much as 0.5 percent. In addition, energy losses are associated with the pumps and instrumentation used to control and operate the ammonia injection system. Although these energy impacts may be measurable, they were not by themselves considered significant enough to reject the control technology. Costs associated with the energy loss have been included within the economic analysis.

Environmental impacts resulting from the use of an SCR system include emission increases of sulfur trioxide (SO_3) and PM_{10} emissions, waste disposal, increased water usage, and the storage, handling, and emissions of ammonia and ammonia products. Increased SO_3 emissions are a result of the catalytic oxidation of SO_2 to SO_3 in the presence of the SCR catalyst. As discussed previously, SO_3 can be expected to form H_2SO_4 in the presence of water vapor within the exhaust gases. SO_3 can also be expected to react with ammonia to form either ammonium bisulfate or ammonium sulfate, which will be reflected as increased PM_{10} emissions and which could potentially cause fouling in the HRSG. In addition to the increases in SO_3 and PM_{10} emissions, the SCR system could also introduce ammonia emissions into the environment. Disposal of the spent catalyst every three years will place additional burdens on available landfill space. Water usage would increase by about 136,500 gallons per year through the use of the aqueous ammonia solution. The handling, storage, and use of aqueous ammonia does pose less of an environmental threat than that of anhydrous ammonia from the standpoint of an accidental air release. However, because of the Purdom Generating Station's location along the banks of the St. Marks River, the potential handling and storage of an aqueous ammonia solution would have to be addressed from an accidental spill and release perspective.

Based on the various impact analyses, BACT for NO_x emissions from the combustion turbine is proposed to be the use of clean pipeline quality natural gas as the primary fuel and Number 2 (0.05% S) diesel fuel oil as the secondary fuel, in combination with good combustion practices and the use of dry-Low-NO_x combustors and a water injection system when firing clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil, respectively.

4.6.3 Volatile Organic Compounds

Within a combustion process, emissions of VOCs are related to the combustion efficiency of the unit. Combustion control strategies for VOCs are similar to those for CO which target high temperatures, long residence times, and adequate excess air. For combustion turbines, NSPS Subpart GG does not establish emission limits for VOC emissions.

The Unit 8 combustion turbine will have VOC levels of 2 parts per million volume on a wet basis (ppmvw) (0.0018 lb/mmBtu) and 5 ppmvw (0.0042 lb/mmBtu), while firing clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil, respectively, for loads above 75 percent. These values are representative of BACT for these loads. For loads below 75 percent, the VOC levels are higher, as reported in the GE data sheets. Table 4-1 presented the most stringent control technology for VOCs, which reported emission levels of 1.5 and 3 ppmvw for natural gas and (0.05% S) diesel fuel oil firing, respectively.

For combustion turbines, add-on air pollution control strategies for VOCs include oxidation catalysts. The use of an oxidation catalyst for the reduction of CO emissions was evaluated for the Unit 8 combustion turbine. Since VOC emissions were not subject to BACT review, a separate cost analysis for an oxidation catalyst to reduce VOCs was not conducted. However, by assuming a 30 percent reduction of VOC emissions across the CO oxidation catalyst, and by adding the additional reduction in VOC emissions to those of CO, the additional benefit of a lower incremental cost of the system was identified. This lower incremental cost was estimated at $7,510 per ton of CO and VOC removed. Although the combination of VOC and CO reductions is slightly higher, making the incremental removal cost lower, the economic cost of an oxidation catalyst was still considered to be unreasonably expensive.

4.6.4 Trace Metals

Emissions of trace metals result from inert materials within the fuel and combustion turbine inlet air. Clean pipeline quality natural gas contains little, if any, noncombustible inert materials; trace metal emissions are considered negligible. For mercury, an emission factor of 0.078 lb/10^{12} Btu has been used for this analysis (EPRI, 1994). Number 2 fuel oil has a reported ash content of less than 0.01 percent by weight (Perry, 1973). Emissions of trace metals from the use of Number 2 (0.05% S) diesel fuel oil are therefore expected to be higher when compared to clean pipeline quality natural gas, but are still relatively low. For the Unit 8 combustion turbine on Number 2 (0.05% S) fuel oil, emissions of trace metals have been estimated based on AP-42 emission factors (EPA, 1995) for lead (194 lb/10^{12} Btu), beryllium (4.2 lb/10^{12} Btu), and mercury (32 lb/10^{12} Btu).

As discussed under the section regarding PM_{10} emissions, BACT for trace metal emissions from combustion turbines has been determined to be fuel quality, good combustion practices, and combustion turbine inlet air filtration. NSPS Subpart GG does not contain any emission standards for trace metals nor did any of the reported BACT determinations. Consistent with other recent FDEP determinations of BACT for trace metal emissions from combustion turbines, the use of clean pipeline quality natural gas as the primary fuel with Number 2 (0.05% S) diesel fuel oil as the secondary fuel, good combustion practices, and combustion turbine inlet air filtration are proposed as BACT for Unit 8.

4.6.5 Total Fluorides

The review of the most stringent control technologies did not identify any emission limitations associated with fluoride emissions from combustion turbines. Fluoride emissions are associated with the use of fuel oil. Fuel quality is therefore proposed as BACT for fluoride emissions from the Unit 8 combustion turbine, with clean pipeline quality natural gas as the primary fuel and Number 2 (0.05% S) diesel fuel oil as the secondary fuel.

4.7 BACT SUMMARY

The BACT evaluations examined the available fuels, combustion technologies, and add-on air pollution control systems. Based on the evaluations, BACT for the Project includes the following:

- For the primary control of CO and VOC emissions from the combustion turbine, good combustion practices, which maximize NO_x reductions while minimizing CO, VOCs, and PM_{10} emissions are proposed as BACT. For CO, the evaluation is based on the economic impacts of an oxidation catalyst, which represents the most stringent control technology.
- For the primary control of particulate matter, PM_{10}, trace metals, and total fluorides emissions from the combustion turbine, inlet air filtration coupled with good combustion practices and fuel quality are proposed as BACT. The use of clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil is the most stringent control technology available.
- For the primary control of NO_x, combustion controls including dry-low NO_x combustors and wet injection techniques coupled with fuel quality are representative of BACT. The evaluation is based on the economic impacts associated with an SCR system, which represents the most stringent control technology available.
- For the primary control of SO_2 and H_2SO_4, and the secondary control of NO_x and PM_{10}, the use of clean pipeline quality natural gas and Number 2 (0.05% S) diesel fuel oil is the most stringent control technology available.
- For the primary control of particualte matter and PM_{10} from the cooling towers, drift eliminators which reduce drift losses are proposed as BACT and are the most stringent control technology available.

Table 4-8 presents a summary of the control technologies proposed as BACT for the combustion turbine and cooling tower.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

TABLE 4-8
SUMMARY OF PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY

Pollutant	Proposed BACT
Carbon Monoxide (CO)	Good Combustion Practices
Particulate Matter (TSP)	Fuel Quality (Clean Pipeline Quality natural gas and No. 2 (0.05% S) diesel fuel oil, Good Combustion Practices, and Combustion Inlet Air Filtration
PM_{10}	Fuel Quality (Clean Pipeline Quality natural gas and No. 2 (0.05% S) diesel fuel oil, Good Combustion Practices, and Combustion Inlet Air Filtration
Sulfur Dioxide (SO_2)	Fuel Quality (Clean Pipeline Quality natural gas and No. 2 (0.05% S) diesel fuel oil.
Sulfuric Acid Mist (H_2SO_4)	Fuel Quality (Clean Pipeline Quality natural gas and No. 2 (0.05% S) diesel fuel oil.
Nitrogen Oxides (NO_x)	Fuel Quality (Clean Pipeline Quality natural gas and No. 2 (0.05% S) diesel fuel oil and Good Combustion Practices including Dry-Low NOx Combustors and Water Injection
Volatile Organic Compounds (Including Benzene)	Good Combustion Practices
Trace Metals Lead (Pb) Beryllium (Be) Mercury (Hg) Arsenic (As)	Fuel Quality (Clean Pipeline Quality natural gas and No. 2 (0.05% S) diesel fuel oil and Combustion Inlet Air Filtration
Total Fluorides (Fl)	Fuel Quality (Clean Pipeline Quality natural gas and No. 2 (0.05% S) diesel fuel oil.
Cooling Tower (TSP & PM_{10})	Drift Eliminators (0.002 percent - Recirculation Water)

Note: Pollutants presented in bold and italics are subject to BACT by rule.

Source: Foster Wheeler Environmental, 1997

5. AMBIENT AIR QUALITY MONITORING DATA ANALYSIS

5.1 PSD PRECONSTRUCTION MONITORING APPLICABILITY

As indicated in Section 3.4.4, the City evaluated the need for preconstruction on-site air quality monitoring in accordance with the requirements of Rule 62-212.400(3)(e), F.A.C. A monitoring exemption request was submitted to FDEP on January 15, 1997, and approved by FDEP on February 19, 1997 (FDEP, 1997). That request contained a preliminary air quality modelling assessment of the impacts of the proposed Project.

The preliminary modelling results demonstrated that the maximum off-site impacts from the proposed Project will be well below the monitoring significance levels (Table 3-3) for all of the criteria pollutants subject to new source review in accordance with Rule 62-212.400(2)(f)2. Those include particulate matter (TSP and PM_{10}) and CO.

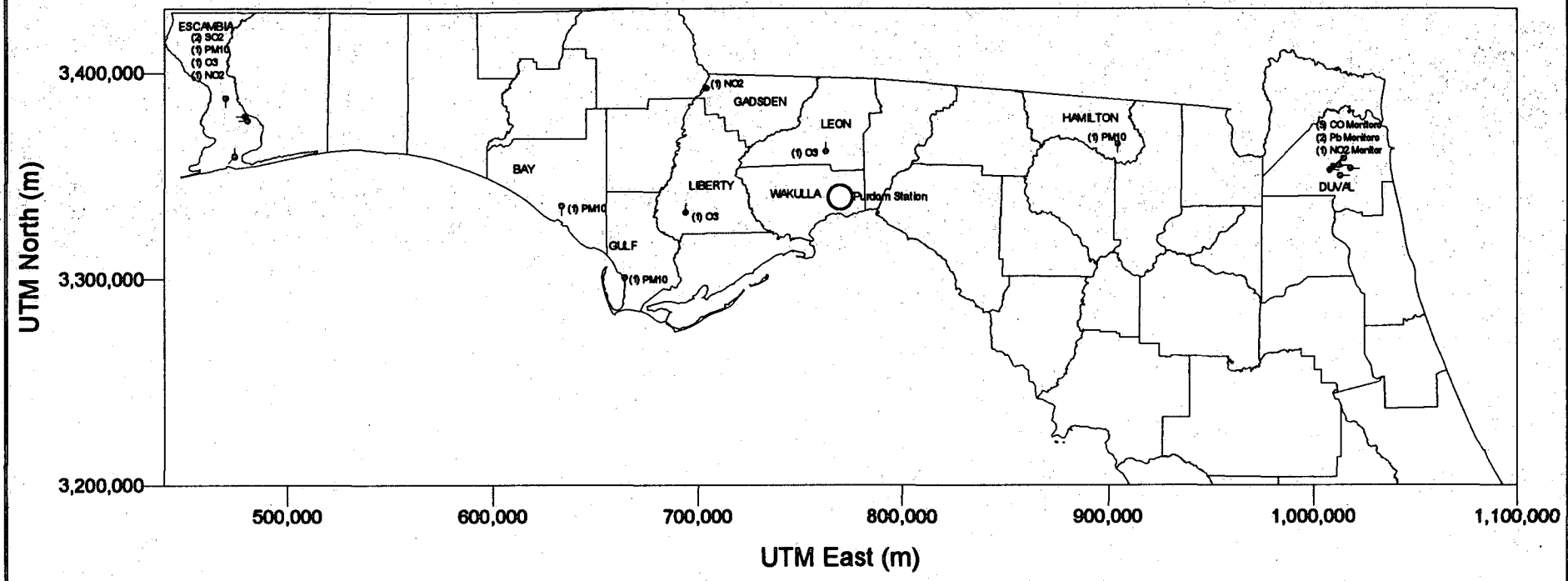
5.2 EXISTING REPRESENTATIVE AIR QUALITY MONITORING DATA

Existing FDEP and other ambient air monitoring data are available that can be used to characterize the existing conditions in the vicinity of the site. A map depicting the locations of the existing ambient air quality monitoring sites is presented as Figure 5-1. The FDEP and other data from these monitors (primarily for 1995) are summarized in Table 5-1.

Ozone is monitored in neighboring Leon County, the most urban county of the region. Thus, Leon County data may be considered to overpredict ozone levels for the Project location. The NAAQS and FAAQS for ozone (O_3) is 0.12 ppm (235 $\mu g/m^3$). This is a daily maximum one-hour concentration, which is not to be exceeded an average of more than one day per year, according to Rule 62-204.240(4), F.A.C. In 1995, the second highest one-hour value observed in Leon County was approximately 80 percent of the standard at 0.096 ppm (188 $\mu g/m^3$). Data available for previous years show similar concentrations. An O_3 monitor in Escambia County, about 170 miles west of the site, had a 1995 second high concentration equal to the standard. Additional O_3 data are available from a closer station in Sumatra, in Liberty County, Florida, a distance of 45 miles from the site (EPA, 1996a). These data indicate a second high one-hour value of 166 $\mu g/m^3$, or about 70 percent of the standard. Of the locations where O_3 is monitored, the data from the Sumatra location are probably most representative of the St. Marks area (for background purposes) as this location is away from urbanized areas.

The FAAQS and NAAQS for NO_2 is 100 $\mu g/m^3$ averaged over the entire year. The average concentration monitored in Duval County, roughly 140 miles east of the site and the nearest location with NO_2 data for 1995, was 30 $\mu g/m^3$ or 30 percent of the standard. A closer monitor in Gadsden County, a distance of 55 miles from the site, has been discontinued. From January to June 1992, the average NO_2 concentration at the Gadsden monitor was 7 $\mu g/m^3$, or 7 percent of the standard. The average concentration in Escambia County in 1990 was 14 $\mu g/m^3$.

Respirable PM_{10} and SO_2 are not monitored by FDEP in Wakulla, Leon, Jefferson, Taylor, or Gadsden Counties. The nearest monitoring locations for those pollutants are in Hamilton and Bay Counties, which are roughly 70 miles east and west of the site, respectively, and in Gulf County, about 70 miles to the west, and Escambia County, about 170 miles to the west. In fact, at least the Hamilton and Bay County monitors are located near major air pollutant



Legend

- OZONE
- SULFUR DIOXIDE
- PARTICULATE MATTER (10 MICRONS AND SMALLER)
- NITROGEN DIOXIDE
- CARBON MONOXIDE
- LEAD

Sources: Monitoring locations FDEP
Base Map Foster Wheeler Environmental, 1997

CITY OF TALLAHASSEE

SELECTED AMBIENT AIR QUALITY MONITORING LOCATIONS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 5-1

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TABLE 5-1
MONITORING DATA SUMMARIES FOR
REGIONAL AIR QUALITY MONITORING SITES

Parameter	Year	Station	ID	1-Hr[(1)]	3-Hr[(1)]	8-Hr[(1)]	24-Hr[(1)]	Quarter	Annual
Particulate Matter (PM_{10})	1995	Bay	12-005-1004	-	-	-	58	-	23.8
	1995	Gulf	12-045-1003	-	-	-	47	-	22.4
	1995	Escambia	12-033-0003	-	-	-	54	-	23.4
	1995	Hamilton	12-047-0015	-	-	-	48	-	22.9
Sulfur Dioxide (SO_2)	1995	Escambia	12-033-0022	-	183	-	71	-	9
	1995	Escambia	12-033-0004	-	176	-	50	-	8
	1995	Hamilton	12-047-0015	-	318	-	102	-	13
Ozone (O_3)	1995	Escambia	12-033-0018	235	-	-	-	-	-
	1995	Leon	12-073-0003	188	-	-	-	-	-
	1995	Liberty	EPA SUM 156	166	-	-	-	-	61
Nitrogen Dioxide (NO_2)	1995	Duval	12-031-0032	-	-	-	-	-	30
	1990	Escambia	12-033-0007	-	-	-	-	-	14
	1992	Gasden	0540002J02	-	-	-	-	-	7
Carbon Monoxide (CO)	1995	Duval	12-031-0084	-	8050	5290	-	-	-
	1995	Duval	12-031-0082	-	7245	3910	-	-	-
	1995	Duval	12-031-0083	-	7245	4255	-	-	-
	1995	Duval	12-031-0095	-	7360	3795	-	-	-
	1995	Duval	12-031-0080	-	5520	3220	-	-	-
Lead (Pb)	1995	Duval	12-031-0032	-	-	-	-	0.026	-
	1995	Duval	12-031-0032	-	-	-	-	0.030	-

All data in micrograms per cubic meter ($\mu g/m^3$)
(1) All short-term values are the second highest values in $\mu g/m^3$
- = Not applicable

Source: FDEP, 1995, 1996
EPA, 1996, 1996a

sources and the use of concentrations monitored there would be expected to overestimate "background" concentrations in the St. Marks area. Nevertheless, these data are being provided as they are the only data available.

The FAAQS and NAAQS for PM_{10} is 50 $\mu g/m^3$ annual arithmetic mean, with a second highest 24-hour average of 150 $\mu g/m^3$, according to Rule 62-204.240(2), F.A.C. The second highest short-term concentration measured in 1995 in Hamilton County was 48 $\mu g/m^3$ or 32 percent of the standard. The annual arithmetic mean was 23 $\mu g/m^3$ or 46 percent of the standard. In Bay, Gulf and Escambia Counties, similar concentrations have been observed.

The FAAQS for SO_2 (which is more stringent than the NAAQS) is 1300 $\mu g/m^3$ for a 3-hour average (not to be exceeded more than once per year), 260 $\mu g/m^3$ for a 24-hour period (not to be exceeded more than once per year) and 60 $\mu g/m^3$ for an annual average (Rule 62-204.240(1) F.A.C.). The second highest 3-hour average recorded in 1995 in Hamilton County was 318 $\mu g/m^3$ or 24 percent of the standard. The second highest 24-hour average for 1995 was 102 $\mu g/m^3$ or 39 percent of the standard. The annual average concentration for 1995 was 13 $\mu g/m^3$ or 22 percent of the standard. Since this monitor is close to a major source, background values from Escambia County may be more representative. Monitored values for Escambia County in 1995 were 191, 70, and 9 $\mu g/m^3$ for the 3-hour, 24-hour, and annual periods, respectively.

No background concentrations data are available for lead (Pb) and carbon monoxide (CO) in the site area. Concentrations for both of these pollutants would be expected to be low in the site vicinity due to the limited number of emission sources. The nearest location where data for these pollutants is collected is Duval County (Jacksonville), which is roughly 140 miles east of the site. Data from the Duval County monitors are presented below.

The FAAQS and NAAQS for CO is 40,000 $\mu g/m^3$ for a 1-hour average and 10,000 $\mu g/m^3$ for an 8-hour average, neither to be exceeded more than once per year (Rule 62-204.240(3), F.A.C.). The second-highest 1-hour average recorded at a monitor in Duval County in 1995 was 8,050 $\mu g/m^3$, or 20 percent of the standard. The second-highest 8-hour average was 5290 $\mu g/m^3$ or 53 percent of the standard.

The FAAQS and NAAQS for Pb is 1.5 $\mu g/m^3$ on a calendar quarter basis (Rule 62-204.240(6) F.A.C.). The highest quarterly average recorded at a monitor in Duval County in 1995 was 0.03 $\mu g/m^3$, or 2 percent of the standard.

Background air quality concentrations to be utilized in the modelling analyses were compiled from the data presented in Table 5-1 and from recommendations by FDEP (1996). A summary of the background values is presented in Table 5-2. Many of the values in Table 5-2 are considered to be very conservative estimates (i.e., overestimates) of background concentrations in the site vicinity because they are more representative of larger urban areas or of areas in the vicinity of major existing sources of air pollutants. All major sources in the vicinity of the Purdom Station are explicitly included in the modelling; adding background concentrations representative of locations near major sources is essentially "double-counting," an especially conservative approach.

TABLE 5-2
MONITORING DATA TO BE USED AS
BACKGROUND AIR QUALITY IN NAAQS/FAAQS MODELLING

Parameter	Year	Station	ID	1-Hr[(1)]	3-Hr[(1)]	8-Hr[(1)]	24-Hr[(1)]	Quarter	Annual
Particulate Matter (PM_{10})	1995	Gulf	12-045-1003	-	-	-	47	-	22.4
Sulfur Dioxide (SO_2)	1995	Escambia	12-033-0022	-	183	-	71	-	9
Nitrogen Dioxide (NO_2)	1990	Escambia	12-033-0007	-	-	-	-	-	14
Carbon Monoxide (CO)	1995	Duval	12-031-0084	8050	-	5290	-	-	-
Lead (Pb)	1995	Duval	12-031-0032	-	-	-	-	0.030	-

All data in micrograms per cubic meter ($\mu g/m^3$)
(1) All short-term values are the second highest value in $\mu g/m^3$
- = Not applicable

Source: FDEP, 1995, 1996
EPA, 1995

5.3 CLIMATOLOGY

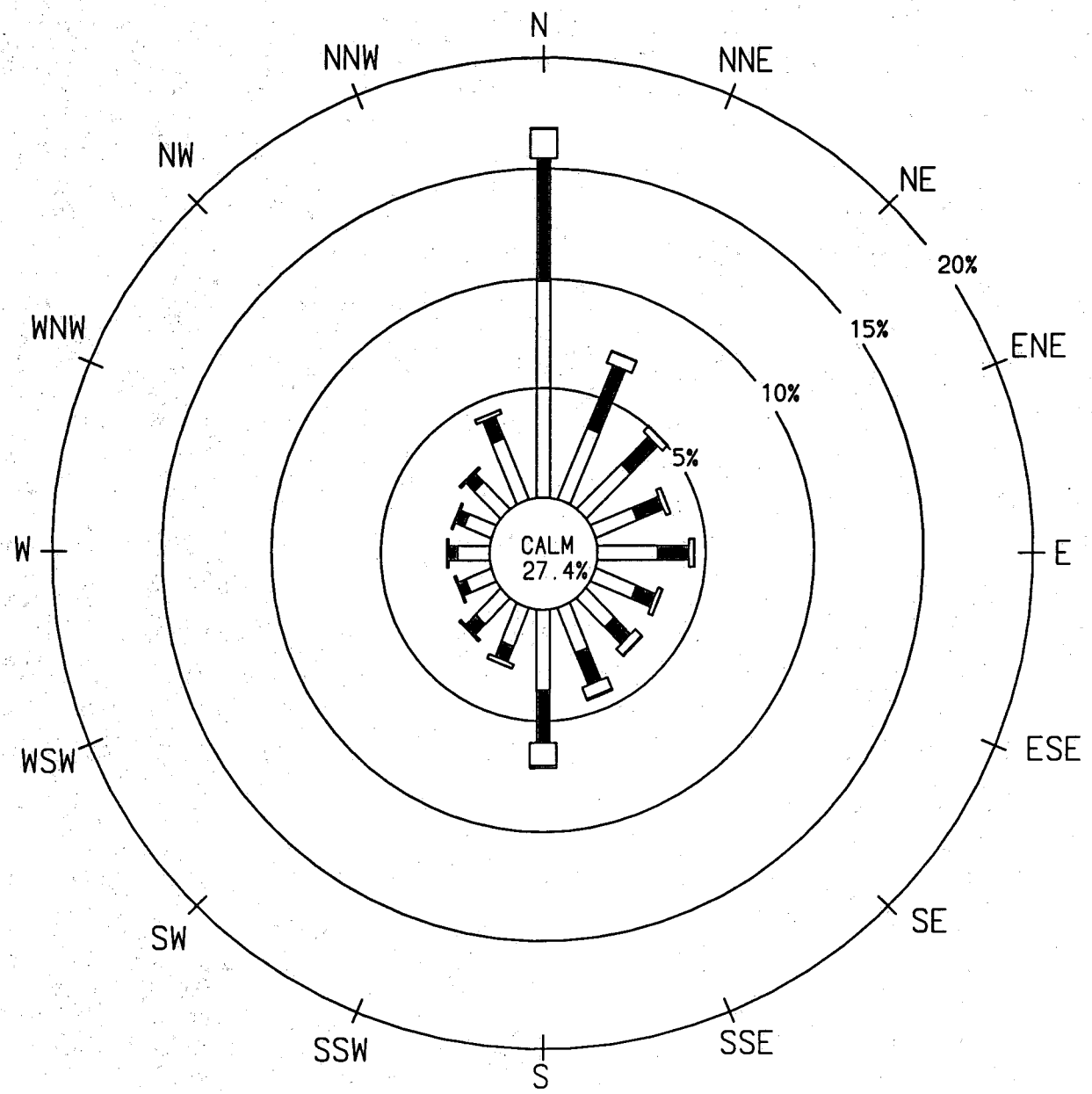
The climate in the vicinity of the Purdom Station is mild and moist, characteristic of the Gulf Coast. Climatological data generally representative of the site are available for the Tallahassee Regional Airport, which is located approximately 30 km to the northwest. A summary of temperature and precipitation data for Tallahassee, Florida is presented in Table 5-3.

TABLE 5-3
TEMPERATURE AND PRECIPITATION SUMMARY - TALLAHASSEE, FLORIDA

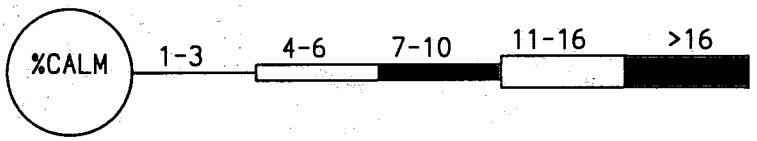
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Ann
Mean Temp (°F)	51.6	53.6	60.2	67.1	74.0	79.5	81.2	81.1	78.3	68.4	59.8	53.0	67.2
Mean Max Temp (°F)	63.4	65.9	72.7	80.0	86.0	90.1	90.9	90.6	87.8	80.4	71.5	65.3	78.7
Mean Min Temp (°F)	39.9	41.2	47.7	54.0	62.0	68.8	71.5	71.6	68.8	56.4	46.0	40.7	55.7
Mean precip (In)	4.66	5.00	5.60	4.13	5.16	6.55	8.75	7.30	6.45	3.10	3.31	4.58	64.59

Source: USDC, 1989 (Period of Record 1951-1980)

Five years of wind data selected to model the proposed Project were obtained from the FDEP for the National Weather Service station at the Tallahassee Regional Airport. Based on data from 1985-1989, the annual average wind speed is 6.4 mph. The prevailing wind direction during this period was from the north, which occurred nearly 17 percent of the time. Wind directions from the south and from the north-northeast occurred nearly eight percent of the time. An annual wind rose for Tallahassee is presented in Figure 5-2, and seasonal wind roses are presented in Figure 5-3. A wind rose for a longer period of record (1948-1990) presented in the Plan of Study (COT, 1996) exhibited less dominance of the northerly component and more winds from the east than is exhibited for the 1985-1989 period. However, the wind instruments were moved in 1961 from Dale Mabry Field to the current location at the Tallahassee Regional Airport, which likely accounts for the differences.



WIND SPEED CLASSES (MPH)



SOURCE: U.S. DEPARTMENT OF COMMERCE, 1993

CITY OF TALLAHASSEE

WIND ROSE
TALLAHASSEE REGIONAL AIRPORT
(1985-89)
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
5-2

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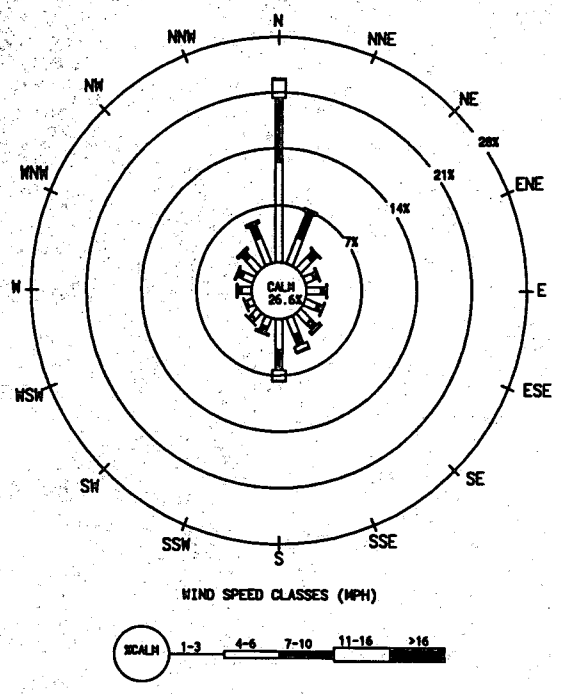
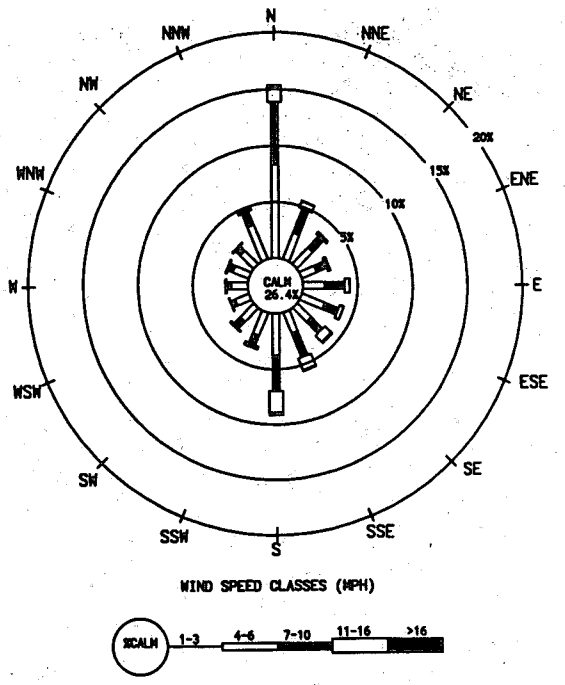
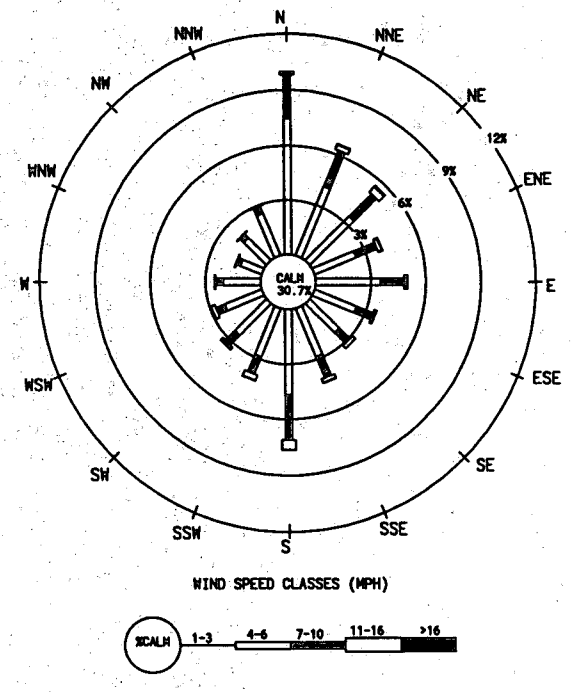


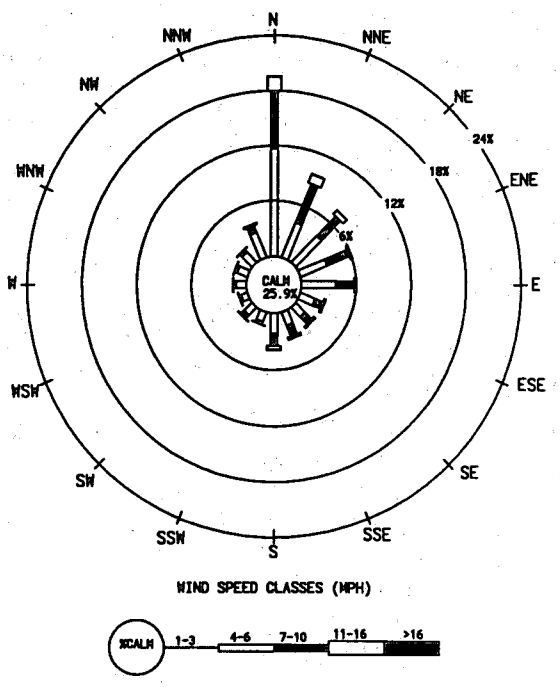
WINTER



SPRING



SUMMER



FALL

SOURCE: U.S. DEPARTMENT OF COMMERCE, 1993

CITY OF TALLAHASSEE

SEASONAL WIND ROSES
TALLAHASSEE REGIONAL AIRPORT
(1985-89)
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
5-3

PLOT DATE FEB 27, 1997 C:\15840002\----\00000-19.DWG

6. AIR QUALITY MODELLING APPROACH

This section summarizes the air quality modelling protocol and input parameters utilized in the air impact determinations presented in Section 7. Descriptions of the models, meteorology, options selected, listings of modelling parameters for the proposed Project, receptor locations, and step-by-step procedures that were used to develop the necessary impact projections are discussed.

6.1 POLLUTANTS COVERED

The required modelling analysis is limited to those pollutants that were determined to be subject to PSD review in Section 3.4.3. As indicated in Table 3-4, these pollutants include particulate matter (TSP and PM_{10}) and CO. Although the proposed source emissions of particulate matter (TSP) are shown in Table 3-4 to be above the PSD significant emission rates, there are no ambient air quality standards nor PSD significant impact levels or increments for that pollutant. Hence, there is no required air quality impact assessment for particulate matter (TSP). Required conventional modelling for compliance with AAQS and PSD increments was, therefore, restricted to PM_{10} and CO for AAQS, and to PM_{10} for PSD. However, in the interest of providing a more complete picture of project impacts, the City voluntarily chose to model the proposed Project for all PSD regulated pollutants with quantifiable emissions for which ambient standards, PSD increments, or draft FARCs exist. Therefore, the PSD regulated pollutants covered by some phase of the modelling analyses include: SO_2, NO_2, particulate matter (TSP), PM_{10}, CO, Pb, Be, Hg, and Fl. The PSD increment consumption modelling covered SO_2, NO_2, and PM_{10}. Modelling for compliance with AAQS covered SO_2, NO_2, PM_{10}, CO, and Pb. The remaining PSD regulated pollutants, Be, Hg, and Fl, were covered in the modelling of hazardous air pollutants (HAPs). Certain HAPs are not subject to PSD review but are covered by the draft FARCs (FDEP, 1995). Those for which emission estimates were available for this Project (antimony, arsenic, cadmium, chromium, cobalt, manganese, nickel, selenium, vanadium, polycyclic organic matter, benzo(a)pyrene, benzene, toluene, hydrochloric acid, dioxin, and formaldehyde (HCOH)) were also included in the air quality impact analysis.

6.2 GENERAL MODELLING APPROACH

A modelling protocol was prepared by the applicant and submitted to FDEP for review (COT, 1996). The FDEP approved the modelling protocol prior to commencement of the air quality impact assessment (FDEP, 1996c).

The air quality impact assessment consisted of a proposed source significant impact area analysis, a PSD increment consumption analysis, an ambient air quality standards impact analysis, a FARCs analysis, and an additional impacts analysis. In addition, the need for ambient monitoring was evaluated. These analyses are discussed in greater detail below. The modelling approach followed EPA and FDEP modelling guidelines for determining compliance with applicable PSD increments, AAQS, and the draft FARCs. EPA modelling guidance is provided in the Guideline on Air Quality Models (40 CFR 51, Appendix W) as well as the Draft New Source Review Workshop Manual (EPA, 1990a). FDEP guidance on conducting the analyses is provided in Rule 62-212.400, F.A.C.

Based on current EPA and FDEP policies, the highest annual and quarterly average, and highest second-high short-term (i.e., 24 hours or less) predicted concentrations (critical concentrations) were selected for comparison to applicable AAQS and PSD increments. However, also in accordance with FDEP policies, the highest short-term predicted concentrations were used for comparison to significance levels and the draft FARCs. The use of a five-year rather than a one-year meteorological data base in the modelling analysis allows a comparison of the predicted highest second-high short-term concentration to applicable short-term PSD increments and ambient air quality standards. The highest second-high concentration is calculated for a receptor field by:

- Eliminating the highest concentration predicted at each receptor;
- Identifying the second-highest concentration predicted at each receptor; and
- Selecting the highest concentration among those second-high concentrations.

This approach is consistent with the air quality standards and PSD increments which permit one exceedance of a short-term average per year at each receptor.

The general modelling approach for each air quality impact analysis commenced with a significance level impact phase. Then screening and refined multi-source modelling phases were conducted. The major difference between the latter two phases is the receptor grid used when predicting concentrations and the number of meteorological data periods evaluated. In general, concentrations for the screening phase were predicted using a coarse mesh receptor grid and a five-year meteorological data base. The screening phase identified the critical receptors associated with the highest and highest second-high short-term concentrations for all applicable pollutants and averaging periods. The predicted concentrations at those critical receptors were evaluated in greater detail in the refined phase of the analysis.

The refined phase of the analysis was performed by predicting concentrations using a fine mesh receptor grid centered over each of the critical receptors identified in the screening phase of the modelling analysis. This approach was used to ensure that valid highest second-high (critical) short-term concentrations were obtained for comparison to applicable air quality standards and PSD increments.

6.3 MODEL SELECTION AND OPTIONS

6.3.1 Dispersion Model Selection

The most current version of Industrial Source Complex (ISC3) dispersion model Version 96113 was used to evaluate the emissions from the existing and proposed units. This model was downloaded from the EPA Technology Transfer Network (TTN), Support Center for Regulatory Air Models (SCRAM) bulletin board. The model and its use are covered in the Users Guide (EPA, 1995a). The ISC3 model was selected primarily for the following reasons:

1. EPA and FDEP have approved the general use of the model for air quality dispersion analysis because the model assumptions and methods are consistent with those in the Guideline on Air Quality Models.

2. The ISC3 model is capable of predicting the impacts from stack, area, and volume sources that are spatially distributed over large areas and located in flat or gently rolling terrain.

3. The results from the ISC3 model are appropriate for addressing compliance with AAQS and PSD increments since the model can predict the highest as well as the highest second-high concentration and period of occurrence for 1-hour, 3-hour, 8-hour and 24-hour averaging periods at each receptor for each full year of hourly meteorological data used. The short-term (ISCST3) or long-term (ISCLT3) versions of the ISC3 model can be used for annual averages. In this case, the short-term version of the model (ISCST3) was used for obtaining annual averages.

4. The ISC3 model has several options and features that allow it to handle certain situations in a variety of ways. For this analysis, the EPA regulatory default options were used to predict the maximum impacts from the facility.

6.3.2 Dispersion Model Options

The ISCST3 model has rural and urban options which affect the wind speed profile exponent law, dispersion rates, and mixing-height formulations used in calculating ground-level concentrations. The criteria used to determine when the rural or urban mode is appropriate are based on land use near the proposed plant's surroundings (Auer, 1978). If the land use is classified as heavy industrial, light-moderate industrial, commercial, or compact residential for more than 50 percent of the area within a 3 km radius centered on the proposed source, the urban option should be selected. Otherwise, the rural option is more appropriate.

Based on the use of USGS topographic maps, it has been concluded that the land use within a 3 km radius of the Purdom Station is consistent with the use of the rural rather than the urban options.

The regulatory default mode for all of the program control parameters was used in the ISCST3 model as approved by FDEP. The ISCST3 model was applied without terrain adjustment data because the area in which the Purdom Generating Station is located has very little relief (e.g., a net change in ground level elevation in the range of only 10-20 feet). The ISCST3 model's building downwash options were applied to all on site sources, but since the stack for the proposed Unit 8 will be greater than calculated GEP stack height (but within the allowed 65 meter default value), downwash modelling was not required for Unit 8.

The air quality impact assessment for particulate matter assumed that all particulate matter emissions were PM_{10} emissions. This assumption simplified the particulate matter modelling analysis (i.e., no separate analyses for TSP and PM_{10}) and resulted in a potentially conservative approach to modelling PM_{10} impacts.

6.4 METEOROLOGICAL DATA

The air quality modelling analysis used hourly preprocessed National Weather Service (NWS) surface meteorological data from Tallahassee, Florida and concurrent twice-daily mixing heights from Apalachicola, Florida for the years 1985 to 1989. These are the locations and years

recommended by FDEP. The preprocessed hourly meteorological data file for each year of record used in the analysis obtained from FDEP contained randomized wind direction, wind speed, ambient temperature, atmospheric stability using the Turner (1970) stability classification scheme, and mixing heights. The anemometer height of 6.7 meters, used in the modelling analysis, was obtained from NWS Local Climatological Data summaries for Tallahassee (USDC, 1989).

6.5 EMISSIONS INVENTORY - UNIT 8

6.5.1 Short-Term Emissions - PSD Regulated Pollutants

The emissions inventories for the proposed Unit 8 for both the primary fuel (natural gas) and the secondary fuel (Number 2 (0.05% S) diesel fuel oil) are presented in Tables 6-1 and 6-2. The pollutant emission rates shown in these tables are representative of BACT as demonstrated in Section 4.0.

The proposed source worst-case fuel/load/temperature scenarios were determined by first conducting preliminary modelling. Preliminary modelling runs were conducted using one year of meteorology (the first year of the data set provided by FDEP - 1985) at three ambient temperatures (95°F, 59°F, and 20°F) and three combustion turbine loads (100%, 75%, and 50%) for both natural gas and Number 2 (0.05% S) diesel fuel oil. Thus, there were a total of 18 preliminary modelling runs conducted using the 1985 meteorological data set. A summary of the preliminary modelling runs is presented in Section 7.1. As a result of these preliminary runs, it was determined that the 20°F at 50% load fuel oil combinations produced the "worst case" predicted ground-level ambient air quality impacts for the short-term averaging periods for all pollutants. The emission rates and stack parameters for these "worst case" conditions are highlighted in bold type in Table 6-2.

6.5.2 Long-Term Emissions - PSD Regulated Pollutants

The annual emissions from the proposed Unit 8 are limited by the need to maintain annual emissions of SO_2 and NO_x within a facility-wide cap. Depending upon fuel choice, availability, and the need to run other units, Unit 8 could run continuously or very infrequently. If Unit 8 were to be utilized as much as possible, it could run the full year (8,760 hours) when firing natural gas or for up to 1,735 hours at full load when firing Number 2 fuel oil with a 0.05% S content and stay within the facility-wide caps for SO_2 and NO_x. The annualized emissions for these two cases are presented in Table 6-3. As indicated, the stack parameters associated with 59°F and 100% load were used for these tables and the associated annual modelling, as they are more representative of annual average conditions than the 20°F, 50% load cases used for the short-term modelling.

6.5.3 Emissions of Hazardous Air Pollutants

The emission rates from Unit 8 for the draft Florida Ambient Reference Concentrations (FARCs) were estimated for both short-term and long-term averaging periods. Short-term emission rates were based upon firing Number 2 (0.05% S) diesel fuel oil and the 20°F, 50% load stack parameters were used. Long-term emission rates were based on Number 2 (0.05% S)

TABLE 6-1
PROPOSED UNIT 8 SHORT-TERM EMISSIONS INVENTORY
NATURAL GAS FIRING

Load (%)	Ambient Temp (°F)	Ts (°K)	Vs (m/sec)	Emission Rates (grams/sec)								
				SO_2[1]	PM/PM_{10}[2]	NO_x	CO[2]	Pb	Be	Fl	H_2SO_4	Hg
100	20	361	24.54	6.37	1.14	7.82	3.91	NA	NA	NA	0.64	1.33E-06
	59	362	22.99	5.91	1.14	7.31	3.66	NA	NA	NA	0.59	1.22E-06
	95	365	21.24	5.55	1.14	6.81	3.28	NA	NA	NA	0.56	1.14E-06
75	20	356	19.34	5.15	1.14	6.31	3.53	NA	NA	NA	0.52	1.06E-06
	59	358	18.59	4.82	1.14	5.93	3.28	NA	NA	NA	0.48	9.94E-07
	95	361	17.52	4.55	1.14	5.55	3.03	NA	NA	NA	0.46	9.38E-07
50	20	350	15.63	4.10	1.14	4.92	7.06	NA	NA	NA	0.41	8.45E-07
	59	353	15.61	3.86	1.14	4.67	6.68	NA	NA	NA	0.39	7.96E-07
	95	357	14.35	3.65	1.14	4.41	6.31	NA	NA	NA	0.36	7.53E-07

(1) Based on 10 grains/100 SCF total sulfur in natural gas.

(2) Pollutants for which PSD is triggered.

Stack UTM Coordinates: 769.611 km - East
3,339.767 km - North

Stack height = 60.97 m
Ts - Stack exit temperature (see table above)
Vs - Stack exit velocity (see table above)
Stack diameter = 5.0 m

NA = No emission factor available or no emissions expected.

Source: Foster Wheeler Environmental, 1996

TABLE 6-2
PROPOSED UNIT 8 SHORT-TERM EMISSIONS INVENTORY
FUEL OIL FIRING

Load (%)	Ambient Temp (°F)	Ts (°K)	Vs (m/sec)	Emission Rates (grams/sec)								
				SO_2 [1]	PM/PM_{10} [2]	NO_x	CO [2]	Pb	Be	Fl	H_2SO_4	Hg
100	20	365	25.90	12.36	2.14	43.76	13.12	1.40E-02	7.97E-05	2.56E-01	1.26	1.74E-03
	59	367	24.24	11.60	2.14	33.17	12.11	1.30E-02	7.41E-05	2.38E-01	1.26	1.62E-03
	95	368	22.20	10.34	2.14	29.64	10.97	1.17E-02	6.64E-05	2.13E-01	1.14	1.45E-03
75	20	359	19.66	10.09	2.14	35.44	12.74	1.15E-02	6.52E-05	2.10E-01	1.01	1.43E-03
	59	361	19.03	9.46	2.14	33.17	12.23	1.07E-02	6.10E-05	1.96E-01	1.01	1.33E-03
	95	364	18.01	8.45	2.14	29.64	11.85	9.61E-03	5.47E-05	1.76E-01	0.88	1.20E-03
50	**20**	**353**	**15.38**	**7.82**	**2.14**	**27.37**	**24.21**	**8.92E-03**	**5.08E-05**	**1.63E-01**	**0.88**	**1.11E-03**
	59	356	15.50	7.56	2.14	25.73	23.84	8.40E-03	4.78E-05	1.54E-01	0.76	1.05E-03
	95	360	14.77	6.68	2.14	22.95	22.32	7.51E-03	4.28E-05	1.37E-01	0.76	9.35E-04

(1) Based on 0.05% sulfur in fuel oil.

(2) Pollutants for which PSD is triggered.

Stack UTM Coordinates: 769.611 km - East
3,339.767 km - North

Stack height = 60.97 m
Ts - Stack exit temperature (see table above)
Vs - Stack exit velocity (see table above)
Stack diameter = 5.0 m

Source: Foster Wheeler Environmental, 1996

TABLE 6-3
PROPOSED UNIT 8 LONG-TERM EMISSIONS INVENTORY
NATURAL GAS AND FUEL OIL FIRING (59° F 100% LOAD)

Pollutant	Natural Gas[1]			Fuel Oil[2]		
	tons/year	lb/hr	grams/sec	tons/year	lb/hr	grams/sec
Sulfur Dioxide (SO_2)	6[3]	1.4[3]	0.2[3]	80[4]	18.3[4]	2.3[4]
Particulate Matter (PM_{10})	39.4	9	1.1	14.7	3.4	0.4
Oxides of Nitrogen (NO_x)	254	58	7.3	279.3	63.8	8
Lead (Pb)	0	0	0.00	8.95E-02	2.04E-02	2.58E-03

(1) Assumes 8,760 hrs of operation.

(2) Assumes 1,735 hours of operation limited by SO_2 facility-wide cap.

(3) Based on 0.32 grains/100 scf total sulfur in natural gas, annual average

(4) Based on 0.05% sulfur in fuel oil

Stack height = 60.97 m
Stack diameter = 5.0 m
Stack exit velocity = 22.99 m/s on natural gas
= 24.24 m/s on fuel oil
Stack exit temperature = 362°K on natural gas
= 367°K on fuel oil

Stack UTM Coordinates: 769.611 km East
3,339.767 km North

Source: Foster Wheeler Environmental, 1997

diesel fuel oil firing (up to 1,735 hours) and 59°F, 100% load stack parameters. The estimated short-term and long-term emission rates for the draft FARC pollutants are summarized in Table 6-4.

6.6 EMISSIONS INVENTORY - THE PROJECT

As indicated in Section 2.4.2, the "worst-case" emissions from the Project were determined based on an evaluation of 11 possible operating scenarios. The Project includes the permanent shut down of Units 5 and 6, reduced operation of existing Unit 7, and the continued operation of the existing combustion turbines (GT1 and GT2) and the auxiliary boiler, in addition to the operation of Unit 8. The 11 operating scenarios were developed to bracket the expected operating ranges of the individual operating units at the Purdom Station while maintaining compliance with the proposed facility-wide caps on emissions of SO_2 and NO_x. The existing combustion turbines, the auxiliary boiler, and the cooling tower were not included in the operating scenarios as their operations were assumed to remain constant for all scenarios.

The emission rates used in the different modelling analyses vary because these different analyses are based on comparisons of future emissions with current or PSD baseline emissions, as appropriate. The current emissions were based on the period August 1994 through July 1996, the latest two-year period for which data were available when this analysis commenced (see Appendix B). The baseline emissions are pollutant specific due to differences in the baseline dates. For SO_2 and PM_{10}, the baseline period was calendar years 1976 and 1977, the two year period preceding the December 27, 1977 minor source PSD baseline date for SO_2 and PM_{10}. For NO_2, the baseline period was calendar years 1986 and 1987, the two year period preceding the March 28, 1988 PSD baseline date for NO_2. As Units 1 through 4 have been permanently shut down, Units 5 and 6 will be permanently shut down, and the existing combustion turbines will have their fuel sulfur content reduced, their emission reductions expand the increment for PSD modelling purposes.

Appendix C contains copies of the spreadsheets and calculations used to determine the short-term and long-term emission rates for the various units associated with the Project for the various modelling analyses. These emission rates are summarized in Tables 6-5 and 6-6 for the PSD regulated pollutants and the FARCs, respectively.

6.7 EMISSIONS INVENTORY - OFF-SITE SOURCES

The results of the proposed source significant impact area analysis (which is described in Section 7.0) indicated that the proposed facility's air quality impacts could be above the significant impact levels for only PM_{10} and NO_2 at off-site locations for Class II areas. The ISCST3 projected impact area for PM_{10} and NO_2 was a 0.3 km radius circle from the proposed source. Typically only the background sources for these two pollutants would need to be considered, but the City chose to expand this analysis to include all of the criteria pollutants. As a result, a full emissions inventory was requested from FDEP.

An inventory of sources in the surrounding counties of Gadsden, Leon, Jefferson, Wakulla and Taylor was provided by the FDEP (1996a). Table 6-7 lists the sources provided by FDEP for evaluation.

TABLE 6-4
PROPOSED UNIT 8 DRAFT FARCS EMISSIONS INVENTORY

Pollutant	Short-Term[1]		Long-Term[2]		
	lb/hr	grams/sec	tons/year	lb/hr	grams/sec
Arsenic (As)	5.98E-03	7.54E-04	7.56E-03	1.73E-03	2.18E-04
Beryllium (Be)	4.03E-04	5.08E-05	5.09E-04	1.16E-04	1.47E-05
Cadmium (Cd)	5.12E-03	6.46E-04	6.48E-03	1.48E-03	1.87E-04
Chromium (Cr)	5.73E-02	7.23E-03	7.26E-02	1.66E-02	2.09E-03
Lead (Pb)	7.08E-02	8.92E-03	8.95E-02	2.04E-02	2.58E-03
Manganese (Mn)	4.15E-01	5.23E-02	5.25E-01	1.20E-01	1.51E-02
Mercury (Hg)	1.11E-03	1.40E-04	1.40E-03	3.21E-04	4.04E-05
Nickel (Ni)	1.46E+00	1.85E-01	1.85E+00	4.23E-01	5.33E-02
Cobalt (Co)	1.11E-02	1.40E-03	1.40E-02	3.21E-03	4.04E-04
Antimony (Sb)	2.68E-02	3.38E-03	3.40E-02	7.75E-03	9.78E-04
Vanadium (V)	5.37E-03	6.77E-04	6.79E-03	1.55E-03	1.96E-04
Polycyclic Organic Matter (POM)	2.93E-02	3.69E-03	3.71E-02	8.46E-03	1.07E-03
Benzo(a)pyrene (BaP)	4.95E-06	6.24E-07	6.27E-06	1.43E-06	1.80E-07
Benzene	1.43E-03	1.81E-04	1.81E-03	4.14E-04	5.22E-05
Toluene	1.29E-02	1.63E-03	1.63E-02	3.73E-03	4.70E-04
Selenium (Se)	6.47E-03	8.15E-04	8.18E-03	1.87E-03	2.36E-04
Hydrochloric Acid (HCl)	9.22E+00	1.16E+00	1.17E+01	2.66E+00	3.36E-01
Hydrogen Fluoride (HF)	1.29E+00	1.63E-01	1.64E+00	3.74E-01	4.71E-02
Hydrogen Dioxin (378TCDD)	1.08E-08	1.36E-09	1.37E-08	3.12E-09	3.94E-10
Formaldehyde (HCOH)	2.61E-02	3.29E-03	4.96E-02	1.13E-02	1.43E-03

(1) Fuel oil firing at 20°F 50% load (worst case impact condition) except formaldehyde which is based on firing natural gas.

(2) Assumes 1,735 hours of operation on fuel at 59°F 100% load, except formaldehyde, which is based on firing natural gas 8,760 hours.

Stack height = 60.97 m
Stack diameter = 5.0 m
Stack exit velocity = 15.38 m/s on fuel oil (20°F 50% load)
Stack exit temperature = 353°K on fuel oil (20°F 50% load)
Stack UTM Coordinates: 769.611 km East
3,339.767 km North

Source: Foster Wheeler Environmental, 1996

TABLE 6-5
PURDOM STATION PSD REGULATED POLLUTANT EMISSION RATES USED FOR MODELLING (g/sec)

Analysis	Pollutant	Averaging Period	Unit 1	Unit 2	Unit 3	Units 4	Unit 5	Unit 6	Unit 7	GT1/ GT2[1]	Unit 8	Cooling Tower	Aux Boiler
Significant Impact	SO_2	Short	0.00	0.00	0.00	0.00	-49.18	-49.18	0.00	-10.29	7.82	NA	NA
	SO_2	Long	0.00	0.00	0.00	0.00	-0.01	-0.11	0.12	0.00	0.00	NA	2.89E-04
	PM_{10}	Short	0.00	0.00	0.00	0.00	-4.73	-4.73	0.00	0.00	2.14	0.30	NA
	PM_{10}	Long	0.00	0.00	0.00	0.00	-0.04	-.04	0.03	0.00	1.14	0.30	2.99E-03
	NO_2	Long	0.00	0.00	0.00	0.00	-1.96	-4.05	5.95	0.00	0.00	NA	6.75E-02
	CO	Short	0.00	0.00	0.00	0.00	-1.26	-1.26	0.00	0.00	12.11	NA	NA
Monitoring Exemption	PM_{10}	Short	0.00	0.00	0.00	0.00	-4.73	-4.73	0.00	0.00	2.14	0.30	NA
	CO	Short	0.00	0.00	0.00	0.00	-1.26	-1.26	0.00	0.00	12.11	NA	NA
PSD Class II	SO_2	Short	0.00	-39.88	-39.88	-39.88	-104.04	-104.04	-68.92	-10.29	7.82	NA	NA
	SO_2	Long	0.00	-0.31	-0.84	-0.79	-22.66	-26.08	-95.39	-0.03	0.00	NA	2.89E-04
	PM_{10}	Short	0.00	-1.81	-1.81	-1.81	-4.73	-4.73	0.00	0.00	2.14	0.30	NA
	PM_{10}	Long	0.00	-0.01	-0.04	-0.04	-1.04	-1.19	-4.46	0.01	2.30	0.30	2.99E-03
	NO_2	Long	0.00	0.00	0.00	0.00	-0.52	-1.25	11.98	0.17	0.00	NA	6.75E-02
PSD Class I	SO_2	Short	0.00	-39.88	-39.88	-39.88	-104.04	-104.04	-68.92	-10.29	7.82	NA	NA
	SO_2	Long	0.00	-0.31	-0.84	-0.79	-22.66	-26.08	-95.39	-0.03	0.00	NA	2.89E-04
	PM_{10}	Short	0.00	-1.81	-1.81	-1.81	-4.73	-4.73	0.00	0.01	2.14	0.30	NA
	PM_{10}	Long	0.00	-0.01	-0.04	-0.04	-1.04	-1.19	-4.46	0.17	2.30	0.30	2.99E-03
	NO_2	Long	0.00	0.00	0.00	0.00	-0.52	-1.25	11.98	0.00	0.00	NA	6.75E-02
AAQS	SO_2	Short	0.00	0.00	0.00	0.00	0.00	0.00	146.45	1.47	7.82	NA	NA
	SO_2	Long	0.00	0.00	0.00	0.00	0.00	0.00	2.30	0.01	0.00	NA	2.89E-04
	PM_{10}	Short	0.00	0.00	0.00	0.00	0.00	0.00	9.79	1.09	2.14	0.30	NA
	PM_{10}	Long	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.01	1.14	0.30	6.75E-02
	NO_2	Long	0.00	0.00	0.00	0.00	0.00	0.00	13.18	0.21	0.00	NA	2.99E-03
	CO	Short	0.00	0.00	0.00	0.00	0.00	0.00	2.61	1.38	12.11	NA	NA
	Pb	Short	0.00	0.00	0.00	0.00	0.00	0.00	0.0152	0.000167	0.0089	NA	NA
Stack Parameters:													
Height (m)			26	26	26	26	38.1	38.1	54.9	11.6	60.97	13.4	8.5
Diameter (m)			1.95	1.95	1.95	1.95	3.96	3.96	2.74	3.05	5	10.08	0.61
Temperature (°K)			478	478	478	478	447	447	422	744	varies[2]	305	450
Velocity (m/s)			5.89	5.89	5.89	5.89	7.23	7.23	14.44	25.56	varies[2]	7.09	6.47

(1) Short-term emission rate for GT1 and GT2 are for each unit and long-term emission rates are a total of GT1 and GT2.
(2) Temperature and velocity vary with ambient temperature and operating load (see Tables 2-1 through 2-6).

Source: Foster Wheeler Environmental, 1997

TABLE 6-6
PURDOM STATION DRAFT FARC POLLUTANT EMISSION RATES USED IN MODELLING (grams/sec)

Pollutant	Averaging Period	Unit 7	GT1/GT2[1]	Unit 8	Cooling Tower	Aux Boiler
Arsenic (As)	Short	8.93E-03	1.41E-04	7.54E-04	NA	NA
Beryllium (Be)	Short	3.29E-04	9.49E-06	5.08E-05	NA	NA
Cadmium (Cd)	Short	3.62E-03	1.21E-04	6.46E-04	NA	NA
Chromium (Cr)	Short	1.00E-02	1.35E-03	7.23E-03	NA	NA
Lead (Pb)	Short	1.52E-02	1.67E-03	8.92E-03	NA	NA
Manganese (Mn)	Short	5.80E-03	9.49E-03	5.08E-02	NA	NA
Mercury (Hg)	Short	2.51E-03	2.62E-05	1.40E-04	NA	NM
Nickel (Ni)	Short	1.82E-01	3.45E-02	1.85E-01	NA	NA
Cobalt (Co)	Short	9.48E-03	2.62E-04	1.40E-03	NA	NA
Antimony (Sb)	Short	3.60E-03	6.32E-04	3.38E-03	NA	NA
Vanadium (V)	Short	1.39E-01	1.26E-04	6.77E-04	NA	NA
Polycyclic Organic Matter (POM)	Short	3.21E-04	6.90E-04	3.69E-03	NA	NA
Benzo(a)pyrene (BaP)	Short	2.98E-07	1.17E-07	6.24E-07	NA	NA
Benzene	Short	8.61E-05	3.38E-05	1.81E-04	NA	NA
Toluene	Short	7.75E-04	3.04E-04	1.63E-03	NA	NA
Selenium (Se)	Short	2.98E-03	1.52E-04	8.15E-04	NA	NA
Hydrochloric Acid (HCl)	Short	4.40E-01	2.17E-01	1.16E+00	NA	NA
Hydrogen Fluoride (HF)	Short	8.35E-02	3.05E-02	1.63E-01	NA	NA
Dioxin (378TCDD)	Short	6.53E-10	2.55E-10	1.36E-09	NA	NA
Formaldehyde (HCOH)	Short	3.17E-02	6.14E-04	3.29E-03	NA	NA
Arsenic (As)	Long	2.44E-04	1.61E-06	0.00E+00	NA	NA
Beryllium (Be)	Long	0.00E+00	1.08E-07	1.47E-05	NA	NA
Cadmium (Cd)	Long	0.00E+00	1.38E-06	1.87E-04	NA	NA
Chromium (Cr)	Long	0.00E+00	1.54E-05	2.09E-03	NA	NA
Lead (Pb)	Long	2.66E-04	1.90E-05	2.58E-03	NA	NA
Manganese (Mn)	Long	0.00E+00	1.08E-04	1.47E-02	NA	NA
Mercury (Hg)	Long	6.85E-05	2.99E-07	0.00E+00	NA	3.76E-10
Nickel (Ni)	Long	0.00E+00	3.94E-04	5.33E-02	NA	NA
Cobalt (Co)	Long	0.00E+00	2.99E-06	4.04E-04	NA	NA
Antimony (Sb)	Long	0.00E+00	7.22E-06	9.78E-04	NA	NA
Vanadium (V)	Long	3.79E-03	1.44E-06	0.00E+00	NA	NA
Poly Cyclic Organic Matter (POM)	Long	0.00E+00	7.88E-06	1.07E-03	NA	NA
Benzo(a)pyrene (BaP)	Long	0.00E+00	1.33E-09	1.80E-07	NA	NA
Benzene	Long	2.04E-05	3.85E-07	1.58E-04	NA	NA
Toluene	Long	5.73E-04	3.47E-06	0.00E+00	NA	NA
Selenium (Se)	Long	0.00E+00	1.74E-06	2.36E-04	NA	NA
Hydrochloric Acid (HCl)	Long	0.00E+00	2.48E-03	3.36E-01	NA	NA
Hydrogen Fluoride (HF)	Long	0.00E+00	3.47E-04	4.71E-02	NA	NA
Dioxin (378TCDD)	Long	0.00E+00	2.91E-12	3.94E-10	NA	NA
Formaldehyde (HCOH)	Long	8.02E-04	7.01E-06	6.70E-03	NA	NA

[1] Short-term emission rate for GT1 and GT2 are for each unit and long-term emission rates are a total of GT1 and GT2.

NA - No emission data available or no emissions expected.

NM - Not modelled as the auxiliary boiler will not run simultaneously with Unit 7 or Unit 8.

Source: Foster Wheeler Environmental, 1997

TABLE 6-7
INVENTORY OF SOURCES PROVIDED BY FDEP

Brooks Concrete Service	McNeill Company Inc.
*C.W. Roberts Contracting Inc.	National Linen Service
City of Quincy	Olin Corporation (now Primex Technologies)
Culley & Sons Funeral Home	*Pat Higdon Industries
Department of Management Services	*Sasser Crematory
DBA Rich Concrete	Sikes Industries, Inc.
Fairchild Cremation Service, Inc.	Sonas Systems of Florida Partnership, Ltd.
Florida A&M University	Southern Concrete and Construction
Florida M & M	St. Marks Refinery, Inc.
Florida Mining & Materials Concrete Corp.	Talla - Comm Industries Inc.
Florida Rock Industry	Tallahassee City Hopkins Generating Station
*Floridian Co.	Tallahassee City Purdom Generating Station
General Dynamics	Terminal Service Company
*Harborlite Corporation	U.S. Marine
*Higdon Furniture Industries	LFC No. 47 Corp.
*Mactavish Furniture Industries	White Construction Company
McKenzie Service Co.	

*Located greater than 50 km from the Purdom Station
Source: FDEP, 1996a

A screening technique known as the "Screening Threshold" method (North Carolina DNR, 1985) was applied to sources located within 50 km from the Purdom Station. The method is designed to objectively eliminate from the emission inventory those sources which are not likely to have a significant interaction with the source undergoing evaluation. According to the method, sources that should be considered in the modelling analyses are those with emissions (in tons/year) greater than *Q*, which is calculated by the following equation:

$$Q = 20 \times D$$

where:

D = the distance in kilometers from the particular source to the source undergoing evaluation.

Those sources with maximum allowable emissions below the calculated "screening threshold" were eliminated from consideration in the modelling analysis. The remaining sources not screened out comprised the existing source emission inventory to be used in the modelling analysis. Table 6-8 presents the sources remaining in the inventory. It should be noted that some conservative assumptions were made regarding missing information on the FDEP supplied inventory. These assumptions are noted in the comment column of Table 6-8.

The existing source emission inventory was also sorted with respect to PSD increment consuming and expanding sources for the PSD analysis. All sources were included for the AAQS analysis. In general, the PSD regulations define PSD sources as those sources which commenced construction after the baseline date for a specified pollutant. Baseline sources are defined as those sources which commenced construction prior to the baseline date for a specified pollutant. The PSD baseline date for major sources (greater than 100 tons/year) of SO_2 and PM_{10} is January 6, 1975, and the minor source (less than 100 tons/year) PSD baseline date for these pollutants is December 27, 1977. For NO_2, both the major source and minor source baseline dates are March 28, 1988. Baseline sources which reduce emissions or shut down after the minor source baseline date are called "increment expanding" sources and their emission reductions are treated as "negative" emissions in the PSD increment consumption modelling. Sources which commenced construction after the applicable baseline date are called "increment consuming" sources, and their emissions are treated as positive numbers in the PSD increment consumption modelling.

The completed existing source emissions inventories were submitted to FDEP for review and were determined to be acceptable for input to the ISCST3 model (FDEP, 1997a). The AAQS source and PSD source emissions inventories used in the air quality modelling analysis are presented in Tables 6-9 and 6-10, respectively. FARCs modelling is not carried out for off-site sources; therefore an inventory of off-site sources is not required. The emissions for all applicable pollutants in those tables are in terms of maximum allowable or potential emissions in order to evaluate worst-case emissions scenarios for those sources from both AAQS and PSD increment impact standpoints. The locations for all existing AAQS sources and PSD sources selected for modelling are shown on Figures 6-1 and 6-2, respectively.

TABLE 6-8
SOURCES REMOVED FROM THE MODELLING INVENTORY BASED ON THE 20D CRITERIA

Source Name	Airs Number	Distance (D) from Purdom Plant (km)	20D	Comments
Brooks Concrete Service	1290007	26.5	529	Assumed less than 529 TPY of particulate matter
Brooks Concrete Service	1290007	26.5	529	Assumed less than 529 TPY of particulate matter
Culley & Sons Funeral Home (crematorium)	0730042	33.0	660	Assumed less than 600 TPY SO_2 and NO_x
Dept of Management Service	0730062	31.6	632	Less than 20D TPY for all listed sources
Fairchild Cremation Services Incorporated	0730068	37.1	741	Less than 20D TPY for all listed sources
Florida A&M University	0730009	30.5	610	Less than 20D TPY for all listed sources
Florida M&M (cement silos)	0730021	32.0	640	Assumed less than 640 TPY particulate matter
Florida M&M (Concrete Batch)	0730059	32.5	651	Assumed less than 651 TPY particulate matter
Florida M&M (Block Plant)	0730066	27.7	555	Assumed less than 555 TPY particulate matter
Florida M&M (Cement Silos)	0730069	31.7	634	Assumed less than 634 TPY particulate matter
Florida Rock Industries (cement Block/batch Plants)	0730025 0730026 0730046	30.0	600	Actual 1993 PM 11 TPY (from DEP Air Resources Management System) Assumed CO, SO_2, NO_x are<600 TPY
Florida Rock Industries (Concrete Batch)	0650004	27.7	555	Potential PM <1 TPY (from DEP Air Resources Management System)
General Dynamics	0730056	38.0	759	Only VOC listed in DEP Air Resources Management System
LFC No. 47 Corp.	0650001	48.3	966	Less than 20D TPY for all listed sources
McNeill Company Inc. (Concrete Batch)	0730060	26.0	521	Assumed less than 521 TPY PM
Mitchell Bothers Inc. (Asphalt Plant) (2 locations)	0730040 0730034	35.7 32.5	715 650	Potential TPY not available in DEP Air Resources Management System but actual emissions for 1994 and 1995 were less than 5 TPY for each listed pollutant
National Linen (Boiler)	0730065	30.4	608	Less than 20D TPY for all listed sources
Peavy & Sons Construction Co.(Asphalt Plant)	7770064	22.8	457	Less than 20D TPY for all listed sources Facility potentials listed in DEP Air Resources Management System
Sikes Industries (Concrete Batch)	0730030	30.7	613	Assumed less than 613 TPY particulate matter
Sonas Systems of FL (Asphalt/Concrete/Soil Treatment)	0730012	34.1	682	Less than 20D TPY for all listed sources Facility potentials listed in DEP Air Resources Management System
Southern Concrete and Construction	7770255	25.5	509	Less than 20D TPY for all listed sources

Source: Foster Wheeler Environmental, 1997

TABLE 6-9
ADDITIONAL SOURCES SELECTED FOR PURDOM UNIT 8 AAQS MODELLING ANALYSIS

Owner	Zone	North (Km)	East (Km)	Eu Id	Description	Hs (Ft)	Ds (Ft)	Ts (Of)	Flow Acfm	Vs (Ft/S)		Lb/Hr	Tpy
Mckenzie Service Co	16	3338.4	769.3	1	North Boiler (300 hp)	21	1.7	375	3965	29	CO	0.1449	0.169
Mckenzie Service Co	16	3338.4	769.3	1	North Boiler (300 hp)	21	1.7	375	3965	29	NO_X	1.59	1.86
Mckenzie Service Co	16	3338.4	769.3	1	North Boiler (300 hp)	21	1.7	375	3965	29	PB	0.0001	0.0001
Mckenzie Service Co	16	3338.4	769.3	1	North Boiler (300 hp)	21	1.7	375	3965	29	PM	0.0087	0.0102
Mckenzie Service Co	16	3338.4	769.3	1	North Boiler (300 hp)	21	1.7	375	3965	29	SO_2	0.115	0.134
Mckenzie Service Co	16	3338.4	769.3	2	South Boiler (100 hp)	21	0.7	375	1322	57	CO	0.1449	0.169
Mckenzie Service Co	16	3338.4	769.3	2	South Boiler (100 hp)	21	0.7	375	1322	57	NO_X	1.59	1.86
Mckenzie Service Co	16	3338.4	769.3	2	South Boiler (100 hp)	21	0.7	375	1322	57	PB	0.0001	0.0001
Mckenzie Service Co	16	3338.4	769.3	2	South Boiler (100 hp)	21	0.7	375	1322	57	PM	0.0087	0.0102
Mckenzie Service Co	16	3338.4	769.3	2	South Boiler (100 hp)	21	0.7	375	1322	57	SO_2	0.05	0.07
Mckenzie Service Co	16	3338.4	769.3	3	Cleaver Brooks Package Boiler	39	1.7	430	5018	36	CO	0.45	1.97
Mckenzie Service Co	16	3338.4	769.3	3	Cleaver Brooks Package Boiler	39	1.7	430	5018	36	NO_X	3.16	13.8
Mckenzie Service Co	16	3338.4	769.3	3	Cleaver Brooks Package Boiler	39	1.7	430	5018	36	PB	.00013	.00057
Mckenzie Service Co	16	3338.4	769.3	3	Cleaver Brooks Package Boiler	39	1.7	430	5018	36	PM	1.27	5.56
Mckenzie Service Co	16	3338.4	769.3	3	Cleaver Brooks Package Boiler	39	1.7	430	5018	36	SO_2	15.06	66
Primex Technologies (formerly Olin)	16	3342.2	767.6	1	North Sweetie Barrel (Venturi Scrubber & 2nd Stage Packed Column	6	1.1	72	2640	46	PM	0.285	1.25
Primex Technologies (formerly Olin)	16	3342.2	767.6	2	Northeast Sweetie Barrel (Venturi Scrubber & 2nd Stage Packed Column	6	1.1	72	2640	46	PM	0.009	0.039
Primex Technologies (formerly Olin)	16	3342.2	767.6	3	Mixing Ventilation System	50	0.5	85	1000	84	PM	2.283	10
Primex Technologies (formerly Olin)	16	3342.2	767.6	4	Boiler #1, Cleaver-Brooks	35	2	322	10100	53	CO	0.6467	2.8325
Primex Technologies (formerly Olin)	16	3342.2	767.6	4	Boiler #1, Cleaver-Brooks	35	2	322	10100	53	NO_X	31.16	7.1136
Primex Technologies (formerly Olin)	16	3342.2	767.6	4	Boiler #1, Cleaver-Brooks	35	2	322	10100	53	PB	0.0002	0.001
Primex Technologies (formerly Olin)	16	3342.2	767.6	4	Boiler #1, Cleaver-Brooks	35	2	322	10100	53	PM	3.88	16.995
Primex Technologies (formerly Olin)	16	3342.2	767.6	4	Boiler #1, Cleaver-Brooks	35	2	322	10100	53	SO_2	51.82	224.62
Primex Technologies (formerly Olin)	16	3342.2	767.6	6	Boiler #2, Cleaver-Brooks	35	2	322	10100	53	CO	2.8325	0.6467
Primex Technologies (formerly Olin)	16	3342.2	767.6	6	Boiler #2, Cleaver-Brooks	35	2	322	10100	53	NO_X	7.1136	31.16
Primex Technologies (formerly Olin)	16	3342.2	767.6	6	Boiler #2, Cleaver-Brooks	35	2	322	10100	53	PB	0.0002	0.001
Primex Technologies (formerly Olin)	16	3342.2	767.6	6	Boiler #2, Cleaver-Brooks	35	2	322	10100	53	PM	3.88	16.995
Primex Technologies (formerly Olin)	16	3342.2	767.6	6	Boiler #2, Cleaver-Brooks	35	2	322	10100	53	SO_2	51.82	224.62
Primex Technologies (formerly Olin)	16	3342.2	767.6	7	Salt Coating & Glazing Facility (Venturi & Packed Scrubbers)	15	0.8	77	1350	44	PM	0.32	1.4
Primex Technologies (formerly Olin)	16	3342.2	767.6	9	Uncoated Powder (Wet Scrubber & Baghouse)	15	0.8	77	1350	44	PM	2.3	10
Primex Technologies (formerly Olin)	16	3342.2	767.6	10	Propellant Salt Coater Process Venturi Scrubber and 2nd Stag	26	0.7	70	1350	58	PM	4	16.8
St.Marks Refinery,Inc.	16	3340.1	769	6	Boiler #1 Fuel Oil #5	85	2	500	9990	52	CO	0.9272	4.0611
St.Marks Refinery,Inc.	16	3340.1	769	6	Boiler #1 Fuel Oil #5	85	2	500	9990	52	NO_X	10.2	44.68
St.Marks Refinery,Inc.	16	3340.1	769	6	Boiler #1 Fuel Oil #5	85	2	500	9990	52	PB	0.0007	0.0031
St.Marks Refinery,Inc.	16	3340.1	769	6	Boiler #1 Fuel Oil #5	85	2	500	9990	52	PM	1.8544	8.1223
St.Marks Refinery,Inc.	16	3340.1	769	6	Boiler #1 Fuel Oil #5	85	2	500	9990	52	SO_2	21.9	191.3
St.Marks Refinery,Inc.	16	3340.1	769	7	Boiler #2 Fuel Oil	85	1.7	500	9990	73	CO	0.9272	4.061

TABLE 6-9
ADDITIONAL SOURCES SELECTED FOR PURDOM UNIT 8 AAQS MODELLING ANALYSIS

Owner	Zone	North (Km)	East (Km)	Eu Id	Description	Hs (Ft)	Ds (Ft)	Ts (Of)	Flow Acfm	Vs (Ft/S)		Lb/Hr	Tpy
St.Marks Refinery,Inc.	16	3340.1	769	7	Boiler #2 Fuel Oil	85	1.7	500	9990	73	NO_X	10.2	44.67
St.Marks Refinery,Inc.	16	3340.1	769	7	Boiler #2 Fuel Oil	85	1.7	500	9990	73	PB	0.0007	0.0031
St.Marks Refinery,Inc.	16	3340.1	769	7	Boiler #2 Fuel Oil	85	1.7	500	9990	73	PM	10	43.83
St.Marks Refinery,Inc.	16	3340.1	769	7	Boiler #2 Fuel Oil	85	1.7	500	9990	73	SO_2	21.84	95.66
St.Marks Refinery,Inc.	16	3340.1	769	12	Crude Heater F 101	83	5	850	8719	7	CO	0.714	3.1273
St.Marks Refinery,Inc.	16	3340.1	769	12	Crude Heater F 101	83	5	850	8719	7	NO_X	7.854	34.4005
St.Marks Refinery,Inc.	16	3340.1	769	12	Crude Heater F 101	83	5	850	8719	7	PM	0.5141	2.2517
St.Marks Refinery,Inc.	16	3340.1	769	12	Crude Heater F 101	83	5	850	8719	7	SO_2	20.48	29.7596
St.Marks Refinery,Inc.	16	3340.1	769	13	Crude Heater F-201	87	3	850	8719	20	CO	0.714	3.1273
St.Marks Refinery,Inc.	16	3340.1	769	13	Crude Heater F-201	87	3	850	8719	20	NO_X	7.854	34.4005
St.Marks Refinery,Inc.	16	3340.1	769	13	Crude Heater F-201	87	3	850	8719	20	PM	0.5141	2.2517
St.Marks Refinery,Inc.	16	3340.1	769	13	Crude Heater F-201	87	3	850	8719	20	SO_2	20.48	29.7596
St.Marks Refinery,Inc.	16	3340.1	769	14	Crude Heater F-202	60	2.3	850	3500	14	CO	0.7	3.066
St.Marks Refinery,Inc.	16	3340.1	769	14	Crude Heater F-202	60	2.3	850	3500	14	NO_X	2.8	12.264
St.Marks Refinery,Inc.	16	3340.1	769	14	Crude Heater F-202	60	2.3	850	3500	14	PB	0.0012	0.0052
St.Marks Refinery,Inc.	16	3340.1	769	14	Crude Heater F-202	60	2.3	850	3500	14	PM	0.06	0.2628
St.Marks Refinery,Inc.	16	3340.1	769	14	Crude Heater F-202	60	2.3	850	3500	14	SO_2	20.48	24.97
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	CO	29.61	129.7
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	NO_X	396.9	1738.4
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	PB	.175	.767
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	PM	78.79	345.1
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	SO_2	675.342	2958
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	2	Combustion Turbine Hopkins #1 Gt Peaking Unit	29	9.2	803	457557	114	CO	3.52	15.4
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	2	Combustion Turbine Hopkins #1 Gt Peaking Unit	29	9.2	803	457557	114	NO_X	51.28	224.6
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	2	Combustion Turbine Hopkins #1 Gt Peaking Unit	29	9.2	803	457557	114	PM	2.78	12.2
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	2	Combustion Turbine Hopkins #1 Gt Peaking Unit	29	9.2	803	457557	114	SO_2	14.75	64.6
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	3	Combustion Turbine Hopkins #2 Gt Peaking Unit	30	14.7	875	698716	68	CO	5.75	25.2
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	3	Combustion Turbine Hopkins #2 Gt Peaking Unit	30	14.7	875	698716	68	NO_X	83.54	365.9
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	3	Combustion Turbine Hopkins #2 Gt Peaking Unit	30	14.7	875	698716	68	PB	0.026	0.113
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	3	Combustion Turbine Hopkins #2 Gt Peaking Unit	30	14.7	875	698716	68	PM	4.54	19.9
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	3	Combustion Turbine Hopkins #2 Gt Peaking Unit	30	14.7	875	698716	68	SO_2	24.06	105.4
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	CO	77.5	339
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	NO_X	750	3055
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	PB	0.451	1.976
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	PM_{10}	232.5	411.1
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	SO_2	3260	14300

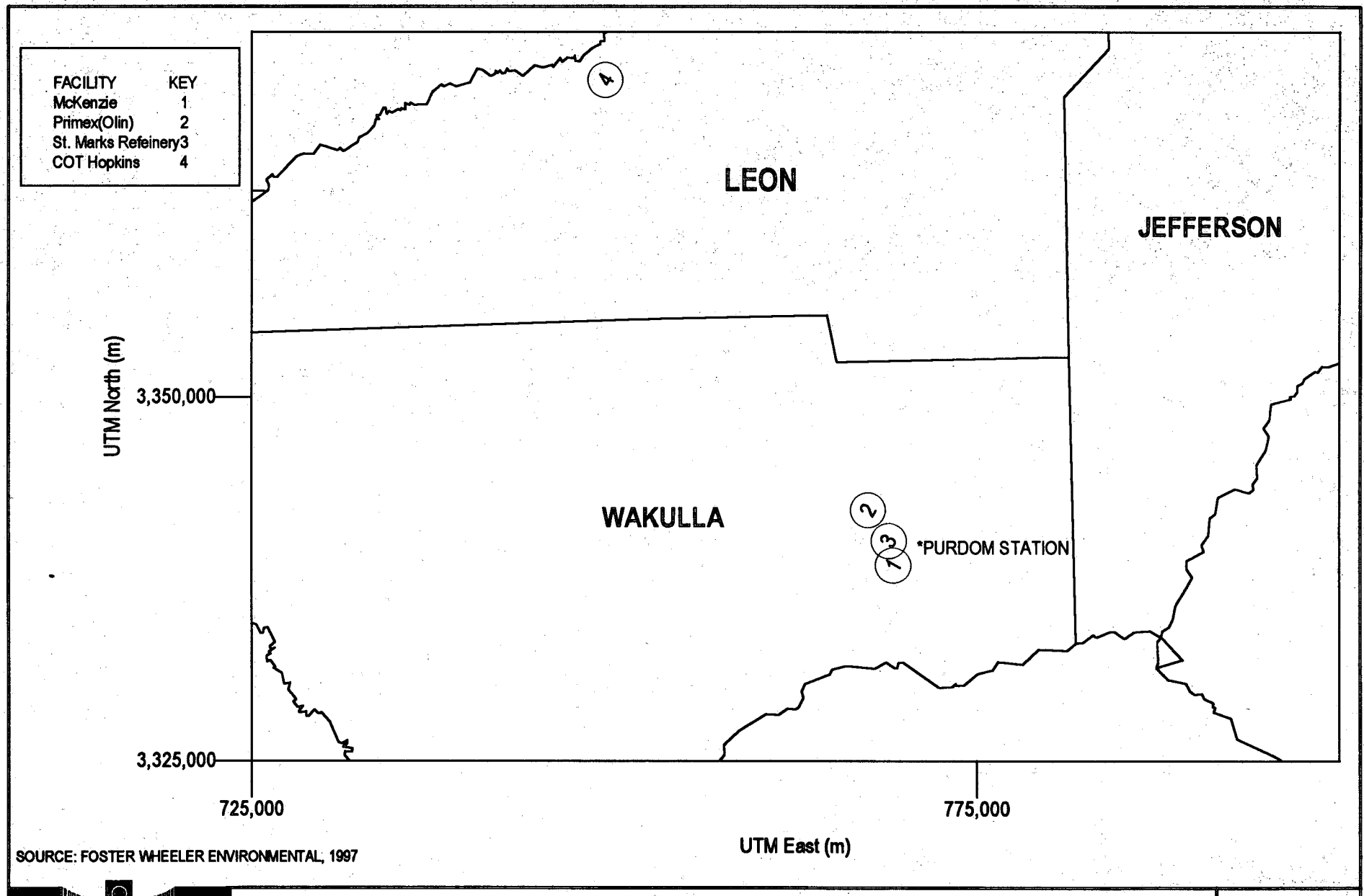
Note: See Table 6-5 for emission parameters for the Purdom Station.

Source: FDEP, 1996a

TABLE 6-10
ADDITIONAL SOURCES SELECTED FOR PURDOM UNIT 8 PSD MODELLING ANALYSIS

Owner	Zone	North (Km)	East (Km)	Eu Id	Description	Hs (Ft)	Ds (Ft)	Ts (Of)	Flow Acfm	Vs (Ft/S)		Lb/Hr	Tpy
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	1	Boiler Hopkins #1 Nat Gas & Fuel Oil #6	200	11	260	226593	39	SO_2	-1806.3	-7912*
Tallahassee City Hopkins Generating Station	16	3371.7	749.4	4	Unit #2	250	14	260	691358	74	SO_2	3260	14300
Tallahassee City Hopkins Generating Station	16	3371.7	747.4	4	Unit #2	250	14	260	691358	74	PM_{10}	232.5	411.1

*Hopkins #1 is increment expanding; therefore emissions for the PSD modelling analysis are based on reducing emissions from 2.75 lb/mmBtu to 0.75 lb/mmBtu.
Note: See Table 6-7 for emission parameters for the Purdom Station.
Source: FDEP, 1996a



CITY OF TALLAHASSEE

PURDOM UNIT 8
AAQS MODELLED SOURCES

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-1

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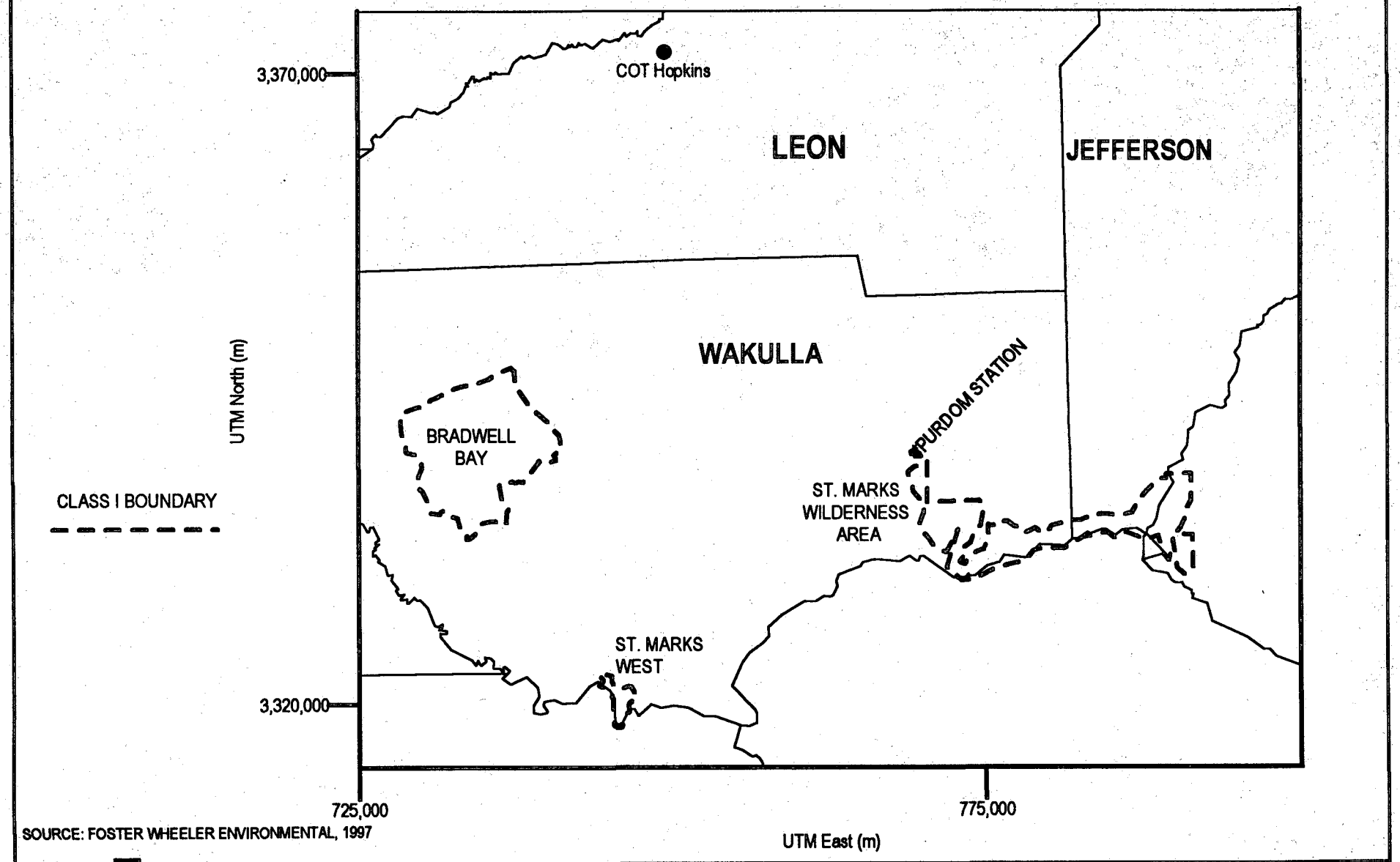

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

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PURDOM UNIT 8
PSD SOURCES - LOCATION MAP
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-2

6.8 RECEPTOR LOCATIONS

6.8.1 Receptor Grids for Site Vicinity

Ambient concentrations were determined for the significant impact area and monitoring exemption analyses for receptors in a polar grid consisting of 36 radial directions at 10 degree intervals at distances listed below (in kilometers) from the site origin, the proposed stack location for Purdom Unit 8 (UTM coordinates 769.611 km East 3,339.767 km North):

1.0	3.5	6.0
1.5	4.0	7.0
2.0	4.5	8.0
2.5	5.0	9.0
3.0	5.5	10.0

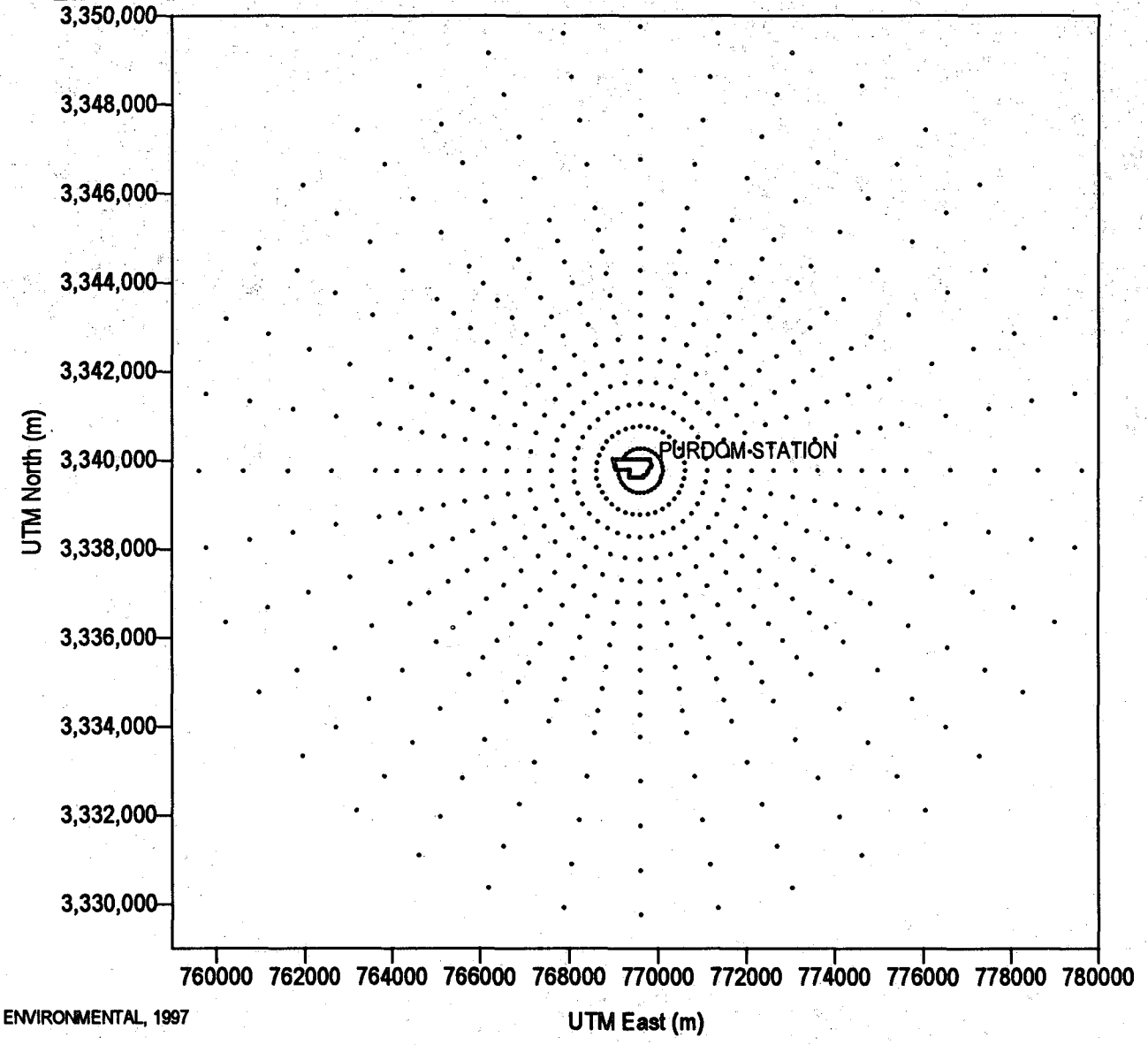
Receptors from these polar grids which fell within the Project site boundaries were not included but 57 additional receptors were placed around the site boundary. A total of 632 receptors were used in the modelling. Figure 6-3 presents the location of the site boundary and polar receptors.

For the monitoring exemption request, Class II PSD, and AAQS analyses, an additional 11x11 (121 point) receptor grid with a spacing of 100m was placed over the critical impact receptor as determined from the preliminary runs. Figures 6-4 through 6-17 depict the location of these "refined" receptors along with the original "preliminary" receptors. Please note that when maximum predicted impacts were zero based on the use of the preliminary receptor grid in Figure 6-3 (annual SO2 Class II increment consumption, for example), no refined receptor grids were needed, and therefore, no figures are presented.

During the AAQS modelling analysis, impacts greater than the 24-hr SO2 AAQS were modelled. The locations of the receptors with high impacts were found to be on the Primex facility, located northwest of the Purdom Station. Then, as indicated in Figures 6-10 and 6-11, special grids were used for the 3-hour, 24-hour, and annual SO2 AAQS analyses, which eliminated receptors within the Primex Technologies (formerly Olin) site boundaries. Therefore, a second approach to modelling these receptors, consistent with an EPA guidance memorandum (EPA 1989) was taken. This approach requires that the receptors that are located on the Primex facility be modelled using all appropriate sources except Primex sources. Figure 6-12 depicts the receptors' locations on the Primex facility.

6.8.2 Receptor Grid for Class I PSD Analysis

The modelling for the St. Marks and Bradwell Bay National Wilderness Areas analyses used receptor grids approved by FDEP (1996b). The St. Marks National Wilderness Area analysis used a total of 68 receptors, including receptors spaced at 75m intervals along the northern boundary as requested by the USFWS. A total of 18 receptors were used in the modelling



SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT
COARSE GRID - ISCST3 MODELLING RECEPTORS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-3

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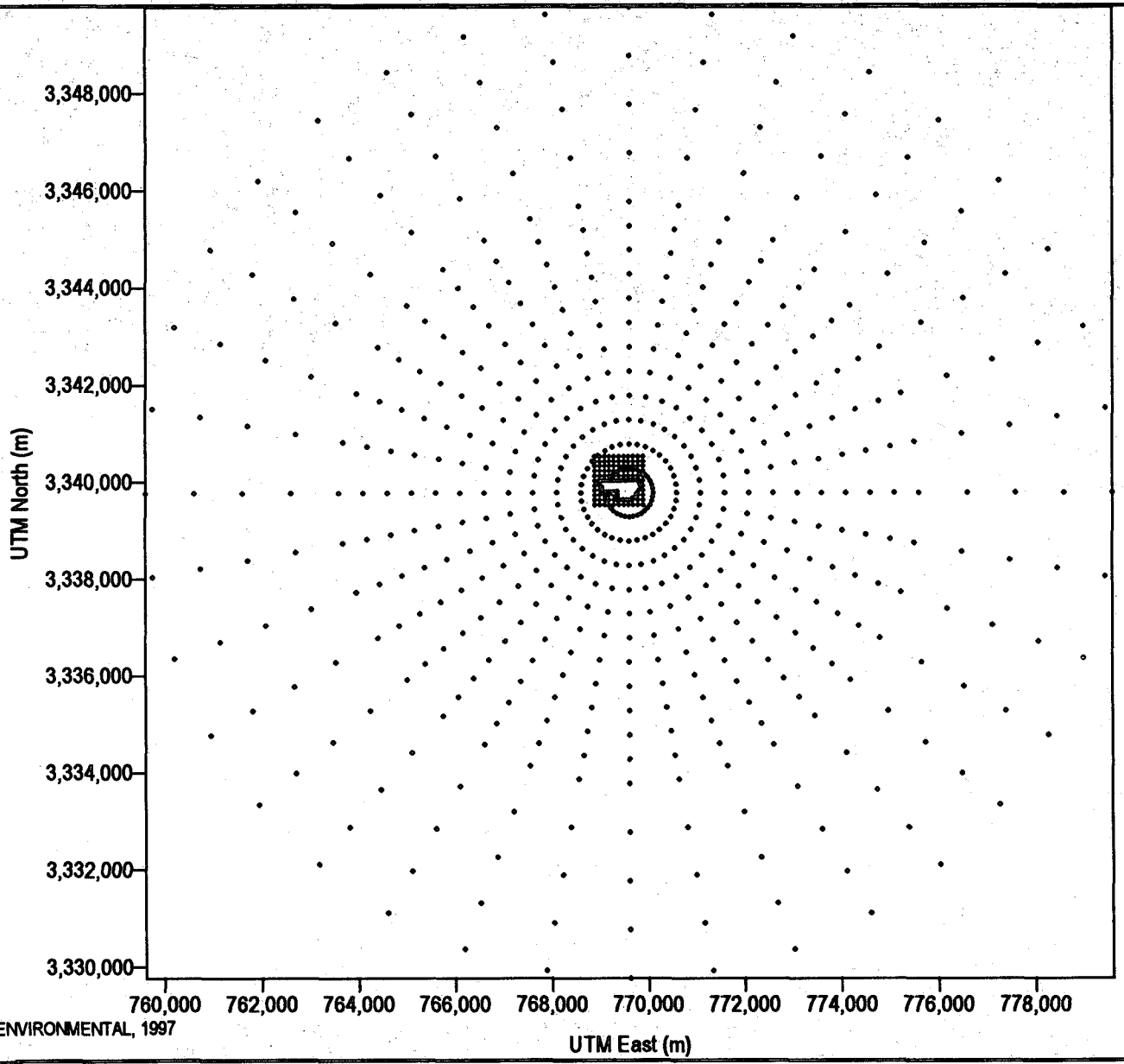

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM UNIT 8 MONITORING EXEMPTION REQUEST
PARTICULATE MATTER
ISCST3 PRELIMINARY AND REFINED RECEPTORS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-4

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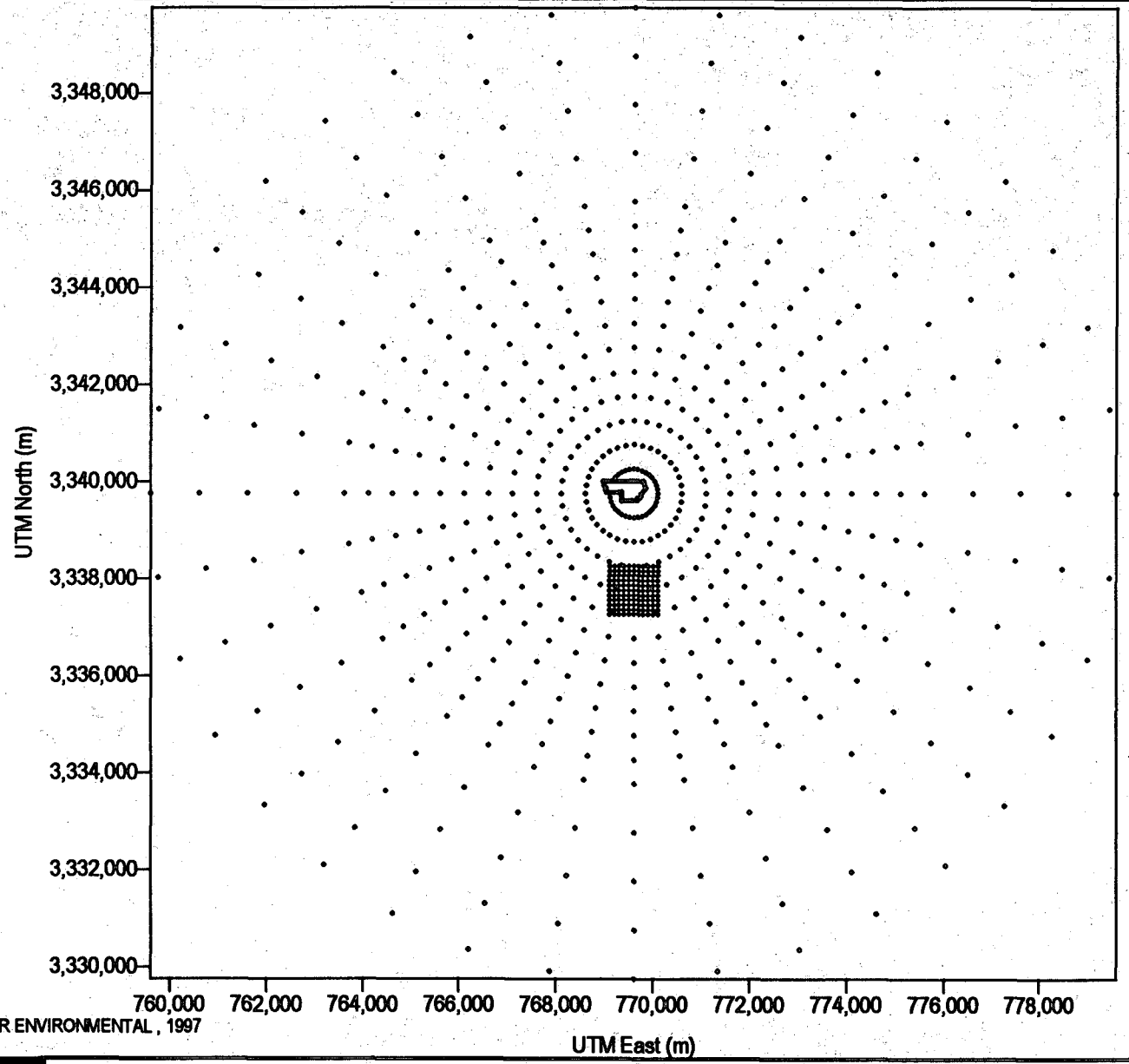

SOURCE: FOSTER WHEELER ENVIRONMENTAL , 1997

CITY OF TALLAHASSEE

PURDOM UNIT 8 MONITORING EXEMPTION REQUEST
CARBON MONOXIDE
ISCST3 PRELIMINARY AND REFINED RECEPTORS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-5

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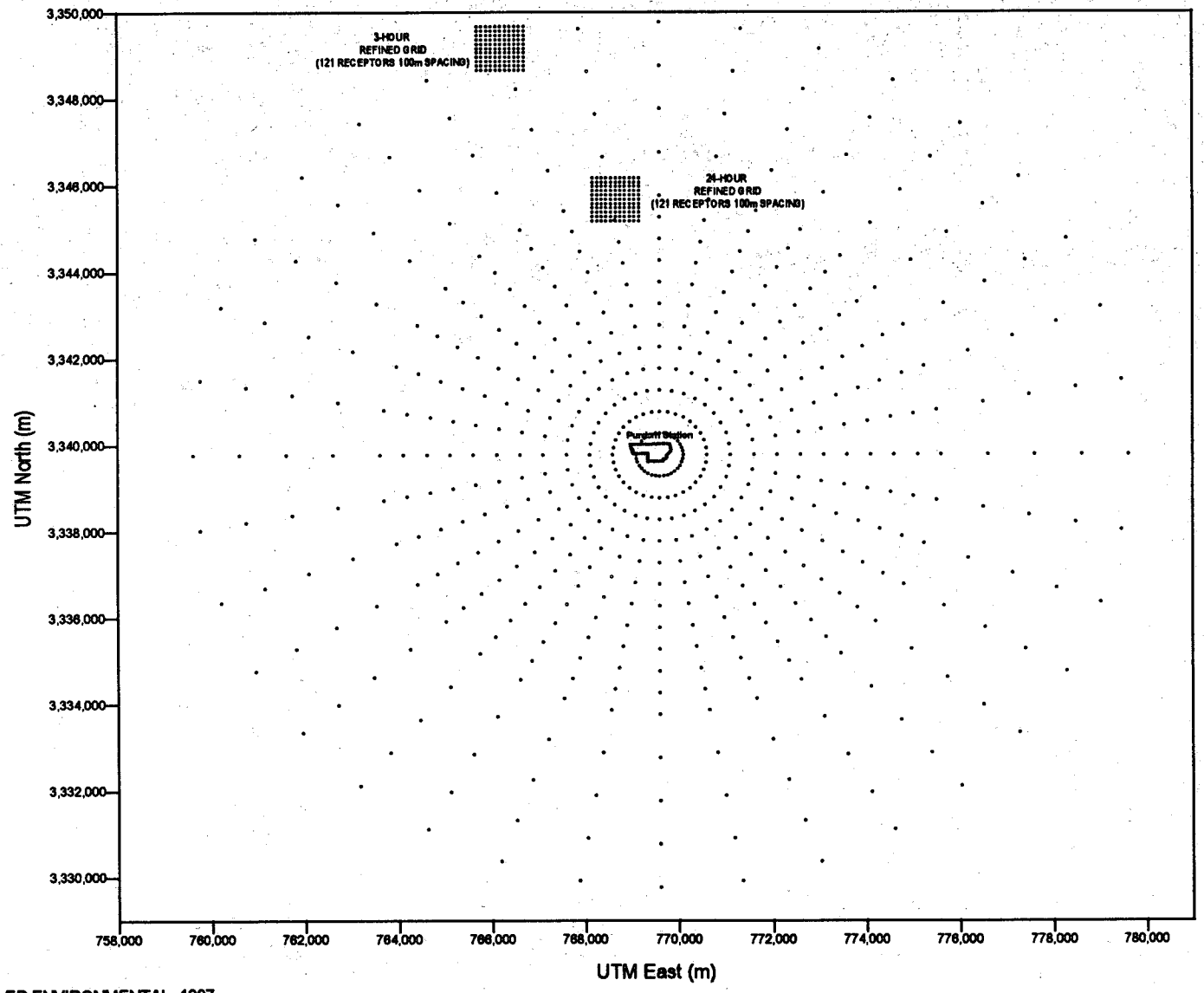

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - PSD CLASS II ANALYSIS
SO2 - 3-HOUR and 24-HOUR - REFINED ISCST3 MODELLING RECEPTORS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-6

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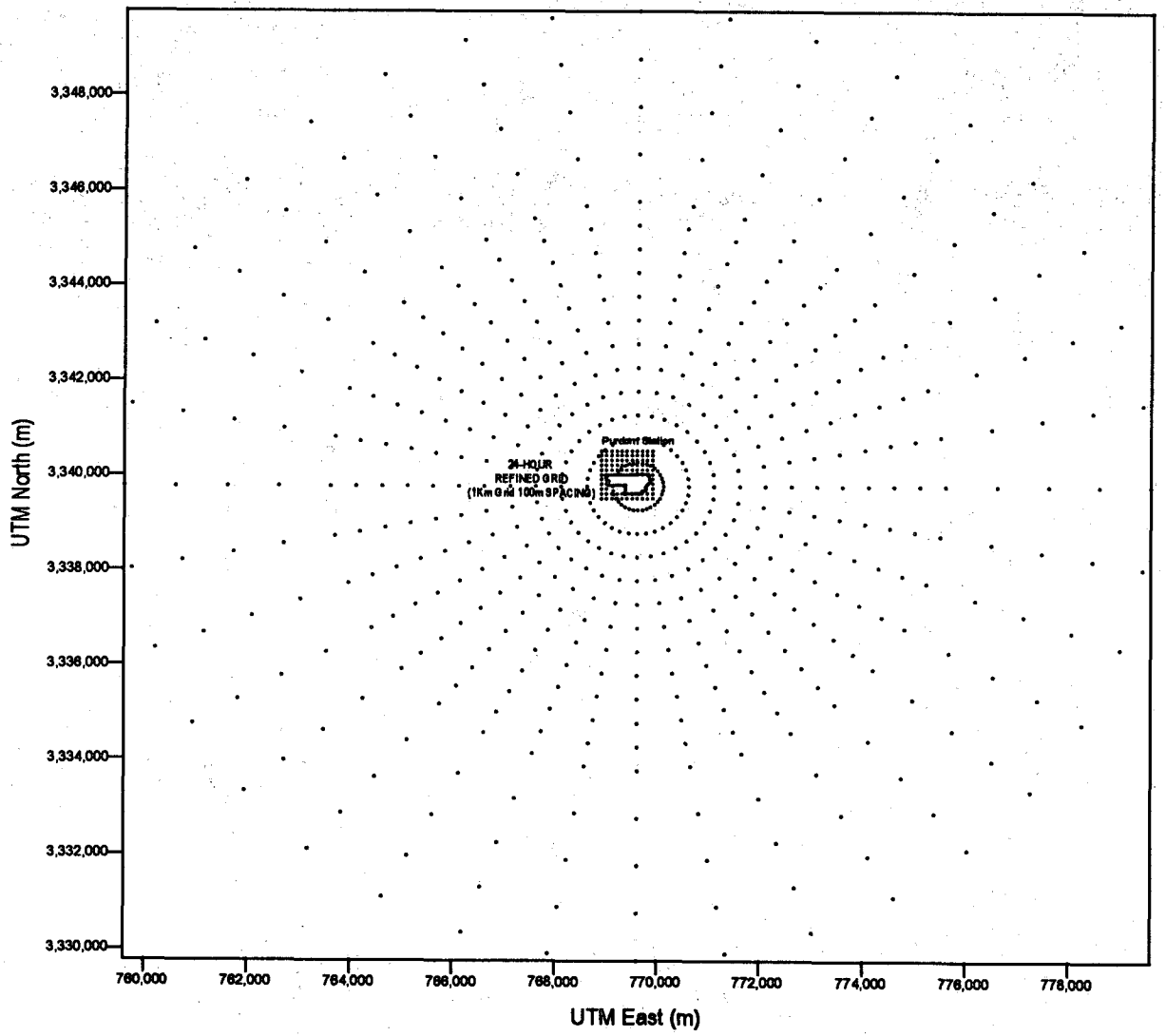

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

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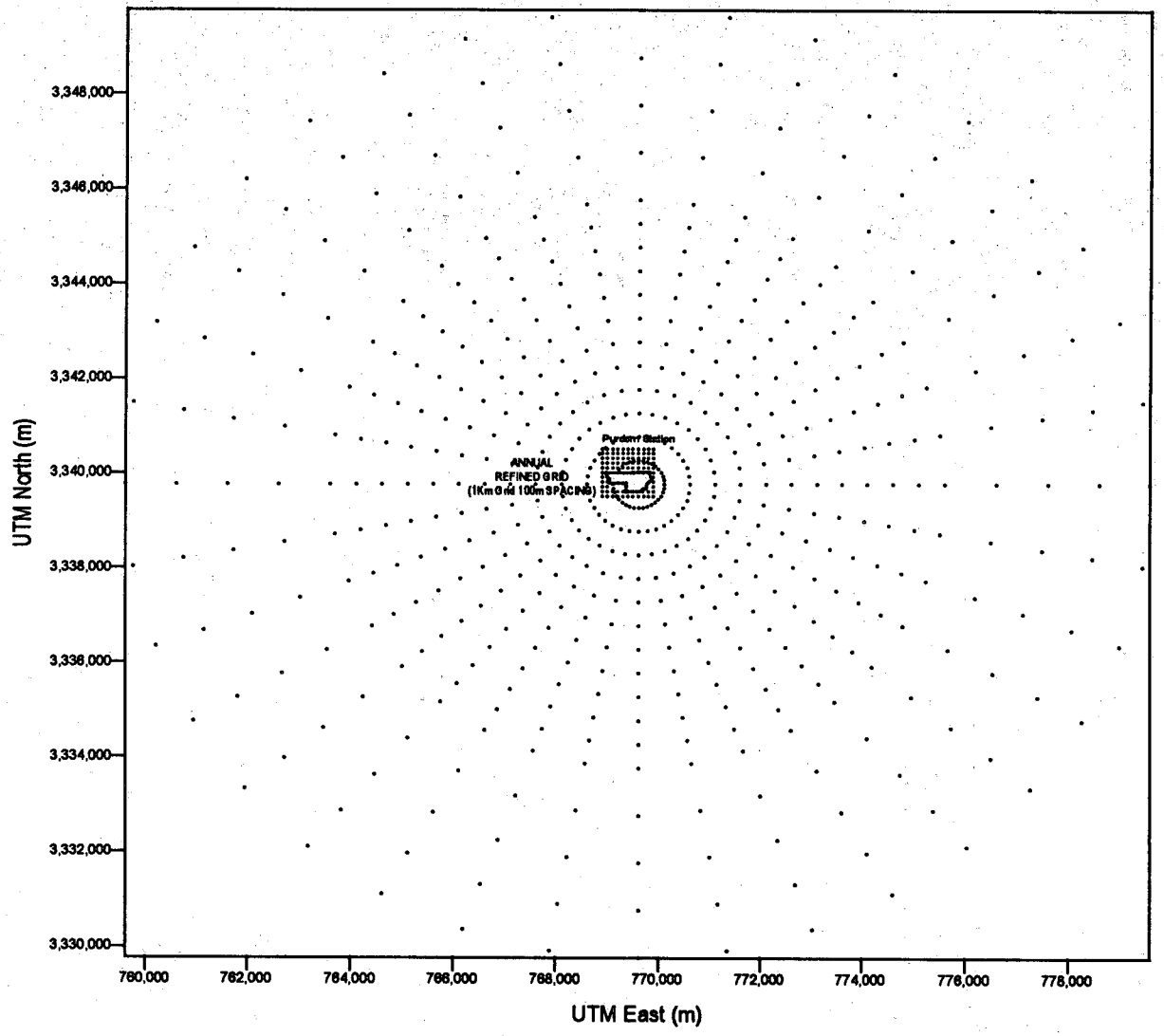
PURDOM PROJECT - PSD CLASS II ANALYSIS
PM - 24-HOUR - REFINED ISCST3 MODELLING RECEPTORS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-7



SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

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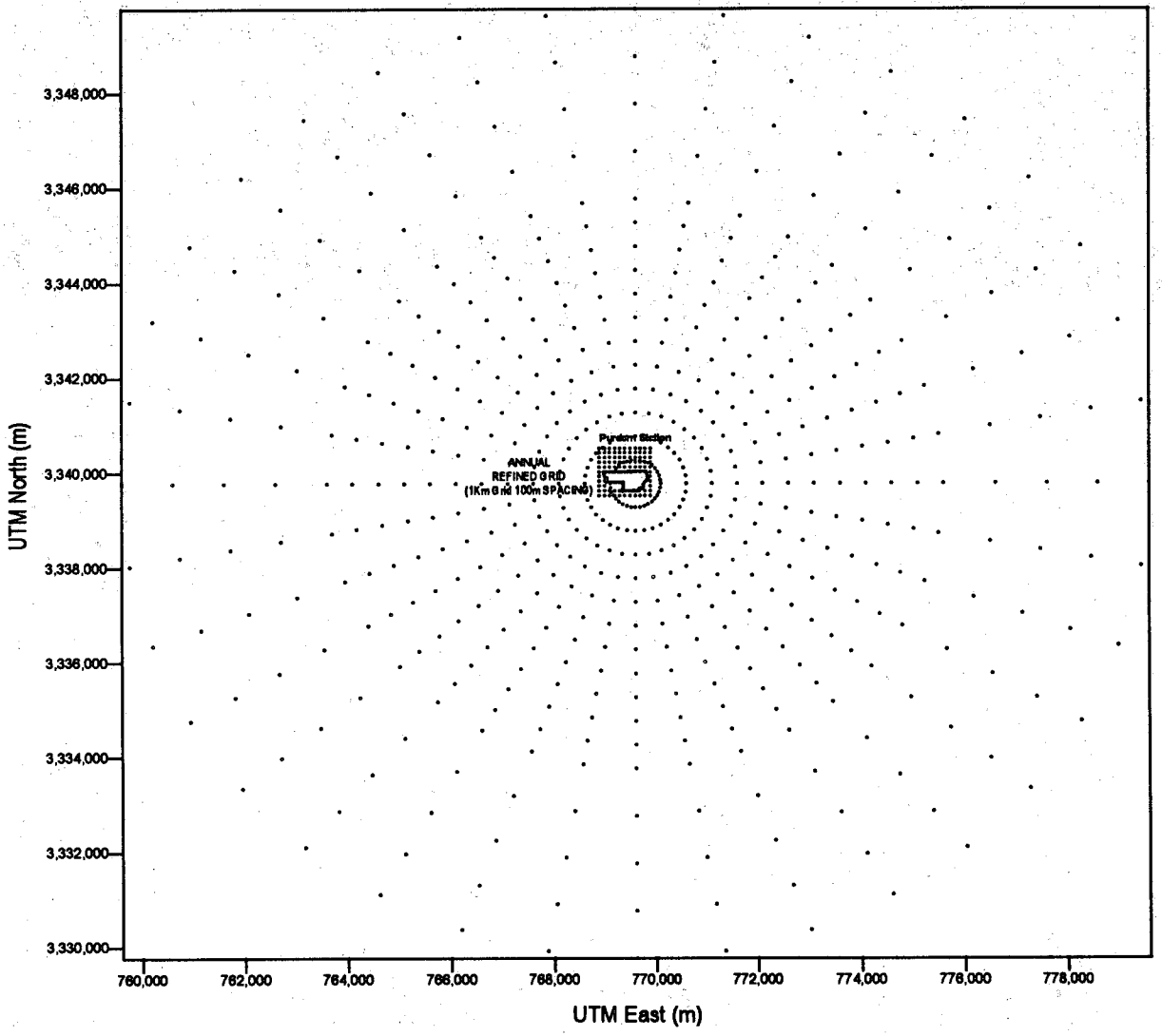
PURDOM PROJECT - PSD CLASS II ANALYSIS
PM - ANNUAL - REFINED ISCST3 MODELLING RECEPTORS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-8



SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

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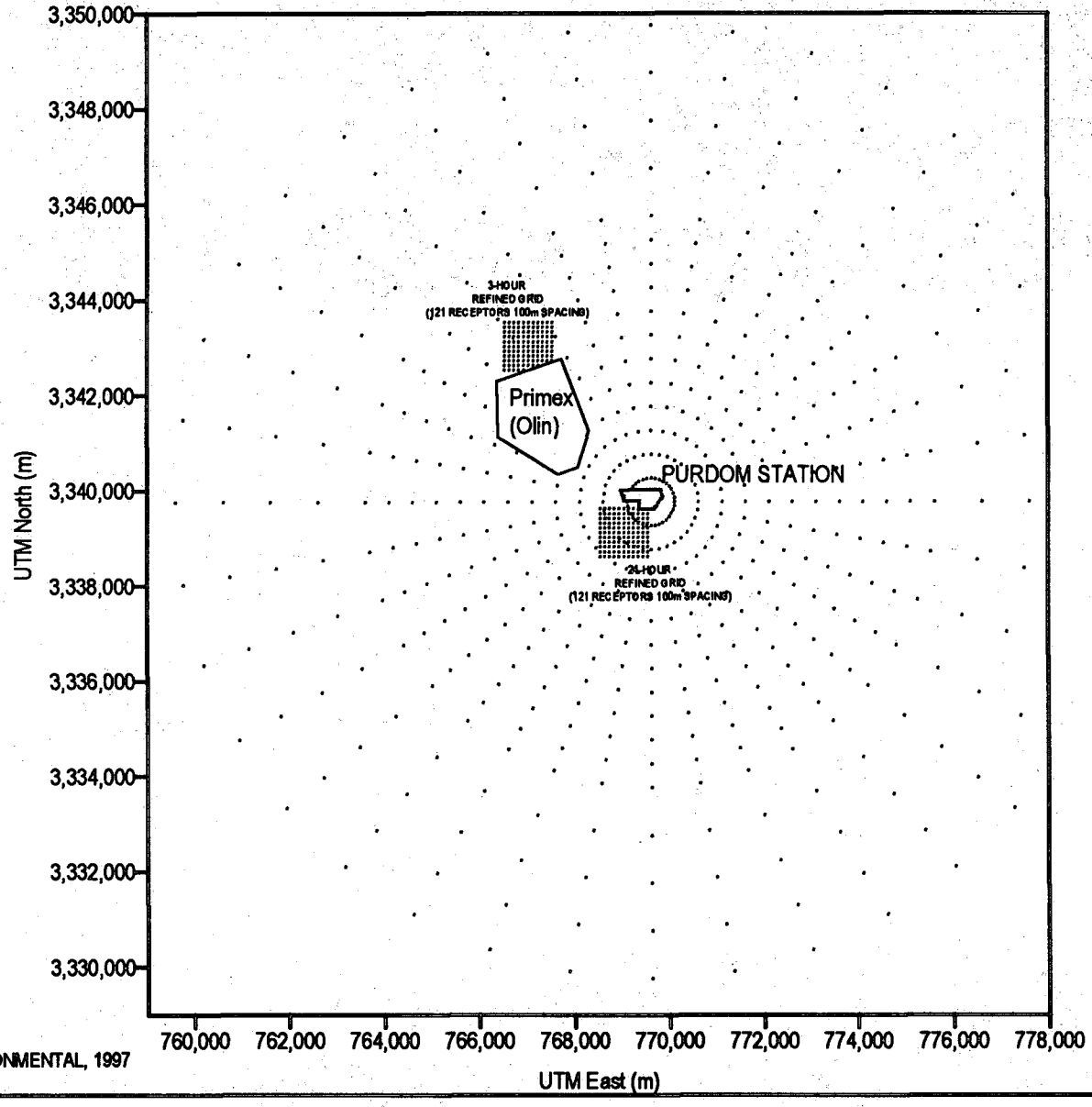
PURDOM PROJECT - PSD CLASS II ANALYSIS
NO2 - ANNUAL - REFINED ISCST3 MODELLING RECEPTORS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-9



SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - AAQS ANALYSIS
SO2 24 - HOUR and 3 HOUR - ISCST3 MODELLING RECEPTORS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-10

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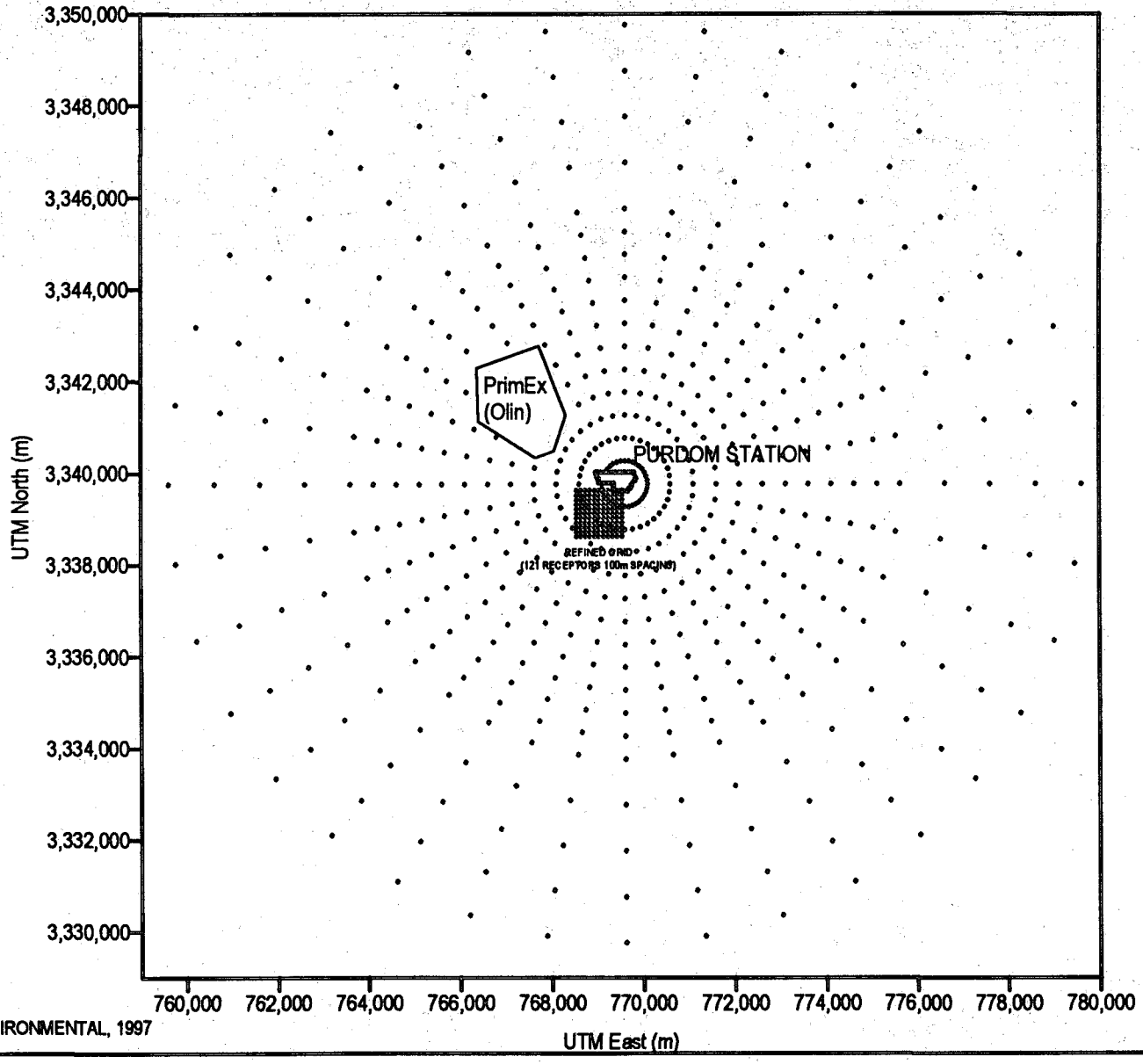

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - AAQS ANALYSIS
SO2 ANNUAL - ISCST3 MODELLING RECEPTORS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-11

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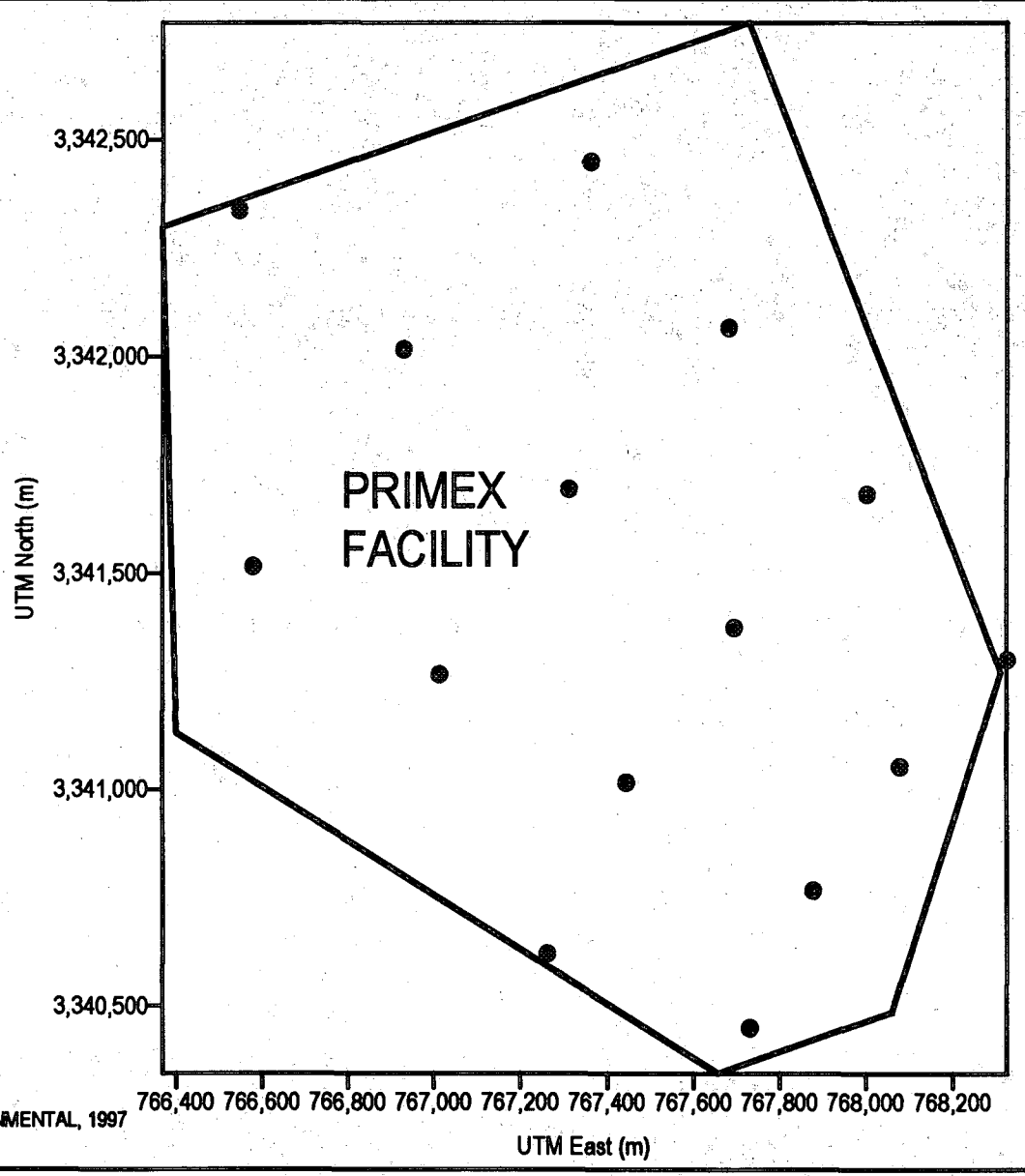

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - AAQS ANALYSIS
SO2 - ISCST3 MODELLING RECEPTORS
PRIMEX RECEPTOR LOCATIONS
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-12

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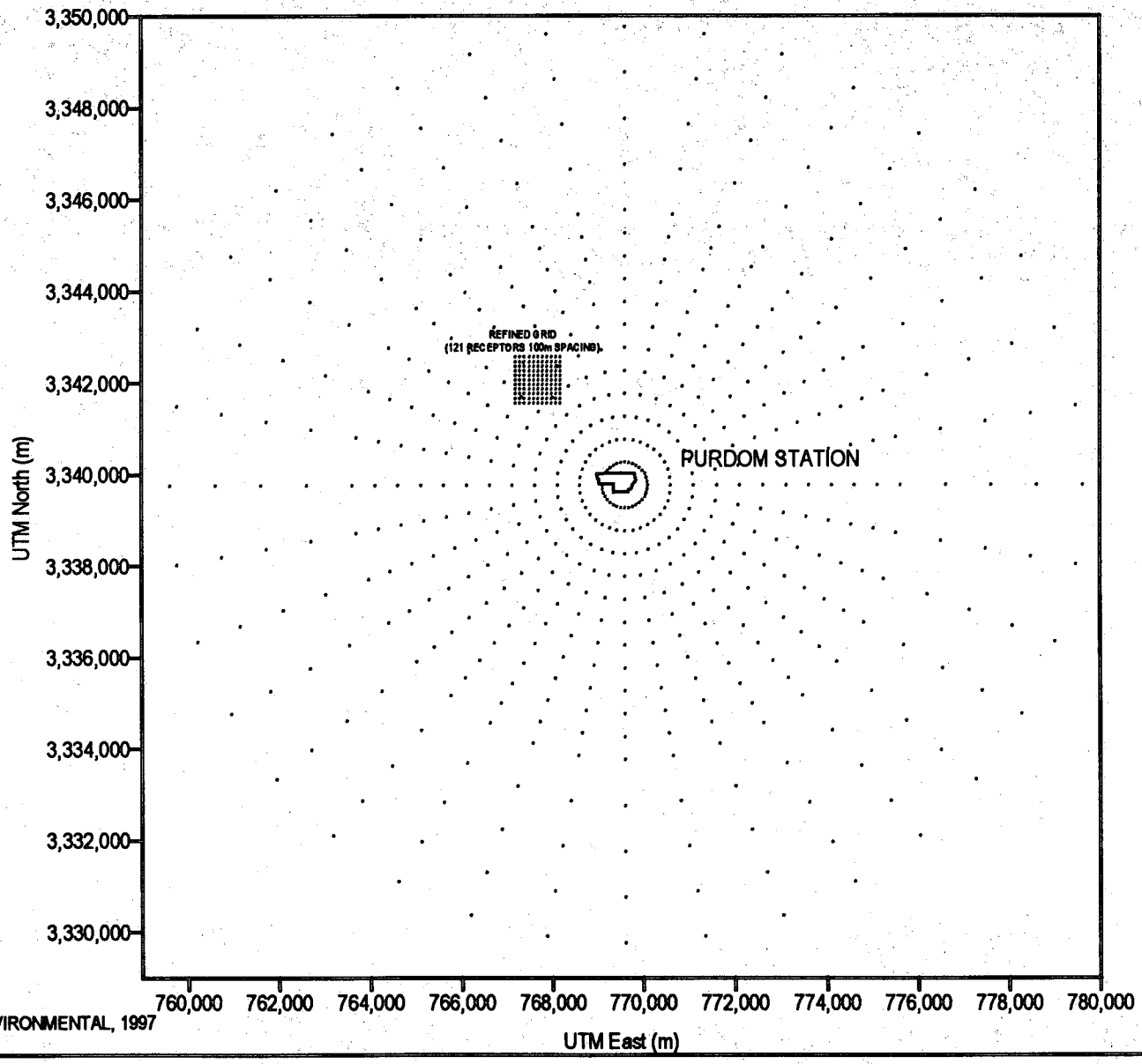

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - AAQS ANALYSIS
PM 24-HOUR - ISCST3 MODELLING RECEPTORS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-13

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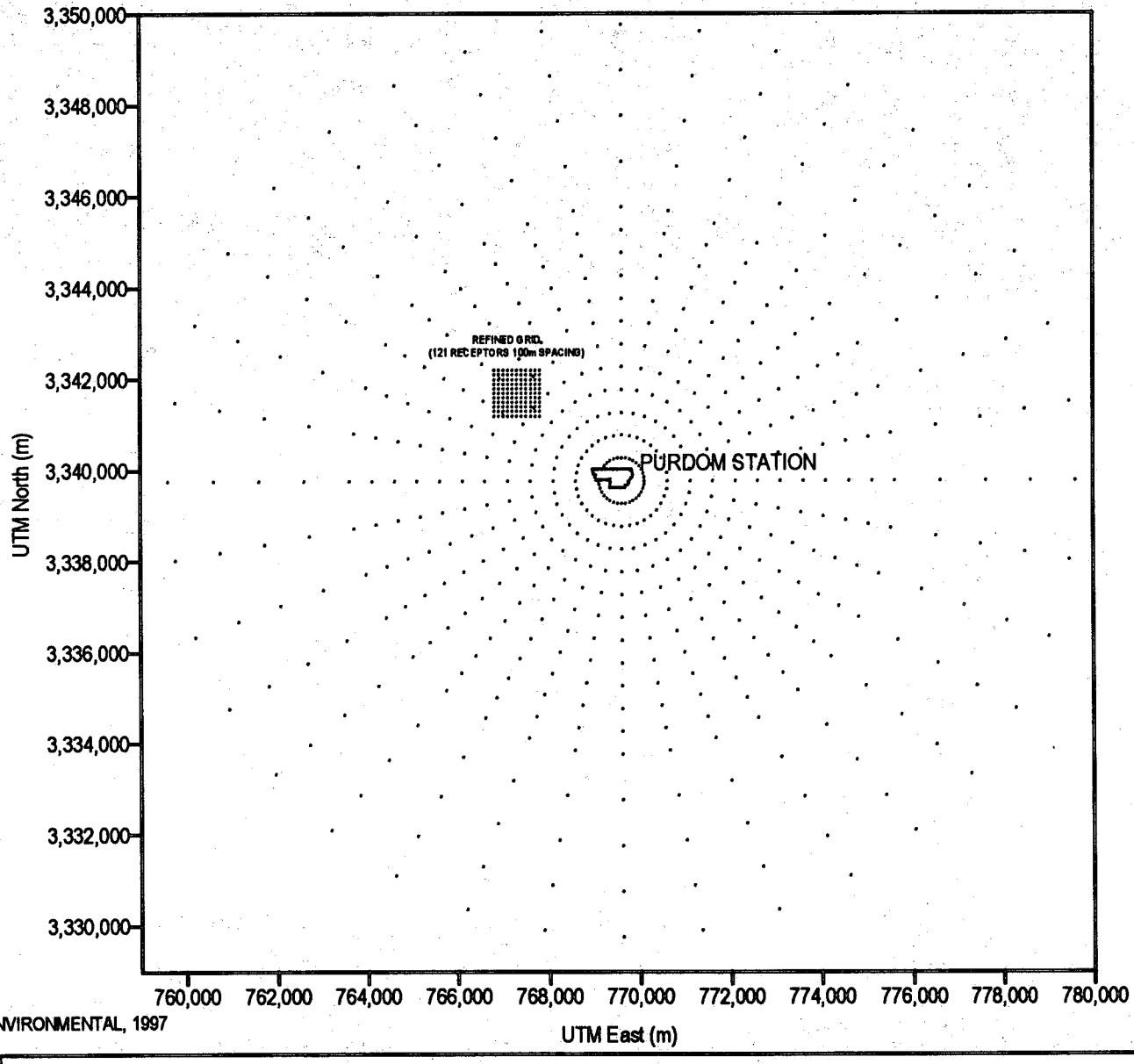

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - AAQS ANALYSIS
PM ANNUAL - ISCST3 MODELLING RECEPTORS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-14

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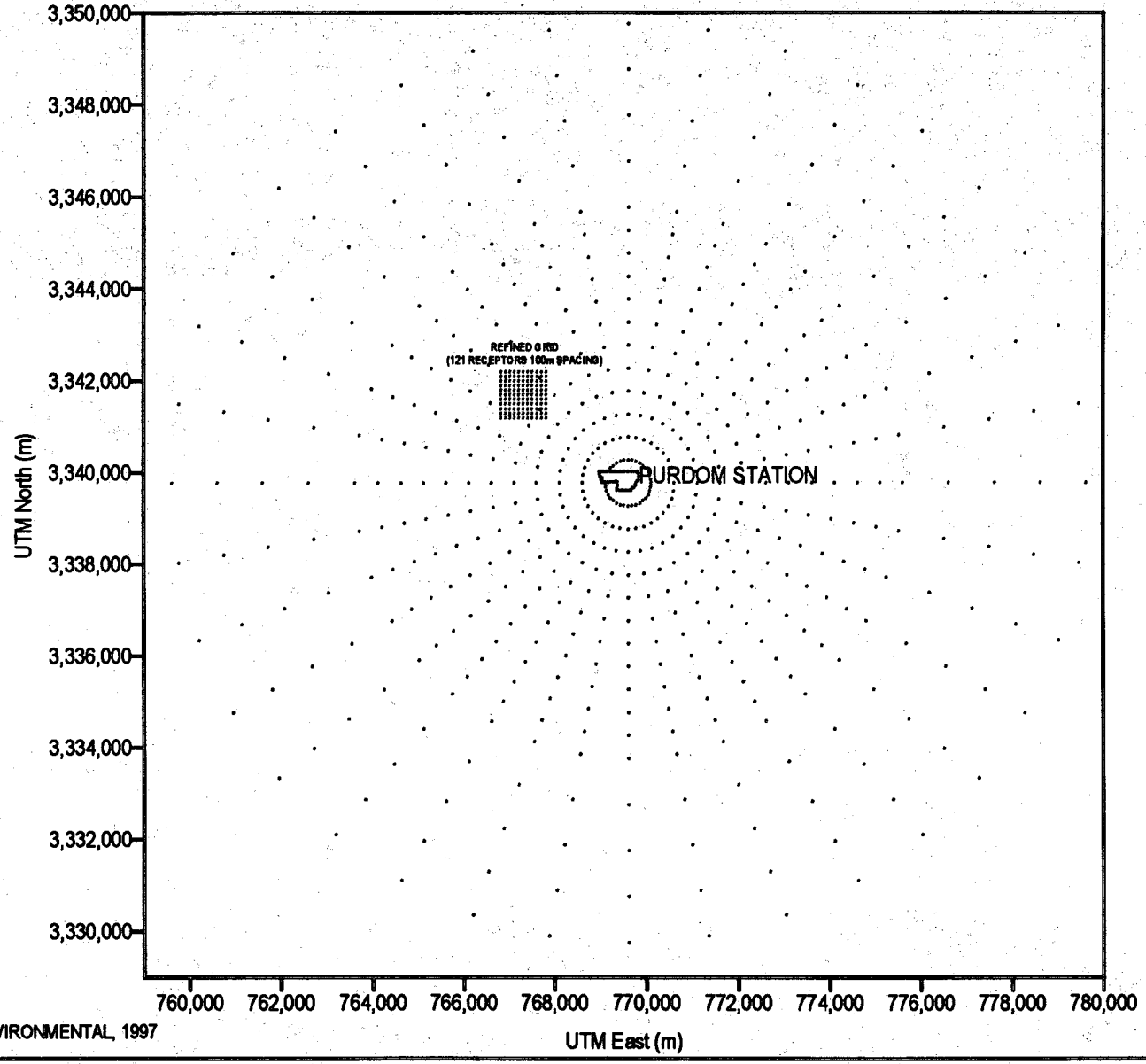

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - AAQS ANALYSIS
NO2 ANNUAL - ISCST3 MODELLING RECEPTORS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-15

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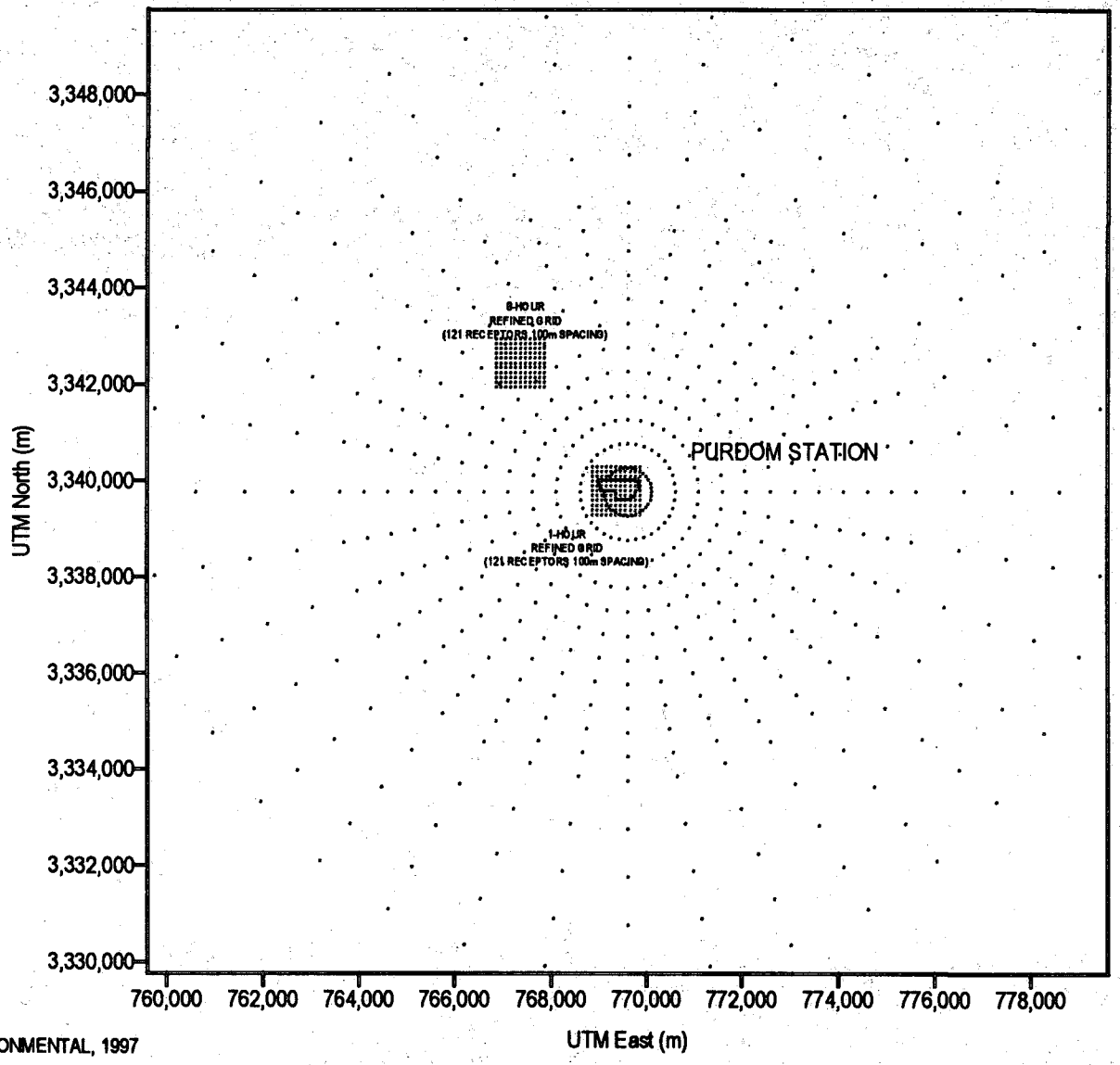

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - AAQS ANALYSIS
CO 8-HOUR and 1-HOUR - ISCST3 MODELLING RECEPTORS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-16

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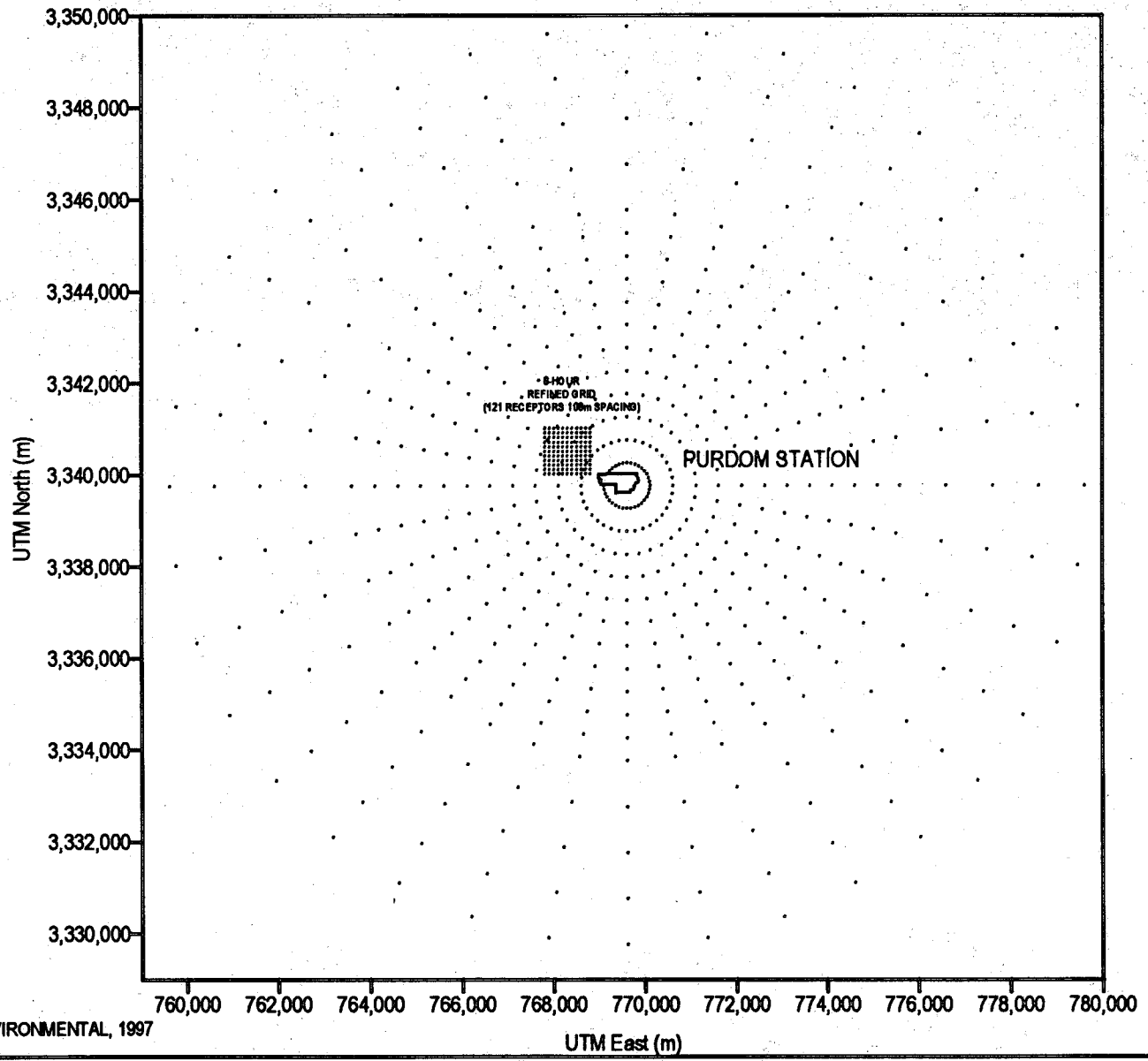

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - AAQS ANALYSIS
Pb 24-HOUR - ISCST3 MODELLING RECEPTORS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-17

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analysis of the Bradwell Bay Wilderness Area. The coordinates of the receptors used in the Class I PSD analysis are listed in Tables 6-11 and 6-12 and depicted on Figures 6-18 through 6-25. The refined analysis included additional receptors to insure the maximum impact was determined. These additional receptors are specific to the pollutant modeled, and consisted of a grid of 121 points spaced 100 meters apart, centered over the location of the highest second-high impact. The exception to this 100m spacing was the northernmost boundary of the St. Marks National Wilderness Area. When the highest second-high impact was located there, the fine grid consisted of four additional receptors spaced 15m apart on each side of the highest second-high impact location.

6.9 BUILDING DOWNWASH EFFECTS

The procedures used for addressing the effects of building downwash are those recommended in the *User's Guide for the Industrial Source Complex (ISC3) Dispersion Models* (EPA, 1995a). The heights and coordinates of the major structures on the site along with the stack parameters of each source were input into the EPA Building Profile Input Program (BPIP) (EPA, 1995b). The program provides GEP stack height information as well as direction-specific building dimensions for each source. These direction-specific building dimensions for 36 radial directions (10 degree segments) are input into the ISCST3 model and are used in the determination of building downwash. Copies of the BPIP program input and output files and a figure depicting the locations of the structures included in the analysis are contained in Appendix I.

Based on the building dimensions of the proposed Unit 8 and existing structures at the Purdom Station, the proposed Unit 8 stack height of 60.97 meters was found to be above the calculated GEP height of 60.0 meters and within the allowable default GEP height of 65 meters determined by the BPIP Program, and therefore in compliance with the FDEP stack height policy.

Cavity calculations were performed for the existing Unit 7, the two existing combustion turbines (GT1/GT2), and the new auxiliary boiler using the SCREEN3 Model (EPA, 1995b). Cavity calculations were not appropriate for Unit 8, as its stack will be GEP. The results indicate that the critical wind speed is greater than 20 m/s for Unit 7 and the existing GT1/GT2, and the model sets the cavity concentration to zero. The new auxiliary boiler will have a cavity which can extend 9 meters out from any side of the building, depending on the wind direction. The auxiliary boiler will be approximately 11 meters from the nearest site boundary.

6.10 FARCS MODELLING

Rather than modelling the emissions from each current or proposed unit individually, a simpler approach to the FARCS modelling was chosen. Emissions from all future units (Unit 7, Unit 8, GT1 and GT2, and the auxiliary boiler) were grouped together and were assumed to be emitted from a single stack. The stack parameters for Unit 7 were chosen for the modelling after an analysis using the "merged stack parameters procedure" outlined in *The South Carolina Air Quality Modelling Guidelines* (SCDHEC, 1993). Modelling was initially done with a unit emission rate of 1 gram/second to identify a maximum concentration for the three averaging periods of interest (8-hours, 24-hours, and annual). Then the results were scaled using the emission rates contained in Table 6-6 to obtain predicted maximum concentrations for each hazardous air pollutant.

TABLE 6-11
RECEPTOR GRID FOR ST. MARKS WILDERNESS PSD CLASS I AREA

Point	East (Km)	North (Km)	Distance From Unit 8[1] (Km)	Point	East (Km)	North (Km)	Distance From Unit 8[1] (Km)
1	770.000	3338.000	1.8	35	768.794	3338.467	1.5
2	770.000	3336.000	3.8	36	768.834	3338.522	1.5
3	772.000	3336.000	4.5	37	768.900	3338.578	1.4
4	772.000	3333.000	7.2	38	768.970	3338.624	1.3
5	772.000	3331.000	9.1	39	769.033	3338.666	1.2
6	775.000	3333.000	8.7	40	769.098	3338.713	1.2
7	775.000	3331.000	10.3	41	769.153	3338.762	1.1
8	777.000	3333.000	10.0	42	769.201	3338.806	1.0
9	780.000	3333.000	12.4	43	769.264	3338.844	1.0
10	782.000	3336.000	12.9	44	769.340	3338.875	0.9
11	782.000	3333.000	14.1	45	769.399	3338.902	0.9
12	785.000	3336.000	15.8	46	769.479	3338.938	0.8
13	785.000	3333.000	16.8	47	769.548	3338.968	0.8
14	787.000	3336.000	17.8	48	769.607	3339.000	0.8
15	787.000	3333.000	18.7	49	769.662	3339.060	0.7
16	770.200	3339.200	0.8	50	769.717	3339.105	0.7
17	770.200	3338.600	1.3	51	769.775	3339.160	0.6
18	770.200	3337.200	2.6	52	769.828	3339.211	0.6
19	774.400	3336.100	6.0	53	769.930	3339.216	0.6
20	782.000	3334.500	13.5	54	770.004	3339.218	0.7
21	785.100	3334.900	16.2	55	770.081	3339.219	0.7
22	789.200	3338.100	19.7	56	770.145	3339.220	0.8
23	791.200	3338.200	21.6	57	770.215	3339.221	0.8
24	791.200	3336.100	21.9	58	770.257	3339.226	0.8
25	791.400	3333.000	22.8	59	744.700	3322.400	30.4
26	790.700	3330.200	23.2	60	745.400	3321.400	30.4
27	777.100	3331.000	11.5	61	746.500	3321.400	29.5
28	770.400	3333.000	6.8	62	747.100	3320.500	29.6
29	768.900	3337.600	2.3	63	746.400	3319.900	30.6
30	769.100	3336.800	3.0	64	746.200	3318.800	31.4
31	768.800	3338.400	1.6	65	745.600	3318.000	32.4
32	769.300	3338.800	1.0	66	745.200	3319.200	31.9
33	769.800	3339.100	0.7	67	745.200	3320.400	31.2
34	768.755	3338.411	1.6	68	744.100	3321.500	31.4

[1] Location of Purdom Unit 8 is 769.611 km east, 3339.767 km north.

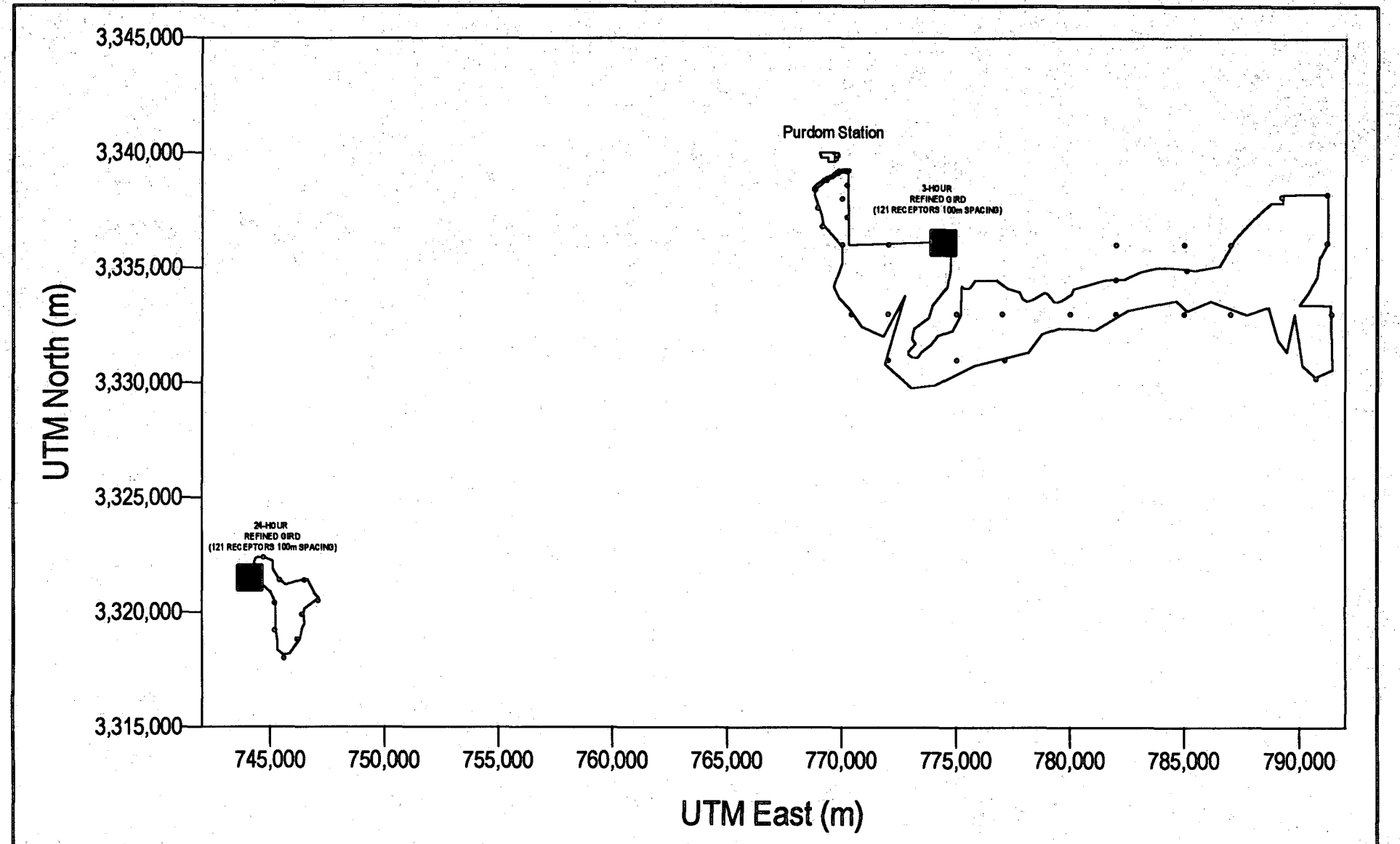
Source: FDEP, 1996; Foster Wheeler Environmental, 1997

TABLE 6-12
RECEPTOR GRID FOR BRADWELL BAY WILDERNESS PSD CLASS I AREA

Point	East (Km)	North (Km)	Distance from Unit 8 [1] (Km)
1	728.000	3343.000	41.7
2	728.000	3341.000	41.6
3	731.000	3343.000	38.7
4	731.000	3341.000	38.6
5	731.000	3338.000	38.7
6	733.000	3343.000	36.8
7	733.000	3341.000	36.6
8	733.000	3338.000	36.7
9	733.000	3336.000	36.8
10	733.000	3333.000	37.2
11	736.000	3346.000	34.2
12	736.000	3343.000	33.8
13	736.000	3341.000	33.6
14	736.000	3338.000	33.7
15	736.000	3336.000	33.8
16	738.000	3343.000	31.8
17	738.000	3341.000	31.6
18	741.000	3341.000	28.6

[1] Location of Purdom Unit 8 is 769.611 km east , 3339.767 km north

Source: FDEP, 1996; Foster Wheeler Environmental, 1997



SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - PSD CLASS I ANALYSIS
SO2 3-HOUR and 24-HOUR - REFINED ISCST3 MODELLING RECEPTORS
ST. MARKS WILDERNESS AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-18

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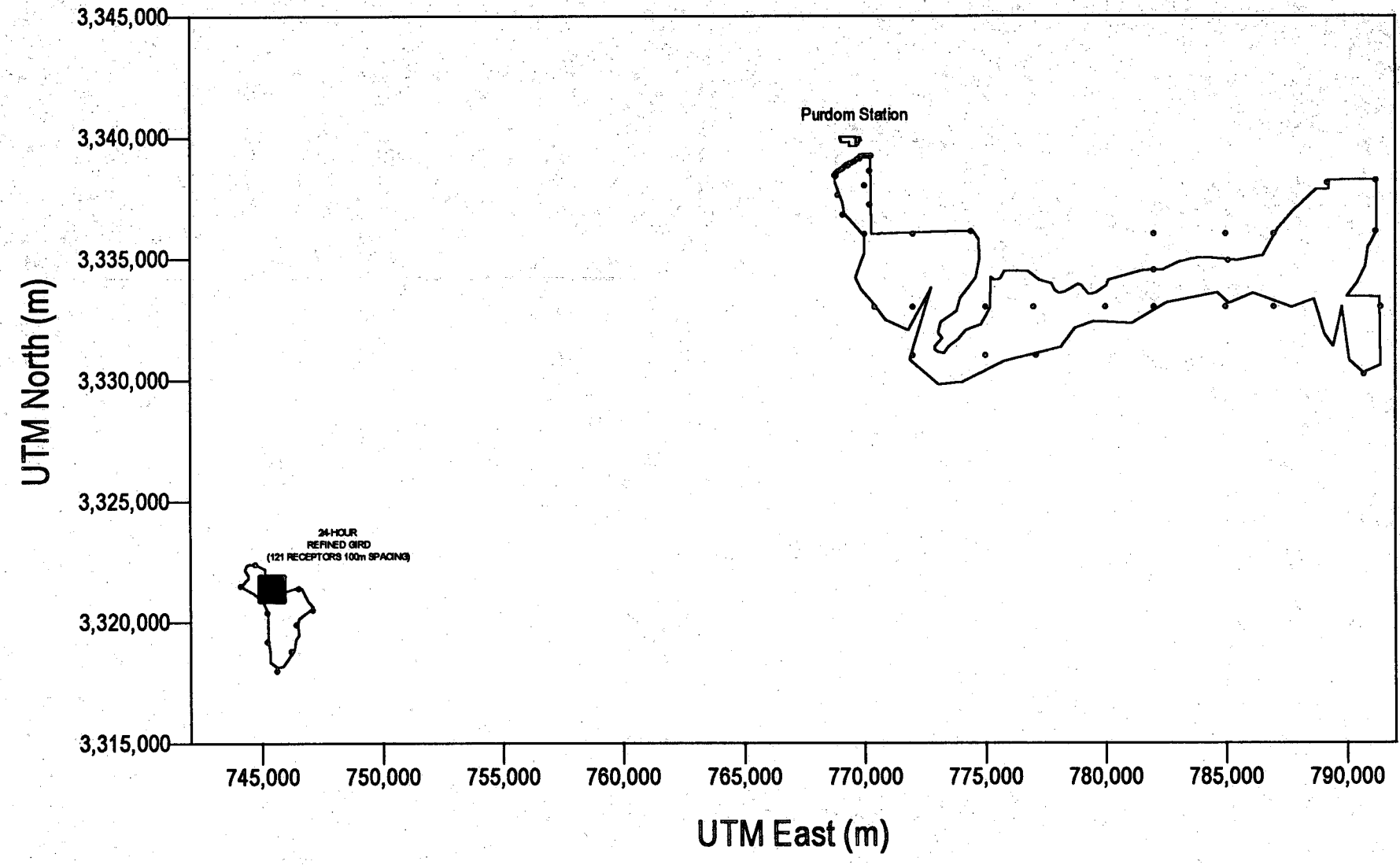

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - PSD CLASS I ANALYSIS
PM 24-HOUR - REFINED ISCST3 MODELLING RECEPTORS
ST. MARKS WILDERNESS AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-19

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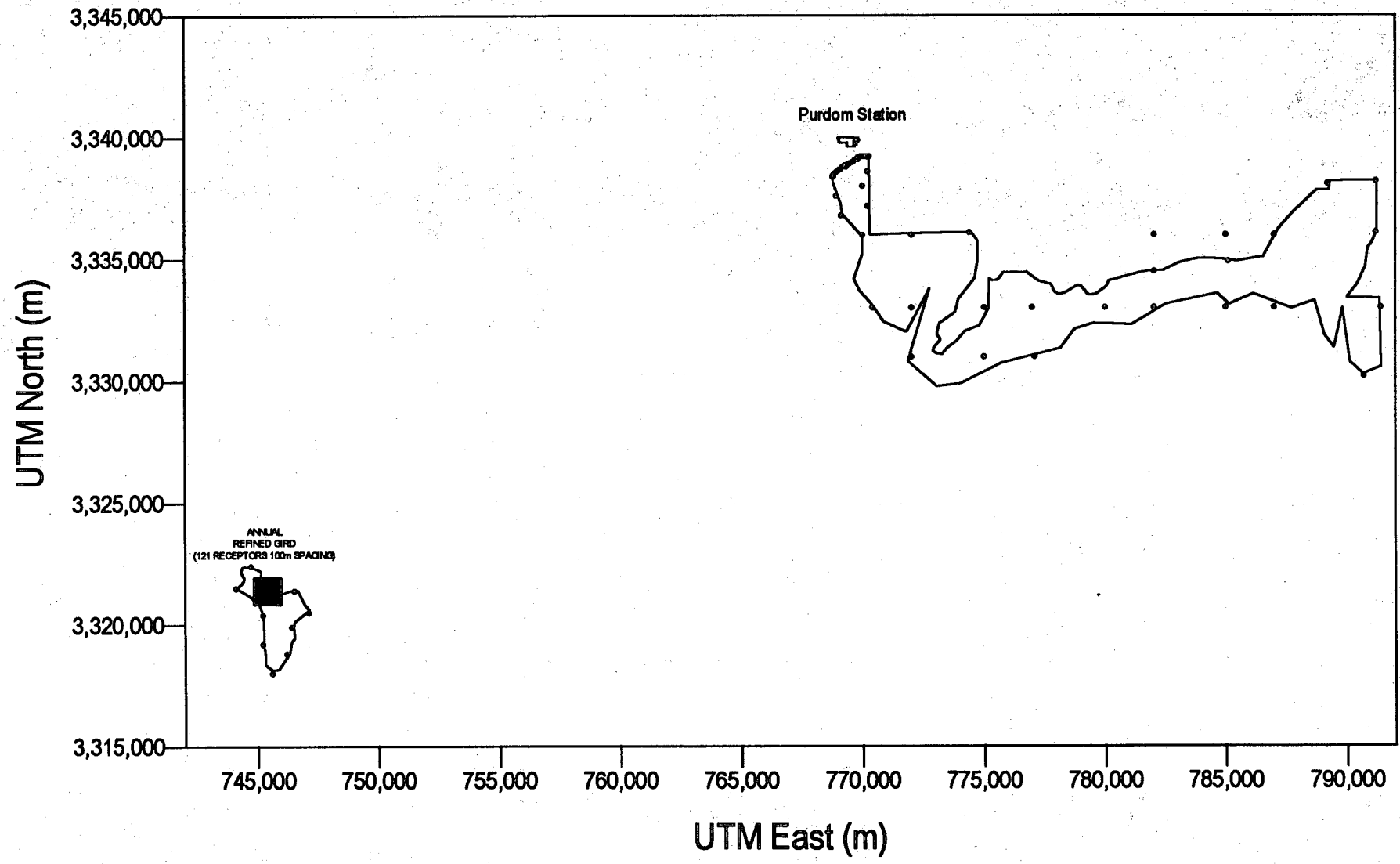

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - PSD CLASS I ANALYSIS
PM ANNUAL - REFINED ISCST3 MODELLING RECEPTORS
ST. MARKS WILDERNESS AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-20

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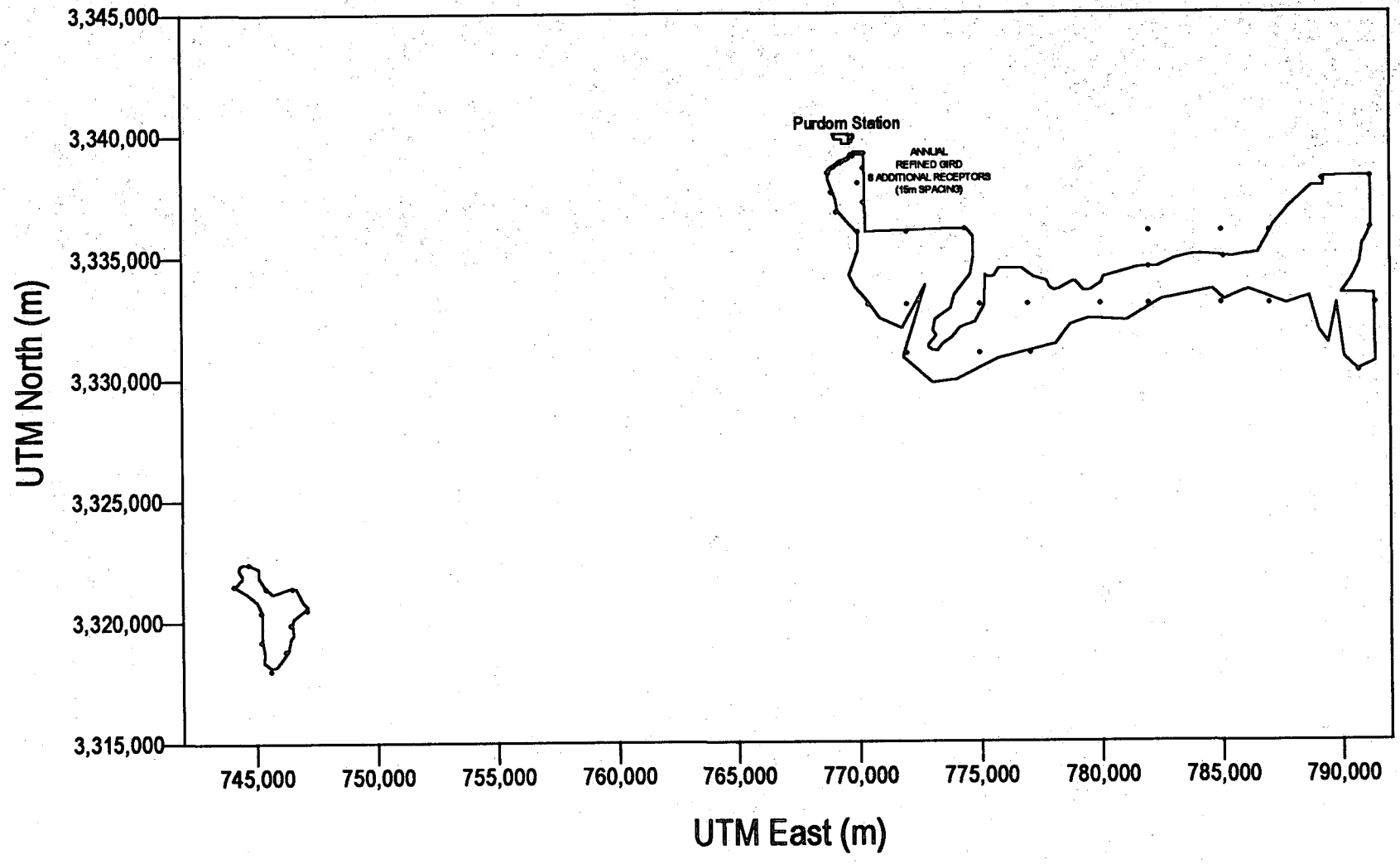

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - PSD CLASS I ANALYSIS
NO2 ANNUAL - REFINED ISCST3 MODELLING RECEPTORS
ST. MARKS WILDERNESS AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-21

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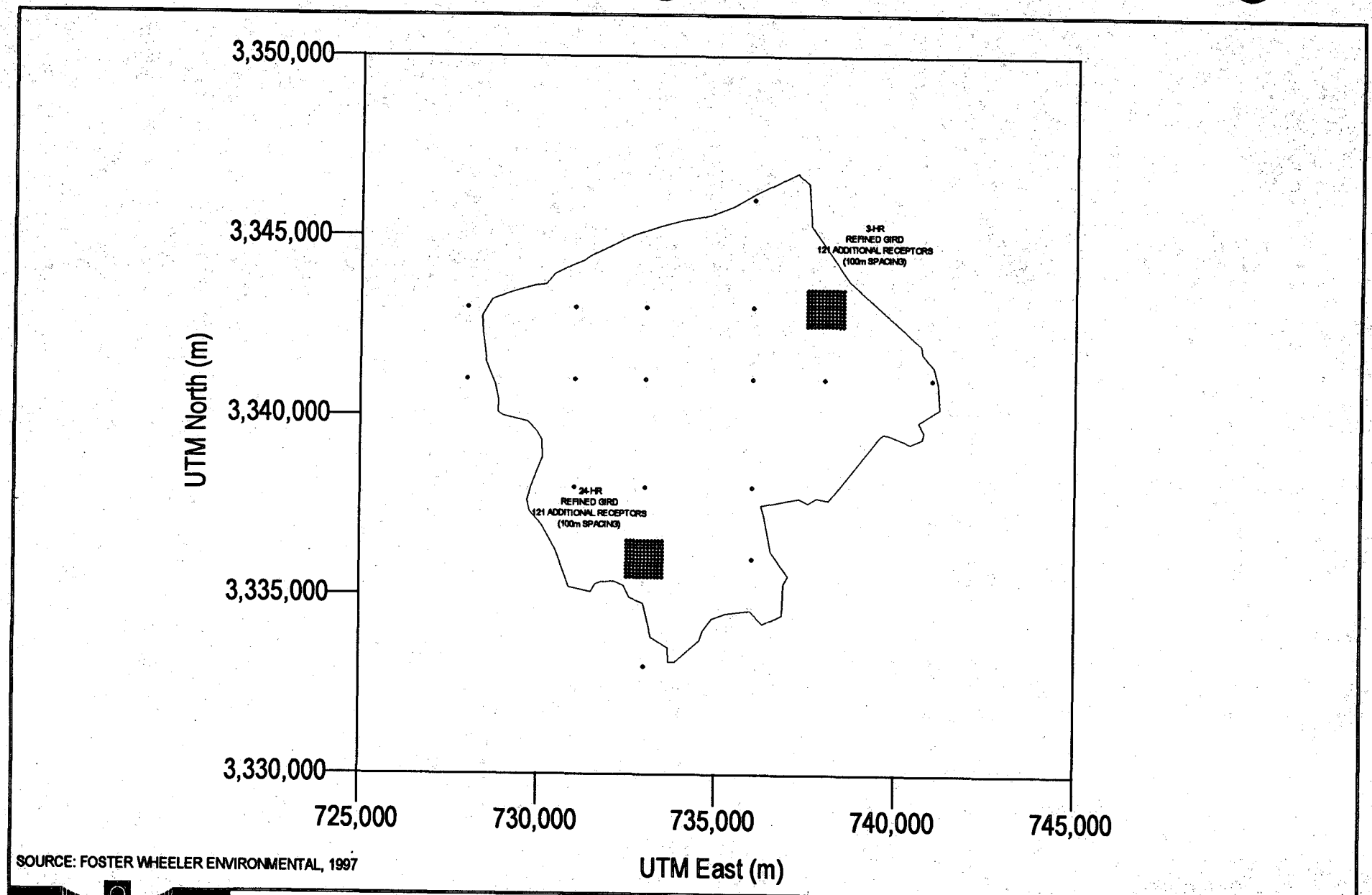

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - PSD CLASS I ANALYSIS
SO2 3-HOUR and 24-HOUR REFINED ISCST3 MODELLING RECEPTORS
BRADWELL BAY WILDERNESS AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-22

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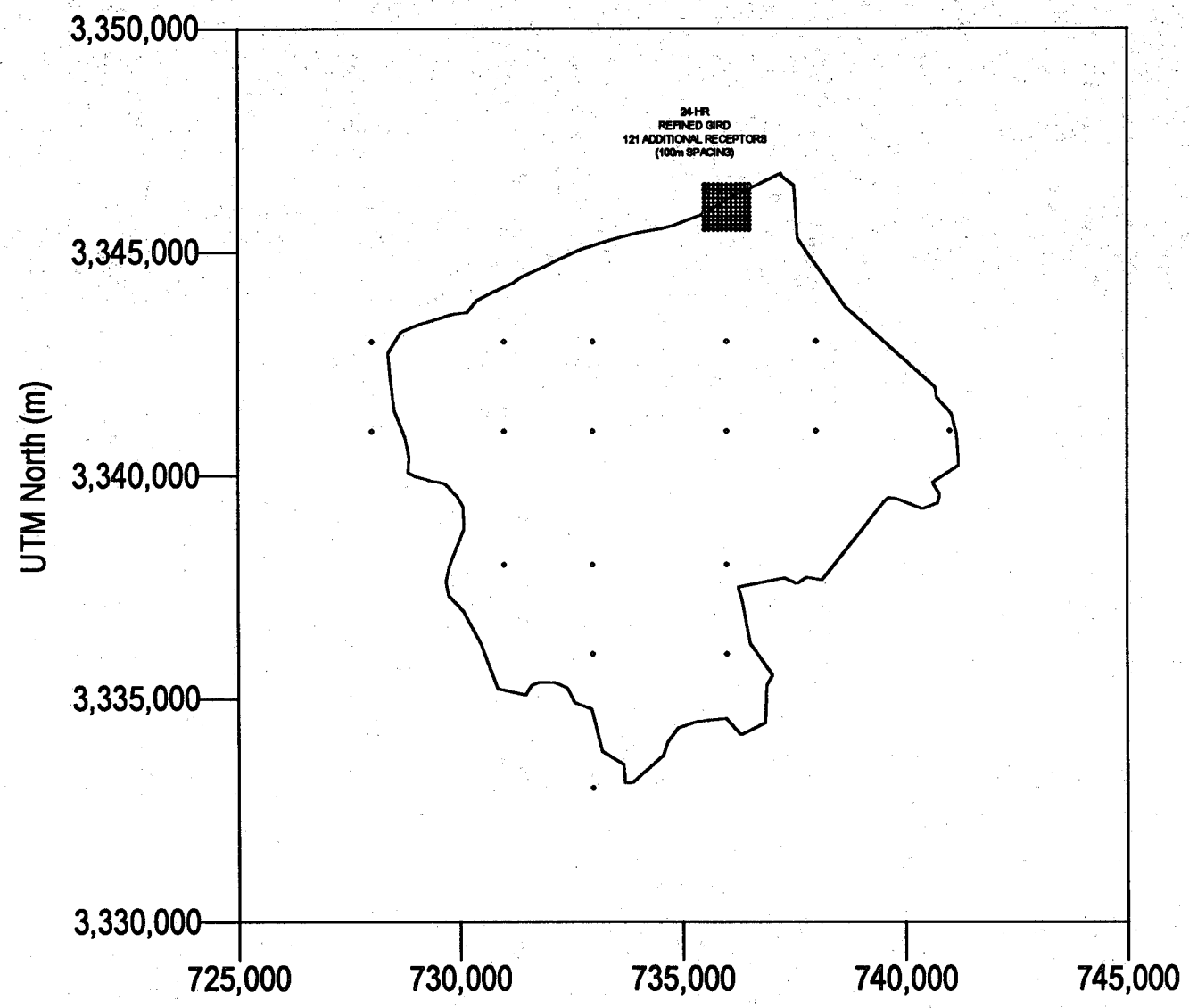

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - PSD CLASS I ANALYSIS
PM 24-HOUR - REFINED ISCST3 MODELLING RECEPTORS
BRADWELL BAY WILDERNESS AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-23

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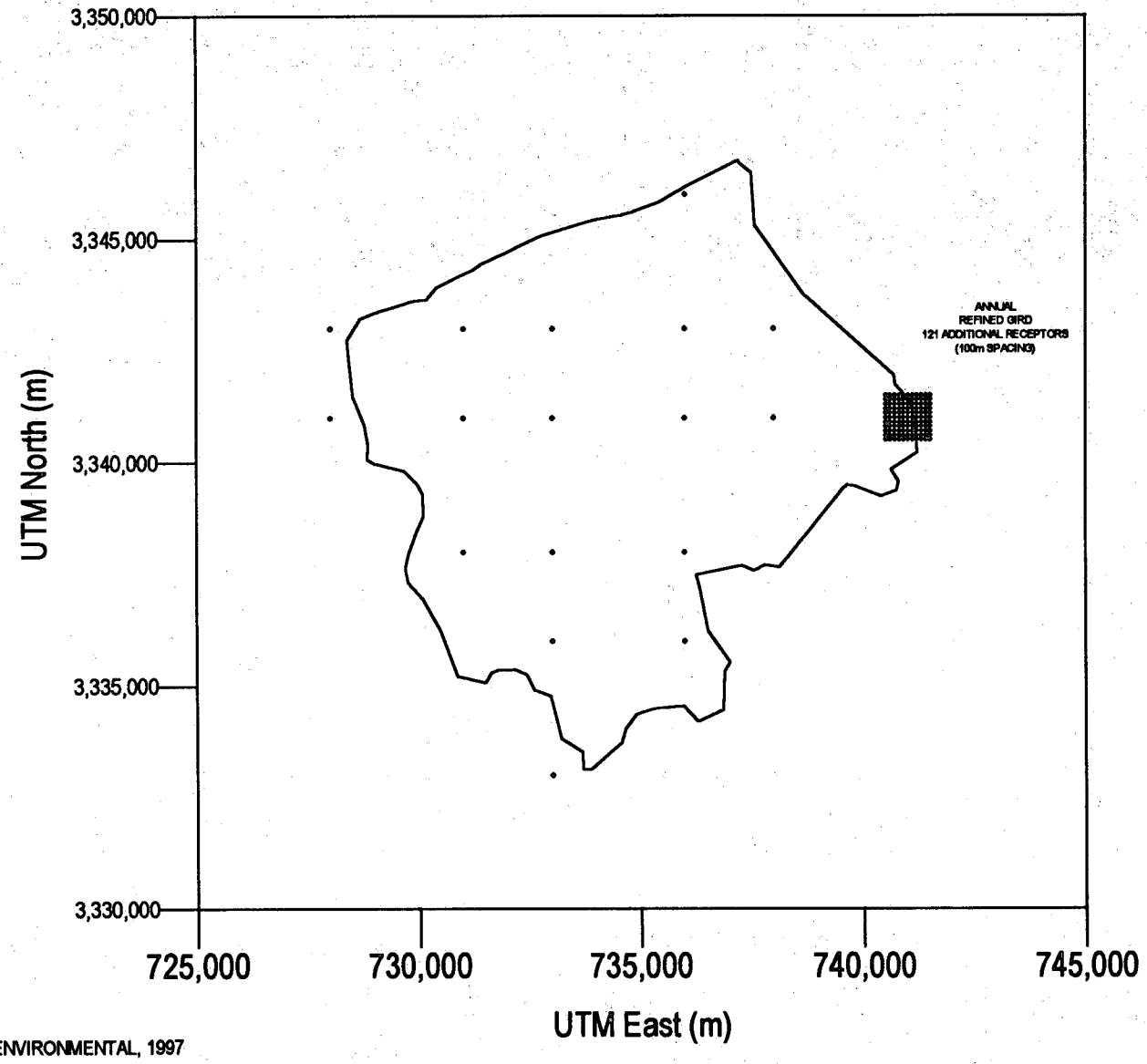

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT - PSD CLASS I ANALYSIS
PM ANNUAL - REFINED ISCST3 MODELLING RECEPTORS
BRADWELL BAY WILDERNESS AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-24

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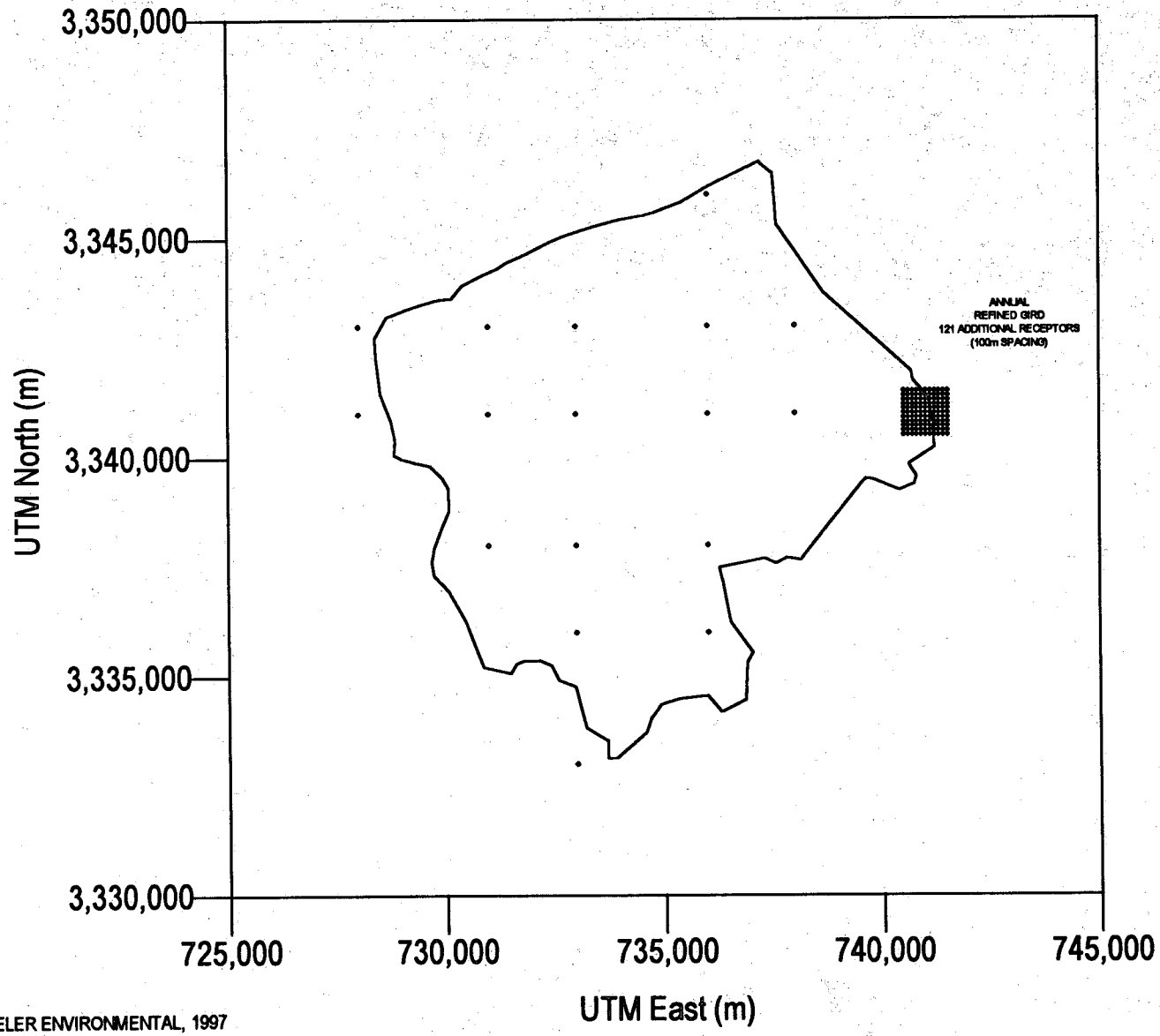

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

PURDOM PROJECT- PSD CLASS I ANALYSIS
NO2 ANNUAL REFINED ISCST3 MODELLING RECEPTORS
BRADWELL BAY WILDERNESS AREA
PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6-25

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6.11 AUXILIARY BOILER MODELLING

Emissions from the recently permitted auxiliary boiler were modeled using the general procedures described in Section 6.1. For short-term model runs, the auxiliary boiler was modelled separately from Units 7 and 8 since a permit condition prohibits it from running at the same time as the existing steam generating units. Long-term analyses of the Project did include the emissions from the auxiliary boiler along with the other sources. A revised permit condition is proposed which would prohibit the operation of the auxiliary boiler simultaneously with Unit 7 or 8 after Unit 8 is completed and successfully commences operation. The emissions from the auxiliary boiler were included in Tables 6-5 and 6-6. Receptor locations used are as indicated for the other sources in Section 6.8.

7. AIR QUALITY IMPACT ANALYSIS RESULTS

This section summarizes the results of the modelling analyses conducted as described in Section 6. It is organized into sections dealing with the predicted impacts of the proposed Project by itself, predicted PSD increment consumption, predicted concentrations with respect to the NAAQS/FAAQS, and predicted concentrations of hazardous air pollutants versus FDEP's draft FARC levels (FDEP, 1995). A discussion of the potential air quality impacts of the auxiliary boiler is included. Finally, a brief conclusion is presented.

Normally, this section would present the results of modelling project impacts only for those pollutants which trigger PSD review in accordance with Rule 62-212.400(2)(f)2, F.A.C. However, in the interest of providing a more complete understanding of the air quality impacts of the proposed Project, the City is providing modelling results for all regulated pollutants for which emissions information is available.

7.1 PROPOSED PROJECT ONLY

As indicated earlier, the Project is a major modification of a major stationary source. It consists of the addition of Unit 8 and its cooling tower, the permanent shut down of Units 5 and 6, and restrictions on other sources in order to maintain SO_2 and NO_x annual emissions within facility-wide caps. Therefore, both emissions increases and decreases are considered in the analysis of impacts of the Project by itself.

7.1.1 Worst-Case Operation Analysis

As indicated in Section 6.4.1, the proposed Unit 8 was evaluated for both the primary fuel, clean pipeline quality natural gas, and the secondary fuel, Number 2 (0.05% S) diesel fuel oil, to determine the worst-case impacts. Modelling was done using one year (1985) of meteorology and three loads (100%, 75%, and 50%). Since emissions and stack parameters from combustion turbine units are temperature dependent, modelling was also conducted at temperatures of 20°F, 59°F, and 95°F to determine the worst-case operating scenarios. For the 95°F case on natural gas, the lowest load evaluated was 55% as the combustion turbine is not expected to operate below this load at that temperature on natural gas. The results of this analysis for the 18 combinations of temperature and load are presented in Table 7-1 for NO_2, SO_2, CO and PM_{10}.

As a result of these model runs, it was determined that the maximum off-site impacts occur when firing Number 2 (0.05% S) diesel fuel oil at 50% load at 20°F. Although some other load/temperature combinations come close, this combination produced the highest impacts for all pollutants modeled and all averaging times. As a result, the emission characteristics and stack parameters associated with this condition were used in all subsequent analyses for short-term impacts. However, this condition was not used for modelling annual average impacts as this condition is clearly not realistic for longer averaging times. Instead, the 100% load, 59°F case was selected as representing a more realistic annual average condition for the Project. Unit 8 is projected to be operated at base (100%) load as much as possible due to its efficiency, and the 59°F case is a conservative representation of the annual average site temperature of about 67°F.

Worst-case operation for the Project was based on the worst-case conditions as defined above for Unit 8 in combination with emissions and stack parameters associated with 100% load operation

TABLE 7-1
PURDOM UNIT 8 WORST-CASE LOAD/TEMPERATURE ANALYSIS

Fuel	Load (%)	Temp (°F)	Maximum NO_2 ($\mu g/m^3$)	Maximum SO_2 ($\mu g/m^3$)			Maximum CO ($\mu g/m^3$)		Maximum PM_{10} ($\mu g/m^3$)	
			Annual	3-Hour	24-Hour	Annual	1-Hour	8-Hour	24-Hour	Annual
Natural Gas	100	95	0.06	0.26	0.06	0.005	4.3	0.9	0.14	0.010
Natural Gas	100	59	0.06	0.28	0.06	0.005	4.7	1.0	0.14	0.010
Natural Gas	100	20	0.06	0.29	0.07	0.005	5.0	1.1	0.14	0.009
Natural Gas	75	95	0.06	0.24	0.06	0.005	4.5	1.0	0.17	0.012
Natural Gas	75	59	0.06	0.25	0.06	0.005	4.9	1.1	0.17	0.012
Natural Gas	75	20	0.07	0.27	0.07	0.005	5.3	1.1	0.17	0.012
Natural Gas	≈55	95	0.06	0.30	0.06	0.005	12.1	2.6	0.21	0.015
Natural Gas	50	59	0.06	0.28	0.06	0.005	12.8	2.8	0.21	0.015
Natural Gas	50	20	0.07	0.32	0.07	0.005	13.6	2.9	0.21	0.016
Number 2 (0.05%S) Diesel Fuel Oil	100	95	0.26	5.0	1.3	0.08	14.1	3.0	0.26	0.02
Number 2 (0.05%S) Diesel Fuel Oil	100	59	0.30	5.5	1.4	0.09	15.4	3.2	0.26	0.02
Number 2 (0.05%S) Diesel Fuel Oil	100	20	0.31	6.3	1.4	0.10	16.7	3.1	0.22	0.02
Number 2 (0.05%S) Diesel Fuel Oil	75	95	0.30	4.5	1.2	0.09	17.6	3.7	0.30	0.02
Number 2 (0.05%S) Diesel Fuel Oil	75	59	0.34	5.0	1.3	0.10	18.1	3.8	0.30	0.02
Number 2 (0.05%S) Diesel Fuel Oil	75	20	0.36	5.4	1.4	0.10	18.9	3.9	0.30	0.02
Number 2 (0.05%S) Diesel Fuel Oil	50	95	0.29	4.0	1.2	0.09	34.9	8.7	0.39	0.03
Number 2 (0.05%S) Diesel Fuel Oil	50	59	0.33	5.9	1.3	0.10	45.4	9.3	0.38	0.03
Number 2 (0.05%S) Diesel Fuel Oil	50	20	0.37	6.3	1.4	0.11	46.4	9.9	0.39	0.03

Results based on 1985 meteorological data.
Highest concentrations shaded.

Source: Foster Wheeler Environmental, 1997

of the other units involved for short-term analyses. For long-term (annual average) analyses, the annual worst-case conditions defined above for Unit 8 were combined with annual average emissions and stack parameters consistent with 100% load operation of the other units. Thus, Units 5, 6, and 7; the existing combustion turbines (GT1 and GT2); and the auxiliary boiler were modelled at 100% load.

7.1.2 Significant Impact Area Analysis

Once the worst-case operating scenarios were determined, the next step in the analysis was to determine the significant impact area for each pollutant with an associated PSD increment or FAAQS/NAAQS for the Project. The significant impact area is defined in the EPA draft New Source Review Workshop Manual (EPA, 1990b) as the circular area whose radius is equal to the greatest distance from the proposed source to which modelling shows that the proposed source will have a significant impact, based upon EPA-defined significance values, which are pollutant specific. The significant impact areas thus define the distances beyond which the impacts from the proposed source will be "insignificant" and need not be analyzed in conjunction with existing sources.

The results of the significant impact area analyses are presented in Table 7-2. The receptor grids used were as described in Section 6.5.1. As indicated in Table 7-2, the only pollutants for which there were predicted significant impacts off Purdom Station property are NO_2 and PM_{10} for Class II PSD purposes. They both have a significant impact area radius of less than 0.3 km. Thus, no further analysis is required for any of the other regulated pollutants. However, as indicated earlier, the City has chosen to provide the PSD and FAAQS/NAAQS analyses for all of the regulated pollutants despite the insignificance of the Project impacts.

7.1.3 Monitoring Exemption Analysis

As indicated earlier, the monitoring exemption request analysis was restricted to PM_{10} and CO. (There is no monitoring de minimis level for particulate matter (TSP)). After the "worst case" temperature/load condition was determined for Unit 8, the proposed Project (including the permanent shut down of Units 5 & 6) was modelled using all applicable sources on site. The net changes in emission rates associated with the modification were determined by subtracting the current actual emission rates (August 1994 - July 1996) from the future emission rates. A summary of unit specific emission rates is included as Table 6-5. Each of the pollutants was modelled using five years of meteorological data and the receptors indicated in Section 6. The results of this preliminary modelling are presented in Table 7-3.

As indicated in the modelling protocol, an additional refined receptor grid was added, centered on the receptor which contained the highest predicted impact from the preliminary modelling runs. This refined grid contained 121 receptors spaced at 100 meter intervals. Figures 6-4 and 6-5 depict the locations of these receptors along with the original receptors.

These more refined receptor grids were used with the year of meteorological data which produced the highest preliminary impact. The "worst case" load and ambient temperature combinations described above were also used in the refined analysis. The results are also

TABLE 7-2
SUMMARY OF CLASS II PSD SIGNIFICANT IMPACT AREA CONCENTRATIONS

Pollutant	Averaging Period	Highest[1] Modelled Concentration ($\mu g/m^3$)	Significance Value[2] ($\mu g/m^3$)	Signficant Off-site Impact	Distance to Signficant Impact Value	Period (yymmddhh)	Receptor Location[3] East (m)	Receptor Location[3] North (m)	Preliminary Maximum[1] Concentration by Year 1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	0.051	25	No	none	89051416	768670	3340109	0.038	0.035	0.042	0.034	0.051
Sulfur Dioxide (SO_2)	24-hr	0.023	5	No	none	89051424	768670	3340109	0.013	0.011	0.011	0.011	0.023
Sulfur Dioxide (SO_2)	Annual	0.024	1	No	none	87	769766	3339709	0.0046	0.013	0.024	0.023	0.013
Particulate Matter (PM_{10})	24-hr	6.5	5	Yes	< 0.3 Km	86112524	769399	3340018	3.8	6.5	5.4	5.5	3.9
Particulate Matter (PM_{10})	Annual	0.35	1	No	none	86	769766	3340018	0.17	0.35	0.28	0.35	0.18
Nitrogen Dioxide (NO_2)	Annual	6.1	1	Yes	< 0.3 Km	87	769766	3339709	1.7	3.3	6.1	5.6	3.7
Carbon Monoxide (CO)	1 hr	21.9	2000	No	none	89072611	768977	3340015	18.4	17.7	19.5	17.4	21.9
Carbon Monoxide (CO)	8-hr	5.1	500	No	none	87071216	769610	3337767	3.4	4.6	5.1	4.2	4.3

(1) Short-term values are highest rather than highest second high concentrations for this analysis.
(2) Rule 62-210.200(256), F.A.C.
(3) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

TABLE 7-3
MONITORING EXEMPTION ANALYSIS

Pollutant	Averaging Period	Maximum[1] Refined Concentration ($\mu g/m^3$)	Monitoring De Minimis Level[2] ($\mu g/m^3$)	Monitoring Required	Preliminary Maximum[1] Concentration by Year				
					1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Particulate Matter (PM_{10})	24-hr	6.5	10	No	3.8	6.5	5.4	5.5	3.9
Carbon Monoxide (CO)	8-hr	5.4	575	No	3.4	4.6	5.1	4.2	4.3

(1) Short-term values are highest second high values for this analysis.
(2) Rule 62-212.400, F.A.C. - Table 212.400-3

Source: Foster Wheeler Environmental, 1997

presented in Table 7-3. As indicated, the maximum predicted concentrations due to the Project are all below the monitoring de minimis levels and monitoring is not required.

7.2 PSD INCREMENT ANALYSIS

7.2.1 Class II Area

The receptor grid depicted in Figures 6-6 through 6-9 was used in the analysis together with all five years of meteorological data. In addition to the emissions from the proposed Project listed in Table 6-5, the emissions from the other PSD increment consuming and increment expanding sources identified in Table 6-10 were included in the modelling. The results are presented in Table 7-4. As indicated in the table, the maximum predicted Class II PSD increment consumption in the vicinity of the proposed Project is well within the allowable values for all averaging times.

7.2.2 Class I Area

As the proposed Project will be located close to both the St. Marks National Wilderness Area (NWA) and the Bradwell Bay National Wilderness Area (NWA), both designated as Class I PSD areas by Rule 62-204.360(4)(b), F.A.C., the impacts of the proposed Project were modeled for both areas. Evaluations of impacts on the next closest Class I areas, the Chassahowitzka National Wilderness Area and the Okefenokee National Wilderness Area, were not performed due to their distances from the proposed Project and the small emissions changes which will result. The PSD regulations and guidelines do not yet contain specific significance values for use in determining whether a detailed analysis of Class I PSD increment consumption is warranted. EPA has proposed such values in their New Source Review Reform package (61 FR 38,249 dated July 23, 1996). However, the USFWS has asked that the significance values suggested by the NPS/USFWS be used. Therefore project impacts in the Class I areas have been compared with both sets of significance values.

A summary of the Project's predicted impact on the Class I area receptors (see Tables 6-11 and 6-12 and Figures 6-18 through 6-25) is presented in Tables 7-5 and 7-6 for the St. Marks NWA and Bradwell Bay NWA, respectively. As indicated, the predicted maximum impacts are below the significance values for SO_2 and PM_{10} at both Class I areas, and no further analysis is required for those pollutants. For NO_2 the predicted maximum impacts are above the significance levels, and additional modelling is required.

However, since the City has chosen to complete multi-source PSD modelling regardless of the significance of the Project impacts, the next step was undertaken for all three pollutants.

An analysis was conducted with the ISCST3 model of Class I area impacts using the other PSD increment consuming and expanding sources contained in Table 6-10 in addition to the proposed Project. The results of that analysis are presented in Tables 7-7 and 7-8 for the two Class I areas. As indicated, the PSD Class I impacts are within the allowable increments for all pollutants and averaging times.

TABLE 7-4
SUMMARY OF CLASS II PSD INCREMENT ANALYSIS

					Receptor Location[4]		Preliminary Maximum[1] Concentration by Year				
Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	Class II PSD Increment[2] ($\mu g/m^3$)	Period (yymmddhh)	East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	14.4	512	89121612	765689	3349564	9.4	12.3	9.1	7.4	13.5
Sulfur Dioxide (SO_2)	24-hr	2.4	91	86021524	768047	3348630	2.0	2.4	1.8	1.6	2.3
Sulfur Dioxide (SO_2)	Annual	<0.00001[3]	20	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Particulate Matter (PM_{10})	24-hr	3.3	30	87121424	769399	3340018	3.2	2.9	3.3	3.1	1.8
Particulate Matter (PM_{10})	Annual	0.32	17	86	769399	3340018	0.12	0.32	0.22	0.31	0.12
Nitrogen Dioxide (NO_2)	Annual	6.2	25	87	769766	3339709	1.9	3.5	6.2	5.8	4.0

(1) Short-term values are highest second high concentrations for this analysis.
(2) Rule 62-204.260, F.A.C.
(3) Maximum impact zero or negative due to increment expanding sources
(4) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

TABLE 7-5
SIGNIFICANCE OF PROJECT IMPACTS AT ST. MARKS NWA CLASS I AREA

						Receptor Location[4]		Preliminary Maximum[1] Concentration by Year				
Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	EPA Significance Criteria[2] ($\mu g/m^3$)	FLM Significance Criteria[2] ($\mu g/m^3$)	Period (yymmddhh)	East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	0.0043	1.0	0.48	88071612	770257	3339226	0.00066	0.00068	0.00050	0.00431	0.00055
Sulfur Dioxide (SO_2)	24-hr	<0.00001[3]	0.2	0.07	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sulfur Dioxide (SO_2)	Annual	<0.00001[3]	0.1	0.03	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Particulate Matter (PM_{10})	24-hr	0.14	0.3	0.27	89033124	769717	3339105	0.14	0.12	0.075	0.088	0.14
Particulate Matter (PM_{10})	Annual	<0.00001[3]	0.2	0.08	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Nitrogen Dioxide (NO_2)	Annual	0.86	0.1	0.03	87	769760	3339160	0.26	0.48	0.86	0.72	0.48

(1) Short-term values are highest second high values for this analysis.
(2) Federal Register July 23, 1996 p. 38,249.
(3) Maximum impact zero or negative due to increment expanding sources.
(4) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

TABLE 7-6
SIGNIFICANCE OF PROJECT IMPACTS AT BRADWELL BAY NWA CLASS I AREA

						Receptor Location[4]		Preliminary Maximum[1] Concentration by Year				
Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	EPA Significance Criteria[2] ($\mu g/m^3$)	FLM Significance Criteria[2] ($\mu g/m^3$)	Period (yy)	East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	<0.00001[3]	1.0	0.48	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sulfur Dioxide (SO_2)	24-hr	<0.00001[3]	0.2	0.07	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sulfur Dioxide (SO_2)	Annual	<0.00001[3]	0.1	0.03	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Particulate Matter (PM)	24-hr	<0.00001[3]	0.3	0.27	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Particulate Matter (PM)	Annual	<0.00001[3]	0.2	0.08	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Nitrogen Dioxide (NO_2)	Annual	0.038	0.1	0.03	86	741500	3340500	0.037	0.022	0.019	0.020	0.016

(1) Short-term values are highest second high values for this analysis.
(2) Federal Register July 23, 1996 p. 38,249.
(3) Maximum impact zero or negative due to increment expanding sources
(4) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

TABLE 7-7
SUMMARY OF ST. MARKS NWA CLASS I PSD INCREMENT ANALYSIS

					Receptor Location[4]		Preliminary Maximum[1] Concentration by Year				
Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	Class I PSD Increment[2] ($\mu g/m^3$)	Period (yymmddhh)	East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	10.7	25	86011106	774900	3336300	7.1	9.5	9.2	8.6	8.0
Sulfur Dioxide (SO_2)	24-hr	2.7	5	86110124	743600	3322000	1.3	2.3	2.1	2.4	1.6
Sulfur Dioxide (SO_2)	Annual	<0.00001[3]	2	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Particulate Matter (PM_{10})	24-hr	0.73	8	88022424	745900	3321900	0.42	0.68	0.63	0.70	0.46
Particulate Matter (PM_{10})	Annual	0.11	4	87	744200	3322900	0.020	0.064	0.11	0.10	0.053
Nitrogen Dioxide (NO_2)	Annual	0.91	2.5	87	769760	3339160	0.36	0.58	0.91	0.79	0.60

(1) Short-term values are highest second high values for this analysis.
(2) Rule 62-204.260, F.A.C.
(3) Maximum impact zero or negative due to increment expanding sources
(4) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

TABLE 7-8
SUMMARY OF BRADWELL BAY NWA CLASS I PSD INCREMENT ANALYSIS

					Receptor Location[4]		Preliminary Maximum[1] Concentration by Year				
Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	Class I PSD Increment[2] ($\mu g/m^3$)	Period (yymmddhh)	East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	16.9	25	87110324	737500	3343500	8.2	15.6	16.2	11.1	10.7
Sulfur Dioxide (SO_2)	24-hr	4.9	5	86113024	736300	3343000	1.8	4.9	4.5	3.0	1.9
Sulfur Dioxide (SO_2)	Annual	<0.00001[3]	2	NA	NA	NA	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Particulate Matter (PM_{10})	24-hr	0.0023	8	85080224	736500	3346500	0.0023	0.0019	0.0013	0.0020	0.00039
Particulate Matter (PM_{10})	Annual	0.16	4	87	741500	3341100	0.030	0.10	0.15	0.12	0.066
Nitrogen Dioxide (NO_2)	Annual	0.57	2.5	87	741500	3341500	0.16	0.37	0.54	0.45	0.25

(1) Short-term values are highest second high values for this analysis.
(2) Rule 62-204.260, F.A.C.
(3) Maximum impact zero or negative due to increment expanding sources.
(4) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

7.3 AAQS ANALYSIS

The AAQS analysis consisted of modelling the impacts of the proposed source together with background concentrations to determine if the totals will be within the FAAQS; and therefore, also within the NAAQS. Background concentrations consist of a modeled component (modeled impacts of significant existing sources) and a monitored component (based upon the concentrations presented in Table 5-2). The existing sources which were included in the modelling were identified in Table 6-7. The receptor grids identified in Figures 6-10 through 6-17 were used in these analyses. During the AAQS analysis for SO_2 impacts higher than the AAQS were modelled. The receptors with the high impacts were found to be located within the property boundaries of the Primex Technologies (formerly Olin) facility. A special method consistent with an EPA guidance memorandum EPA (1989) was used for the SO_2 analyses for receptors within the boundaries of the Primex Technologies site. A summary of the modelling of the Primex receptors is presented in Table 7-9. All other receptors were modelled using the standard methodology presented in the project modelling protocol (COT, 1996).

The highest values for each averaging period of the five years modelled of the Primex receptors was compared against the highest second-high impact for the corresponding averaging periods for the non-Primex receptors. This comparison indicated that the highest second-high impact for all receptors (Primex and non-Primex receptors) was located off the Primex facility. The results of the analysis are summarized in Table 7-10. As indicated in the table, maximum concentrations for all pollutants for all averaging periods will be below the FAAQS, and therefore, also below the NAAQS.

7.4 AIR TOXICS ANALYSIS

As indicated in Section 6.10, the analysis of Project impacts versus the draft FARCs involved combining all future Purdom Station emissions (Unit 7, Unit 8, GT1 and GT2 and the auxiliary boiler) as a single source and modelling at a unit emission rate (1 gram/second). The projected maximum impacts from this analysis are included in Table 7-11. These maximum impacts for the three averaging times were scaled using the short-term and annual expected emission rates for the various pollutants. Predicted concentrations are provided in Table 7-12. As indicated, all concentrations are below the draft FARCs.

7.5 AUXILIARY BOILER

As indicated in Section 6.11, the auxiliary boiler was modelled separately from the other sources in the short-term analyses as it will not be permitted to operate in conjunctionwith Units 7 and 8. The results of modelling the auxiliary boiler alone are included in Table 7-13. As indicated, the maximum short-term impacts of the auxiliary boiler are very small in comparison with allowable PSD increments and FAAQS/NAAQS. Annual impacts were not computed as they were already included in all of the long-term impact analyses discussed above.

7.6 CONCLUSIONS

As indicated by the review and analysis in the previous sections, the proposed Project will not cause or contribute to violations of the allowable PSD increments or NAAQS/FAAQS.

TABLE 7-9
SUMMARY OF FAAQS ANALYSIS (PRIMEX RECEPTORS)

Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	Background ($\mu g/m^3$)	Max[1] Modelled + Background ($\mu g/m^3$)	FAAQS[2] ($\mu g/m^3$)	Period Date/Time	Receptor Location[3]		Preliminary Maximum[1] Concentration by Year				
							East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	194.8	183	378	1300	88060618	767877	3340767	155.3	166.5	168.1	194.8	155.0
Sulfur Dioxide (SO_2)	24-hr	71.7	71	143	260	88050824	767877	3340767	55.4	66.2	61.8	71.7	38.4
Sulfur Dioxide (SO_2)	Annual	4.7	9	14	60	87	768324	3341299	4.6	4.1	4.7	3.9	2.9

(1) Short-term values are highest second high values for this analysis.
(2) Rule 62-204.240, F.A.C.
(3) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

TABLE 7-10
SUMMARY OF FAAQS ANALYSIS

Pollutant	Avg Period	Max[1] Refined Conc ($\mu g/m^3$)	Background ($\mu g/m^3$)	Max[1] Modelled + Background ($\mu g/m^3$)	FAAQS[2] ($\mu g/m^3$)	Period (yymmddhh)	Receptor Location[3]		Preliminary Maximum[1] Concentration by Year				
							East (m)	North (m)	1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	402.1	183	585	1300	86031203	767338	3344831	296.6	306.9	289.3	304.9	253.6
Sulfur Dioxide (SO_2)	24-hr	137.2	71	208	260	86051824	767438	3342731	88.9	98.2	94.9	96.0	92.6
Sulfur Dioxide (SO_2)	Annual	25.7	9	35	60	87	768943	3339624	11.6	15.1	21.0	19.4	14.9
Particulate Matter (PM_{10})	24-hr	83.8	47	131	150	89061024	767881	3342365	40.0	40.1	402.0	49.7	51.4
Particulate Matter (PM_{10})	Annual	19.1	22.4	42	50	87	767611	33411995	5.6	5.5	6.6	5.6	6.5
Nitrogen Dioxide (NO_2)	Annual	21.4	14	35	100	87	767511	3341895	5.1	7.4	10.4	9.1	6.8
Carbon Monoxide (CO)	1 hr	103.1	8050	8153	40000	85090112	769362	3339793	103.1	28.2	28.1	27.0	28.7
Carbon Monoxide (CO)	8-hr	16.3	5290	5306	10000	86072916	767460	3342348	8.3	13.3	10.1	11.6	8.7
Lead (Pb)	24-hr	0.011	0.03	0.04	1.5	87062724	769610	3338267	0.0064	0.010	0.011	0.011	0.0084

(1) Short-term values are highest second high values for this analysis.
(2) Rule 62-204.240, F.A.C.
(3) Unit 8 stack location 769,611 m East, 3,339,767 m North.

Source: Foster Wheeler Environmental, 1997

TABLE 7-11
PREDICTED MAXIMUM IMPACTS DUE TO FUTURE EMISSIONS AT A UNIT EMISSION RATE[1]

Pollutant	Avg Period	Predicted Max[2] Concentration ($\mu g/m^3$)	Maximum[1] Concentration by Year				
			1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
FARCS	24-hr	0.54	0.30	0.39	0.54	0.42	0.42
FARCS	8-hr	0.99	0.76	0.83	0.99	0.88	0.85
FARCS	Annualr	0.072	0.025	0.041	0.072	0.065	0.035

(1) Unit emission rate = 1 gram/second

(2) Short-term values are based on highest rather than highest second high values for this analysis.

Source: Foster Wheeler Environmental, 1997

TABLE 7-12
MAXIMUM MODELLED HAZARDOUS AIR POLLUTANT CONCENTRATIONS VERSUS DRAFT FARCS

Pollutant	8-Hour			24-Hour			Annual		
	Maximum[1] Modelled Conc ($\mu g/m^3$)	Draft FARC[2] ($\mu g/m^3$)	Acceptable	Maximum[1] Modelled Conc ($\mu g/m^3$)	Draft FARC[2] ($\mu g/m^3$)	Acceptable	Maximum[1] Modelled Conc ($\mu g/m^3$)	Draft FARC[2] ($\mu g/m^3$)	Acceptable
Arsenic (As)	9.85E-03	0.1	Yes	5.42E-03	0.02	Yes	1.78E-05	2.30E-04	Yes
Beryllium (Be)	3.94E-04	0.02	Yes	2.17E-04	0.005	Yes	1.07E-06	4.20E-04	Yes
Cadmium (Cd)	4.45E-03	0.02	Yes	2.45E-03	0.005	Yes	1.36E-05	5.60E-04	Yes
Chromium (Cr)	1.97E-02	0.5	Yes	1.09E-02	0.1	Yes	1.52E-04	NA	Yes
Lead (Pb)	2.71E-02	0.5	Yes	1.49E-02	0.1	Yes	2.07E-04	9.00E-02	Yes
Manganese (Mn)	7.46E-02	50	Yes	4.11E-02	12	Yes	1.07E-03	5.00E-02	Yes
Mercury (Hg)	2.67E-03	0.1	Yes	1.47E-03	0.02	Yes	4.97E-06	3.01E-01	Yes
Nickel (Ni)	4.31E-01	10	Yes	2.37E-01	2.4	Yes	3.89E-03	4.20E-03	Yes
Cobalt (Co)	1.13E-02	0.5	Yes	6.20E-03	0.1	Yes	2.95E-05	NA	Yes
Antimony (Sb)	8.15E-03	5	Yes	4.49E-03	1.2	Yes	7.14E-05	3.00E-01	Yes
Vandium (V)	1.38E-01	0.5	Yes	7.59E-02	0.1	Yes	2.73E-04	2.00E+01	Yes
Polycyclic Organic Matter (POM)	5.33E-03	NA	Yes	2.93E-03	NA	Yes	7.79E-05	NA	Yes
Benzo (a) Pyrene (Ben(a)P)	1.14E-06	NA	Yes	6.28E-07	NA	Yes	1.32E-08	3.00E-04	Yes
Benzene	3.30E-04	30	Yes	1.82E-04	7	Yes	1.29E-05	1.20E-01	Yes
Toluene	2.97E-03	1880	Yes	1.64E-03	448	Yes	4.17E-05	4.00E+02	Yes
Selenium (Se)	4.05E-03	2	Yes	2.23E-03	0.5	Yes	1.72E-05	NA	Yes
Hydrochloric Acid (HCl)	2.01E+00	70	Yes	1.11E+00	17	Yes	2.45E-02	7.00E+00	Yes
Hydrogen Fluoride (HF)	3.04E-01	26	Yes	1.67E-01	6.2	Yes	3.69E-03	NA	Yes
Dioxin (378TCDD)	2.50E-09	NA	Yes	1.37E-09	NA	Yes	2.88E-11	2.20E-08	Yes
Formaldehyde (HCOH)	3.58E-02	3.7	Yes	1.97E-02	0.9	Yes	5.41E-04	7.70E-02	Yes

[1] Maximum values are highest rather than highest second-high values for this analysis.
[2] FDEP, 1995

Source: Foster Wheeler Environmental, 1997

TABLE 7-13
SUMMARY OF AUXILIARY BOILER ANALYSIS

Pollutant	Avg Period	Maximum Concentration ($\mu g/m^3$)	Preliminary Maximum[1] Concentration by Year				
			1985 ($\mu g/m^3$)	1986 ($\mu g/m^3$)	1987 ($\mu g/m^3$)	1988 ($\mu g/m^3$)	1989 ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3-hr	0.80	0.74	0.78	0.77	0.80	0.73
Sulfur Dioxide (SO_2)	24-hr	0.49	0.20	0.44	0.41	0.49	0.40
Particulate Matter (PM_{10})	24-hr	6.4	2.6	5.7	5.4	6.4	5.1
Carbon Monoxide (CO)	1 hr	161.0	161.0	109.4	77.1	81.2	156.4
Carbon Monoxide (CO)	8-hr	53.5	29.6	45.0	53.5	49.6	40.8

[1] Maximum values are highest second high concentrations for this analysis.

Source: Foster Wheeler Environmental, 1997

Furthermore, the Project impacts will be below the FDEP draft FARCs for the hazardous air pollutants.

8. ADDITIONAL IMPACTS ANALYSIS

8.1 INTRODUCTION

The PSD guidelines indicate that, in addition to demonstrating that the proposed source will neither cause nor contribute to violations of the applicable PSD increments and AAQS, an additional impacts analysis must be conducted for those pollutants subject to PSD review. As indicated in Table 3-4, those pollutants include CO and particulate matter (TSP and PM_{10}). However, the City has chosen to include other pollutants in the analysis to provide additional information. The additional impacts analysis includes an analysis of air quality impacts due to growth induced by the Project, an analysis of air quality impacts on soils, vegetation, and wildlife, and a discussion of Project impacts on visibility.

The focus of the visibility, vegetation, soils, and wildlife portions of the additional impacts analysis section of a PSD application is typically on any nearby Class I areas. As has been demonstrated in Section 7.0 of this application, the proposed Project will neither cause nor contribute to violations of the Class I PSD increments (nor the AAQS) at the St. Marks National Wilderness Area or the Bradwell Bay National Wilderness Area. The City has agreed to evaluate Project impacts on air quality-related values (AQRV) identified by the Federal Land Manager (FLMs) as a part of the application. Although no specific AQRVs have been identified (USFWS, 1996a), the U.S. Fish and Wildlife Service (USFWS) has identified air quality and water quality as concerns for the St. Marks NWA. The U.S. Forest Service (USFS) has identified "fresh air (lack of odor) and vegetation" as AQRVs for the Bradwell Bay NWA and has asked that visibility impacts be evaluated as well (USFS, 1996a). Therefore, the additional impacts analysis section has been broadened to cover these AQRVs, as well as the traditional issues. Furthermore, the City went beyond the requirements and a broader range of pollutants was analyzed. Finally, the analysis has been broadened to cover the Class II PSD area in the vicinity of the site in addition to the Class I areas discussed.

8.2 IMPACTS DUE TO GROWTH

The growth analysis considers air quality impacts due to emissions resulting from the industrial, commercial, and residential growth associated with the Project. Only impacts related to permanent growth are considered; emissions from temporary sources and mobile sources are not addressed in the growth analysis. The analysis of socioeconomic effects presented in Chapter 7.0 of the Site Certification Application serves as the basis for this growth analysis.

An average of about 160 people will be employed at the Purdom Station during the construction phase of the Project. It is anticipated that about half of the construction workers will commute from their current residences, whereas the other half of the construction workers will migrate into the City of St. Marks area. The permanent operational employment at the Purdom Station will be 12 more than without the new unit, but will still decline from its current level. Therefore, there will be no demographic impact on Wakulla County due to permanent influx of employees (Moore/Bowers, 1997).

Some amount of residential and commercial development may be associated with the temporary construction-related population influx (construction of new homes and rental property;

establishment of new businesses to provide goods and services). However, the permanent, nonmobile source emissions and impacts of this development will likely be very small and have impacts on different areas than those affected by emissions of the new unit at the Purdom Station.

Development of industries supporting the new unit are expected to be negligible. Raw materials consumed by the facility (fuels, supplies, etc.) will be delivered to the site in usable form from outside of the region. Further processing, such as water treatment, will be accomplished entirely on site.

Electricity sales, on the other hand, will be spread out over a large area as part of the City of Tallahassee's generating capacity that will serve to meet increasing residential, commercial, and industrial demand throughout its system.

In summary, there may be some temporary residential growth associated with construction of the Purdom Unit 8 Project, but there is little potential for new industrial development nearby as a result of the new facility. Although it is not possible to reliably quantify the emissions and impacts resulting from the new development, they are expected to be small and well-distributed throughout the area.

8.3 VEGETATION, SOILS, AND WILDLIFE ANALYSES

The vegetation, soils, and wildlife component of the additional impacts analysis has been expanded to constitute an air quality-related values (AQRVs) analysis to assess potential adverse impacts to AQRVs of the St. Marks National Wilderness Area (NWA) and the Bradwell Bay NWA due to the development of the Project. Potential air quality impacts of the Project were predicted at these PSD Class I Areas, as well as nearby Class II areas. The following impacts analysis evaluates how the emissions from the Purdom Station after the construction of Unit 8 would affect vegetation, soils, and wildlife. While there are no AQRVs for the Class II areas, the discussion of effects on vegetation, soils, and wildlife (AQRVs) is germane to assessing these effects in the Class II areas which are in closer proximity to the proposed Project. If no adverse effects are predicted to occur to Class II areas, then the chances of adverse effects on the Class I areas are further remote, as the analysis demonstrates.

The Project was designed so that there would be no annual increase in either NO_2 or SO_2 emissions. Although some increases for some pollutants may occur, future impacts will be very similar to existing impacts. The U.S. Department of the Interior (National Park Service) in 1978 administratively defined AQRVs to be:

- All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some ways upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality.
- Important attributes of an area are those values or assets that make an area significant as a national monument, preserve, or primitive area. They are assets that are to be preserved if the area is to achieve the purposes for which it was set aside.

For the purposes of PSD review, EPA has recently proposed (EPA, 1996e) to define an AQRV as "a scenic, cultural, physical, biological, ecological, or recreational resource which may be affected by a change in air quality, as defined by the FLM for federal lands and as defined by a State or Indian Governing Body for nonfederal lands within their respective jurisdictions." EPA further proposed to define "adverse impacts on air quality related values" as "a deleterious effect on any AQRV defined by the FLM, resulting from the emissions of a proposed source or modification, that interfaces with the management protection, preservation, or enjoyment of the AQRV of a Federal Class I area."

AQRVs have not been specifically identified by the USFWS for the St. Marks NWA; however the USFS has identified two AQRVs for the Bradwell Bay NWA, fresh air (lack of odor) and vegetation (FWENC, 1997a). Operation of the proposed Project will not result in any odors in the NWAs, hence the AQRV fresh air (lack of odor) is not addressed further in the following analysis. Since specific AQRVs have not been identified for the St. Marks NWA, this AQRV analysis evaluates the effects of air quality on general vegetation types and wildlife found in both the St. Marks NWA and the Bradwell Bay NWA.

For St. Marks NWA, typical vegetation type AQRVs and their representative species types have been identified as:

- Estuarine Habitat - black needlerush, salt marsh cordgrass
- Forested Wetland - red maple, swamp tupelo, sweet bay, and pond cypress
- Upland Forest - slash pine, blackberries, winged sumac, hollies, and saw palmetto

For Bradwell Bay, typical vegetation type AQRVs and their representative species types have been identified as:

- Upland Forest - slash pine, loblolly pine
- Forested Wetland - sweet gum, slash pine, water oak, red bay, black willow, pond cypress, bald cypress, saw palmetto

Wildlife AQRVs included: endangered species, waterfowl, marsh and water birds, shorebirds, reptiles and mammals. Since no particular species were identified, the analysis focused upon typical "indicator species" as noted in the literature. It should be noted that these "indicator" species do not necessarily occur in the NWAs but are included for comparative purposes.

A screening approach was used which compared the maximum predicted ambient concentrations of air pollutants of concern from the Project with "effect threshold limits" for both vegetation and wildlife as reported in the scientific literature. It was recognized that effect threshold information is not available for all species found in either the St. Marks NWA or Bradwell Bay NWA, although studies have been performed on a few of the common species and on other similar species which can be used as models. In conducting the assessment, both direct (fumigation) and indirect (soil accumulation/uptake) exposures were considered for flora, and direct exposure (inhalation) was considered for wildlife. Maximum concentrations and depositions were predicted using the ISCST3 model and five years of meteorological data as described in Sections 6.0 and 7.0.

Since background air quality monitoring data were not available for either of the Class I Areas or for the site area, background values for the criteria pollutants were estimated (Table 8-1) based on monitoring data from regional air quality monitoring locations as listed in Table 5-2. With the exception of O_3, this was a conservative approach since the monitors were either near point sources or in more urban areas than the Class I Areas or the site vicinity.

8.3.1 Vegetation

The effects of air contaminants on vegetation occur primarily from SO_2, NO_2, O_3, and particulate matter (TSP and PM_{10}). Analysis of the effects of CO and particulate matter on vegetation is required due to the predicted change in emission levels, although vegetation is very tolerant to CO concentrations. Similarly, particulate matter concentrations higher than predicted for the Project are necessary to result in detrimental effects. Potential effects on vegetation from particulate deposition are considered to be negligible. Annual concentrations of SO_2 and NO_2 are not expected to increase above existing levels due to modification of the Purdom Station. Accordingly, no impacts on vegetation from SO_2 and NO_2 would be expected. However, analyses of SO_2 and NO_2 effects on vegetation were conducted to assess the Project's potential impacts.

8.3.1.1 Carbon Monoxide

Concentrations of CO even in polluted atmospheres are not typically detrimental to vegetation (USEPA, 1976). Carbon monoxide has not been found to produce detrimental effects on plants at concentrations below 100 ppm (114,500 $\mu g/m^3$) for exposures from one to three weeks (USEPA, 1976). Existing background concentrations of 8,050 $\mu g/m^3$ for 1-hour and 5,290 $\mu g/m^3$ for an 8-hour average plus predicted contributions from the Project of 103 $\mu g/m^3$ for 1-hour and 16.3 $\mu g/m^3$ for an 8-hour (Table 8-1) would be approximately 0.07 of the values reported to cause detrimental effects to vegetation. Therefore, no impact is expected.

8.3.1.2 Particulates

The maximum predicted concentration of particulate matter (in the form of TSP and PM_{10}) from the Project is 19.1 $\mu g/m^3$ for an annual average (Table 7-10). The existing background concentration in the vicinity of the Project based on monitoring data from the Gulf County location (FDEP, 1995, 1996) is 22.4 $\mu g/m^3$ for an annual average. Combined with the existing background, the predicted maximum concentration would be approximately 42 $\mu g/m^3$ on an annual basis and 131 $\mu g/m^3$ on a 24-hour basis. This would translate to a 24-hour estimated deposition rate of 1.13×10^{-3} $mg/cm^2/day$ compared to 0.05 to 0.38 $mg/cm^2/day$ for two to three days as reported in the literature. In comparison to the few injury threshold values reported in the literature (Darley, 1966; Krause and Kaiser, 1977), no potential effects on vegetation in the Project area and the NWAs would be anticipated because this predicted concentration is below the values reported to adversely affect plants.

8.3.1.3 Nitrogen Dioxide

The maximum ground-level NO_2 concentration (annual average) predicted to occur within a 10 km radius of the Purdom site during the operation of the Project is 35 $\mu g/m^3$ (Project plus

TABLE 8-1
SUMMARY OF THE MAXIMUM PREDICTED IMPACTS
FROM THE PURDOM STATION

Air Contaminant	Maximum Predicted Impact ($\mu g/m^3$)[1]				
	1-Hour	3-Hour	8-Hour	24-Hour	Annual
Carbon Monoxide (CO)	**8153**	7338	**5306**	3032	379
Particulate Matter (PM)	328	295	229	**131**	**42**
Sulfur Dioxide (SO_2)	650	**585**	455	**208**	**35**
Nitrogen Dioxide (NO_2)	700	630	490	280	**35**
Lead (Pb)	3.88E-02	3.49E-02	**2.71E-02**	**1.49E-02**	**2.07E-04**
Beryllium (Be)	5.63E-04	5.06E-04	**3.94E-04**	**2.17E-04**	**1.07E-06**
Mercury (Hg)	3.81E-03	3.43E-03	**2.67E-03**	**1.47E-03**	**4.97E-06**
Arsenic (As)	1.41E-02	1.27E-02	**9.85E-03**	**5.42E-03**	**1.78E-05**
Antimony (Sb)	1.16E-02	1.05E-02	**8.15E-03**	**4.49E-03**	**7.14E-05**
Cadmium (Cd)	6.36E-03	5.72E-03	**4.45E-03**	**2.45E-03**	**1.36E-05**
Chromium (Cr)	2.82E-02	2.54E-02	**1.97E-02**	**1.09E-02**	**1.52E-04**
Cobalt (Co)	1.61E-02	1.45E-02	**1.13E-02**	**6.20E-03**	**2.95E-05**
Manganese (Mn)	1.07E-01	9.60E-02	**7.46E-02**	**4.11E-02**	**1.07E-03**
Nickel (Ni)	6.16E-01	5.54E-01	**4.31E-01**	**2.37E-01**	**3.89E-03**
Vanadium (V)	1.97E-01	1.77E-01	**1.38E-01**	**7.59E-02**	**2.73E-04**

[1] Includes background levels for each averaging period when available and where appropriate. Numbers in bold typeface were predicted by modelling. Other values were scaled using EPA's conversion factors for converting model results to different averaging periods-screening (simple terrain).

Source: Foster Wheeler Environmental, 1997

background from existing sources) (Table 8-1). Assuming a threshold injury concentration of 1880 $\mu g/m^3$ for a 24 hour exposure period (Thompson et al., 1974) extrapolated to an annual value of 94 $\mu g/m^3$, this maximum concentration is 0.4 of the estimated threshold concentration. The 1-, 3-, 8-hour and 24-hour predicted NO_2 ambient concentrations from the Project are 700, 630, 490, and 280 $\mu g/m^3$, respectively. These values, when compared with the conservative end of the range of threshold concentrations of 1,880 to 68,620 $\mu g/m^3$ for 1-hour, 22,560 for 3-hour, 4,324 to 9,024 for 8-hour and 1,880 to 4,324 for 24-hour exposures, are 0.3, 0.03, 0.1, and 0.15 of the levels reported in the literature as resulting in minimal effects on relatively sensitive species. Therefore, there are not expected to be any adverse impacts on vegetation.

8.3.1.4 Sulfur Dioxide

The predicted maximum ground-level 1-hour, 3-hour, 8-hour, 24-hour and annual ambient concentrations resulting from operation of the Project are 650, 585, 455, 208, and 35 $\mu g/m^3$ (Project plus background from existing sources) (Table 8-1). These predicted concentrations would not exceed the existing ambient SO_2 concentrations since the annual and short-term SO_2 emissions from the Project will not increase over existing levels (either short-term or long-term). The predicted ambient concentrations during operation of the Project would be 0.5, 0.75, and 0.9, of the 1-hour, 3-hour, and 8-hour injury threshold concentrations (1,300, 785, and 472 $\mu g/m^3$) for sensitive vegetation as reported in the literature (Jacobsen, 1977; Jones et al., 1974; Linzon, 1973; and USEPA, 1976). The annual average of 35 $\mu g/m^3$ (including background from existing sources) is 0.3 of the annual value (118 $\mu g/m^3$) reported as resulting in no foliar injury on maples during a growing season (Fed Am Soc Exp Bio, 1973). The 1-hour and 3-hour predicted concentrations are 0.25 and 0.4 of the 1-hour and 3-hour SO_2 concentrations (2,620 and 1,572 $\mu g/m^3$, Jones et al., 1974) used to identify southern pines as sensitive to SO_2. Under these predicted ambient conditions, which would be similar to existing conditions, no injury symptoms would be expected within a 10 km radius of the Project and, while not specifically modelled under the AAQS analysis, similar concentrations would be expected to occur in the St. Marks NWA and slightly lower concentrations would be expected in the Bradwell Bay NWA, respectively.

The potential for physiological or chronic injury occurring cannot be predicted with certainty. The predicted maximum annual ambient concentration during operation of the Project is 35 $\mu g/m^3$. Most evidence in the literature suggests that levels around 118 $\mu g/m^3$ may be responsible for physiological or chronic injury. Since there is an 83 $\mu g/m^3$ difference between the predicted ambient concentration and the threshold concentration reported in the literature, the probability of physiological or chronic injury is low. In addition, SO_2 emissions from the Project will be maintained at or below existing levels, which supports the conclusion that there is a low probability of physiological or chronic injury since no injury symptoms have been reported to date.

Sulfur can also be added to soil through washout of atmospheric SO_2 by precipitation. In a study in Minnesota, annual sulfur additions from atmospheric SO_2 washout were found to range from 100 lbs/acre in urban areas to 5 lbs/acre in rural areas. In southern states, the annual average is about 5 lbs/acre (Kamprath, 1972). Sulfur is an essential nutrient for plants. In some cases, the amount of sulfur deposition is sufficient to meet crop requirements, although in rural area, the

amount of sulfur deposition is sufficient to meet only 20-30 percent of crop needs. Potential sulfur deposition from the Project is not anticipated to have an adverse effect that might result from excessive deposition. Nor would predicted deposition levels be expected to compensate for sulfur deficient soils. This conclusion is supported by the fact that SO_2 emissions will remain at or below existing levels.

8.3.1.5 Ozone

Ozone (O_3) would not be directly produced from the combustion of fuel at the proposed Project, but instead results from a complex photochemical reaction involving NO_x and VOCs. No increases in annual NO_x emissions are anticipated from the Project, although there may potentially be a slight increase in VOCs (12 tpy). Ozone formation is not well understood, although it is generally believed that it is a phenomenon occurring at long downwind distances from, but not in the immediate vicinity of a source, such as the Project. This distance/delay is attributed to the kinetics and time-dependent nature of the necessary photochemical reaction.

It is difficult to predict what effect the Project emissions will have on ambient O_3 concentrations on local or regional scales, although no significant change is anticipated since the NO_2 emissions from the Project will not increase from existing levels. The estimated annual background O_3 concentration in the area is 63 $\mu g/m^3$ (Sumatra) based on the monitoring by EPA (1996a). Since it is not practicable to model how the emissions from the Project would affect the ambient O_3 concentrations in the region, it was assumed for purposes of this analysis that the levels potentially occurring in the NWAs and the site area would be equal to or less than the ambient concentrations monitored at Sumatra, FL (EPA, 1996a). This approach is based on the assumption that the levels monitored at Sumatra are representative of O_3 concentrations in rural locations as influenced by emissions from urban areas. The average O_3 concentration monitored at Sumatra is 63 $\mu g/m^3$ (32 ppb) for an annual average, and the second highest 1-hour concentration was 167 $\mu g/m^3$ (85 ppb). These values fall below reported 1-hour injury threshold concentrations for sensitive plants (196 to 490 $\mu g/m^3$) (Heggestad and Heck, 1971). At this time, there appears to be no studies indicating actual harm to the vegetation in the area. Given the relatively small Project contribution of O_3 precursors to regional totals (no increase in annual NO_2 emissions and a 12 tpy increase in VOCs), it can reasonably be predicted that the Project would not cause any harm to the vegetation of the NWAs or site area from O_3.

8.3.1.6 Synergistic Responses

SO_2 - NO_2 Synergism

It has been demonstrated in the literature (Tingey et al., 1971) that NO_2 in combination with certain concentrations of SO_2 can result in synergistic plant responses (i.e., leaf injury for certain species is observed at concentrations below the injury thresholds for each of these air contaminants in isolation). Maximum annual SO_2 and NO_2 concentrations (including background) are both predicted to be 35 $\mu g/m^3$. Considered in isolation, the maximum predicted annual concentrations for both NO_2 and SO_2 are well below the threshold range for sensitive vegetation. In addition, maximum annual concentrations are below the range of concentrations (262 $\mu g/m^3$ SO_2 and 188 $\mu g/m^3$ NO_2) where SO_2-NO_2 synergistic effects have been reported to

occur for certain species, and none of these species exist on or adjacent to the Project site , or in the NWAs.

Tingey et al. (1971) report that the concentrations of SO_2 and NO_2 found to cause injury in their studies were similar to those found in urban areas and may result in reduced yields of crops grown under field conditions. However, it should be noted that synergistic effects from SO_2-NO_2 have rarely been observed in the field. In addition, data on the effects on vegetation due to mixtures of SO_2 and NO_2 are limited and the general consensus of most investigators is that more research is required before SO_2-NO_2 synergism is completely understood and potential effects predicted for field situations with any degree of certainty.

There is not sufficient evidence in the literature to either support or negate the possibility that synergistic effects may occur within the NWAs as a result of the predicted annual ambient concentrations of SO_2 and NO_2. However, the predicted SO_2 and NO_2 concentrations (annual average) appear to be much less than that resulting in a synergistic response over longer exposure periods. In addition, the NO_2 and SO_2 ambient concentrations resulting from the Project are not anticipated to exceed existing levels on an annual basis. No injury effects have been noted or reported for these areas under existing conditions; therefore, no effects on vegetation from the Project operation are anticipated.

SO_2 - O_3 Synergism

Tingey et al. (1973a and 1973b) have observed that mixtures of SO_2 and O_3 at concentrations typically found in urban areas have resulted in synergistic or additive plant responses (i.e., plant leaf injury is observed at concentrations below the injury threshold levels for each of these air contaminants in isolation). There are no generalized injury threshold concentrations of SO_2-O_3 (in mixture) listed in the literature that would apply specifically to those species characteristic of the Project area or the NWAs. However, Jensen and Dochlinger (1989) have exposed red maple to low concentrations of both SO_2 (52 $\mu g/m^3$) and O_3 (137 $\mu g/m^3$) and determined that red maple is sensitive and exhibits some growth reduction when exposed to these levels.

The maximum annual ambient SO_2 concentration is predicted to be 35 $\mu g/m^3$ (including existing sources). The annual O_3 monitored concentration at Sumatra was 63 $\mu g/m^3$. Since it is not possible to model how the emissions from the Project will affect the ambient O_3 concentration in the NWAs, it was assumed for purposes of this analysis that the levels potentially occurring in both the NWAs would be equal to or less than the ambient concentrations monitored at Sumatra, FL (EPA, 1996a).

As a result of this inability to predict ambient O_3 concentrations, it is difficult to predict with certainty the synergistic effects which may or may not occur on all species in the NWAs as a result of the Project. However, the SO_2 (predicted) and O_3 (measured) concentrations (35 and 63 $\mu g/m^3$, respectively) are lower than concentrations reported as causing growth reductions in red maple (52 and 137 $\mu g/m^3$), a species typically found in the area. Since the Project is expected to have minimal effects on O_3 concentrations and no change in annual SO_2 concentrations, no significant change in impacts to vegetation due to SO_2-O_3 synergism is expected.

8.3.1.7 Sulfur and Nitrogen Deposition

Due to the growing awareness of decline in the health and vigor of forests, current research is focusing upon the effects of the addition of sulfur (S) and nitrogen (N) and associated air contaminants to forest ecosystems. Sulfur and nitrogen additions are thought to affect forests through soil influences, foliar leaching, carbon allocation, winter injury, reproduction and regeneration, and insect and pathogen influences (Fox et al., 1989). The USFWS in developing a model for evaluating proposed new source contributions to pollution loadings in Class I areas, has considered the soil influence effects of S and N deposition, expressed in kg N or S per hectare per year. Since there would be no annual increases in either the SO_2 or NO_2 emissions from the Project, there would not be any additional deposition of S or N from the Project and there are no reported adverse impacts based on current emission levels.

8.3.2 Soils

Air contaminants can affect soils through fumigation by gaseous forms, accumulation of compounds transformed from the gaseous state, or by the direct deposition of particulate matter or particulate matter to which certain contaminants are adsorbed. Gaseous fumigation of soils does not directly affect the soil but rather the organisms found in the soil. Concentrations several orders of magnitude higher than the predicted values are required before any adverse effects from fumigation would be observed. It is more likely that effects on soils and organisms (plants and animals) found in the soils could occur from the deposition of trace elements over the life of the Project. Thus, this analysis of effects on soils specifically addresses the deposition of trace elements and potential pathways for movements into the vegetation.

The contribution to the ambient concentrations of lead, beryllium, mercury, arsenic, antimony, cadmium, chromium, cobalt, manganese, nickel, selenium, and vanadium in the Project area from the Project has been predicted by the dispersion model (Table 8-2). The concentration predictions can be converted to deposition predictions by multiplying by an estimated deposition velocity. The deposition velocity assumes equal fractions for wet and dry depositions. A deposition velocity of 0.1 cm/sec (Edgerton and Lavery, 1990) has been assumed for this Project. Assuming that the trace elements deposit on the soil surface and accumulate within the first 25 cm, a basis is provided for predicting average annual increases in soil trace element levels that could potentially result in the general vicinity of the Project. Levels within the closest portion of the St. Marks NWA would essentially be equivalent, while levels within the Bradwell Bay NWA would be less than those in the immediate Project vicinity. A summary of the analysis of soil concentration increases is presented in Table 8-2.

In order to provide some perspective for the comparison of trace element concentration increases in soils as affected by the Project, and lacking specific trace element concentration data for local soils as well as soils of the NWAs, typical background trace element concentrations for soils of the eastern U.S. as reported by Shacklette and Boerngen (1984) and Dvorak et al. (1978) were used. In each reference, mean values were used with Shacklette and Boerngen (1984) as the primary data source and Dvorak et al. (1978) used to supplement data not found in Shacklette and Beorngen (1984).

Studies of model power plants by Dvorak et al. (1978), Dvorak and Pentecost et al. (1977), and Vaughan et al. (1975) predicted increases in soil trace element levels of less than 10 percent of

TABLE 8-2
SUMMARY OF ESTIMATED TRACE ELEMENT SOIL CONCENTRATIONS DUE TO OPERATION OF THE PURDOM STATION

	Maximum Project Emissions (Annual) (g/sec)	Maximum Predicted Concentrations (Annual) ($\mu g/m^3$)	Deposition Flux ($g/m^2/yr$)	Estimated Soil Concentration Increase (mg/kg/yr)	Average Background Soil Concentration (mg/kg)
Lead (Pb)	2.88E-03	2.07E-04	6.53E-06	1.74E-05	14
Beryllium (Be)	1.49E-05	1.07E-06	3.37E-08	8.99E-08	0.55
Mercury (Hg)	6.91E-05	4.97E-06	1.57E-07	4.18E-07	0.08
Arsenic (As)	2.47E-04	1.78E-05	5.60E-07	1.49E-06	4.8
Antimony (Sb)	9.92E-04	7.14E-05	2.25E-06	6.00E-06	0.52
Cadmium (Cd)	1.89E-04	1.36E-05	4.29E-07	1.14E-06	0.06
Chromium (Cr)	2.12E-03	1.52E-04	4.80E-06	1.28E-05	33
Cobalt (Co)	4.10E-04	2.95E-05	9.30E-07	2.48E-06	5.9
Manganese (Mn)	1.49E-02	1.07E-03	3.37E-05	8.99E-05	260
Nickel (Ni)	5.41E-02	3.89E-03	1.23E-04	3.27E-04	11
Vanadium (V)	2.39E-04	1.72E-05	5.42E-07	1.44E-06	0.03

Source: Foster Wheeler Environmental, 1997; Shacklette and Boerngen, 1984; and Dvorak et al., 1978

the total endogenous concentrations over the life of the model plant. It was concluded that uptake by vegetation could not increase dramatically unless the forms of the deposited trace elements were considerably more available than the endogenous forms (Dvorak and Lewis et al., 1978; Environmental Research and Technology, 1978). The estimated annual concentration increases assuming the trace elements remained in the top 25 cm of soil over this period, ranged from 8.99 x 10^{-8} to 3.27 x 10^{-4} mg/kg/yr. These predicted increases over a 30-year period would be imperceptible at the locations of predicted highest concentrations in the vicinity of the Purdom Station and would be even less perceptible in the NWAs.

8.3.3 Wildlife

Compared with other threats to wildlife, such as pesticides, the toxicological relationships between air contaminants and effects on wildlife are not well understood (Newman and Schreiber, 1988). The limited understanding is based primarily on reports of symptoms observed in the field and on information extrapolated from laboratory studies. Information on controlled wildlife studies is limited in the scientific literature. Most studies report symptoms of various air contaminants but do not provide toxicity levels. Those studies that do provide toxicity levels are limited to four air contaminants: SO_2, NO_2, O_3, and particulate matter. Accordingly, this analysis addresses only those air contaminants for which sufficient data exist. As stated earlier, only the particulate matter analysis is required under PSD review; the other pollutant impacts are being voluntarily analyzed.

Effects on wildlife from air contaminants are summarized in Table 8-3. It should be noted that most of the effects noted in Table 8-3 occur below the national primary and secondary AAQS, where the data equate to a standard. The estimated annual particulate matter concentration (42 $\mu g/m^3$), based on the estimated background plus the predicted Project contribution is approximately 0.5 percent of the concentration reported to cause respiratory stress. Because the projected particulate matter concentrations are so far below the reported injury threshold, no adverse impacts to wildlife from the Project are expected.

As shown in Table 8-3, the predicted annual SO_2 concentration of 35 $\mu g/m^3$ (Table 8-1) falls within the range of concentrations (13-157 $\mu g/m^3$, continually for 5 months) that were reported in the literature to result in a decreased abundance of deer mice. The NWAs are well outside the geographical range of the deer mouse, however, and it is included in this analysis solely as an indicator organism that has been reported in the literature. This predicted concentration (35 $\mu g/m^3$) is well below the AAQS of 60 $\mu g/m^3$ which is generally protective of human health and the environment.

The predicted 3-hour O_3 concentration of 150 $\mu g/m^3$ (based on an extrapolation of the 1-hour and annual concentrations monitored at Sumatra) is below the low end of the range of concentrations reported in the literature to induce respiratory stress and increase the susceptibility to respiratory infection in mice, rats, and rabbits (Table 8-1). Since there are no increases in annual NO_2 concentrations predicted and a relatively small increase in VOC emissions (12 tpy) predicted, it is not anticipated that the operation of the Project will result in an increase in O_3 levels that would be harmful to indigenous wildlife. The predicted 3-hour NO_2 concentration of 490 $\mu g/m^3$ from the Project and existing sources (Table 8-1) is approximately 0.25 of the concentration (1917 $\mu g/m^3$) reported to cause respiratory stress in mice. Given the fact that the predicted SO_2

TABLE 8-3
REPORTED EFFECTS IN WILDLIFE OF SELECTED AIR CONTAMINANTS

Pollutant	Concentration ($\mu g/m^3$)	Exposure	Reported Effect	Reference
Sulfur Dioxide (SO_2)	427-854	1 hour	Respiratory stress in guinea pigs	Newman and Schreiber (1988)
	267	7 hours/day 5 days/week, 10 weeks	Respiratory stress in rats	Newman and Schreiber (1988)
	13-157	Continually for 5 months	Decreased abundance of deer mice	Newman and Schreiber (1988)
Nitrogen Dioxide (NO_2)	1917	3 hours	Respiratory stress in mice	Trzeciak et al. (1977)
	96-958	8 hours/day, 122 days	Respiratory stress in guinea pigs	Gardner and Graham (1976)
Ozone (O_3)	160-200	3 hours	Respiratory stress; increased susceptibility to respiratory infection in mice rats and rabbits	Newman and Schreiber (1988)
Particulates	120 (PbO_3)	Continually for 2 months	Respiratory stress, reduced respiratory disease defenses	Newman and Schreiber (1988)
	100 ($NiCl_2$)	2 hours	Decreased respiratory disease defenses in rats and hamsters	Newman and Schreiber (1988)

Sources as indicated

and NO_x emissions from the Project would not exceed existing levels, it would not be anticipated that ambient levels due to Project operation would have any adverse impacts on wildlife.

8.4 VISIBILITY IMPACTS

Section 169A of the CAA Amendments of 1977 provides for implementation of guidelines to prevent visibility impairment in mandatory PSD Class I areas. The guidelines are intended to protect the aesthetic quality of these pristine areas from reduction in visual range and atmospheric discoloration due to various pollutants. As agreed to by the FDEP, the USFWS, and the USFS (USFWS, 1996), only emissions of PM_{10} were considered for the visibility analysis since there will be no net increase in annual emissions of SO_2 and NO_x. Further, the USFS agreed that due to the small increase in annual emissions of PM_{10} proposed, a regional haze analysis is not warranted (USFWS, 1997).

Potential Project impacts on visibility in the nearest Class I areas were to be evaluated using the VISCREEN Version 1.01 (88341) model (EPA, 1988b) in accordance with the modelling protocol (COT, 1996). However, it was determined that this and other more refined visibility models can only evaluate visibility impacts for short-term averaging periods using short-term emission rates. For the proposed Project, the future maximum short-term PM_{10} emission rates will be lower than the current values. Intuitively, this should result in some short-term improvement in visibility. However, since the VISCREEN model is not programmed to address emission reductions, the extent of the short-term improvements cannot be evaluated quantitatively.

9. CONCLUSION

The proposed project will apply BACT to control its emissions, will meet other state emission requirements, will not cause or contribute to any exceedances of AAQS or PSD increments, will not cause exceedances of FDEP's draft FARCS and will not cause any other significant air quality problems. Therefore, reasonable assurances have been provided to support FDEP's issuance of a PSD permit for the Project.

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APPENDIX A

GENERAL ELECTRIC INFORMATION

APPENDIX A

The attached performance data for the Unit 8 combustion turbine have been developed by General Electric (GE) based on analyses and laboratory testing as noted in the attached letter from GE Power Generation Engineering. The letter reports that GE's Dry Low-NOx (DLN) program achieved its 9 ppm NO_x (corrected to 15% O_2) goal at base load in March of 1996. The tested unit had a Frame 7FA configuration and a firing temperature of 2350 °F. The unit proposed for this project is a Frame 7FA with a higher firing temperature of 2400 F. GE reports that testing and commissioning of the first 2400 °F system is scheduled for this summer. The attached technical paper describes DLN operation.

GE Power Generation
Engineering

February 24, 1997

Mr. Frank C. Michel
Project Manager
Raytheon Engineers & Constructors, Inc.
145 Technology Park
Norcross, GA 30092

Subject: City of Tallahassee
S.O. Purdom Generating Station Unit No. 8
DLN Combustor Status

The following provide responses to your questions presented by your letter of Feb. 14, received on Feb. 18, 1997:

1) DLN-2.6 Time Line: The DLN-2.6 development program was initiated in late 1994 with the goal of reaching 9 ppm NOx (corrected to 15% O2) emissions at base load. Analyses and laboratory testing were performed during 1995, followed by manufacture of the first set of production hardware. The first unit reached base load in March of 1996 with emissions of less than 9 ppm in a 7FA configuration with a firing temperature of 2350 F. Improvements were made to the end cover and cap for increased durability in December 1996. Re-commissioning was performed and base load NOx levels were measured at less than 9 ppm.
2) The first 7FA DLN2.6 combustor firing at 2400 F is planned to be in commercial operation this summer. The combustion hardware configuration is unchanged from the 2350 F firing temperature system. Base load NOx levels are expected to remain below 9 ppm based upon analytical predictions. The increase in firing temperature is a result of improvements to the turbine and compressor sections. Combustion reaction zone temperature is relatively un-affected by the up-grade.
3) The DLN-2.6 combustion system has demonstrated less than 9 ppm NOx levels at base load. Therefore, no emissions extensions will be necessary for the Purdom Generating Station Unit No. 8.
4) Commissioning and field testing of the first 2400 F system will be performed this summer. For this application, the contract calls for less than 15 ppm NOx. The system is designed to achieve less than 9 ppm NOx at base load with continued testing.

Sincerely,

Christian Vandervort
Technical Leader (Acting), DLN2.6 Product

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

DRY LOW NO_x COMBUSTION SYSTEMS FOR GE HEAVY-DUTY GAS TURBINES

L.B. Davis
GE Power Systems
Schenectady, NY

ABSTRACT

State-of-the-art emissions control technology for heavy-duty gas turbines is reviewed with emphasis on the operating characteristics and field experience of Dry Low NO_x (DLN) combustors for E- and F- technology machines. The lean premixed DLN systems for gas fuel have demonstrated their ability to meet the ever-lower emission levels required today. Lean premixed technology has also been demonstrated on oil fuel and is also discussed.

INTRODUCTION

The regulatory requirements for low emissions from gas turbine power plants have increased during the past 10 years. Environmental agencies throughout the world are now requiring even lower rates of emissions of NO_x and other pullutants from both new and existing gas turbines. Traditional methods of reducing NO_x emissions from combustion turbines (water and steam injection) are limited in their ability to reach the extremely low levels required in many localities. GE's involvement in the development of both the traditional methods (References 1 through6) and the newer Dry Low NO_x (DLN) technology (References 7 and 8) has been well-documented. This paper focuses on DLN.

Since the commercial introduction of GE's DLN combustion systems for natural-gas-fired heavy-duty gas turbines in 1991, systems have been installed in more than 145 machines, from the most modern F technology (firing temperature class of 2400 F/1316 C) to field retrofits of older machines. As of August 1996, these machines have operated more than one million hours with DLN; more than 290,000 hours have been in the F technology. To meet marketplace demands, GE has developed DLN products broadly classified as either DLN-1, which was developed for E-technology (2000 F/1093 C firing temperature class) machines, or DLN-2, which was developed specifically for the F technology machines and is also being applied to the EC, G and H machines.

Development of these products has required an intensive engineering effort involving both GE Power Systems and GE Corporate Research and Development. This collaboration will continue as DLN is applied to the G and H machines and combustor development for Dry Low NO_x on oil ("dry oil") continues.

This paper presents the current status of DLN-1 technology and experience, including dry oil, and of DLN-2 technology and experience. Background information about gas turbine emissions and emissions control is contained in the Appendix.

DRY LOW NO_x SYSTEMS

Dry Low NO_x Product Plan

Figure 1 shows GE's Dry Low NO_x product offerings for its new and existing machines in three major groupings. The first group includes the MS3000, MS5000 and MS6001B products. The 6B DLN-1 is the technology flagship product for this group and, as can be noted, is available to meet 9 ppm NO_x requirements. Such low NO_x emissions are generally not attainable on lower firing temperature machines such as the MS3000s and MS5000s because carbon monoxide (CO) would be excessive.

The second major group includes the MS7000B/E, MS7001EA and MS9001E machines with the 9 ppm 7EA DLN-1 as the flagship product. The dry oil program focuses initially on this group.

The third group combines all of the DLN-2 products and includes the FA, EC, G and H machines, with the 7FA product as the flagship.

As shown in Figures 2 and 3, most of these products are capable of power augmentation and of peak firing with increased NO_x emissions. With gas fuel, power augmentation with steam is in the premixed mode for both DLN-1 and DLN-2 systems. Power augmentation with water is in the lean-lean mode for DLN-1 and in the premixed mode for DLN-2.

The GE DLN systems integrate a staged pre-

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Turbine Model	Gas			Distillate		
	NO_x (ppmvd)	CO (ppmvd)	Diluent	NO_x (ppmvd)	CO (ppmvd)	Diluent
MS3002 (J) - RC	33	25	Dry	Not Available		
MS3002 (J) - SC	42	50	Dry			
MS5001P	42	50	Dry	65	20	Water
MS5001R	42	50	Dry	65	20	Water
MS5002C	42	50	Dry	65	20	Water
MS6001 B	25	15	Dry	42	20	Water
	9	25	Dry	42	30	Water/Steam
MS6001 FA	25	15	Dry	42/65	20	Water/Steam
MS7001 B/E Conv	25	25	Dry	42	30	Water
MS7001 EA	25	15	Dry	42	20	Water
	15	25	Dry	42	30	Water/Steam
	9	25	Dry	42	30	Water/Steam
MS7001 EC	25	15	Dry	42/65	20	Water/Steam
MS7001 FA	25	15	Dry	42/65	20	Water/Steam
	9	9	Dry	42/65	30	Water/Steam
MS9001 E	35	15	Dry	42	20	Water
	25	25	Dry	42	20	Water
	25	25	Dry	90	20	Dry
MS7001 H	25	15	Dry	42/65	20	Water/Steam
	9	9	Dry	42/65	30	Water/Steam
MS9001 EC	25	15	Dry	42/65	20	Water/Steam
MS9001 FA	25	15	Dry	42/65	20	Water/Steam
MS9001 H	25	15	Dry	42/65	20	Water/Steam

Notes: 1. NO_x levels are at 15% oxygen. Ambient range 30 F/-1 C to 100 F/38 C

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Figure 1. Dry Low NO_x product plan

mixed combustor, the gas turbine's SPEEDTRONIC™ controls and the fuel and associated systems. There are two principal measures of performance. The first is meeting the emission levels required at base load on both gas and oil fuel and controlling the variation of these levels across the load range of the gas turbine.

The second measure is system operability, with emphasis placed on the smoothness and reliability of combustor mode changes, ability to load and unload the machine without restriction, capability to switch from one fuel to another and back again, and system response to rapid transients (e.g., generator breaker open events or rapid swings in load). GE's design goal is to make the DLN system operate so the gas turbine operator does not know whether a DLN or conventional combustion system is installed (i.e., its operation is "transparent to the user"). As of August 1996, a significant portion of the DLN design and development effort has focused on system operability.

Design of a successful DLN combustor for a heavy-duty gas turbine also requires the designer to develop hardware features and operational

Turbine Model	NO_x @15% O_2 (ppmvd)	Operating Mode	Diluent	Maximum Diluent/Fuel	NO_x at Max D/F (ppmvd)	CO Max D/F (ppmvd)
MS6001(B)	9	Premix	Steam	2.5/1	9	25
		Lean-Lean	Steam	2.5/1	25	15
	25	Premix	Steam	2.5/1	25	15
		Lean-Lean	Water	1.5/1	25	15
		Lean-Lean	Steam	2.5/1	25	15
MS7001(EA)	9	Premix	Steam	2.5/1	9	25
		Lean-Lean	Water	1.5/1	25	15
		Lean-Lean	Steam	2.5/1	25	15
	25	Premix	Steam	2.5/1	25	15
		Lean-Lean	Water	1.5/1	25	15
		Lean-Lean	Steam	2.5/1	25	15
MS7001(FA)	25	Premix	Steam	2.1/1	25	15

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Figure 2. DLN power augmentation summary — gas fuel

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	NO_x-Base (ppmvd)	NO_x-Peak (ppmvd)	CO-Base (ppmvd)	CO-Peak (ppmvd)
MS6001(B)	9 25	18 50	25 15	6 4
MS7001(EA)	9 25	18 50	25 15	6 4
MS7001(FA)	25	35	15	6
MS9001(E)	25	40	15	6

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Figure 3. DLN peak firing summary — gas fuel

methods that simultaneously allow the equivalence ratio and residence time in the flame zone to be low enough to achieve low NO_x, but with acceptable levels of combustion noise (dynamics), stability at part load operation and sufficient residence time for CO burn-out, hence the designation of DLN combustion design as "four-sided box" (Figure 4).

A scientific and engineering development program by GE's Corporate Research and Development Center, Power Systems business and Aircraft Engine business has focused on understanding and controlling dynamics in lean premixed flows. The objectives have been to:

- Gather and analyze machine and laboratory data to create a comprehensive dynamics data base
- Create analytical models of gas turbine combustion systems that can be used to understand dynamics behavior
- Use the analytical models and experimental methods to develop methods to control dynamics

As of August 1996, these efforts have resulted in a large number of hardware and control features that limit dynamics, plus analytical tools that are used to predict system behavior. The latter are particularly useful in correlating laboratory test data from full scale combustors with actual gas turbine data.

DLN-1 System

DLN-1 development began in the 1970s with the goal of producing a dry oil system to meet the United States Environmental Protection Agency's New Source Performance Standards of 75 ppmvd NO_x at 15% O_2. As noted in Reference 7, this system was tested on both oil and gas fuel at Houston Lighting & Power in

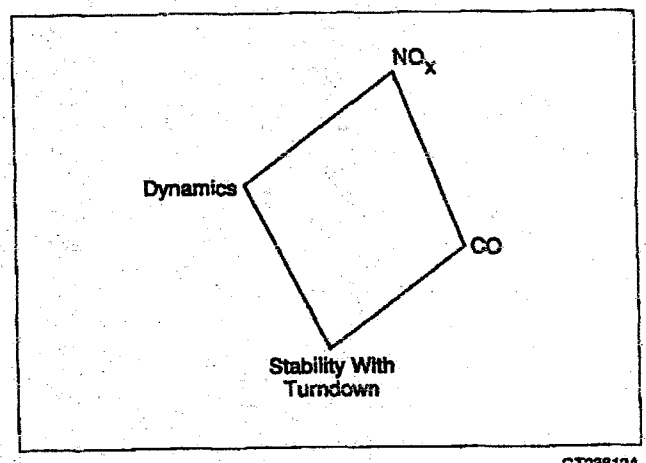

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Figure 4. DLN technology — a four-sided box

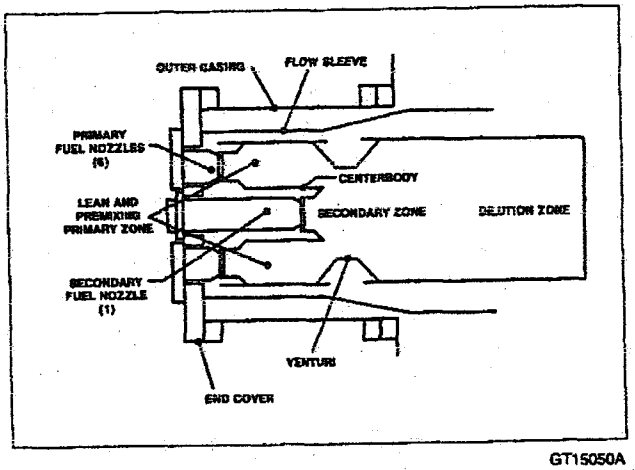

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Figure 5. DLN-1 combustor schematic

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1980 and met its emission goals. Subsequent to this, DLN program goals changed in response to stricter environmental regulations and the pace of the program accelerated in the late 1980s.

DLN-1 Combustor

The GE DLN-1 combustor (shown in cross section in Figure 5 and described in Reference 8) is a two-stage premixed combustor designed for use with natural gas fuel and capable of operation on liquid fuel. As shown, the combustion system includes four major components: fuel injection system, liner, venturi and cap/centerbody assembly.

These components form two stages in the combustor. In the premixed mode, the first stage thoroughly mixes the fuel and air and delivers a uniform, lean, unburned fuel-air mixture to the second stage.

The GE DLN-1 combustion system operates in four distinct modes, illustrated in Figure 6, during pre-mixed natural gas or oil fuel operation:

Mode	Operating Range
Primary	Fuel only to the primary nozzles. Flame is in the primary stage only. This mode of operation is used to ignite, accelerate and operate the machine over low- to mid-loads, up to a preselected combustion reference temperature.
Lean-Lean	Fuel to both the primary and secondary nozzles. Flame is in both the primary and secondary stages. This mode of operation is used for intermediate loads between two pre-selected combustion reference temperatures.
Secondary	Fuel to the secondary nozzle only. Flame is in the secondary zone only. This mode is a transition state between lean-lean and premix modes. This mode is necessary to extinguish the flame in the primary zone, before fuel is reintroduced into what becomes the primary premixing zone.
Premix	Fuel to both primary and secondary nozzles. Flame is in the secondary stage only. This mode of operation is achieved at and near the combustion reference temperature design point. Optimum emissions are generated in premix mode.

The load range associated with these modes varies with the degree of inlet guide vane modulation and, to a smaller extent, with the ambient temperature. At ISO ambient, the premix operating range is 50% to 100% load with IGV modulation down to 42°, and 75% to 100% load with IGV modulation down to 57°. The 42° IGV minimum requires an inlet bleed heat system.

If required, both the primary and secondary fuel nozzles can be dual-fuel nozzles, thus allowing automatic transfer from gas to oil throughout the load range. When burning either natural gas or distillate oil, the system can operate to full load in the lean-lean mode (Figure 6) and in the pre-mixed. Power augmentation with water is the most common reason.

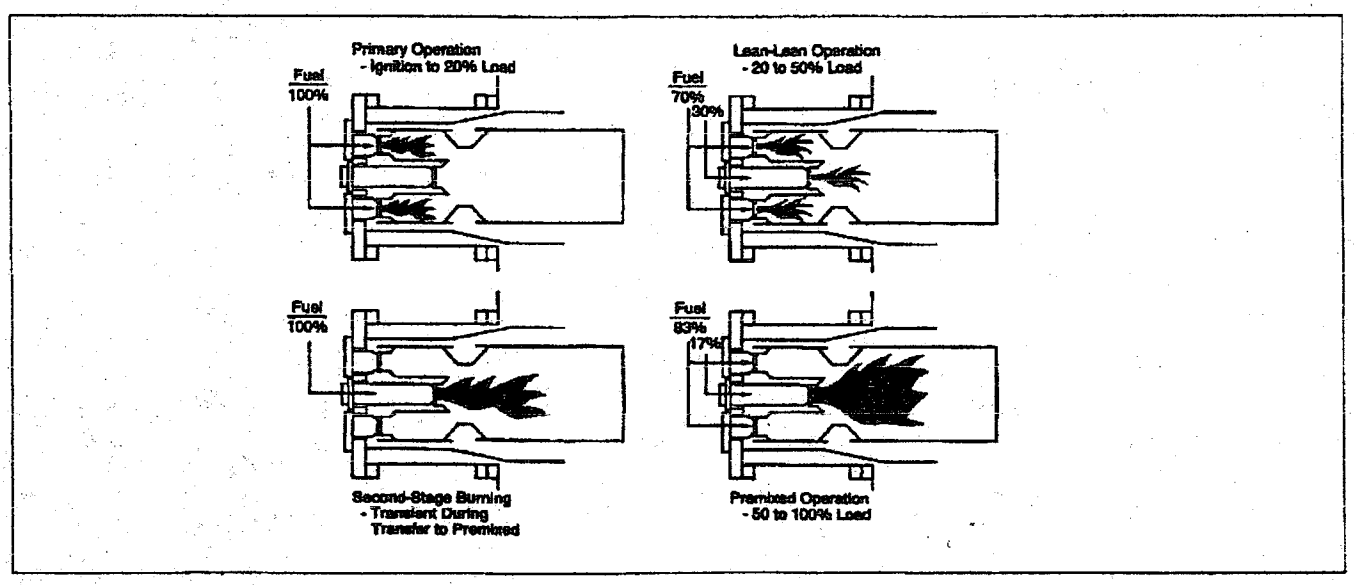

Figure 6. Fuel-staged Dry Low NO_x operating modes

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The spark plug and flame detector arrangements in a DLN-1 combustor are different from those used in a conventional combustor. Since the first stage must be re-ignited at high load in order to transfer from the premixed mode back to lean-lean operation, the spark plugs do not retract. One plug is mounted in a primary zone cup in each of two combustors. The system uses flame detectors to view the primary stage of selected chambers (similar to conventional systems), and secondary flame detectors that look through the centerbody and into the second stage.

The primary fuel injection system is used during ignition and part load operation. The system also injects most of the fuel during premixed operation and must be capable of stabilizing the flame. For this reason, the DLN-1 primary fuel nozzle is similar to GE's MS7001EA multi-nozzle combustor with multiple swirl-stabilized fuel injectors. The GE DLN-1 system uses five primary fuel nozzles for the MS6001B and smaller machines and six primary fuel nozzles for the larger machines. This design is capable of providing a well-stabilized diffusion flame that burns efficiently at ignition and during part load operation.

In addition, the multi-nozzle fuel injection system provides a satisfactory spatial distribution of fuel flow entering the first-stage mixer. The primary fuel-air mixing section is bound by the combustor first-stage wall, the cap/centerbody and the forward cone of the venturi. This volume serves as a combustion zone when the combustor operates in the primary and lean-lean modes. Since ignition occurs in this stage, crossfire tubes are installed to propagate flame and to balance pressures between adjacent chambers. Film slots on the liner walls provide cooling, as they do in a standard combustor.

In order to achieve good emissions performance in premixed operation, the fuel-air equivalence ratio of the mixture exiting the first-stage mixer must be very lean. Efficient and stable burning in the second stage is achieved by providing continuous ignition sources at both the inner and outer surfaces of this flow. The three elements of this stage comprise a piloting flame, an associated aerodynamic device to force interaction between the pilot flame and the inner surface of the main stage flow, and an aerodynamic device to create a stable flame zone on the outer surface of the main stage flow exiting the first stage.

The piloting flame is generated by the secondary fuel nozzle, which premixes a portion of the natural gas fuel and air (nominally, 17% at full-load operation) and injects the mixture through a swirler into a cup where it is burned. This flame is stabilized by burning an even smaller amount of fuel (less than 2% of the total fuel flow) as a diffusion flame in the cup. The secondary nozzle, which is mounted in the cap centerbody, is simple and highly effective for creating a stable flame.

A swirler mounted on the downstream end of the cap/centerbody surrounds the secondary nozzle. This creates a swirling flow that stirs the interface region between the piloting flame and the main-stage flow and ensures that the flame is continuously propagated from the pilot to the inner surface of the fuel-air mixture exiting the first stage. Operation on oil fuel is similar except that all of the secondary oil is burned in a diffusion flame in the current dry oil design.

The sudden expansion at the throat of the venturi creates a toroidal recirculation zone over the downstream conical surface of the venturi. This zone, which entrains a portion of the venturi cooling air, is a stable burning zone that acts as an ignition source for the main stage fuel-air mixture. The cone angle and axial location of the venturi cooling air dump have significant effects on the efficacy of this ignition source. Finally, the dilution zone (the region of the combustor immediately downstream from the flame zone in the secondary) provides a region for CO burnout and for shaping the gas temperature profile exiting the combustion system.

DLN-1 Controls and Accessories

The gas turbine accessories and control systems are configured so that operation on a DLN-equipped turbine is essentially identical to that of a turbine equipped with a conventional combustor. This is accomplished by controlling the turbines in identical fashions, with the exhaust temperature, speed and compressor discharge pressure establishing the fuel flow and compressor inlet guide vane position.

A turbine with a conventional diffusion combustor that uses diluent injection for NO_x control will use an underlying algorithm to control steam or water injection. This algorithm will use top level control variables (exhaust temperature, speed, etc.) to establish a steam-to-fuel or water-to-fuel ratio to control NO_x.

In a similar fashion, the same variables are used to divide the total turbine fuel flow between the primary and secondary stages of a DLN combustor. The fuel division is accom-

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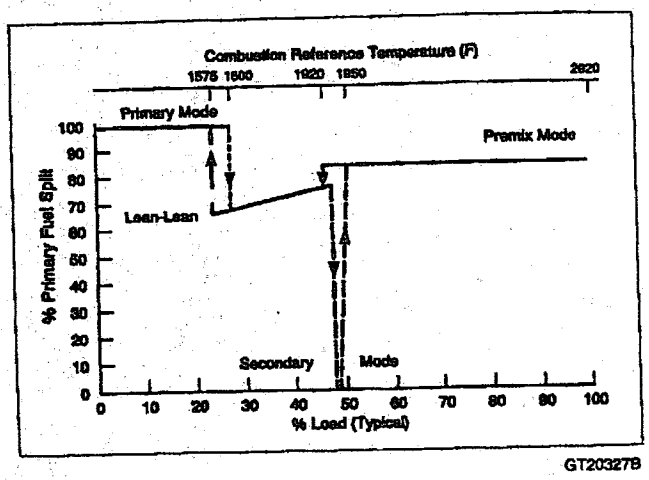

Figure 7. Typical Dry Low NO_x fuel gas split schedule

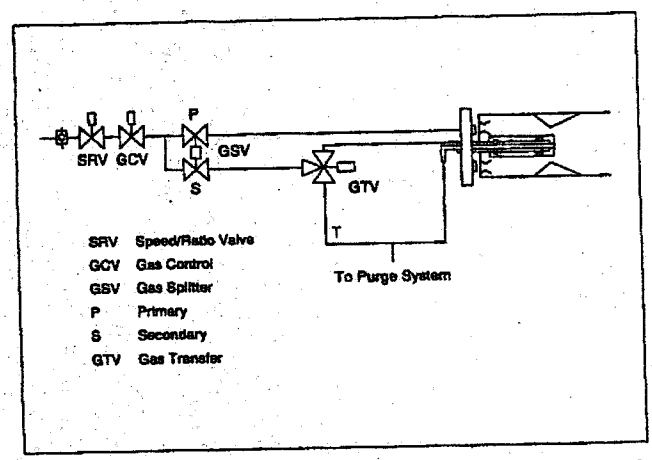

Figure 8. DLN-1 gas fuel system

plished by commanding a calibrated splitter valve to move to a set position based on the calculated combustion reference temperature (Figure 7). Figure 8 shows aschematic of the gas fuel system for a DLN-equipped turbine.

The only special control sequences required are concerned protection of the turbine during a generator breaker-open trip, or flashback, from the second stage to the first stage during premixed operation. When either the breaker opens at load or flashback is sensed by ultraviolet flame detectors looking into the first stage, the splitter valve is commanded to move to a pre-determined position. In the case of a flashback, the control system can execute an automatic sequence to return to premixed, full-load operation.

DLN-1 Emissions

The emissions performance of the GE DLN system can be illustrated as a function of load for a given ambient temperature and turbine configuration. Figures 9 and 10 show the NO_x and CO emissions from typical MS7001EA and MS6001B DLN systems designed for 9 ppmvd NO_x and 25 ppm CO when operated on natural gas fuel. Note that in premixed operation, NO_x is generally highest at higher loads and CO only approaches 25 ppm at lower premixed loads.

Figures 11 and 12 show NO_x and CO emissions for the same systems operated on oil fuel with water injection for NO_x control, rather than premixed oil. These figures are for units equipped with inlet bleed heat and extended IGV modulation. NO_x and CO emissions from the DLN combustor at loads less than 20% of base load are similar to those from standard combustion systems. This result is expected because both systems are operating as diffusion flame combustors in this range. Between 20% and 50% load, the DLN system is operated in the lean-lean mode, and the flow split between the primary fuel nozzles and secondary nozzle is varied to give the decreasing NO_x characteristic shown.

From 50% to 100% load, the DLN system operates as a lean premixed combustor. As shown in

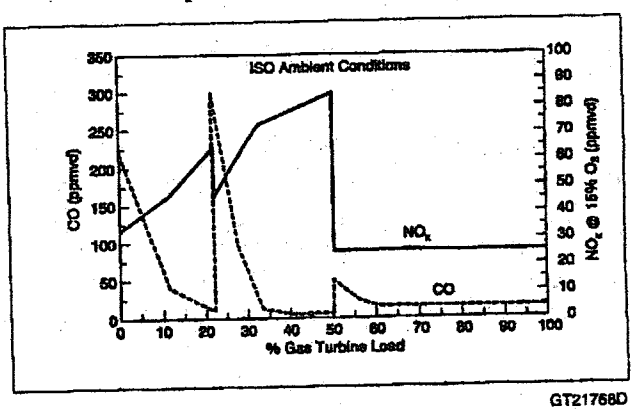

Figure 9. MS7001EA/MS9001E DLN-1 combustion system performance on natural gas fuel

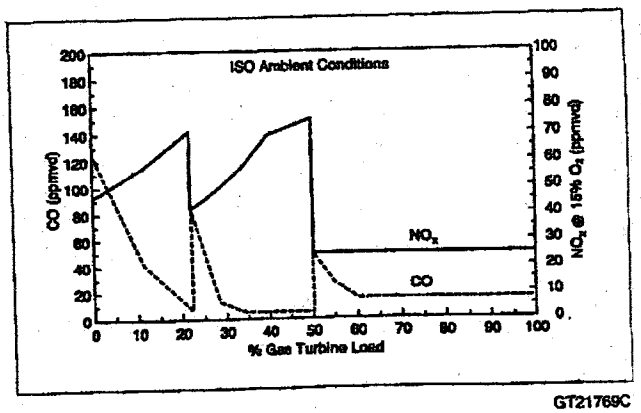

Figure 10. MS6001B DLN-1 emissions performance on natural gas fuel

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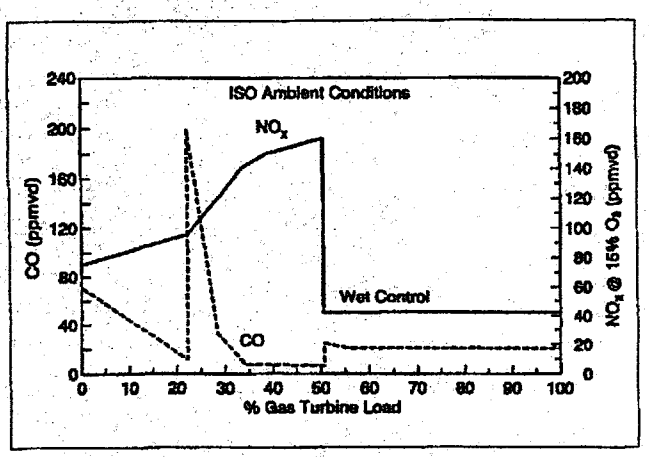

Figure 11. MS7001EA/MS9001E DLN-1 combustion system performance on distillate oil

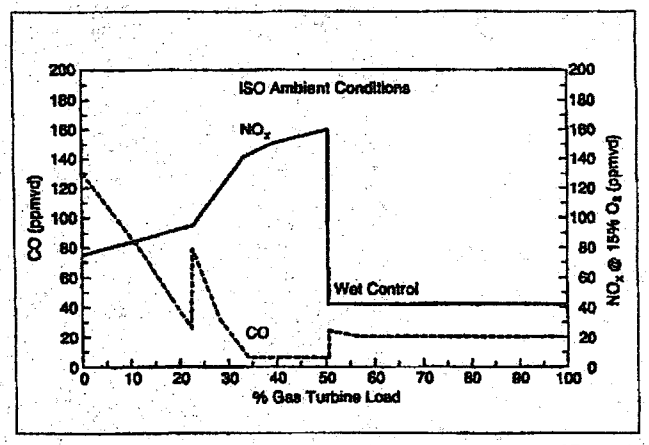

Figure 12. MS6001B DLN-1 emissions performance on distillate oil fuel

Figures 9 through 12, NO_x emissions are significantly reduced, while CO emissions are comparable to those from the standard system.

DLN-1 Experience

GE's first DLN-1 system was tested at Houston Lighting & Power in 1980 (Reference 7). A prototype DLN system using the combustor design discussed above was tested on an MS9001E at the Electricity Supply Board's (ESB) Northwall Station in Dublin, Ireland, between October 1989 and July 1990. A comprehensive engineering test of the prototype DLN combustor, controls and associated systems was conducted with NO_x levels of 32 ppmvd (at 15% O_2) obtained at base load. The results were incorporated into the design of prototype systems for the MS7001E and MS6001B.

The 7E DLN-1 prototype was tested at Anchorage Municipal Light and Power (AMLP) in early 1991 and entered commercial service shortly afterward. Since then, development of advanced combustor configurations have been carried out at AMLP. These results have been incorporated into production hardware.

The MS6001B prototype system was first operated at Jersey Central Power & Light's Forked River Station in early 1991. A series of additional tests culminated in the demonstration of a 9 ppm combustor at Jersey Central in November 1993.

As of August 1996, 28 MS6001B machines are equipped with DLN-1 systems. In total, they have accumulated more than 370,000 hours of operation. There are, in addition, four MS7001E, eight MS7001B-E, 26 MS7001EA, 18 MS9001E, one MS5001P and three MS3002J DLN-1 machines that have collectively operated for more than 350,000 hours. Excellent emission results have been obtained in all cases, with single-digit NO_x and CO achieved on several MS7001EAs. Several MS7001E/EA machines have the capability to power augment with either massive water or steam injection.

Starting in early 1992, eight MS7001F machines equipped with GE DLN systems were placed in service at Korea Electric Power Company's Seoinchon site. These F technology machines have achieved better than 55% (gross) efficiency in combined-cycle operation, and the DLN systems are currently operating between 30 and 40 ppmvd NO_x on gas fuel (the guarantee level is 50 ppmvd). These units have operated for more than 150,000 hours. Four additional F technology DLN-1 systems have been commissioned at Scottish Hydro's Keadby site and at National Power's Little Barford site. These 9F machines have operated more than 20,000 hours at less than 60 ppm NO_x.

The combustion laboratory testing and field operation have shown that the DLN-1 system can achieve single digit NO_x and CO levels on E technology machines operating on gas fuel. Current DLN-1 development activity focuses on four goals:

- Application of single-digit technology to the MS6001B, MS7001EA and MS9001E
- Application of DLN-1 technology for retrofitting existing field machines (including MS3002s and MS5000s, some of which will require upgrade before DLN retrofit)
- Completing the development of steam and water power augmentation as needed by the market
- Completing the development of dry oil DLN-1 products.

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DLN-2 SYSTEM

As F-technology gas turbines became available in the late 1980s, studies were conducted to establish what type of DLN combustor would be needed for these new higher firing temperature machines. Studies concluded that that air usage in the combustor (e.g., for cooling) other than for mixing with fuel would have to be strictly limited. A team of engineers from GE Power Generation, GE Corporate Research and Development and GE Aircraft Engine proposed a design that repackaged DLN-1 premixing technology but eliminated the venturi and centerbody assemblies that require cooling air.

The resulting combustor is called DLN-2, which is the standard system for the 6FA, 7FA, 9FA, 9EC, 7G, 7H, 9G and 9H machines. Fourteen combustors are installed in the 7FA and 9EC, 18 in the 9FA, and six in the 6FA. These combustors, for all but the 7FA, are not scaled, but are full-size 9FA combustors; the 7FA is slightly smaller.

DLN-2 Combustion System

The DLN-2 combustion system shown in Figure 13 is a single-stage dual-mode combustor that can operate on both gaseous and liquid fuel. On gas, the combustor operates in a diffusion mode at low loads (< 50% load), and a premixed mode at high loads (> 50% load). While the combustor can operate in the diffusion mode across the load range, diluent injection would be required for NO_x abatement. Oil operation on this combustor is in the diffusion mode across the entire load range, with diluent injection used for NO_x control.

Each DLN-2 combustor system has a single burning zone formed by the combustor liner and the face of the cap. In low emissions operation, 90% of the gas fuel is injected through radial gas injection spokes in the premixer, and combustion air is mixed with the fuel in tubes surrounding each of the five fuel nozzles. The premixer tubes are part of the cap assembly. The fuel and air are thoroughly mixed, flow out of the five tubes at high velocity and enter the burning zone where lean, low-NO_x combustion occurs. The vortex breakdown from the swirling flow exiting the premixers, along with the sudden expansion in the liner, are mechanisms for flame stabilization. The DLN-2 fuel nozzle/premixer tube arrangement is similar in design and technology to the secondary nozzle/centerbody of a DLN-1. Five nozzle/premixer tube assemblies are located on the head end of the combustor. A quaternary fuel manifold is located on the circumference of the combustion casing to bring the remaining fuel flow to casing injection pegs located radially around the casing.

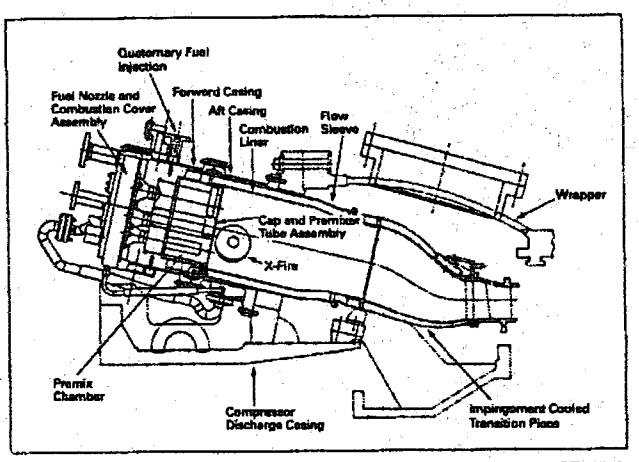

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Figure 13. DLN-2 combustion system

Figure 14 shows a cross-section of a DLN-2 fuel nozzle. As noted, the nozzle has passages for diffusion gas, premixed gas, oil and water. When mounted on the end cover, as shown in Figure 15, the diffusion passages of four of the fuel nozzles is fed from a common manifold, called the primary, that is built into the end cover. The premixed passage of the same four nozzles are fed from another internal manifold called the secondary. The premixed passages of the remaining nozzle are supplied by the tertiary fuel system; the diffusion passage of that nozzle is always purged with compressor discharge air and passes no fuel.

Figure 15 shows the fuel nozzles installed on the combustion chamber end cover and the

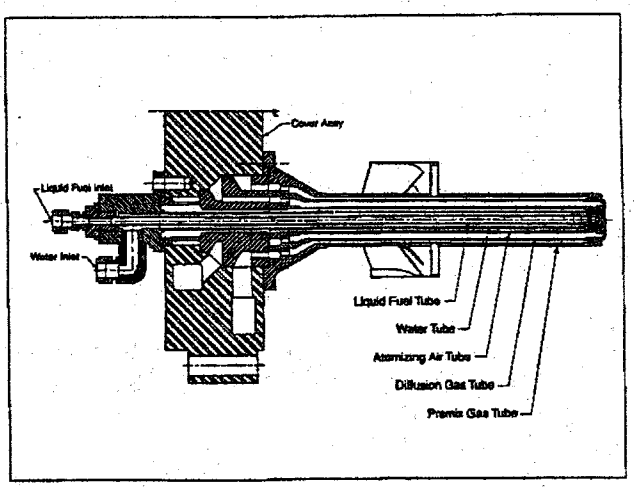

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Figure 14. Cross-section of a DLN-2 fuel nozzle

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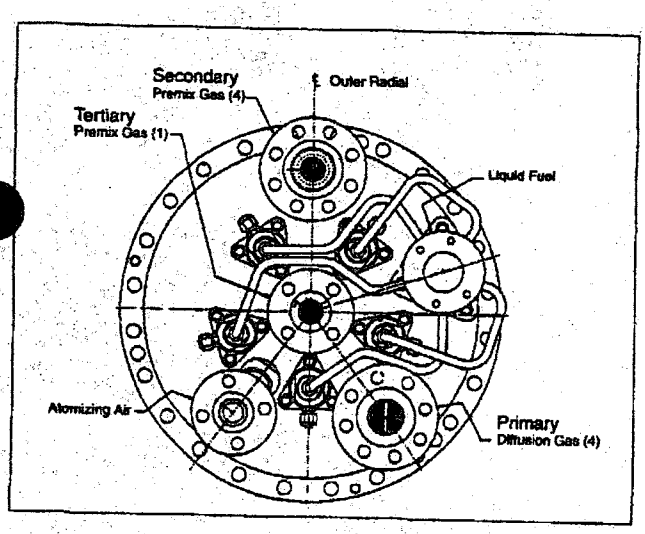

Figure 15. External view of DLN-2 fuel nozzles mounted

connections for the primary, secondary and tertiary fuel systems. DLN-2 fuel streams are:

- Primary fuel — fuel gas entering through the diffusion gas holes in the swirler assembly of each of the outboard four fuel nozzles
- Secondary fuel — premix fuel gas entering through the gas metering holes in the fuel gas injector spokes of each of the outboard four fuel nozzles
- Tertiary fuel — premix fuel gas delivered by the metering holes in the fuel gas injector spokes of the inboard fuel nozzle
- The quaternary system — injects a small amount of fuel into the airstream just upstream from the fuel nozzle swirlers

The DLN-2 combustion system can operate in several different modes.

Primary

Fuel only to the primary side of the four fuel nozzles; diffusion flame. Primary mode is used from ignition to 81% corrected speed.

Lean-Lean

Fuel to the primary (diffusion) fuel nozzles and single tertiary (premixing) fuel nozzle. This mode is used from 81% corrected speed to a preselected combustion reference temperature. The percentage of primary fuel flow is modulated throughout the range of operation as a function of combustion reference temperature. If necessary, lean-lean mode can be operated throughout the entire load range of the turbine. Selecting "lean-lean base on" locks out premix operation and enables the machine to be taken to base load in lean-lean.

Premix Transfer

Transition state between lean-lean and premix modes. Throughout this mode, the primary and secondary gas control valves modulate to their final position for the next mode. The premix splitter valve is also modulated to hold a constant tertiary flow split.

Piloted Premix

Fuel is directed to the primary, secondary and tertiary fuel nozzles. This mode exists while operating with temperature control off as an intermediate mode between lean-lean and premix mode. This mode also exists as a default mode out of premix mode and, in the event that premix operating is not desired, piloted premix can be selected and operated to base load. Primary, secondary and tertiary fuel split are constant during this mode of operation.

Premix

Fuel is directed to the secondary, tertiary and quaternary fuel passages and premixed flame exists in the combustor. The minimum load for premixed operation is set by the combustion reference temperature and IGV position. It typically ranges from 50% with inlet bleed heat on to 65% with inlet bleed heat off. Mode transition from premix to piloted premix or piloted premix to premix, can occur whenever the combustion reference temperature is greater than 2200 F/1204 C. Optimum emissions are generated in premix mode.

Tertiary Full Speed No Load (FSNL)

Initiated upon a breaker open event from any load greater than 12.5%. Fuel is directed to the tertiary nozzle only and the unit operates in secondary FSNL mode for a minimum of 20 seconds, then transfers to lean-lean mode.

Figure 16 illustrates the fuel flow scheduling associated with DLN-2 operation. Fuel staging depends on combustion reference temperature and IGV temperature control operation mode.

DLN-2 Controls and Accessories

The DLN-2 control system regulates the fuel distribution to the primary, secondary, tertiary and quaternary fuel system. The fuel flow distribution to each combustion fuel system is a function of combustion reference temperature and IGV temperature control mode. Diffusion, piloted premix and premix flame are established by changing the distribution of fuel flow in the combustor. The gas fuel system (Figure 17) consists of the gas fuel stop/ratio valve, primary gas

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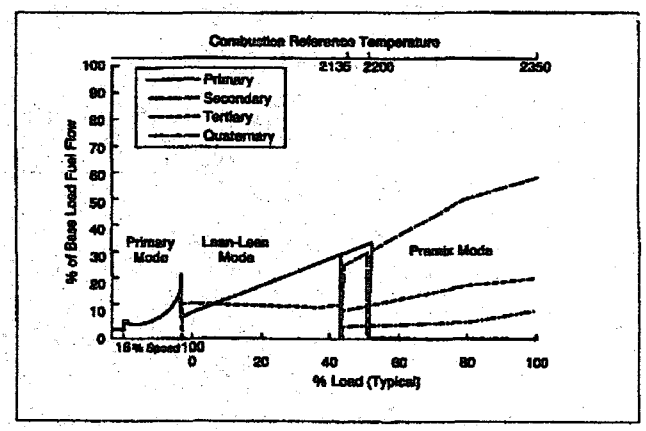

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Figure 16. Fuel flow scheduling associated with DLN-2 operation

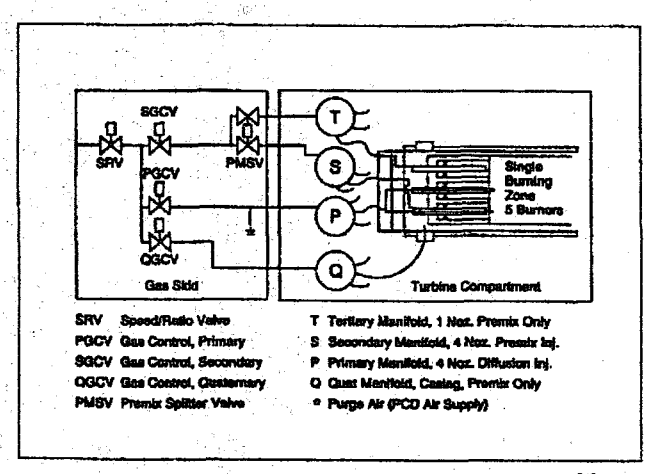

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Figure 17. DLN-2 gas fuel system

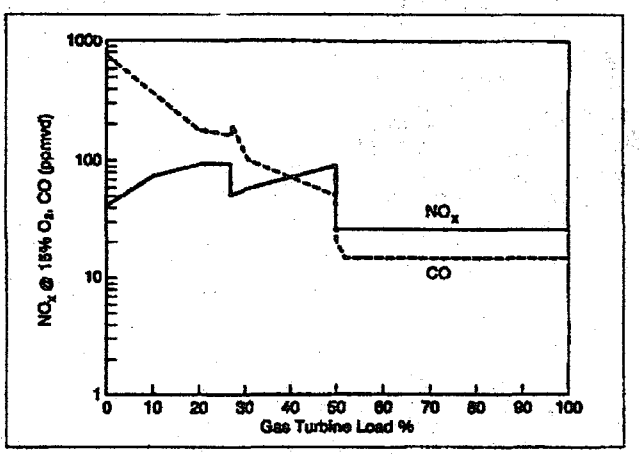

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Figure 18. Emissions performance for DLN-2-equipped 7FA/9FA for gas fuel

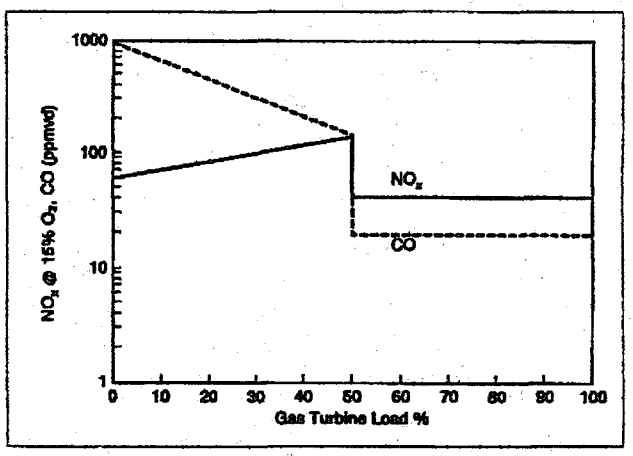

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Figure 19. Emissions performance for DLN-2-equipped 7FA/9FA for oil fuel with water injection

control valve, secondary gas control valve premix splitter valve and quaternary gas control valve. The stop/ratio valve is designed to maintain a predetermined pressure at the control valve inlet.

The primary, secondary and quaternary gas control valves regulate the desired gas fuel flow delivered to the turbine in response to the fuel command from the SPEEDTRONIC™ controls.

The premix splitter valve controls the fuel flow split between the secondary and tertiary fuel system.

DLN-2 Emissions Performance

Figures 18 and 19 show the emissions performance for a DLN-2 equipped 7FA/9FA for gas fuel and for oil fuel with water injection.

DLN-2 Experience

The first DLN-2 systems were placed in service at Florida Power and Light's Martin Station with commissioning beginning in September 1993, and the first two (of four) 7FA units entering commercial service in February 1994. During commissioning, quaternary fuel was added and other combustor modifications were made to control dynamic pressure oscillations in the combustor.

As of August 1996, 23 DLN-2 7FA and 17 9FA units are in commercial service. They have accumulated more than 150,000 hours of operation. Of these units, 11 are dual-fuel units, and the remainder are gas-only.

CONCLUSION

GE's Dry Low NO_X Program continues to focus on the development of systems capable of the extremely low NO_X levels required to meet

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today's regulations and to prepare for more stringent requirements in the future. New unit production needs and the requirements of existing machines, are being addressed. GE DLN systems are operating on more than 145 machines and have accumulated more than one million service hours. More than 200 DLN systems have been either put into service, shipped or placed on order. GE is the only manufacturer with F technology machines operating below 25 ppmvd.

APPENDIX

Gas Turbine Combustion Systems

A gas turbine combustor mixes large quantities of fuel and air and burns the resulting mixture. In concept the combustor is comprised of a fuel injector and a wall to contain the flame. There are three fundamental factors and practical concerns that complicate the design of the combustor: equivalence ratio, flame stability, and ability to operate from ignition through full load.

Equivalence ratio

A flame burns best when there is just enough fuel to react with the available oxygen. With this stoichiometric mixture (equivalence ratio of 1.0) the flame temperature is the highest and the chemical reactions are the fastest, compared to cases where there is either more oxygen ("fuel lean," < 1.0) or less oxygen ("fuel rich," > 1.0) for the amount of fuel present.

In a gas turbine, the maximum temperature of the hot gases exiting the combustor is limited by the tolerance of the turbine nozzles and buckets. This temperature corresponds to an equivalence ratio of 0.4 to 0.5 (40 to 50% of the stoichiometric fuel flow). In the combustors used on modern gas turbines, this fuel-air mixture would be too lean for stable and efficient burning. Therefore, only a portion of the compressor discharge air is introduced directly into the combustor reaction zone (flame zone) to be mixed with the fuel and burned. The balance of the airflow either quenches the flame prior to the combustor discharge entering the turbine or to cool the wall of the combustor.

Flame stability

Even with only part of the air being introduced into the reaction zone, flow velocities in the zone are higher than the turbulent flame speed at which a flame propagates through the fuel-air mixture. Special mechanical or aerodynamic devices must be used to stabilize the flame by providing a low velocity region. Modern combustors employ a combination of swirlers and jets to achieve a good mix and to stabilize the flame.

Operational Stability

The combustor must be able to ignite and to support acceleration and operation of the gas turbine over the entire load range of the machine. For a single-shaft generator-drive machine, speed is constant under load and, therefore, so is the airflow for a fixed ambient temperature. There will be a five- or six-to-one turndown in fuel flow over the load range, and a combustor whose reaction zone equivalence ratio is optimized for full load operation will be very lean at the lower loads. Nevertheless, the flame must be stable and the combustion process must be efficient at all loads.

GE uses multiple-combustion chamber assemblies in its heavy-duty gas turbines to achieve reliable and efficient turbine operation. As shown in Figure A-1, each combustion chamber assembly comprises a cylindrical combustor, a fuel injection system and a transition piece that guides the flow of the hot gas from the combustor to the inlet of the turbine. Figure A-2 illustrates the multiple-combustor concept.

There are several reasons for using the multiple-chamber arrangement instead of large silo-type combustors:

- The configuration permits the entire turbine to be factory assembled, tested and shipped without interim disassembly
- The turbine inlet temperature can be better controlled, thus providing for longer turbine life with reduced turbine cooling air requirements
- Smaller parts can be handled more easily during routine maintenance
- Smaller transition pieces are less susceptible to damage from dynamic forces generated in the combustor; furthermore, the shorter combustion system length ensures that acoustic natural frequencies are higher and less likely to couple with the pressure oscillations in the flame
- Smaller combustors generate less NO_x because of much better mixing and shorter residence time
- As turbine inlet temperatures have increased to improve efficiency, the size of the combustors has decreased to minimize cooling

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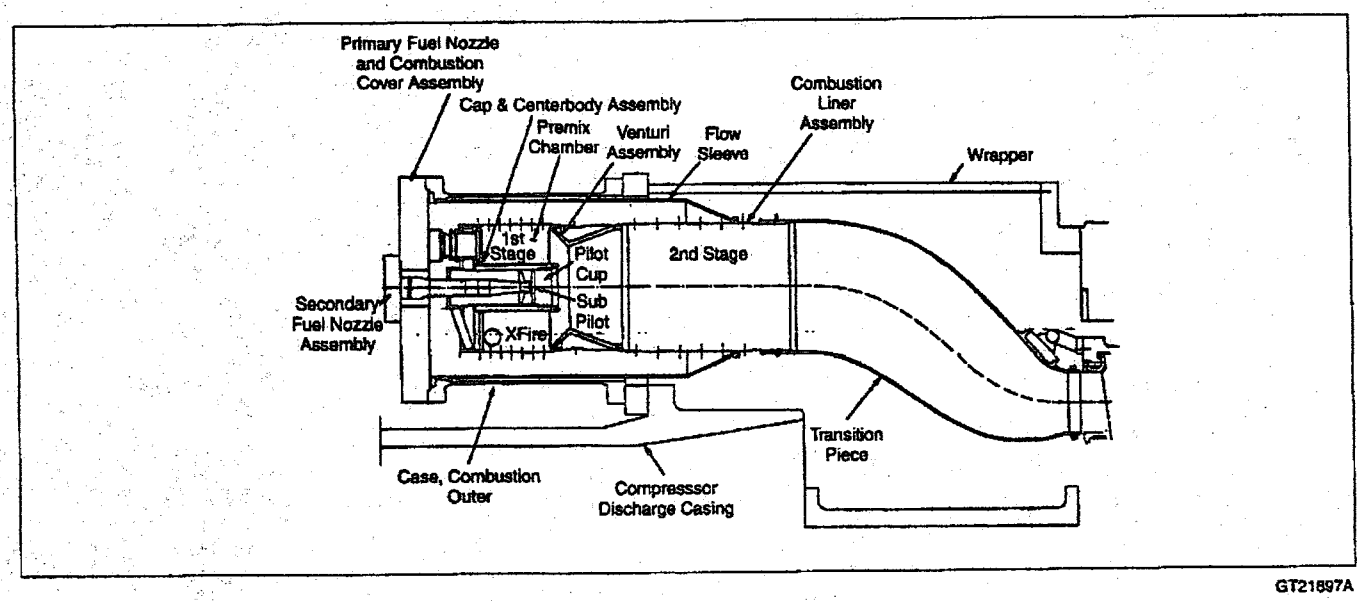

Figure A1. MS7001EA Dry Low NO_x combustion chamber

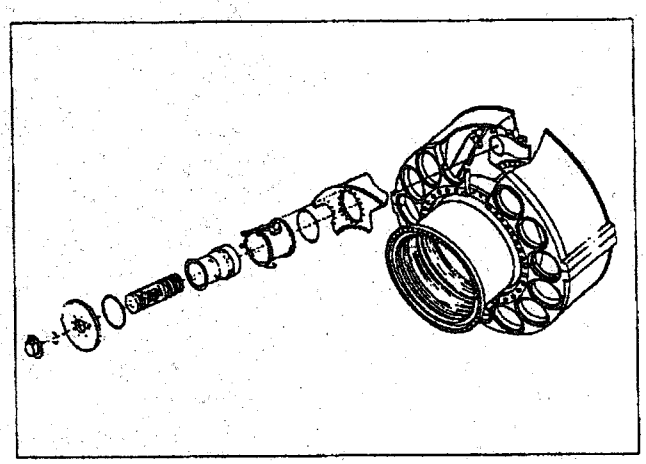

Figure A2. Exploded view of combustion chamber

requirements, as in aircraft gas turbine combustors

- Small can-type combustors can be completely developed in the laboratory through a combination of both atmospheric and full-pressure, full-flow tests. Therefore, there is a higher degree of confidence that a combustor will perform as designed across all load ranges before it is installed and tested in a machine.

Gas Turbine Emissions

The significant products of combustion in gas turbine emissions are:

- Oxides of nitrogen (NO and NO_2, collectively called NO_x)
- Carbon monoxide (CO)
- Unburned hydrocarbons or UHCs (usually expressed as equivalent methane (CH_4) particles and arise from incomplete combustion)
- Oxides of sulfur (SO_2 and SO_3) particulates.

Unburned hydrocarbons include both volatile organic compounds (VOCs), which contribute to the formation of atmospheric ozone, and compounds, such as methane, that do not.

There are two sources of NO_x emissions in the exhaust of a gas turbine. Most of the NO_x is generated by the fixation of atmospheric nitrogen in the flame, which is called thermal NO_x. Nitrogen oxides are also generated by the conversion of a fraction of any nitrogen chemically bound in the fuel (called fuel-bound nitrogen or FBN). Lower-quality distillates and low-Btu coal gases from gasifiers with hot gas cleanup carry various amounts of fuel-bound nitrogen that must be taken into account when emissions calculations are made. The methods described below to control thermal NO_x emissions are ineffective in controlling the conversion of FBN to NO_x.

Thermal NO_x is generated by a chemical reaction sequence called the Zeldovich Mechanism (Reference 6). This set of well-verified chemical reactions postulates that the rate of generation of thermal NO_x is an exponential function of the temperature of the flame. The amount of NO_x generated is a function of the flame temperature and of the time the hot gas mixture is at flame temperature. This turns out

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to be a linear function of time. Thus, temperature and residence time determine thermal NO_x emissions levels and are the principal variables that a gas turbine designer can adjust to control emission levels.

For a given fuel, since the flame temperature is a unique function of the equivalence ratio, the rate of NO_x generation can be cast as a function of the equivalence ratio. Figure A-3, shows that the highest rate of NO_x production occurs at an equivalence ratio of 1.0, when the temperature is equal to the stoichiometric, adiabatic flame temperature.

To the left of the maximum temperature point (Figure A-3), more oxygen is available (the equivalence ratio is less than 1.0) and the resulting flame temperature is lower. This is a fuel-lean operation. Since the rate of NO_x formation is a function of temperature and time, it follows that some difference in NO_x emissions can be expected when different fuels are burned in a given combustion system. Since distillate oil and natural gas have approximately a 100 F/38 C flame temperature difference, a significant difference in NO_x emissions can be expected if reaction zone equivalence ratio, water injection rate, etc. are equal.

As shown in Figure A-3, the rate of NO_x production dramatically decreases as flame temperature decreases (i.e., the flame becomes fuel lean). This is because of the exponential effect of temperature in the Zeldovich Mechanism and is the reason why diluent injection (usually water or steam) into a gas turbine combustor flame zone reduces NO_x emissions. For the same reason, very lean dry combustors can be used to control emissions. This is desirable for reaching the lower NO_x levels now required in many applications.

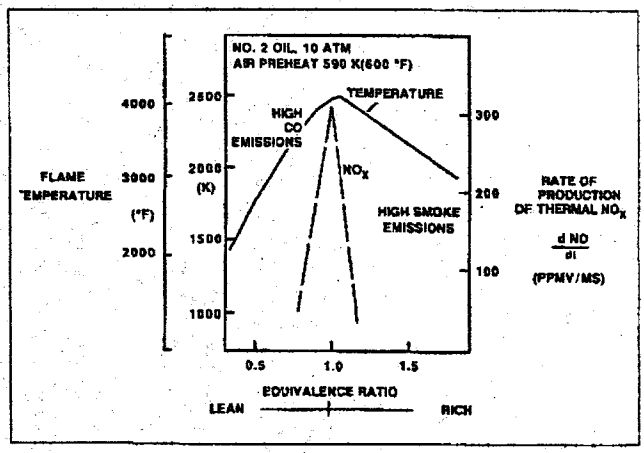

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Figure A3. Rate of thermal NO_x production

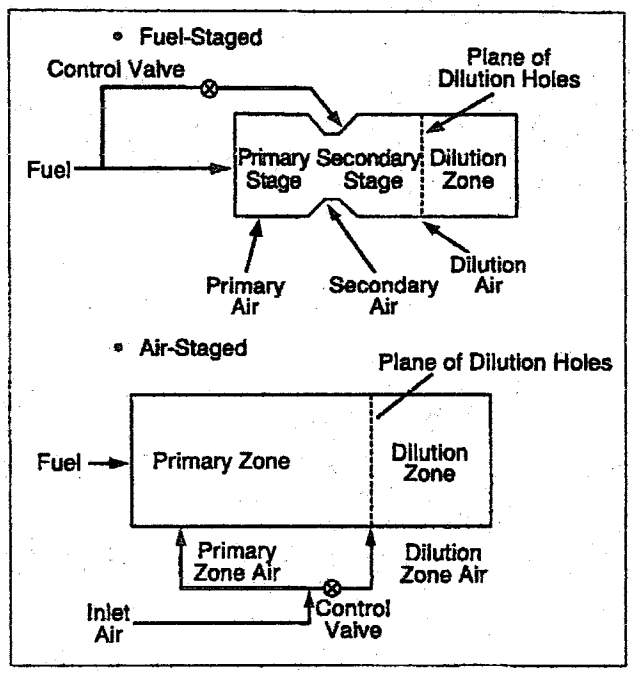

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Figure A4. Staged combustors

There are two design challenges associated with very lean combustors. First, care must be taken to ensure that the flame is stable at the design operating point. Secondly, a turndown capability is necessary since a gas turbine must ignite, accelerate, and operate over the load range. At lower loads, as fuel flow to the combustors decreases, the flame will be very lean and will not burn well, or it can become unstable and blow out.

In response to these challenges, combustion system designers use staged combustors so a portion of the flame zone air can mix with the fuel at lower loads or during startup. The two types of staged combustors are fuel-staged and air-staged (Figure A-4). In its simplest and most common configuration, a fuel-staged combustor has two flame zones; each receives a constant fraction of the combustor airflow. Fuel flow is divided between the two zones so that at each machine operating condition, the amount of fuel fed to a stage matches the amount of air available.

An air-staged combustor uses a mechanism for diverting a fraction of the airflow from the flame zone to the dilution zone at low load to increase turndown. These methods can be combined.

Emissions Control Methods

There are three principal methods for controlling gas turbine emissions:

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- Injection of a diluent such as water or steam into the burning zone of a conventional (diffusion flame) combustor
- Catalytic clean-up of NO_x and CO from the gas turbine exhaust (usually used in conjunction with the other two methods)
- Design of the combustor to limit the formation of pollutants in the burning zone by utilizing "lean-premixed" combustion technology.

The last method includes both DLN combustors and catalytic combustors. GE has considerable experience with each of these three methods.

Since September 1979, when regulations required that NO_x emissions be limited to 75 ppmvd (parts per million by volume, dry), more than 300 GE heavy-duty gas turbines have accumulated more than 2.5 million operating hours using either steam or water-injection to meet or exceed these required NO_x emissions levels. The amount of water required to accomplish this is approximately one-half of the fuel flow. However, there is a 1.8% heat-rate penalty associated with using water to control NO_x emissions for oil-fired simple-cycle gas turbines. Output, increases by approximately 3%, making water (or steam) injection for power augmentation economically attractive in some circumstances (such as peaking applications).

Single-nozzle combustors that use water or steam injection are limited in their ability to reduce NO_x levels below 42 ppmvd on gas fuel and 65 ppmvd on oil fuel. GE developed multinozzle quiet combustors (MNQC) for the MS7001EA and MS7001FA capable of achieving 25 ppmvd on gas fuel and 42 ppmvd on oil, using either water or steam injection. Since October 1987, more than 26 MNQC-equipped MS7001s that use water or steam injection have been placed in service. One unit that uses steam injection has operated nearly 50,000 hours at 25 ppmvd NO_x (at 15% O_2).

Frequent combustion inspections and decreased hardware life are undesirable side effects that can result from the use of diluent injection to reduce NO_x emissions from combustion turbines. For applications that require NO_x emissions below 42 ppmvd (or 25 ppmvd in the case of the MS7001EA or MS7001FA MNQC), or to avoid the significant cycle efficiency penalties incurred when water or steam injection is used for NO_x control, one of the other two principal methods of NO_x control mentioned above must be used.

Selective catalytic reduction (SCR) converts NO and NO_2 in the gas turbine exhaust stream to molecular nitrogen and oxygen by reacting the NO_x with ammonia in the presence of a catalyst. Conventional SCR technology requires that the temperature of the exhaust stream remain in a narrow range (550 F to 750 F or 288 C to 399 C) and is restricted to applications with a heat recovery system installed in the exhaust. The SCR is installed at a location in the boiler where the exhaust gas temperature has decreased to the above temperature range. New high-temperature SCR technology is being developed that may allow SCRs to be used for applications without heat recovery boilers.

For an MS7001EA gas turbine, an SCR designed to remove 90% of the NO_x from the gas turbine exhaust stream has a volume of approximately 175 cubic meters and weighs 111 tons. It is comprised of segments stacked in the exhaust duct. Each segment has a honeycomb pattern with passages that are aligned in the direction of the exhaust gas flow. A catalyst, such as vanadium pentoxide, is deposited on the surface of the honeycomb.

SCR systems are sensitive to fuels containing more than 1,000 ppm of sulfur (light distillate oils may have up to 0.8% sulfur). There are two reasons for this sensitivity: first, sulfur poisons the catalyst being used in SCRs.

Secondly, the ammonia will react with sulfur in the presence of the catalyst to form ammonium bisulfate, which is extremely corrosive, particularly near the discharge of a heat recovery boiler. Special catalyst materials that are less sensitive to sulfur have been identified, and there are some theories as to how to inhibit the formation of ammonium bisulfate. This, however, remains an open issue with SCRs.

More than 100 GE units have accumulated more than 100,000 operating hours with SCRs installed. Twenty of the units are in Japan; others are located in California, New Jersey, New York and several other eastern U.S. states. Units operating with SCRs include MS9000s, MS7000s, MS6000s, LM2500s and LM5000s.

Lean premixed combustion is the basis for achieving low emissions from Dry Low NO_x and catalytic combustors. GE has participated in the development of catalytic combustors for many years. These systems use a catalytic reactor bed mounted within the combustor to burn a very lean fuel-air mixture. They have the potential to achieve extremely low emissions levels without resorting to exhaust gas cleanup. Technical chal-

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lenges in the combustor and in the catalyst and reactor bed materials must be overcome in order to develop an operational catalytic combustor. GE has development programs in place with both ceramic and catalyst manufacturers to address these challenges. GE does not believe commercial systems employing this technology will be available in the near term.

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summary

	IPS 50120		City of Tallahassee/Raytheon					
			Emissions Summary-GE MS7001FA w/DLN Combustion					
	Fuel: Natural Gas (Methane) 21515 Btu/lb LHV							
Ambient Conditions				20 F, 60%rh				
Evap Cooler			Off	Off	Off			
GT Load			Base	75%	50%			
NOx, ppmvd @ 15%O2			9	9	9			
NOx, lb/h as NO2			62	50	39			
CO, ppmvd			9	10	25			
CO, lb/h			31	28	56			
UHC, ppmvw			7	7	10			
UHC, lb/h			15	12	14			
VOC, ppmvw			1.4	1.4	2			
VOC, lb/h			3	2.4	2.8			
Particulates, lb/h			9	9	9			
Heat Cons., 10^6 Btu/h LHV			1682.2	1360.7	1083.5			
Stack Temp, F			190	181	171			
Exhaust Flow, lb/s			1052	841	690			
Exhaust Temp (°F)			1066	1108	1151			
Exhaust Analysis % Vol								
Oxygen			12.62%	12.64%	12.93%			
Water			7.72%	7.69%	7.43%			
Carbon Dioxide			3.78%	3.77%	3.64%			
Nitrogen			74.99%	75.00%	75.10%			
Argon			0.89%	0.90%	0.90%			
Ambient Conditions				59 F, 60%rh				
Evap Cooler			Off	Off	Off			
GT Load			Base	75%	50%			
NOx, ppmvd @ 15%O2			9	9	9			
NOx, lb/h as NO2			58	47	37			
CO, ppmvd			9	10	25			
CO, lb/h			29	26	53			
UHC, ppmvw			7	7	10			
UHC, lb/h			14	11	13			
VOC, ppmvw			1.4	1.4	2			
VOC, lb/h			2.8	2.2	2.6			
Particulates, lb/h			9	9	9			
Heat Cons., 10^6 Btu/h LHV			1563.2	1274.4	1020.4			
Stack Temp, F			193	185	176			
Exhaust Flow, lb/s			981	803	664			
Exhaust Temp (°F)			1111	1135	1175			
Exhaust Analysis % Vol								
Oxygen			12.51%	12.60%	12.91%			
Water			8.44%	8.35%	8.08%			
Carbon Dioxide			3.76%	3.71%	3.58%			
Nitrogen			74.41%	74.44%	74.54%			
Argon			0.88%	0.90%	0.89%			
CM Jones		12/18/1996 Rev.1		tall.xls				

summary

	IPS 50120		*City of Tallahassee/Raytheon*					
			Emissions Summary-GE MS7001FA w/DLN Combustion					
	Fuel: Natural Gas (Methane) 21515 Btu/lb LHV							
Ambient Conditions				95 F, 60%rh				
Evap Cooler			On	Off	Off	Off		
GT Load			Base	75%	~55%	Base		
NOx, ppmvd @ 15%O2			9	9	9	9		
NOx, lb/h as NO2			54	44	35	52		
CO, ppmvd			9	10	25	9		
CO, lb/h			26	24	50	26		
UHC, ppmvw			7	7	10	7		
UHC, lb/h			13	11	13	13		
VOC, ppmvw			1.4	1.4	2	1.4		
VOC, lb/h			2.6	2.2	2.8	2.5		
Particulates, lb/h			9	9	9	9		
Heat Cons., 10^6 Btu/h LHV			1467.7	1202.1	965	1427.51		
Stack Temp, F			198	190	183	197		
Exhaust Flow, lb/s			921	751	622	901		
Exhaust Temp (°F)			1134.3	1164	1200	1143		
Exhaust Analysis % Vol								
Oxygen			12.05%	12.29%	12.60%	12.24%		
Water			10.96%	10.46%	10.21%	10.51%		
Carbon Dioxide			3.72%	3.64%	3.50%	3.66%		
Nitrogen			72.41%	72.74%	72.82%	72.72%		
Argon			0.86%	0.87%	0.87%	0.87%		
CM Jones		12/18/1996 Rev.1		tall.xls				

summary

	IPS 50120		City of Tallahassee/Raytheon					
			Emissions Summary-GE MS7001FA w/DLN Combustion					
	Fuel: Distillate 18550 Btu/lb LHV							
Ambient Conditions				20 F, 60%rh				
Evap Cooler			Off	Off	Off			
GT Load			Base	75%	50%			
NOx, ppmvd @ 15%O2			42	42	42			
NOx, lb/h as NO2			347	281	217			
CO, ppmvd			30	40	90			
CO, lb/h			104	101	192			
UHC, ppmvw			7	10	25			
UHC, lb/h			16	17	34			
VOC, ppmvw			3.5	5	12.5			
VOC, lb/h			8	8.5	17			
SO2 ppmvw		*	12	12	12			
SO2, lb/h		*	98	80	62			
SO3 ppmvw		*	1	1	1			
SO3, lb/h		*	6	6	5.5			
Sulfur Mist lb/h		*	10	8	7			
Particulates, lb/h			17	17	17	(not including sulfur salts)		
Heat Cons., 10^6 Btu/h LHV			1914.1	1567	1219.9			
Stack Temp, F			198	186	176			
Exhaust Flow, lb/s			1097	848	674			
Exhaust Temp (°F)			1040	1107	1152			
Exhaust Analysis % Vol								
Oxygen			10.90%	9.91%	10.81%			
Water			11.66%	12.93%	11.47%			
Carbon Dioxide			5.35%	5.86%	5.44%			
Nitrogen			71.24%	70.46%	71.43%			
Argon			0.85%	0.84%	0.85%			
CM Jones		12/18/1996 Rev.1		tall.xls				

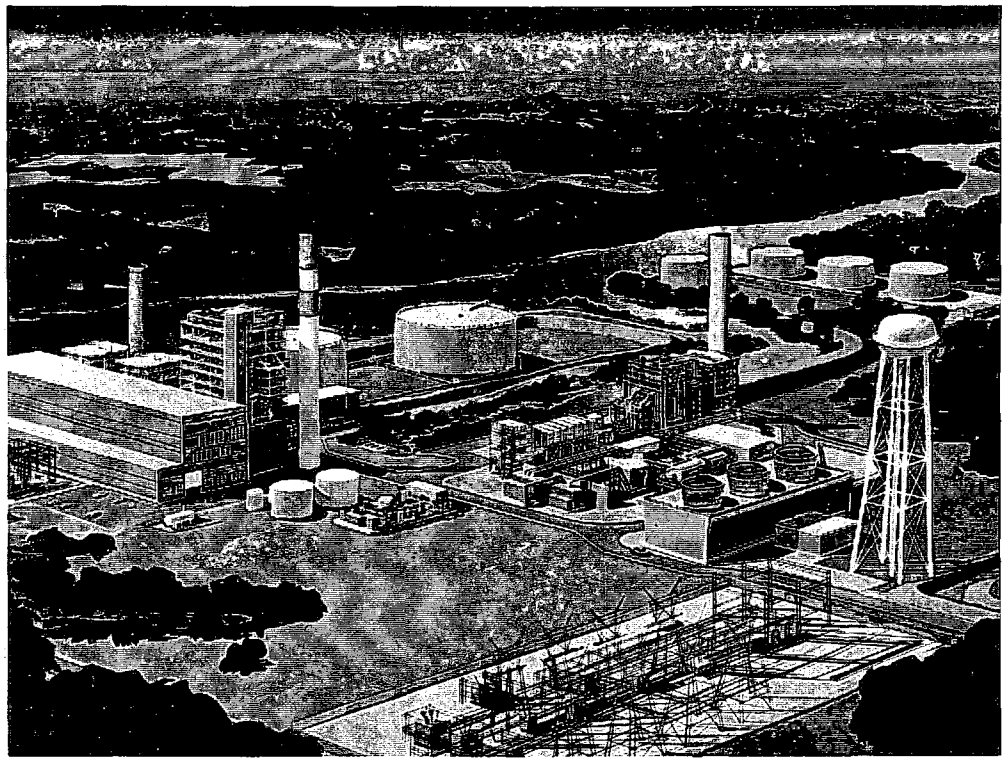
summary

	IPS 50120		City of Tallahassee/Raytheon					
			Emissions Summary-GE MS7001FA w/DLN Combustion					
	Fuel: Distillate 18550 Btu/lb LHV							
Ambient Conditions				59 F, 60%rh				
Evap Cooler			Off	Off	Off			
GT Load			Base	75%	50%			
NOx, ppmvd @ 15%O2			42	42	42			
NOx, lb/h as NO2			322	263	204			
CO, ppmvd			30	40	90			
CO, lb/h			96	97	189			
UHC, ppmvw			7	10	25			
UHC, lb/h			15	16	32			
VOC, ppmvw			3.5	5	12.5			
VOC, lb/h			7.5	8	16			
SO2 ppmvw		*	12	12	12			
SO2, lb/h		*	92	75	60			
SO3 ppmvw		*	1	1	1			
SO3, lb/h		*	6	5	4			
Sulfur Mist lb/h		*	10	8	6			
Particulates, lb/h			17	17	17	(not including sulfur salts)		
Heat Cons., 10^6 Btu/h LHV			1779.5	1465.5	1148.9			
Stack Temp, F			201	190	181			
Exhaust Flow, lb/s			1022	816	674			
Exhaust Temp (°F)			1086	1132	1174			
Exhaust Analysis % Vol								
Oxygen			10.89%	10.86%	11.41%			
Water			11.98%	11.44%	11.00%			
Carbon Dioxide			5.31%	5.41%	5.09%			
Nitrogen			70.96%	71.43%	71.64%			
Argon			0.85%	0.86%	0.86%			
CM Jones		12/18/1996 Rev.1		tall.xls				

summary

	IPS 50120		City of Tallahassee/Raytheon					
			Emissions Summary-GE MS7001FA w/DLN Combustion					
	Fuel: Distillate 18550 Btu/lb LHV							
Ambient Conditions				95 F, 60%rh				
Evap Cooler			Off	Off	Off	On		
GT Load			Base	75%	50%	Base		
NOx, ppmvd @ 15%O2			42	42	42	42		
NOx, lb/h as NO2			288	235	182	297		
CO, ppmvd			30	40	90	30		
CO, lb/h			87	94	177	89		
UHC, ppmvw			7	10	25	7		
UHC, lb/h			13	15	32	14		
VOC, ppmvw			3.5	5	12.5	3.5		
VOC, lb/h			6.5	7.5	16	6.6		
SO2 ppmvw		*	12	12	12	12		
SO2, lb/h		*	82	67	53	85		
SO3 ppmvw		*	1	1	1	1		
SO3, lb/h		*	5	5	3	6		
Sulfur Mist lb/h		*	9	7	6	9		
Particulates, lb/h			17	17	17	17	(not including sulfur s	
Heat Cons., 10^6 Btu/h LHV			1594.5	1313.3	1027.3	1659.5		
Stack Temp, F			203	196	188	205		
Exhaust Flow, lb/s			933	765	635	954		
Exhaust Temp (°F)			1131	1161	1200	1122		
Exhaust Analysis % Vol								
Oxygen			10.78%	10.61%	11.42%	10.69%		
Water			13.18%	13.22%	12.08%	13.42%		
Carbon Dioxide			5.22%	5.33%	4.93%	5.24%		
Nitrogen			69.99%	70.00%	70.72%	69.81%		
Argon			0.84%	0.84%	0.85%	0.84%		
* Based on 0.05% (wt.) sulfur in fuel oil								
CM Jones		12/18/1996 Rev.1		tall.xls				

CITY OF TALLAHASSEE



Purdom Unit 8 Site Certification A

VOLUME 3

Raytheon Engineers & Constructors

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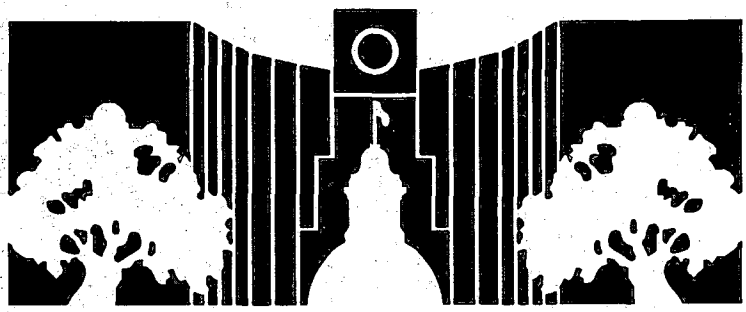

CITY OF TALLAHASSEE

SITE CERTIFICATION APPLICATION

PURDOM UNIT 8

MARCH 1997

VOLUME 3

Cover Art by Ouida Vick

VOLUME DIRECTORY

VOLUME 1

1. SUMMARY OF NEED APPLICATION

- 1.1 INTRODUCTION
- 1.2 BACKGROUND
- 1.3 THE CITY'S CURRENT POWER SYSTEM
- 1.4 THE CITY'S PLANNING PROCESS
- 1.5 OTHER CONSIDERATIONS
- 1.6 CONCLUSION

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- 2.1 SITE AND ASSOCIATED FACILITIES DELINEATION
- 2.2 SOCIOPOLITICAL ENVIRONMENT
- 2.3 BIOPHYSICAL ENVIRONMENT

3. THE PROJECT AND DIRECTLY ASSOCIATED FACILITIES

- 3.1 BACKGROUND
- 3.2 SITE LAYOUT
- 3.3 FUEL
- 3.4 AIR EMISSIONS AND CONTROLS
- 3.5 PROJECT WATER USE
- 3.6 CHEMICAL AND BIOCIDE WASTE
- 3.7 SOLID AND HAZARDOUS WASTE
- 3.8 ON-SITE DRAINAGE SYSTEM
- 3.9 MATERIALS HANDLING
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- 4.2 IMPACT ON SURFACE WATER BODIES AND USES
- 4.3 GROUNDWATER IMPACTS
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- 4.6 IMPACT ON HUMAN POPULATIONS
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VOLUME 4

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APPENDIX B

CALCULATIONS OF CURRENT ACTUAL EMISSIONS

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore **Date:** **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 11/22/96 **File:** EMISS.XLS
Rvd. By: C. Moore **Date:** 12/03/97 **Sheet:** GT 1

Client: City of Tallahassee
Project: Purdom Unit 8

Description: This calculation provides the short term and annual emission rates associated with Gas Turbine No. 1 based on material balances and AP-42 emission factors for the known hours of operation, natutral gas, and fuel oil usage.

References:

No. 1	COT Generation Logs
No. 2	Calculation: Trace Metal Emissions
No. 3	FGT Sulfur Content Data
No. 4	AP-42, Section 3.1, Table 3.1-1, 5th Edition

Knowns/Assumptions:

Fuel Usage Rate (gal/hr) for GT1:	**1,727**	Ref. No. 2
Firing Rate (mmBtu/hr) for GT1:	**228**	Calculation
Lower Heating Value of Distillate Oil (Btu/gal):	**132,000**	Set
Lower Heating Value of Natural Gas (Btu/cf):	**904**	Set
Natural Gas Sulfur Content (gr/100 SCF):	**0.32**	Ref. No. 3
Fuel Oil Sulfur Content (% wt):	**0.31%**	Ref. No. 3
Fuel Oil Density (lb/gal):	**6.75**	Set

Operating Data:

Month/Year	Hours of Operating	Fuel Oil Usage (Gal)	Natural Gas Usage (1000 CF)	Reference Nos.
Aug-94	9.2	0	1646	1
Sep-94	1	0	150	1
Oct-94	2	0	158	1
Nov-94	0	0	0	1
Dec-94	1	0	86	1
Jan-95	3	0	432	1
Feb-95	2.4	0	455	1
Mar-95	1	0	148	1
Apr-95	1	0	134	1
May-95	1.4	0	205	1
Jun-95	12.7	0	1978	1
Jul-95	3.8	0	423	1
Aug-95	40.8	0	6020	1
Sep-95	1.1	0	183	1
Oct-95	5.1	0	733	1
Nov-95	29.1	2782	3424	1
Dec-95	8.4	2415	1377	1
Jan-96	18.2	12501	1010	1
Feb-96	29.7	0	4280	1
Mar-96	8.5	0	683	1
Apr-96	8.6	0	1316	1
May-96	12.8	0	1887	1
Jun-96	12.6	0	2168	1
Jul-96	4.9	0	869	1
2-yr Ave.	**109.15**	**8849**	**14882.5**	**Calculation**

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore **Date:**
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 11/22/96
Rvd. By: C. Moore **Date:** 12/03/97

OFS No.: 1584.0005.0008
File: EMISS.XLS
Sheet: GT 1

Client: City of Tallahassee
Project: Purdom Unit 8

Calculations: gt1

	Emission Factors (lb/mmBtu)		Hourly Emissions (lb/hr)		Annual Emissions (TPY) - Actual		
Pollutant	**Nat. Gas**	**Fuel Oil**	**Nat. Gas**	**Fuel Oil**	**Nat. Gas**	**Fuel Oil**	**Total**
NOx	0.44	0.698	100.30	159.12	2.96	0.41	3.37
CO	0.11	0.048	25.08	10.94	0.74	0.03	0.77
VOC	0.024	0.017	5.47	3.88	0.16	0.01	0.17
SO2	MB	MB	0.22	68.66	0.00646	0.18	0.18
PM-10	0.0419	0.061	3.82	6.67	0.28	0.04	0.32

MB - Mass Balance Calculation assuming 95 percent of sulfur is converted to SO2, with remaining being converted to other sulfur compounds.
PM-10 emissions estimated from speciation data in AP-42 (40% - NG & 48% - Fuel Oil)

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore **Date:**
Ckd. By: D. Graziani, PE 3/4/97 **Date:** 11/22/96
Rvd. By: C. Moore **Date:** 12/03/97

OFS No.: 1584.0005.0008
File: EMISS.XLS
Sheet: GT 2

Client: City of Tallahassee
Project: Purdom Unit 8

Description: This calculation provides the short term and annual emission rates associated with Gas Turbine No. 2 based on material balances and AP-42 emission factors for the known hours of operation, natutral gas, and fuel oil usage.

References:

No. 1	COT Generation Logs
No. 2	Calculation: Trace Metal Emissions
No. 3	FGT Sulfur Content Data
No. 4	AP-42, Section 3.1, Table 3.1-1, 5th Edition

Knowns/Assumptions:

Fuel Usage Rate (gal/hr) for GT2:	**1,727**	Ref. No. 2
Firing Rate (mmBtu/hr) for GT2:	**228**	Calculation
Lower Heating Value of Distillate Oil (Btu/gal):	**132,000**	Set
Lower Heating Value of Natural Gas (Btu/cf):	**904**	Set
Natural Gas Sulfur Content (gr/100 SCF):	**0.32**	Ref. No. 3
Fuel Oil Sulfur Content (% wt):	**0.31%**	Ref. No. 3
Fuel Oil Density (lb/gal):	**6.75**	Set

Operating Data:

Month/Year	Hours of Operating	Fuel Oil Usage (Gal)	Natural Gas Usage (1000 CF)	Reference Nos.
Aug-94	13	0	2359	1
Sep-94	1	0	122	1
Oct-94	1.3	0	205	1
Nov-94	0	0	0	1
Dec-94	1	0	41	1
Jan-95	3.2	0	464	1
Feb-95	2.9	0	528	1
Mar-95	0.9	0	112	1
Apr-95	1	0	134	1
May-95	1	0	140	1
Jun-95	3.6	0	536	1
Jul-95	6.7	0	832	1
Aug-95	40.9	0	6613	1
Sep-95	1.1	0	140	1
Oct-95	2.7	0	462	1
Nov-95	27.6	0	3275	1
Dec-95	5.5	4082	788	1
Jan-96	19.6	0	2188	1
Feb-96	29.8	0	4169	1
Mar-96	8.1	0	643	1
Apr-96	12.5	0	1908	1
May-96	11.8	0	1841	1
Jun-96	10.2	0	1934	1
Jul-96	4.3	0	739	1
2-yr Ave.	**104.85**	**2041**	**15086.5**	**Calculation**

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore **Date:** **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 11/22/96 **File:** EMISS.XLS
Rvd. By: C. Moore **Date:** 12/03/97 **Sheet:** GT 2

Client: City of Tallahassee
Project: Purdom Unit 8

Calculations: gt2

	Emission Factors (lb/mmBtu)		Hourly Emissions (lb/hr)		Annual Emissions (TPY) - Actual		
Pollutant	Nat. Gas	Fuel Oil	Nat. Gas	Fuel Oil	Nat. Gas	Fuel Oil	Total
NOx	0.44	0.698	100.30	159.12	3.00	0.09	3.09
CO	0.11	0.048	25.08	10.94	0.75	0.01	0.76
VOC	0.024	0.017	5.47	3.88	0.16	0.0023	0.17
SO2	MB	MB	0.22	68.66	0.00655	0.04	0.05
PM-10	0.0419	0.061	3.82	6.67	0.11	0.0039	0.12

MB - Mass Balance Calculation assuming 95 percent of sulfur is converted to SO2, with remainder being converted to other sulfur compounds.
PM-10 emissions estimated from speciation data in AP-42 (40% - NG & 48% - Fuel Oil)

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore DJG 3/4/97 **Date:**
Ckd. By: D. Graziani, PE **Date:** 11/22/96
Rvd. By: C. Moore **Date:** 12/03/97

OFS No.: 1584.0005.0008
File: EMISS.XLS
Sheet: Unit 5

Client: City of Tallahassee
Project: Purdom Unit 8

Description: This calculation provides the short term and annual emission rates associated with Unit 5 based on material balances and AP-42 emission factors for the known hours of operation, natutral gas, and fuel oil usage.

References:

No. 1	COT Generation Logs
No. 2	Calculation: Trace Metal Emissions
No. 3	AP-42, Section 1.4, 5th Edition
No. 4	AP-42, Section 1.3, 5th Edition
No. 5	FGT Sulfur Data

Knowns/Assumptions:

Fuel Usage Rate (gal/hr) for Unit 5:	**2,000**	Calculation
Firing Rate (mmBtu/hr) for Unit 5:	**300**	Set
Higher Heating Value of Residual Oil (Btu/gal):	**150,000**	Ref. No. 3
Higher Heating Value of Natural Gas (Btu/cf):	**1,040**	Approximation (from analytical data)
Natural Gas Sulfur Content (gr/100 SCF):	**0.32**	Ref. No. 5
Weighted Fuel Oil Sulfur Content (% wt):	**1.70%**	Calculation
Fuel Oil Density (lb/gal):	**8.05**	Approximation (from analytical data)

Operating Data:

Month/Year	Fuel Oil Usage (Bbls)	Fuel Oil Sulfur Content (% wt)	Sufur Content Wt'd Ave. (lb - S)*	Natural Gas Usage (1000 CF)	Reference Nos.
Aug-94	0	1.45	0	3260	1
Sep-94	0	1.45	0	23090	1
Oct-94	0	1.45	0	62290	1
Nov-94	0	0.53	0	0	1
Dec-94	0	0.53	0	0	1
Jan-95	0	1.3	0	0	1
Feb-95	0	0.67	0	0	1
Mar-95	0	0.67	0	2704	1
Apr-95	0	1.2	0	31730	1
May-95	0	1.1	0	17517	1
Jun-95	0	1.1	0	0	1
Jul-95	0	0.974	0	72772	1
Aug-95	0	0.956	0	96088	1
Sep-95	0	0.991	0	24548	1
Oct-95	0	0.991	0	7219	1
Nov-95	0	0.903	0	82087	1
Dec-95	0	0.863	0	74483	1
Jan-96	0	1.7	0	85785	1
Feb-96	0	0.5	0	42865	1
Mar-96	0	0.82	0	87763	1
Apr-96	0	1.06	0	3323	1
May-96	107	1.7	615	96317	1
Jun-96	0	1.7	0	35,758	1
Jul-96	0	1.7	0	102507	1
2-yr Ave.	**53.5**	**1.70%**	**615.00**	**476053**	**Calculation**

*** - Pounds of Sulfur were calculated for purposes of developing a weighted sulfur content.**

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore
Ckd. By: D. Graziani, PE DJG 3/4/97
Rvd. By: C. Moore

Date:
Date: 11/22/96
Date: 12/03/97

OFS No.: 1584.0005.0008
File: EMISS.XLS
Sheet: Unit 5

Client: City of Tallahassee
Project: Purdom Unit 8

Calculations:

	Emission Factors		Emission Rates - two year average				
	Nat. Gas	Fuel Oil	Hourly Emissions (lb/hr)		Annual Emissions (TPY) - Actual		
Pollutant	Units as defined		Nat. Gas	Fuel Oil	Nat. Gas	Fuel Oil	Total
NOx (1)	286	42	82.50	84.00	68.08	0.05	68.12
CO (1)	41.6	5	12.00	10.00	9.90	0.006	9.91
VOC (1)	1.47	0.76	0.42	1.52	0.29	0.001	0.29
SO2 (1 & 2)	MB	266.9	0.26	533.80	0.22	0.300	0.52
SO3 (1)	NA	9.690	NA	19.38	NA	0.011	0.011
Pb (3)	NA	1.94E-10	NA	0.0582	NA	3.27E-05	3.27E-05
Be (3)	NA	4.2E-12	NA	0.00126	NA	7.08E-07	7.08E-07
Hg (3 & 4)	7.8E-16	3.2E-11	2.34E-07	0.0096	1.93E-07	5.39E-06	5.59E-06
HF (5)	NA	0.16	NA	0.32	NA	1.80E-04	1.80E-04
PM-10(& PM) (1 & 6)	5.2	0.080	1.50	24.00	1.24	0.01	1.25

(1) AP-42 emission factors, units of lb/mmCF for natural gas and lb/kGal for oil.
(2) For natural gas, SO2 emissions based on AP-42 assumption that 100% of the sulfur was converted.
(3) For Fuel Oil, trace metal emissions based on AP-42 emission factors in units of lb/10^12 Btu
(4) For natural gas an EPRI (1994) factor was used
(5) Factor based on fuel analysis of City of Tallahassee oil.
(6) Based on stack test data for oil firing in units of lb/mmBtu.
NA = Not Applicable
MB = Material Balance
Sulfur Content of fuel oil based on as burn fuel oil analysis. Sulfur Content of natural gas based on FGT analytical data.

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore **Date:**
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 11/22/96
Rvd. By: C. Moore **Date:** 12/03/97

OFS No.: 1584.0005.0008
File: EMISS.XLS
Sheet: Unit 6

Client: City of Tallahassee
Project: Purdom Unit 8

Description: This calculation provides the short term and annual emission rates associated with Unit 6 based on material balances, teast data, and AP-42 emission factors for the known hours of operation, natutral gas usage, and fuel oil usage.

References:

No. 1	COT Generation Logs
No. 2	Calculation: Trace Metal Emissions
No. 3	AP-42, Section 1.4, 5th Edition
No. 4	AP-42, Section 1.3, 5th Edition
No. 5	FGT Sulfur Data

Knowns/Assumptions:

Fuel Usage Rate (gal/hr) for Unit 6:	**2,000**	Calculation
Firing Rate (mmBtu/hr).for Unit 6:	**300**	Set
Higher Heating Value of Residual Oil (Btu/gal):	**150,000**	Ref. No. 3
Higher Heating Value of Natural Gas (Btu/cf):	**1,040**	Approximation (from analytical data)
Natural Gas Sulfur Content (gr/100 SCF):	**0.32**	Ref. No. 5
Weighted Fuel Oil Sulfur Content (% wt):	**1.05%**	Calculation
Fuel Oil Density (lb/gal):	**8.05**	Approximation (from analytical data)
Total Firing Under Soot Blowing (mmBtu/yr):	**447.30**	Ref. No. 1

Operating Data:

Month/Year	Fuel Oil Usage (Bbls)	Fuel Oil Sulfur Content (% wt)	Sufur Content Wt'd Ave. (lb - S)*	Natural Gas Usage (1000 CF)	Reference Nos.
Aug-94	183	1.45	897	82494	1
Sep-94	0	1.45	0	8430	1
Oct-94	0	1.45	0	59683	1
Nov-94	0	0.53	0	0	1
Dec-94	0	0.53	0	0	1
Jan-95	0	1.3	0	0	1
Feb-95	0	0.67	0	0	1
Mar-95	0	0.67	0	0	1
Apr-95	0	1.2	0	39050	1
May-95	0	1.1	0	10897	1
Jun-95	0	1.1	0	0	1
Jul-95	770	0.974	2536	88809	1
Aug-95	163	0.956	527	104573	1
Sep-95	253	0.991	848	27249	1
Oct-95	0	0.991	0	3152	1
Nov-95	0	0.903	0	44200	1
Dec-95	0	0.863	0	50463	1
Jan-96	295	1.7	1696	80979	1
Feb-96	299	0.5	505	42509	1
Mar-96	85	0.82	236	77917	1
Apr-96	0	1.06	0	13354	1
May-96	0	1.7	0	103368	1
Jun-96	0	1.7	0	66899	1
Jul-96	0	1.7	0	69548	1
2-yr Ave.	**1024**	**1.05%**	**7244**	**486787**	**Calculation**

*** - Pounds of Sulfur were calculated for purposes of developing a weighted sulfur content.**

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore **Date:** **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 11/22/96 **File:** EMISS.XLS
Rvd. By: C. Moore **Date:** 12/03/97 **Sheet:** Unit 6

Client: City of Tallahassee
Project: Purdom Unit 8

Calculations:

	Emission Factors		Emission Rates - two year average				
	Nat. Gas	Fuel Oil	Hourly Emissions (lb/hr)		Annual Emissions (TPY) - Actual		
Pollutant	Units as defined		Nat. Gas	Fuel Oil	Nat. Gas	Fuel Oil	Total
NOx (1)	572	67	165.00	134.00	139.22	1.44	140.66
CO (1)	41.6	5	12.00	10.00	10.13	0.108	10.23
VOC (1)	1.467	0.76	0.42	1.52	0.30	0.016	0.31
SO2 (1 & 2)	MB	164.25	0.26	328.50	0.22	3.532	3.75
SO3 (1)	NA	5.96	NA	11.93	NA	0.128	0.128
Pb (3)	NA	1.94E-10	NA	0.0582	NA	6.26E-04	6.26E-04
Be (3)	NA	4.2E-12	NA	0.00126	NA	1.35E-05	1.35E-05
Hg (3 & 4)	7.8E-16	3.2E-11	2.34E-07	0.0096	1.97E-07	1.03E-04	1.03E-04
HF (5)	NA	0.16	NA	0.32	NA	0.003	0.003
PM-10 (1 & 6)	5	0.048	1.44	14.40	1.22	0.155	1.37
PM-10 (7 & 8)	0	0.161	0.00	0.32	0.00	0.018	0.02

(1) AP-42 emission factors, units of lb/mmCF for natural gas and lb/kGal for oil.
(2) For natural gas, SO2 emissions based on AP-42 assumption that 100% of the sulfur was converted.
(3) For Fuel Oil, trace metal emissions based on AP-42 emission factors in units of lb/10^12 Btu
(4) For natural gas an EPRI (1994) factor was used
(5) Factor based on fuel analysis of City of Tallahassee oil.
(6) Fuel Oil data based on Stack Test (0.048 lb/mmBtu)
(7) Additional PM10 emissions associated with soot blowing (Test Data - 0.209 lb/mmBtu)
(8) Additional PM10 emissions associated with soot blowing (lb/mmBtu) from test data
NA = Not Applicable
MB = Material Balance
Sulfur Content of fuel oil based on as burn fuel oil analysis. Sulfur Content of natural gas based on FGT analytical data.

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore DJ **Date:** **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE 3/4/97 **Date:** 11/22/96 **File:** EMISS.XLS
Rvd. By: C. Moore **Date:** 12/03/97 **Sheet:** Unit 7

Client: City of Tallahassee
Project: Purdom Unit 8

Description: This calculation provides the short term and annual emission rates associated with Unit 7 based on material balances, teast data, CEMS data, and AP-42 emission factors for the known hours of operation, natutral gas usage, and fuel oil usage.

References:

No. 1 COT Generation Logs
No. 2 Calculation: Trace Metal Emissions
No. 3 AP-42, Section 1.4, 5th Edition
No. 4 AP-42, Section 1.3, 5th Edition
No. 5 *Calculation: Unit 7- Continuous Emissions Monitor (CEMS) & Monthly Generation Report (MGR) data*
No. 6 FGT Sulfur Content Data

Knowns/Assumptions:

Fuel Usage Rate (gal/hr) for Unit 7:	**4,140**	Calculation
Firing Rate (mmBtu/hr) for Unit 7:	**621**	Set
Higher Heating Value of Residual Oil (Btu/gal):	**150,000**	Ref. No. 3
Higher Heating Value of Natural Gas (Btu/cf):	**1,040**	Approximation (from analytical data)
Natural Gas Sulfur Content (gr/100 SCF):	**0.32**	Ref. No. 6
Weighted Fuel Oil Sulfur Content (% wt):	**1.06%**	Calculation
Fuel Oil Density (lb/gal):	**8.05**	Approximation (from analytical data)
Total Firing Under Soot Blowing (mmBtu/yr):	**8,477.28**	Ref. No. 1

Operating Data:

Month/Year	Fuel Oil Usage (kgal)	Fuel Oil Sulfur Content (% wt)	Sufur Content Wt'd Ave. (lb - S)*	Natural Gas Usage (1000 CF)	Reference Nos.
Aug-94	125.748	1.45%	14677.94	*120125*	5
Sep-94	271.908	1.45%	31738.46	*150492*	5
Oct-94	103.572	1.45%	12089.44	*127718*	5
Nov-94	189.086	1.33%	20226.52	*167291*	5
Dec-94	229.698	0.71%	13162.54	*139865*	5
Jan-95	3.780	1.30%	395.58	*148227*	5
Feb-95	122.304	0.55%	5415.01	*138958*	5
Mar-95	0.000	0.00%	0.00	*79162*	5
Apr-95	5.270	1.20%	509.09	155279	5
May-95	15.752	1.10%	1394.86	207271	5
Jun-95	0.000	0.00%	0.00	153582	5
Jul-95	33.661	0.97%	2639.27	201694	5
Aug-95	187.728	0.97%	14617.02	199229	5
Sep-95	17.201	0.99%	1372.22	82389	5
Oct-95	0.000	0.00%	0.00	203212	5
Nov-95	10.140	0.90%	737.09	169909	5
Dec-95	132.618	0.96%	10226.65	198234	5
Jan-96	38.751	0.83%	2589.13	231836	5
Feb-96	170.159	0.73%	9965.94	171262	5
Mar-96	5.050	0.84%	343.47	212566	5
Apr-96	48.433	1.07%	4159.62	160524	5
May-96	77.904	1.07%	6732.93	187689	5
Jun-96	0.000	0.00%	0.00	223,591	5
Jul-96	0.000	0.00%	0.00	*231499*	5
2-yr Ave.	**894.381**	**1.06%**	**152992.76**	**2030802**	**Calculation**

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore **Date:** **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE DG 3/4/97 **Date:** 11/22/96 **File:** EMISS.XLS
Rvd. By: C. Moore **Date:** 12/03/97 **Sheet:** Unit 7

Client: City of Tallahassee
Project: Purdom Unit 8

Calculations: UNIT 7

	Emission Factors		Emission Rates - two year average				
	Nat. Gas	Fuel Oil	Hourly Emissions (lb/hr)		Annual Emissions (TPY) - Actual		
Pollutant	Units as defined		Nat. Gas	Fuel Oil	Nat. Gas	Fuel Oil	Total
NOx (1)	0.23	0.33	142.83	204.930	227.84	23.40	251.24
CO (2)	41.6	5	24.84	20.700	42.24	2.236	44.48
VOC (2)	1.47	0.76	0.88	3.146	1.49	0.340	1.83
SO2 (2&3)	MB	166.81	0.55	690.593	0.93	74.596	75.52
SO3 (1)	NA	6.06	NA	25.072	NA	2.708	2.708
Pb (4)	NA	1.94E-10	NA	0.120	NA	1.30E-02	1.30E-02
Be (4)	NA	4.2E-12	NA	0.003	NA	2.82E-04	2.82E-04
Hg (4 & 5)	7.8E-16	3.2E-11	4.84E-07	0.020	8.24E-07	2.15E-03	2.15E-03
HF (6)	NA	0.16	NA	0.662	NA	0.072	0.072
PM-10 (2 & 7)	5.2	0.033	3.11	20.651	5.28	2.231	7.51
PM-10 (7 & 8)	0	0.064	0.00	0.267	0.00	0.066	0.07

(1) Short Term NOx data based on 0.23 lb/mmBtu - gas & 0.33 lb/mmBtu oil, annual based on Calculation Unit 7 CEMS & MGR
(2) Reference Nos. 3 & 4, gas-lb/mmcf & oil-lb/kgal
(2) For natural gas, SO2 emissions based on AP-42 assumption that 100% of the sulfur was converted.
(4) For Fuel Oil, trace metal emissions based on AP-42 emission factors in units of lb/10^12 Btu
(5) For natural gas an EPRI (1994) factor was used
(6) Factor based on fuel analysis of City of Tallahassee oil.
(7) Fuel Oil data based on Stack Test results (lb/mmBtu)
(8) Additional PM10 emissions associated with soot blowing (lb/mmBtu) from test data

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore **Date:**
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 11/22/96
Rvd. By: C. Moore **Date:** 12/03/97

OFS No.: 1584.0005.0008
File: EMISS.XLS
Sheet: Unit 7 CEMS & MGR

Client: City of Tallahassee
Project: Purdom Unit 8

Description: Data reduction for the Fuel Oil Usage for the period 8/94 through 7/96
References:
No. 1 FGT Sulfur Content Data
Knowns/Assumptions:

Higher Heating Value of Residual Oil (Btu/gal):	**150,000**	Set
Fuel Oil Density (lb/gal):	**8.05**	Set
Higher Heating Value of Natural Gas (Btu/cf):	**1,040**	Set
Natural Gas Sulfur Content (gr/100 SCF):	**0.32**	Ref. No. 1

Natural Gas Usage Data

Period	MGR GAS (mcf)	CEMS GAS (mcf)	Difference (%)	CEMS NOX-Data (lb/mmBtu)	CEMS NOX-Data (lbs)	Emissions Estimate Basis
Aug-94	120125	ND	N/A	0.23	28733.9	MGR
Sep-94	150492	ND	N/A	0.23	35997.7	MGR
Oct-94	127718	ND	N/A	0.23	30550.1	MGR
Nov-94	167291	ND	N/A	0.23	40016.0	MGR
Dec-94	139865	ND	N/A	0.23	33455.7	MGR
Jan-95	148227	185459	20	0.23	35455.9	MGR
Feb-95	138958	0	N/A	0.23	33238.8	MGR
Mar-95	79162	0	N/A	0.23	18935.6	MGR
Apr-95	155279	159657.5	3	*0.231*	38356.1	CEMS
May-95	207271	201462.5	-3	*0.231*	48399.4	CEMS
Jun-95	153582	173838.8	12	*0.231*	41763.0	CEMS
Jul-95	201694	181561.9	-11	*0.217*	40974.9	CEMS
Aug-95	199229	188223.8	-6	*0.217*	42478.3	CEMS
Sep-95	82389	72500.23	-14	*0.222*	16738.9	CEMS
Oct-95	203212	205639.1	1	*0.222*	47478.0	CEMS
Nov-95	169909	154860	-10	*0.222*	35754.1	CEMS
Dec-95	198234	180331.2	-10	*0.222*	41634.9	CEMS
Jan-96	231836	204178.3	-14	*0.244*	51812.3	CEMS
Feb-96	171262	159820.2	-7	*0.244*	40556.0	CEMS
Mar-96	212566	193966.6	-10	*0.244*	49221.0	CEMS
Apr-96	160524	153055.3	-5	*0.21*	33427.3	CEMS
May-96	187689	169551	-11	*0.21*	37029.9	CEMS
Jun-96	223591	202355.1	-10	*0.21*	44194.4	CEMS
Jul-96	ND	206782.3	N/A	*0.21*	45161.3	CEMS

Italics represent average values for gas and oil
MGR = monthly generation reports
CEMS = Continuous Emissions Monitoring System

Fuel Oil Usage

Period	lbs	(kGal)	NOx Data (lb/mmBtu)	% Sulfur (wt)	Lbs of Sulfur	Monthly Summaries Period (kgal)	Monthly Summaries (lbs - S)	Monthly Summaries (lbs-Nox)
Aug-94	1012271.40	125.748	0.33	1.45	14677.9	125.7	14677.9	6224.5
Sep-94	2188859.40	271.908	0.33	1.45	31738.5	271.9	31738.5	13459.4
Oct-94	833754.60	103.572	0.33	1.45	12089.4	103.6	12089.4	5126.8
Nov-94	1321649.00	164.18	0.33	1.45	19163.9	189.086	20226.5	9359.8
Nov-94	200493.30	24.906	0.33	0.53	1062.6			
Dec-94	365486.10	45.402	0.33	1.45	5299.5	229.698	13162.5	11370.1
Dec-94	1483582.80	184.296	0.33	0.53	7863.0			
Jan-95	30429.00	3.78	0.33	1.3	395.6	3.8	395.6	187.1
Feb-95	984547.20	122.304	0.33	0.55	5415.0	122.3	5415.0	6054.0
Mar-95	0.00	0	0.33	0	0.0	0.0	0.0	0.0
Apr-95	1043.6	0.130	***0.231***	1.2	12.5	5.270	509.1	182.6
Apr-95	6560.6	0.815	***0.231***	1.2	78.7			
Apr-95	5912.2	0.734	***0.231***	1.2	70.9			
Apr-95	6266.8	0.778	***0.231***	1.2	75.2			
Apr-95	6090.6	0.757	***0.231***	1.2	73.1			
Apr-95	6124.8	0.761	***0.231***	1.2	73.5			
Apr-95	6175	0.767	***0.231***	1.2	74.1			
Apr-95	4250.2	0.528	***0.231***	1.2	51.0			
May-95	9384.7	1.166	***0.231***	1.1	103.2	15.752	1394.9	545.8
May-95	14891	1.850	***0.231***	1.1	163.8			
May-95	14881.4	1.849	***0.231***	1.1	163.7			
May-95	20534.1	2.551	***0.231***	1.1	225.9			
May-95	21384.3	2.656	***0.231***	1.1	235.2			

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore
Ckd. By: D. Graziani, PE 3/4/97 DJG
Rvd. By: C. Moore

Date:
Date: 11/22/96
Date: 12/03/97

OFS No.: 1584.0005.0008
File: EMISS.XLS
Sheet: Unit 7 CEMS & MGR

Client: City of Tallahassee
Project: Purdom Unit 8

Period	lbs	(kGal)	NOx Data (lb/mmBtu)	% Sulfur (wt)	Lbs of Sulfur	Period (kgal)	Period (lbs - S)	Period (lbs-Nox)
May-95	21387.5	2.657	***0.231***	1.1	235.3	15.75217391	1394.855	
May-95	19821.6	2.462	***0.231***	1.1	218.0			
May-95	4520.4	0.562	***0.231***	1.1	49.7			
Jun-95	0	0.000	***0.217***	0	0.0	0	0	0.0
Jul-95	4579.3	0.569	***0.217***	0.974	44.6	33.661	2639.3	1095.7
Jul-95	13242	1.645	***0.217***	0.974	129.0			
Jul-95	13330.5	1.656	***0.217***	0.974	129.8			
Jul-95	17931.2	2.227	***0.217***	0.974	174.6			
Jul-95	23696.1	2.944	***0.217***	0.974	230.8			
Jul-95	19698.2	2.447	***0.217***	0.974	191.9			
Jul-95	18733.8	2.327	***0.217***	0.974	182.5			
Jul-95	18750.6	2.329	***0.217***	0.974	182.6			
Jul-95	18781.1	2.333	***0.217***	0.974	182.9			
Jul-95	18753.6	2.330	***0.217***	0.974	182.7			
Jul-95	23084.2	2.868	***0.217***	0.974	224.8			
Jul-95	25101.5	3.118	***0.217***	0.974	244.5			
Jul-95	24663.5	3.064	***0.217***	0.974	240.2			
Jul-95	24602.5	3.056	***0.217***	0.974	239.6			
Jul-95	6024.4	0.748	***0.217***	0.974	58.7			
Aug-95	10263.4	1.275	***0.217***	0.982	100.8	187.7	14617.0	6110.5
Aug-95	14456.6	1.796	***0.217***	0.982	142.0			
Aug-95	13919.5	1.729	***0.217***	0.982	136.7			
Aug-95	13414.4	1.666	***0.217***	0.982	131.7			
Aug-95	13444.9	1.670	***0.217***	0.982	132.0			
Aug-95	14423	1.792	***0.217***	0.982	141.6			
Aug-95	14801.5	1.839	***0.217***	0.98	145.1			
Aug-95	14035.5	1.744	***0.217***	0.98	137.5			
Aug-95	13954.6	1.733	***0.217***	0.98	136.8			
Aug-95	13954.6	1.733	***0.217***	0.98	136.8			
Aug-95	14890	1.850	***0.217***	0.98	145.9			
Aug-95	25284.6	3.141	***0.217***	0.98	247.8			
Aug-95	26679.3	3.314	***0.217***	0.98	261.5			
Aug-95	26621.3	3.307	***0.217***	0.98	260.9			
Aug-95	26966.2	3.350	***0.217***	0.98	264.3			
Aug-95	26686.9	3.315	***0.217***	0.98	261.5			
Aug-95	26618.2	3.307	***0.217***	0.98	260.9			
Aug-95	26757.1	3.324	***0.217***	0.98	262.2			
Aug-95	26964.6	3.350	***0.217***	0.98	264.3			
Aug-95	26705.2	3.317	***0.217***	0.98	261.7			
Aug-95	26659.4	3.312	***0.217***	0.98	261.3			
Aug-95	26865.4	3.337	***0.217***	0.98	263.3			
Aug-95	25109.1	3.119	***0.217***	0.98	246.1			
Aug-95	8050.8	1.000	***0.217***	0.98	78.9			
Aug-95	1294	0.161	***0.217***	0.964	12.5			
Aug-95	21854.3	2.715	***0.217***	0.964	210.7			
Aug-95	27292.7	3.390	***0.217***	0.964	263.1			
Aug-95	27245.4	3.385	***0.217***	0.964	262.6			
Aug-95	27237.8	3.384	***0.217***	0.964	262.6			
Aug-95	27237.8	3.384	***0.217***	0.964	262.6			
Aug-95	27227.1	3.382	***0.217***	0.964	262.5			
Aug-95	27214.9	3.381	***0.217***	0.964	262.4			
Aug-95	27196.6	3.378	***0.217***	0.964	262.2			
Aug-95	27166.1	3.375	***0.217***	0.964	261.9			
Aug-95	24495.7	3.043	***0.217***	0.964	236.1			
Aug-95	24131	2.998	***0.217***	0.964	232.6			
Aug-95	24442.3	3.036	***0.217***	0.964	235.6			
Aug-95	19187	2.383	***0.217***	0.962	184.6			
Aug-95	18601	2.311	***0.217***	0.962	178.9			
Aug-95	18761.3	2.331	***0.217***	0.962	180.5			
Aug-95	18776.5	2.332	***0.217***	0.962	180.6			
Aug-95	18616.3	2.313	***0.217***	0.962	179.1			
Aug-95	19832.5	2.464	***0.217***	0.962	190.8			
Aug-95	25431.1	3.159	***0.217***	0.962	244.6			
Aug-95	25338	3.148	***0.217***	0.962	243.8			
Aug-95	24094.4	2.993	***0.217***	0.962	231.8			
Aug-95	26184.9	3.253	***0.217***	0.962	251.9			
Aug-95	27491.1	3.415	***0.217***	0.962	264.5			
Aug-95	27198.1	3.379	***0.217***	0.962	261.6			

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore **Date:** **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 11/22/96 **File:** EMISS.XLS
Rvd. By: C. Moore **Date:** 12/03/97 **Sheet:** Unit 7 CEMS & MGR

Client: City of Tallahassee
Project: Purdom Unit 8

Period	lbs	(kGal)	NOx Data (lb/mmBtu)	% Sulfur (wt)	Lbs of Sulfur	Period (kgal)	Period (lbs - S)	Period (lbs-Nox)
Aug-95	27021.1	3.357	0.217	0.962	259.9	187.7	14617.0	6110.5
Aug-95	27100.4	3.367	0.217	0.962	260.7			
Aug-95	27184.4	3.377	0.217	0.962	261.5			
Aug-95	27593.3	3.428	0.217	0.962	265.4			
Aug-95	27353.7	3.398	0.217	0.962	263.1			
Aug-95	27619.3	3.431	0.217	0.962	265.7			
Aug-95	27114.2	3.368	0.217	0.962	260.8			
Aug-95	14229.3	1.768	0.217	0.962	136.9			
Aug-95	683.6	0.085	0.217	0.962	6.6			
Aug-95	8916	1.108	0.217	0.956	85.2			
Aug-95	15588.9	1.937	0.217	0.956	149.0			
Aug-95	27878.7	3.463	0.217	0.956	266.5			
Aug-95	27185.9	3.377	0.217	0.956	259.9			
Aug-95	27111.1	3.368	0.217	0.956	259.2			
Aug-95	27097.4	3.366	0.217	0.956	259.1			
Aug-95	27401	3.404	0.217	0.956	262.0			
Aug-95	27098.9	3.366	0.217	0.956	259.1			
Aug-95	26703.7	3.317	0.217	0.956	255.3			
Aug-95	20761.7	2.579	0.217	0.956	198.5			
Aug-95	8493.3	1.055	0.217	0.956	81.2			
Sep-95	13918	1.729	0.222	0.991	137.9	17.201	1372.2	572.8
Sep-95	16957.6	2.107	0.222	0.991	168.0			
Sep-95	18253.1	2.267	0.222	0.991	180.9			
Sep-95	18041	2.241	0.222	0.991	178.8			
Sep-95	18010.5	2.237	0.222	0.991	178.5			
Sep-95	18009	2.237	0.222	0.991	178.5			
Sep-95	17995.2	2.235	0.222	0.991	178.3			
Sep-95	15518.7	1.928	0.222	0.991	153.8			
Sep-95	1765.5	0.219	0.222	0.991	17.5			
Oct-95	0	0.000	0.222	0	0.0	0	0	0.0
Nov-95	3022.9	0.376	0.222	0.903	27.3	10.140	737.1	337.7
Nov-95	13309.1	1.653	0.222	0.903	120.2			
Nov-95	15866.6	1.971	0.222	0.903	143.3			
Nov-95	15247	1.894	0.222	0.903	137.7			
Nov-95	16757.7	2.082	0.222	0.903	151.3			
Nov-95	14983.1	1.861	0.222	0.903	135.3			
Nov-95	2440	0.303	0.222	0.903	22.0			
Dec-95	3698.8	0.459	0.222	0.91	33.7	132.618	10226.6	4416.2
Dec-95	21736.8	2.700	0.222	0.91	197.8			
Dec-95	27723	3.444	0.222	0.91	252.3			
Dec-95	27976.3	3.475	0.222	0.91	254.6			
Dec-95	19109.2	2.374	0.222	0.91	173.9			
Dec-95	20120.9	2.499	0.222	0.91	183.1			
Dec-95	5401.8	0.671	0.222	0.91	49.2			
Dec-95	8919	1.108	0.222	0.951	84.8			
Dec-95	8500.9	1.056	0.222	0.951	80.8			
Dec-95	8746.6	1.087	0.222	0.951	83.2			
Dec-95	7408.4	0.920	0.222	0.951	70.5			
Dec-95	8868.7	1.102	0.222	0.951	84.3			
Dec-95	8877.8	1.103	0.222	0.951	84.4			
Dec-95	8899.2	1.105	0.222	0.951	84.6			
Dec-95	3724.8	0.463	0.222	0.951	35.4			
Dec-95	12067	1.499	0.222	1.024	123.6			
Dec-95	21526.2	2.674	0.222	1.024	220.4			
Dec-95	17754.1	2.205	0.222	1.024	181.8			
Dec-95	19576.1	2.432	0.222	1.024	200.5			
Dec-95	13899.7	1.727	0.222	1.024	142.3			
Dec-95	13742.5	1.707	0.222	1.024	140.7			
Dec-95	13109.2	1.628	0.222	1.024	134.2			
Dec-95	12921.5	1.605	0.222	1.024	132.3			
Dec-95	17528.3	2.177	0.222	1.024	179.5			
Dec-95	24056.2	2.988	0.222	1.024	246.3			
Dec-95	26027.7	3.233	0.222	1.024	266.5			
Dec-95	26119.3	3.245	0.222	1.024	267.5			
Dec-95	27134	3.371	0.222	1.024	277.9			
Dec-95	26493.1	3.291	0.222	1.024	271.3			
Dec-95	24855.8	3.088	0.222	1.024	254.5			
Dec-95	18576.6	2.308	0.222	1.024	190.2			

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore **Date:**
Ckd. By: D. Graziani, PE JJG 3/4/97 **Date:** 11/22/96
Rvd. By: C. Moore **Date:** 12/03/97

OFS No.: 1584.0005.0008
File: EMISS.XLS
Sheet: Unit 7 CEMS & MGR

Client: City of Tallahassee
Project: Purdom Unit 8

Period	lbs	(kGal)	NOx Data (lb/mmBtu)	% Sulfur (wt)	Lbs of Sulfur	Period (kgal)	Period (lbs - S)	Period (lbs-Nox)
Dec-95	20885.3	2.594	*0.222*	0.956	199.7	132.6	10226.6	4416.2
Dec-95	18900.1	2.348	*0.222*	0.956	180.7			
Dec-95	21507.9	2.672	*0.222*	0.956	205.6			
Dec-95	24343.1	3.024	*0.222*	0.956	232.7			
Dec-95	24265.3	3.014	*0.222*	0.956	232.0			
Dec-95	24875.6	3.090	*0.222*	0.956	237.8			
Dec-95	19917.9	2.474	*0.222*	0.956	190.4			
Dec-95	22437.2	2.787	*0.222*	0.956	214.5			
Dec-95	24816.1	3.083	*0.222*	0.956	237.2			
Dec-95	24749	3.074	*0.222*	0.956	236.6			
Dec-95	19631	2.439	*0.222*	0.956	187.7			
Dec-95	14577.2	1.811	*0.222*	0.956	139.4			
Dec-95	12573.6	1.562	*0.222*	0.956	120.2			
Dec-95	12561.4	1.560	*0.222*	0.956	120.1			
Dec-95	12558.4	1.560	*0.222*	0.956	120.1			
Dec-95	12572.1	1.562	*0.222*	0.956	120.2			
Dec-95	12630.1	1.569	*0.222*	0.956	120.7			
Dec-95	13992.7	1.738	*0.222*	0.956	133.8			
Dec-95	13116.9	1.629	*0.222*	0.956	125.4			
Dec-95	13179.4	1.637	*0.222*	0.956	126.0			
Dec-95	13525.8	1.680	*0.222*	0.956	129.3			
Dec-95	13528.9	1.681	*0.222*	0.956	129.3			
Dec-95	13524.3	1.680	*0.222*	0.956	129.3			
Dec-95	15036.5	1.868	*0.222*	0.956	143.7			
Dec-95	16664.6	2.070	*0.222*	0.863	143.8			
Dec-95	16916.4	2.101	*0.222*	0.863	146.0			
Dec-95	16666.2	2.070	*0.222*	0.863	143.8			
Dec-95	16602.1	2.062	*0.222*	0.863	143.3			
Dec-95	17343.7	2.154	*0.222*	0.863	149.7			
Dec-95	20621.4	2.562	*0.222*	0.863	178.0			
Dec-95	17854.9	2.218	*0.222*	0.863	154.1			
Dec-95	18610.2	2.312	*0.222*	0.863	160.6			
Dec-95	1489.3	0.185	*0.222*	0.863	12.9			
Jan-96	4828	0.600	*0.244*	0.83	40.1	38.751	2589.1	1418.3
Jan-96	25196.1	3.130	*0.244*	0.83	209.1			
Jan-96	26877.7	3.339	*0.244*	0.83	223.1			
Jan-96	24105	2.994	*0.244*	0.83	200.1			
Jan-96	23714.4	2.946	*0.244*	0.83	196.8			
Jan-96	19046.6	2.366	*0.244*	0.83	158.1			
Jan-96	20326.9	2.525	*0.244*	0.83	168.7			
Jan-96	25064.9	3.114	*0.244*	0.83	208.0			
Jan-96	26671.7	3.313	*0.244*	0.83	221.4			
Jan-96	26688.4	3.315	*0.244*	0.83	221.5			
Jan-96	25792.7	3.204	*0.244*	0.83	214.1			
Jan-96	24945.8	3.099	*0.244*	0.83	207.1			
Jan-96	13661.6	1.697	*0.244*	0.83	113.4			
Jan-96	11639.8	1.446	*0.244*	0.83	96.6			
Jan-96	9659.1	1.200	*0.244*	0.83	80.2			
Jan-96	3338.7	0.415	*0.244*	0.83	27.7			
Jan-96	386.1	0.048	*0.244*	0.83	3.2			
Feb-96	7406.8	0.920	*0.244*	0.8	59.3	170.159	9965.9	6227.8
Feb-96	23278	2.892	*0.244*	0.8	186.2			
Feb-96	23647.3	2.938	*0.244*	0.8	189.2			
Feb-96	21431.6	2.662	*0.244*	0.8	171.5			
Feb-96	21048.6	2.615	*0.244*	0.8	168.4			
Feb-96	19356.4	2.405	*0.244*	0.8	154.9			
Feb-96	21260.7	2.641	*0.244*	0.8	170.1			
Feb-96	19437.2	2.415	*0.244*	0.8	155.5			
Feb-96	28080.1	3.488	*0.244*	0.8	224.6			
Feb-96	25154.9	3.125	*0.244*	0.8	201.2			
Feb-96	28237.3	3.508	*0.244*	0.8	225.9			
Feb-96	26506.9	3.293	*0.244*	0.8	212.1			
Feb-96	26628.9	3.308	*0.244*	0.8	213.0			
Feb-96	22861.4	2.840	*0.244*	0.8	182.9			
Feb-96	20751.1	2.578	*0.244*	0.8	166.0			
Feb-96	20770.9	2.580	*0.244*	0.8	166.2			
Feb-96	20761.7	2.579	*0.244*	0.8	166.1			
Feb-96	20758.7	2.579	*0.244*	0.8	166.1			

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: C. Moore DJS 3/4/97
Ckd. By: D. Graziani, PE
Rvd. By: C. Moore

Date:
Date: 11/22/96
Date: 12/03/97

OFS No.: 1584.0005.0008
File: EMISS.XLS
Sheet: Unit 7 CEMS & MGR

Client: City of Tallahassee
Project: Purdom Unit 8

Period	lbs	(kGal)	NOx Data (lb/mmBtu)	% Sulfur (wt)	Lbs of Sulfur	Period (kgal)	Period (lbs - S)	Period (lbs-Nox)
Feb-96	26705.2	3.317	*0.244*	0.8	213.6	170.16	9965.94	6227.8
Feb-96	28049.6	3.484	*0.244*	0.8	224.4			
Feb-96	29171.1	3.624	*0.244*	0.8	233.4			
Feb-96	29131.4	3.619	*0.244*	0.8	233.1			
Feb-96	29189.4	3.626	*0.244*	0.8	233.5			
Feb-96	27451.4	3.410	*0.244*	0.8	219.6			
Feb-96	21039.5	2.614	*0.244*	0.74	155.7			
Feb-96	21201.2	2.634	*0.244*	0.74	156.9			
Feb-96	21402.6	2.659	*0.244*	0.74	158.4			
Feb-96	21160	2.629	*0.244*	0.74	156.6			
Feb-96	17130	2.128	*0.244*	0.74	126.8			
Feb-96	28327.3	3.519	*0.244*	0.74	209.6			
Feb-96	28910.2	3.591	*0.244*	0.74	213.9			
Feb-96	27390.4	3.403	*0.244*	0.74	202.7			
Feb-96	26009.4	3.231	*0.244*	0.74	192.5			
Feb-96	24268.3	3.015	*0.244*	0.74	179.6			
Feb-96	23564.9	2.927	*0.244*	0.74	174.4			
Feb-96	27892.4	3.465	*0.244*	0.74	206.4			
Feb-96	27817.6	3.456	*0.244*	0.74	205.9			
Feb-96	27889.3	3.465	*0.244*	0.74	206.4			
Feb-96	27993.1	3.477	*0.244*	0.74	207.1			
Feb-96	22211.4	2.759	*0.244*	0.74	164.4			
Feb-96	20813.6	2.586	*0.244*	0.74	154.0			
Feb-96	24869.5	3.089	*0.244*	0.74	184.0			
Feb-96	29099.4	3.615	*0.244*	0.74	215.3			
Feb-96	28847.6	3.584	*0.244*	0.74	213.5			
Feb-96	25421.9	3.158	*0.244*	0.74	188.1			
Feb-96	26227.6	3.258	*0.244*	0.74	194.1			
Feb-96	25113.7	3.120	*0.244*	0.74	185.8			
Feb-96	15317.2	1.903	*0.244*	0.74	113.3			
Feb-96	13991.2	1.738	*0.244*	0.5	70.0			
Feb-96	14304	1.777	*0.244*	0.5	71.5			
Feb-96	14488.7	1.800	*0.244*	0.5	72.4			
Feb-96	14511.6	1.803	*0.244*	0.5	72.6			
Feb-96	14455.1	1.796	*0.244*	0.5	72.3			
Feb-96	14481	1.799	*0.244*	0.5	72.4			
Feb-96	15723.1	1.953	*0.244*	0.5	78.6			
Feb-96	25515	3.170	*0.244*	0.5	127.6			
Feb-96	23331.4	2.898	*0.244*	0.5	116.7			
Feb-96	23348.2	2.900	*0.244*	0.5	116.7			
Feb-96	22647.8	2.813	*0.244*	0.5	113.2			
Feb-96	15988.6	1.986	*0.244*	0.5	79.9			
Mar-96	248.7	0.031	*0.244*	0.94	2.3	5.050	343.5	184.8
Mar-96	8072.1	1.003	*0.244*	0.92	74.3			
Mar-96	1724.3	0.214	*0.244*	0.92	15.9			
Mar-96	11024.8	1.370	*0.244*	0.82	90.4			
Mar-96	19032.9	2.364	*0.244*	0.82	156.1			
Mar-96	552.4	0.069	*0.244*	0.82	4.5			
Apr-96	134287.4	16.682	*0.210*	1.08	1450.3	48.433	4159.6	1525.6
Apr-96	255595.6	31.751	*0.210*	1.06	2709.3			
May-96	226933.2	28.190	*0.210*	1.08	2450.9	77.904	6732.9	2454.0
May-96	400192	49.713	*0.210*	1.07	4282.1			
Jun-96	0	0.000	*0.210*	0	0.0	0.000	0.0	0.0
Jul-96	0	0.000	*0.210*	0	0.0	0.000	0.0	0.0

Note: There was no fuel oil usage in Unit 7 in June or July, 1996.

APPENDIX C

SUMMARY OF EMISSION RATES USED IN MODELLING

SUPPORTING CALCULATIONS

TITLE V EMISSION FACTORS - FCG
EMISSION FACTORS WORKSHOP VERSION 3.1

Summary of Emission rates used in modelling

SIGNIFICANT IMPACT

Future Emis (yr 2000) - Current Actual

	CURRENT ACTUAL PERIOD	UNIT 1-4 SHEET #	FUTURE	-CURRENT	=(g/s)	UNIT 5 SHEET #	FUTURE	-CURRENT	(g/s)	UNIT 6 SHEET #	FUTURE	-CURRENT	(g/s)	UNIT 7 SHEET #	FUTURE	-CURRENT	(g/s)
SO2 SHORT	Aug94Jul96	NO-NO	0.00	0.00	0.00	NO - 6	0.00	49.18	-49.18	NO - 6	0.00	49.18	-49.18	4 - 6	146.45	146.45	0.00
SO2 LONG	Aug94Jul96	NO-NO	0.00	0.00	0.00	NO - 5	0.00	0.01	-0.01	NO - 5	0.00	0.11	-0.11	3 - 5	2.30	2.17	0.12
PM SHORT	Aug94Jul96	NO-NO	0.00	0.00	0.00	NO - 6	0.00	4.73	-4.73	NO - 6	0.00	4.73	-4.73	4 - 6	9.79	9.79	0.00
PM LONG	Aug94Jul96	NO-NO	0.00	0.00	0.00	NO - 5	0.00	0.04	-0.04	NO - 5	0.00	0.04	-0.04	3 - 5	0.24	0.22	0.03
NO2 LONG	Aug94Jul96	NO-NO	0.00	0.00	0.00	NO - 5	0.00	1.96	-1.96	NO - 5	0.00	4.05	-4.05	3 - 5	13.18	7.23	5.95
CO SHORT	Aug94Jul96	NO-NO	0.00	0.00	0.00	NO - 6	0.00	1.26	-1.26	NO - 6	0.00	1.26	-1.26	4 - 6	2.61	2.61	0.00

Note: Long term Emission rates were based on Scenarios
The Scenario which produced the highest emissions was selected
This worst case selection process may result it some units having zero emissions in the Long term analysis.

NO = Not Operating

SIGNIFICANT IMPACT

Future Emis (yr 2000) - Current Actual

	CURRENT	UNIT GT1				UNIT GT2				UNIT 8		UNIT Cooling Tower		AUXILARY BOILER	
	ACTUAL PERIOD	SHEET #	FUTURE -	CURRENT	(g/s)	SHEET #	FUTURE -	CURRENT	(g/s)	SHEET #	(g/s)		(g/s)	SHEET #	(g/s)
SO2 SHORT	Aug94Jul96	4 - 6	1.47	11.76	-10.29	4 - 6	1.47	11.76	-10.29	4	7.82	NA	NA	NA**	NA
SO2 LONG	Aug94Jul96	There is only info on the			0.00	5 - 5(a)	0.01	0.01	0.00	3	0.00	NA	NA	3	2.89E-04
PM SHORT	Aug94Jul96	4 - 6	1.09	1.09	0.00	4 - 6	1.09	1.09	NA	4	2.14		0.30	NA**	NA
PM LONG	Aug94Jul96	combined operation of			0.00	5 - 5(a)	0.01	0.01	0.00	3	1.14		0.30	3	2.99E-03
NO2 LONG	Aug94Jul96	GT 1&2 see GT2 column			0.00	5 - 5(a)	0.19	0.19	0.00	3	0.00	NA	NA	3	6.75E-02
CO SHORT	Aug94Jul96	4 - 6	1.38	1.38	0.00	4 - 6	1.38	1.38	NA	4	14.34	NA	NA	NA**	NA

(a) GT 1 and GT 2 are assumed to operate at the current utilization in the futrure.

** aux Boiler will never operate with the other steam units (unit 7 & 8) so it is not included in any "short term" Modelling

NO = Not Operating

NO = Not Operating

MONITORING EXEMPTION

EMISSION RATES BASED ON:

Future Emis (yr 2000) - Current Actual

	CURRENT ACTUAL PERIOD	UNIT 1-4				UNIT 5				UNIT 6				UNIT 7			
		SHEET #	FUTURE -CURRENT		=(g/s)	SHEET #	FUTURE -CURRENT		(g/s)	SHEET #	FUTURE -CURRENT		(g/s)	SHEE	FUTURE -CURRENT		(g/s)
PM SHORT	Aug94Jul96	NO-NO	0.00	0.00	0.00	NO - 6	0.00	4.73	-4.73	NO - 6	0.00	4.73	-4.73	4 - 6	9.79	9.79	0.00
CO SHORT	Aug94Jul96	NO-NO	0.00	0.00	0.00	NO - 6	0.00	1.26	-1.26	NO - 6	0.00	1.26	-1.26	4 - 6	2.61	2.61	0.00

MONITORING EXEMPTION

EMISSION RATES BASED ON:

Future Emis (yr 2000) - Current Actual

	CURRENT ACTUAL PERIOD	UNIT GT1				UNIT GT2				UNIT 8		UNIT Cooling Tower		AUXILARY BOILER	
		SHEE	FUTURE	-CURRENT	(g/s)	SHEET #	FUTURE	-CURRENT	(g/s)	SHEET #	(g/s)		(g/s)	SHEET #	(g/s)
PM SHORT	Aug94Jul96	4 - 6	1.09	1.09	0.00	4 - 6	1.09	1.09	0.00	4	2.14	4	0.30	NA**	NA
CO SHORT	Aug94Jul96	4 - 6	1.38	1.38	0.00	4 - 6	1.38	1.38	0.00	4	14.34	NA	NA	NA**	NA

** aux Boiler will never operate with the other steam units (unit 7 & 8) so it is not included in any "short term" Modelling

NO = Not Operating

Summary of Emission rates used in modelling

PSD CLASS II

Future Emis (yr 2000) - Baseline Actual

	BASELINE PERIOD	UNIT 1				UNIT 2				UNIT 3				UNIT 4			
		SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)
SO2 SHORT	1976-1977	O - NO	0.00	0.00	0.00	O - NO	0.00	39.88	-39.88	NO - 2	0.00	39.88	-39.88	NO - 2	0.00	39.88	-39.88
SO2 LONG	1976-1977	O - NO	0.00	0.00	0.00	NO - 2	0.00	0.31	-0.31	NO - 1	0.00	0.84	-0.84	NO - 1	0.00	0.79	-0.79
PM SHORT	1976-1977	O - NO	0.00	0.00	0.00	NO - 1	0.00	1.81	-1.81	NO - 2	0.00	1.81	-1.81	NO - 2	0.00	1.81	-1.81
PM LONG	1976-1977	O - NO	0.00	0.00	0.00	NO - 2	0.00	0.01	-0.01	NO - 1	0.00	0.04	-0.04	NO - 1	0.00	0.04	-0.04
NO2 LONG	1986-1987	O - NO	0.00	0.00	0.00	NO - 1	0.00	0.00	0.00	NO - 1	0.00	0.00	0.00	NO - 1	0.00	0.00	0.00

PSD CLASS II

Future Emis (yr 2000) - Baseline Actual

	BASELINE PERIOD	UNIT 5				UNIT 6				UNIT 7				UNIT GT1			
		SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)
SO2 SHORT	1976-1977	NO - 2	0.00	104.04	-104.04	NO - 2	0.00	104.04	-104.04	4 - 2	146.45	215.37	-68.92	4 - 2	1.47	11.76	-10.29
SO2 LONG	1976-1977	NO - 1	0.00	22.66	-22.66	NO - 1	0.00	26.08	-26.08	3 - 1	2.30	97.68	-95.39	see note below			0.00
PM SHORT	1976-1977	NO - 2	0.00	4.73	-4.73	NO - 2	0.00	4.73	-4.73	4 - 2	9.79	9.79	0.00	4 - 2	1.09	1.09	0.00
PM LONG	1976-1977	NO - 1	0.00	1.04	-1.04	NO - 1	0.00	1.19	-1.19	3 - 1	0.00	4.46	-4.46	see note below			0.00
NO2 LONG	1986-1987	NO - 1	0.00	0.52	-0.52	NO - 1	0.00	1.25	-1.25	3 - 1	13.18	1.20	11.98	see note below			0.00

Note: GT 1&2 long term emission rates are a combination of the two units and are presented in the GT2 column.

* For GT 1&2 Current and Future long term emissions are based on Current Utilization factor
* (this is an assumption not a permit condition)

** aux Boiler will never operate with the other units so it is not included in any "short term" Modelling

NO = Not Operating

PSD CLASS II

Future Emis (yr 2000) - Baseline Actual

	BASELINE PERIOD	UNIT GT2 SHEET #	FUTURE	BASELINE	=(g/s)	UNIT 8 SHEET #	(g/s)	UNIT Cooling Tower	(g/s)	AUXILARY BOILER SHEET #	(g/s)
SO2 SHORT	1976-1977	4 - 2	1.47	11.76	-10.29	4	7.82	NA	NA	NA**	NA
SO2 LONG	1976-1977	5* - 1	0.01	0.04	-0.03	3	0.00	NA	NA	3	2.89E-04
PM SHORT	1976-1977	4 - 2	1.09	1.09	NA	4	2.14	4.00	0.30	NA**	NA
PM LONG	1976-1977	5* - 1	0.01	0.006	0.01	3	2.30	4.00	0.30	3	2.99E-03
NO2 LONG	1986-1987	5* - 1	0.19	0.04	0.14	3	0.00	NA	NA	3	6.75E-02

PSD CLASS I

Future Emis (yr 2000) - Baseline

	BASELINE PERIOD	UNIT 1				UNIT 2				UNIT 3				UNIT 4			
		SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)
SO2 SHORT	1976-1977	O - NO	0.00	0.00	0.00	NO - 2	0.00	39.88	-39.88	NO - 2	0.00	39.88	-39.88	NO - 2	0.00	39.88	-39.88
SO2 LONG	1976-1977	O - NO	0.00	0.00	0.00	NO - 1	0.00	0.31	-0.31	NO - 1	0.00	0.84	-0.84	NO - 1	0.00	0.79	-0.79
PM SHORT	1976-1977	O - NO	0.00	0.00	0.00	NO - 2	0.00	1.81	-1.81	NO - 2	0.00	1.81	-1.81	NO - 2	0.00	1.81	-1.81
PM LONG	1976-1977	O - NO	0.00	0.00	0.00	NO - 1	0.00	0.01	-0.01	NO - 1	0.00	0.04	-0.04	NO - 1	0.00	0.04	-0.04
NO2 LONG	1986-1987	O - NO	0.00	0.00	0.00	O - NO	0.00	0.00	0.00	O - NO	0.00	0.00	0.00	O - NO	0.00	0.00	0.00

PSD CLASS I

Future Emis (yr 2000) - Baseline

	BASELINE PERIOD	UNIT 5				UNIT 6				UNIT 7				UNIT GT1			
		SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	FUTURE	-BASELINE	=(g/s)
SO2 SHORT	1976-1977	NO - 2	0.00	104.04	-104.04	NO - 2	0.00	104.04	-104.04	4 - 2	146.45	215.37	-68.92	4 - 2	1.47	11.76	-10.29
SO2 LONG	1976-1977	NO - 1	0.00	22.66	-22.66	NO - 1	0.00	26.08	-26.08	3 - 1	2.30	97.68	-95.39	see note below			0.00
PM SHORT	1976-1977	NO - 2	0.00	4.73	-4.73	NO - 2	0.00	4.73	-4.73	4 - 2	9.79	9.79	0.00	4 - 2	1.09	1.09	0.00
PM LONG	1976-1977	NO - 1	0.00	1.04	-1.04	NO - 1	0.00	1.19	-1.19	3 - 1	0.00	4.46	-4.46	see note below			0.00
NO2 LONG	1986-1987	NO - 1	0.00	0.52	-0.52	NO - 1	0.00	1.25	-1.25	3 - 1	13.18	1.20	11.98	see note below			0.00

Note: GT 1&2 long term emission rates are a combination of the two units and are presented in the GT2 column.

* For GT 1&2 Current and Future long term emissions are based on Current Utilization factor
* (this is an assumption not a permit condition)

** aux Boiler will never operate with the other units so it is not included in any "short term" Modelling

NO = Not Operating

PSD CLASS I

Future Emis (yr 2000) - Baseline

	BASELINE PERIOD	UNIT GT2				UNIT 8		UNIT Cooling Tower		AUXILARY BOILER	
		SHEET #	FUTURE	-BASELINE	=(g/s)	SHEET #	(g/s)		(g/s)	SHEET #	(g/s)
SO2 SHORT	1976-1977	4 - 2	1.47	11.76	-10.29	4	7.82	NA	NA	NA**	NA
SO2 LONG	1976-1977	5* - 1	0.01	0.04	-0.03	3	0.00	NA	NA	3	2.89E-04
PM SHORT	1976-1977	4 - 2	1.09	1.09	NA	4	2.14	4	0.30	NA**	NA
PM LONG	1976-1977	5* - 1	0.01	0.006	0.01	3	2.30	4	0.30	3	2.99E-03
NO2 LONG	1986-1987	5* - 1	0.19	0.04	0.14	3	0.00	NA	NA	3	6.75E-02

Summary of Emission rates used in modelling

AAQS

Future Emissions (year 2000)

	FUTURE PERIOD	UNIT 1-4		UNIT 5		UNIT 6		UNIT 7		UNIT GT1		UNIT GT2	
		SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)
SO2 SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	146.45	4	1.47	4	1.47
SO2 LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	2.30	SEE	NOTE	5*	0.01
PM SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	9.79	4	1.09	4	1.09
PM LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.24	SEE	NOTE	5*	0.01
NO2 LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	13.18	SEE	NOTE	5*	0.19
CO SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	2.61	4	1.38	4	1.38
Pb SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	0.0152	4	0.00167	4	0.00167

Note: GT 1&2 long term emission rates are a combination of the two units and are presented in the GT2 column.

* For GT 1&2 Current and Future long term emissions are based on Current Utilization factor
* (this is an assumption not a permit condition)

** aux Boiler will never operate with the other units so it is not included in any "short term" Modelling

NO = Not Operating

AAQS

Future Emissions (year 2000)

	FUTURE PERIOD	UNIT 8		UNIT Cooling Tower		AUXILARY BOILER	
		SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)
SO2 SHORT	2000	4	7.82	NA	NA	NA**	NA
SO2 LONG	2000	3	0.00	NA	NA	3	2.89E-04
PM SHORT	2000	4	2.14	4	0.30	NA**	NA
PM LONG	2000	3	1.14	4	0.30	3	6.75E-02
NO2 LONG	2000	3	0.00	NA	NA	3	2.99E-03
CO SHORT	2000	4	14.34	NA	NA	NA**	NA
Pb SHORT	2000	4	0.00892	NA	NA	NA**	NA

FARCS

Future Emissions (year 2000)

		FUTURE PERIOD	UNIT 1-4		UNIT 5		UNIT 6		UNIT 7		UNIT GT1		UNIT GT2	
			SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)
As	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	8.93E-03	4	1.41E-04	4	1.41E-04
Cd	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	3.62E-03	4	1.21E-04	4	1.21E-04
Cr	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	1.00E-02	4	1.35E-03	4	1.35E-03
Pb	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	1.52E-02	4	1.67E-03	4	1.67E-03
Mn	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	5.80E-03	4	9.49E-03	4	9.49E-03
Hg	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	2.51E-03	4	2.62E-05	4	2.62E-05
Ni	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	1.82E-01	4	3.45E-02	4	3.45E-02
Co	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	9.48E-03	4	2.62E-04	4	2.62E-04
Sb	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	3.60E-03	4	6.32E-04	4	6.32E-04
V	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	1.39E-01	4	1.26E-04	4	1.26E-04
POM	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	3.21E-04	4	6.90E-04	4	6.90E-04
Ben(a)P	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	2.98E-07	4	1.17E-07	4	1.17E-07
Benzene	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	8.61E-05	4	3.38E-05	4	3.38E-05
Toluene	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	7.75E-04	4	3.04E-04	4	3.04E-04
Se	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	2.98E-03	4	1.52E-04	4	1.52E-04
HCL	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	4.40E-01	4	2.17E-01	4	2.17E-01
HF	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	8.35E-02	4	3.05E-02	4	3.05E-02
378TCDD	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	6.53E-10	4	2.55E-10	4	2.55E-10
HCOH	SHORT	2000	NO	0.00	NO	0.00	NO	0.00	4	3.17E-02	4	6.14E-04	4	6.14E-04

FARCS

Future Emissions (year 2000)

		FUTURE	UNIT 1-4		UNIT 5		UNIT 6		UNIT 7		UNIT GT1		UNIT GT2	
		PERIOD	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)
As	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	2.44E-04	3	1.61E-06	3	1.61E-06
Be	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	1.08E-07	3	1.08E-07
Cd	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	1.38E-06	3	1.38E-06
Cr	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	1.54E-05	3	1.54E-05
Pb	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	2.62E-04	3	1.90E-05	3	1.90E-05
Mn	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	1.08E-04	3	1.08E-04
Hg	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	6.85E-05	3	2.99E-07	3	2.99E-07
Ni	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	3.94E-04	3	3.94E-04
Co	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	2.99E-06	3	2.99E-06
Sb	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	7.22E-06	3	7.22E-06
V	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	3.79E-03	3	1.44E-06	3	1.44E-06
POM	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	7.88E-06	3	7.88E-06
Ben(a)P	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	1.33E-09	3	1.33E-09
Benzene	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	2.04E-05	3	3.85E-07	3	3.85E-07
Toluene	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	5.73E-04	3	3.47E-06	3	3.47E-06
Se	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	1.74E-06	3	1.74E-06
HCL	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	2.48E-03	3	2.48E-03
HF	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	2.09E-03	3	2.09E-03
378TCDD	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	0.00E+00	3	2.91E-12	3	2.91E-12
HCOH	LONG	2000	NO	0.00	NO	0.00	NO	0.00	3	7.92E-04	3	7.01E-06	3	7.01E-06

FARCS

Future Emissions (year 2000)

		FUTURE PERIOD	UNIT 8 SHEET #	UNIT 8 (g/s)	UNIT Cooling Tower SHEET #	UNIT Cooling Tower (g/s)	UNIT AUX. BOILER SHEET #	UNIT AUX. BOILER (g/s)
As	SHORT	2000	4	7.54E-04	(a)	NA	(b)	NA
Cd	SHORT	2000	4	6.46E-04	(a)	NA	(b)	NA
Cr	SHORT	2000	4	7.23E-03	(a)	NA	(b)	NA
Pb	SHORT	2000	4	8.92E-03	(a)	NA	(b)	NA
Mn	SHORT	2000	4	5.08E-02	(a)	NA	(b)	NA
Hg	SHORT	2000	4	1.40E-04	(a)	NA	(b)	NA
Ni	SHORT	2000	4	1.85E-01	(a)	NA	(b)	NA
Co	SHORT	2000	4	1.40E-03	(a)	NA	(b)	NA
Sb	SHORT	2000	4	3.38E-03	(a)	NA	(b)	NA
V	SHORT	2000	4	6.77E-04	(a)	NA	(b)	NA
POM	SHORT	2000	4	3.69E-03	(a)	NA	(b)	NA
Ben(a)P	SHORT	2000	4	6.24E-07	(a)	NA	(b)	NA
Benzene	SHORT	2000	4	1.81E-04	(a)	NA	(b)	NA
Toluene	SHORT	2000	4	1.63E-03	(a)	NA	(b)	NA
Se	SHORT	2000	4	8.15E-04	(a)	NA	(b)	NA
HCL	SHORT	2000	4	1.16E+00	(a)	NA	(b)	NA
HF	SHORT	2000	4	1.63E-01	(a)	NA	(b)	NA
378TCDD	SHORT	2000	4	1.36E-09	(a)	NA	(b)	NA
HCOH	SHORT	2000	4	3.29E-03	(a)	NA	(b)	NA

FARCS

Future Emissions (year 2000)

		FUTURE	UNIT 8		UNIT Cooling Tower		UNIT AUX. BOILER	
		PERIOD	SHEET #	(g/s)	SHEET #	(g/s)	SHEET #	(g/s)
As	LONG	2000	3	0.00E+00	3	NA	3	NA
Be	LONG	2000	3	1.47E-05	3	NA	3	NA
Cd	LONG	2000	3	1.87E-04	3	NA	3	NA
Cr	LONG	2000	3	2.09E-03	3	NA	3	NA
Pb	LONG	2000	3	2.58E-03	3	NA	3	NA
Mn	LONG	2000	3	1.47E-02	3	NA	3	NA
Hg	LONG	2000	3	0.00E+00	3	NA	3	3.76E-10
Ni	LONG	2000	3	5.33E-02	3	NA	3	NA
Co	LONG	2000	3	4.04E-04	3	NA	3	NA
Sb	LONG	2000	3	9.78E-04	3	NA	3	NA
V	LONG	2000	3	0.00E+00	3	NA	3	NA
POM	LONG	2000	3	1.07E-03	3	NA	3	NA
Ben(a)P	LONG	2000	3	1.80E-07	3	NA	3	NA
Benzene	LONG	2000	3	1.58E-04	3	NA	3	NA
Toluene	LONG	2000	3	0.00E+00	3	NA	3	NA
Se	LONG	2000	3	2.36E-04	3	NA	3	NA
HCL	LONG	2000	3	3.36E-01	3	NA	3	NA
HF	LONG	2000	3	4.71E-02	3	NA	3	NA
378TCDD	LONG	2000	3	3.94E-10	3	NA	3	NA
HCOH	LONG	2000	3	6.70E-03	3	NA	3	NA

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello
Ckd. By: D. Graziani, PE DJG 3/4/97
Rvd. By: M. Bilello

Date: 11/25/96
Date: 1/9/97
Date: 03/04/97

OFS No.: 1584.0005.0008
File: P8EMISS2.XLS
Sheet: Baseline LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

Description: This calculation provides the annualized emission rates for Units 1 thru 7 and GT1 and GT2 during the period 1/76 thru 12/77 for SO2 and PM and 1/86 thru 1/87 for NO2

References:

No. 1	COT Operating Data Report Summary
No. 2	Average Sulfur Content Natural Gas (0.32 grain/100CF)
No. 3	2.75 lb/mmBtu per 62-296.405(1)(c), F.A.C.
No. 4	0.125 lb/mmBtu per 62-296.405(1)(b) & 62-210.700(3) F.A.C. (assumes 3 hrs/day soot blowing)
No. 5	AP-42 Section 1.4 (emission factors adjusted to 1040 Btu/CF per table 1.4-2 (a))
No. 6	Unit 7 CEM NO2 emission factors (0.23 lb/mmBtu Nat. Gas) (0.33 lb/mmBtu Oil)
No. 7	Original Permit
No. 8	Typical density of #2 fuel oil at Purdom site (from analytical data).
No. 9	AP-42 Appendix sec 3.1

Operating Data 1976 1977

	Gross Generation Rate (kW*hr)							Units 3-7 (a) Generation Split (%)	
Month/Year	1	2	3	4	5	6	7	Gas	Oil
Jan-76	0	0	584,300	714,700	7,721,000	8,251,000	26,617,000	0.0%	100.0%
Feb-76	0	0	0	95,800	4,098,000	3,865,000	22,466,000	0.0%	100.0%
Mar-76	0	0	0	0	2,980,000	4,611,000	24,054,000	0.0%	100.0%
Apr-76	0	0	0	0	5,395,000	4,857,000	13,277,000	0.0%	100.0%
May-76	0	0	0	0	0	0	25,166,000	0.0%	100.0%
Jun-76	0	0	0	0	3,272,000	1,039,000	24,983,000	0.0%	100.0%
Jul-76	0	0	529,300	349,000	7,907,000	7,719,000	25,297,000	0.0%	100.0%
Aug-76	0	0	0	0	4,623,000	576,000	25,557,000	3.4%	96.6%
Sep-76	0	0	0	0	1,422,000	2,048,000	19,926,000	0.0%	100.0%
Oct-76	0	0	0	0	1,514,000	7,548,000	0	0.0%	100.0%
Nov-76	0	0	0	0	388,000	8,499,000	0	0.0%	100.0%
Dec-76	0	0	0	0	4,800,000	5,013,000	20,021,000	0.0%	100.0%
Jan-77	0	234,000	395,800	385,800	3,599,000	4,491,000	28,515,000	0.0%	100.0%
Feb-77	0	0	34,300	45,200	408,000	1,239,000	25,579,000	0.0%	100.0%
Mar-77	0	0	0	0	0	4,936,000	15,171,000	11.2%	88.8%
Apr-77	0	0	0	0	0	0	23,750,000	23.5%	76.5%
May-77	0	0	0	0	4,658,000	4,145,000	25,837,000	30.4%	69.6%
Jun-77	0	361,100	854,100	514,000	9,664,000	10,823,000	26,585,000	26.4%	73.6%
Jul-77	0	439,000	883,200	1,090,400	11,756,000	11,222,000	27,920,000	15.6%	84.4%
Aug-77	0	100,400	183,600	74,400	11,824,000	11,212,000	27,676,000	3.0%	97.0%
Sep-77	0	0	0	0	10,940,000	7,256,000	25,733,000	24.8%	75.2%
Oct-77	0	0	0	0	896,000	701,000	20,131,000	93.5%	6.5%
Nov-77	0	0	0	0	963,000	2,436,000	18,655,000	23.6%	76.4%
Dec-77	0	0	0	0	7,000	1,243,000	19,830,000	6.1%	93.9%
Average (%)								***10.89%***	***89.11%***
Total kW-hr	0	1,134,500	3,464,600	3,269,300	98,835,000	113,730,000	512,746,000		
Btu/kW-hr	13,700	13,700	13,700	13,700	13,000	13,000	10,800		
Gas (mmBtu)76&77	0	0	5,169	4,878	139,929	161,018	603,088		
Oil (mmBtu)76&77	0	15,543	42,296	39,912	1,144,926	1,317,472	4,934,568		

(a) Units 1 & 2 fire Oil Only

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/25/96 **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 1/9/97 **File:** P8EMISS2.XLS
Rvd. By: M. Bilello **Date:** 03/04/97 **Sheet:** Baseline LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

Note all ITALIC data is from COT PURDOM (CURTIS GOLDEN)
GT 1 & 2 Operating Information (COMBINATION OF TWO UNITS)
Operating Information: unit rating 12.3 MW x 2 — 24.6 mw

Heat Input 228* mmBtu/hr x 2	456 mmBtu/hr
BTU per KW-hr based on unit ratings (heat input/mw)	18537 Btu/kwh
LHV of natural gas Per GE data sheet	904 Btu/CF
LHV of #2 Fuel oil	132000 Btu/gal

WHEN OPERATING DATA DOES NOT HAVE FUEL USAGE THE FUEL USAGE WAS CALCULATED
FUEL USAGE= KWH*BTU/KWH/HEATING VALUE OF THE FUEL

GT1 & GT2 Operating Data

Year - 1978	mmCF gas	Kgal oil	*Hours on Gas*	*Hours on Oil*	*Total Hours*	*Oil Burn Gallons*	*Gas Burn M.C.F.*	*Gross KWH Gas*	*Gross KWH Oil*
Month									
January	0.00	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*
February	0.00	32.07				*32067*	*0*	*0*	*241000*
March	0.00	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*
April	5.78	0.00						*282000*	*0*
May	3.24	17.12				*17118*		*158000*	*123000*
June	0.73	8.40	*7*	*5*	*12*	*8401*	*730*	*38000*	*46000*
July	0.55	6.67			*7*	*6674*		*27000*	*50000*
August	0.00	5.31	*0*		*3*	*5313*	*0*	*0*	*40000*
September	4.94	2.16			*25*	*2163*		*241000*	*10000*
October	0.00	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*
November	0.00	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*
December	0.00	13.88	*0*			*13882*	*0*	*0*	*101000*
TOTAL	15.25	85.62							

Year - 1979	mmCF gas	Kgal oil	*Hours on Gas*	*Hours on Oil*	*Total Hours*	*Oil Burn Gallons*	*Gas Burn M.C.F.*	*Gross KWH Gas*	*Gross KWH Oil*
Month									
January	0.00	17.81	*0.00*	*11.50*	*11.50*	*17805*	*0*	*0*	*138000*
February	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
March	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
April	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
May	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
June	0.08	0.00		*0.00*		*0*		*4000*	*0*
July	1.11	0.00		*0.00*		*0*		*54000*	*0*
August	3.06	0.00		*0.00*		*0*		*149000*	*0*
September	0.92	0.00		*0.00*		*0*		*45000*	*0*
October	0.23	0.00		*0.00*		*0*		*11000*	*0*
November	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
December	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
TOTAL	5.39	17.81							

blank means no data

1978 1979 Summary	mmCF gas	Kgal oil
1978	15.25	85.62
1979	5.39	17.81
two year total	*20.64*	*103.42*

** The heat input is based on the current permitted level. It is understood that during the baseline years it was somewhat lower. (188 mmBtu/hr @ site elev.). The fuel oil sulfur content in the original application was 0.27% but this limit was not reflected in the permit issued. Given the low number of operating hours for these units these differences will have no material effect on the modelled impacts.*

Note 1978 and 1979 are the oldest data available on the operation of GT1 and GT2. These data are being used as the most representative data available to 1976 and 1977

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello
Ckd. By: D. Graziani, PE DJD 3/4/97
Rvd. By: M. Bilello

Date: 11/25/96
Date: 1/9/97
Date: 03/04/97

OFS No.: 1584.0005.0008
File: P8EMISS2.XLS
Sheet: Baseline LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

Note all ITALIC data is from COT PURDOM (CURTIS GOLDEN)
GT 1 & 2 Operating Information (COMBINATION OF TWO UNITS)
Operating Information: unit rating 12.3 MW x 2

	24.6 mw
Heat Input 228* mmBtu/hr x 2	456 mmBtu/hr
BTU per KW-hr based on unit ratings (heat input/mw)	18537 Btu/kw-hr
LHV of natural gas Per GE data sheet)	904 Btu/CF
LHV of #2 Fuel oil	132000 Btu/gal

WHEN OPERATING DATA DOES NOT HAVE FUEL USAGE THE FUEL USAGE WAS CALCULATED
FUEL USAGE= KWH*BTU/KWH/HEATING VALUE OF THE FUEL

Year - 1986	mmCF gas	Kgal oil	*Hours on Gas*	*Hours on Oil*	*Total Hours*	*Oil Burn Gallons*	*Gas Burn M.C.F.*	*Gross KWH Gas*	*Gross KWH Oil*
Month									
January	1.95	0.00	*8.50*	*0*	*8.50*	*0*		*95000*	*0*
February	0.00	0.00	*0.00*	*0*	*0.00*	*0*	*0*	*0*	*0*
March	0.00	0.00	*0.00*	*0*	*0.00*	*0*	*0*	*0*	*0*
April	0.00	0.00	*0.00*	*0*	*0.00*	*0*	*0*	*0*	*0*
May	2.79	0.00	*13.00*	*0*	*13.00*	*0*		*136000*	*0*
June	0.00	0.00	*0.00*	*0*	*0.00*	*0*	*0*	*0*	*0*
July	0.00	0.00	*0.00*	*0*	*0.00*	*0*	*0*	*0*	*0*
August	0.00	0.00	*0.00*	*0*	*0.00*	*0*	*0*	*0*	*0*
September	0.88	0.00	*4.50*	*0*	*4.50*	*0*		*43000*	*0*
October	2.48	0.00	*11.50*	*0*	*11.50*	*0*		*121000*	*0*
November	0.00	0.00	*0.00*	*0*	*0.00*	*0*	*0*	*0*	*0*
December	0.00	0.00	*0.00*	*0*	*0.00*	*0*	*0*	*0*	*0*
Annual	8.10	0.00	37.50	0.00	37.50	0.00	0.00	395000.00	0.00

Year - 1987	mmCF gas	Kgal oil	*Hours on Gas*	*Hours on Oil*	*Total Hours*	*Oil Burn Gallons*	*Gas Burn M.C.F.*	*Gross KWH Gas*	*Gross KWH Oil*
Month									
January	0.45	0.00	*3.00*	*0.00*	*3.00*	*0*	*448*	*32000*	*0*
February	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
March	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
April	0.66	0.00	*6.00*	*0.00*	*6.00*	*0*	*662*	*64000*	*0*
May	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
June	0.74	0.00	*3.50*	*0.00*	*3.50*	*0*		*36000*	*0*
July	1.36	0.00	*10.30*	*0.00*	*10.30*	*0*	*1358*	*97000*	*0*
August	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
September	0.00	0.00	*0.00*	*0.00*	*0.00*	*0*	*0*	*0*	*0*
October	0.20	0.00	*2.00*	*0.00*	*2.00*	*0*	*196*	*14000*	*0*
November	1.70	0.00	*8.25*	*0.00*	*8.25*	*0*		*83000*	*0*
December	1.81	0.00	*13.75*	*0.00*	*13.75*	*0*	*1806*	*129000*	*0*
Annual	6.91	0.00	46.80	0.00	46.80	0.00	4470.00	455000.00	0.00

blank means no data

1986 1987 Summary	mmCF gas	Kgal oil
1978	8.10	0.00
1979	6.91	0.00
two year total	*15.01*	*0.00*

** The heat input is based on the current permitted level. It is understood that during the baseline years it was somewhat lower. (188 mmBtu/hr @ site elev.). The fuel oil sulfur content in the original application was 0.27% but this limit was not reflected in the permit issued. Given the low number of operating hours for these units these differences will have no material effect on the modelled impacts.*

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello
Ckd. By: D. Graziani, PE DJD 3/4/97
Rvd. By: M. Bilello

Date: 11/25/96
Date: 1/9/97
Date: 03/04/97

OFS No.: 1584.0005.0008
File: P8EMISS2.XLS
Sheet: Baseline LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

Operating Data 1986 1987

Year	Unit 5 Gas (10^3 CF)	Unit 5 Oil (kgal)	Unit 6 Gas (10^3 CF)	Unit 6 Oil (kgal)	Unit 7 Gas (10^3 CF)	Unit 7 Oil (kgal)	Ref. No.
1986	142450	55.1	240370	59.81	1762910	559.9	1
1987	102227	0	55045	0	664245	0	1
Totals	244677	55.1	295415	59.81	2427155	559.9	
mmBtu 1986/87	254464.08	8265	307231.6	8971.5	2524241.2	83985	

Assume	150000	Btu/gal heat content for #6 Oil or 0.15 mmBtu/gal
Assume	132000	Btu/gal heat content for #2 Oil or 0.132 mmBtu/gal
Assume	1040	Btu/scf heat content for natural gas
Assume	904	Btu/scf heat content for natural gas,
Ref 8	6.75	lb/gal weight of # 2 fuel oil

HHV for Boilers
LHV for Combustion Turbines (per GE Data Sheet)

Calculations Oil Fired

Pollutant	UNIT 1 em. factor		UNIT 1 TPY	UNIT 2 em. factor		UNIT 2 TPY
SO2	2.75	lb/mmBtu(7)	0.00E+00	2.75	lb/mmBtu(7)	1.07E+01
NO2	na	na	na	na	na	na
PM	0.125	lb/mmBtu(3)	0.00E+00	0.125	lb/mmBtu(3)	4.86E-01

Units 1- 4 were not operating during the NO2 baseline years 1986/87

Calculations Oil Fired

Pollutant	UNIT 3 em. factor		UNIT 3 TPY	UNIT 4 em. factor		UNIT 4 TPY
SO2	2.75	lb/mmBtu(7)	2.91E+01	2.75	lb/mmBtu(7)	2.74E+01
NO2	na	na	na	na	na	na
PM	0.125	lb/mmBtu(3)	1.32E+00	0.125	lb/mmBtu(3)	1.25E+00

Calculations Oil Fired

Pollutant	UNIT 5 em. factor		UNIT 5 TPY	UNIT 6 em. factor		UNIT 6 TPY
SO2	2.75	lb/mmBtu(7)	7.87E+02	2.75	lb/mmBtu(7)	9.06E+02
NO2	42	lb/Kgal (1)	5.79E-01	67	lb/Kgal (1)	1.00E+00
PM	0.125	lb/mmBtu(3)	3.58E+01	0.125	lb/mmBtu(3)	4.12E+01

Calculations Oil Fired

Pollutant	UNIT 7 em. factor		UNIT 7 TPY	UNIT GT1 em. factor	UNIT GT1 TPY	UNIT GT2 em. factor		UNIT GT2 TPY
SO2	2.75	lb/mmBtu(7)	3.39E+03	OPERATING DATA IS ONLY		0.4	%S (7)*	1.40E+00
NO2	0.33	lb/mmBtu(3)	6.93E+00	AVAILABLE FOR THE COMBINATION		0.698	lb/mmBtu(9)	0.00E+00
PM	0.125	lb/mmBtu(3)	1.54E+02	OF GT1& GT2 (SEE GT2 COLUMN)		0.038	lb/mmBtu(9)(f)	1.30E-01

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/25/96 **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 1/9/97 **File:** P8EMISS2.XLS
Rvd. By: M. Bilello **Date:** 03/04/97 **Sheet:** Baseline LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

Calculations Natural Gas Fired

Pollutant	UNIT 1 em. factor		1 TPY	2 em. factor		2 TPY
SO2	na	na	na	na	na	na
NO2	na	na	na	na	na	na
PM	na	na	na	na	na	na

Unit 1 & 2 are only capable of firing oil.

Calculations Natural Gas Fired

Pollutant	UNIT 3 em. factor		3 TPY	4 em. factor		4 TPY
SO2	0.32	gr/100CF	**1.14E-03**	0.32	gr/100CF	**1.07E-03**
NO2	na	na	na	na	na	na
PM	5.2	lb/mmCF(5)	**6.46E-03**	5.2	lb/mmCF(5)	**6.10E-03**

Units 1-4 were not running during NO2 baseline years

Calculations Natural Gas Fired

Pollutant	UNIT 5 em. factor		5 TPY	6 em. factor		6 TPY
SO2	0.32	gr/100CF	**3.08E-02**	0.32	gr/100CF	**3.64E-02**
NO2	286	lb/mmCF(5)	**1.75E+01**	572	lb/mmCF(5)	**4.22E+01**
PM	5.2	lb/mmCF(5)	**1.75E-01**	5.2	lb/mmCF(5)	**2.01E-01**

Calculations Natural Gas Fired

Pollutant	UNIT 7 em. factor		7 TPY	GT1 em. factor	GT1 TPY	GT2 em. factor		GT2 TPY
SO2	0.32	gr/100CF	**1.33E-01**	OPERATING DATA IS ONLY		0.32	gr/100CF	**4.72E-03**
NO2	0.23	lb/mmBTU(5)	**3.47E+01**	AVAILABLE FOR THE COMBINATION		0.44	lb/mmBtu(9)	**1.49E+00**
PM	5.2	lb/mmCF(5)	**7.54E-01**	OF GT1& GT2 (SEE GT2 COLUMN)		0.0193	lb/mmBtu (9)	**9.00E-02**

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/25/96
Ckd. By: D. Graziani, PE DJB 3/4/97 **Date:** 1/9/97
Rvd. By: M. Bilello **Date:** 03/04/97

OFS No.: 1584.0005.0008
File: P8EMISS2.XLS
Sheet: Baseline LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

Annualized Emission Rates =[Oil (tpy) + Gas(tpy)] x 2000lb/ton x 454gm/lb /8760hr/yr / 3600sec/hr

	UNIT					
	1		1	2		2
Pollutant	OIL(TPY)	Gas TPY	g/s	OIL(TPY)	Gas TPY	g/s
SO2	0.00E+00	na	**0.00E+00**	1.07E+01	na	**3.08E-01**
NO2	na	na	**0.00E+00**	na	na	**0.00E+00**
PM	0.00E+00	na	**0.00E+00**	4.86E-01	na	**1.40E-02**

	UNIT					
	3		3	4		4
Pollutant	OIL(TPY)	Gas TPY	g/s	OIL(TPY)	Gas TPY	g/s
SO2	2.91E+01	1.14E-03	**8.37E-01**	2.74E+01	1.07E-03	**7.90E-01**
NO2	na	na	**0.00E+00**	na	na	**0.00E+00**
PM	1.32E+00	6.46E-03	**3.82E-02**	1.25E+00	6.10E-03	**3.61E-02**

	UNIT					
	5		5	6		6
Pollutant	OIL(TPY)	Gas TPY	g/s	OIL(TPY)	Gas TPY	g/s
SO2	7.87E+02	3.08E-02	**2.27E+01**	9.06E+02	3.54E-02	**2.61E+01**
NO2	5.79E-01	1.75E+01	**5.20E-01**	1.00E+00	4.22E+01	**1.25E+00**
PM	3.58E+01	1.75E-01	**1.04E+00**	4.12E+01	2.01E-01	**1.19E+00**

	UNIT					
	7		7	GT1		GT1
Pollutant	OIL(TPY)	Gas TPY	g/s	OIL(TPY)	Gas TPY	g/s
SO2	3.39E+03	1.33E-01	**9.77E+01**	OPERATING DATA IS ONLY		
NO2	6.93E+00	3.47E+01	**1.20E+00**	AVAILABLE FOR THE COMBINATION		
PM	1.54E+02	7.54E-01	**4.46E+00**	OF GT1& GT2 (SEE GT2 COLUMN)		

	UNIT		
	GT2		GT2
Pollutant	OIL(TPY)	Gas TPY	g/s
SO2	1.40E+00	4.72E-03	**4.03E-02**
NO2	0.00E+00	1.49E+00	**4.30E-02**
PM	1.30E-01	9.00E-02	**6.33E-03**

Calculation Formats:

EmissionFactor Units	Equation
lb/mmBtu	TPY= EF(lb/mmBtu) X Heat Input(mmBtu/2yr baseline) / 2000(lb/ton) / 2(yr/Baseline period)
lb/Kgal	TPY= EF(lb/Kgal) X Fuel usage(Kgal/2yr baseline) / 2000(lb/ton) / 2(yr/Baseline period)
gr/100CF	TPY= EF(gr/100CF) X Heat Input(mmBtu/2yr baseline) X 10^6Btu/mmBtu / 100(CF) / Heat rate(Btu/CF) X 7000 gr/lb / 2000(lb/ton) / 2(yr/Baseline period)

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96 **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 1/9/97 **File:** P8EMISS.XLS
Rvd. By: M. Bilello **Date:** 03/04/97 **Sheet:** Baseline ST Rates

Client: City of Tallahassee
Project: Purdom Unit 8

Description: This calculation provides the short term emission rates for Units 1-7, GTs 1 & 2 based on allowable emission rates

References:

No. 1 AP-42, Section 1.3
No. 2 Original Permits
No. 3 0.125 lb/mmBtu per 62-296.405(1)(b) & 62-210.700(3) F.A. (assumes 3 hrs/day soot blowing)
No. 4 Typical densities of oil (#2 and #6) at Purdom site (from analytical data).
No. 5 Title V Application (11/04/96)
No. 7 AP-42, Section 3.1
No. 8 Letter from Kennard F. Kosky (KBN) to Howard Rhodes (FDEP) 4-28-95Re: Florida [Electric Power] Coordinating Group [,Inc.]Emission Factors for Title [V] Permit Applications dated 4-28-95
No.9 Analysis of City of Tallahssee oil

General Information

	Unit No.					
	1	5	6	7	GT 1	GT 2
mmBTU	115	300	300	621	228.0	228.0
gal/hr	767	2,000	2000	4140	1727	1727.0
oil densi	8.05	8.05	8.05	8.05	6.75	6.75
lb Oil/hr	6172	16100	16100	33327	11657	11657

Calculations

	UNIT							
Pollutant	1 (g) em. factor		1(g) (g/s)	5 em. factor		5 (g/s)	6 em. factor		6 (g/s)
SO2	2.75	lb/mmBtu (2)	39.88	2.75	lb/mmBtu (2)	104.04	2.75	lb/mmBtu (2)	104.04
NO2	67	lb/Kgal (1)	6.48	42	lb/Kgal (1)(h)	10.59	67	lb/Kgal (1)	16.90
PM	0.125	lb/mmBtu(3)	1.81	0.125	lb/mmBtu(3)	4.73	0.125	lb/mmBtu(3)	4.73
CO	5	lb/Kgal (1)	0.48	5	lb/Kgal (1)	1.26	5	lb/Kgal (1)	1.26
Be	4.2	lb/10^12Btu(1)	0.0001	4.2	lb/10^12Btu(1)	0.0002	4.2	lb/10^12Btu(1)	0.0002
Pb	194.0	lb/10^12Btu(1)	0.0028	194.0	lb/10^12Btu(1)	0.0073	194.0	lb/10^12Btu(1)	0.0073
Hg	32.0	lb/10^12Btu(1)	0.0005	32.0	lb/10^12Btu(1)	0.0012	32.0	lb/10^12Btu(1)	0.0012
Fl	0.00016	lb/gal (9)	0.0155	0.00016	lb/gal (9)	0.0404	0.00016	lb/gal (9)	0.0404

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96 **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE DJG **Date:** 1/9/97 **File:** P8EMISS.XLS
Rvd. By: M. Bilello 3/4/97 **Date:** 03/04/97 **Sheet:** Baseline ST Rates

Client: City of Tallahassee
Project: Purdom Unit 8

Calculations

	UNIT								
Pollutant	7 em. factor		7 (g/s)	GT1 em. factor		GT1 (g/s)	GT2 em. factor		GT2 (g/s)
SO2	2.75	lb/mmBtu (2)	215.37	0.4	%S (2)	11.76	0.4	%S (2)	11.76
NO2	0.33	lb/mmBtu(b)	25.84	0.698	lb/mmBtu(7)	20.07	0.698	lb/mmBtu(7)	20.07
PM	0.125	lb/mmBtu(3)	9.79	0.038	lb/mmBtu(7)(f)	1.09	0.038	lb/mmBtu(7)(f)	1.09
CO	5	lb/Kgal (1)	2.61	0.048	lb/mmBtu(7)	1.38	0.048	lb/mmBtu(7)	1.38
Be	4.2	lb/10^12Btu(1)	0.0003	3.30E-07	lb/mmBtu(7)	0.00001	3.30E-07	lb/mmBtu(7)	0.00001
Pb	194.0	lb/10^12Btu(1)	0.0152	5.80E-05	lb/mmBtu(7)	0.00167	5.80E-05	lb/mmBtu(7)	0.00167
Hg	32.0	lb/10^12Btu(1)	0.0025	9.10E-07	lb/mmBtu(7)	0.00003	9.10E-07	lb/mmBtu(7)	0.00003
Fl	0.00016	lb/gal (9)	0.0835	0.00014	lb/gal (9)	0.0305	0.00014	lb/gal (9)	0.0305

all emission rates based on firing oil

(b) Unit 7 NO2 emission factor from CEM data
(e) heat inputs for Units 5,6&7 are from Ref.5
(f) includes only filterable fraction of particulates
(g) Units 1-4 are identical units, as such emissions calculations are identical.
(h) Unit 5 is tangentally fired

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 1/9/97
Rvd. By: M. Bilello **Date:** 3/04/97

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Future LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

Description: This is a summary of the annual scenario calculation that was used for the determination of future long term emission rates for unit 7 and unit 8 and the calculation of the future long term emissions for GT1 , GT2 and the Aux Boiler.

This is a summary of the calculations performed in the anual scenario calculations.
ALL tpy VALUES PRESENTED IN THIS SUMMARY ARE FROM THE ANNUAL SCEANRIOS.

Scenarios used for future emissions estimates for Unit 7 and Unit 8

SCENARIO 1 UNIT 8 AS CONTROLLING UNIT OPERATING 8760 HOURS ON NATURAL GAS / UNIT 7 FIRING #6 OIL SO2 LIMIT 1.87 lb/mmBtu
SCENARIO 2 UNIT 8 AS CONTROLLING UNIT OPERATING MAX HOURS ON #2 FUEL OIL / NO OPERATION OF UNIT 7
SCENARIO 3 UNIT 7 AS CONTROLLING UNIT MAX HOURS ON #6 FUEL OIL 1.87 lb/mmBtu/ NO OPERATION OF UNIT 8
SCENARIO 4 UNIT 8 AS CONTROLLING UNIT OPERATING 8760 HOURS ON NATURAL GAS / UNIT 7 OPERATING ON # 6 OIL ASSUME TYPICAL S CONTENT
SCENARIO 5 UNIT 8 AS CONTROLLING UNIT OPERATING 8760 HOURS ON NATURAL GAS / UNIT 7 OPERATION ON NATURAL GAS
SCENARIO 6 UNIT 7 AS CONTROLLING UNIT MAX HOURS ON #6 FUEL OIL ASSUME TYPICAL S CONTENT/ NO OPERATION OF UNIT 8
SCENARIO 7 UNIT 7 AS CONTROLLING UNIT MAX HOURS ON NATURAL GAS/ OPERATION OF UNIT 8 ON NATURAL GAS
SCENARIO 8 UNIT 8 AS CONTROLLING UNIT OPERATING 8260 HOURS ON NATURAL GAS & 500 HR ON #2 OIL / UNIT 7 ON #6 OIL Typical S content 1%
SCENARIO 9 UNIT 8 AS CONTROLLING UNIT OPERATING 8260 HOURS ON NATURAL GAS & 500 HR ON #2 OIL / UNIT 7 ON NATURAL GAS
SCENARIO 10 UNIT 8 AS CONTROLLING UNIT OPERATING 7021 HRS ON NATURAL GAS & 425 HR ON #2 OIL / UNIT 7 ON #6 OIL ASSUME typical S content 1%
SCENARIO 11 UNIT 8 AS CONTROLLING UNIT (85% CAP.) OPERATING 7201 HOURS ON NATURAL GAS & 425 HR ON #2 OIL / UNIT 7 ON NATURAL GAS

Note: These scenarios were used to determine the potential worst case emissions on an annual basis and are not meant to reflect any hourly operational limits on the facility

ALL SCENARIOS BASED ON UNITS OPERATING AT 100 % LOAD

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

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Client: City of Tallahassee
Project: Purdom Unit 8

Summary of annual Scenarios

	SO2			PM			NO2		
	UNIT 7	UNIT 8	TOTAL	UNIT 7	UNIT 8	TOTAL	UNIT 7	UNIT 8	TOTAL
	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY
SCENARIO 1	72.9	6.9	79.8	4.9	39.4	44.3	12.9	254.0	266.9
SCENARIO 2	0.0	79.8	79.8	0.0	14.7	14.7	0.0	279.3	279.3
SCENARIO 3	79.8	0.0	79.8	5.3	0.00	5.3	14.1	0.0	14.1
SCENARIO 4	72.9	6.9	79.8	**8.5**	**39.4**	**47.9**	22.4	254.0	276.4
SCENARIO 5	0.8	6.9	7.7	4.4	39.4	43.8	203.7	254.0	457.7
SCENARIO 6	**79.8**	**0.0**	**79.8**	9.3	0.0	9.3	24.5	0.0	24.5
SCENARIO 7	1.7	0.0	1.7	10.0	0.0	10.0	**457.7**	**0.0**	**457.7**
SCENARIO 8	50.3	29.5	79.8	5.9	41.4	47.3	15.5	320.0	335.5
SCENARIO 9	0.5	29.5	30.1	3.0	41.4	44.4	137.7	320.0	457.7
SCENARIO 10	54.7	25.1	79.8	6.4	35.2	41.6	16.8	272.0	288.9
SCENARIO 11	0.7	25.1	25.8	4.0	35.2	39.2	185.7	272.0	457.7
MAX TOTAL			79.8			47.9			457.7

	SO2			PM			NO2		
	UNIT 7	UNIT 8	TOTAL	UNIT 7	UNIT 8	TOTAL	UNIT 7	UNIT 8	TOTAL
Maximum emissions TPY	79.8	0.0	79.8	8.49	39.42	47.91	457.73	0.00	457.73
Emission Rate used in annual Modelling (g/s)	**2.30**	**0.00**	2.30	**0.24**	**1.14**	1.38	**13.18**	**0.00**	13.18
double check			OK			OK			OK

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
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OFS No.: 1584.0005.0008
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Sheet: Future LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

	CO			VOC			Pb			H2SO4		
	UNIT 7 TPY	UNIT 8 TPY	TOTAL TPY	UNIT 7 TPY	UNIT 8 TPY	TOTAL TPY	UNIT 7 TPY	UNIT 8 TPY	TOTAL TPY	UNIT 7 TPY	UNIT 8 TPY	TOTAL TPY
SCENARIO 1	1.3	147.0	148.3	0.2	12.3	12.5	7.56E-03	0.00E+00	7.56E-03	3.37E+00	0.00E+00	3.37E+00
SCENARIO 2	0.0	98.6	98.6	0.0	7.9	7.9	**0.00E+00**	**8.95E-02**	**8.95E-02**	**0.00E+00**	**8.67E+00**	**8.67E+00**
SCENARIO 3	1.4	0.0	1.4	0.2	0.0	0.2	8.28E-03	0.00E+00	8.28E-03	3.69E+00	0.00E+00	3.69E+00
SCENARIO 4	2.3	147.0	149.3	0.3	12.3	12.6	1.32E-02	0.00E+00	1.32E-02	5.88E+00	0.00E+00	5.88E+00
SCENARIO 5	35.4	147.0	182.4	1.2	12.3	13.5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SCENARIO 6	2.5	0.0	2.5	0.4	0.0	0.4	1.44E-02	0.00E+00	1.44E-02	6.44E+00	0.00E+00	6.44E+00
SCENARIO 7	79.6	0.0	79.6	2.7	0.0	2.7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SCENARIO 8	1.6	167.0	168.6	0.2	13.8	14.1	9.09E-03	2.58E-02	3.49E-02	4.06E+00	2.50E+00	6.56E+00
SCENARIO 9	**23.9**	**167.0**	**191.0**	**0.8**	**13.8**	**14.7**	0.00E+00	2.58E-02	2.58E-02	0.00E+00	2.50E+00	2.50E+00
SCENARIO 10	1.7	142.0	143.7	0.3	11.8	12.0	9.89E-03	2.19E-02	3.18E-02	4.41E+00	2.13E+00	6.54E+00
SCENARIO 11	32.3	142.0	174.3	1.1	11.8	12.9	0.00E+00	2.19E-02	2.19E-02	0.00E+00	2.13E+00	2.13E+00
MAX TOTAL			191.0			14.7			8.95E-02			8.67E+00

	CO			VOC			Pb			H2SO4		
	UNIT 7	UNIT 8	TOTAL	UNIT 7	UNIT 8	TOTAL	UNIT 7	UNIT 8	TOTAL	UNIT 7	UNIT 8	TOTAL
Maximum emissions TPY	23.95	167.02	190.97	0.8	13.8	14.7	9.09E-03	8.95E-02	8.95E-02	0.00E+00	8.67E+00	8.67E+00
Emission Rate used in annual Modelling (g/s)	**0.69**	**4.81**	5.50	na	na	na	0.0002616	0.0025776	0.00257763	**0.00E+00**	**2.50E-01**	2.50E-01
double check			OK			OK			OK			OK

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE DJD 3/4/97 **Date:** 1/9/97
Rvd. By: M. Bilello **Date:** 3/04/97

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Future LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

	Fl			Hg			Be			As		
	UNIT 7 TPY	UNIT 8 TPY	TOTAL TPY	UNIT 7 TPY	UNIT 8 TPY	TOTAL TPY	UNIT 7 TPY	UNIT 8 TPY	TOTAL TPY	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*
SCENARIO 1	4.16E-02	0.00E+00	4.16E-02	1.25E-03	5.34E-06	1.25E-03	1.64E-04	0.00E+00	1.64E-04	4.44E-03	0.00E+00	*4.44E-03*
SCENARIO 2	**0.00E+00**	**1.64E+00**	**1.64E+00**	**0.00E+00**	**1.40E-03**	**1.40E-03**	**0.00E+00**	**5.09E-04**	**5.09E-04**	0.00E+00	7.56E-03	*7.56E-03*
SCENARIO 3	4.55E-02	0.00E+00	4.55E-02	1.37E-03	0.00E+00	1.37E-03	1.79E-04	0.00E+00	1.79E-04	4.86E-03	0.00E+00	*4.86E-03*
SCENARIO 4	7.24E-02	0.00E+00	7.24E-02	2.17E-03	5.34E-06	2.18E-03	2.85E-04	0.00E+00	2.85E-04	7.74E-03	0.00E+00	*7.74E-03*
SCENARIO 5	0.00E+00	0.00E+00	0.00E+00	6.91E-07	5.34E-06	6.03E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	*0.00E+00*
SCENARIO 6	7.93E-02	0.00E+00	7.93E-02	**2.38E-03**	**0.00E+00**	**2.38E-03**	3.12E-04	0.00E+00	3.12E-04	**8.48E-03**	**0.00E+00**	***8.48E-03***
SCENARIO 7	0.00E+00	0.00E+00	0.00E+00	1.55E-06	0.00E+00	1.55E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	*0.00E+00*
SCENARIO 8	4.72E-01	5.00E-02	5.22E-01	4.10E-04	4.10E-04	8.20E-04	1.97E-04	1.47E-04	3.44E-04	5.34E-03	2.18E-03	*7.52E-03*
SCENARIO 9	0.00E+00	4.72E-01	4.72E-01	4.67E-07	4.10E-04	4.10E-04	0.00E+00	1.47E-04	1.47E-04	0.00E+00	2.18E-03	*2.18E-03*
SCENARIO 10	5.44E-02	4.01E-01	4.55E-01	1.63E-03	3.48E-04	1.98E-03	2.14E-04	1.25E-04	3.39E-04	5.81E-03	1.85E-03	*7.66E-03*
SCENARIO 11	0.00E+00	4.01E-01	4.01E-01	6.30E-07	3.48E-04	3.49E-04	0.00E+00	1.25E-04	1.25E-04	0.00E+00	1.85E-03	*1.85E-03*
MAX TOTAL			1.64E+00			2.38E-03			5.09E-04			*8.48E-03*

	Fl			Hg			Be			As		
	UNIT 7	UNIT 8	TOTAL	UNIT 7	UNIT 8	TOTAL	UNIT 7	UNIT 8	TOTAL	UNIT 7	UNIT 8	*TOTAL*
Maximum emissions TPY	0.00E+00	1.64E+00	1.64E+00	2.38E-03	0.00E+00	2.38E-03	0.00E+00	5.09E-04	5.09E-04	8.48E-03	0.00E+00	8.48E-03
Emission Rate used in annual Modelling (g/s)	**0.00E+00**	**4.71E-02**	4.71E-02	**6.85E-05**	**0.00E+00**	6.85E-05	**0.00E+00**	**1.47E-05**	1.47E-05	2.44E-04	0.00E+00	**2.44E-04**
double check			OK			OK			OK			OK

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello
Ckd. By: D. Graziani, PE DJG 3/4/97
Rvd. By: M. Bilello

Date: 11/22/96
Date: 1/9/97
Date: 3/04/97

OFS No.: 1584.0005.0008
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Client: City of Tallahassee
Project: Purdom Unit 8

	Cd			Cr			Mn			Ni		
	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*
SCENARIO 1	1.80E-03	0.00E+00	*1.80E-03*	4.99E-03	0.00E+00	*4.99E-03*	2.88E-03	0.00E+00	*2.88E-03*	9.08E-02	0.00E+00	*9.08E-02*
SCENARIO 2	**0.00E+00**	**6.48E-03**	***6.48E-03***	**0.00E+00**	**7.25E-02**	***7.25E-02***	**0.00E+00**	**5.09E-01**	***5.09E-01***	**0.00E+00**	**1.85E+00**	***1.85E+00***
SCENARIO 3	1.97E-03	0.00E+00	*1.97E-03*	5.46E-03	0.00E+00	*5.46E-03*	3.16E-03	0.00E+00	*3.16E-03*	9.08E-02	0.00E+00	*9.08E-02*
SCENARIO 4	3.14E-03	0.00E+00	*3.14E-03*	8.69E-03	0.00E+00	*8.69E-03*	5.02E-03	0.00E+00	*5.02E-03*	1.58E-01	0.00E+00	*1.58E-01*
SCENARIO 5	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*
SCENARIO 6	3.43E-03	0.00E+00	*3.43E-03*	9.52E-03	0.00E+00	*9.52E-03*	5.50E-03	0.00E+00	*5.50E-03*	1.73E-01	0.00E+00	*1.73E-01*
SCENARIO 7	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*
SCENARIO 8	2.16E-03	1.87E-03	*4.03E-03*	5.99E-03	2.09E-02	*2.69E-02*	3.47E-03	1.47E-01	*1.50E-01*	1.09E-01	5.34E-01	*6.43E-01*
SCENARIO 9	0.00E+00	1.87E-03	*1.87E-03*	0.00E+00	2.09E-02	*2.09E-02*	0.00E+00	1.47E-01	*1.47E-01*	0.00E+00	5.34E-01	*5.34E-01*
SCENARIO 10	2.35E-03	1.59E-03	*3.94E-03*	6.52E-03	1.78E-02	*2.43E-02*	3.77E-03	1.25E-01	*1.29E-01*	1.19E-01	4.54E-01	*5.73E-01*
SCENARIO 11	0.00E+00	1.59E-03	*1.59E-03*	0.00E+00	1.78E-02	*1.78E-02*	0.00E+00	1.25E-01	*1.25E-01*	0.00E+00	4.54E-01	*4.54E-01*
MAX TOTAL			*6.48E-03*			*7.25E-02*			*5.09E-01*			*1.85E+00*

	Cd			Cr			Mn			Ni		
	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*
Maximum emissions TPY	0.00E+00	6.48E-03	6.48E-03	0.00E+00	7.25E-02	7.25E-02	0.00E+00	5.09E-01	5.09E-01	0.00E+00	1.85E+00	1.85E+00
Emission Rate used in annual Modelling (g/s)	0.00E+00	1.87E-04	**1.87E-04**	0.00E+00	2.09E-03	**2.09E-03**	0.00E+00	1.47E-02	**1.47E-02**	0.00E+00	5.33E-02	**5.33E-02**
double check			OK			OK			OK			OK

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello
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Client: City of Tallahassee
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	Co			Sb			V			POM		
	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*
SCENARIO 1	4.72E-03	0.00E+00	*4.72E-03*	1.79E-03	0.00E+00	*1.79E-03*	6.90E-02	0.00E+00	*6.90E-02*	1.60E-04	0.00E+00	*1.60E-04*
SCENARIO 2	**0.00E+00**	**1.40E-02**	***1.40E-02***	**0.00E+00**	**3.40E-02**	***3.40E-02***	0.00E+00	6.79E-03	***6.79E-03***	**0.00E+00**	**3.71E-02**	***3.71E-02***
SCENARIO 3	4.72E-03	0.00E+00	*4.72E-03*	1.96E-03	0.00E+00	*1.96E-03*	7.56E-02	0.00E+00	*7.56E-02*	1.75E-04	0.00E+00	*1.75E-04*
SCENARIO 4	8.22E-03	0.00E+00	*8.22E-03*	3.12E-03	0.00E+00	*3.12E-03*	1.20E-01	0.00E+00	*1.20E-01*	2.78E-04	0.00E+00	*2.78E-04*
SCENARIO 5	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*
SCENARIO 6	9.00E-03	0.00E+00	*9.00E-03*	3.42E-03	0.00E+00	*3.42E-03*	**1.32E-01**	**0.00E+00**	***1.32E-01***	3.05E-04	0.00E+00	*3.05E-04*
SCENARIO 7	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*	0.00E+00	0.00E+00	*0.00E+00*
SCENARIO 8	5.67E-03	4.05E-03	*9.72E-03*	2.15E-03	9.79E-03	*1.19E-02*	8.29E-02	1.96E-03	*8.49E-02*	1.92E-04	1.07E-02	*1.09E-02*
SCENARIO 9	0.00E+00	4.05E-03	*4.05E-03*	0.00E+00	9.79E-03	*9.79E-03*	0.00E+00	1.96E-03	*1.96E-03*	0.00E+00	1.07E-02	*1.07E-02*
SCENARIO 10	6.17E-03	3.44E-03	*9.61E-03*	2.34E-03	8.32E-03	*1.07E-02*	9.02E-02	1.66E-03	*9.19E-02*	2.09E-04	9.08E-03	*9.29E-03*
SCENARIO 11	0.00E+00	3.44E-03	*3.44E-03*	0.00E+00	8.32E-03	*8.32E-03*	0.00E+00	1.66E-03	*1.66E-03*	0.00E+00	9.08E-03	*9.08E-03*
MAX TOTAL			*1.40E-02*			*3.40E-02*			*1.32E-01*			*3.71E-02*

	Co			Sb			V			POM		
	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*
Maximum emissions TPY	0.00E+00	1.40E-02	1.40E-02	0.00E+00	3.40E-02	3.40E-02	1.32E-01	0.00E+00	1.32E-01	0.00E+00	3.71E-02	3.71E-02
Emission Rate used in annual Modelling (g/s)	0.00E+00	4.04E-04	**4.04E-04**	0.00E+00	9.78E-04	**9.78E-04**	3.79E-03	0.00E+00	**3.79E-03**	0.00E+00	1.07E-03	**1.07E-03**
double check			OK			OK			OK			OK

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 1/9/97
Rvd. By: M. Bilello **Date:** 3/04/97

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Future LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

	BaP			Benzene			Toluene			Se		
	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*
SCENARIO 1	1.48E-07	0.00E+00	*1.48E-07*	4.29E-05	5.48E-03	*5.52E-03*	3.86E-04	0.00E+00	*3.86E-04*	1.48E-03	0.00E+00	*1.48E-03*
SCENARIO 2	**0.00E+00**	**6.27E-06**	***6.27E-06***	0.00E+00	1.81E-03	*1.81E-03*	0.00E+00	1.63E-02	*1.63E-02*	**0.00E+00**	**8.18E-03**	***8.18E-03***
SCENARIO 3	1.62E-07	0.00E+00	*1.62E-07*	4.69E-05	0.00E+00	*4.69E-05*	4.22E-04	0.00E+00	*4.22E-04*	1.62E-03	0.00E+00	*1.62E-03*
SCENARIO 4	2.58E-07	0.00E+00	*2.58E-07*	7.47E-05	5.48E-03	*5.55E-03*	6.72E-04	0.00E+00	*6.72E-04*	2.58E-03	0.00E+00	*2.58E-03*
SCENARIO 5	0.00E+00	0.00E+00	*0.00E+00*	**7.08E-04**	**5.48E-03**	***6.19E-03***	8.86E-03	0.00E+00	*8.86E-03*	0.00E+00	0.00E+00	*0.00E+00*
SCENARIO 6	2.83E-07	0.00E+00	*2.83E-07*	8.18E-05	0.00E+00	*8.18E-05*	7.36E-04	0.00E+00	*7.36E-04*	2.83E-03	0.00E+00	*2.83E-03*
SCENARIO 7	0.00E+00	0.00E+00	*0.00E+00*	1.59E-03	0.00E+00	*1.59E-03*	**1.99E-02**	**0.00E+00**	***1.99E-02***	0.00E+00	0.00E+00	*0.00E+00*
SCENARIO 8	1.78E-07	1.81E-06	*1.98E-06*	5.15E-05	5.69E-03	*5.74E-03*	4.64E-04	4.70E-03	*5.17E-03*	1.78E-03	2.36E-03	*4.14E-03*
SCENARIO 9	0.00E+00	1.81E-06	*1.81E-06*	4.79E-04	5.69E-03	*6.17E-03*	5.99E-03	4.70E-03	*1.07E-02*	0.00E+00	2.36E-03	*2.36E-03*
SCENARIO 10	1.94E-07	1.53E-06	*1.73E-06*	5.61E-05	4.83E-03	*4.89E-03*	5.05E-04	4.00E-03	*4.50E-03*	1.94E-03	2.00E-03	*3.94E-03*
SCENARIO 11	0.00E+00	1.53E-06	*1.53E-06*	6.46E-04	4.83E-03	*5.48E-03*	8.07E-03	4.00E-03	*1.21E-02*	0.00E+00	2.00E-03	*2.00E-03*
MAX TOTAL			***6.27E-06***			***6.19E-03***			***1.99E-02***			***8.18E-03***

	BaP			Benzene			Toluene			Se		
	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*
Maximum emissions TPY	0.00E+00	6.27E-06	6.27E-06	7.08E-04	5.48E-03	6.19E-03	1.99E-02	0.00E+00	1.99E-02	0.00E+00	8.18E-03	8.18E-03
Emission Rate used in annual Modelling (g/s)	0.00E+00	1.80E-07	**1.80E-07**	2.04E-05	1.58E-04	**1.78E-04**	5.73E-04	0.00E+00	**5.73E-04**	0.00E+00	2.36E-04	**2.36E-04**
double check			OK			OK			OK			OK

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello
Ckd. By: D. Graziani, PE DJG 3/4/97
Rvd. By: M. Bilello

Date: 11/22/96
Date: 1/9/97
Date: 3/04/97

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Future LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

	HCL			2378diox			HCOH		
	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*	UNIT 7 TPY	UNIT 8 TPY	*TOTAL TPY*
SCENARIO 1	2.19E-01	0.00E+00	*2.19E-01*	3.25E-10	0.00E+00	*3.25E-10*	1.58E-02	2.33E-01	*2.49E-01*
SCENARIO 2	**0.00E+00**	**1.17E+01**	***1.17E+01***	**0.00E+00**	**1.37E-08**	***1.37E-08***	0.00E+00	3.30E-02	*3.30E-02*
SCENARIO 3	2.40E-01	0.00E+00	*2.40E-01*	3.56E-10	0.00E+00	*3.56E-10*	1.73E-02	0.00E+00	*1.73E-02*
SCENARIO 4	3.81E-01	0.00E+00	*3.81E-01*	5.66E-10	0.00E+00	*5.66E-10*	**2.75E-02**	**2.33E-01**	***2.60E-01***
SCENARIO 5	0.00E+00	0.00E+00	*0.00E+00*	1.06E-09	0.00E+00	*1.06E-09*	0.00E+00	2.33E-01	*2.33E-01*
SCENARIO 6	4.18E-01	0.00E+00	*4.18E-01*	6.20E-10	0.00E+00	*6.20E-10*	3.01E-02	0.00E+00	*3.01E-02*
SCENARIO 7	0.00E+00	0.00E+00	*0.00E+00*	2.39E-09	0.00E+00	*2.39E-09*	6.77E-02	0.00E+00	*6.77E-02*
SCENARIO 8	2.63E-01	3.36E+00	*3.63E+00*	3.90E-10	3.94E-09	*4.33E-09*	1.90E-02	2.29E-01	*2.48E-01*
SCENARIO 9	0.00E+00	3.36E+00	*3.36E+00*	7.18E-10	3.94E-09	*4.66E-09*	2.04E-02	2.29E-01	*2.49E-01*
SCENARIO 10	2.86E-01	2.86E+00	*3.15E+00*	4.25E-10	3.35E-09	*3.78E-09*	2.06E-02	1.95E-01	*2.15E-01*
SCENARIO 11	0.00E+00	2.86E+00	*2.86E+00*	9.69E-10	3.35E-09	*4.32E-09*	2.75E-02	1.95E-01	*2.22E-01*
MAX TOTAL			*1.17E+01*			*1.37E-08*			*2.60E-01*

	HCL			2378diox			HCOH		
	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*	UNIT 7	UNIT 8	*TOTAL*
Maximum emissions TPY	0.00E+00	1.17E+01	1.17E+01	0.00E+00	1.37E-08	1.37E-08	2.75E-02	2.33E-01	2.60E-01
Emission Rate used in annual Modelling (g/s)	0.00E+00	3.36E-01	**3.36E-01**	0.00E+00	3.94E-10	**3.94E-10**	7.92E-04	6.70E-03	**7.49E-03**
double check			OK			OK			OK

Note: When there is more than one scenario with the total TPY equal to the max the scenario in which Unit 7 has the higer emissions was selected. This is because Unit 7 produces higher impacts than Unit 8 with the same TPY emissions

annualized g/s=TPY x 2000lb/ton x 454gm/lb / 8760hr/yr / 3600sec/hr

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE DJD 3/4/97 **Date:** 1/9/97
Rvd. By: M. Bilello **Date:** 3/04/97

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Future LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

General Information for Oil firing

	GT 1	GT 2	Aux B (3)
mmBTU/hr	228.0	228.0	16.738
gal/hr	1727	1727.0	na
oil density(5)	6.75	6.75	na
lb Oil/hr	11657	11657	na
hours/year(a)	100	100	2000

References:

No. 1 AP-42, Section 1.3
No. 2 Letter from Kennard F. Kosky (KBN) to Howard Rhodes (FDEP) 4-28-95Re:Florida [Electric Power] Coordinating Group [,Inc.]Emission Factors for *Title [V] Permit* Applications dated 4-28-95
No. 3 Aux Boiler Permit Application
No. 4 AP-42, Section 1.4
No. 5 Typical densitiyof #2 fuel oil at Purdom site (from analytical data).

All calculations based on 100% load

Note: These emission rates (g/s) are annualized based on the assumed hrs/yr in the above general information

Pollutant	GT1 em. factor		GT1 (g/s)	GT2 em. factor		GT2 (g/s)	AUX BOILER em. factor		AUX (g/s)
As	4.90E-06	lb/mmBtu (1)	1.61E-06	4.90E-06	lb/mmBtu (1)	1.61E-06	NA	NA	NA
Be	3.30E-07	lb/mmBtu (1)	1.08E-07	3.30E-07	lb/mmBtu (1)	1.08E-07	NA	NA	NA
Cd	4.20E-06	lb/mmBtu (1)	1.38E-06	4.20E-06	lb/mmBtu (1)	1.38E-06	NA	NA	NA
Cr	4.70E-05	lb/mmBtu (1)	1.54E-05	4.70E-05	lb/mmBtu (1)	1.54E-05	NA	NA	NA
Pb	5.80E-05	lb/mmBtu (1)	1.90E-05	5.80E-05	lb/mmBtu (1)	1.90E-05	NA	NA	NA
Mn	3.30E-04	lb/mmBtu (1)	1.08E-04	3.30E-04	lb/mmBtu (1)	1.08E-04	NA	NA	NA
Hg	9.10E-07	lb/mmBtu (1)	2.99E-07	9.10E-07	lb/mmBtu (1)	2.99E-07	7.80E-04	lb/Btu10^12 (2	3.76E-10
Ni	1.20E-03	lb/mmBtu (1)	3.94E-04	1.20E-03	lb/mmBtu (1)	3.94E-04	NA	NA	NA
Co	9.10E-06	lb/mmBtu (1)	2.99E-06	9.10E-06	lb/mmBtu (1)	2.99E-06	NA	NA	NA
Sb	2.20E-05	lb/mmBtu (1)	7.22E-06	2.20E-05	lb/mmBtu (1)	7.22E-06	NA	NA	NA
V	4.40E-06	lb/mmBtu (1)	1.44E-06	4.40E-06	lb/mmBtu (1)	1.44E-06	NA	NA	NA
POM	0.00317	lb/Kgal(2)	7.88E-06	0.00317	lb/Kgal(2)	7.88E-06	NA	NA	NA
BaP	5.36E-07	lb/Kgal(2)	1.33E-09	5.36E-07	lb/Kgal(2)	1.33E-09	NA	NA	NA
Benzene	0.000155	lb/Kgal(2)	3.85E-07	0.000155	lb/Kgal(2)	3.85E-07	NA	NA	NA
Toluene	0.001396	lb/Kgal(2)	3.47E-06	0.001396	lb/Kgal(2)	3.47E-06	NA	NA	NA
Se	5.30E-06	lb/mmBtu (1)	1.74E-06	5.30E-06	lb/mmBtu (1)	1.74E-06	NA	NA	NA
HCL	0.997988	lb/Kgal(2)	2.48E-03	0.997988	lb/Kgal(2)	2.48E-03	NA	NA	NA
HF	0.842446	lb/Kgal(2)	2.09E-03	0.842446	lb/Kgal(2)	2.09E-03	NA	NA	NA
2378 diox.	1.17E-09	lb/Kgal(2)	2.91E-12	1.17E-09	lb/Kgal(2)	2.91E-12	NA	NA	NA
HCOH	0.00282	lb/Kgal(2)	7.01E-06	0.00282	lb/Kgal(2)	7.01E-06	NA	NA	NA

(a) for purposes of this analysis GT 1 and GT2 are assumed to operate at the current utilization of nominally 100 hrs per year this is not a permit condition

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE DJG **Date:** 1/9/97
Rvd. By: M. Bilello 3/4/97 **Date:** 3/04/97

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Future LT Rates

Client: City of Tallahassee
Project: Purdom Unit 8

General Information for Natural Gas firing

	Aux B (3)
mmBTU/hr	16.738
Btu/cf	1000.0
mmCF/hr	0.017
annual hr operation	2000

Note: These emission rates (g/s) are annualized based on the assumed hrs/yr in the above general information

Pollutant	Aux Boiler em. factor (g)		Aux. B (g/s)	
SO2	0.6	lb/mmCF (4)	2.89E-04	
NO2	140	lb/mmCF (4)	6.75E-02	
PM	6.2	lb/mmCF (4)	2.99E-03	
CO	35	lb/mmCF (4)	1.69E-02	
Be	NA	NA	NA	
Pb	NA	NA	NA	
Hg	NA	NA	NA	
Fl	NA	NA	NA	
VOC	2.784	lb/mmCF (4)(j	1.34E-03	The VOC emission rate is used to calculate TPY<u>It is not used for modelling</u>
H2SO4	na	na	na	

Aux Boiler fires ONLY Nat. Gas

(j) TOC emission factor adjusted for 52% methane (see ref 4 table 1.4-3 footnote g)

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE **Date:** 1/9/97
Rvd. By: M. Bilello **Date:** 03/04/97
Client: City of Tallahassee
Project: Purdom Unit 8

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Future ST Rates

Description: This calculation provides the Future short term emission rates for Units 7 and 8, GTs 1 & 2 and the Aux. Boiler

References:

No. 1 AP-42, Section 1.3
No. 2 62-296.405(1)(c), F.A.C.
No. 3 0.125 lb/mmBtu per 62-296.405(1)(b) & 62-210.700(3) F.A.C. (assumes 3 hrs/day soot blowing)
No. 4 Typical densities of oil (#2 and #6) at Purdom site (from analytical data).
No. 5 Title V Application (11/04/96)
No. 6 GE Data Sheet (10/02/96)
No. 7 AP-42, Section 3.1
No. 8 EPRI Synthesis Report , 1994
No. 9 AP-42, Section 1.4(emission facors adjusted per footnote (a) table 1.4-2)
No. 10 H. Frediani Calc. #17
No. 11 Aux Boiler Permit Application
No. 12 Analysis of City of Tallahassee Oil

General Information for Oil firing

	Unit No.				
	7 (l)	8 (a)	8 (h)	GT 1(m)	GT 2 (m)
mmBTU/hr (e)	621	1219.9	1779.5	228.0	228.0
gal/hr	4140	9242	13481	1727	1727.0
oil density(4)	8.05	6.75	6.75	6.75	6.75
lb Oil/hr	33327	62381	90997	11657	11657

General Information for Natural Gas firing

	Unit No.				
	7 (l)	8 (h)	GT 1(m)	GT 2 (m)	Aux B.(11)
mmBTU/hr (e)	621	1563.2	228	228	16.738
Btu/cf (*)	1040	904	904	904	1000.0
mmCF/hr	0.597	1.729	0.252	0.252	0.017

(*) Typical HHV of COT Natural Gas , LHV from GE data sheet used for all Combustion Turbines, HHV value for Aux. Boiler from manf.

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE DJD **Date:** 1/9/97
Rvd. By: M. Bilello 3/4/97 **Date:** 03/04/97
Client: City of Tallahassee
Project: Purdom Unit 8

OFS No.: 1584.0005.0008
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Sheet: Future ST Rates

Calculations

	UNIT											
Pollutant	7 em. factor		7 (g/s)	8 (a) 20oF 60% em. factor		8 (a) (g/s)	GT1 em. factor		GT1 (g/s)	GT2 em. factor		GT1 (g/s)
SO2	1.87	lb/mmBtu (5)	146.45	62	lb/hr(6)	7.82	0.05	%S(c)	1.47	0.05	%S(c)	1.47
NO2	0.33	lb/mmBtu(b)	25.84	217	lb/hr(6)	27.37	0.698	lb/mmBtu(7)	20.07	0.698	lb/mmBtu(7)	20.07
PM	0.125	lb/mmBtu(3)	9.79	17	lb/hr(6)	2.14	0.038	lb/mmBtu(7)(f)	1.09	0.038	lb/mmBtu(7)(f)	1.09
CO	5	lb/Kgal (1)	2.61	192	lb/hr(6)	24.21	0.048	lb/mmBtu(7)	1.38	0.048	lb/mmBtu(7)	1.38
Be	4.2	lb/10^12Btu(1)	0.0003	3.30E-07	lb/mmBtu(7)	0.00005	3.30E-07	lb/mmBtu(7)	0.00001	3.30E-07	lb/mmBtu(7)	0.00001
Pb	194.0	lb/10^12Btu(1)	0.0152	5.80E-05	lb/mmBtu(7)	0.00892	5.80E-05	lb/mmBtu(7)	0.00167	5.80E-05	lb/mmBtu(7)	0.00167
Hg	32.0	lb/10^12Btu(1)	0.0025	9.10E-07	lb/mmBtu(7)	0.00014	9.10E-07	lb/mmBtu(7)	0.00003	9.10E-07	lb/mmBtu(7)	0.00003
Fl	0.00016	lb/gal (12)	0.0835	0.00014	lb/gal (12)	0.1632	0.00014	lb/gal (12)	0.0305	0.00014	lb/gal (12)	0.0305
VOC	0.76	lb/Kgal(1)	0.40	17.0	lb/hr(6)	2.14	0.02	lb/mmBtu(7)(i)	0.48873	0.02	lb/mmBtu(7)(i)	0.48873
H2SO4	12.99	lb/Kgal (1)	6.78	7.0	lb/hr(6)	0.88	NA	NA	NA	NA	NA	NA

The VOC emission rate is used to calculate TPY it is not used for modelling

Pollutant	COOLING TOWER em. factor		COOL T. (g/s)	Aux Boiler em. factor (g)		Aux. B (g/s)	8 (h) 59oF Base Load em. factor		8 (h) (g/s)	8 (h) 59oF Base Load em. factor		8 (h) (g/s)
SO2	NA	NA	NA	0.6	lb/mmCF (9)	0.001	92	lb/hr(6)	11.60	92	lb/hr(6)	11.60
NO2	NA	NA	NA	140	lb/mmCF (9)	0.296	322	lb/hr(6)	40.61	322	lb/hr(6)	40.61
PM	2.392	lb/hr (10)	0.30	6.2	lb/mmCF (9)	0.013	17	lb/hr(6)	2.14	17	lb/hr(6)	2.14
CO	NA	NA	NA	35	lb/mmCF (9)	0.074	113.67	lb/hr(6)	14.34	96	lb/hr(6)	12.11
Be	NA	NA	NA	NA	NA	NA	3.30E-07	lb/mmBtu(7)	0.00007	3.30E-07	lb/mmBtu(7)	0.00007
Pb	NA	NA	NA	NA	NA	NA	5.80E-05	lb/mmBtu(7)	0.01302	5.80E-05	lb/mmBtu(7)	0.01302
Hg	NA	NA	NA	NA	NA	NA	9.10E-07	lb/mmBtu(7)	0.00020	9.10E-07	lb/mmBtu(7)	0.00020
Fl	NA	NA	NA	NA	NA	NA	0.00014	lb/gal (12)	2.38E-01	0.00014	lb/gal (12)	2.38E-01
VOC	NA	NA	NA	2.784	lb/mmCF (9)(j)	0.006	9.1	lb/hr(6)	1.15	7.5	lb/hr(6)	0.95
H2SO4	NA	NA	NA	na	na	na	10.0	lb/hr(6)	1.26	10.0	lb/hr(6)	1.26

The VOC emission rate is used to calculate TPY it is not used for modelling

Aux Boiler fires ONLY Nat. Gas

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE **Date:** 1/9/97
Rvd. By: M. Bilello **Date:** 03/04/97
Client: City of Tallahassee
Project: Purdom Unit 8

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Future ST Rates

Calculations for Natural gas not used in the short term modelling analysis but needed for netting analysis

	UNIT											
Pollutant	7 em. factor		7 (g/s)	8 59oF base load em. factor		8 (g/s)	GT1 em. factor		GT1 (g/s)	GT2 em. factor		GT1 (g/s)
SO2	0.32	gr/100CF	6.88E-02	0.32	gr/100CF	1.99E-01	0.32	gr/100CF	2.91E-02	0.32	gr/100CF	2.91E-02
NO2	0.23	lb/mmBTU(b)	18.01	58	lb/hr(6)	7.31	0.44	lb/mmBtu(7)	12.64947	0.44	lb/mmBtu(7)	12.64947
PM	5.2	lb/mmCF(9)	0.39	9	lb/hr(6)	1.14	0.0193	lb/mmBtu (7)	0.55485	0.0193	lb/mmBtu (7)	0.55485
CO	41.6	lb/mmCF(9)	3.13	33.56	lb/hr(6)	4.23	0.11	lb/mmBtu (7)	3.16237	0.11	lb/mmBtu (7)	3.16237
Be	na	na	na	na	na	na	na	na	na	na	na	na
Pb	na	na	na	na	na	na	na	na	na	na	na	na
Hg	0.00078	lb/10^12 Btu (8)	6.11E-08	0.00078	lb/10^12 Btu (8)	1.54E-07	0.00078	lb/10^12 Btu (8)	2.24E-08	0.00078	lb/10^12 Btu (8)	2.24E-08
Fl	na	na	na	na	na	na	na	na	na	na	na	na
VOC	1.41	lb/mmCF (9) (k)	0.11	2.8	lb/hr(6)	0.35	0.02400	lb/mmBtu(7)(i)	0.68997	0.02400	lb/mmBtu(7)(i)	0.68997
H2SO4	na	na	na	na	na	na	na	na	na	na	na	na

The VOC emission rate is used to calculate TPY it is not used for modelling

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE DJG **Date:** 1/9/97
Rvd. By: M. Bilello 3/4/97 **Date:** 03/04/97
Client: City of Tallahassee
Project: Purdom Unit 8

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
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Calculations for FARCS (OIL FIRING)

	UNIT											
Pollutant	7 em. factor		7 (g/s)	8 (a) em. factor		8 (a) (g/s)	GT1 em. factor		GT1 (g/s)	GT2 em. factor		GT1 (g/s)
As	114	lb/Btu10^12 (1)	8.93E-03	4.90E-06	lb/mmBtu (7)	7.54E-04	4.90E-06	lb/mmBtu (7)	1.41E-04	4.90E-06	lb/mmBtu (7)	1.41E-04
Be	4.2	lb/Btu10^12 (1)	3.29E-04	3.30E-07	lb/mmBtu (7)	5.08E-05	3.30E-07	lb/mmBtu (7)	9.49E-06	3.30E-07	lb/mmBtu (7)	9.49E-06
Cd	46.2	lb/Btu10^12 (12	3.62E-03	4.20E-06	lb/mmBtu (7)	6.46E-04	4.20E-06	lb/mmBtu (7)	1.21E-04	4.20E-06	lb/mmBtu (7)	1.21E-04
Cr	128	lb/Btu10^12 (1)	1.00E-02	4.70E-05	lb/mmBtu (7)	7.23E-03	4.70E-05	lb/mmBtu (7)	1.35E-03	4.70E-05	lb/mmBtu (7)	1.35E-03
Pb	194	lb/Btu10^12 (1)	1.52E-02	5.80E-05	lb/mmBtu (7)	8.92E-03	5.80E-05	lb/mmBtu (7)	1.67E-03	5.80E-05	lb/mmBtu (7)	1.67E-03
Mn	74	lb/Btu10^12 (1)	5.80E-03	3.30E-04	lb/mmBtu (7)	5.08E-02	3.30E-04	lb/mmBtu (7)	9.49E-03	3.30E-04	lb/mmBtu (7)	9.49E-03
Hg	32	lb/Btu10^12 (1)	2.51E-03	9.10E-07	lb/mmBtu (7)	1.40E-04	9.10E-07	lb/mmBtu (7)	2.62E-05	9.10E-07	lb/mmBtu (7)	2.62E-05
Ni	2330	lb/Btu10^12 (1)	1.82E-01	1.20E-03	lb/mmBtu (7)	1.85E-01	1.20E-03	lb/mmBtu (7)	3.45E-02	1.20E-03	lb/mmBtu (7)	3.45E-02
Co	121	lb/Btu10^12 (1)	9.48E-03	9.10E-06	lb/mmBtu (7)	1.40E-03	9.10E-06	lb/mmBtu (7)	2.62E-04	9.10E-06	lb/mmBtu (7)	2.62E-04
Sb	46	lb/Btu10^12 (1)	3.60E-03	2.20E-05	lb/mmBtu (7)	3.38E-03	2.20E-05	lb/mmBtu (7)	6.32E-04	2.20E-05	lb/mmBtu (7)	6.32E-04
V	0.2656	lb/Kgal(8)	1.39E-01	4.40E-06	lb/mmBtu (7)	6.77E-04	4.40E-06	lb/mmBtu (7)	1.26E-04	4.40E-06	lb/mmBtu (7)	1.26E-04
POM	0.000615	lb/Kgal(8)	3.21E-04	0.00317	lb/Kgal(8)	3.69E-03	0.00317	lb/Kgal(8)	6.90E-04	0.00317	lb/Kgal(8)	6.90E-04
Ben(a)P	5.70E-07	lb/Kgal(8)	2.98E-07	5.36E-07	lb/Kgal(8)	6.24E-07	5.36E-07	lb/Kgal(8)	1.17E-07	5.36E-07	lb/Kgal(8)	1.17E-07
Benzene	0.000165	lb/Kgal(8)	8.61E-05	0.000155	lb/Kgal(8)	1.81E-04	0.000155	lb/Kgal(8)	3.38E-05	0.000155	lb/Kgal(8)	3.38E-05
Toluene	0.001485	lb/Kgal(8)	7.75E-04	0.001396	lb/Kgal(8)	1.63E-03	0.001396	lb/Kgal(8)	3.04E-04	0.001396	lb/Kgal(8)	3.04E-04
Se	38	lb/Btu10^12 (1)	2.98E-03	5.30E-06	lb/mmBtu (7)	8.15E-04	5.30E-06	lb/mmBtu (7)	1.52E-04	5.30E-06	lb/mmBtu (7)	1.52E-04
HCL	0.842446	lb/Kgal(12)	4.40E-01	0.997988	lb/Kgal(8)	1.16E+00	0.997988	lb/Kgal(8)	2.17E-01	0.997988	lb/Kgal(8)	2.17E-01
HF	0.16	lb/Kgal(12)	8.35E-02	0.14	lb/Kgal(12)	1.63E-01	0.14	lb/Kgal(12)	3.05E-02	0.14	lb/Kgal(12)	3.05E-02
2378 TCDD	1.25E-09	lb/Kgal(8)	6.53E-10	1.17E-09	lb/Kgal(8)	1.36E-09	1.17E-09	lb/Kgal(8)	2.55E-10	1.17E-09	lb/Kgal(8)	2.55E-10
HCOH	405	lb/Btu10^12 (1)	3.17E-02	0.00282	lb/Kgal(8)	3.29E-03	0.00282	lb/Kgal(8)	6.14E-04	0.00282	lb/Kgal(8)	6.14E-04

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE DJD 3/4/97 **Date:** 1/9/97
Rvd. By: M. Bilello **Date:** 03/04/97
Client: City of Tallahassee
Project: Purdom Unit 8

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Future ST Rates

These natural gase emission rates are NOT used for short term modelling BUT are used in calculating the annual emissions
Calculations for FARCS on Natural Gas

	UNIT											
Pollutant	7 em. factor		7 (g/s)	8 (h) em. factor		8 (a) (g/s)	GT1 em. factor		GT1 (g/s)	GT2 em. factor		GT2 (g/s)
As	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Be	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cr	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mn	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hg	7.80E-04	lb/Btu10^12 (8)	6.11E-08	7.80E-04	lb/Btu10^12 (8)	1.54E-07	7.80E-04	lb/Btu10^12 (8)	2.24E-08	7.80E-04	lb/Btu10^12 (8)	2.24E-08
Ni	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Co	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
V	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
POM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ben(a)P	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.8	lb/Btu10^12 (8)	6.27E-05	0.8	lb/Btu10^12 (8)	1.58E-04	0.8	lb/Btu10^12 (8)	2.30E-05	0.8	lb/Btu10^12 (8)	2.30E-05
Toluene	10	lb/Btu10^12 (8)	7.83E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA
Se	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HCL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2378 TCDD	1.20E-06	lb/Btu10^12 (8)	9.40E-11	NA	NA	NA	NA	NA	NA	NA	NA	NA
HCOH	34	lb/Btu10^12 (8)	2.66E-03	34	lb/Btu10^12 (8)	6.70E-03	34	lb/Btu10^12 (8)	9.77E-04	34	lb/Btu10^12 (8)	9.77E-04

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/22/96
Ckd. By: D. Graziani, PE DJD **Date:** 1/9/97
Rvd. By: M. Bilello 3/4/97 **Date:** 03/04/97
Client: City of Tallahassee
Project: Purdom Unit 8

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Future ST Rates

Calculations for FARCS AUX Boiler on Natural Gas / Unit 8 Oil @ 59oF Base Load

	UNIT					
Pollutant	AUX BOILER em. factor		AUX (g/s)	8 (h) 59oF Base Load em. factor		8 (h) (g/s)
As	NA	NA	NA	4.90E-06	lb/mmBtu (7)	1.10E-03
Be	NA	NA	NA	3.30E-07	lb/mmBtu (7)	7.41E-05
Cd	NA	NA	NA	4.20E-06	lb/mmBtu (7)	9.43E-04
Cr	NA	NA	NA	4.70E-05	lb/mmBtu (7)	1.05E-02
Pb	NA	NA	NA	5.80E-05	lb/mmBtu (7)	1.30E-02
Mn	NA	NA	NA	3.30E-04	lb/mmBtu (7)	7.41E-02
Hg	7.80E-04	lb/Btu10^12 (6)	1.65E-09	9.10E-07	lb/mmBtu (7)	2.04E-04
Ni	NA	NA	NA	1.20E-03	lb/mmBtu (7)	2.69E-01
Co	NA	NA	NA	9.10E-06	lb/mmBtu (7)	2.04E-03
Sb	NA	NA	NA	2.20E-05	lb/mmBtu (7)	4.94E-03
V	NA	NA	NA	4.40E-06	lb/mmBtu (7)	9.87E-04
POM	NA	NA	NA	0.00317	lb/Kgal(8)	5.39E-03
BaP	NA	NA	NA	5.36E-07	lb/Kgal(8)	9.11E-07
Benzene	NA	NA	NA	0.000155	lb/Kgal(8)	2.64E-04
Toluene	NA	NA	NA	0.001396	lb/Kgal(8)	2.37E-03
Se	NA	NA	NA	5.30E-06	lb/mmBtu (7)	1.19E-03
HCL	NA	NA	NA	0.997988	lb/Kgal(8)	1.70E+00
HF	NA	NA	NA	0.842446	lb/Kgal(8)	1.43E+00
2378 diox.	NA	NA	NA	1.17E-09	lb/Kgal(8)	1.99E-09
HCOH	NA	NA	NA	0.00282	lb/Kgal(8)	4.79E-03

(a) BASED ON 20oF 50% LOAD (worst case ambient impacts)
(b) Unit 7 NO2 emission factor from CEM data
(c) 0.05% S is what will be fired when Unit 8 is constructed.
(d) Unit 8 fuel usage based on lower heat value of oil - 132,000 Btu/gal
(e) heat inputs for Units 5,6&7 are from Ref.5 , Unit 8 value is from Ref.6
(f) Includes only filterable fraction of particulates
(g) Heating value for natural gas used in Aux Boiler Permit was 1000 Btu/CF
(h) BASED ON 59oFBASE LOAD (FOR ANNUAL ANALYSIS) (execpt CO and VOC which is based on 59oF 19% of time at 50% load and 81% of time at 100% load)
(I) VOC as methane
(j) Total Organic Compounds (TOC) emission factor adjusted for 52% methane (see ref 9 table 1.4-3 footnote g)
(k) TOC emission factor adjusted for 17% methane (see ref 9 table 1.4-3 footnote f)
(l) Operating at 100% load
(m) Operating at 100% load Site conditions (80oF)

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello — Date: 11/25/96 — OFS No.: 1584.0005.0008
Ckd. By: D. Graziani DJG 3/4/97 — Date: 1/9/97 — File: P8EMISS.XLS
Rvd. By: M. Bilello — Date: 03/04/97 — Sheet: Current LT Rates
Client: City of Tallahassee
Project: Purdom Unit 8

Description: This calculation provides the CURRENT (1995.96) LONG term emission rates for Units 5, 6, and 7, GTs 1 & 2

References:

No. 1	AP-42, Section 1.3
No. 2	62-296.405(1)(c), F.A.C.
No. 3	0.125 lb/mmBtu per 62-296.405(1)(b) & 62-210.700(3) F.A.C. (assumes 3 hrs/day soot blowing)
No. 4	AP-42, Appendix A
No. 5	Title V Application (11/04/96)
No. 7	AP-42, Section 3.1
No. 8	Letter from Kennard F. Kosky (KBN) to Howard Rhodes (FDEP) 4-28-95Re: Florida [Electric Power] Coordinating Group Emission Factors for Title [V] Permit Applications dated 4-28-95
No.9	FGT average S content of Natural Gas (0.32 gr/100CF)
No. 10	Calcs. 961007CJT001, 961007CJT003, EMISS.XLS- UNIT7-GT1-GT2
No. 11	Analysis of City of Tallahassee Oil

(b) Unit 7 NO2 emission factor from CEM data (0.23 lb/mmBtu Gas) (0.33 lb/mmBtu Oil)
(e) heat inputs for Units 5,6&7 are from Ref.5
(f) includes only filterable fraction of particulates
(g) NO2 emissions for Unit 7 are from CEM data which did not separate oil and gas Total oil + gas is presented in the natural gas table..
(h) Table 1-1 of the Plan of Study presents the sum of GT1 & GT2 this SUM is shown as GT2

Assume	150000	Btu/gal heat content for #6 Oil or 0.15 mmBtu/gal
Assume	132000	Btu/gal heat content for #2 Oil or 0.132 mmBtu/gal
Assume	1040	Btu/scf heat content for natural gas, or 0.00104 mmBtu/scf

Operating Data

	Unit 5		Unit 6		Unit 7		GT1		GT2	
	Nat. Gas CFx10^3	Oil bbls	Nat. Gas CFx10^3	Oil bbls	Nat. Gas CFx10^3	Oil bbls	Nat. Gas CFx10^3	Oil gal	Nat. Gas CFx10^3	Oil gal
Aug-94	3260	0	82494	183	120125	2994	1646	0	2359	0
Sep-94	23090	0	8430	0	150492	6474	150	0	122	0
Oct-94	62290	0	59683	0	127718	2466	158	0	205	0
Nov-94	0	0	0	0	167291	4502	0	0	0	0
Dec-94	0	0	0	0	139865	5469	86	0	41	0
Jan-95	0	0	0	0	148227	90	432	0	464	0
Feb-95	0	0	0	0	138958	2912	455	0	528	0
Mar-95	2704	0	0	0	79162	0	148	0	112	0
Apr-95	31730	0	39050	0	155279	127	134	0	134	0
May-95	17517	0	10897	0	207271	300	205	0	140	0
Jun-95	0	0	0	0	153582	0	1978	0	536	0
Jul-95	72792	0	88809	770	201694	710	423	0	832	0
Aug-95	96088	0	104573	163	199229	4347	6020	0	6613	0
Sep-95	24548	0	27249	253	82389	589	183	0	140	0
Oct-95	7219	0	3152	0	203212	0	733	0	462	0
Nov-95	82087	0	44200	0	169909	237	3424	2782	3275	0
Dec-95	74483	0	50463	0	198234	3003	1377	2415	788	4082
Jan-96	85785	0	80979	295	231836	861	1010	12501	2188	0
Feb-96	42865	0	42509	299	171262	3909	4280	0	4169	0
Mar-96	87763	0	77917	85	212566	1136	883	0	643	0
Apr-96	3323	0	13354	0	160524	1087	1316	0	1908	0
May-96	96317	107	103368	0	187689	1715	1887	0	1841	0
Jun-96	35758	0	66899	0	223591	0	2168	0	1934	0
Jul-96	103506	0	70225	0	231499	0	869	0	748	0
Total	953125	107	974251	2048	4061604	42928	29965	17698	30182	4082
Annual average	476562.5	53.5	487125.5	1024	2030802	21464	14982.5	8849	15091	2041
Annual Average mmBtu(1,2,3)	495625	337.05	506610.52	6451.2	2112034.08	135223.2	15581.8	1168.068	15694.64	269.412

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello
Ckd. By: D. Graziani DJG 3/4/97
Rvd. By: M. Bilello
Client: City of Tallahassee
Project: Purdom Unit 8

Date: 11/25/96
Date: 1/9/97
Date: 03/04/97

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Current LT Rates

Calculations Oil Fired

Pollutant	UNIT 5 em. factor	5 TPY	6 em. factor	6 TPY
SO2	Ref (10)	3.00E-01	Ref (10)	3.53E+00
NO2	Ref (10)	5.00E-02	Ref (10)	1.44E+00
PM	Ref (10)	1.00E-02	Ref (10)	1.70E-01
CO	Ref (10)	1.00E-02	Ref (10)	1.10E-01
Be	4.2 lb/10^12Btu(1)	7.08E-07	4.2 lb/10^12Btu(1)	1.35E-05
Pb	194.0 lb/10^12Btu(1)	3.27E-05	194.0 lb/10^12Btu(1)	6.26E-04
Hg	32.0 lb/10^12Btu(1)	5.39E-06	32.0 lb/10^12Btu(1)	1.03E-04
Fl	0.00016 lb/gal (11)	1.80E-04	0.00016 lb/gal (11)	3.44E-03

Calculations Oil Fired

Pollutant	UNIT 7 em. factor	7 TPY	GT1 em. factor	GT1 TPY	GT2 em. factor	GT2 TPY
SO2	Ref (10)	7.46E+01	Ref (10)	(h)	Ref (10)	2.30E-01
NO2	Ref (10)	(g)	Ref (10)	(h)	Ref (10)	5.00E-01
PM	Ref (10)	2.30E+00	Ref (10)	(h)	Ref (10)	4.40E-02
CO	Ref (10)	2.26E+00	Ref (10)	(h)	Ref (10)	3.00E-02
Be	4.2 lb/10^12Btu(1)	2.84E-04	3.30E-07 lb/mmBtu(7)	1.93E-13	3.30E-07 lb/mmBtu(7)	4.45E-14
Pb	194.0 lb/10^12Btu(1)	1.31E-02	5.80E-05 lb/mmBtu(7)	3.39E-11	5.80E-05 lb/mmBtu(7)	7.81E-12
Hg	32.0 lb/10^12Btu(1)	2.16E-03	9.10E-07 lb/mmBtu(7)	5.31E-13	9.10E-07 lb/mmBtu(7)	1.23E-13
Fl	0.00016 lb/gal (11)	1.72E+00	0.00014 lb/gal (11)	6.19E-04	0.00014 lb/gal (11)	1.43E-04

Calculations Natural Gas Fired

Pollutant	UNIT 5 em. factor	5 TPY	6 em. factor	6 TPY
SO2	Ref (10)	2.20E-01	Ref (10)	2.20E-01
NO2	Ref (10)	6.81E+01	Ref (10)	1.39E+02
PM	Ref (10)	1.24E+00	Ref (10)	1.22E+00
CO	Ref (10)	9.90E+00	Ref (10)	1.01E+01
Be		na		na
Pb		na		na
Hg	0.00078 lb/tbtu (8)		0.00078 lb/tbtu (8)	
Fl		na		na

Calculations Natural Gas Fired

Pollutant	UNIT 7 em. factor	7 TPY	GT1 em. factor	GT1 TPY	GT2 em. factor	GT2 TPY
SO2	Ref (10)	9.30E-01	Ref (10)	(h)	Ref (10)	1.30E-02
NO2	Ref (10)(g)	2.51E+02	Ref (10)	(h)	Ref (10)	5.96E+00
PM	Ref (10)	5.28E+00	Ref (10)	(h)	Ref (10)	3.90E-01
CO	Ref (10)	4.22E+01	Ref (10)	(h)	Ref (10)	1.49E+00
Be		na		na		0.00E+00
Pb		na		na		0.00E+00
Hg	0.00078 lb/tbtu (8)		0.00078 lb/tbtu (8)		0.00078 lb/tbtu (8)	
Fl		na		na		0.00E+00

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello
Ckd. By: D. Graziani DJG 3/4/97
Rvd. By: M. Bilello
Client: City of Tallahassee
Project: Purdom Unit 8

Date: 11/25/96
Date: 1/9/97
Date: 03/04/97

OFS No.: 1584.0005.0008
File: P8EMISS.XLS
Sheet: Current LT Rates

Annualized Emission Rates =[Oil (tpy) + Gas(tpy)] x 2000lb/ton x 454gr/lb /8760hr/yr / 3600sec/hr

	UNIT					
	5		5	6		6
Pollutant	Oil(TPY)	Gas TPY	g/s	Oil(TPY)	Gas TPY	g/s
SO2	3.00E-01	2.20E-01	1.50E-02	3.53E+00	2.20E-01	1.08E-01
NO2	5.00E-02	6.81E+01	1.96E+00	1.44E+00	1.39E+02	4.05E+00
PM	1.00E-02	1.24E+00	3.60E-02	1.70E-01	1.22E+00	4.00E-02
CO	1.00E-02	9.90E+00	2.85E-01	1.10E-01	1.01E+01	2.95E-01
Be	7.08E-07	na	2.04E-08	1.35E-05	na	3.90E-07
Pb	3.27E-05	na	9.41E-07	6.26E-04	na	1.80E-05
Hg	5.39E-06	0.00E+00	1.55E-07	1.03E-04	0.00E+00	2.97E-06
Fl	1.80E-04	na	5.18E-06	3.44E-03	na	9.91E-05

Annualized Emission Rates

	UNIT								
	7		7	GT1		GT1	GT2		GT2
Pollutant	Oil(TPY)	Gas TPY	g/s	Oil(TPY)	Gas TPY	g/s	Oil(TPY)	Gas TPY	g/s
SO2	7.46E+01	9.30E-01	2.17E+00	Ref (10)		(h)	2.30E-01	1.30E-02	7.00E-03
NO2	(g)	2.51E+02	7.23E+00	Ref (10)		(h)	5.00E-01	5.96E+00	1.86E-01
PM	2.30E+00	5.28E+00	2.18E-01	Ref (10)		(h)	4.40E-02	3.90E-01	1.25E-02
CO	2.26E+00	4.22E+01	1.28E+00	Ref (10)		(h)	3.00E-02	1.49E+00	4.38E-02
Be	2.84E-04	na	8.18E-06	1.93E-13	na	5.55E-15	4.45E-14	0.00E+00	1.28E-15
Pb	1.31E-02	na	3.78E-04	3.39E-11	na	9.75E-13	7.81E-12	0.00E+00	2.25E-13
Hg	2.16E-03	0.00E+00	6.23E-05	5.31E-13	0.00E+00	1.53E-14	1.23E-13	0.00E+00	3.53E-15
Fl	1.72E+00	na	4.94E-02	6.19E-04	na	1.78E-05	1.43E-04	0.00E+00	4.11E-06

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: Mike Bilello **Date:** 11/25/96 **OFS No.:** 1584.0005.0008
Ckd. By: D. Graziani, PE DJG 3/4/97 **Date:** 1/9/97 **File:** P8EMISS.XLS
Rvd. By: M. Bilello **Date:** 03/04/97 **Sheet:** Current ST Rates

Client: City of Tallahassee
Project: Purdom Unit 8

Description: This calculation provides the CURRENT (1995,96) short term emission rates for Units 5, 6, and 7, GTs 1 & 2

References:

No. 1	AP-42, Section 1.3
No. 3	0.125 lb/mmBtu per 62-296.405(1)(b) & 62-210.700(3) F.A.C. (assumes 3 hrs/day soot blowing)
No. 4	Typical densities of oil (#2 and #6) at Purdom site (from analytical data).
No. 5	Title V Application (11/04/96)
No. 7	AP-42, Section 3.1
No. 8	Letter from Kennard F. Kosky (KBN) to Howard Rhodes (FDEP) 4-28-95Re: Florida [Electric Power] Coordinating Group [,Inc.]Emission Factors for Title [V] Permit Applications dated 4-28-95
No.9	Analysis of City of Tallahasse oil

General Information

	Unit No.			Unit No.	
	5	6	7	GT 1	GT 2
mmBTU/hr (e)	300	300	621	228.0	228.0
gal/hr	2,000	2000	4140	1727	1727.0
oil density(4)	8.05	8.05	8.05	6.75	6.75
lb Oil/hr	16100	16100	33327	11657	11657

Calculations

	UNIT				
	5	5	6		6
Pollutant	em. factor	(g/s)	em. factor		(g/s)
SO2	1.3	lb/mmBtu (5)	**49.18**	1.3	lb/mmBtu (5)	**49.18**
NO2	42	lb/Kgal (1)	**10.59**	67	lb/Kgal (1)	**16.90**
PM	0.125	lb/mmBtu(3)	**4.73**	0.125	lb/mmBtu(3)	**4.73**
CO	5	lb/Kgal (1)	**1.26**	5	lb/Kgal (1)	**1.26**
Be	4.2	lb/10^12Btu(1)	**0.0002**	4.2	lb/10^12Btu(1)	**0.0002**
Pb	194.0	lb/10^12Btu(1)	**0.0073**	194.0	lb/10^12Btu(1)	**0.0073**
Hg	32.0	lb/10^12Btu(1)	**0.0012**	32.0	lb/10^12Btu(1)	**0.0012**
Fl	0.00016	lb/gal (9)	**0.0404**	0.00016	lb/gal (9)	**0.0404**

Calculations

	UNIT							
	7	7	GT1		GT1	GT2		GT2
Pollutant	em. factor	(g/s)	em. factor		(g/s)	em. factor		(g/s)
SO2	1.87	lb/mmBtu (5)	**146.45**	0.4	%S (5)	**11.76**	0.4	%S (5)	**11.76**
NO2	0.33	lb/mmBtu(b)	**25.84**	0.698	lb/mmBtu(7)	**20.07**	0.698	lb/mmBtu(7)	**20.07**
PM	0.125	lb/mmBtu(3)	**9.79**	0.038	lb/mmBtu(7)(f)	**1.09**	0.038	lb/mmBtu(7)(f)	**1.09**
CO	5	lb/Kgal (1)	**2.61**	0.048	lb/mmBtu(7)	**1.38**	0.048	lb/mmBtu(7)	**1.38**
Be	4.2	lb/10^12Btu(1)	**0.0003**	3.30E-07	lb/mmBtu(7)	**0.00001**	3.30E-07	lb/mmBtu(7)	**0.00001**
Pb	194.0	lb/10^12Btu(1)	**0.0152**	5.80E-05	lb/mmBtu(7)	**0.00167**	5.80E-05	lb/mmBtu(7)	**0.00167**
Hg	32.0	lb/10^12Btu(1)	**0.0025**	9.10E-07	lb/mmBtu(7)	**0.00003**	9.10E-07	lb/mmBtu(7)	**0.00003**
Fl	0.00016	lb/gal (9)	**0.0835**	0.00014	lb/gal (9)	**0.0305**	0.00014	lb/gal (9)	**0.0305**

all emission rates based on firing oil

(b) Unit 7 NO2 emission factor from CEM data
(e) heat inputs for Units 5,6&7 are from Ref.5
(f) includes only filterable fraction of particulates

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		UNIT 8 AS CONTROLLING UNIT OPERATING 8760 HOURS ON NATURAL GAS / UNIT 7 FIRING #6 OIL SO2 LIMIT 1.87 lb/mmBtu												
SCENARIO 1														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(5)	TPY	HOURS	g/s(6)	TPY	HOURS	g/s (7)	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	125.61	146.45	72.8753	xxx	9.79	xxx	1987.9	25.84	203.7	2.61	1.3	0.40	0.20
UNIT 7 ANNUALIZED			2.10			0.14			0.37					
ACCURACY														
Unit 8	Natural Gas	8760	0.20	6.92472	8760	1.14	39.4	8760.0	7.31	254.0	4.23	147.0	0.35	12.26
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		72.9			4.9			12.9		1.3		0.20
based on limiting unit		Unit 8		6.9			39.4			254.0		147.0		12.26
TPY		Total		79.8			44.3			266.9		148.3		12.46
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.73		0.1		0.11
	Change from recent actuals			0.0			34.2			-190.8		148.2		12.35

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJD 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

	gal/hr x	lb/gal x	gm/lb *	S in SO2	/ sec/hr	*fuel S	=g/s							
calc for unit 7 SO2 firing 1% S Fuel	4140	8.05	454	2	3600	0.01	84.1							
		(1) Facitlity cap TPY from Calcs. 961007CJT001, 961007CJT003, EMISS.XLS- UNIT7-GT1-GT2 (CT 1 and CT2 TPY subtracted)												
		(2) Unit 7 emission rate based on FGT average S content of 0.32 grain/100CF												
		(3) Unit 7 emission rate based on AP-42 Emission Factor for Natural Gas (high end of range)												
		(4) Unit 7 emission rate based on CEM data (0.23 lb/mmBtu NO2) Emission Rate for Natural Gas												
		(5) Unit 7 emission rate based on 1.87 lb/mmBtu SO2												
		(6) Unit 7 emission ratebased on 0.125 lb/mmBtu PM Emission Rate for Fuel Oil												
		(7) Unit 7 emission ratebased on CEM data (0.33 lb/mmBtu NO2) Emission Rate for Fuel Oil												
		(8) Unit 7 emission rate based on typical #6 fuel oil currently in use. (1% S)												
		Note: Shaded hours denote pollutant (NO2 or SO2) which limits hours based on faciltiy cap.												
		ALL CALCULATIONS BASED ON UNITS OPERATING AT 100% LOAD												

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		UNIT 8 AS CONTROLLING UNIT OPERATING 8760 HOURS ON NATURAL GAS / UNIT 7 FIRING #6 OIL SO2 LIMIT 1.87 lb/mmBtu												
SCENARIO 1														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(5)	TPY	HOURS	g/s(6)	TPY	HOURS	g/s (7)	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	125.51	146.45	72.8753	xxx	9.79	xxx	1987.9	25.84	203.7	2.61	1.3	0.40	0.20
UNIT 7 ANNUALIZED			2.10			0.14			0.37					
ACCURACY														
Unit 8	Natural Gas	8760	0.20	6.92472	8760	1.14	39.4	8760.0	7.31	254.0	4.23	147.0	0.35	12.26
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		72.9			4.9			12.9		1.3		0.20
based on limiting unit		Unit 8		6.9			39.4			254.0		147.0		12.26
TPY		Total		79.8			44.3			266.9		148.3		12.46
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.73		0.1		0.11
	Change from recent actuals			0.0			34.2			-190.8		148.2		12.35

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		UNIT 8 AS CONTROLLING UNIT OPERATING MAX HOURS ON #2 FUEL OIL / NO OPERATION OF UNIT 7												
SCENARIO 2														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(5)	TPY	HOURS	g/s(6)	TPY	HOURS	g/s (7)	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	0	146.45	0	xxx	9.79	xxx	0.0	25.84	0.0	2.61	0.0	0.40	0.00
UNIT 7 ANNUALIZED		0	0	0	0	0.00	0.0	0.0	0.00	0.0				
Unit 8	#2 Fuel	1734.78	11.60	79.8	1734.78	2.14	14.7	2843.0	40.61	457.7	14.34	98.6	1.15	7.91
UNIT 8 ANNUALIZED			2.30			0.42			8.04					
facitlity cap(1`)				79.8			na			457.7				
Facility annual emissions		Unit 7		0.0			0.0			0.0		0.0		0.00
based on limiting unit		Unit 8		79.8			14.7			279.3		98.6		7.91
TPY		Total		79.8			14.7			279.3		98.6		7.91
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.73		0.1		0.11
	Change from recent actuals			0.0			4.7			-178.4		98.5		7.80

		UNIT 7 AS CONTROLLING UNIT MAX HOURS ON #6 FUEL OIL / NO OPERATION OF UNIT 8												
SCENARIO 3														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(5)	TPY	HOURS	g/s(6)	TPY	HOURS	g/s (7)	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	137.436	146.45	79.8	xxx	9.79	xxx	4467.2	25.84	457.7	2.61	1.4	0.40	0.22
UNIT 7 ANNUALIZED			2.30			0.15			0.41					
Unit 8	Natural Gas	0	0.20	0	0	1.14	0.0	0.0	7.31	0.0	4.23	0.0	0.35	0.00
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		79.8			5.3			14.1		1.4		0.22
based on limiting unit		Unit 8		0.0			0.0			0.0		0.0		0.00
TPY		Total		79.8			5.3			14.1		1.4		0.22
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.7		0.1		0.11
	Change from recent actuals			0.0			-4.7			-443.6		1.3		0.11

By. M. Bilello Date: 11/21/96 DJS 3/4/97
Ckd By:D.Graziani Date:1/9/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		UNIT 8 AS CONTROLLING UNIT OPERATING 8760 HOURS ON NATURAL GAS / UNIT 7 OPERATING ON # 6 OIL ASSUME TYPICAL S C												
SCENARIO 4														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(8)	TPY	HOURS	g/s(6)	TPY	HOURS	g/s (7)	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	218.667	84.1	72.8753	xxx	9.79	xxx	1987.9	25.84	203.7	2.61	2.3	0.40	0.34
UNIT 7 ANNUALIZED			2.10			0.24			0.65					
Unit 8	Natural Gas	8760	0.20	6.92472	8760	1.14	39.4	8760.0	7.31	254.0	4.23	147.0	0.35	12.26
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		72.9			8.5			22.4		2.3		0.34
based on limiting unit		Unit 8		6.9			39.4			254.0		147.0		12.26
TPY		Total		79.8			47.9			276.4		149.3		12.61
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.7		0.1		0.11
	Change from recent actuals			0.0			37.8			-181.3		149.1		12.50

By. M. Bilello Date: 11/21/96 3/4/97
Ckd By:D.Graziani Date:1/9/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		UNIT 8 AS CONTROLLING UNIT OPERATING 8760 HOURS ON NATURAL GAS / UNIT 7 OPERATION ON NATURAL GAS												
SCENARIO 5														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(2)	TPY	HOURS	g/s(3)	TPY	HOURS	g/s(4)	TPY	g/s	TPY	g/s	TPY
Unit 7	NAT. GAS	8760	0.0688	72.8753	xxx	0.39	xxx	2852.2	18.01	203.7	3.13	35.4	0.11	1.20
UNIT 7 ANNUALIZED			0.02			0.13			5.88					
Unit 8	Natural Gas	8760	0.20	6.92472	8760	1.14	39.4	8760.0	7.31	254.0	4.23	147.0	0.35	12.26
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		0.8			4.4			203.7		35.4		1.20
based on limiting unit		Unit 8		6.9			39.4			254.0		147.0		12.26
TPY		Total		7.7			43.8			457.7		182.4		13.47
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.7		0.1		0.11
	Change from recent actuals			-72.1			33.8			0.0		182.3		13.36

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		UNIT 7 AS CONTROLLING UNIT MAX HOURS ON #6 FUEL OIL ASSUME TYPICAL S CONTENT												
SCENARIO 6														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(8)	TPY	HOURS	g/s(6)	TPY	HOURS	g/s (7)	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	239.445	84.1	79.8	xxx	9.79	xxx	4467.2	25.84	457.7	2.61	2.5	0.40	0.38
UNIT 7 ANNUALIZED			2.30			0.27			0.71					
Unit 8	Natural Gas	0	0.20	0	0	1.14	0.0	0.0	7.31	0.0	4.23	0.0	0.35	0.00
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		79.8			9.3			24.5		2.5		0.38
based on limiting unit		Unit 8		0.0			0.0			0.0		0.0		0.00
TPY		Total		79.8			9.3			24.5		2.5		0.38
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.7		0.1		0.11
	Change from recent actuals			0.0			-0.8			-433.2		2.4		0.27

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJB 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		UNIT 7 AS CONTROLLING UNIT MAX HOURS ON NATURAL GAS												
SCENARIO 7														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(2)	TPY	HOURS	g/s(3)	TPY	HOURS	g/s(4)	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	8760	0.0688	79.8	xxx	0.39	xxx	6409.4	18.01	457.7	3.13	79.6	0.11	2.70
UNIT 7 ANNUALIZED			0.05			0.29			13.18					
Unit 8	Natural Gas	0	0.20	0	0	1.14	0.0	0.0	7.31	0.0	4.23	0.0	0.35	0.00
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		1.7			10.0			457.7		79.6		2.70
based on limiting unit		Unit 8		0.0			0.0			0.0		0.0		0.00
TPY		Total		1.7			10.0			457.7		79.6		2.70
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.7		0.1		0.11
	Change from recent actuals			-78.1			-0.1			0.0		79.5		2.59

		UNIT 8 AS CONTROLLING UNIT OPERATING 8260 HOURS ON NATURAL GAS & 500 HR ON #2 OIL / UNIT 7 ON #6 OIL ASSUME TYPIC												
SCENARIO 8														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(8)	TPY	HOURS	g/s(6)	TPY	HOURS	g/s (7)	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	150.84	84.1	50.2705	xxx	9.79	xxx	1343.8	25.84	137.7	2.61	1.6	0.40	0.24
UNIT 7 ANNUALIZED			1.20			0.14			0.37					
Unit 8	Natural Gas	8260	0.20	6.52947	8260	1.14	37.2	8260.0	7.31	239.5	4.23	138.6	0.35	11.56
Unit 8	#2 Oil	500	11.60	23	500	2.14	4.3	500.0	40.61	80.5	14.34	28.4	1.15	2.28
Unit 8	Total			29.5295			41.4			320.0		167.0		13.84
Unit 8 Annualized Nat. Gas			0.19			1.07			6.90					
Unit 8 Annualized #2 Oil			0.66			0.12			2.32					
Unit 8 Annualized Total			0.85			1.19			9.21					
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		50.3			5.9			15.5		1.6		0.24
based on limiting unit		Unit 8		29.5			41.4			320.0		167.0		13.84
TPY		Total		79.8			47.3			335.5		168.6		14.08
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.7		0.1		0.11
	Change from recent actuals			0.0			37.2			-122.2		168.5		13.97

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 QJB 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		UNIT 8 AS CONTROLLING UNIT OPERATING 8260 HOURS ON NATURAL GAS & 500 HR ON #2 OIL / UNIT 7 ON NATURAL GAS												
SCENARIO 9														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(2)	TPY	HOURS	g/s(3)	TPY	HOURS	g/s(4)	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	8760	0.0688	50.2705	xxx	0.39	xxx	1828.0	18.01	137.7	3.13	23.9	0.11	0.81
UNIT 7 ANNUALIZED			0.00			0.01			0.26					
Unit 8	Natural Gas	8260	0.20	6.52947	8260	1.14	37.2	8260.0	7.31	239.5	4.23	138.6	0.35	11.56
Unit 8	#2 Oil	500	11.60	23	500	2.14	4.3	500.0	40.81	80.5	14.34	28.4	1.15	2.28
Unit 8	Total			29.5295			41.4			320.0		167.0		13.84
Unit 8 Annualized Nat. Gas			0.19			1.07			6.90					
Unit 8 Annualized #2 Oil			0.66			0.12			2.32					
Unit 8 Annualized Total			0.85			1.19			9.21					
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		0.5			3.0			137.7		23.9		0.81
based on limiting unit		Unit 8		29.5			41.4			320.0		167.0		13.84
TPY		Total		30.1			44.4			457.7		191.0		14.66
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.7		0.1		0.11
	Change from recent actuals			-49.7			34.3			0.0		190.9		14.55

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		UNIT 8 AS CONTROLLING UNIT OPERATING 7021 HRS ON NATURAL GAS & 425 HR ON #2 OIL / UNIT 7 ON #6 OIL ASSUME typical S												
SCENARIO 10														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(8)	TPY	HOURS	g/s(6)	TPY	HOURS	g/s (7)	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	164.131	84.1	54.6999	xxx	9.79	xxx	1812.3	25.84	185.7	2.61	1.7	0.40	0.26
UNIT 7 ANNUALIZED			1.20			0.14			0.37					
Unit 8	Natural Gas	7021	0.20	5.55005	7021	1.14	31.6	7021.0	7.31	203.6	4.23	117.8	0.35	9.83
Unit 8	#2 Oil	425	11.60	19.55	425	2.14	3.6	425.0	40.61	68.4	14.34	24.2	1.15	1.94
Unit 8	Total			25.1001			35.2			272.0		142.0		11.77
Unit 8 Annualized Nat. Gas			0.16			0.91			5.86					
Unit 8 Annualized #2 Oil			0.56			0.10			1.97					
Unit 8 Annualized Total			0.72			1.01			7.83					
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		54.7			6.4			16.8		1.7		0.26
based on limiting unit		Unit 8		25.1			35.2			272.0		142.0		11.77
TPY		Total		79.8			41.6			288.9		143.7		12.03
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.7		0.1		0.11
	Change from recent actuals			0.0			31.5			-168.9		143.6		11.92

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		UNIT 8 AS CONTROLLING UNIT (85% CAP.) OPERATING 7201 HOURS ON NATURAL GAS & 425 HR ON #2 OIL / UNIT 7 ON NATURAL												
SCENARIO 11														
	FUEL		SO2			PM			NO2		CO		VOC	
		HOURS	g/s(2)	TPY	HOURS	g/s(3)	TPY	HOURS	g/s(4)	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	8760	0.0688	54.6999	xxx	0.39	xxx	2600.2	18.01	185.7	3.13	32.3	0.11	1.10
UNIT 7 ANNUALIZED			0.001			0.01			0.26					
Unit 8	Natural Gas	7021	0.20	5.55005	7021	1.14	31.6	7021.0	7.31	203.6	4.23	117.8	0.35	9.83
Unit 8	#2 Oil	425	11.60	19.55	425	2.14	3.6	425.0	40.61	68.4	14.34	24.2	1.15	1.94
Unit 8	Total			25.1001			35.2			272.0		142.0		11.77
Unit 8 Annualized Nat. Gas			0.16			0.91			5.86					
Unit 8 Annualized #2 Oil			0.58			0.10			1.97					
Unit 8 Annualized Total			0.72			1.01			7.83					
facitlity cap(1)				79.8			na			457.7				
Facility annual emissions		Unit 7		0.7			4.0			185.7		32.3		1.10
based on limiting unit		Unit 8		25.1			35.2			272.0		142.0		11.77
TPY		Total		25.8			39.2			457.7		174.3		12.86
Recent actuals Units 5,6,7 (1)	minus aux boiler emissions			79.8			10.1			457.7		0.1		0.11
	Change from recent actuals			-54.0			29.2			0.0		174.2		12.75

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 1														
	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	#6 Fuel	1.52E-02	7.56E-03	6.78	3.37E+00	8.35E-02	4.16E-02	2.51E-03	1.25E-03	3.29E-04	1.64E-04	8.93E-03	4.44E-03	3.62E-03
UNIT 7 ANNUALIZED														
ACCURACY														
Unit 8	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	1.5E-07	5.34E-06	0	0.00E+00	0	0.00E+00	0
facitlity cap(1)														
Facility annual emissions			7.56E-03		3.37E+00		4.16E-02		1.25E-03		1.64E-04		4.44E-03	
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		5.34E-06		0.00E+00		0.00E+00	
TPY			7.56E-03		3.37E+00		4.16E-02		1.25E-03		1.64E-04		4.44E-03	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		2.57E+00		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		-2.44E-03		8.04E-01		-2.68E-01		-7.47E-04		-1.36E-04		na	

By. M. Bilello Date: 11/21/96 3/4/97
Ckd By:D.Graziani Date:1/9/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 2														
	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	#6 Fuel	1.52E-02	0.00E+00	6.78	0.00E+00	8.35E-02	0.00E+00	2.51E-03	0.00E+00	3.29E-04	0.00E+00	8.93E-03	0.00E+00	3.62E-03
UNIT 7 ANNUALIZED														
Unit 8	#2 Fuel	1.30E-02	8.95E-02	1.26	8.67E+00	2.38E-01	1.64E+00	2.04E-04	1.40E-03	7.41E-05	5.09E-04	1.10E-03	7.56E-03	9.43E-04
UNIT 8 ANNUALIZED														
facitlity cap(1')														
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00	
based on limiting unit			8.95E-02		8.67E+00		1.64E+00		1.40E-03		5.09E-04		7.56E-03	
TPY			8.95E-02		8.67E+00		1.64E+00		1.40E-03		5.09E-04		7.56E-03	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		2.57E+00		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		7.95E-02		6.10E+00		1.33E+00		-5.95E-04		2.09E-04		na	

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 3														
	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	#6 Fuel	1.52E-02	8.28E-03	6.78	3.69E+00	8.35E-02	4.55E-02	2.51E-03	1.37E-03	3.29E-04	1.79E-04	8.93E-03	4.86E-03	3.62E-03
UNIT 7 ANNUALIZED														
Unit 8	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	1.5E-07	0.00E+00	0	0.00E+00	0	0.00E+00	0
facitlity cap(1)														
Facility annual emissions			8.28E-03		3.69E+00		4.55E-02		1.37E-03		1.79E-04		4.86E-03	
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00	
TPY			8.28E-03		3.69E+00		4.55E-02		1.37E-03		1.79E-04		4.86E-03	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		2.57E+00		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		-1.72E-03		1.12E+00		-2.64E-01		-6.34E-04		-1.21E-04		na	

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		NTENT												
SCENARIO 4														
	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	#6 Fuel	1.52E-02	1.32E-02	6.78	5.88E+00	8.35E-02	7.24E-02	2.51E-03	2.17E-03	3.29E-04	2.85E-04	8.93E-03	7.74E-03	3.62E-03
UNIT 7 ANNUALIZED														
Unit 8	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	1.54E-07	5.34E-06	0	0.00E+00	0	0.00E+00	0
facitlity cap(1)														
Facility annual emissions			1.32E-02		5.88E+00		7.24E-02		2.17E-03		2.85E-04		7.74E-03	
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		5.34E-06		0.00E+00		0.00E+00	
TPY			1.32E-02		5.88E+00		7.24E-02		2.18E-03		2.85E-04		7.74E-03	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		2.57E+00		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		3.17E-03		3.31E+00		-2.38E-01		1.78E-04		-1.48E-05		na	

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJB 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 5														
	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	NAT. GAS	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	6.1E-08	6.91E-07	0	0.00E+00	0	0.00E+00	0
UNIT 7 ANNUALIZED														
Unit 8	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	1.54E-07	5.34E-06	0	0.00E+00	0	0.00E+00	0
facitlity cap(1)														
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		6.91E-07		0.00E+00		0.00E+00	
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		5.34E-06		0.00E+00		0.00E+00	
TPY			0.00E+00		0.00E+00		0.00E+00		6.03E-06		0.00E+00		0.00E+00	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		5.70E-01		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		-1.00E-02		-5.70E-01		-3.10E-01		-1.99E-03		-3.00E-04		na	

SCENARIO 6

	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	#6 Fuel	1.52E-02	1.44E-02	6.78	6.44E+00	8.35E-02	7.93E-02	2.51E-03	2.38E-03	3.29E-04	3.12E-04	8.93E-03	8.48E-03	3.62E-03
UNIT 7 ANNUALIZED														
Unit 8	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	1.5E-07	0.00E+00	0	0.00E+00	0	0.00E+00	0
facitlity cap(1)														
Facility annual emissions			1.44E-02		6.44E+00		7.93E-02		2.38E-03		3.12E-04		8.48E-03	
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00	
TPY			1.44E-02		6.44E+00		7.93E-02		2.38E-03		3.12E-04		8.48E-03	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		2.57E+00		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		4.42E-03		3.87E+00		-2.31E-01		3.79E-04		1.23E-05		na	

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 7														
	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	6.1E-08	1.55E-06	0	0.00E+00	0	0.00E+00	0
UNIT 7 ANNUALIZED														
Unit 8	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	1.5E-07	0.00E+00	0	0.00E+00	0	0.00E+00	0
facitlity cap(1)														
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		1.55E-06		0.00E+00		0.00E+00	
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00	
TPY			0.00E+00		0.00E+00		0.00E+00		1.55E-06		0.00E+00		0.00E+00	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		2.57E+00		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		-1.00E-02		-2.57E+00		-3.10E-01		-2.00E-03		-3.00E-04		na	

		L S CONTENT												
SCENARIO 8														
	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	#6 Fuel	1.52E-02	9.09E-03	6.78	4.06E+00	8.35E-02	5.00E-02	2.51E-03	1.50E-03	3.29E-04	1.97E-04	8.93E-03	5.34E-03	3.62E-03
UNIT 7 ANNUALIZED														
Unit 8	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	1.5E-07	5.04E-06	0	0.00E+00	0	0.00E+00	0
Unit 8	#2 Oil	1.30E-02	2.58E-02	1.26	2.50E+00	2.38E-01	4.72E-01	2.04E-04	4.05E-04	7.41E-05	1.47E-04	1.10E-03	2.18E-03	9.43E-04
Unit 8	Total		2.58E-02		2.50E+00		4.72E-01		4.10E-04		1.47E-04		2.18E-03	
Unit 8 Annualized Nat. Gas														
Unit 8 Annualized #2 Oil														
Unit 8 Annualized Total														
facitlity cap(1)														
Facility annual emissions			9.09E-03		4.06E+00		5.00E-02		1.50E-03		1.97E-04		5.34E-03	
based on limiting unit			2.58E-02		2.50E+00		4.72E-01		4.10E-04		1.47E-04		2.18E-03	
TPY			3.49E-02		6.56E+00		5.22E-01		1.91E-03		3.44E-04		7.52E-03	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		2.57E+00		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		2.49E-02		3.99E+00		2.12E-01		-9.11E-05		4.35E-05		na	

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 9														
	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	6.1E-08	4.67E-07	0	0.00E+00	0	0.00E+00	0
UNIT 7 ANNUALIZED														
Unit 8	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	1.5E-07	5.04E-06	0	0.00E+00	0	0.00E+00	0
Unit 8	#2 Oil	1.30E-02	2.58E-02	1.26	2.50E+00	2.38E-01	4.72E-01	2.04E-04	4.05E-04	7.41E-05	1.47E-04	1.10E-03	2.18E-03	9.43E-04
Unit 8	Total		2.58E-02		2.50E+00		4.72E-01		4.10E-04		1.47E-04		2.18E-03	
Unit 8 Annualized Nat. Gas														
Unit 8 Annualized #2 Oil														
Unit 8 Annualized Total														
facitlity cap(1)														
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		4.67E-07		0.00E+00		0.00E+00	
based on limiting unit			2.58E-02		2.50E+00		4.72E-01		4.10E-04		1.47E-04		2.18E-03	
TPY			2.58E-02		2.50E+00		4.72E-01		4.10E-04		1.47E-04		2.18E-03	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		2.57E+00		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		1.58E-02		-7.00E-02		1.62E-01		-1.59E-03		-1.53E-04		na	

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		ontent												
SCENARIO 10														
	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	#6 Fuel	1.52E-02	9.89E-03	6.78	4.41E+00	8.35E-02	5.44E-02	2.51E-03	1.63E-03	3.29E-04	2.14E-04	8.93E-03	5.81E-03	3.62E-03
UNIT 7 ANNUALIZED														
Unit 8	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	1.5E-07	4.28E-06	0	0.00E+00	0	0.00E+00	0
Unit 8	#2 Oil	1.30E-02	2.19E-02	1.26	2.13E+00	2.38E-01	4.01E-01	2.04E-04	3.44E-04	7.41E-05	1.25E-04	1.10E-03	1.85E-03	9.43E-04
Unit 8	Total		2.19E-02		2.13E+00		4.01E-01		3.48E-04		1.25E-04		1.85E-03	
Unit 8 Annualized Nat. Gas														
Unit 8 Annualized #2 Oil														
Unit 8 Annualized Total														
facitlity cap(1)														
Facility annual emissions			9.89E-03		4.41E+00		5.44E-02		1.63E-03		2.14E-04		5.81E-03	
based on limiting unit			2.19E-02		2.13E+00		4.01E-01		3.48E-04		1.25E-04		1.85E-03	
TPY			3.18E-02		6.54E+00		4.55E-01		1.98E-03		3.39E-04		7.66E-03	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		2.57E+00		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		2.18E-02		3.97E+00		1.45E-01		-2.05E-05		3.88E-05		na	

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

		AS												
SCENARIO 11														
	FUEL	Pb		H2SO4		Fl		Hg		Be		As		Cd
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s
Unit 7	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	6.1E-08	6.30E-07	0	0.00E+00	0	0.00E+00	0
UNIT 7 ANNUALIZED														
Unit 8	Natural Gas	0	0.00E+00	0.00	0.00E+00	0	0.00E+00	1.5E-07	4.28E-06	0	0.00E+00	0	0.00E+00	0
Unit 8	#2 Oil	1.30E-02	2.19E-02	1.26	2.13E+00	2.38E-01	4.01E-01	2.04E-04	3.44E-04	7.41E-05	1.25E-04	1.10E-03	1.85E-03	9.43E-04
Unit 8	Total		2.19E-02		2.13E+00		4.01E-01		3.48E-04		1.25E-04		1.85E-03	
Unit 8 Annualized Nat. Gas														
Unit 8 Annualized #2 Oil														
Unit 8 Annualized Total														
facitlity cap(1)														
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		6.30E-07		0.00E+00		0.00E+00	
based on limiting unit			2.19E-02		2.13E+00		4.01E-01		3.48E-04		1.25E-04		1.85E-03	
TPY			2.19E-02		2.13E+00		4.01E-01		3.49E-04		1.25E-04		1.85E-03	
Recent actuals Units 5,6,7 (1)	minus aux boiler		1.00E-02		2.57E+00		3.10E-01		2.00E-03		3.00E-04		na	
	Change from rec		1.19E-02		-4.45E-01		9.11E-02		-1.65E-03		-1.75E-04		na	

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

	gal/hr x							
calc for unit 7 SO2 firing 1% S Fuel	4140							

SCENARIO 1								
	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	1.80E-03	1.00E-02	4.99E-03	5.80E-03	2.88E-03	1.82E-01	9.08E-02
UNIT 7 ANNUALIZED								
ACCURACY								
Unit 8	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)								
Facility annual emissions		1.80E-03		4.99E-03		2.88E-03		9.08E-02
based on limiting unit		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY		1.80E-03		4.99E-03		2.88E-03		9.08E-02
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

SCENARIO 2								
	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	0.00E+00	1.00E-02	0.00E+00	5.80E-03	0.00E+00	1.62E-01	0.00E+00
UNIT 7 ANNUALIZED								
Unit 8	#2 Fuel	6.48E-03	1.05E-02	7.25E-02	7.41E-02	5.09E-01	2.69E-01	1.85E+00
UNIT 8 ANNUALIZED								
facitlity cap(1`)								
Facility annual emissions		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit		6.48E-03		7.25E-02		5.09E-01		1.85E+00
TPY		6.48E-03		7.25E-02		5.09E-01		1.85E+00
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

SCENARIO 3								
	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	1.97E-03	1.00E-02	5.46E-03	5.80E-03	3.16E-03	1.82E-01	9.08E-02
UNIT 7 ANNUALIZED								
Unit 8	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)								
Facility annual emissions		1.97E-03		5.46E-03		3.16E-03		9.08E-02
based on limiting unit		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY		1.97E-03		5.46E-03		3.16E-03		9.08E-02
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

SCENARIO 4								
	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	3.14E-03	1.00E-02	8.69E-03	5.80E-03	5.02E-03	1.82E-01	1.58E-01
UNIT 7 ANNUALIZED								
Unit 8	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)								
Facility annual emissions		3.14E-03		8.69E-03		5.02E-03		1.58E-01
based on limiting unit		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY		3.14E-03		8.69E-03		5.02E-03		1.58E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

SCENARIO 5								
	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	NAT. GAS	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
UNIT 7 ANNUALIZED								
Unit 8	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)								
Facility annual emissions		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY		0.00E+00		0.00E+00		0.00E+00		0.00E+00
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

SCENARIO 6

	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	3.43E-03	1.00E-02	9.52E-03	5.80E-03	5.50E-03	1.82E-01	1.73E-01
UNIT 7 ANNUALIZED								
Unit 8	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)								
Facility annual emissions		3.43E-03		9.52E-03		5.50E-03		1.73E-01
based on limiting unit		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY		3.43E-03		9.52E-03		5.50E-03		1.73E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

SCENARIO 7								
	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
UNIT 7 ANNUALIZED								
Unit 8	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)								
Facility annual emissions		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY		0.00E+00		0.00E+00		0.00E+00		0.00E+00
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 8								
	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	2.16E-03	1.00E-02	5.99E-03	5.80E-03	3.47E-03	1.82E-01	1.09E-01
UNIT 7 ANNUALIZED								
Unit 8	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
Unit 8	#2 Oil	1.87E-03	1.05E-02	2.09E-02	7.41E-02	1.47E-01	2.69E-01	5.34E-01
Unit 8	Total	1.87E-03		2.09E-02		1.47E-01		5.34E-01
Unit 8 Annualized Nat. Gas								
Unit 8 Annualized #2 Oil								
Unit 8 Annualized Total								
facitlity cap(1)								
Facility annual emissions		2.16E-03		5.99E-03		3.47E-03		1.09E-01
based on limiting unit		1.87E-03		2.09E-02		1.47E-01		5.34E-01
TPY		4.03E-03		2.69E-02		1.50E-01		6.43E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

SCENARIO 9								
	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
UNIT 7 ANNUALIZED								
Unit 8	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
Unit 8	#2 Oil	1.87E-03	1.05E-02	2.09E-02	7.41E-02	1.47E-01	2.69E-01	5.34E-01
Unit 8	Total	1.87E-03		2.09E-02		1.47E-01		5.34E-01
Unit 8 Annualized Nat. Gas								
Unit 8 Annualized #2 Oil								
Unit 8 Annualized Total								
facitlity cap(1)								
Facility annual emissions		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit		1.87E-03		2.09E-02		1.47E-01		5.34E-01
TPY		1.87E-03		2.09E-02		1.47E-01		5.34E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

SCENARIO 10								
	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	2.35E-03	1.00E-02	6.52E-03	5.80E-03	3.77E-03	1.82E-01	1.19E-01
UNIT 7 ANNUALIZED								
Unit 8	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
Unit 8	#2 Oil	1.59E-03	1.05E-02	1.78E-02	7.41E-02	1.25E-01	2.69E-01	4.54E-01
Unit 8	Total	1.59E-03		1.78E-02		1.25E-01		4.54E-01
Unit 8 Annualized Nat. Gas								
Unit 8 Annualized #2 Oil								
Unit 8 Annualized Total								
facitlity cap(1)								
Facility annual emissions		2.35E-03		6.52E-03		3.77E-03		1.19E-01
based on limiting unit		1.59E-03		1.78E-02		1.25E-01		4.54E-01
TPY		3.94E-03		2.43E-02		1.29E-01		5.73E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

SCENARIO 11								
	FUEL		Cr		Mn		Ni	
		TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
UNIT 7 ANNUALIZED								
Unit 8	Natural Gas	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
Unit 8	#2 Oil	1.59E-03	1.05E-02	1.78E-02	7.41E-02	1.25E-01	2.69E-01	4.54E-01
Unit 8	Total	1.59E-03		1.78E-02		1.25E-01		4.54E-01
Unit 8 Annualized Nat. Gas								
Unit 8 Annualized #2 Oil								
Unit 8 Annualized Total								
facitlity cap(1)								
Facility annual emissions		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit		1.59E-03		1.78E-02		1.25E-01		4.54E-01
TPY		1.59E-03		1.78E-02		1.25E-01		4.54E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler	na		na		na		na
	Change from rec	na		na		na		na

SCENARIO 1											
	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	9.48E-03	4.72E-03	3.60E-03	1.79E-03	1.39E-01	6.90E-02	3.21E-04	1.60E-04	2.98E-07	1.48E-07
UNIT 7 ANNUALIZED											
ACCURACY											
Unit 8	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)											
Facility annual emissions			4.72E-03		1.79E-03		6.90E-02		1.60E-04		1.48E-07
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY			4.72E-03		1.79E-03		6.90E-02		1.60E-04		1.48E-07
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na
	Change from rec		na		na		na		na		na

SCENARIO 2											
	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	9.48E-03	0.00E+00	3.60E-03	0.00E+00	1.39E-01	0.00E+00	3.21E-04	0.00E+00	2.98E-07	0.00E+00
UNIT 7 ANNUALIZED											
Unit 8	#2 Fuel	2.04E-03	1.40E-02	4.94E-03	3.40E-02	9.87E-04	6.79E-03	5.39E-03	3.71E-02	9.11E-07	6.27E-06
UNIT 8 ANNUALIZED											
facitlity cap(1')											
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit			1.40E-02		3.40E-02		6.79E-03		3.71E-02		6.27E-06
TPY			1.40E-02		3.40E-02		6.79E-03		3.71E-02		6.27E-06
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na
	Change from rec		na		na		na		na		na

SCENARIO 3											
	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	9.48E-03	4.72E-03	3.60E-03	1.96E-03	1.39E-01	7.56E-02	3.21E-04	1.75E-04	2.98E-07	1.62E-07
UNIT 7 ANNUALIZED											
Unit 8	Natural Gas	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)											
Facility annual emissions			4.72E-03		1.96E-03		7.56E-02		1.75E-04		1.62E-07
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY			4.72E-03		1.96E-03		7.56E-02		1.75E-04		1.62E-07
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na
	Change from rec		na		na		na		na		na

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 4											
	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	9.48E-03	8.22E-03	3.60E-03	3.12E-03	1.39E-01	1.20E-01	3.21E-04	2.78E-04	2.98E-07	2.58E-07
UNIT 7 ANNUALIZED											
Unit 8	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)											
Facility annual emissions			8.22E-03		3.12E-03		1.20E-01		2.78E-04		2.58E-07
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY			8.22E-03		3.12E-03		1.20E-01		2.78E-04		2.58E-07
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na
	Change from rec		na		na		na		na		na

SCENARIO 5											
	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	NAT. GAS	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
UNIT 7 ANNUALIZED											
Unit 8	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)											
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na
Change from rec			na		na		na		na		na

SCENARIO 6

	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	9.48E-03	9.00E-03	3.60E-03	3.42E-03	1.39E-01	1.32E-01	3.21E-04	3.05E-04	2.98E-07	2.83E-07
UNIT 7 ANNUALIZED											
Unit 8	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)											
Facility annual emissions			9.00E-03		3.42E-03		1.32E-01		3.05E-04		2.83E-07
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY			9.00E-03		3.42E-03		1.32E-01		3.05E-04		2.83E-07
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na
	Change from rec		na		na		na		na		na

SCENARIO 7											
	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
UNIT 7 ANNUALIZED											
Unit 8	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
facitlity cap(1)											
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na
	Change from rec		na		na		na		na		na

SCENARIO 8											
	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	9.48E-03	5.67E-03	3.60E-03	2.15E-03	1.39E-01	8.29E-02	3.21E-04	1.92E-04	2.98E-07	1.78E-07
UNIT 7 ANNUALIZED											
Unit 8	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
Unit 8	#2 Oil	2.04E-03	4.05E-03	4.94E-03	9.79E-03	9.87E-04	1.96E-03	5.39E-03	1.07E-02	9.11E-07	1.81E-06
Unit 8	Total		4.05E-03		9.79E-03		1.96E-03		1.07E-02		1.81E-06
Unit 8 Annualized Nat. Gas											
Unit 8 Annualized #2 Oil											
Unit 8 Annualized Total											
facitlity cap(1)											
Facility annual emissions			5.67E-03		2.15E-03		8.29E-02		1.92E-04		1.78E-07
based on limiting unit			4.05E-03		9.79E-03		1.96E-03		1.07E-02		1.81E-06
TPY			9.72E-03		1.19E-02		8.49E-02		1.09E-02		1.98E-06
Recent actuals Units 5,8,7 (1)	minus aux boiler		na		na		na		na		na
	Change from rec		na		na		na		na		na

SCENARIO 9											
	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
UNIT 7 ANNUALIZED											
Unit 8	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
Unit 8	#2 Oil	2.04E-03	4.05E-03	4.94E-03	9.79E-03	9.87E-04	1.96E-03	5.39E-03	1.07E-02	9.11E-07	1.81E-06
Unit 8	Total		4.05E-03		9.79E-03		1.96E-03		1.07E-02		1.81E-06
Unit 8 Annualized Nat. Gas											
Unit 8 Annualized #2 Oil											
Unit 8 Annualized Total											
facitlity cap(1)											
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit			4.05E-03		9.79E-03		1.96E-03		1.07E-02		1.81E-06
TPY			4.05E-03		9.79E-03		1.96E-03		1.07E-02		1.81E-06
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na
	Change from rec		na		na		na		na		na

SCENARIO 10											
	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	9.48E-03	6.17E-03	3.60E-03	2.34E-03	1.39E-01	9.02E-02	3.21E-04	2.09E-04	2.98E-07	1.94E-07
UNIT 7 ANNUALIZED											
Unit 8	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
Unit 8	#2 Oil	2.04E-03	3.44E-03	4.94E-03	8.32E-03	9.87E-04	1.66E-03	5.39E-03	9.08E-03	9.11E-07	1.53E-06
Unit 8	Total		3.44E-03		8.32E-03		1.66E-03		9.08E-03		1.53E-06
Unit 8 Annualized Nat. Gas											
Unit 8 Annualized #2 Oil											
Unit 8 Annualized Total											
facitlity cap(1)											
Facility annual emissions			6.17E-03		2.34E-03		9.02E-02		2.09E-04		1.94E-07
based on limiting unit			3.44E-03		8.32E-03		1.66E-03		9.08E-03		1.53E-06
TPY			9.61E-03		1.07E-02		9.19E-02		9.29E-03		1.73E-06
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na
	Change from rec		na		na		na		na		na

SCENARIO 11											
	FUEL	Co		Sb		V		POM		Ben(a)P	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
UNIT 7 ANNUALIZED											
Unit 8	Natural Gas	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00
Unit 8	#2 Oil	2.04E-03	3.44E-03	4.94E-03	8.32E-03	9.87E-04	1.66E-03	5.39E-03	9.08E-03	9.11E-07	1.53E-06
Unit 8	Total		3.44E-03		8.32E-03		1.66E-03		9.08E-03		1.53E-06
Unit 8 Annualized Nat. Gas											
Unit 8 Annualized #2 Oil											
Unit 8 Annualized Total											
facitlity cap(1)											
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit			3.44E-03		8.32E-03		1.66E-03		9.08E-03		1.53E-06
TPY			3.44E-03		8.32E-03		1.66E-03		9.08E-03		1.53E-06
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na
	Change from rec		na		na		na		na		na

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 1													
	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	8.61E-05	4.29E-05	7.75E-04	3.86E-04	2.98E-03	1.48E-03	4.40E-01	2.19E-01	6.53E-10	3.25E-10	3.17E-02	1.58E-02
UNIT 7 ANNUALIZED													
ACCURACY													
Unit 8	Natural Gas	0.000158	5.48E-03	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0.0067027	2.33E-01
facitlity cap(1)													
Facility annual emissions			4.29E-05		3.86E-04		1.48E-03		2.19E-01		3.25E-10		1.58E-02
based on limiting unit			5.48E-03		0.00E+00		0.00E+00		0.00E+00		0.00E+00		2.33E-01
TPY			5.52E-03		3.86E-04		1.48E-03		2.19E-01		3.25E-10		2.49E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
Change from rec			na		na		na		na		na		na

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 2													
	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	8.61E-05	0.00E+00	7.75E-04	0.00E+00	2.98E-03	0.00E+00	4.40E-01	0.00E+00	6.53E-10	0.00E+00	3.17E-02	0.00E+00
UNIT 7 ANNUALIZED													
Unit 8	#2 Fuel	2.64E-04	1.81E-03	2.37E-03	1.63E-02	1.19E-03	8.18E-03	1.70E+00	1.17E+01	1.99E-09	1.37E-08	4.79E-03	3.30E-02
UNIT 8 ANNUALIZED													
facitlity cap(1`)													
Facility annual emissions			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
based on limiting unit			1.81E-03		1.63E-02		8.18E-03		1.17E+01		1.37E-08		3.30E-02
TPY			1.81E-03		1.63E-02		8.18E-03		1.17E+01		1.37E-08		3.30E-02
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
Change from rec			na		na		na		na		na		na

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJD 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 3													
	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	8.61E-05	4.69E-05	7.75E-04	4.22E-04	2.98E-03	1.62E-03	4.40E-01	2.40E-01	6.53E-10	3.56E-10	3.17E-02	1.73E-02
UNIT 7 ANNUALIZED													
Unit 8	Natural Gas	0.000158	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0.0067027	0.00E+00
facitlity cap(1)													
Facility annual emissions			4.69E-05		4.22E-04		1.62E-03		2.40E-01		3.56E-10		1.73E-02
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY			4.69E-05		4.22E-04		1.62E-03		2.40E-01		3.56E-10		1.73E-02
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
	Change from rec		na		na		na		na		na		na

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 4													
	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	8.61E-05	7.47E-05	7.75E-04	6.72E-04	2.98E-03	2.58E-03	4.40E-01	3.81E-01	6.53E-10	5.66E-10	3.17E-02	2.75E-02
UNIT 7 ANNUALIZED													
Unit 8	Natural Gas	0.000158	5.48E-03	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0.0067027	2.33E-01
facitlity cap(1)													
Facility annual emissions			7.47E-05		6.72E-04		2.58E-03		3.81E-01		5.66E-10		2.75E-02
based on limiting unit			5.48E-03		0.00E+00		0.00E+00		0.00E+00		0.00E+00		2.33E-01
TPY			5.55E-03		6.72E-04		2.58E-03		3.81E-01		5.66E-10		2.60E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
	Change from rec		na		na		na		na		na		na

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 5													
	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	NAT. GAS	6.27E-05	7.08E-04	0.000783	8.86E-03	0	0.00E+00	0	0.00E+00	9.398E-11	1.06E-09	0	0.00E+00
UNIT 7 ANNUALIZED													
Unit 8	Natural Gas	0.000158	5.48E-03	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0.0067027	2.33E-01
facitlity cap(1)													
Facility annual emissions			7.08E-04		8.86E-03		0.00E+00		0.00E+00		1.06E-09		0.00E+00
based on limiting unit			5.48E-03		0.00E+00		0.00E+00		0.00E+00		0.00E+00		2.33E-01
TPY			6.19E-03		8.86E-03		0.00E+00		0.00E+00		1.06E-09		2.33E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
	Change from rec		na		na		na		na		na		na

SCENARIO 6													
	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	8.61E-05	8.18E-05	7.75E-04	7.36E-04	2.98E-03	2.83E-03	4.40E-01	4.18E-01	6.53E-10	6.20E-10	3.17E-02	3.01E-02
UNIT 7 ANNUALIZED													
Unit 8	Natural Gas	0.000158	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0.0067027	0.00E+00
facitlity cap(1)													
Facility annual emissions			8.18E-05		7.36E-04		2.83E-03		4.18E-01		6.20E-10		3.01E-02
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY			8.18E-05		7.36E-04		2.83E-03		4.18E-01		6.20E-10		3.01E-02
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
	Change from rec		na		na		na		na		na		na

SCENARIO 7

	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	6.27E-05	1.59E-03	0.000783	1.99E-02	0	0.00E+00	0	0.00E+00	9.398E-11	2.39E-09	2.66E-03	6.77E-02
UNIT 7 ANNUALIZED													
Unit 8	Natural Gas	0.000158	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0.0067027	0.00E+00
facitlity cap(1)													
Facility annual emissions			1.59E-03		1.99E-02		0.00E+00		0.00E+00		2.39E-09		6.77E-02
based on limiting unit			0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00
TPY			1.59E-03		1.99E-02		0.00E+00		0.00E+00		2.39E-09		6.77E-02
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
	Change from rec		na		na		na		na		na		na

SCENARIO 8													
	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	8.61E-05	5.15E-05	7.75E-04	4.64E-04	2.98E-03	1.78E-03	4.40E-01	2.63E-01	6.53E-10	3.90E-10	3.17E-02	1.90E-02
UNIT 7 ANNUALIZED													
Unit 8	Natural Gas	0.000158	5.16E-03	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0.0067027	2.20E-01
Unit 8	#2 Oil	2.64E-04	5.22E-04	2.37E-03	4.70E-03	1.19E-03	2.36E-03	1.70E+00	3.36E+00	1.99E-09	3.94E-09	4.79E-03	9.50E-03
Unit 8	Total		5.69E-03		4.70E-03		2.36E-03		3.36E+00		3.94E-09		2.29E-01
Unit 8 Annualized Nat. Gas													
Unit 8 Annualized #2 Oil													
Unit 8 Annualized Total													
facitlity cap(1)													
Facility annual emissions			5.15E-05		4.64E-04		1.78E-03		2.63E-01		3.90E-10		1.90E-02
based on limiting unit			5.69E-03		4.70E-03		2.36E-03		3.36E+00		3.94E-09		2.29E-01
TPY			5.74E-03		5.17E-03		4.14E-03		3.63E+00		4.33E-09		2.48E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
	Change from rec		na		na		na		na		na		na

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJD 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 9													
	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	6.27E-05	4.79E-04	0.000783	5.99E-03	0	0.00E+00	0	0.00E+00	9.398E-11	7.18E-10	0.0026627	2.04E-02
UNIT 7 ANNUALIZED													
Unit 8	Natural Gas	0.000158	5.16E-03	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0.0067027	2.20E-01
Unit 8	#2 Oil	2.64E-04	5.22E-04	2.37E-03	4.70E-03	1.19E-03	2.36E-03	1.70E+00	3.36E+00	1.99E-09	3.94E-09	4.79E-03	9.50E-03
Unit 8	Total		5.69E-03		4.70E-03		2.36E-03		3.36E+00		3.94E-09		2.29E-01
Unit 8 Annualized Nat. Gas													
Unit 8 Annualized #2 Oil													
Unit 8 Annualized Total													
facitlity cap(1)													
Facility annual emissions			4.79E-04		5.99E-03		0.00E+00		0.00E+00		7.18E-10		2.04E-02
based on limiting unit			5.69E-03		4.70E-03		2.36E-03		3.36E+00		3.94E-09		2.29E-01
TPY			6.17E-03		1.07E-02		2.36E-03		3.36E+00		4.66E-09		2.49E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
	Change from rec		na		na		na		na		na		na

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 10													
	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	#6 Fuel	8.61E-05	5.61E-05	7.75E-04	5.05E-04	2.98E-03	1.94E-03	4.40E-01	2.86E-01	6.53E-10	4.25E-10	3.17E-02	2.06E-02
UNIT 7 ANNUALIZED													
Unit 8	Natural Gas	0.000158	4.39E-03	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0.0067027	1.87E-01
Unit 8	#2 Oil	2.64E-04	4.44E-04	2.37E-03	4.00E-03	1.19E-03	2.00E-03	1.70E+00	2.86E+00	1.99E-09	3.35E-09	4.79E-03	8.08E-03
Unit 8	Total		4.83E-03		4.00E-03		2.00E-03		2.86E+00		3.35E-09		1.95E-01
Unit 8 Annualized Nat. Gas													
Unit 8 Annualized #2 Oil													
Unit 8 Annualized Total													
facitlity cap(1)													
Facility annual emissions			5.61E-05		5.05E-04		1.94E-03		2.86E-01		4.25E-10		2.06E-02
based on limiting unit			4.83E-03		4.00E-03		2.00E-03		2.86E+00		3.35E-09		1.95E-01
TPY			4.89E-03		4.50E-03		3.94E-03		3.15E+00		3.78E-09		2.15E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
	Change from rec		na		na		na		na		na		na

By. M. Bilello Date: 11/21/96
Ckd By:D.Graziani Date:1/9/97 DJG 3/4/97
Rvd By:M. Bilello Date:03/04/97

FOSTER WHEELER ENVIRONMENTAL CORPORATION

OFS No. 1584.0005.0008

Client: City of Tallahassee
Project:Purdom Unit 8

SCENARIO 11													
	FUEL	Benzene		Toluene		Se		HCl		2378 TCDD		HCOH	
		g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY	g/s	TPY
Unit 7	Natural Gas	6.27E-05	6.46E-04	0.000783	8.07E-03	0	0.00E+00	0	0.00E+00	9.398E-11	9.69E-10	2.66E-03	2.75E-02
UNIT 7 ANNUALIZED													
Unit 8	Natural Gas	0.000158	4.39E-03	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0.0067027	1.87E-01
Unit 8	#2 Oil	2.64E-04	4.44E-04	2.37E-03	4.00E-03	1.19E-03	2.00E-03	1.70E+00	2.86E+00	1.99E-09	3.35E-09	4.79E-03	8.08E-03
Unit 8	Total		4.83E-03		4.00E-03		2.00E-03		2.86E+00		3.35E-09		1.95E-01
Unit 8 Annualized Nat. Gas													
Unit 8 Annualized #2 Oil													
Unit 8 Annualized Total													
facitlity cap(1)													
Facility annual emissions			6.46E-04		8.07E-03		0.00E+00		0.00E+00		9.69E-10		2.75E-02
based on limiting unit			4.83E-03		4.00E-03		2.00E-03		2.86E+00		3.35E-09		1.95E-01
TPY			5.48E-03		1.21E-02		2.00E-03		2.86E+00		4.32E-09		2.22E-01
Recent actuals Units 5,6,7 (1)	minus aux boiler		na		na		na		na		na		na
	Change from rec		na		na		na		na		na		na

April 28, 1995

Mr. Howard L. Rhodes, Director
Division of Air Resources Management
Florida Department of Environmental Protection
2600 Blair Stone Road, M.S. 5505
Tallahassee, FL 32399-2400

RE: Florida Electric Power Coordinating Group (FCG)
Emission Factors for Title Permit Applications

Dear Howard:

This correspondence is being submitted on behalf of the FCG to obtain FDEP concurrence with proposed emission factors that would be used in the preparation of Title V permit applications. This submittal is consistent with your letter dated September 27, 1993, in which the division has agreed to consider industry proposals for industry-specific emission factors in the absence of EPA-approved factors and encourages facilities to submit new or updated air pollutant emission information that become available. The emission factors in this correspondence were developed based on the latest information available for the various types of air emission sources at electric generating utilities. It is the intent that the proposed emission factors and referenced material be used in determining emissions for Item 5. of Section E. Pollutant Information in FDEP Form No.62.62-210.900(1). The exception will be if the utility has more direct information on emissions or there is an applicable air construction or operating permit requirement.

EPA emission factors from AP-42 are proposed for many of the criteria pollutants where permit limits are not in the specific conditions of the air construction or operating permit. Many of the emission factors for trace emissions were based on the Electric Power Research Institute's (EPRI) Electric Utility Trace Substances Synthesis Report, November, 1994. This report which was submitted to EPA at the end of last year will be used in EPA's report to Congress later this year on estimated toxic air emissions from electric utility units. Where information is not available from AP-42 or EPRI, other utility data or EPA information were used.

The emission factors and/or references are in the form of tables which list the type of emission sources, the pollutants, the emission factor units, the proposed emission factor and the basis for the emission factor or present the reference to existing emission factors. The tables presented in this correspondence include emission factors for utility and industrial boilers which fire coal, natural gas, or oil (see Tables SUM-1 through SUM-4). References for emission factors are also presented for combustion turbines as well as particulate and volatile organic compound emissions from sources which are generally considered as fugitive. A general summary of recommended emission factors for these emission sources is presented in Table SUM-5.

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Washington, D.C. 20036
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EQUAL EMPLOYMENT OPPORTUNITY

AN AFFIRMATIVE ACTION EMPLOYER

I have provided a general certification regarding the overall use of these emissions factors. If there are any questions, Dwain Waters and I can meet with your staff or have a conference call to address any comments. Mr. Dwain Waters of Gulf Power Company is the FCG representative on this issue.

Your consideration in this matter is appreciated.

Sincerely,

Kennard F. Kosky, P.E.
President

cc: Dwain Waters, FCG
Bob McCann, KBN
Clair Fancy, FDEP
John Brown, FDEP

15053A/2

PROFESSIONAL ENGINEER STATEMENT

I, the undersigned, hereby certify that:

To the best of my knowledge, the emission factors presented herein are true, accurate, and complete and are based upon available techniques and information for calculating reasonable estimates of emissions from electric utility emission units.

Kennard F. Kosky, P.E.

4/27/95
Date

Table SUM-1. Coal Combustion for Utility Boilers- Summary of Recommended Emission Factors, Uncontrolled and Controlled

Pollutant	Units	PC/ DB-WF			PC/ DB-TF			PC/ WB			Basis
		Value	Equation a	Equation b	Value	Equation a	Equation b	Value	Equation a	Equation b	
Criteria And Precursor Pollutants											
Sulfur Dioxide	lb/ton	38(S%).95			38(S%).95			38(S%).95			AP-42
Particulate Matter	lb/ton	10(A%)			10(A%)			7(A%)			AP-42
Particulate Matter (PM10)	lb/ton	2.3(A%)			2.3(A%)			2.6(A%)			AP-42
Nitrogen Oxides	lb/ton	21.7			14.4			34			AP-42
Carbon Monoxide	lb/ton	0.5			0.5			0.5			AP-42
Volatile Organic Compounds	lb/ton	0.06			0.06			0.04			AP-42
Lead	lb/10^12 Btu	EQN	3.4	0.8	EQN	3.4	0.8	EQN	3.4	0.8	EPRI
NSPS/NESHAP Pollutants											
Arsenic	lb/10^12 Btu	EQN	3.1	0.85	EQN	3.1	0.85	EQN	3.1	0.85	EPRI
Beryllium	lb/10^12 Btu	EQN	1.2	1.1	EQN	1.2	1.1	EQN	1.2	1.1	EPRI
Fluorides (as HF)	lb/10^12 Btu	CON			CON			CON			EPRI
Hydrogen Chloride	lb/10^12 Btu	CON			CON			CON			EPRI
Mercury	lb/10^12 Btu	8.33			8.33			8.33			FCG (1)
Radionuclides	pCi/gram PM	52.75			52.75			52.75			EPRI
Sulfuric Acid Mist	lb/ton	38(S%)x.00858			38(S%)x.00858			38(S%)x.00858			AP-42 (2)
2,3,7,8-TCDD equiv. (dioxin/furan)	lb/10^12 Btu	2.00E-08			2.00E-08			2.00E-08			EPRI
Other Regulated Air Pollutants											
Acetaldehyde	lb/10^12 Btu	--			--			--			--
Acrolein	lb/10^12 Btu	--			--			--			--
Antimony	lb/10^12 Btu	EQN	0.92	0.63	EQN	0.92	0.63	EQN	0.92	0.63	EPRI
Benzene	lb/10^12 Btu	3.8			3.8			3.8			EPRI
Cadmium	lb/10^12 Btu	EQN	3.3	0.5	EQN	3.3	0.5	EQN	3.3	0.5	EPRI
Chromium	lb/10^12 Btu	EQN	3.7	0.58	EQN	3.7	0.58	EQN	3.7	0.58	EPRI
Cobalt	lb/10^12 Btu	EQN	1.7	0.69	EQN	1.7	0.69	EQN	1.7	0.69	EPRI
Formaldehyde	lb/10^12 Btu	3			3			3			EPRI
Manganese	lb/10^12 Btu	EQN	3.8	0.6	EQN	3.8	0.6	EQN	3.8	0.6	EPRI
Methane	lb/ton	0.04			0.04			0.05			AP-42
Nickel	lb/10^12 Btu	EQN	4.4	0.48	EQN	4.4	0.48	EQN	4.4	0.48	EPRI
Phosphorous	lb/10^12 Btu	--			--			--			--
Polycyclic Organic Matter	lb/10^12 Btu	2.08			2.4			2.4			AP-42
Selenium	lb/10^12 Btu	CON			CON			CON			--
Toluene	lb/10^12 Btu	1.4			1.4			1.4			EPRI

APR-28-1995 15:40 KBN - GAINESVILLE 904 336 6603 P.04

Table SUM-1. Coal Combustion for Utility Boilers- Summary of Recommended Emission Factors, Uncontrolled and Controlled

Pollutant	Units	PC/ DB-WF Value	PC/ DB-WF Equation a	PC/ DB-WF Equation b	PC/ DB-TF Value	PC/ DB-TF Equation a	PC/ DB-TF Equation b	PC/ WB Value	PC/ WB Equation a	PC/ WB Equation b	Basis
Xylene	lb/10^12 Btu	--			--			--			--
Non-regulated Pollutants											
Carbon Dioxide	lb/ton	73.3(C%)			73.3(C%)			73.3(C%)			
Controlled Emission Factors (3)											

Note: PC= pulverized coal; DB-WF= dry bottom- wall-fired; DB-TF= dry bottom, tangentially-fired; WB= wet bottom.
EQN means equation used to calculate factor- a (X) ^b where X= (coal ppm/ash fraction) x PM emissions (lb/10^12 Btu)
CON means concentration in coal input (e.g., mg/kg)
S= sulfur content (%)
C= carbon content (%)

(1) Based on mercury concentration of 0.10 ppm and coal heat content of 12,000 Btu/lb.
(2) Based on SO3 emission factor and adjusting for molecular weight of H2SO4/ SO3 (98/80).
(3) Controlled factors can be obtained by multiplying the following fractions for emission controls (representative of control efficiencies) by the uncontrolled emission factors:

Pollutant	ESP	Baghouse	Scrubber	
SO2/SO3	1	1	0.1	
PM	0.008	0.002	0.06	
PM10	0.02174	0.008696	0.1826	
As, Be, Cd, Co, Cr, Mn, Ni, Pb, Sb	0.1	0.1	0.1	(multiply by X in EQN, see note above)
Mercury	0.70	0.70	0.55	
Selenium	0.55	0.55	0.12	
HCl, HF	1.00	1.00	0.03	
Formaldehyde	0.10	0.10	0.10	

		LNB	LNB+OFA	LNB(LNC3)	SCR
NOx	DB-WF	0.625	0.45	1.00	0.25
	WB	0.625	0.45	1.00	0.25
	DB-TF	0.775	0.65	0.56	0.25

APR-28-1995 15:40 KBN - GAINESVILLE 904 336 6603 P.05

GASFAC01
4/16/95

Table SUM-2. Natural Gas Combustion for Utility Boilers- Summary of Emission Factors, Uncontrolled and Controlled

Pollutant	Units	FCG- Recommendation Heat Input Rate (MMBtu/hr) > 100	10-100	Basis
Criteria And Precursor Pollutants				
Sulfur Dioxide	lb/Mmcf	6.00E-01	6.00E-01	AP-42 (1)
Particulate Matter	lb/Mmcf	3.00E+00	1.37E+01	AP-42
Particulate Matter (PM10)	lb/Mmcf	3.00E+00	1.37E+01	AP-42
Nitrogen Oxides	lb/Mmcf	5.50E+02	1.40E+02	AP-42
Nitrogen Oxides (tangentially-fired)	lb/Mmcf	2.75E+00		AP-42
Carbon Monoxide	lb/Mmcf	4.00E+01	3.50E+01	AP-42
Volatile Organic Compounds	lb/Mmcf	1.41E+00	2.78E+00	AP-42
Lead	lb/10^12 Btu	NA	NA	EPRI
NSPS/NESHAP Pollutants				
Arsenic	lb/10^12 Btu	NA	NA	EPRI
Beryllium	lb/10^12 Btu	NA	NA	EPRI
Fluorides (as HF)	lb/10^12 Btu	NA	NA	NA
Hydrogen Chloride	lb/10^12 Btu	NA	NA	NA
Mercury	lb/10^12 Btu	7.80E-04	7.80E-04	FCG
Radionuclides	pCi/gram	NA	NA	NA
Sulfuric Acid Mist	lb/10^12 Btu	??	??	??
2,3,7,8-TCDD equiv. (dioxin/furans)	lb/10^12 Btu	1.20E-06	1.20E-06	EPRI
Other Regulated Air Pollutants				
Acetaldehyde	lb/10^12 Btu	NA	NA	NA
Acrolein	lb/10^12 Btu	NA	NA	NA
Antimony	lb/10^12 Btu	NA	NA	NA
Benzene	lb/10^12 Btu	8.00E-01	8.00E-01	EPRI
Cadmium	lb/10^12 Btu	NA	NA	EPRI
Chromium	lb/10^12 Btu	NA	NA	EPRI
Cobalt	lb/10^12 Btu	NA	NA	EPRI
Formaldehyde	lb/10^12 Btu	3.40E+01	3.40E+01	EPRI
Manganese	lb/10^12 Btu	NA	NA	EPRI
Methane	lb/10^12 Btu	2.90E-01	2.90E-01	AP-42
Nickel	lb/10^12 Btu	NA	NA	EPRI
Phosphorous	lb/10^12 Btu	NA	NA	NA
Polycyclic Organic Matter	lb/10^12 Btu	NA	NA	NA
Selenium	lb/10^12 Btu	NA	NA	EPRI
Toluene	lb/10^12 Btu	1.00E+01	1.00E+01	EPRI
Xylene	lb/10^12 Btu	NA	NA	NA
Non-regulated Pollutants				
Carbon dioxide	lb/10^12 Btu	1.20E+05	1.20E+05	AP-42
Controlled Emission Factors				
Nitrogen Oxides LNB	lb/Mmcf	8.10E+01	8.10E+01	AP-42
FGR	lb/Mmcf	5.30E+01	3.00E+01	AP-42
SCR	lb/Mmcf	1.21E+02	1.21E+02	AP-42
Carbon Monoxide LNB	lb/Mmcf	NA	6.10E+01	AP-42
FGR	lb/Mmcf	NA	3.70E+01	AP-42

Note: LNB= low NOx burner; FGR= flue gas recirculation; SCR- selective catalytic reduction.

(1) Based on 0.2 grain sulfur/ 100 cf; sulfur content may be higher if delivered by pipeline (2.86 lb/MMBtu; assuming 1.0 gr/100 cf).

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4/16/95

Table SUM-3. Oil Combustion for Utility Boilers- Summary of Recommended Emission Factors, Uncontrolled and Controlled

Pollutant	Units	FCG- Recommendation No. 6	No. 5	No. 4	No. 2	Basis
Criteria And Precursor Pollutants						
Sulfur Dioxide	lb/10^3 gal	157(S%)	157(S%)	150(S%)	142(S%)	AP-42
Particulate Matter	lb/10^3 gal	9.19(S%)+3.22	10	7	2	AP-42
Particulate Matter (PM10)	lb/10^3 gal	[9.19(S%)+3.22] 0.7	7.1	4.97	1	AP-42
Nitrogen Oxides	lb/10^3 gal	67	67	67	20	AP-42
Nitrogen Oxides (tangential-firing)	lb/10^3 gal	42	42	42	20	AP-42
Carbon Monoxide	lb/10^3 gal	5	5	5	5	AP-42
Volatile Organic Compounds	lb/10^3 gal	0.76	0.76	0.76	0.2	AP-42
Lead	lb/10^12 Btu	7	7	7	8.9	EPRI/Radian (No. 2
NSPS/NESHAP Pollutants						
Arsenic	lb/10^12 Btu	5.5	5.5	5.5	4.2	EPRI/Radian (No. 2
Beryllium	lb/10^12 Btu	0.2	0.2	0.2	0.2	EPRI
Fluorides (as HF) (1)	lb/10^3 gal	0.842	0.842	0.842	0.842	FCG
Hydrogen Chloride (2)	lb/10^3 gal	0.998	0.998	0.998	0.998	FCG
Mercury	lb/10^12 Btu	1	1	1	1	FCG
Radionuclides	pCi/gram	1.9	1.9	1.9	1.9	EPRI
Sulfuric Acid Mist (3)	lb/10^3 gal	8.983(S%)	8.983(S%)	8.983(S%)	2.45(S%)	AP-42
2,3,7,8-TCDD equiv. (dioxins/furans)	lb/10^12 Btu	8.300E-06	8.3E-06	8.3E-06	8.3E-06	EPRI
Other Regulated Air Pollutants						
Acetaldehyde	lb/10^12 Btu	NA	NA	NA	NA	NA
Acrolein	lb/10^12 Btu	NA	NA	NA	NA	NA
Antimony	lb/10^12 Btu	35	35	35	35	AP-42
Benzene	lb/10^12 Btu	1.1	1.1	1.1	1.1	EPRI
Cadmium	lb/10^12 Btu	1.3	1.3	1.3	1.3	EPRI
Chromium	lb/10^12 Btu	5.2	4	4	4	EPRI
Cobalt	lb/10^12 Btu	37	37	37	37	EPRI
Formaldehyde	lb/10^12 Btu	20	20	20	20	EPRI
Manganese	lb/10^12 Btu	13	13	13	13	EPRI
Methane	lb/10^3 gal	0.26	0.26	0.26	0.052	AP-42
Nickel	lb/10^12 Btu	720	370	370	170	EPRI
Phosphorous	lb/10^12 Btu	NA	NA	NA	NA	NA
Polycyclic Organic Matter	lb/10^12 Btu	4.1	4.1	4.1	22.5	Radian
Selenium	lb/10^12 Btu	2	2	2	2	EPRI
Toluene	lb/10^12 Btu	9.9	9.9	9.9	9.9	EPRI
Xylene	lb/10^12 Btu	NA	NA	NA	NA	NA
Non-regulated Pollutants						
Carbon dioxide	lb/10^3 gal	288 (C%)	288 (C%)	288 (C%)	259 (C%)	AP-42
PCB Used Oil Only (4)	lb/10^3 gal	NA	NA	NA	NA	FCG- 0.4 lb/10^3 g
Vanadium	lb/10^3 gal	0.2656	0.2656	0.2656	0.2656	FCEM
Controlled Emission Factors (5)						

(1) Based on 100 ppm fluorine content and oil density of 8.0 lb/gal.
(2) Based on 121.3 ppm chlorine content and oil density of 8.0 lb/gal.
(3) Based on SO3 emission factor and adjusting for molecular weight ratio (MW H2SO4/MW SO3= 98/80)
(4) Based on PCB concentration of 50 ppm.
(5) Controlled factors can be obtained by multiplying the following fractions for emission controls (representative of control efficiencies) by the uncontrolled emission factors:

Pollutant	ESP	Baghouse	Scrubber
SO2/SO3	1.0	1.0	0.1
PM	0.008	--	0.06
PM10	0.007119	--	0.008475

	LNB	LNB+OFA	LNB(LNC3)	SCR
NOx- Normal firing	0.625	0.45	--	0.25
- Tangential firing	0.775	0.65	--	0.25

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Table SUM-4. Oil Combustion for Industrial Boilers- Summary of Recommended Emission Factors, Uncontrolled and Controlled

Pollutant	Units	FCG- Recommendation No. 6	No. 5	No. 4	No. 2	Basis
Criteria And Precursor Pollutants						
Sulfur Dioxide	lb/10^3 gal	157(S%)	157(S%)	150(S%)	142(S%)	AP-42
Particulate Matter	lb/10^3 gal	9.19(S%)+3.22	10	7	2	AP-42
Particulate Matter (PM10)	lb/10^3 gal	[9.19(S%)+3.22] 0.7	7.1	4.97	1	AP-42
Nitrogen Oxides	lb/10^3 gal	67	67	67	20	AP-42
Nitrogen Oxides (tangential-firing)	lb/10^3 gal	55	55	20	20	AP-42
Carbon Monoxide	lb/10^3 gal	5	5	5	5	AP-42
Volatile Organic Compounds	lb/10^3 gal	0.28	0.28	0.28	0.2	AP-42
Lead	lb/10^12 Btu	7	7	7	8.9	EPRI/Radian (No. 2
NSPS/NESHAP Pollutants						
Arsenic	lb/10^12 Btu	5.5	5.5	5.5	4.2	EPRI/Radian (No. 2
Beryllium	lb/10^12 Btu	0.2	0.2	0.2	0.2	EPRI
Fluorides (as HF) (1)	lb/10^3 gal	0.842	0.842	0.842	0.842	FCG
Hydrogen Chloride (2)	lb/10^3 gal	0.998	0.998	0.998	0.998	FCG
Mercury	lb/10^12 Btu	1	1	1	1	FCG
Radionuclides	pCi/gram	1.9	1.9	1.9	1.9	EPRI
Sulfuric Acid Mist (3)	lb/10^3 gal	6.983(S%)	6.983(S%)	6.983(S%)	2.45(S%)	AP-42
2,3,7,8-TCDD equiv. (dioxins/furans)	lb/10^12 Btu	8.30DE-06	8.3E-06	8.3E-06	8.3E-06	EPRI
Other Regulated Air Pollutants						
Acetaldehyde	lb/10^12 Btu	NA	NA	NA	NA	NA
Acrolein	lb/10^12 Btu	NA	NA	NA	NA	NA
Antimony	lb/10^12 Btu	35	35	35	35	AP-42
Benzene	lb/10^12 Btu	1.1	1.1	1.1	1.1	EPRI
Cadmium	lb/10^12 Btu	1.3	1.3	1.3	1.3	EPRI
Chromium	lb/10^12 Btu	5.2	4	4	4	EPRI
Cobalt	lb/10^12 Btu	37	37	37	37	EPRI
Formaldehyde	lb/10^12 Btu	20	20	20	20	EPRI
Manganese	lb/10^12 Btu	13	13	13	13	EPRI
Methane	lb/10^3 gal	1	1	0.052	0.052	AP-42
Nickel	lb/10^12 Btu	720	370	370	170	EPRI
Phosphorous	lb/10^12 Btu	NA	NA	NA	NA	NA
Polycyclic Organic Matter	lb/10^12 Btu	4.1	4.1	4.1	22.5	Radian
Selenium	lb/10^12 Btu	2	2	2	2	EPRI
Toluene	lb/10^12 Btu	9.9	9.9	8.9	9.9	EPRI
Xylene	lb/10^12 Btu	NA	NA	NA	NA	NA
Non-regulated Pollutants						
Carbon dioxide	lb/10^3 gal	288 (C%)	288 (C%)	288 (C%)	259 (C%)	AP-42
PCB Used Oil Only (4)	lb/10^3 gal	NA	NA	NA	NA	FCG- 0.4 lb/10^3 g
Vanadium	lb/10^3 gal	0.2656	0.2656	0.2656	0.2656	FCEM
Controlled Emission Factors (5)						

(1) Based on 100 ppm fluorine content and oil density of 8.0 lb/gal.
(2) Based on 121.3 ppm chlorine content and oil density of 8.0 lb/gal.
(3) Based on SO3 emission factor and adjusting for molecular weight ratio (MW H2SO4/MW SO3= 98/80)
(4) Based on PCB concentration of 50 ppm.
(5) Controlled factors can be obtained by multiplying the following fractions for emission controls (representative of control efficiencies) by the uncontrolled emission factors:

Pollutant	ESP	Baghouse	Scrubber
SO2/SO3	1	1	0.1
PM	0.008	--	0.06
PM10	0.007119	--	0.008475

	LNB	LNB+OFA	LNB(LNC3)	SCR
NOx- Normal firing	0.625	0.45	--	0.25
- Tangential firing	0.775	0.65	--	0.25

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Table SUM-5. General Summary of Recommended Emission Factors

Fuel/ Pollutant	Emission Type	Size	References	Comments
1. Boilers				
Coal- Bituminous Sub-bituminous	Utility Dry bottom wall-fired Dry bottom tangentially fired Wet bottom		AP-42, EPRI, FCG	See Table SUM-1
Coal/Petroleum coke (50-50 blend)			Same as Coal	Default to Coal
Coal/ Tire derived fuel (90-10 blend)			Same as Coal	Default to Coal, except additional margin for NOx, CO, Mn, Co
Coal/ Wood (90-10 blend)			Same as Coal	Default to Coal
Natural Gas	Utility	> 100 MMBtu/hr	AP-42, EPRI, FCG	See Table SUM-2
		10 - 100 MMBtu/hr	AP-42, EPRI, FCG	See Table SUM-2
	Industrial	> 100 MMBtu/hr	Same as Utility Gas	See Table SUM-2
		10 - 100 MMBtu/hr	Same as Utility Gas	See Table SUM-2
Propane	Industrial		AP-42	
Butane	Industrial		AP-42	
Fuel Oil- Residual (No. 6,5, Distillate (No. 2)	Utility Normal- fired Tangentially- fired		AP-42, EPRI, Radian, FCG, FCEM	See Table SUM-3
	Industrial		AP-42, EPRI, Radian, FCG, FCEM	See Table SUM-4
Used oil	All Boilers		FCG- default to residual or distillate with exceptions	See Tables SUM-3 and4 (in part); Exceptions for: On-spec- PCB Off-spec- As, Cd, Cr, Pb, HCl, P
2. Combustion Turbines				
Natural Gas	Utility, Industrial		AP-42, FCG	FCG- mercury
Fuel Oil	Utility, Industrial		AP-42, see Utility Boilers	For factors not in AP-42, use factors for utility fuel oil; Controls for NOx, CO for SCR, water and steam injection

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Table SUM-5. General Summary of Recommended Emission Factors

Fuel/ Pollutant	Emission Type	Size	References	Comments
3. Fugitive Emission Sources				
Particulate Matter	Continuous Drop Batch Drop Wind Erosion- Active Storage Pile Unpaved and Paved Roads Abrasive Blasting		AP-42	Based on permit reference; use of site characteristic data
Particulate Matter	Wet Cooling Tower		AP-42	
Volatile Organic Compounds	Painting Operations		Manufacturer	Normal- 6 lb/gal; Low VOC- 3.5 lb/gal
	Petroleum Industry Cooling towers; Pipeline valves, flanges, etc.		Fire/ AP-42	
	Storage tanks		AP-42	Calculate breathing, working losses, etc. with EPA's TANKS Program
As, Be, Cd, Cr, Pb, Hg, Se, Ag	Boiler Cleaning Waste Evaporation		TCLP limits	

References:

AP-42- EPA document, "Air Pollutant Emission Factors for Stationary Point Sources"
EPRI- Synthesis Report, November, 1994.
Radian- "Estimating Air Toxics Emissions from Coal and Oil Combustion Sources, April, 1989.
FCG- Based on specific information from available fuel data.
FCEM- EPRI's Field Chemical Emission Monitoring Program.
Fire- EPA's Factor Information Retrieval System

APPENDIX D

EPA BACT/LAER CLEARINGHOUSE
COMBUSTION TURBINE
QUERY RESULTS

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

CITY OF TALLAHASSEE
PURDOM UNIT 8 - COMBINED CYCLE GAS TURBINE
BACT EVALUATION
U. S. ENVIRONMENTAL PROTECTION AGENCY'S RACT/BACT/LAER CLEARINGHOUSE

RBLCID	FACILITY	AGCTNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
AL-0069	INTERNATIONAL PAPER CO. RIVERDALE MILL	ALABAMA DEPT OF ENVIRONMENTAL MGMT	(205) 271-7861	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	40.00	MW	CO	2.21E+01	LB/HR	DESIGN	0.000	BACT-PSD
AL-0069	INTERNATIONAL PAPER CO. RIVERDALE MILL	ALABAMA DEPT OF ENVIRONMENTAL MGMT	(205) 271-7861	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	40.00	MW	NOX	8.00E-02	LB/MMBTU (GAS)	STEAM INJECTION INTO THE TURBINE	0.000	BACT-PSD
AL-0069	INTERNATIONAL PAPER CO. RIVERDALE MILL	ALABAMA DEPT OF ENVIRONMENTAL MGMT	(205) 271-7861	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	40.00	MW	PM10	1.00E-02	LB/MMBTU (GAS)	FUEL SPECIFICATION	0.000	BACT-PSD
AL-0069	INTERNATIONAL PAPER CO. RIVERDALE MILL	ALABAMA DEPT OF ENVIRONMENTAL MGMT	(205) 271-7861	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	40.00	MW	VOC	8.30E+00	LB/HR (GAS)	DESIGN	0.000	BACT-PSD
AL-0074	FLORIDA GAS TRANSMISSION COMPANY	ALABAMA DEPT OF ENVIRONMENTAL MGMT	(205) 271-7861	TURBINE, NATURAL GAS	12600.00	BHP	CO	4.20E-01	GM/HP HR	AIR-TO-FUEL RATIO CONTROL, DRY COMBUSTION CONTROLS	0.000	BACT-PSD
AL-0074	FLORIDA GAS TRANSMISSION COMPANY	ALABAMA DEPT OF ENVIRONMENTAL MGMT	(205) 271-7861	TURBINE, NATURAL GAS	12600.00	BHP	NOX	5.80E-01	GM/HP HR	AIR-TO-FUEL RATIO CONTROL, DRY LOW NOX COMBUSTION	71.000	BACT-PSD
AZ-0010	EL PASO NATURAL GAS	EPA REGION IX	(415)-744-1283	TURBINE, GAS, SOLAR CENTAUR H	5500.00	HP	CO	1.05E+01	PPM @ 15% O2	FUEL SPEC: LEAN FUEL MIX	0.000	BACT-PSD
AZ-0010	EL PASO NATURAL GAS	EPA REGION IX	(415)-744-1283	TURBINE, GAS, SOLAR CENTAUR H	5500.00	HP	NOX	8.49E+01	PPM @ 15% O2	LEAN BURN	0.000	NSPS
AZ-0010	EL PASO NATURAL GAS	EPA REGION IX	(415)-744-1283	TURBINE, GAS, SOLAR CENTAUR H	5500.00	HP	NOX	4.20E+01	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	51.000	BACT-PSD
AZ-0011	EL PASO NATURAL GAS	EPA REGION IX	(415)-744-1283	TURBINE, GAS, SOLAR CENTAUR H	5500.00	HP	CO	1.05E+01	PPM @ 15% O2	FUEL SPEC: LEAN FUEL MIX	0.000	BACT-PSD
AZ-0011	EL PASO NATURAL GAS	EPA REGION IX	(415)-744-1283	TURBINE, GAS, SOLAR CENTAUR H	5500.00	HP	NOX	8.51E+01	PPM @ 15% O2	FUEL SPEC: LEAN FUEL MIX	0.000	NSPS
AZ-0011	EL PASO NATURAL GAS	EPA REGION IX	(415)-744-1283	TURBINE, GAS, SOLAR CENTAUR H	5500.00	HP	NOX	4.20E+01	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	51.000	BACT-PSD
AZ-0012	EL PASO NATURAL GAS	EPA REGION IX	(415)-744-1283	TURBINE, NAT. GAS TRANSM., GE FRAME 3	12000.00	HP	CO	6.00E+01	PPM @ 15% O2	LEAN BURN	0.000	BACT-PSD
AZ-0012	EL PASO NATURAL GAS	EPA REGION IX	(415)-744-1283	TURBINE, NAT. GAS TRANSM., GE FRAME 3	12000.00	HP	NOX	2.25E+02	PPM @ 15% O2	LEAN BURN	0.000	BACT-PSD
AZ-0012	EL PASO NATURAL GAS	EPA REGION IX	(415)-744-1283	TURBINE, NAT. GAS TRANSM., GE FRAME 3	12000.00	HP	NOX	4.20E+01	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	80.000	BACT-PSD
CA-0418	SOUTHERN CALIFORNIA GAS	KERN COUNTY APCD (DESERT PORTION), CA	(805)-861-3682	TURBINE, GAS-FIRED	47.64	MMBTU/H	CO	7.74E+00	PPM @ 15% O2	HIGH TEMPERATURE OXIDATION CATALYST	80.000	BACT-PSD
CA-0418	SOUTHERN CALIFORNIA GAS	KERN COUNTY APCD (DESERT PORTION), CA	(805)-861-3682	TURBINE, GAS-FIRED	47.64	MMBTU/H	HC	1.94E+00	PPM @ 15% O2	HIGH TEMPERATURE OXIDATION CATALYST	50.000	BACT-PSD
CA-0418	SOUTHERN CALIFORNIA GAS	KERN COUNTY APCD (DESERT PORTION), CA	(805)-861-3682	TURBINE, GAS-FIRED	47.64	MMBTU/H	NOX	8.00E+00	PPMVD @ 15% O2	HIGH TEMPERATURE SELECTIVE CATALYTIC REDUCTION	93.000	BACT-PSD
CA-0437	KINGSBURG ENERGY SYSTEMS	FRESNO APCD, CA	(209)-445-3239	TURBINE, NATURAL GAS FIRED, DUCT BURNER	34.50	MW	NOX	6.00E+00	PPM @ 15% O2	SCR, STEAM INJECTION	90.000	BACT-PSD
CA-0441	GRANITE ROAD LIMITED	SAN JOAQUIN COUNTY APCD, CA	(805)-861-3682	TURBINE, GAS, ELECTRIC GENERATION	460.80	MMBTU/H*	NOX	3.50E+00	PPMVD @ 15% O2	SCR, STEAM INJECTION	97.000	BACT-PSD
CA-0463	SOUTHERN CALIFORNIA GAS	KERN COUNTY APCD (DESERT PORTION), CA	(805)-861-3682	TURBINE, GAS FIRED, SOLAR MODEL H	5500.00	HP	CO	7.74E+00	PPM @ 15% O2	HIGH TEMP OXIDATION CATALYST	80.000	BACT-PSD
CA-0463	SOUTHERN CALIFORNIA GAS	KERN COUNTY APCD (DESERT PORTION), CA	(805)-861-3682	TURBINE, GAS FIRED, SOLAR MODEL H	5500.00	HP	HC	1.94E+00	PPM @ 15% O2	HIGH TEMP OXIDATION CATALYST	50.000	BACT-PSD
CA-0463	SOUTHERN CALIFORNIA GAS	KERN COUNTY APCD (DESERT PORTION), CA	(805)-861-3682	TURBINE, GAS FIRED, SOLAR MODEL H	5500.00	HP	NOX	8.00E+00	PPM @ 15% O2	HIGH TEMP SELECT. CAT. REDUCTION	93.000	BACT-PSD
CA-0544	GOAL LINE, LP ICEFLOE	SAN DIEGO COUNTY APCD, CA	(619) 694-3316	TURBINE, COMBUSTION (NATURAL GAS) (42.4 MW)	386.00	MMBTU/HR	NOX	5.00E+00	PPMVD @ 15% OXYGE	WATER INJECTION & SCR W AUTOMATIC AMMONIA INJECT.	88.000	BACT-OTHER
CA-0611	BANK OF AMERICA LOS ANGELES DATA CENTER	SOUTH COAST AQMD, CA	(909) 396-2638	TURBINE, DIESEL & GENERATOR (SEE NOTES)	0.00		NOX	1.63E+02	PPM @ 15% O2	FUEL SPEC: LOW NOX DIESEL FUEL (SEE NOTES)	0.000	BACT-OTHER
CA-0613	UNOCAL	SOUTH COAST AQMD, CA	(909) 396-2606	TURBINE, GAS (SEE NOTES)	0.00		CO	1.00E+01	PPM @ 15% O2	OXIDATION CATALYST	75.000	BACT-OTHER
CA-0613	UNOCAL	SOUTH COAST AQMD, CA	(909) 396-2606	TURBINE, GAS (SEE NOTES)	0.00		NOX	9.00E+00	PPM @ 15% O2	SELECTIVE CATALYTIC REDUCTION (SCR), WATER INJECTN	80.000	BACT-OTHER
CO-001	THERMO INDUSTRIES, LTD.	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINE, GAS FIRED, 5 EACH	246.00	MMBTU/H	CO	2.50E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
CO-001	THERMO INDUSTRIES, LTD.	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINE, GAS FIRED, 5 EACH	246.00	MMBTU/H	NOX	2.50E+01	PPM @ 15% O2	DRY LOW NOX TECH.	0.000	BACT-PSD
CO-001	THERMO INDUSTRIES, LTD.	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINE, GAS FIRED, 5 EACH	246.00	MMBTU/H	PM	2.58E+01	LB/H	FUEL SPEC: NATURAL GAS FIRED	0.000	OTHER
CO-001	THERMO INDUSTRIES, LTD.	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINE, GAS FIRED, 5 EACH	246.00	MMBTU/H	SOX	1.50E+00	LB/H		0.000	OTHER
CO-001	THERMO INDUSTRIES, LTD.	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINE, GAS FIRED, 5 EACH	246.00	MMBTU/H	VOC	1.67E+01	LB/H		0.000	OTHER
CO-001	BRUSH COGENERATION PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINE	350.00	MMBTU/H	NOX	2.50E+01	PPM @ 15% O2	DRY LOW NOX BURNER	74.000	BACT-PSD
CO-001	BRUSH COGENERATION PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINE	350.00	MMBTU/H	PM	9.90E+00	T/YR		0.000	OTHER
CO-001	BRUSH COGENERATION PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINE	350.00	MMBTU/H	PM10	9.90E+00	T/YR		0.000	OTHER
CO-001	BRUSH COGENERATION PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINE	350.00	MMBTU/H	SO2	3.20E+00	T/YR		0.000	OTHER
CO-001	BRUSH COGENERATION PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINE	350.00	MMBTU/H	VOC	2.67E+01	T/YR		0.000	OTHER
CO-001	COLORADO POWER PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	385.00	MMBTU/H	CO	2.24E+01	PPM @ 15% O2		0.000	BACT-PSD
CO-001	COLORADO POWER PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	385.00	MMBTU/H	NOX	4.20E+01	PPM @ 15% O2	WATER INJECTION	86.000	BACT-PSD
CO-001	COLORADO POWER PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	385.00	MMBTU/H	PM	1.24E+01	T/YR		0.000	OTHER
CO-001	COLORADO POWER PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	385.00	MMBTU/H	PM10	1.24E+01	T/YR		0.000	OTHER
CO-001	COLORADO POWER PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	385.00	MMBTU/H	SO2	3.20E+00	T/YR		0.000	OTHER
CO-001	COLORADO POWER PARTNERSHIP	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-692-3176	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	385.00	MMBTU/H	VOC	3.52E+01	T/YR		0.000	OTHER
CO-002	CIMARRON CHEMICAL	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-331-8593	TURBINE #2, GE FRAME 6	33.00	MW	CO	2.50E+02	T/YR, LESS THAN	CO CATALYST	0.000	OTHER
CO-002	CIMARRON CHEMICAL	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-331-8593	TURBINE #1, GE FRAME 6	33.00	MW	NOX	2.50E+01	PPM @ 15% O2	WATER INJECTION	0.000	OTHER
CO-002	CIMARRON CHEMICAL	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303)-331-8593	TURBINE #2, GE FRAME 6	33.00	MW	NOX	9.00E+00	PPM @ 15% O2	SCR	0.000	OTHER
CO-002	NORTHWEST PIPELINE CORPORATION	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303) 692-3176	TURBINE, SOLAR TAURUS	45.00	MMBTU/HR	NO2	9.50E+01	PPMVD (UNTIL 11/96)	DRY LOW NOX COMBUSTOR (BY 11/01/96)	0.000	BACT-PSD
CO-002	PHOENIX POWER PARTNERS	COLORADO DEPT OF HEALTH - AIR POLL CTRL	(303) 692-3176	TURBINE (NATURAL GAS)	311.00	MMBTU/HR	NOX	2.20E+01	PPM @ 15% O2	DRY LOW NOX COMBUSTION	0.000	BACT-OTHER
FL-0045	CHARLES LARSEN POWER PLANT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 1 EACH	80.00	MW	CO	2.50E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0045	CHARLES LARSEN POWER PLANT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 1 EACH	80.00	MW	CO	2.50E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0045	CHARLES LARSEN POWER PLANT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 1 EACH	80.00	MW	H2SO4	0.00E+00		FUEL SPEC: LIMIT FUEL SULFUR CONTENT	0.000	BACT-PSD
FL-0045	CHARLES LARSEN POWER PLANT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 1 EACH	80.00	MW	H2SO4	0.00E+00		FUEL SPEC: LIMIT FUEL SULFUR CONTENT	0.000	BACT-PSD
FL-0045	CHARLES LARSEN POWER PLANT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 1 EACH	80.00	MW	NOX	2.50E+01	PPM @ 15% O2	WET INJECTION	0.000	BACT-PSD
FL-0045	CHARLES LARSEN POWER PLANT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 1 EACH	80.00	MW	NOX	4.20E+01	PPM @ 15% O2	WET INJECTION	0.000	BACT-PSD
FL-0045	CHARLES LARSEN POWER PLANT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 1 EACH	80.00	MW	PM	6.00E-03	LB/MMBTU	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0045	CHARLES LARSEN POWER PLANT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 1 EACH	80.00	MW	PM	2.50E-02	LB/MMBTU	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0045	CHARLES LARSEN POWER PLANT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 1 EACH	80.00	MW	SO2	0.00E+00		FUEL SPEC: LIMIT FUEL SULFUR CONTENT	0.000	BACT-PSD
FL-0045	CHARLES LARSEN POWER PLANT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 1 EACH	80.00	MW	SO2	0.00E+00		FUEL SPEC: LIMIT FUEL SULFUR CONTENT	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	400.00	MW	CO	3.00E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD

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RBLCID	FACILITY	AGCYNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 2 EACH	400.00	MW	CO	3.30E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, CG, 4 EACH	400.00	MW	CO	3.30E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	400.00	MW	NOX	2.50E+01	PPM @ 15% O2	LOW NOX COMBUSTORS	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 2 EACH	400.00	MW	NOX	6.50E+01	PPM @ 15% O2	LOW NOX COMBUSTORS	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, CG, 4 EACH	400.00	MW	NOX	4.20E+01	PPM @ 15% O2	LOW NOX COMBUSTORS	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	400.00	MW	PM	1.80E+01	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 2 EACH	400.00	MW	PM	6.06E+01	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, CG, 4 EACH	400.00	MW	PM	1.90E+01	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	400.00	MW	SO2	9.15E+01	LB/H	FUEL SPEC: NATURAL GAS AS FUEL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 2 EACH	400.00	MW	SO2	9.20E+02	LB/H	FUEL SPEC: NO. 2 FUEL OIL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, CG, 4 EACH	400.00	MW	SO2	8.34E-02	LB/H	FUEL SPEC: COAL DERIVED GAS	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	400.00	MW	VOC	1.60E+00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 2 EACH	400.00	MW	VOC	6.00E+00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, CG, 4 EACH	400.00	MW	VOC	9.00E+00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	240.00	MW	CO	3.00E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 4 EACH	0.00		CO	3.30E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	240.00	MW	H2SO4	0.00E+00		FUEL SPEC: NATURAL GAS AS FUEL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 4 EACH	0.00		H2SO4	0.00E+00		FUEL SPEC: FIRING #2 FUEL OIL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	240.00	MW	NOX	4.20E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 4 EACH	0.00		NOX	6.50E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	240.00	MW	PM	1.54E+01	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 4 EACH	0.00		PM	5.80E+01	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	240.00	MW	SO2	0.00E+00		FUEL SPEC: NATURAL GAS AS FUEL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 4 EACH	0.00		SO2	0.00E+00		FUEL SPEC: NO. 2 FUEL OIL AS FUEL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	240.00	MW	VOC	1.00E+00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 4 EACH	0.00		VOC	6.00E+00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0054	LAKE COGEN LIMITED	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 2 EACH	42.00	MW	CO	4.20E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0054	LAKE COGEN LIMITED	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 2 EACH	42.00	MW	CO	7.80E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0054	LAKE COGEN LIMITED	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 2 EACH	42.00	MW	NOX	2.50E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0054	LAKE COGEN LIMITED	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 2 EACH	42.00	MW	NOX	4.20E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0054	LAKE COGEN LIMITED	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 2 EACH	42.00	MW	PM	6.90E-03	LB/MMBTU	COMBUSTION CONTROL, FUEL SPEC: CLEAN FUEL	0.000	BACT-PSD
FL-0054	LAKE COGEN LIMITED	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 2 EACH	42.00	MW	PM	2.60E-02	LB/MMBTU	COMBUSTION CONTROL, FUEL SPEC: CLEAN FUEL	0.000	BACT-PSD
FL-0056	ORLANDO UTILITIES COMMISSION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	35.00	MW	CO	1.00E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0056	ORLANDO UTILITIES COMMISSION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 4 EACH	35.00	MW	CO	1.00E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0056	ORLANDO UTILITIES COMMISSION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	35.00	MW	NOX	4.20E+01	PPM @ 15% O2	WET INJECTION	70.000	BACT-PSD
FL-0056	ORLANDO UTILITIES COMMISSION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 4 EACH	35.00	MW	NOX	6.50E+01	PPM @ 15% O2	WET INJECTION	0.000	BACT-PSD
FL-0056	ORLANDO UTILITIES COMMISSION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS, 4 EACH	35.00	MW	VOC	7.00E+00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0056	ORLANDO UTILITIES COMMISSION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 4 EACH	35.00	MW	VOC	7.00E+00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0057	FLORIDA POWER GENERATION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 6 EACH	92.90	MW	CO	5.40E+01	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0057	FLORIDA POWER GENERATION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 6 EACH	92.90	MW	H2SO4	7.80E+01	LB/H	FUEL SPEC: #2 FUEL OIL	0.000	BACT-PSD
FL-0057	FLORIDA POWER GENERATION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 6 EACH	92.90	MW	NOX	4.20E+01	PPM @ 15% O2	WET INJECTION	0.000	BACT-PSD
FL-0057	FLORIDA POWER GENERATION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 6 EACH	92.90	MW	PM	1.50E+01	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0057	FLORIDA POWER GENERATION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 6 EACH	92.90	MW	SO2	5.55E+02	LB/H	FUEL SPEC: #2 FUEL OIL	0.000	BACT-PSD
FL-0057	FLORIDA POWER GENERATION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, OIL, 6 EACH	92.90	MW	VOC	5.00E+00	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0059	SEMINOLE FERTILIZER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904)-488-1344	TURBINE, GAS	26.00	MW	NOX	9.00E+00	PPM @ 15% O2	SCR	0.000	BACT-PSD
FL-0068	ORANGE COGENERATION LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS, 2	368.30	MMBTU/H	CO	3.00E+01	PPMVD	GOOD COMBUSTION	0.000	BACT-PSD
FL-0068	ORANGE COGENERATION LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS, 2	368.30	MMBTU/H	NOX	1.50E+01	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0068	ORANGE COGENERATION LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS, 2	368.30	MMBTU/H	PM	5.00E+00	LB/H	GOOD COMBUSTION	0.000	BACT-PSD
FL-0068	ORANGE COGENERATION LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS, 2	368.30	MMBTU/H	VOC	1.00E+01	PPMVD	GOOD COMBUSTION	0.000	BACT-PSD
FL-0072	TIGER BAY LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, GAS	1614.80	MMBTU/H	CO	4.90E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0072	TIGER BAY LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1849.90	MMBTU/H	CO	9.84E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0072	TIGER BAY LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, GAS	1614.80	MMBTU/H	NOX	1.50E+01	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0072	TIGER BAY LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1849.90	MMBTU/H	NOX	4.20E+01	PPM @ 15% O2	WATER INJECTION	0.000	BACT-PSD
FL-0072	TIGER BAY LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, GAS	1614.80	MMBTU/H	PM	9.00E+00	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0072	TIGER BAY LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1849.90	MMBTU/H	PM	1.70E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0074	FLORIDA GAS TRANSMISSION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, GAS	131.59	MMBTU/H	NOX	2.50E+01	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS	869.00	MMBTU/H	CO	5.40E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	928.00	MMBTU/H	CO	6.50E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS	367.00	MMBTU/H	CO	4.00E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD

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RBLCID	FACILITY	AGCYNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	371.00	MMBTU/H	CO	7.80E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	928.00	MMBTU/H	H2SO4	5.70E+00	LB/H	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	371.00	MMBTU/H	H2SO4	2.20E+00	LB/H	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS	869.00	MMBTU/H	NOX	1.50E+01	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	928.00	MMBTU/H	NOX	4.20E+01	PPM @ 15% O2	WATER INJECTION	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS	367.00	MMBTU/H	NOX	1.50E+01	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	371.00	MMBTU/H	NOX	4.20E+01	PPM @ 15% O2	WATER INJECTION	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS	869.00	MMBTU/H	PM	7.00E+00	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	928.00	MMBTU/H	PM	1.50E+01	LB/H	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS	367.00	MMBTU/H	PM	9.00E+00	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	371.00	MMBTU/H	PM	1.00E+01	LB/H	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	928.00	MMBTU/H	SO2	5.20E+01	LB/H	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	371.00	MMBTU/H	SO2	2.00E+01	LB/H	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE,GAS	1214.00	MMBTU/H	CO	1.50E+01	PPMVD	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1170.00	MMBTU/H	CO	2.50E+01	PPMVD	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE,GAS	1214.00	MMBTU/H	H2SO4	7.50E+00	LB/H	FUEL SPEC: LOW SULFUR IN NATURAL GAS	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1170.00	MMBTU/H	H2SO4	1.40E+01	LB/H	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE,GAS	1214.00	MMBTU/H	NOX	1.50E+01	PPMVD @ 15 % O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1170.00	MMBTU/H	NOX	4.20E+01	PPMVD @ 15 % O2	STEAM INJECTION	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE,GAS	1214.00	MMBTU/H	PM	1.36E-02	LB/MMBTU	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1170.00	MMBTU/H	PM	4.72E-02	LB/MMBTU	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE,GAS	1214.00	MMBTU/H	SO2	4.00E+01	LB/H	FUEL SPEC: LOW SULFUR IN NATURAL GAS	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1170.00	MMBTU/H	SO2	7.00E+01	LB/H	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE,GAS	1214.00	MMBTU/H	VOC	6.00E+00	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1170.00	MMBTU/H	VOC	1.00E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0081	TECO POLK POWER STATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	1765.00	MMBTU/H	CO	4.00E+01	PPMVD	GOOD COMBUSTION	0.000	BACT-PSD
FL-0081	TECO POLK POWER STATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	1765.00	MMBTU/H	NOX	4.20E+01	PPMVD @ 15 % O2	WET INJECTION	0.000	BACT-PSD
FL-0081	TECO POLK POWER STATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	1765.00	MMBTU/H	PM	9.00E-03	LB/MMBTU	GOOD COMBUSTION	0.000	BACT-PSD
FL-0081	TECO POLK POWER STATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	1765.00	MMBTU/H	SO2	4.60E-02	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
FL-0081	TECO POLK POWER STATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL	1765.00	MMBTU/H	VOC	2.60E-02	LB/MMBTU	GOOD COMBUSTION	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS (2)	1510.00	MMBTU/H	CO	2.50E+01	PPMVD	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL (2)	1730.00	MMBTU/H	CO	3.00E+01	PPMVD	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS (2)	1510.00	MMBTU/H	NOX	1.20E+01	PPMVD @15 % O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL (2)	1730.00	MMBTU/H	NOX	4.20E+01	PPMVD @ 15 %O2	WATER INJECTION	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS (2)	1510.00	MMBTU/H	PM	9.00E+00	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL (2)	1730.00	MMBTU/H	PM	1.70E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS (2)	1510.00	MMBTU/H	SO2	8.90E-01	LB/H	FUEL SPEC: LOW SULFUR IN NATURAL GAS	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL (2)	1730.00	MMBTU/H	SO2	9.40E+01	LB/H	FUEL SPEC: LOW SULFUR FUEL OIL (MAX 0.05 % SULFUR)	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, NATURAL GAS (2)	1510.00	MMBTU/H	VOC	7.00E+00	PPMVW	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, FUEL OIL (2)	1730.00	MMBTU/H	VOC	7.00E+00	PPMVW	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1029.00	MMBTU/H	CO	5.40E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1866.00	MMBTU/H	CO	7.80E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1029.00	MMBTU/H	H2SO4	1.80E+01	LB/H	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1866.00	MMBTU/H	H2SO4	2.60E+01	LB/H	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1029.00	MMBTU/H	NOX	4.20E+01	PPMVD @ 15 % O2	WET INJECTION	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1866.00	MMBTU/H	NOX	4.20E+01	PPMVD @ 15 % O2	WET INJECTION	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1029.00	MMBTU/H	PM	1.50E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1866.00	MMBTU/H	PM	1.70E+01	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1029.00	MMBTU/H	SO2	2.22E+02	LB/H	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1866.00	MMBTU/H	SO2	4.07E+02	LB/H	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1029.00	MMBTU/H	VOC	5.00E+00	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0083	FLORIDA POWER CORPORATION	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, OIL	1866.00	MMBTU/H	VOC	9.00E+00	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0092	GAINESVILLE REGIONAL UTILITIES	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	SIMPLE CYCLE COMBUSTION TURBINE, GAS/NO 2 OIL B-U	74.00	MW	H2SO4	3.00E+00	LB/HR AT 20 F (GAS)	FUEL SPEC: LOW SULFUR OIL BACKUP FUEL AND NAT GAS PRIMARY 0.05% S OIL	0.000	BACT-PSD
FL-0092	GAINESVILLE REGIONAL UTILITIES	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	SIMPLE CYCLE COMBUSTION TURBINE, GAS/NO 2 OIL B-U	74.00	MW	NOX	1.50E+01	PPM AT 15% OXYGEN	DRY LOW NOX BURNERS	0.000	BACT-PSD
FL-0092	GAINESVILLE REGIONAL UTILITIES	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	OIL FIRED COMBUSTION TURBINE	74.00	MW	NOX	4.20E+01	PPM AT 15% OXYGEN	WATER INJECTION	0.000	BACT-PSD
FL-0092	GAINESVILLE REGIONAL UTILITIES	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	SIMPLE CYCLE COMBUSTION TURBINE, GAS/NO 2 OIL B-U	74.00	MW	PM	7.00E+00	LB/HR AT 20 F	FUEL SPEC: LOW SULFUR FUELS	0.000	BACT-PSD
FL-0092	GAINESVILLE REGIONAL UTILITIES	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	SIMPLE CYCLE COMBUSTION TURBINE, GAS/NO 2 OIL B-U	74.00	MW	SO2	2.90E+01	LB/HR AT 20 F (GAS)	FUEL SPEC: LOW SULFUR OIL BACKUP FUEL AND NAT GAS PRIMARY 0.05% S	0.000	BACT-PSD
FL-0092	GAINESVILLE REGIONAL UTILITIES	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	OIL FIRED COMBUSTION TURBINE	74.00	MW	SO2	5.30E+01	LB/HR AT 20 F	FUEL SPEC: LOW S OIL 0.05% S	0.000	BACT-PSD
FL-0102	PANDA-KATHLEEN, L.P.	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	COMBINED CYCLE COMBUSTION TURBINE (TOTAL 115MW)	75.00	MW	CO	2.50E+01	PPM @ 15% O2	COMBUSTION CONTROLS	0.000	BACT-PSD

CITY OF TALLAHASSEE
PURDOM UNIT 8 - COMBINED CYCLE GAS TURBINE
BACT EVALUATION
U. S. ENVIRONMENTAL PROTECTION AGENCY'S RACT/BACT/LAER CLEARINGHOUSE

RBLCID	FACILITY	AGCYNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
FL-0102	PANDA-KATHLEEN, L.P.	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	COMBINED CYCLE COMBUSTION TURBINE (TOTAL 115MW)	75.00	MW	NOX	1.50E+01	PPM @ 15% O2	DRY LOW NOX BURNER	0.000	BACT-PSD
FL-0104	SEMINOLE HARDEE UNIT 3	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	COMBINED CYCLE COMBUSTION TURBINE	140.00	MW	CO	2.00E+01	PPM (NAT. GAS)	DRY LNB - GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0104	SEMINOLE HARDEE UNIT 3	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	COMBINED CYCLE COMBUSTION TURBINE	140.00	MW	NOX	1.50E+01	PPM @ 15% O2	DRY LNB - STAGED COMBUSTION	0.000	BACT-PSD
FL-0104	SEMINOLE HARDEE UNIT 3	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	COMBINED CYCLE COMBUSTION TURBINE	140.00	MW	PM/PM10	7.00E+00	LB/HR (NAT. GAS)	DRY LNB - FUEL SPEC: LOW S OIL, LIMITED OPERATION ON OIL. GOOD COMBUSTION	0.000	BACT-PSD
FL-0104	SEMINOLE HARDEE UNIT 3	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	COMBINED CYCLE COMBUSTION TURBINE	140.00	MW	SO2	1.00E+00	GRAIN S/100 SCF GAS	FUEL SPEC: LOW S FUEL OIL OR NATURAL GAS FUEL; COMBUSTION OF CLEAN FUELS	0.000	BACT-PSD
FL-0109	KEY WEST CITY ELECTRIC SYSTEM	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, EXISTING CT RELOCATION TO A NEW PLANT	23.00	MW	CO	2.00E+01	PPM @ 15% O2 FULL L	GOOD COMBUSTION	0.000	BACT-PSD
FL-0109	KEY WEST CITY ELECTRIC SYSTEM	FLORIDA DEPT OF ENV REGULATION	(904) 488-1344	TURBINE, EXISTING CT RELOCATION TO A NEW PLANT	23.00	MW	NOX	7.50E+01	PPM @ 15% O2	WATER INJECTION	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	1032.00	MMBTU/H, NAT GAS	CO	9.00E+00	PPM @ 15% O2	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	972.00	MMBTU/H, #2 OIL	CO	9.00E+00	PPM @ 15% O2	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	1032.00	MMBTU/H, NAT GAS	HG	9.00E-01	LB/E11 BTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	972.00	MMBTU/H, #2 OIL	HG	2.60E+00	LB/E12 BTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	1032.00	MMBTU/H, NAT GAS	NOX	2.50E+01	PPM @ 15% O2	MAX WATER INJECTION	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	972.00	MMBTU/H, #2 OIL	NOX	0.00E+00	SEE NOTES	MAX WATER INJECTION	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	1032.00	MMBTU/H, NAT GAS	PM	8.00E-03	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	972.00	MMBTU/H, #2 OIL	PM	1.20E-02	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	972.00	MMBTU/H, #2 OIL	SO2	5.00E-01	% S MAX	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	1032.00	MMBTU/H, NAT GAS	VOC	3.00E-03	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404)-363-7000	TURBINES, 8	972.00	MMBTU/H, #2 OIL	VOC	4.20E-03	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0053	HARTWELL ENERGY LIMITED PARTNERSHIP	GEORGIA, OTHER	(404) 363-7000	TURBINE, GAS FIRED (2 EACH)	1817.00	M BTU/HR	CO	2.50E+01	PPMVD @ FULL LOAD	FUEL SPEC: CLEAN BURNING FUELS	0.000	BACT-PSD
GA-0053	HARTWELL ENERGY LIMITED PARTNERSHIP	GEORGIA, OTHER	(404) 363-7000	TURBINE, OIL FIRED (2 EACH)	1840.00	M BTU/HR	CO	2.50E+01	PPMVD @ FULL LOAD	FUEL SPEC: CLEAN BURNING FUELS	0.000	BACT-PSD
GA-0053	HARTWELL ENERGY LIMITED PARTNERSHIP	GEORGIA, OTHER	(404) 363-7000	TURBINE, GAS FIRED (2 EACH)	1817.00	M BTU/HR	NOX	2.50E+01	PPM @ 15% O2	MAXIMUM WATER INJECTION	0.000	BACT-PSD
GA-0053	HARTWELL ENERGY LIMITED PARTNERSHIP	GEORGIA, OTHER	(404) 363-7000	TURBINE, OIL FIRED (2 EACH)	1840.00	M BTU/HR	NOX	2.50E+01	PPMVD, FUEL N AFLOW	MAXIMUM WATER INJECTION	0.000	BACT-PSD
GA-0053	HARTWELL ENERGY LIMITED PARTNERSHIP	GEORGIA, OTHER	(404) 363-7000	TURBINE, GAS FIRED (2 EACH)	1817.00	M BTU/HR	PM	6.40E-03	LB/M BTU	FUEL SPEC: CLEAN BURNING FUELS	0.000	BACT-PSD
GA-0053	HARTWELL ENERGY LIMITED PARTNERSHIP	GEORGIA, OTHER	(404) 363-7000	TURBINE, OIL FIRED (2 EACH)	1840.00	M BTU/HR	PM	1.56E-02	LB/M BTU	FUEL SPEC: CLEAN BURNING FUELS	0.000	BACT-PSD
GA-0053	HARTWELL ENERGY LIMITED PARTNERSHIP	GEORGIA, OTHER	(404) 363-7000	TURBINE, OIL FIRED (2 EACH)	1840.00	M BTU/HR	SO2	5.00E-02	% S IN FUEL	FUEL SPEC: CLEAN BURNING FUELS	0.000	BACT-PSD
GA-0056	GEORGIA POWER COMPANY, ROBINS TURBINE PROJECT	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	TURBINE, COMBUSTION, NATURAL GAS	80.00	MW	NOX	2.50E+01	PPM	WATER INJECTION, FUEL SPEC: NATURAL GAS	0.000	BACT-PSD
GA-0056	GEORGIA POWER COMPANY, ROBINS TURBINE PROJECT	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	TURBINE, COMBUSTION, NATURAL GAS	80.00	MW	SO2	5.60E+01	PPM	FUEL SPEC: LOW SULFUR FUEL (.3% AVG) FUEL 0.1	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	COMBUSTION TURBINE (2), NATURAL GAS	116.00	MW	CO	1.00E+01	PPMVD	COMPLETE COMBUSTION	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	COMBUSTION TURBINE (2), FUEL OIL	116.00	MW	CO	3.00E+01	PPMVD	COMPLETE COMBUSTION	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	COMBUSTION TURBINE (2), NATURAL GAS	116.00	MW	NOX	9.00E+00	PPMVD	DRY LOW NOX BURNER WITH SCR	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	COMBUSTION TURBINE (2), FUEL OIL	116.00	MW	NOX	2.00E+01	PPMVD	WATER INJECTION WITH SCR	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	COMBUSTION TURBINE (2), NATURAL GAS	116.00	MW	PM	1.80E+01	LB/HR	CLEAN FUEL	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	COMBUSTION TURBINE (2), FUEL OIL	116.00	MW	PM	5.50E+01	LB/HR	CLEAN FUEL	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	COMBUSTION TURBINE (2), FUEL OIL	116.00	MW	SO2	5.00E-02	% SULFUR IN FUEL	FUEL SPEC: VERY LOW SULFUR IN FUEL	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	COMBUSTION TURBINE (2), NATURAL GAS	116.00	MW	VOC	8.00E+00	PPMVD	COMPLETE COMBUSTION	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	GEORGIA DEPARTMENT OF NATURAL RESOU	(404) 363-7110	COMBUSTION TURBINE (2), FUEL OIL	116.00	MW	VOC	3.00E+01	PPMVD	COMPLETE COMBUSTION	0.000	BACT-PSD
HI-0013	MAUI ELECTRIC COMPANY, LTD.	HAWAII CLEAN AIR BRANCH	(808)-586-4200	TURBINE, FUEL OIL #2	28.00	MW	CO	0.00E+00	SEE NOTES	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
HI-0013	MAUI ELECTRIC COMPANY, LTD.	HAWAII CLEAN AIR BRANCH	(808)-586-4200	TURBINE, FUEL OIL #2	28.00	MW	NOX	4.20E+01	PPM	WATER INJECTION	71.000	BACT-PSD
HI-0013	MAUI ELECTRIC COMPANY, LTD.	HAWAII CLEAN AIR BRANCH	(808)-586-4200	TURBINE, FUEL OIL #2	28.00	MW	PM	4.50E-02	GR/DSCF	FUEL SPEC: 0.4 % SULFUR	0.000	BACT-PSD
HI-0013	MAUI ELECTRIC COMPANY, LTD.	HAWAII CLEAN AIR BRANCH	(808)-586-4200	TURBINE, FUEL OIL #2	28.00	MW	SO2	7.90E+01	PPM	FUEL SPEC: 0.4 % SULFUR	0.000	BACT-PSD
HI-0013	MAUI ELECTRIC COMPANY, LTD.	HAWAII CLEAN AIR BRANCH	(808)-586-4200	TURBINE, FUEL OIL #2	28.00	MW	VOC	0.00E+00	SEE NOTES	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	CO	2.68E+01	LB/H @ 100% PEAKLD	COMBUSTION DESIGN	0.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	CO	5.64E+01	LB/H @ 75-<100% PKLD	COMBUSTION DESIGN	0.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	CO	1.81E+02	LB/H @ 50-<75% PKLD	COMBUSTION DESIGN	0.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	CO	4.76E+02	LB/H @ 25-<50% PKLD	COMBUSTION DESIGN	0.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	NOX	4.23E+01	LB/HR	COMBUSTOR WATER INJECTOR, WATER INJECTION	70.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	PM	1.97E+01	LB/HR	COMBUSTION DESIGN	0.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	SO2	1.10E+02	LB/HR	COMBUSTOR WATER INJECTOR, FUEL SPEC: 0.4% SULFUR FUEL	0.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	VOC	8.00E-01	LB/HR @ 100% PEAKLD	COMBUSTION DESIGN	0.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	VOC	2.60E+00	LB/H @ 75-<100% PKLD	COMBUSTION DESIGN	0.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	VOC	2.81E+01	LB/H @ 50-<75% PKLD	COMBUSTION DESIGN	0.000	BACT-PSD
HI-0014	HAWAII ELECTRIC LIGHT CO., INC.	HAWAII, OTHER	(808) 586-4200	TURBINE, FUEL OIL #2	20.00	MW	VOC	2.98E+02	LB/H @ 25-<50% PKLD	COMBUSTION DESIGN	0.000	BACT-PSD
HI-0015	MAUI ELECTRIC COMPANY, LTD./MAALAEA GENERATING S	HAWAII CLEAN AIR BRANCH	(808) 586-4200	TURBINE, COMBINED-CYCLE COMBUSTION	28.00	MW	CO	2.69E+01	LB/HR	COMBUSTION TECHNOLOGY/DESIGN	0.000	BACT-OTHER
HI-0015	MAUI ELECTRIC COMPANY, LTD./MAALAEA GENERATING S	HAWAII CLEAN AIR BRANCH	(808) 586-4200	TURBINE, COMBINED-CYCLE COMBUSTION	28.00	MW	NOX	4.23E+01	LB/HR	WATER INJECTION	69.000	BACT-OTHER
HI-0015	MAUI ELECTRIC COMPANY, LTD./MAALAEA GENERATING S	HAWAII CLEAN AIR BRANCH	(808) 586-4200	TURBINE, COMBINED-CYCLE COMBUSTION	28.00	MW	PM	1.97E+01	LB/HR	COMBUSTION TECHNOLOGY/DESIGN	0.000	BACT-OTHER
HI-0015	MAUI ELECTRIC COMPANY, LTD./MAALAEA GENERATING S	HAWAII CLEAN AIR BRANCH	(808) 586-4200	TURBINE, COMBINED-CYCLE COMBUSTION	28.00	MW	SO2	1.10E+02	LB/HR	FUEL SPEC: 0.4 PERCENT SULFUR CONTENT	0.000	BACT-OTHER
HI-0015	MAUI ELECTRIC COMPANY, LTD./MAALAEA GENERATING S	HAWAII CLEAN AIR BRANCH	(808) 586-4200	TURBINE, COMBINED-CYCLE COMBUSTION	28.00	MW	VOC	8.00E-01	LB/HR	COMBUSTION TECHNOLOGY/DESIGN	0.000	BACT-OTHER
KY-0053	KENTUCKY UTILITIES COMPANY	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINE, #2 FUEL OIL/NATURAL GAS (8)	1500.00	MM BTU/HR	CO	7.50E+01	LB/HR (EACH)	COMBUSTION CONTROL	0.000	BACT-PSD
KY-0053	KENTUCKY UTILITIES COMPANY	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINE, #2 FUEL OIL/NATURAL GAS (8)	1500.00	MM BTU/HR	NOX	6.50E+01	PPM @ 15% O2, OIL	WATER INJECTION	0.000	BACT-PSD

CITY OF TALLAHASSEE
PURDOM UNIT 8 - COMBINED CYCLE GAS TURBINE
BACT EVALUATION
U. S. ENVIRONMENTAL PROTECTION AGENCY'S RACT/BACT/LAER CLEARINGHOUSE

RBLCID	FACILITY	AGCYNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
KY-0053	KENTUCKY UTILITIES COMPANY	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINE, #2 FUEL OIL/NATURAL GAS (8)	1500.00	MM BTU/HR	NOX	4.20E+01	PPM @ 15% O2, N. GAS	WATER INJECTION	0.000	BACT-PSD
KY-0053	KENTUCKY UTILITIES COMPANY	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINE, #2 FUEL OIL/NATURAL GAS (8)	1500.00	MM BTU/HR	PM/PM10	6.70E+01	LB/HR (EACH)	COMBUSTION CONTROL	0.000	BACT-PSD
KY-0053	KENTUCKY UTILITIES COMPANY	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINE, #2 FUEL OIL/NATURAL GAS (8)	1500.00	MM BTU/HR	SO2	4.44E+02	LB/HR (EACH)	FUEL SPEC: LOW SULFUR FUEL (0.3% SULFUR FUEL)	0.000	BACT-PSD
KY-0053	KENTUCKY UTILITIES COMPANY	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINE, #2 FUEL OIL/NATURAL GAS (8)	1500.00	MM BTU/HR	VOC	2.04E+01	LB/HR (EACH)	COMBUSTION CONTROL	0.000	BACT-PSD
KY-0057	EAST KENTUCKY POWER COOPERATIVE	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINES (5), #2 FUEL OIL AND NAT. GAS FIRED	1492.00	MM BTU/HR	CO	7.50E+01	LBS/H (EACH)	PROPER COMBUSTION TECHNIQUES	0.000	BACT-OTHER
KY-0057	EAST KENTUCKY POWER COOPERATIVE	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINES (5), #2 FUEL OIL AND NAT. GAS FIRED	1492.00	MM BTU/HR	H2SO4	1.50E+01	LBS/H (EACH)	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-OTHER
KY-0057	EAST KENTUCKY POWER COOPERATIVE	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINES (5), #2 FUEL OIL AND NAT. GAS FIRED	1492.00	MM BTU/HR	NOX	4.20E+01	PPM @ 15% O2 (OIL)	WATER INJECTION	46.000	SEE NOTES
KY-0057	EAST KENTUCKY POWER COOPERATIVE	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINES (5), #2 FUEL OIL AND NAT. GAS FIRED	1492.00	MM BTU/HR	PM/PM10	5.40E+01	LBS/H (EACH)	PROPER COMBUSTION TECHNIQUES	0.000	BACT-OTHER
KY-0057	EAST KENTUCKY POWER COOPERATIVE	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINES (5), #2 FUEL OIL AND NAT. GAS FIRED	1492.00	MM BTU/HR	SO2	5.00E+02	LBS/H (EACH)	FUEL SPEC: LOW SULFUR FUEL (0.3% SULFUR FUEL)	0.000	SEE NOTES
KY-0057	EAST KENTUCKY POWER COOPERATIVE	KENTUCKY DEP, DIV FOR AIR QUALITY	(502) 564-3382	TURBINES (5), #2 FUEL OIL AND NAT. GAS FIRED	1492.00	MM BTU/HR	VOC	2.80E+01	LBS/H (EACH)	PROPER COMBUSTION TECHNIQUES	0.000	BACT-OTHER
LA-0079	ENRON LOUISIANA ENERGY COMPANY	LOUISIANA DEPARTMENT OF ENV QUALITY	(504)-765-0195	TURBINE, GAS, 2	39.10	MM BTU/HR	CO	6.00E+01	PPM @ 15% O2	BASE CASE, NO ADDITIONAL CONTROLS	0.000	BACT-PSD
LA-0079	ENRON LOUISIANA ENERGY COMPANY	LOUISIANA DEPARTMENT OF ENV QUALITY	(504)-765-0195	TURBINE, GAS, 2	39.10	MM BTU/HR	NOX	4.00E+01	PPM @ 15% O2	H2O INJECT 0.67 LB/LB	71.000	BACT-PSD
LA-0086	INTERNATIONAL PAPER	LOUISIANA DEPARTMENT OF ENV QUALITY	(504) 765-0199	TURBINE/HRSG, GAS COGEN	338.00	MM BTU/HR	CO	1.86E+02	LB/HR	COMBUSTION CONTROL	0.000	BACT
LA-0086	INTERNATIONAL PAPER	LOUISIANA DEPARTMENT OF ENV QUALITY	(504) 765-0199	TURBINE/HRSG, GAS COGEN	338.00	MM BTU/HR	NOX	2.50E+01	PPMV 15% O2 TURBINE	DRY LOW NOX COMBUSTOR/COMBUSTION CONTROL	0.000	BACT
LA-0086	INTERNATIONAL PAPER	LOUISIANA DEPARTMENT OF ENV QUALITY	(504) 765-0199	TURBINE/HRSG, GAS COGEN	338.00	MM BTU/HR	VOC	3.80E+00	LB/HR COMBINED	COMBUSTION CONTROLS, FUEL SELECTION	0.000	BACT
LA-0089	FORMOSA PLASTICS CORPORATION, LOUISIANA	LOUISIANA DEPARTMENT OF ENV QUALITY	(504) 765-0199	TURBINE/HRSG, GAS COGENERATION	450.00	MM BTU/HR	CO	2.58E+01	LB/HR	PROPER OPERATION	0.000	BACT-PSD
LA-0089	FORMOSA PLASTICS CORPORATION, LOUISIANA	LOUISIANA DEPARTMENT OF ENV QUALITY	(504) 765-0199	TURBINE/HRSG, GAS COGENERATION	450.00	MM BTU/HR	NOX	9.00E+00	PPMV	DRY LOW NOX BURNER/COMBUSTION DESIGN AND CONTROL	0.000	LAER
MA-0015	PEABODY MUNICIPAL LIGHT PLANT	MASSACHUSETTS DIV OF AIR QUAL CONTROL	(617) 292-5630	TURBINE, 38 MW NATURAL FAS FIRED	412.00	MM BTU/HR	CO	4.00E+01	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-OTHER
MA-0015	PEABODY MUNICIPAL LIGHT PLANT	MASSACHUSETTS DIV OF AIR QUAL CONTROL	(617) 292-5630	TURBINE, 38 MW NATURAL FAS FIRED	412.00	MM BTU/HR	NOX	2.50E+01	PPM @ 15% O2	WATER INJECTION	0.000	BACT-OTHER
MA-0015	PEABODY MUNICIPAL LIGHT PLANT	MASSACHUSETTS DIV OF AIR QUAL CONTROL	(617) 292-5630	TURBINE, 38 MW OIL FIRED	412.00	MM BTU/HR	NOX	4.00E+01	PPM @ 15% O2	WATER INJECTION	0.000	BACT-OTHER
MA-0015	PEABODY MUNICIPAL LIGHT PLANT	MASSACHUSETTS DIV OF AIR QUAL CONTROL	(617) 292-5630	TURBINE, 38 MW OIL FIRED	412.00	MM BTU/HR	PM	5.00E-02	LB/MMBTU	FUEL SPECIFICATION: NO. 2 LIGHT OIL	0.000	BACT-OTHER
MD-001	SOUTHERN MARYLAND ELECTRIC COOPERATIVE (SMECO	MARYLAND, OTHER	(410) 631-3215	TURBINE, NATURAL GAS FIRED ELECTRIC	90.00	MW	NO2	1.99E+02	LB/HR	WATER INJECTION	0.000	BACT-PSD
MD-001	SOUTHERN MARYLAND ELECTRIC COOPERATIVE (SMECO	MARYLAND, OTHER	(410) 631-3215	TURBINE, OIL FIRED ELECTRIC	90.00	MW	NO2	4.00E+02	LB/HR	WATER INJECTION	0.000	BACT-PSD
MD-001	SOUTHERN MARYLAND ELECTRIC COOPERATIVE (SMECO	MARYLAND, OTHER	(410) 631-3215	TURBINE, OIL FIRED ELECTRIC	90.00	MW	SO2	0.00E+00		FUEL SPEC: FUEL LIMITED AND 0.3 % S	0.000	BACT-PSD
MD-001	PEPCO - CHALK POINT PLANT	MARYLAND, OTHER	(410) 631-3215	TURBINE, 105 MW NATURAL GAS FIRED ELECTRIC	105.00	MW	NO2	7.70E+01	PPM @ 15% O2	DRY PREMIX AND WATER INJECTION	0.000	BACT-PSD
MD-001	PEPCO - CHALK POINT PLANT	MARYLAND, OTHER	(410) 631-3215	TURBINE, 105 MW OIL FIRED ELECTRIC	105.00	MW	NO2	2.50E+01	PPM @ 15% O2	DRY PREMIX BURNER	0.000	BACT-PSD
MD-001	PEPCO - CHALK POINT PLANT	MARYLAND, OTHER	(410) 631-3215	TURBINE, 84 MW NATURAL GAS FIRED ELECTRIC	84.00	MW	NO2	2.50E+01	PPM @ 15% O2	QUIET COMBUSTION AND WATER INJECTION	0.000	BACT-PSD
MD-001	PEPCO - CHALK POINT PLANT	MARYLAND, OTHER	(410) 631-3215	TURBINE, 84 MW OIL FIRED ELECTRIC	84.00	MW	NO2	5.80E+01	PPM @ 15% O2	QUIET COMBUSTION AND WATER INJECTION	0.000	BACT-PSD
MD-001	BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	MARYLAND, OTHER	(410) 631-3215	TURBINE, 140 MW NATURAL GAS FIRED ELECTRIC	140.00	MW	CO	2.00E+01	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
MD-001	BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	MARYLAND, OTHER	(410) 631-3215	TURBINE, 140 MW NATURAL GAS FIRED ELECTRIC	140.00	MW	NO2	1.50E+01	PPM @ 15% O2	DRY BURN LOW NOX BURNERS	91.000	BACT-PSD
MD-001	BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	MARYLAND, OTHER	(410) 631-3215	TURBINE, 140 MW OIL FIRED ELECTRIC	140.00	MW	NO2	6.50E+01	PPM @ 15% O2	WATER INJECTION	72.000	BACT-PSD
MD-001	BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	MARYLAND, OTHER	(410) 631-3215	TURBINE, 140 MW OIL FIRED ELECTRIC	140.00	MW	SO2	8.70E+01	LB/HR	FUEL SPEC: LOW SULFUR OIL (0.05%)	75.000	BACT-PSD
MD-002	PEPCO - STATION A	MARYLAND, OTHER	(410) 631-3215	TURBINE, 124 MW NATURAL GAS FIRED	125.00	MW	NO2	4.20E+01	PPM @ 15% O2	WATER INJECTION	0.000	BACT-PSD
MD-002	PEPCO - STATION A	MARYLAND, OTHER	(410) 631-3215	TURBINE, 124 MW OIL FIRED	125.00	MW	NO2	7.70E+01	PPM @ 15% O2	WATER INJECTION	0.000	BACT-PSD
MI-0208	KALAMAZOO POWER LIMITED	MICHIGAN DEPARTMENT OF NATURAL RESOU	(517)-373-7023	TURBINE, GAS-FIRED, 2, W/ WASTE HEAT BOILERS	1805.90	MMBTU/H	CO	2.00E+01	PPMV	DRY LOW NOX TURBINES	0.000	BACT-PSD
MI-0208	KALAMAZOO POWER LIMITED	MICHIGAN DEPARTMENT OF NATURAL RESOU	(517)-373-7023	TURBINE, GAS-FIRED, 2, W/ WASTE HEAT BOILERS	1805.90	MMBTU/H	NOX	1.50E+01	PPMV	DRY LOW NOX TURBINES	0.000	BACT-PSD
MN-002	LSP-COTTAGE GROVE, L.P.	MINNESOTA POLL CTRL AGCY, AIR QUAL DIV	(612) 296-7825	COMBUSTION TURBINE/GENERATOR	1970.00	MMBTU/HR	H2SO4	3.70E-01	LB/HR GAS	FUEL SELECTION	0.000	BACT-PSD
MN-002	LSP-COTTAGE GROVE, L.P.	MINNESOTA POLL CTRL AGCY, AIR QUAL DIV	(612) 296-7825	COMBUSTION TURBINE/GENERATOR	1970.00	MMBTU/HR	NOX	4.50E+00	PPM @ 15% O2 GAS	SELECTIVE CATALYTIC REDUCTION (SCR)	70.000	BACT-PSD
MN-002	LSP-COTTAGE GROVE, L.P.	MINNESOTA POLL CTRL AGCY, AIR QUAL DIV	(612) 296-7825	COMBUSTION TURBINE/GENERATOR	1970.00	MMBTU/HR	PM10	1.07E+01	LB/HR GAS	FUEL SELECTION; GOOD COMBUSTION	0.000	BACT-PSD
MN-002	LSP-COTTAGE GROVE, L.P.	MINNESOTA POLL CTRL AGCY, AIR QUAL DIV	(612) 296-7825	COMBUSTION TURBINE/GENERATOR	1970.00	MMBTU/HR	VOC	1.90E+01	LB/HR GAS	FUEL SELECTION, GOOD COMBUSTION	0.000	BACT-PSD
MS-0028	SOUTH MISSISSIPPI ELECTRIC POWER ASSOC.	MISSISSIPPI DEPT OF ENV QUALITY	(601) 961-5242	COMBUSTION TURBINE, COMBINED CYCLE	1299.00	MMBTU/HR	CO	2.63E+01	PPM @ 15% O2, GAS	GOOD COMBUSTION CONTROLS	0.000	BACT-PSD
MS-0028	SOUTH MISSISSIPPI ELECTRIC POWER ASSOC.	MISSISSIPPI DEPT OF ENV QUALITY	(601) 961-5242	COMBUSTION TURBINE, COMBINED CYCLE	1299.00	MMBTU/HR	PM	8.10E+00	LB/HR, GAS	GOOD COMBUSTION CONTROLS	0.000	BACT-PSD
MS-0028	SOUTH MISSISSIPPI ELECTRIC POWER ASSOC.	MISSISSIPPI DEPT OF ENV QUALITY	(601) 961-5242	COMBUSTION TURBINE, COMBINED CYCLE	1299.00	MMBTU/HR	VOC	5.20E+00	PPM @ 15% O2, GAS	GOOD COMBUSTION CONTROLS	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATI	NORTH CAROLINA DIV OF ENV MGMT	(919) 733-3340	TURBINE, COMBUSTION	1247.00	MM BTU/HR	CO	8.00E+01	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATI	NORTH CAROLINA DIV OF ENV MGMT	(919) 733-3340	TURBINE, COMBUSTION	1313.00	MM BTU/HR	CO	5.90E+01	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATI	NORTH CAROLINA DIV OF ENV MGMT	(919) 733-3340	TURBINE, COMBUSTION	1247.00	MM BTU/HR	H2SO4	2.51E+01	LB/HR	FUEL SPEC: 0.2% SULFUR FUEL OIL	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATI	NORTH CAROLINA DIV OF ENV MGMT	(919) 733-3340	TURBINE, COMBUSTION	1247.00	MM BTU/HR	NOX	2.87E+02	LB/HR	MULTINOZZLE COMBUSTOR, MAXIMUM WATER INJECTION	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATI	NORTH CAROLINA DIV OF ENV MGMT	(919) 733-3340	TURBINE, COMBUSTION	1313.00	MM BTU/HR	NOX	1.19E+02	LB/HR	MULTINOZZLE COMBUSTOR, MAXIMUM WATER INJECTION	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATI	NORTH CAROLINA DIV OF ENV MGMT	(919) 733-3340	TURBINE, COMBUSTION	1313.00	MM BTU/HR	PM10	5.00E+00	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATI	NORTH CAROLINA DIV OF ENV MGMT	(919) 733-3340	TURBINE, COMBUSTION	1247.00	MM BTU/HR	SO2	2.41E+02	LB/HR	FUEL SPEC: 0.2% SULFUR FUEL OIL	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATI	NORTH CAROLINA DIV OF ENV MGMT	(919) 733-3340	TURBINE, COMBUSTION	1313.00	MM BTU/HR	SO2	7.00E-01	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATI	NORTH CAROLINA DIV OF ENV MGMT	(919) 733-3340	TURBINE, COMBUSTION	1247.00	MM BTU/HR	VOC	5.00E+00	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATI	NORTH CAROLINA DIV OF ENV MGMT	(919) 733-3340	TURBINE, COMBUSTION	1313.00	MM BTU/HR	VOC	2.00E+00	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	CO, GAS	8.00E+01	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	CO, OIL	8.10E+01	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	H2SO4	1.80E+01	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	NOX, GAS	1.58E+02	LB/HR	WATER INJECTION	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	NOX, OIL	9.12E+02	LB/HR	WATER INJECTION; FUEL SPEC: 0.04% N FUEL OIL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	PM/PM10, GAS	9.00E+00	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD

CITY OF TALLAHASSEE
PURDOM UNIT 8 - COMBINED CYCLE GAS TURBINE
BACT EVALUATION
U. S. ENVIRONMENTAL PROTECTION AGENCY'S RACT/BACT/LAER CLEARINGHOUSE

RBLCID	FACILITY	AGCYNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	PM/PM10, OIL	1.70E+01	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	SO2, GAS	1.00E+00	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	SO2, OIL	3.09E+02	LB/HR	FUEL SPEC: 0.15% S FUEL OIL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	VOC, GAS	2.80E+00	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	NORTH CAROLINA DIV OF ENV MGMT	(919) 715-6283	COMBUSTION TURBINE, 4 EACH	1907.80	MMBTU/HR	VOC, OIL	7.00E+00	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NJ-0009	NEWARK BAY COGENERATION PARTNERSHIP	NEW JERSEY DEPT OF ENV PROTECTION	(609) 904-0491	TURBINE, NATURAL GAS FIRED	585.00	MMBTU/HR	CO	5.50E-03	LB/MMBTU	CATALYTIC OXIDATION	80.000	BACT-PSD
NJ-0009	NEWARK BAY COGENERATION PARTNERSHIP	NEW JERSEY DEPT OF ENV PROTECTION	(609) 904-0491	TURBINE, KEROSENE FIRED	585.00	MMBTU/HR	CO	6.30E-02	LB/MMBTU	CATALYTIC OXIDATION	83.000	BACT-PSD
NJ-0009	NEWARK BAY COGENERATION PARTNERSHIP	NEW JERSEY DEPT OF ENV PROTECTION	(609) 904-0491	TURBINE, NATURAL GAS FIRED	585.00	MMBTU/HR	NOX	3.30E-02	LB/MMBTU	STEAM INJECTION AND SCR	94.000	BACT-PSD
NJ-0009	NEWARK BAY COGENERATION PARTNERSHIP	NEW JERSEY DEPT OF ENV PROTECTION	(609) 904-0491	TURBINE, KEROSENE FIRED	585.00	MMBTU/HR	NOX	6.30E-02	LB/MMBTU	STEAM INJECTION AND SCR	94.000	BACT-PSD
NJ-0010	PEDRICKTOWN COGENERATION LIMITED PARTNERSHIP	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-0491	TURBINE, NATURAL GAS FIRED	1000.00	MMBTU/HR	NOX	4.40E-02	LB/MMBTU	STEAM INJECTION AND SCR	93.000	BACT-PSD
NJ-0011	LINDEN COGENERATION TECHNOLOGY	NEW JERSEY DEPT OF ENV PROTECTION	(609) 633-8210	TURBINE, NATURAL GAS FIRED	50.00	X E12 BTU/YR	NO2	3.38E+01	LB/HR	STEAM INJECTION AND SCR	94.500	BACT-PSD
NJ-0013	LAKEWOOD COGENERATION, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES (NATURAL GAS) (2)	1190.00	MMBTU/HR	CO	2.60E-02	LB/MMBTU	TURBINE DESIGN	0.000	BACT-OTHER
NJ-0013	LAKEWOOD COGENERATION, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES (#2 FUEL OIL) (2)	1190.00	MMBTU/HR	CO	6.00E-02	LB/MMBTU	TURBINE DESIGN	0.000	BACT-OTHER
NJ-0013	LAKEWOOD COGENERATION, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES (NATURAL GAS) (2)	1190.00	MMBTU/HR	NOX	3.30E-02	LB/MMBTU	SCR, DRY LOW NOX BURNER	64.000	BACT-OTHER
NJ-0013	LAKEWOOD COGENERATION, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES (#2 FUEL OIL) (2)	1190.00	MMBTU/HR	NOX	8.20E-02	LB/MMBTU	SCR AND WATER INJECTION	0.000	BACT-OTHER
NJ-0013	LAKEWOOD COGENERATION, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES (NATURAL GAS) (2)	1190.00	MMBTU/HR	PM	2.30E-03	LB/MMBTU	TURBINE DESIGN	0.000	BACT-OTHER
NJ-0013	LAKEWOOD COGENERATION, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES (#2 FUEL OIL) (2)	1190.00	MMBTU/HR	PM	2.60E-02	LB/MMBTU	TURBINE DESIGN	0.000	BACT-OTHER
NJ-0013	LAKEWOOD COGENERATION, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES (NATURAL GAS) (2)	1190.00	MMBTU/HR	SO2	6.90E-03	LB/MMBTU	FUEL SPEC: NAT GAS/LOW SULFUR NO.2 OIL	0.000	BACT-OTHER
NJ-0013	LAKEWOOD COGENERATION, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES (#2 FUEL OIL) (2)	1190.00	MMBTU/HR	SO2	2.10E-01	LB/MMBTU	FUEL SPEC: USE OF LOW SULFUR NO.2 OIL	0.000	BACT-OTHER
NJ-0013	LAKEWOOD COGENERATION, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES (NATURAL GAS) (2)	1190.00	MMBTU/HR	VOC	4.60E-03	LB/MMBTU	TURBINE DESIGN	0.000	OTHER
NJ-0013	LAKEWOOD COGENERATION, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES (#2 FUEL OIL) (2)	1190.00	MMBTU/HR	VOC	7.30E-03	LB/MMBTU	TURBINE DESIGN	0.000	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617.00	MMBTU/HR	CO	1.80E+00	PPMDV	OXIDATION CATALYST	0.000	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, KEROSENE-FIRED (2)	640.00	MMBTU/HR	CO	2.80E+00	PPMDV	OXIDATION CATALYST	0.000	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617.00	MMBTU/HR	NOX	8.30E+00	PPMDV	SCR	0.000	BACT-PSD
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, KEROSENE-FIRED (2)	640.00	MMBTU/HR	NOX	1.60E+01	PPMDV	SCR	0.000	BACT-PSD
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617.00	MMBTU/HR	PM10	6.00E-03	LB/MMBTU	TURBINE DESIGN	0.000	BACT-PSD
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, KEROSENE-FIRED (2)	640.00	MMBTU/HR	PM10	2.30E-02	LB/MMBTU	TURBINE DESIGN	0.000	BACT-PSD
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617.00	MMBTU/HR	SO2	2.60E-03	LB/MMBTU	FUEL SPEC: USE OF NATURAL GAS	0.000	BACT-PSD
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, KEROSENE-FIRED (2)	640.00	MMBTU/HR	SO2	4.00E-02	LB/MMBTU	FUEL SPEC: USE OF LOW SULFUR OIL	0.000	BACT-PSD
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617.00	MMBTU/HR	TSP	6.00E-03	LB/MMBTU	TURBINE DESIGN	0.000	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, KEROSENE-FIRED (2)	640.00	MMBTU/HR	TSP	3.10E-02	LB/MMBTU	TURBINE DESIGN	0.000	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617.00	MMBTU/HR	VOC	4.00E+00	PPMDV	TURBINE DESIGN	0.000	BACT-PSD
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEW JERSEY DEPT OF ENV PROTECTION	(609) 984-3022	TURBINES, COMBUSTION, KEROSENE-FIRED (2)	640.00	MMBTU/HR	VOC	8.10E+00	PPMDV	TURBINE DESIGN	0.000	OTHER
NM-002	WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSO	NEW MEXICO ENVIRONMENT DEPT/APC BURE	(505) 827-2412	TURBINE, GAS-FIRED	11257.00	HP	CO	5.00E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
NM-002	WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSO	NEW MEXICO ENVIRONMENT DEPT/APC BURE	(505) 827-2412	TURBINE, GAS-FIRED	11257.00	HP	NOX	4.20E+01	PPM @ 15% O2	SOLONOX COMBUSTOR, DRY LOW NOX TECHNOLOGY	66.000	BACT-PSD
NM-002	WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSO	NEW MEXICO ENVIRONMENT DEPT/APC BURE	(505) 827-2412	TURBINE, GAS-FIRED	11257.00	HP	VOC	2.50E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
NM-002	MARATHON OIL CO. - INDIAN BASIN N.G. PLAN	NEW MEXICO ENVIRONMENT DEPT/APC BURE	(505) 827-0068	TURBINES, NATURAL GAS (2)	5500.00	HP	CO	1.32E+01	LBS/HR	LEAN-PREMIXED COMBUSTION TECHNOLOGY.	66.000	BACT-PSD
NM-002	MARATHON OIL CO. - INDIAN BASIN N.G. PLAN	NEW MEXICO ENVIRONMENT DEPT/APC BURE	(505) 827-0068	TURBINES, NATURAL GAS (2)	5500.00	HP	NOX	7.40E+00	LBS/HR	LEAN-PREMIXED COMBUSTION TECHNOLOGY. DRY/LOW NOX	66.000	BACT-PSD
NM-002	MILAGRO, WILLIAMS FIELD SERVICE	NEW MEXICO ENVIRONMENT DEPT/APC BURE	(505) 827-2411	TURBINE/COGEN, NATURAL GAS (2)	900.00	MMCF/DAY	CO	2.76E+01	PPM @ 15% O2		0.000	BACT-PSD
NM-002	MILAGRO, WILLIAMS FIELD SERVICE	NEW MEXICO ENVIRONMENT DEPT/APC BURE	(505) 827-2411	TURBINE/COGEN, NATURAL GAS (2)	900.00	MMCF/DAY	NO2	9.00E+00	PPM @ 15% O2	DRY LOW NOX (GENERAL ELECTRIC MODEL PG6541B)	94.000	BACT-PSD
NM-002	MILAGRO, WILLIAMS FIELD SERVICE	NEW MEXICO ENVIRONMENT DEPT/APC BURE	(505) 827-2411	TURBINE/COGEN, NATURAL GAS (2)	900.00	MMCF/DAY	PM10	0.00E+00	SEE P2 DESC.	COMBUSTION AIR FILTERS; GOOD COMBUSTION PRACTICE AND MAINTENANCE	0.000	BACT-PSD
NV-0015	SAGUARO POWER COMPANY	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE GENERATOR	34.50	MW	CO	9.00E+00	PPH	CONVERTER (CATALYTIC)	90.000	BACT-PSD
NV-0015	SAGUARO POWER COMPANY	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE GENERATOR	34.50	MW	NOX	1.69E+01	PPH (WINTER)	SELECTIVE CATALYTIC REDUCTION (SCR)	80.000	BACT-PSD
NV-0015	SAGUARO POWER COMPANY	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE GENERATOR	34.50	MW	PM	2.50E+00	PPH	COMBUSTION SYSTEM	0.000	LAER
NV-0015	SAGUARO POWER COMPANY	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE GENERATOR	34.50	MW	VOC	8.00E-01	PPH	COMBUSTION SYSTEM	0.000	LAER
NV-0017	NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLAN	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE ELECTRIC POWER GENERATION	75.00	MW	CO	1.53E+02	TPY (EACH TURBINE)	PRECISION CONTROL FOR THE LOW NOX COMBUSTOR	0.000	BACT-PSD
NV-0017	NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLAN	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE ELECTRIC POWER GENERATION	75.00	MW	NO2	8.86E+01	TPY (EACH TURBINE)	LOW NOX COMBUSTOR	0.000	BACT-PSD
NV-0017	NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLAN	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE ELECTRIC POWER GENERATION	75.00	MW	PM10	3.06E+01	TPY (EACH TURBINE)	PRECISION CONTROL FOR THE COMBUSTOR	0.000	BACT-PSD
NV-0017	NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLAN	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE ELECTRIC POWER GENERATION	75.00	MW	SO2	2.71E+01	TPY (EACH TURBINE)	FUEL SPEC: S IN #2 DISTILLATE LIMITED TO 0.05%	0.000	BACT-PSD
NV-0018	NEVADA COGENERATION ASSOCIATES #2	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBINED-CYCLE POWER GENERATION	85.00	MW	CO	4.00E+01	LBS/HR	CATALYTIC CONVERTER	0.000	BACT-PSD
NV-0018	NEVADA COGENERATION ASSOCIATES #2	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBINED-CYCLE POWER GENERATION	85.00	MW	NMHC	6.00E+00	LBS/HR	FUEL SPEC: BURN NATURAL GAS	0.000	BACT-PSD
NV-0018	NEVADA COGENERATION ASSOCIATES #2	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBINED-CYCLE POWER GENERATION	85.00	MW	NO2	6.13E+01	LBS/HR	SELECTIVE CATALYTIC SYSTEM ON ONE UNIT	0.000	BACT-PSD
NV-0018	NEVADA COGENERATION ASSOCIATES #2	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBINED-CYCLE POWER GENERATION	85.00	MW	PM10	3.00E+00	LBS/HR	FUEL SPEC: BURN NATURAL GAS	0.000	BACT-PSD
NV-0018	NEVADA COGENERATION ASSOCIATES #2	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBINED-CYCLE POWER GENERATION	85.00	MW	SO2	2.10E+00	LB/HR	FUEL SPEC: USE OF LOW-SULFUR OIL AS STANDBY FUEL	0.000	BACT-PSD
NV-0020	NEVADA COGENERATION ASSOCIATES #1	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBINED-CYCLE POWER GENERATION	85.00	MW	CO	4.00E+01	LBS/HR	CATALYTIC CONVERTER	0.000	BACT-PSD
NV-0020	NEVADA COGENERATION ASSOCIATES #1	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBINED-CYCLE POWER GENERATION	85.00	MW	NMHC	6.00E+00	LBS/HR	FUEL SPEC: BURN NATURAL GAS	0.000	BACT-PSD
NV-0020	NEVADA COGENERATION ASSOCIATES #1	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBINED-CYCLE POWER GENERATION	85.00	MW	NO2	6.13E+01	LBS/HR	SELECTIVE CATALYTIC SYSTEM ON ONE UNIT	0.000	BACT-PSD
NV-0020	NEVADA COGENERATION ASSOCIATES #1	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBINED-CYCLE POWER GENERATION	85.00	MW	PM10	3.00E+00	LBS/HR	FUEL SPEC: BURN NATURAL GAS	0.000	BACT-PSD
NV-0020	NEVADA COGENERATION ASSOCIATES #1	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBINED-CYCLE POWER GENERATION	85.00	MW	SO2	2.10E+00	LBS/HR	FUEL SPEC: USE OF LOW SULFUR OIL AS THE STAND-BY FUEL	0.000	BACT-PSD

CITY OF TALLAHASSEE
PURDOM UNIT 8 - COMBINED CYCLE GAS TURBINE
BACT EVALUATION
U. S. ENVIRONMENTAL PROTECTION AGENCY'S RACT/BACT/LAER CLEARINGHOUSE

RBLCID	FACILITY	AGCYNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
NV-0030	MUDDY RIVER L.P.	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00	MW	CO	7.70E+01	LB/HR	FUEL SPEC: NATURAL GAS	0.000	BACT-PSD
NV-0030	MUDDY RIVER L.P.	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00	MW	NOX	3.03E+02	LB/HR	LOW NOX BURNER	0.000	BACT-PSD
NV-0030	MUDDY RIVER L.P.	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00	MW	PM10	1.70E+01	LB/HR	FUEL SPEC: NATURAL GAS	0.000	BACT-PSD
NV-0030	MUDDY RIVER L.P.	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00	MW	SO2	8.80E+01	LB/HR	FUEL SPEC: LOW SULFUR FUEL (LESS THAN .05%S)	0.000	BACT-PSD
NV-0030	MUDDY RIVER L.P.	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00	MW	VOC	1.40E+01	LB/HR	FUEL SPEC: NATURAL GAS	0.000	BACT-PSD
NV-0031	CSW NEVADA, INC.	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00	MW	CO	8.30E+01	LB/HR	FUEL SPEC: NATURAL GAS	0.000	BACT-PSD
NV-0031	CSW NEVADA, INC.	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00	MW	NOX	2.73E+02	LB/HR	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
NV-0031	CSW NEVADA, INC.	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00	MW	PM10	1.70E+01	LB/HR	FUEL SPEC: NATURAL GAS	0.000	BACT-PSD
NV-0031	CSW NEVADA, INC.	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00	MW	SO2	3.05E+01	LB/HR	FUEL SPEC: LOW SULFUR FUEL (LESS THAN 0.05%S)	0.000	BACT-PSD
NV-0031	CSW NEVADA, INC.	CLARK CO HEALTH DIST, DIV APC, NV	(702) 383-1276	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00	MW	VOC	1.30E+01	LB/HR	FUEL SPEC: NATURAL GAS	0.000	BACT-PSD
NY-0044	BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, NATURAL GAS FIRED	240.00	MW	CO	4.00E+00	PPM @ 15% O2		0.000	LAER
NY-0044	BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, OIL FIRED	240.00	MW	CO	5.00E+00	PPM @ 15% O2		0.000	LAER
NY-0044	BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, NATURAL GAS FIRED	240.00	MW	NOX	3.50E+00	PPM @ 15% O2	SCR	0.000	LAER
NY-0044	BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, OIL FIRED	240.00	MW	NOX	1.00E+01	PPM @ 15% O2	SCR	0.000	LAER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	COMBUSTION TURBINES (2) (252 MW)	1173.00	MMBTU/HR	CO	1.00E+01	PPM	COMBUSTION CONTROLS	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	COMBUSTION TURBINE (79 MW)	1173.00	MMBTU/HR	CO	2.50E+01	PPM	COMBUSTION CONTROL	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	COMBUSTION TURBINES (2) (252 MW)	1173.00	MMBTU/HR	H2SO4 MIST	2.10E-02	LB/MMBTU OIL	FUEL SPEC: LOW SULFUR OIL	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	COMBUSTION TURBINES (2) (252 MW)	1173.00	MMBTU/HR	NOX	9.00E+00	PPM GAS	STEAM INJECTION AND SCR	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	COMBUSTION TURBINE (79 MW)	1173.00	MMBTU/HR	NOX	2.50E+01	PPM GAS	STEAM INJECTION	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	COMBUSTION TURBINES (2) (252 MW)	1173.00	MMBTU/HR	PM/PM10	4.00E-03	LB/MMBTU GAS (BASE)	COMBUSTION CONTROLS AND FUEL SPEC: LOW SULFUR OIL	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	COMBUSTION TURBINE (79 MW)	1173.00	MMBTU/HR	PM/PM10	4.00E-03	LB/MMBTU, GAS	COMBUSTION CONTROLS AND FUEL SPEC: LOW SULFUR OIL	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	COMBUSTION TURBINES (2) (252 MW)	1173.00	MMBTU/HR	SO2	2.00E-01	% SULFUR OIL	FUEL SPEC: LOW SULFUR OIL	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	COMBUSTION TURBINE (79 MW)	1173.00	MMBTU/HR	SO2	2.00E-01	% SULFUR OIL	FUEL SPEC: LOW SULFUR OIL	0.000	BACT-OTHER
NY-0046	SARANAC ENERGY COMPANY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINES, COMBUSTION (2) (NATURAL GAS)	1123.00	MMBTU/HR	CO	3.00E+00	PPM	OXIDATION CATALYST	0.000	BACT-OTHER
NY-0046	SARANAC ENERGY COMPANY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINES, COMBUSTION (2) (NATURAL GAS)	1123.00	MMBTU/HR	NOX	9.00E+00	PPM	SCR	0.000	BACT-OTHER
NY-0046	SARANAC ENERGY COMPANY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINES, COMBUSTION (2) (NATURAL GAS)	1123.00	MMBTU/HR	PM/PM10	6.20E-03	LB/MMBTU	COMBUSTION CONTROLS	0.000	BACT-OTHER
NY-0046	SARANAC ENERGY COMPANY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINES, COMBUSTION (2) (NATURAL GAS)	1123.00	MMBTU/HR	VOC	4.50E-03	LB/MMBTU	OXIDATION CATALYST	0.000	BACT-OTHER
NY-0047	PASNY/HOLTSVILLE COMBINED CYCLE PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION GAS (150 MW)	1146.00	MMBTU/HR	CO	8.50E+00	PPM	COMBUSTION CONTROL	0.000	BACT-OTHER
NY-0047	PASNY/HOLTSVILLE COMBINED CYCLE PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION GAS (150 MW)	1146.00	MMBTU/HR	NOX (FROM GAS)	9.00E+00	PPM	DRY LOW NOX	0.000	BACT-OTHER
NY-0047	PASNY/HOLTSVILLE COMBINED CYCLE PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION GAS (150 MW)	1146.00	MMBTU/HR	NOX (FROM OIL)	4.20E+01	PPM	WATER INJECTOR	0.000	BACT-OTHER
NY-0047	PASNY/HOLTSVILLE COMBINED CYCLE PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION GAS (150 MW)	1146.00	MMBTU/HR	SO2	2.00E-01	% SULFUR OIL	FUEL SPEC: LOW SULFUR OIL	0.000	BACT-OTHER
NY-0048	KAMINE/BESICORP CORNING L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION (79 MW)	653.00	MMBTU/HR	NOX	9.00E+00	PPM	DRY LOW NOX OR SCR	0.000	BACT-OTHER
NY-0048	KAMINE/BESICORP CORNING L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION (79 MW)	653.00	MMBTU/HR	PM/PM10	8.00E-03	LB/MMBTU	COMBUSTION CONTROL	0.000	BACT-OTHER
NY-0049	KAMINE/BESICORP BEAVER FALLS COGENERATION FACIL	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW)	650.00	MMBTU/HR	CO	9.50E+00	PPM	COMBUSTION CONTROLS	0.000	BACT-OTHER
NY-0049	KAMINE/BESICORP BEAVER FALLS COGENERATION FACIL	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW)	650.00	MMBTU/HR	NOX (FROM GAS)	9.00E+00	PPM	DRY LOW NOX OR SCR	0.000	BACT-OTHER
NY-0049	KAMINE/BESICORP BEAVER FALLS COGENERATION FACIL	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW)	650.00	MMBTU/HR	NOX (FROM OIL)	5.50E+01	PPM	DRY LOW NOX OR SCR	0.000	BACT-OTHER
NY-0049	KAMINE/BESICORP BEAVER FALLS COGENERATION FACIL	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW)	650.00	MMBTU/HR	PM/PM10 (FROM GAS)	8.00E-03	LB/MMBTU	COMBUSTION CONTROLS	0.000	BACT-OTHER
NY-0049	KAMINE/BESICORP BEAVER FALLS COGENERATION FACIL	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW)	650.00	MMBTU/HR	PM/PM10 (FROM OIL)	3.00E-02	LB/MMBTU	COMBUSTION CONTROLS	0.000	BACT-OTHER
NY-0049	KAMINE/BESICORP BEAVER FALLS COGENERATION FACIL	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW)	650.00	MMBTU/HR	SO2	8.00E-02	% SULFUR OIL	FUEL SPEC: LOW SULFUR OIL	0.000	BACT-OTHER
NY-0049	KAMINE/BESICORP BEAVER FALLS COGENERATION FACIL	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW)	650.00	MMBTU/HR	VOC	7.00E-03	LB/MMBTU	COMBUSTION CONTROLS	0.000	BACT-OTHER
NY-0050	SITHE/INDEPENDENCE POWER PARTNERS	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINES, COMBUSTION (4) (NATURAL GAS) (1012 MW)	2133.00	MMBTU/HR	CO	1.30E+01	PPM	COMBUSTION CONTROLS	0.000	BACT-OTHER
NY-0050	SITHE/INDEPENDENCE POWER PARTNERS	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINES, COMBUSTION (4) (NATURAL GAS) (1012 MW)	2133.00	MMBTU/HR	NOX	4.50E+00	PPM	SCR AND DRY LOW NOX	0.000	BACT-OTHER
NY-0050	SITHE/INDEPENDENCE POWER PARTNERS	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	TURBINES, COMBUSTION (4) (NATURAL GAS) (1012 MW)	2133.00	MMBTU/HR	SO2	0.00E+00		FUEL SPEC: USE OF NATURAL GAS	0.000	BACT-OTHER
NY-0057	MEGAN-RACINE ASSOCIATES, INC	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000-N COMBINED CYCLE GAS TURBINE	401.00	MMBTU/HR	CO	2.80E-02	LB/MMBTU, 11 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0057	MEGAN-RACINE ASSOCIATES, INC	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000-N COMBINED CYCLE GAS TURBINE	401.00	MMBTU/HR	NOX	4.20E+01	PPMDV @ 15% O2	WATER INJECTION	80.000	BACT
NY-0057	MEGAN-RACINE ASSOCIATES, INC	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000-N COMBINED CYCLE GAS TURBINE	401.00	MMBTU/HR	PM,PM10	2.80E-02	LB/MMBTU, 12 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0057	MEGAN-RACINE ASSOCIATES, INC	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000-N COMBINED CYCLE GAS TURBINE	401.00	MMBTU/HR	VOC	2.00E-02	LB/MMBTU, 8.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0061	ANITEC COGEN PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000 COMBINED CYCLE GAS TURBINE EP #00001	451.00	MMBTU/HR	CO	3.80E+01	PPM, 33 LB/HR	BAFFLE CHAMBER	80.000	SEE NOTE #4
NY-0061	ANITEC COGEN PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000 COMBINED CYCLE GAS TURBINE EP #00001	451.00	MMBTU/HR	NOX	2.50E+01	PPM, 41 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0061	ANITEC COGEN PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000 COMBINED CYCLE GAS TURBINE EP #00001	451.00	MMBTU/HR	PM,PM10	5.00E-03	LB/MMBTU, 2.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.1% BY WEIGHT	0.000	BACT-OTHER
NY-0061	ANITEC COGEN PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000 COMBINED CYCLE GAS TURBINE EP #00001	451.00	MMBTU/HR	VOC	8.00E-03	LB/MMBTU, 3.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0062	FULTON COGEN PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000 GAS TURBINE	500.00	MMBTU/HR	CO	1.07E+02	PPM, 120 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0062	FULTON COGEN PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000 GAS TURBINE	500.00	MMBTU/HR	NOX	3.80E+01	PPM, 85 LB/HR	WATER INJECTION	58.500	BACT
NY-0062	FULTON COGEN PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000 GAS TURBINE	500.00	MMBTU/HR	PM,PM10	2.40E-02	LB/MMBTU, 12.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.3% BY WEIGHT	0.000	BACT-OTHER
NY-0062	FULTON COGEN PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM5000 GAS TURBINE	500.00	MMBTU/HR	VOC	4.00E-03	LB/MMBTU, 2.0 LB/HR	NO CONTROLS	0.000	SEE NOTE #6
NY-0063	TBG COGEN COGENERATION PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM2500 GAS TURBINE	214.90	MMBTU/HR	CO	1.81E-01	LB/MMBTU	CATALYTIC OXIDIZER	80.000	BACT
NY-0063	TBG COGEN COGENERATION PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM2500 GAS TURBINE	214.90	MMBTU/HR	NOX	7.50E+01	PPM + FBN CORRECTI	WATER INJECTION	60.000	BACT
NY-0063	TBG COGEN COGENERATION PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM2500 GAS TURBINE	214.90	MMBTU/HR	PM,PM10	2.40E-02	LB/MMBTU, 5.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.037% BY WEIGHT	0.000	BACT-OTHER
NY-0063	TBG COGEN COGENERATION PLANT	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM2500 GAS TURBINE	214.90	MMBTU/HR	VOC	8.00E-03	LB/MMBTU, 2.9 LB/HR	NO CONTROLS	0.000	BACT-OTHER

CITY OF TALLAHASSEE
PURDOM UNIT 8 - COMBINED CYCLE GAS TURBINE
BACT EVALUATION
U. S. ENVIRONMENTAL PROTECTION AGENCY'S RACT/BACT/LAER CLEARINGHOUSE

RBLCID	FACILITY	AGCYNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
NY-0064	INDECK-OSWEGO ENERGY CENTER	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	533.00	MMBTU/HR	CO	1.00E+01	PPM, 10.00 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0064	INDECK-OSWEGO ENERGY CENTER	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	533.00	MMBTU/HR	NOX	4.20E+01	PPM, 75.00 LB/HR	STEAM INJECTION	53.000	BACT
NY-0064	INDECK-OSWEGO ENERGY CENTER	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	533.00	MMBTU/HR	PM,PM10	8.00E-03	LB/MMBTU, 5.00 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.27% BY WEIGHT	0.000	BACT-OTHER
NY-0064	INDECK-OSWEGO ENERGY CENTER	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	533.00	MMBTU/HR	VOC	1.00E-02	LB/MMBTU, 5.00 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	491.00	MMBTU/HR	CO	1.00E+01	PPM, 11.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	491.00	MMBTU/HR	NOX	4.20E+01	PPM, 76.6 LB/HR	STEAM INJECTION	63.000	BACT
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	491.00	MMBTU/HR	PM,PM10	5.00E-03	LB/MMBTU, 3.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.20% BY WEIGHT	0.000	BACT-OTHER
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	491.00	MMBTU/HR	VOC	9.00E-03	LB/MMBTU, 5.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0066	INDECK ENERGY COMPANY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE EP #00001	491.00	MMBTU/HR	CO	4.00E+01	PPM	NO CONTROLS	0.000	BACT-OTHER
NY-0066	INDECK ENERGY COMPANY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE EP #00001	491.00	MMBTU/HR	NOX	3.20E+01	PPM	STEAM INJECTION	58.200	BACT
NY-0066	INDECK ENERGY COMPANY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE EP #00001	491.00	MMBTU/HR	PM,PM10	6.00E-03	LB/MMBTU, 2.5 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0068	KAMINE/BESICORP NATURAL DAM LP	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	500.00	MMBTU/HR	CO	2.00E-02	LB/MMBTU, 10 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0068	KAMINE/BESICORP NATURAL DAM LP	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	500.00	MMBTU/HR	NOX	4.20E+01	PPM, 80.1 LB/HR	STEAM INJECTION	35.000	BACT
NY-0068	KAMINE/BESICORP NATURAL DAM LP	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	500.00	MMBTU/HR	PM,PM10	0.00E+00	SEE NOTE #1	FUEL SPECIFICATION	0.000	BACT-OTHER
NY-0068	KAMINE/BESICORP NATURAL DAM LP	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	500.00	MMBTU/HR	VOC	8.00E-03	LB/MMBTU, 4 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0071	KAMINE SOUTH GLENS FALLS COGEN CO	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	498.00	MMBTU/HR	CO	9.00E+00	PPM, 11.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0071	KAMINE SOUTH GLENS FALLS COGEN CO	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	498.00	MMBTU/HR	NOX	4.20E+01	PPM, 76.6 LB/HR	WATER INJECTION	50.000	BACT
NY-0071	KAMINE SOUTH GLENS FALLS COGEN CO	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	498.00	MMBTU/HR	PM,PM10	5.00E-03	LB/MMBTU, 3.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.20% BY WEIGHT	0.000	BACT-OTHER
NY-0071	KAMINE SOUTH GLENS FALLS COGEN CO	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	498.00	MMBTU/HR	VOC	9.00E-03	LB/MMBTU, 5.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	SIEMENS V84.3 GAS TURBINE (EP #00001)	850.00	MMBTU/HR	CO	9.50E+00	PPM	NO CONTROLS	0.000	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	SIEMENS V84.3 GAS TURBINE (EP #00001)	850.00	MMBTU/HR	NOX	2.50E+01	PPM	WATER INJECTION	70.000	BACT
NY-0072	KAMINE/BESICORP SYRACUSE LP	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	SIEMENS V84.3 GAS TURBINE (EP #00001)	850.00	MMBTU/HR	PM,PM10	6.00E-03	LB/MMBTU, 5.8 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.15% BY WEIGHT	0.000	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	SIEMENS V84.3 GAS TURBINE (EP #00001)	850.00	MMBTU/HR	VOC	7.00E-03	LB/MMBTU, 4.6 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0073	LOCKPORT COGEN FACILITY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(6) GE FRAME 6 TURBINES (EP #S 00001-00006)	423.90	MMBTU/HR	CO	1.00E+01	PPM	NO CONTROLS	0.000	BACT-OTHER
NY-0073	LOCKPORT COGEN FACILITY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(6) GE FRAME 6 TURBINES (EP #S 00001-00006)	423.90	MMBTU/HR	NOX	4.20E+01	PPM	STEAM INJECTION	78.000	BACT
NY-0073	LOCKPORT COGEN FACILITY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(6) GE FRAME 6 TURBINES (EP #S 00001-00006)	423.90	MMBTU/HR	PM,PM10	6.00E-03	LB/MMBTU, 2.5 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.20% BY WEIGHT	0.000	BACT-OTHER
NY-0073	LOCKPORT COGEN FACILITY	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(6) GE FRAME 6 TURBINES (EP #S 00001-00006)	423.90	MMBTU/HR	VOC	1.20E-02	LB/MMBTU, 5.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0075	PILGRIM ENERGY CENTER	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	1400.00	MMBTU/HR	CO	1.00E+01	PPM, 29.0 LB/HR		0.000	BACT-OTHER
NY-0075	PILGRIM ENERGY CENTER	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	1400.00	MMBTU/HR	NOX	4.50E+00	PPM, 23.6 LB/HR	STEAM INJECTION FOLLOWED BY SCR	0.000	BACT
NY-0075	PILGRIM ENERGY CENTER	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	1400.00	MMBTU/HR	PM,PM10	7.00E-03	LB/MMBTU, 7.20 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.05% BY WEIGHT	0.000	BACT-OTHER
NY-0075	PILGRIM ENERGY CENTER	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	1400.00	MMBTU/HR	VOC	2.00E-03	LB/MMBTU, 2.53 LB/HR		0.000	BACT-OTHER
NY-0076	TRIGEN MITCHEL FIELD	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	424.70	MMBTU/HR	CO	1.00E+01	PPM, 10.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0076	TRIGEN MITCHEL FIELD	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	424.70	MMBTU/HR	NOX	6.00E+01	PPM, 90 LB/HR	STEAM INJECTION	20.000	BACT
NY-0076	TRIGEN MITCHEL FIELD	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	424.70	MMBTU/HR	PM,PM10	8.00E-03	LB/MMBTU, 2.9 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0076	TRIGEN MITCHEL FIELD	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE	424.70	MMBTU/HR	VOC	1.10E-02	LB/MMBTU, 4.5 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0077	INDECK-YERKES ENERGY SERVICES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE (EP #00001)	432.20	MMBTU/HR	CO	1.00E+01	PPM, 10 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0077	INDECK-YERKES ENERGY SERVICES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE (EP #00001)	432.20	MMBTU/HR	NOX	4.20E+01	PPM, 74 LB/HR	STEAM INJECTION	35.000	BACT
NY-0077	INDECK-YERKES ENERGY SERVICES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE FRAME 6 GAS TURBINE (EP #00001)	432.20	MMBTU/HR	TSP/PM10	7.00E-03	LB/MMBTU, 2.5 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0079	LEDERLE LABORATORIES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(2) GAS TURBINES (EP #S 00101&102)	110.00	MMBTU/HR	CO	4.80E+01	PPM, 12.6 LB/HR		0.000	BACT-OTHER
NY-0079	LEDERLE LABORATORIES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(2) DUCT BURNERS (EP #S 00101&102)	99.00	MMBTU/HR	CO	6.00E-02	LB/MMBTU, 5.9 LB/HR		0.000	BACT-OTHER
NY-0079	LEDERLE LABORATORIES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(2) GAS TURBINES (EP #S 00101&102)	110.00	MMBTU/HR	NOX	4.20E+01	PPM, 18 LB/HR	STEAM INJECTION	0.000	BACT-PSD
NY-0079	LEDERLE LABORATORIES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(2) DUCT BURNERS (EP #S 00101&102)	99.00	MMBTU/HR	NOX	4.00E-01	LB/MMBTU, 36.3 LB/HR		0.000	BACT-OTHER
NY-0079	LEDERLE LABORATORIES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(2) GAS TURBINES (EP #S 00101&102)	110.00	MMBTU/HR	PM,PM10	0.00E+00	SEE NOTE #2	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.30% BY WEIGHT	0.000	BACT-OTHER
NY-0079	LEDERLE LABORATORIES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(2) DUCT BURNERS (EP #S 00101&102)	99.00	MMBTU/HR	PM,PM10	0.00E+00	SEE NOTE #2	FUEL SPEC: SULFUR CONTENT NO TO EXCEED 0.30% BY WEIGHT	0.000	BACT-OTHER
NY-0080	PROJECT ORANGE ASSOCIATES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM-5000 GAS TURBINE	550.00	MMBTU/HR	CO	9.20E+01	LB/HR TEMP > 20F	NO CONTROLS	0.000	BACT-OTHER
NY-0080	PROJECT ORANGE ASSOCIATES	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	GE LM-5000 GAS TURBINE	550.00	MMBTU/HR	NOX	2.50E+01	PPM, 47 LB/HR	STEAM INJECTION, FUEL SPEC; NATURAL GAS ONLY	80.000	BACT
NY-0081	LILCO SHOREHAM	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(3) GE FRAME 7 TURBINES (EP #S 00007-9)	850.00	MMBTU/HR	CO	1.00E+01	PPM, 19.7 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0081	LILCO SHOREHAM	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(3) GE FRAME 7 TURBINES (EP #S 00007-9)	850.00	MMBTU/HR	NOX	5.50E+01	PPM +FBN & HEAT RAT	WATER INJECTION	30.000	BACT
NY-0081	LILCO SHOREHAM	NEW YORK DEC, DIV OF AIR RESOURCES	(518) 457-7688	(3) GE FRAME 7 TURBINES (EP #S 00007-9)	850.00	MMBTU/HR	PM10	1.20E-02	LB/MMBTU, 10.2 LB/HR	NO CONTROLS	0.000	BACT-OTHER
OH-021	CNG TRANSMISSION	OHIO ENVIRONMENTAL PROTECTION AGENCY	(614) 644-2270	TURBINE (NATURAL GAS) (3)	5500.00	HP (EACH)	CO	1.50E-02	G/HP-HR	FUEL SPEC: USE OF NATURAL GAS	0.000	OTHER
OH-021	CNG TRANSMISSION	OHIO ENVIRONMENTAL PROTECTION AGENCY	(614) 644-2270	TURBINE (NATURAL GAS) (3)	5500.00	HP (EACH)	NOX	1.60E+00	G/HP-HR*	LOW NOX COMBUSTION	0.000	BACT-OTHER
OH-021	CNG TRANSMISSION	OHIO ENVIRONMENTAL PROTECTION AGENCY	(614) 644-2270	TURBINE (NATURAL GAS) (3)	5500.00	HP (EACH)	PM	3.50E-02	LB/MMBTU	FUEL SPEC: USE OF NATURAL GAS	0.000	OTHER
OH-021	CNG TRANSMISSION	OHIO ENVIRONMENTAL PROTECTION AGENCY	(614) 644-2270	TURBINE (NATURAL GAS) (3)	5500.00	HP (EACH)	VOC	1.00E-01	G/HP-HR	FUEL SPEC: USE OF NATURAL GAS	0.000	OTHER
OK-0027	OKLAHOMA MUNICIPAL POWER AUTHORITY	OKLAHOMA AIR QUALITY SERVICE	(405) 271-5220	TURBINE, COMBUSTION	58.00	MW	H2SO4	1.30E-02	LB/MM BTU	FUEL SPEC: USE OF DISTILLATE FUEL	90.000	BACT-OTHER
OK-0027	OKLAHOMA MUNICIPAL POWER AUTHORITY	OKLAHOMA AIR QUALITY SERVICE	(405) 271-5220	TURBINE, COMBUSTION	58.00	MW	NOX (FROM GAS FUEL)	2.50E+01	PPM @ 15% O2	COMBUSTION CONTROLS	83.000	BACT-OTHER
OK-0027	OKLAHOMA MUNICIPAL POWER AUTHORITY	OKLAHOMA AIR QUALITY SERVICE	(405) 271-5220	TURBINE, COMBUSTION	58.00	MW	NOX (FROM OIL FUEL)	6.50E+01	PPM @ 15% O2	COMBUSTION CONTROLS	83.000	BACT-OTHER
OK-0027	OKLAHOMA MUNICIPAL POWER AUTHORITY	OKLAHOMA AIR QUALITY SERVICE	(405) 271-5220	TURBINE, COMBUSTION	58.00	MW	PM	1.25E-02	LB/MMBTU	FUEL SPEC: USE OF DISTILLATE FUEL	90.000	BACT-OTHER
OK-0027	OKLAHOMA MUNICIPAL POWER AUTHORITY	OKLAHOMA AIR QUALITY SERVICE	(405) 271-5220	TURBINE, COMBUSTION	58.00	MW	SO2	4.30E-01	LB/MMBTU	FUEL SPEC: USE OF DISTILLATE FUEL	50.000	BACT-OTHER
OR-000	PACIFIC GAS TRANSMITION	OREGON DEPT OF ENVIRONMENTAL QUALITY	(503)-229-5988	TURBINE, NAT. GAS	14600.00	HP	NOX	4.20E+01	PPM @ 15% O2	LOW NOX BURNERS	75.000	BACT-PSD

CITY OF TALLAHASSEE
PURDOM UNIT 8 - COMBINED CYCLE GAS TURBINE
BACT EVALUATION
U. S. ENVIRONMENTAL PROTECTION AGENCY'S RACT/BACT/LAER CLEARINGHOUSE

RBLCID	FACILITY	AGCYNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
OR-000	PACIFIC GAS TRANSMISSION COMPANY	OREGON DEPT OF ENVIRONMENTAL QUALITY	(503) 229-5988	TURBINE GAS, COMPRESSOR STATION	110.00	MMBTU/HR	NO2	1.99E+02	PPM @ 15% O2	LOW NOX BURNER DESIGN	30.000	NSPS
OR-001	PORTLAND GENERAL ELECTRIC CO.	OREGON DEPT OF ENVIRONMENTAL QUALITY	(503) 229-5584	TURBINES, NATURAL GAS (2)	1720.00	MMBTU/HR	CO	1.50E+01	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
OR-001	PORTLAND GENERAL ELECTRIC CO.	OREGON DEPT OF ENVIRONMENTAL QUALITY	(503) 229-5584	BOILERS, AUXILIARY, NATURAL GAS (2)	361.00	MMBTU/HR	CO	5.60E+01	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
OR-001	PORTLAND GENERAL ELECTRIC CO.	OREGON DEPT OF ENVIRONMENTAL QUALITY	(503) 229-5584	TURBINES, NATURAL GAS (2)	1720.00	MMBTU/HR	NOX	4.50E+00	PPM @ 15% O2	SCR	82.000	BACT-PSD
OR-001	PORTLAND GENERAL ELECTRIC CO.	OREGON DEPT OF ENVIRONMENTAL QUALITY	(503) 229-5584	BOILERS, AUXILIARY, NATURAL GAS (2)	361.00	MMBTU/HR	NOX	1.00E-01	LB/MMBTU	LOW NOX BURNER AND FLUE GAS RECIRCULATION	0.000	BACT-PSD
OR-001	HERMISTON GENERATING CO.	OREGON DEPT OF ENVIRONMENTAL QUALITY	(503) 229-5584	TURBINES, NATURAL GAS (2)	1696.00	MMBTU/HR	CO	1.50E+01	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
OR-001	HERMISTON GENERATING CO.	OREGON DEPT OF ENVIRONMENTAL QUALITY	(503) 229-5584	TURBINES, NATURAL GAS (2)	1696.00	MMBTU/HR	NOX	4.50E+00	PPM @ 15% O2	SCR	82.000	BACT-PSD
PA-0083	NORTHERN CONSOLIDATED POWER	PENNSYLVANIA DER, BUR OF AIR QUAL CTRL	(814)-332-6940	TURBINES, GAS, 2	34.60	MMBTU/HR	CO	1.10E+02	T/YR	OXIDATION CATALYST	90.000	OTHER
PA-0083	NORTHERN CONSOLIDATED POWER	PENNSYLVANIA DER, BUR OF AIR QUAL CTRL	(814)-332-6940	TURBINES, GAS, 2	34.60	MMBTU/HR	NOX	2.50E+01	PPM @ 15% O2	STEAM INJECTION/+SCR IN 1997	85.000	OTHER
PA-0083	NORTHERN CONSOLIDATED POWER	PENNSYLVANIA DER, BUR OF AIR QUAL CTRL	(814)-332-6940	TURBINES, GAS, 2	34.60	MMBTU/HR	VOC	1.05E+02	PPM @ 15% O2	OXIDATION CATALYST	50.000	OTHER
PA-0098	GRAYS FERRY CO. GENERATION PARTNERSHIP	PHILADELPHIA DOPH, AIR MGMT SERV, PA	(215) 823-7572	TURBINE (NATURAL GAS & OIL)	1150.00	MMBTU/HR	CO	5.50E-03	LB/MMBTU (GAS)*	COMBUSTION	0.000	BACT-OTHER
PA-0098	GRAYS FERRY CO. GENERATION PARTNERSHIP	PHILADELPHIA DOPH, AIR MGMT SERV, PA	(215) 823-7572	TURBINE (NATURAL GAS & OIL)	1150.00	MMBTU/HR	NOX	9.00E+00	PPMVD (NAT. GAS)*	DRY LOW NOX BURNER, COMBUSTION CONTROL	0.000	BACT-OTHER
PA-0098	GRAYS FERRY CO. GENERATION PARTNERSHIP	PHILADELPHIA DOPH, AIR MGMT SERV, PA	(215) 823-7572	TURBINE (NATURAL GAS & OIL)	1150.00	MMBTU/HR	PM	1.00E-01	LB/MMBTU*	DRY LOW NOX BURNER, COMBUSTION CONTROL	0.000	BACT-OTHER
PA-0098	GRAYS FERRY CO. GENERATION PARTNERSHIP	PHILADELPHIA DOPH, AIR MGMT SERV, PA	(215) 823-7572	TURBINE (NATURAL GAS & OIL)	1150.00	MMBTU/HR	VOC	3.30E-03	LB/MMBTU*	COMBUSTION	0.000	BACT-OTHER
PA-0099	FLEETWOOD COGENERATION ASSOCIATES	PENNSYLVANIA DER, BUR OF AIR QUAL CTRL	(215) 468-4175	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER	360.00	MMBTU/HR	NOX	2.10E+01	LB/HR	SCR WITH LOW NOX COMBUSTORS	47.000	BACT-OTHER
PA-0099	FLEETWOOD COGENERATION ASSOCIATES	PENNSYLVANIA DER, BUR OF AIR QUAL CTRL	(215) 468-4175	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER	360.00	MMBTU/HR	PM	8.00E+00	LB/HR		0.000	BACT-OTHER
PA-0099	FLEETWOOD COGENERATION ASSOCIATES	PENNSYLVANIA DER, BUR OF AIR QUAL CTRL	(215) 468-4175	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER	360.00	MMBTU/HR	SO2	1.13E+01	LB/HR	FUEL SPEC: 0.1 % SULFUR IN FUEL	0.000	BACT-OTHER
PA-0099	FLEETWOOD COGENERATION ASSOCIATES	PENNSYLVANIA DER, BUR OF AIR QUAL CTRL	(215) 468-4175	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER	360.00	MMBTU/HR	VOC	4.40E+00	LB/HR	GOOD COMBUSTION PRACTICES	0.000	BACT-OTHER
PA-0130	PROCTOR AND GAMBLE PAPER PRODUCTS CO (CHARMIN	PENNSYLVANIA DER, BUR OF AIR QUAL CTRL	(717) 826-2531	TURBINE, NATURAL GAS	560.00	MMBTU/HR	NOX	5.50E+01	PPM @ 15% O2	STEAM INJECTION	75.000	RACT
RI-0010	NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.	RHODE ISLAND DIV OF AIR & HAZ MAT	(401)-277-2808	TURBINE, GAS AND DUCT BURNER	1360.00	MMBTU/HR	CO	1.10E+01	PPM @ 15% O2, GAS		0.000	BACT-PSD
RI-0010	NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.	RHODE ISLAND DIV OF AIR & HAZ MAT	(401)-277-2808	TURBINE, GAS AND DUCT BURNER	1360.00	MMBTU/HR	NOX	9.00E+00	PPM @ 15% O2, GAS	SCR	0.000	BACT-PSD
RI-0010	NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.	RHODE ISLAND DIV OF AIR & HAZ MAT	(401)-277-2808	TURBINE, GAS AND DUCT BURNER	1360.00	MMBTU/HR	PM	5.00E-03	LB/MMBTU, GAS		0.000	BACT-PSD
RI-0010	NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.	RHODE ISLAND DIV OF AIR & HAZ MAT	(401)-277-2808	TURBINE, GAS AND DUCT BURNER	1360.00	MMBTU/HR	VOC	5.00E+00	PPM @ 15% O2		0.000	BACT-PSD
RI-0012	ALGONQUIN GAS TRANSMISSION CO.	RHODE ISLAND DIV OF AIR & HAZ MAT	(401)-277-2808	TURBINE, GAS, 2	49.00	MMBTU/HR	CO	1.14E-01	LB/MMBTU	GOOD COMBUSTION PRACTICES	0.000	BACT-OTHER
RI-0012	ALGONQUIN GAS TRANSMISSION CO.	RHODE ISLAND DIV OF AIR & HAZ MAT	(401)-277-2808	TURBINE, GAS, 2	49.00	MMBTU/HR	NOX	1.00E+02	PPM @ 15% O2	LOW NOX COMBUSTION	0.000	BACT-OTHER
RI-0012	ALGONQUIN GAS TRANSMISSION CO.	RHODE ISLAND DIV OF AIR & HAZ MAT	(401)-277-2808	TURBINE, GAS, 2	49.00	MMBTU/HR	VOC	1.60E-02	LB/MMBTU	GOOD COMBUSTION PRACTICES	0.000	BACT-OTHER
SC-0021	CAROLINA POWER AND LIGHT CO.	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4857	TURBINE, I.C.	80.00	MW	CO	8.00E+01	LB/H		0.000	BACT-PSD
SC-0021	CAROLINA POWER AND LIGHT CO.	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4857	TURBINE, I.C.	80.00	MW	H2SO4	3.00E+00	LB/H		0.000	BACT-PSD
SC-0021	CAROLINA POWER AND LIGHT CO.	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4857	TURBINE, I.C.	80.00	MW	NOX	2.92E+02	LB/H	WATER INJECTION	50.000	BACT-PSD
SC-0021	CAROLINA POWER AND LIGHT CO.	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4857	TURBINE, I.C.	80.00	MW	PM	1.50E+01	LB/H		0.000	BACT-PSD
SC-0021	CAROLINA POWER AND LIGHT CO.	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4857	TURBINE, I.C.	80.00	MW	SO2	2.26E+02	LB/H	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
SC-0021	CAROLINA POWER AND LIGHT CO.	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4857	TURBINE, I.C.	80.00	MW	VOC	1.00E+01	LB/H		0.000	BACT-PSD
SC-0029	SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	INTERNAL COMBUSTION TURBINE	110.00	MW	CO	2.30E+01	LBS/HR	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
SC-0029	SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	INTERNAL COMBUSTION TURBINE	110.00	MW	NOX	3.06E+02	LBS/HR	WATER INJECTION	0.000	BACT-PSD
SC-0029	SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	INTERNAL COMBUSTION TURBINE	110.00	MW	PM	4.50E+01	LBS/HR	FUEL SPEC: LOW ASH CONTENT FUELS	0.000	BACT-PSD
SC-0029	SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	INTERNAL COMBUSTION TURBINE	110.00	MW	SO2	6.30E+02	LBS/HR	FUEL SPEC: LOW SULFUR CONTENT FUELS	0.000	BACT-PSD
SC-0029	SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	INTERNAL COMBUSTION TURBINE	110.00	MW	VOC	1.00E+01	LBS/HR	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
SC-0031	BMW MANUFACTURING CORPORATION	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	TURBINE, NAT GAS FIRED (3 -1 SPARE) AND 2 BOILERS	54.50	MMBTU/HR	PM10	3.79E+00	TPY	EACH OF THE 2 BOILER-TURBINE USE A COMMON STACK	0.000	BACT-PSD
SC-0031	BMW MANUFACTURING CORPORATION	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	TURBINE, NAT GAS FIRED (3 -1 SPARE) AND 2 BOILERS	54.50	MMBTU/HR	VOC	7.79E+01	LBS/DAY	EACH OF THE 2 BOILER-TURBINE USE A COMMON STACK	0.000	LAER
SC-0036	CAROLINA POWER AND LIGHT	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	STATIONARY GAS TURBINE	1520.00	MMBTU/HR	CO (NG)	7.02E+02	LB/H	PROPER OPERATION TO ACHIEVE GOOD COMBUSTION	0.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	STATIONARY GAS TURBINE	1520.00	MMBTU/HR	CO (OIL)	4.14E+02	LB/H	PROPER OPERATION TO ACHIEVE GOOD COMBUSTION	0.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	STATIONARY GAS TURBINE	1520.00	MMBTU/HR	NOX (NG)	2.50E+01	PPMDV @ 15% O2	WATER INJECTION	30.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	STATIONARY GAS TURBINE	1520.00	MMBTU/HR	NOX (OIL)	8.20E+01	PPMDV @ 15% O2	WATER INJECTION	30.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	STATIONARY GAS TURBINE	1520.00	MMBTU/HR	PM (NG)	5.80E+00	LB/H	PROPER OPERATION TO ACHIEVE GOOD COMBUSTION	0.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	STATIONARY GAS TURBINE	1520.00	MMBTU/HR	PM (OIL)	2.20E+01	LB/H	PROPER OPERATION TO ACHIEVE GOOD COMBUSTION	0.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	STATIONARY GAS TURBINE	1520.00	MMBTU/HR	SO2 (NG)	1.50E+01	PPMDV @ 15% O2		0.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	STATIONARY GAS TURBINE	1520.00	MMBTU/HR	SO2 (OIL)	1.50E+01	PPMDV @ 15% O2	FUEL SPEC: LOW SULFUR OIL, 0.2% MAX SULFUR CONTENT	0.000	BACT-PSD
SC-0038	GENERAL ELECTRIC GAS TURBINES	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	I.C. TURBINE	2700.00	MMBTU/HR	CO	2.72E+04	LB/HR	GOOD COMBUSTION PRACTICES TO MINIMIZE EMISSIONS	0.000	BACT-PSD
SC-0038	GENERAL ELECTRIC GAS TURBINES	SOUTH CAROLINA DEPT OF HEALTH & ENV CT	(803) 734-4750	I.C. TURBINE	2700.00	MMBTU/HR	NOX	8.85E+02	LB/HR	GOOD COMBUSTION PRACTICES TO MINIMIZE EMISSIONS	0.000	BACT-PSD
SD-0001	NORTHERN STATES POWER COMPANY	EPA REGION VIII	(303) 293-1755	TURBINE, SIMPLE CYCLE, 4 EACH	129.00	MW	CO	5.00E+01	PPM FOR GAS	GOOD COMBUSTION TECHNIQUES	0.000	BACT-PSD
SD-0001	NORTHERN STATES POWER COMPANY	EPA REGION VIII	(303) 293-1755	TURBINE, SIMPLE CYCLE, 4 EACH	129.00	MW	NO2	2.40E+01	PPM @ 15% O2 GAS	WATER INJECTION FOR GAS & DISTILLATION	0.000	BACT-PSD
SD-0001	NORTHERN STATES POWER COMPANY	EPA REGION VIII	(303) 293-1755	TURBINE, SIMPLE CYCLE, 4 EACH	129.00	MW	PM	1.20E+01	LB/H FOR GAS	FUEL SPEC: NATURAL GAS AS PRIMARY FUEL	0.000	BACT-PSD
SD-0001	NORTHERN STATES POWER COMPANY	EPA REGION VIII	(303) 293-1755	TURBINE, SIMPLE CYCLE, 4 EACH	129.00	MW	SO2	1.40E+01	PPM @ 15% O2 GAS	FUEL SPEC: NATURAL GAS AND 0.37% SULFUR IN OIL	0.000	BACT-PSD
SD-0001	NORTHERN STATES POWER COMPANY	EPA REGION VIII	(303) 293-1755	TURBINE, SIMPLE CYCLE, 4 EACH	129.00	MW	VOC	6.00E+00	PPM FOR GAS	GOOD COMBUSTION TECHNIQUES	0.000	BACT-PSD
TX-0231	WEST CAMPUS COGENERATION COMPANY	TEXAS AIR CONTROL BOARD	(512) 239-1000	GAS TURBINES	75.30	MW	CO	3.00E+02	TPY	INTERNAL COMBUSTION CONTROLS	0.000	BACT
TX-0231	WEST CAMPUS COGENERATION COMPANY	TEXAS AIR CONTROL BOARD	(512) 239-1000	GAS TURBINES	75.30	MW	NOX	2.00E+02	TPY	INTERNAL COMBUSTION CONTROLS	0.000	BACT-PSD
TX-0231	WEST CAMPUS COGENERATION COMPANY	TEXAS AIR CONTROL BOARD	(512) 239-1000	GAS TURBINES	75.30	MW	PM10	5.20E+01	TPY	INTERNAL COMBUSTION CONTROLS	0.000	BACT
TX-0231	WEST CAMPUS COGENERATION COMPANY	TEXAS AIR CONTROL BOARD	(512) 239-1000	GAS TURBINES	75.30	MW	SO2	2.60E+00	TPY	INTERNAL COMBUSTION CONTROLS	0.000	BACT
TX-0231	WEST CAMPUS COGENERATION COMPANY	TEXAS AIR CONTROL BOARD	(512) 239-1000	GAS TURBINES	75.30	MW	VOC	3.80E+01	TPY	INTERNAL COMBUSTION CONTROLS	0.000	BACT

CITY OF TALLAHASSEE
PURDOM UNIT 8 - COMBINED CYCLE GAS TURBINE
BACT EVALUATION
U. S. ENVIRONMENTAL PROTECTION AGENCY'S RACT/BACT/LAER CLEARINGHOUSE

RBLCID	FACILITY	AGCYNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION/BURNER, DUCT	0.00	NO. 2 FUEL OIL	CD	1.00E-02	LB/H		0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1175.00	MMBTU/HR	CO	6.20E+01	LB/H/UNIT	FURNACE DESIGN	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1117.00	MMBTU/HR	CO	6.20E+01	LB/H/UNIT	FURNACE DESIGN	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION, 2	0.00		CO	2.29E+02	T/YR/UNIT		0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION/BURNER, DUCT	0.00	NATURAL GAS	HG	2.00E-02	LB/H		0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION/BURNER, DUCT	0.00	NO. 2 FUEL OIL	HG	3.00E-03	LB/H		0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION/BURNER, DUCT	0.00	NO. 2 FUEL OIL	MN	2.00E-02	LB/H		0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1175.00	MMBTU/HR	NOX	9.00E+00	PPM @ 15% O2	SCR, STEAM INJECTION	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1117.00	MMBTU/HR	NOX	1.50E+01	PPM @ 15% O2	SCR, STEAM INJ.	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION, 2	0.00		NOX	1.91E+02	T/YR/UNIT		0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1175.00	MMBTU/HR	PM	5.00E+00	E-3 LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1117.00	MMBTU/HR	PM	3.50E+00	E-2 LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION, 2	0.00		PM	8.22E+01	T/YR/UNIT		0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1175.00	MMBTU/HR	PM10	5.00E+00	E-3 LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1117.00	MMBTU/HR	PM10	3.50E+00	E-2 LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION, 2	0.00		PM10	8.22E+01	T/YR/UNIT		0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1175.00	MMBTU/HR	SO2	9.00E+00	E-4 LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1117.00	MMBTU/HR	SO2	6.80E+00	E-2 LB/MMBTU	FUEL SPEC: LOW SULFUR OIL	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION, 2	0.00		SO2	1.39E+02	T/YR/UNIT		0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1175.00	MMBTU/HR	VOC	2.30E+00	LB/H/UNIT	FURNACE DESIGN	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION	1117.00	MMBTU/HR	VOC	5.80E+00	LB/H/UNIT	FURNACE DESIGN	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804)-323-2409	TURBINE, COMBUSTION, 2	0.00		VOC	1.49E+01	T/YR/UNIT		0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINE FACILITY, GAS	1331.13	X10(7) SCF/Y NAT GAS	CO	2.50E+02	TOTAL TPY	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINE FACILITY, GAS	7.44	X10(7) GPY FUEL OIL	CO	2.50E+02	TOTAL TPY	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINES (2) [EACH WITH A SF]	1.51	X10(9) BTU/HR N GAS	CO	5.70E+01	LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINES (2) [EACH WITH A SF]	1.36	X10(9) BTU/H #2 OIL	CO	6.80E+01	LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINE FACILITY, GAS	1331.13	X10(7) SCF/Y NAT GAS	NOX	2.45E+02	TOTAL TPY	SELECTIVE CATALYTIC REDUCTION (SCR) W/ WATER INJEC	80.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINE FACILITY, GAS	7.44	X10(7) GPY FUEL OIL	NOX	2.45E+02	TOTAL TPY	SELECTIVE CATALYTIC REDUCTION (SCR)	80.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINES (2) [EACH WITH A SF]	1.51	X10(9) BTU/HR N GAS	NOX	9.00E+00	PPMDV/UNIT @ 15% 02	SCR WITH WATER INJECTION	80.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINES (2) [EACH WITH A SF]	1.36	X10(9) BTU/H #2 OIL	NOX	6.80E+01	LBS/HR/UNIT	WATER INJECTION AND SCR	80.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINE FACILITY, GAS	1331.13	X10(7) SCF/Y NAT GAS	SO2	2.50E+02	TOTAL TPY	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINE FACILITY, GAS	7.44	X10(7) GPY FUEL OIL	SO2	2.50E+02	TOTAL TPY	FUEL SPEC: 0.2 WT LOW SULFUR FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINES (2) [EACH WITH A SF]	1.51	X10(9) BTU/HR N GAS	SO2	5.00E-01	LB/HR/UNIT	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINES (2) [EACH WITH A SF]	1.36	X10(9) BTU/H #2 OIL	SO2	6.80E+01	LBS/HR/UNIT	FUEL SPEC: 0.2 WT LOW SULFUR FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINE FACILITY, GAS	1331.13	X10(7) SCF/Y NAT GAS	TSP/PM10	5.06E+01	TOTAL TPY	FUEL SPEC: CLEAN BURNING FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINE FACILITY, GAS	7.44	X10(7) GPY FUEL OIL	TSP/PM10	5.06E+01	TOTAL TPY	FUEL SPEC: CLEAN BURNING FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINES (2) [EACH WITH A SF]	1.51	X10(9) BTU/HR N GAS	TSP/PM10	6.00E+00	LBS/HR/UNIT	FUEL SPEC: CLEAN BURNING FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINES (2) [EACH WITH A SF]	1.36	X10(9) BTU/H #2 OIL	TSP/PM10	1.30E+01	LBS/HR/UNIT	FUEL SPEC: CLEAN BURNING FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINE FACILITY, GAS	1331.13	X10(7) SCF/Y NAT GAS	VOC	9.71E+01	TOTAL TPY	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINE FACILITY, GAS	7.44	X10(7) GPY FUEL OIL	VOC	9.71E+01	TOTAL TPY	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINES (2) [EACH WITH A SF]	1.51	X10(9) BTU/HR N GAS	VOC	2.20E+01	LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX COUNTY AIR POLLUTION CONTROL	(703) 899-4600	TURBINES (2) [EACH WITH A SF]	1.36	X10(9) BTU/H #2 OIL	VOC	2.10E+01	LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	474.00	X10(6) BTU/HR N. GAS	CO	1.10E+01	LBS/HR	GOOD COMBUSTION	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	468.00	X10(6) BTU/HR #2 OIL	CO	1.10E+01	LBS/HR	GOOD COMBUSTION	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS (TOTAL)	0.00		CO	4.82E+01	TPY	GOOD COMBUSTION	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	474.00	X10(6) BTU/HR N. GAS	NOX	9.00E+00	PPM	SELECTIVE CATALYTIC REDUCTION (SCR)	74.500	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	468.00	X10(6) BTU/HR #2 OIL	NOX	1.50E+01	PPM	SCR	80.800	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS (TOTAL)	0.00		NOX	6.97E+01	TPY	SCR	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	474.00	X10(6) BTU/HR N. GAS	PM10	5.30E-03	LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	468.00	X10(6) BTU/HR #2 OIL	PM10	3.60E-02	LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS (TOTAL)	0.00		PM10	7.46E+01	TPY	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	474.00	X10(6) BTU/HR N. GAS	SO2	3.20E-03	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	468.00	X10(6) BTU/HR #2 OIL	SO2	2.10E-01	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS (TOTAL)	0.00		SO2	4.39E+02	TPY	FUEL SPEC: LOW SULFUR FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	474.00	X10(6) BTU/HR N. GAS	TSP	5.30E-03	LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	468.00	X10(6) BTU/HR #2 OIL	TSP	3.60E-02	LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS (TOTAL)	0.00		TSP	7.46E+01	TPY	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	474.00	X10(6) BTU/HR N. GAS	VOC	5.00E+00	LBS/HR	GOOD COMBUSTION	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-5849	TURBINE, COMBUSTION GAS	468.00	X10(6) BTU/HR #2 OIL	VOC	5.00E+00	LBS/HR	GOOD COMBUSTION	0.000	BACT-PSD

CITY OF TALLAHASSEE
PURDOM UNIT 8 - COMBINED CYCLE GAS TURBINE
BACT EVALUATION
U. S. ENVIRONMENTAL PROTECTION AGENCY'S RACT/BACT/LAER CLEARINGHOUSE

RBLCID	FACILITY	AGCYNAME	PHONE	PROCESS	THRUPUT	THRUPUTUNT	POLLUTANT	EMISSION	UNITS	CTRLDESC	% EFF	BASIS
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-6849	TURBINE, COMBUSTION GAS (TOTAL)	0.00		VOC	2.19E+01	TPY	GOOD COMBUSTION	0.000	BACT-PSD
VA-0206	POTOMMACK POWER PARTNERS, LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-6849	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	10.20	X109 SCF/YR NAT GAS	CO	1.40E-02	LB/HR	FUEL SPEC: CLEAN FUELS	0.000	BACT-PSD
VA-0206	POTOMMACK POWER PARTNERS, LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-6849	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	10.20	X109 SCF/YR NAT GAS	CO	2.80E+01	LB/HR	GOOD COMBUSTION OPERATING PRACTICES	0.000	BACT-PSD
VA-0206	POTOMMACK POWER PARTNERS, LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-6849	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	10.20	X109 SCF/YR NAT GAS	HG	5.00E-03	LB/HR	FUEL SPEC: CLEAN FUELS	0.000	BACT-PSD
VA-0206	POTOMMACK POWER PARTNERS, LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-6849	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	10.20	X109 SCF/YR NAT GAS	NOX	1.31E+02	LB/HR(GAS); 339 OIL	DRY LOW NOX COMBUSTOR; DESIGN, WATER INJECTION	0.000	BACT-PSD
VA-0206	POTOMMACK POWER PARTNERS, LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-6849	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	10.20	X109 SCF/YR NAT GAS	SO2	2.80E+01	LB/HR(GAS); 71 (OIL)	FUEL SPEC: LOW SULFUR FUELS (NAT.GAS/OIL .05% S)	0.000	BACT-PSD
VA-0206	POTOMMACK POWER PARTNERS, LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-6849	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	10.20	X109 SCF/YR NAT GAS	TSP/PM10	1.00E+00	LB/HR	FUEL SPEC: CLEAN BURNING FUELS	0.000	BACT-PSD
VA-0206	POTOMMACK POWER PARTNERS, LIMITED PARTNERSHIP	VIRGINIA DEPT OF AIR POLLUTION CONTROL	(804) 786-6849	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	10.20	X109 SCF/YR NAT GAS	VOC	8.00E+00	LB/HR	GOOD COMBUSTION OPERATING PRACTICES	0.000	BACT-PSD
WA-002	SUMAS ENERGY INC.	NORTHWEST AIR POLLUTION AUTHORITY, WA	(206)-428-1617	TURBINE, NATURAL GAS	88.00	MW	CO	6.00E+00	PPM @ 15% O2	CO CATALYST	80.000	BACT-PSD
WA-002	SUMAS ENERGY INC.	NORTHWEST AIR POLLUTION AUTHORITY, WA	(206)-428-1617	TURBINE, NATURAL GAS	88.00	MW	NOX	8.00E+00	PPM @ 15% O2	SCR	90.000	BACT-PSD
WA-027	NORTHWEST PIPELINE COMPANY	WASHINGTON STATE DEPARTMENT OF ECOL	(206) 649-7109	TURBINE, GAS-FIRED	12100.00	HP	NO2	1.96E+02	PPM @ 15% O2	ADVANCED DRY LOW NOX COMBUSTOR (BY 07/01/95)	78.000	BACT-PSD
WA-027	TENASKA WASHINGTON PARTNERS, L.P.	WASHINGTON STATE DEPARTMENT OF ECOL	(206) 649-7106	COGENERATION PLANT, COMBINED CYCLE	1.83	MMBTU/HR	CO	2.00E+01	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
WA-027	TENASKA WASHINGTON PARTNERS, L.P.	WASHINGTON STATE DEPARTMENT OF ECOL	(206) 649-7106	COGENERATION PLANT, COMBINED CYCLE	1.83	MMBTU/HR	NOX	7.00E+00	PPM @ 15% O2 (GAS)	STAGED LNB, STEAM INJECTION, SCR	95.000	BACT-PSD
WA-027	TENASKA WASHINGTON PARTNERS, L.P.	WASHINGTON STATE DEPARTMENT OF ECOL	(206) 649-7106	COGENERATION PLANT, COMBINED CYCLE	1.83	MMBTU/HR	PM10	2.20E-03	GR/DSCF @ 15% O2	FUEL SPEC: LIMITS ON FUEL USE, CONTENT.	0.000	BACT-PSD
WA-027	TENASKA WASHINGTON PARTNERS, L.P.	WASHINGTON STATE DEPARTMENT OF ECOL	(206) 649-7106	COGENERATION PLANT, COMBINED CYCLE	1.83	MMBTU/HR	SO2	4.00E+00	PPM @ 15% O2 (GAS)	FUEL SPEC: LIMITS ON FUEL USE, CONTENT.	0.000	BACT-PSD
WI-0067	WEPCU, PARIS SITE	WISCONSIN DEPT OF NATURAL RESOURCES	(608) 267-2015	TURBINES, COMBUSTION (4)	0.00		CO	2.50E+01	LBS/HR (SEE NOTES)		0.000	BACT-PSD
WI-0067	WEPCU, PARIS SITE	WISCONSIN DEPT OF NATURAL RESOURCES	(608) 267-2015	TURBINES, COMBUSTION (4)	0.00		NOX (FROM NAT. GAS)	2.50E+01	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
WI-0067	WEPCU, PARIS SITE	WISCONSIN DEPT OF NATURAL RESOURCES	(608) 267-2015	TURBINES, COMBUSTION (4)	0.00		NOX (FROM OIL)	6.50E+01	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
WI-0067	WEPCU, PARIS SITE	WISCONSIN DEPT OF NATURAL RESOURCES	(608) 267-2015	TURBINES, COMBUSTION (4)	0.00		PM	1.20E+01	LBS/HR	GOOD COMBUSTION	0.000	BACT-PSD
WI-0067	WEPCU, PARIS SITE	WISCONSIN DEPT OF NATURAL RESOURCES	(608) 267-2015	TURBINES, COMBUSTION (4)	0.00		SO2	5.25E-02	LB/MM BTU		0.000	BACT-PSD
WI-0067	WEPCU, PARIS SITE	WISCONSIN DEPT OF NATURAL RESOURCES	(608) 267-2015	TURBINES, COMBUSTION (4)	0.00		VE	1.00E+01	% OPACITY		0.000	
WI-0067	WEPCU, PARIS SITE	WISCONSIN DEPT OF NATURAL RESOURCES	(608) 267-2015	TURBINES, COMBUSTION (4)	0.00		VOC	9.00E+00	LBS/HR (SEE NOTES)	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD

APPENDIX E

BACT EMISSION ESTIMATES

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Graziani, P.E.
Date: 12/23/96

Ck'd By: A. Chapman
Date: 1/31/97

Rev'd By: D. Graziani, P.E
Date: 2/28/97

Client: City of Tallahassee
OFS No: 1584.0005.0008

Sheet No.: 1 of 5
Calc. No.: 961223DJG01

Description:

This calculation documents the emission estimates associated with the BACT determination. Emission estimates for CO and NOx are provided based on the specific operating scenario identified for the pollutant.

References:
No. 1 - GE Performance Data Sheets
No. 2 - Vendor Quotes

Operating Scenarios

For the BACT evaluation of carbon monoxide and the additional evaluation of volatile organic compounds, Unit 8 was assumed to operate continuously (8,760 hr/yr), firing natural gas for 8,260 hr/yr and Number 2 diesel fuel oil for 500 hr/yr. The load was split between full load and 50 percent load to account for the increased emissions at the lower levels. The reduced load estimate of 19 percent of the year was provided by the City. The reduced load operation was assumed to be evenly split between natural gas and low sulfur distillate oil firing. The average annual temperature of 59 degrees was selected as the representative point.

For the additional evaluation of nitrogen oxides, Unit 8 was assumed to operate continuously (8,760 hr/yr), firing natural gas for 8,260 hr/yr and low sulfur distillate oil for 500 hr/yr at full load. The average annual temperature of 59 degrees was selected as the representative point.

The selected scenarios are within the requested facility-wide emission caps for SO2 and NOx.

Calculations

Carbon Monoxide Emissions :

Natural Gas Firing

$$NGHOP := 8260 \cdot \frac{hr}{yr}$$

Full Load Firing

$$NG100HOP := NGHOP \cdot (1 - .19)$$

$$NG100HOP = 6690.6 \cdot \frac{hr}{yr}$$

50% Load Firing

$$NG50HOP := NGHOP \cdot (.19)$$

$$NG50HOP = 1569.4 \cdot \frac{hr}{yr}$$

Calculations (Cont.)

Distillate Oil Firing $DOHOP := 500 \cdot \frac{hr}{yr}$

Full Load Firing $DO100HOP := DOHOP \cdot (1 - .19)$

$DO100HOP = 405 \cdot \frac{hr}{yr}$

50% Load Firing $DO50HOP := DOHOP \cdot (.19)$

$DO50HOP = 95 \cdot \frac{hr}{yr}$

Base Case

Natural Gas Firing (100 & 50 % loads) $NGHCO100 := 29 \cdot \frac{lb}{hr}$ $NGHCO50 := 53 \cdot \frac{lb}{hr}$

Distillatle Oil Firing (1000 & 50% loads) $DOHCO100 := 96 \cdot \frac{lb}{hr}$ $DOHCO50 := 189 \cdot \frac{lb}{hr}$

$$ABCCO := \frac{(NGHCO100 \cdot NG100HOP + NGHCO50 \cdot NG50HOP + DOHCO100 \cdot DO100HOP + DOHCO50 \cdot DO50HOP)}{2000 \cdot \frac{lb}{ton}}$$

$$ABCCO = 167 \cdot \frac{ton}{yr}$$

Option 1 (90% Control) $AOP1CO := ABCCO \cdot (1 - 0.9)$

$AOP1CO = 16.7 \cdot \frac{ton}{yr}$

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Graziani, P.E.
Date: 12/23/96

Ck'd By: A. Chapman
Date: 1/31/97

Rev'd By: D. Graziani, P.E
Date: 2/28/97

Client: City of Tallahassee
OFS No: 1584.0005.0008

Sheet No.: 3 of 5
Calc. No.: 961223DJG01

Calculations (Cont.)

Volatile Organic Compound Emissions :

Natural Gas Firing $NGHOP := 8260 \cdot \frac{hr}{yr}$

Full Load Firing $NG100HOP := NGHOP \cdot (1 - .19)$

$NG100HOP = 6690.6 \cdot \frac{hr}{yr}$

50% Load Firing $NG50HOP := NGHOP \cdot (.19)$

$NG50HOP = 1569.4 \cdot \frac{hr}{yr}$

Base Case

Natural Gas Firing (100 & 50 % loads)	$NGHVOC100 := 2.8 \cdot \frac{lb}{hr}$	$NGHVOC50 := 2.6 \cdot \frac{lb}{hr}$
Distillatle Oil Firing (1000 & 50% loads)	$DOHVOC100 := 17.5 \cdot \frac{lb}{hr}$	$DOHVOC50 := 16 \cdot \frac{lb}{hr}$

$$ABCVOC := \frac{(NGHVOC100 \cdot NG100HOP + NGHVOC50 \cdot NG50HOP + DOHVOC100 \cdot DO100HOP + DOHVOC50 \cdot DO50HOP)}{2000 \cdot \frac{lb}{ton}}$$

$$ABCVOC = 16 \cdot \frac{ton}{yr}$$

Option 1 (30% Control) $AOP1VOC := ABCVOC \cdot (1 - 0.3)$

$AOP1VOC = 11 \cdot \frac{ton}{yr}$

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Graziani, P.E.
Date: 12/23/96

Ck'd By: A. Chapman
Date: 1/31/97

Rev'd By: D. Graziani, P.E
Date: 2/28/97

Client: City of Tallahassee
OFS No: 1584.0005.0008

Sheet No.: 4 of 5
Calc. No.: 961223DJG01

Nitrogen Oxide Emissions:

Natural Gas Firing	$NGHNOX := 58 \cdot \frac{lb}{hr}$	$NGBCNOX := 9$	Ref. No. 1
Distillate Oil Firing	$DOHNOX := 322 \cdot \frac{lb}{hr}$	$DOBCNOX := 42$	Ref. No. 1

Nitrogen Oxide Emissions (Cont.):

Natural Gas Firing $NGHOP := 8260 \cdot \frac{hr}{yr}$

Distillate Oil Firing $DOHOP := 500 \cdot \frac{hr}{yr}$

Base Case

$$ABCNOX := \frac{(NGHNOX \cdot NGHOP + DOHNOX \cdot DOHOP)}{2000 \cdot \frac{lb}{ton}}$$

$$ABCNOX = 320 \cdot \frac{ton}{yr}$$

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Graziani, P.E.
Date: 12/23/96

Ck'd By: A. Chapman
Date: 1/31/97

Rev'd By: D. Graziani, P.E
Date: 2/28/97

Client: City of Tallahassee
OFS No: 1584.0005.0008

Sheet No.: 5 of 5
Calc. No.: 961223DJG01

Option No. 1 (3.5 ppmvd Gas and 10 ppmvd Number 2 Diesel Fuel Oil)

NGOP1NOX := 3.5 Ref. No. 2

DOOP1NOX := 10 Ref. No. 2

$$ABCNOX := \frac{\left(NGHNOX \cdot NGHOP \cdot \frac{NGOP1NOX}{NGBCNOX} + DOHNOX \cdot DOHOP \cdot \frac{DOOP1NOX}{DOBCNOX}\right)}{2000 \cdot \frac{lb}{ton}}$$

$$ABCNOX = 112 \cdot \frac{ton}{yr}$$

APPENDIX F

VENDOR QUOTE
CO OXIDATION CATALYST

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

CO OXIDATION CATALYST SYSTEM
QUOTATION SUMMARY

Customer:	Foster Wheeler
Project Name:	Unknown
Customer Contact:	Darrel Graziani
Customer Fax:	561-781-3411
Engelhard Reference:	EP-6000
Date:	December 23, 1996
Prepared By:	Stan Mack Telephone: (908) 205-6174 Telefax: (908) 205-6146

1.0 TECHNICAL

1.1 *Customer Design Parameters*

Emission Source:	GE-MS7001FA
Fuel:	Natural Gas - Primary #2 Fuel Oil - Secondary (<500 hrs/yr)
Exhaust Flow, maximum (lbs/hr):	3,950,000
Exhaust Temperature, Range (°F):	None Specified (600-700 °F assumed)
HRSG Duct Dimension, W x H (ft):	None Specified
Pressure Loss, maximum (inch H_2O):	None Specified
CO Conversion, required (%):	90% minimum on oil firing

(a) For details reference customer fax dated 12/20/96

1.2 *CO Catalyst System Design*

Catalyst Name:	CatCO™ 610 ST (This catalyst is sulfur tolerant for use with oil firing)
Catalyst Type:	Precious Metal
Substrate Type:	Ceramic Honeycomb
Substrate Cell Density (cpsi):	400
CO Catalyt Housing, W x H, Inside Liner (ft):	65 x 34
CO Catalyst Housing Length (ft):	1.5
Weights, approximate (lbs) CO Catalyst and Housing:	55,000

1.3 *CO Catalyst System Performance*

CO Conversion, warranted (%): Case 7/oil:	90
Pressure Loss, (inches H_2O): Case 7/oil:	1.3

Performance based upon:

(a) Flow at catalyst face not to exceed ± 15% average flow velocity.

(b) Temperature at catalyst face not to exceed ± 20° F temperature variation.

1.4 *Scope of Supply*

CO Oxidation System:

- ENGELHARD **CatCO™** oxidation catalyst in modules.
- Internal support structure for catalyst modules (frame). Includes all hardware and gaskets for catalyst module installation.
- CO catalyst housing with internal thermal expansion joint to prevent gas bypass around the catalyst. Internally insulated with SS liner.
- Five (5) day (max. 10 hrs/day) field supervision/operator training for catalyst/framework installation and start-up.

Drawings and Documents

- Foundation loads
- General arrangement drawings
- Equipment drawings
- Equipment and parts list
- Catalyst and frame installation/instruction manuals
- Operating manuals

Excluded from Scope of Supply:

- Installation of equipment supplied by Engelhard
- Any interconnecting field wiring or piping
- Electrical grounding equipment
- Utilities
- Foundations
- Monitors to measure pressure loss and inlet/outlet temperatures across the catalyst bed
- All other items not specifically listed in Scope of Supply

NOTE:

All structural steel equipment is inspected and certified by a local professional structural engineer in accordance with customer supplied applicable specifications.

2.0 COMMERCIAL

2.1 *Price*

Type of Quotation:	Budget
FOB Point:	Union, NJ
Number of Systems:	One
Price for one system (U.S. Dollars):	
CO Oxidation Catalyst System*	$830,000

* This price is based on the current Engelhard Industrial value of Platinum (Pt). Should the price of Pt increase by the time of purchase, the price of our catalyst will reflect the following precious metal price adder per system:

(Pt - 400) x 229.71 for 1 system

where Pt is the "Engelhard Industrial price" as stated in the *Wall Street Journal* on the day the purchase order is provided.

2.2 *Payment Terms* (net 30 days):

- 10% with order
- 20% with release to fabricate
- 35% with frame delivery
- 35% with catalyst delivery

2.3 *Equipment Shipment*:

12 - 16 weeks after drawing approval

NOTE: Drawings submitted to approval 2-4 weeks after receipt of order.

2.4 ***Warranty:***

CO Oxidation Catalyst Warranty

- Period: Two years of operation* or 2.5 years after catalyst delivery, whichever occurs first.
- Conditions: Engelhard CO Oxidation catalyst warranty statement enclosed.

Equipment Warranty

- Period, Typical: One year of operation* or 1.5 years after catalyst delivery, whichever occurs first.
- Coverage: Equipment supplied to Engelhard and installed in quipment sold by Engelhard, the warranty is limited to the warranty of the original manufacturer.

**Operation is considered to start when exhaust gas is first passed through the catalyst.*

2.5 ***Quote Validity:***

This quote is valid for a period of sixty (60) days

2.6 ***Terms and Conditions:***

This proposal is made subject to the attached Engelhard standard Terms and Conditions (EC-6626, Rev. 7/92).

3.0 ***COMMENTS***

3.1 **Comments to Specification**

3.2 Other Comments

- A minimum access clearance of three (3) feet upstream of the CO catalyst housing is required to facilitate installation, inspection, and servicing of the catalyst modules. Alternative designs are available which provide less access space.

- All structural steel equipment is inspected and certified by a local professional structural engineer in accordance to customer supplied applicable specifications.

TERMS AND CONDITIONS

1. ACCEPTANCE

The terms and conditions set forth herein contain the sole, entire and exclusive agreement between the Seller and the Buyer in this transaction superseding all prior discussions, proposals, negotiations, representations, and agreements. Any additional or conflicting terms, whether or not material, shall not, in any manner, by implication, by waiver, or otherwise, govern the relationship between Seller and Buyer. Any waiver, modification or amendment of these terms and conditions shall only be effective as against Seller if such waiver, modification or amendment is contained in a written instrument duly executed by or on behalf of Seller. Specification changes are subject to acceptance by Seller, to price revisions and to any adjustments necessary to cover material procured and processed and labor expended prior to receipt by Seller of revised specifications. Acceptance of this agreement by Seller is specifically conditioned upon the terms and conditions set forth herein.

2. SHIPMENTS

A) Shipment dates are based upon Seller's best judgment, are subject to production limitations and factory schedules, and hence are not guaranteed.

B) All sales, unless otherwise specified herein, are f.o.b. Seller's plant. Buyer is solely responsible for notifying the carrier as to any damage to or loss in transit of materials.

C) Claims for shortages shall not be accepted by Seller unless such claims are received by Seller in writing within forty-eight (48) hours after delivery of materials to Buyer and are accompanied by a reference to Seller's shipping slip number. Seller shall be given a reasonable opportunity to inspect any shipment claimed by Buyer to contain a shortage. Use of materials by Buyer prior to such inspection by Seller shall constitute acceptance of the materials and a waiver of all claims by Buyer.

D) All metal accounts established or maintained by Seller shall be subject to Seller's Metal Account Terms and Conditions, the current form of which appears on each metal account statement.

3. PRICE

A) Unless other pricing arrangements are set forth on the face hereof, all orders shall be priced in accordance with Seller's prices in effect on the date of shipment, including, in the case of precious metals prices, the metal market prices published by Seller on the day metal is shipped or credited to Buyer's metal account (or in the case of fabricated gold or silver products, such revision may be made in accordance with metal market prices published by Seller on the next day a price is published by Seller following the date of shipment.) Seller reserves the right to revise any price previously quoted without notice to Buyer at any time prior to acceptance by Buyer.

B) Except as set forth on the face hereof, Seller's price does not include any tax or other charge now or hereafter imposed by law or regulation, domestic or foreign, upon any material herein sold or on the production, manufacture, sale, transportation, disposal or delivery thereof. Accordingly, in addition to the price specified herein, the amount of any such tax or other charge applicable to this transaction herein shall be paid by Buyer, or, in lieu thereof, Buyer shall provide Seller with appropriate evidence of exemption thereof from the proper governmental authority. At its option, Seller may initially pay any such tax or other charges for Buyer's account and thereafter invoice Buyer for same.

4. PAYMENT

A) Payment for all shipments hereunder shall be made by Buyer against Seller's invoice within thirty (30) days from date of invoice, terms net cash, unless 1) otherwise indicated on the face hereof and 2) for precious metals, cash in advance unless otherwise specifically agreed in writing by Seller.

B) If at any time, in Seller's opinion, the financial responsibility of Buyer becomes impaired or unsatisfactory to Seller, or, inadequate to meet the obligations hereunder, the terms of payment may, at Seller's option, be revised or withdrawn, and Seller may require cash or other satisfactory security before making further shipments to Buyer.

C) In addition to any other legal remedy, if Buyer fails to fulfill the terms of payment, Seller may, at its option, defer further delivery of goods hereunder or cancel all further delivery of goods to Buyer.

D) Seller shall have the right at any time without notice to set off any liability (whether to pay money or to credit, deliver, or transfer metal or otherwise) of Seller to Buyer against any liability of Buyer to Seller and in furtherance thereof, to convert metal to money or money to metal at market value at the date of such set-off.

E) In the event Seller is required to commence collection action to recover unpaid invoices for goods sold and delivered, Seller shall be entitled to interest on the unpaid balance at the highest legal rate permitted from the due date of invoice, attorney's fees of 15% of the amount due, and costs of suit.

5. FORCE MAJEURE

A) Any delays in or any failure of performance or delivery by Seller shall not constitute default or give rise to any claims for damages if and to the extent caused, directly or indirectly, by acts of God, acts of the Buyer, acts, rules or regulations of governmental authority (civil or military, executive, legislative, judicial or otherwise), strikes or other concerted acts of workers, lockout, labor difficulties, fires, floods, storm, accident, earthquakes, tidal waves, or other natural disasters, epidemics, war, riots, rebellion, sabotage, insurrection, difficulties or delays in public transportation or in public or postal delivery services, car shortages, fuel shortages, inability to obtain from Seller's usual sources of supply, inability to obtain suitable or sufficient energy, labor, machinery, facilities, supplies or materials, as and when required, failure of any third party to honor its contractual commitments, or by any other circumstances beyond Seller's control whether of a similar or dissimilar nature.

B) When any such circumstance or circumstances exist as set forth in 5(A), Seller shall have the right, in its sole discretion, to allocate its available production, deliveries, services, raw materials or other resources among any or all purchasers, as well as among divisions, departments, subsidiaries and affiliates of Seller, upon any such basis as Seller may determine, without any liability whatsoever for any failure to perform which may result therefrom.

In any event, Seller may determine not to allocate any of its available production, deliveries, services, raw materials or other resources to Buyer, without any liability whatsoever for any failure to perform which may result therefrom.

6. PATENT INFRINGEMENT

Seller agrees to defend Buyer in any suit alleging infringement by Buyer of any U.S. patent based on the manufacture and sale of the materials purchased by Buyer (except materials manufactured or sold by Seller in accordance with Buyer's specifications, requirements or designs) under this agreement and to indemnify Buyer against liability for any such infringement claim, provided that Buyer notify Seller within ten (10) days after receipt by it of any notice of commencement of any suit based upon such alleged infringement and provided further that Seller shall control and remain in control of any and all proceedings taken in defending such suit, including without limitation, utilization solely of counsel of Seller's own selection to defend such suit. The use of materials purchased hereunder in combination with other materials or in the operation of any process is beyond the control of Seller, and Seller shall have no obligation or liability whatsoever in connection with any suit claiming infringement by means of the use of such materials.

7. WARRANTIES - REPRESENTATIONS

A) Seller warrants that the materials delivered hereunder shall be free from defects in workmanship or material and shall conform to the specifications set forth herein.

B) Seller's liability for breach of warranty for materials delivered hereunder that are proven by Buyer to be defective or proven by Buyer to be at variance with applicable specifications shall be limited, at Seller's option, to:

1. replacing or repairing such materials, or
2. refunding the sales price received by Seller for such materials.

All claims for defects hereunder must be presented to Seller in writing within ten (10) days after delivery to Buyer. Failure of Buyer to give such notice shall constitute a waiver by Buyer of all claims in respect thereto. Seller shall have an opportunity of verifying any such defect before materials are used by Buyer. Where the defective or nonconforming materials are replaced by Seller or where Seller refunds the sales price received from Buyer for such materials, if requested by Seller, Buyer shall return the defective or nonconforming materials to Seller strictly in accordance with Seller's written instructions concerning shipping, handling, insurance and other matters as to which Seller issues instructions. Failure to comply with these provisions shall invalidate any claim by Buyer for defects in materials by Buyer.

C) In no event shall Seller be liable for: 1) Materials damaged in shipment or otherwise without fault of Seller. 2) Defects in materials due to negligence (other than that of Seller), accident, abuse, improper care or storage, abnormal condition of temperature or moisture. 3) Damage to materials which have been tampered with or altered in any way other than by Seller. 4) Expenses incurred by Buyer in attempting to correct any defects in materials.

D) Seller warrants that it complies with all applicable requirements of Sections 6, 7 and 12 of the Fair Labor Standards Act, as amended, and of the regulations and orders of the United States Department of Labor issued under Section 14 thereof.

E) Recommendations by Seller, if any, covering the use, utilization, properties or qualities of materials delivered hereunder are believed reliable, but Seller makes no warranty whatsoever with respect thereto. Use or application of materials sold by Seller to Buyer hereunder is at the discretion of the Buyer without any liability or obligation on the part of Seller except as expressly warranted by Seller in writing.

THESE WARRANTIES ARE EXCLUSIVE AND ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY LAW OR CUSTOM, INCLUDING BUT NOT BY WAY OF LIMITATION, THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

8. LIMITATION OF DAMAGES

A) In no event shall Seller be liable for incidental, consequential or special damages arising out of or relating to the transactions herein.

B) In no event shall the aggregate liabilities of Seller to Buyer arising out of or relating to the transactions herein exceed the purchase price paid by Buyer to Seller hereunder of the materials in respect of which such claim is made.

9. INDEMNIFICATION

Buyer assumes all risk and liability for loss, damages or injury to persons or to the property of the Buyer or others arising out of the use or presence of the materials purchased hereunder. Buyer agrees to indemnify and hold harmless Seller against any liability, damages, losses, costs, and expenses in connection with any suit or claim, including but not limited to, any loss of use, loss of profits, damage or injuries to person or property arising out of or relating to any use of materials purchased by Buyer herein, whether such claim is made by Buyer, Buyer's customers, or other third parties.

10. CANCELLATION

Seller may cancel this Agreement as well as any or all other outstanding transactions between Seller and Buyer at any time in the event that Buyer shall fail to perform or observe any term or condition hereof by giving Buyer ten (10) days written notice of cancellation. Cancellation hereunder shall not prevent Seller from pursuing any other remedy available to Seller by law or from seeking all such damages to which Seller may be entitled.

11. GENERAL

A) Buyer shall not assign or transfer this Agreement or the benefits thereof without the prior written consent of Seller.

B) This Agreement shall be governed by and construed according to the laws of the State of Seller's facility shown on the face of this form.

APPENDIX G

ECONOMICS CALCULATIONS

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: D. Graziani, P.E
Date: 12/30.96
Ckd. By: D. Ghayal, P.E.
Date: 1/10/97
Rev. By: D. Graziani, P.E. DJG 3/4/97
Date: 2/10/97

OFS No.: 1523.0005.0008
File: COTBACT.XLS
Sheet:: CO-BACT

Description: Incremental and total cost analysis for the CO Oxidation Catalyst. Cost factors and references listed. Capital costs estimate for the Oxidation Catalyst was supplied by a vendor.

BACT ANALYSIS

CAPITAL COSTS FOR OXIDATION CATALYST (90% CONTROL)

COST ITEM	COST FACTOR	REFERENCE	COST ($1997)
DIRECT COSTS (DC)			
PURCHASED EQUIPMENT COSTS (PEC)			
OX CAT. & AUXILIARY EQUIPMENT	AS ESTIMATED, A	VENDOR QUOTE	$830,000.00
INSTRUMENTATION	0.05 X A	(EPA, 1990d)	$41,500.00
STATE SALES TAXES	0.06 X A	State Sales Tax	$49,800.00
FREIGHT	0.05 X A	(EPA, 1990d)	$41,500.00
PEC SUBTOTAL	1.16 X A = B		$962,800.00
DIRECT INSTALLATION COSTS (DIC)			
FOUNDATIONS & SUPPORTS	0.08 X B	(ULRICH, 1984)	$77,024.00
LABOR	0.14 X B	(EPA, 1990d)	$134,792.00
ELECTRICAL	0.04 X B	(EPA, 1990d)	$38,512.00
PIPING	N/A		-
INSULATION	N/A		-
PAINTING	0.01 X B	(EPA, 1990d)	$9,628.00
DIC SUBTOTAL	0.27 X B	(EPA, 1990d)	$259,956.00
SITE PREPARATION	N/A	-	-
BUILDINGS	N/A	-	-
TOTAL DC	1.27 X B	-	$1,222,756.00
INDIRECT COSTS (IDC)			
ENGINEERING	0.10 X B	(EPA,1990d)	$96,280.00
CONSTRUCTION OVERHEAD	0.05 X B	(EPA,1990d)	$48,140.00
CONTRACTOR FEES	0.10 X B	(EPA,1990d)	$96,280.00
CONTINGENCIES	0.03 X B	(EPA,1990d)	$28,884.00
START-UP	0.02 X B	(EPA,1990d)	$19,256.00
PERFORMANCE TESTING	0.01 X B	(EPA,1990d)	$9,628.00
TOTAL IDC	0.53 X B	-	$298,468.00
TOTAL CAPITAL INVESTMENT (TCI)	1.84 X B		$1,521,224.00

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: D. Graziani, P.E
Date: 12/30.96
Ckd. By: D. Ghayal, P.E.
Date: 1/10/97
Rev. By: D. Graziani, P.E. DJG 3/4/97
Date: 2/10/97

OFS No.: 1523.0005.0008
File: COTBACT.XLS
Sheet:: CO-BACT

OPERATING COST FACTORS FOR OXIDATION CATALYST

COST DATA

CHEMICAL ENGINEERING PLANT COST INDEX

1990	357.6
1993	359.2
Sept. '96	383.9

CAPITAL RECOVERY FACTOR (CRF) @i=7.25%,n=20: 0.0962

0.0725
20

	FACTOR	REFERENCE	1997 COSTS, $/YR
DIRECT ANNUAL COSTS, $/YR			
OPERATING LABOR	$27.82/HR @ .5HR/12HR-SHIFT	(COT & EPA 1990d)	$10,154.30
SUPERVISORY LABOR	15 % OF OPERATING LABOR	(EPA,1990d)	$1,523.15
MAINTENANCE LABOR AND MATERIALS	2 x $27.82/HR @ 0.5HR/12HR-SHIFT	(EPA,1990d)	$20,308.60
CATALYST REPLACEMENT (CR)	9 X 0.75 X A X CFR	Vendor Quote	$539,155.69
CATALYST DISPOSAL	$15/CF	(EPA,1993b)	$172,308.62
ELECTRICITY	N/A	(EPA,1990d)	-
PERFORMANCE LOSS	0.50%	(EPA,1993b)	$272,461.58
			$1,015,911.94
INDIRECT ANNUAL COSTS, $/YR			
OVERHEAD	60% OF ALL LABOR MAIN. COSTS	(EPA,1990d)	$19,192
INSURANCE & ADMINISTRATION	2.5%OF TCI	(EPA,1990d)	$38,031
CAPITAL RECOVERY	CRF X (TCI - CR)	N/A	$86,489
			$143,710.79
TOTAL ANNUAL COSTS, $/YR			$1,159,622.73
TOTAL NET REDUCTIONS (TPY)			
Carbon Monoxide	90 % Reduction		150.32
INCREMENTAL COST EFFECTIVENESS, $/TON			$7,714

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: D. Graziani, P.E
Date: 12/30.96
Ckd. By: D. Ghayal, P.E.
Date: 1/10/97
Rev. By: D. Graziani, P.E. DJG 3/4/97
Date: 2/10/97

OFS No.: 1523.0005.0008
File: COTBACT.XLS
Sheet:: VOC-BACT

Description: Incremental and total cost analysis for the Oxidation Catalyst. Cost factors and references listed. Capital cost estimate for the Oxidation Catalyst was supplied by a vendor for the CO BACT Evaluation. The potential reductions of VOC emissions (30%) were added to the CO reductions as additional reductions.

BACT ANALYSIS

CAPITAL COSTS FOR OXIDATION CATALYST (30% CONTROL)

COST ITEM	COST FACTOR	REFERENCE	COST ($1997)
DIRECT COSTS (DC)			
PURCHASED EQUIPMENT COSTS (PEC)			
OX CAT. & AUXILIARY EQUIPMENT	AS ESTIMATED, A	VENDOR QUOTE	$830,000.00
INSTRUMENTATION	0.05 X A	(EPA, 1990d)	$41,500.00
STATE SALES TAXES	0.06 X A	State Sales Tax	$49,800.00
FREIGHT	0.05 X A	(EPA, 1990d)	$41,500.00
PEC SUBTOTAL	1.16 X A = B		$962,800.00
DIRECT INSTALLATION COSTS (DIC)			
FOUNDATIONS & SUPPORTS	0.08 X B	(ULRICH, 1984)	$77,024.00
LABOR	0.14 X B	(EPA, 1990d)	$134,792.00
ELECTRICAL	0.04 X B	(EPA, 1990d)	$38,512.00
PIPING	N/A		-
INSULATION	N/A		-
PAINTING	0.01 X B	(EPA, 1990d)	$9,628.00
DIC SUBTOTAL	0.27 X B	(EPA, 1990d)	$259,956.00
SITE PREPARATION	N/A	-	-
BUILDINGS	N/A	-	-
TOTAL DC	1.27 X B	-	$1,222,756.00
INDIRECT COSTS (IDC)			
ENGINEERING	0.10 X B	(EPA,1990d)	$96,280.00
CONSTRUCTION OVERHEAD	0.05 X B	(EPA,1990d)	$48,140.00
CONTRACTOR FEES	0.10 X B	(EPA,1990d)	$96,280.00
CONTINGENCIES	0.03 X B	(EPA,1990d)	$28,884.00
START-UP	0.02 X B	(EPA,1990d)	$19,256.00
PERFORMANCE TESTING	0.01 X B	(EPA,1990d)	$9,628.00
TOTAL IDC	0.53 X B	-	$298,468.00
TOTAL CAPITAL INVESTMENT (TCI)	1.84 X B		$1,521,224.00

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: D. Graziani, P.E
Date: 12/30.96
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Date: 1/10/97
Rev. By: D. Graziani, P.E. DJG 3/4/97
Date: 2/10/97

OFS No.: 1523.0005.0008
File: COTBACT.XLS
Sheet:: VOC-BACT

OPERATING COST FACTORS FOR OXIDATION CATALYST

COST DATA

CHEMICAL ENGINEERING PLANT COST INDEX

1990	357.6
1993	359.2
Sept. '96	383.9

CAPITAL RECOVERY FACTOR (CRF) @i=7.25%,n=20: 0.0962

0.0725
20

	FACTOR	REFERENCE	1997 COSTS, $/YR
DIRECT ANNUAL COSTS, $/YR			
OPERATING LABOR	$27.82/HR @ .5HR/12HR-SHIFT	(COT & EPA 1990d)	$10,154.30
SUPERVISORY LABOR	15 % OF OPERATING LABOR	(EPA,1990d)	$1,523.15
MAINTENANCE LABOR AND MATERIALS	2 x $27.82/HR @ 0.5HR/12HR-SHIFT	(EPA,1990d)	$20,308.60
CATALYST REPLACEMENT (CR)	9 X 0.75 X A X CFR	Vendor Quote	$539,155.69
CATALYST DISPOSAL	$15/CF	(EPA,1993b)	$172,308.62
ELECTRICITY	N/A	(EPA,1990d)	-
PERFORMANCE LOSS	0.50%	(EPA,1993b)	$272,461.58
			$1,015,911.94
INDIRECT ANNUAL COSTS, $/YR			
OVERHEAD	60% OF ALL LABOR MAIN. COSTS	(EPA,1990d)	$19,192
INSURANCE & ADMINISTRATION	2.5%OF TCI	(EPA,1990d)	$38,031
CAPITAL RECOVERY	CRF X (TCI - CR)	N/A	$86,489
			$143,710.79
TOTAL ANNUAL COSTS, $/YR			$1,159,622.73
TOTAL NET REDUCTIONS (TPY)			
Carbon Monoxide	90 % Reduction		150.32
Volatile Organic Compounds	30% Reduction		4.11
Total			154.42
INCREMENTAL COST EFFECTIVENESS, $/TON			$7,509

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: D. Graziani, P.E
Date: 12/30.96
Ckd. By: D. Ghayal, P.E.
Date: 1/10/97
Rev. By: D. Graziani, P.E. DJG 3/4/97
Date: 2/10/97

OFS No.: 1523.0005.0008
File: COTBACT.XLS
Sheet:: SCR-BACT

Description: Incremental and total cost analysis for the SCR System. Cost factors and references listed. Capital costs estimate for theSCR was supplied by a vendor.

BACT ANALYSIS

CAPITAL COST FACTORS FOR SELECT CATALYTIC REDUCTION

OPTION 1 (3.5 ppmvd @ 15% O2 - Gas & 10 ppmvd @ 15% O2 - Oil Firing)

COST ITEM	COST FACTOR	REFERENCE	COST ($1996)
DIRECT COSTS (DC)			
PURCHASED EQUIPMENT COSTS (PEC)			
SCR & AUXILIARY EQUIPMENT	AS ESTIMATED, A	VENDOR QUOTE	$1,676,000.00
INSTRUMENTATION	0.05 X A	(EPA, 1990d)	$83,800.00
STATE SALES TAXES	0.06 X A	State Sales Tax	$100,560.00
FREIGHT	0.05 X A	(EPA, 1990d)	$83,800.00
PEC SUBTOTAL	1.16 X A = B		$1,944,160.00
DIRECT INSTALLATION COSTS (DIC)			
FOUNDATIONS & SUPPORTS	0.08 X B	(ULRICH, 1984)	$155,532.80
LABOR	0.14 X B	(EPA, 1990d)	$272,182.40
ELECTRICAL	0.04 X B	(EPA, 1990d)	$77,766.40
PIPING	N/A	VENDOR QUOTE	-
INSULATION	N/A	VENDOR QUOTE	-
PAINTING	0.01 X B	(EPA, 1990d)	$19,441.60
DIC SUBTOTAL	0.27 X B	(EPA, 1990d)	$524,923.20
SITE PREPARATION	N/A	-	-
BUILDINGS	N/A	-	-
TOTAL DC	1.27 X B	-	$2,469,083.20
INDIRECT COSTS (IDC)			
ENGINEERING	0.10 X B	(EPA,1990d)	$194,416.00
CONSTRUCTION OVERHEAD	0.05 X B	(EPA,1990d)	$97,208.00
CONTRACTOR FEES	0.10 X B	(EPA,1990d)	$194,416.00
CONTINGENCIES	0.03 X B	(EPA,1990d)	$58,324.80
START-UP	0.02 X B	(EPA,1990d)	$38,883.20
PERFORMANCE TESTING	0.01 X B	(EPA,1990d)	$19,441.60
TOTAL IDC	0.53 X B	-	$602,689.60
TOTAL CAPITAL INVESTMENT (TCI)	1.84 X B		$3,071,772.80

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: D. Graziani, P.E
Date: 12/30.96
Ckd. By: D. Ghayal, P.E.
Date: 1/10/97
Rev. By: D. Graziani, P.E. DJG 3/4/97
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OFS No.: 1523.0005.0008
File: COTBACT.XLS
Sheet:: SCR-BACT

OPERATING COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST DATA

CHEMICAL ENGINEERING PLANT COST INDEX

1990	357.6
1993	359.2
Sept. '96	383.9

CAPITAL RECOVERY FACTOR (CRF) @i=7.25%,n=20: 0.0962

0.0725
20

	FACTOR	REFERENCE	1997 COSTS, $/YR
DIRECT ANNUAL COSTS, $/YR			
OPERATING LABOR	$27.82/HR @ 1HR/12HR-SHIFT	(COT & EPA 1993b)	$20,309
SUPERVISORY LABOR	15 % OF OPERATING LABOR	(EPA,1993b)	$3,046
MAINTENANCE LABOR AND MATERIALS	1,250 (MW) ÷ 25,600	(EPA,1993b)	$241,327
CATALYST REPLACEMENT (CR)	N/A	Vendor Estimate	$350,000
CATALYST DISPOSAL	$15/CF	(EPA,1993b)	$68,923
AQUEOUS AMMONIA	$360/TON	(EPA,1993b)	$43,338
DILUTION SYSTEM	N/A	(EPA,1993b)	-
ELECTRICITY	N/A	(EPA,1993b)	-
PERFORMANCE LOSS	0.50%	(EPA,1993b)	$312,613
BLOWER	N/A	(EPA,1993b)	-
PRODUCTION LOSS	N/A	(EPA,1993b)	-
			$1,039,556
INDIRECT ANNUAL COSTS, $/YR			
OVERHEAD	60% OF ALL LABOR MAIN. COSTS	(EPA,1990d)	$158,809
INSURANCE & ADMINISTRATION	2.5%OF TCI	(EPA,1990d)	$76,794
CAPITAL RECOVERY	CRF X (TCI - CR)	N/A	$225,612
			$461,215
TOTAL ANNUAL COSTS, $/YR			$1,500,771
TOTAL NET NOx REDUCTIONS (TPY)			
Oil Firing			61
Gas Firing			146
Total			208
INCREMENTAL COST EFFECTIVENESS, $/TON			$7,225

APPENDIX H

VENDOR QUOTE - SCR

Foster Wheeler Energy Corporation
Perryville Corporate Park
Clinton, NJ 08809-4000

TELECOPY NO. 908-713-3210
TELEPHONE NO. 908-713-2432

TELECOPY FORM

December 23, 1996

TO: **Mr. Darrel Graziani: FWEnC** **561/781-3411**

FROM: Howard N. Franklin

SUBJECT: : SCR Estimate: FWEC Ref.: P738

This telefax contains **10 pages**, including this cover sheet.

Dear Mr. Darrel Graziani

Attached is the budgetary estimate you requested. I believe it is somewhat conservative.

Good luck

Howard

C

FOSTER WHEELER ENERGY CORPORATION

PERRYVILLE CORPORATE PARK • CLINTON, NEW JERSEY 08809-4000 • PHONE 908-730-4000

December 23, 1996
P738-01/FWEC

Mr. Darrel Graziani
Foster Wheeler Environmental Corporation
759 south Federal Highway
Stuart, FL 34994

Subject: **Budgetary SCR for FWEnC**
FWEC SCR # P-738

Reference: Information data from D. Graziani received 12/20/96

Dear Mr Graziani:

Foster Wheeler Energy Corporation is pleased to have this opportunity to provide budgetary pricing for the subject SCR system based upon the reference.

COMMERCIAL:

The budgetary price (excluding all taxes) for the design and supply of one aqueous ammonia SCR system, F.O.B. U. S. job site, is:

TWO MILLION TWO HUNDRED FORTY THOUSAND U.S. DOLLARS .. $ 2,240,000

This cost can be reduced by getting an allowable higher outlet NOX for oil firing. It is our experience that oil is possibly fired during the winter when the natural gas supply may be curtailed for residential use. Winter is not the worst NOX season and we have often seen the NOX outlet raised from 3.5 to 9 ppmvd @ 15% O_2.

The budgetary price (excluding all taxes) for the design and supply of one aqueous ammonia SCR system, F.O.B. U. S. job site, is:

ONE MILLION SIX HUNDRED SEVENTY-SIX THOUSAND U.S. DOLLARS ..... $ 1,676,000

for this reduced case. The natural gas fired case remains unchanged.

These estimates are based upon scantly SCR duty requirements and vague project

information. Taken as an aggregate they are deemed to be reasonable.

Scheduled fabrication completion of the SCR system is based upon full release no later than eight months prior to the scheduled fabrication completion date. Earlier deliveries may be possible if required by the schedule.

DISCUSSION

The maximum ammonia flow rate, which is for the oil fired case, as given in Table 1, based upon a 27% aqueous solution. No reactor cross section was given so the flow cross-sectional area is also given in Table 1. Without HRSG and SCR Reactor sizes any required flue transitions could not be estimated and are not included - see General and Ammonia Scope of Supply.

In addition, FWEC has not broken out the catalyst price as requested. The bulk of the cost is the catalyst and without it the error band of this estimate wold be too high to make the estimated costs realistic. With regard to the supply of the catalyst FWEC would be willing to discuss this at a later date when the SCR duty requirements are solidified.

COMMENTS AND EXCEPTIONS

Our quotation is based on the reference data. Comments and exceptions include:

1. The foregoing quotation is based on FWC acceptable Terms and Conditions.

2. Performance of the catalyst is dependent on reasonably uniform flue gas distribution at the Ammonia Injection Grid (AIG) and catalyst as well as sufficient mixing time between the AIG and catalyst. The flue gas distribution at the ammonia injection grid should satisfy an RMS deviation less than 10% of the mean and catalyst inlet should satisfy an RMS deviation less than 15% of the mean. A one-half second or greater residence time should be used between the AIG and SCR catalyst. The catalyst should not be blocked in such a way as to disrupt the flow distribution into the catalyst. The temperature distribution should be less than or equal to ±20 °F at the catalyst.

3. The maximum allowable exhaust gas temperature at the catalyst is 750 °F. For such a small SO_3 concentration the lower temperature catalyst limit is about 500 °F based upon performance rather than ammonium salt formation.

4. The allowed start-up and shut-down temperature gradient for the catalyst is 20 °F/min below and 110 °F/min above the flue gas dew point.

5. The SCR does not fit within the 12 M X 20 M dimensions, it is slightly larger to meet pressure drop.

6. The catalyst reactor outer casing and inner structure are included. They include 4" of internal insulation and catalyst loading doors at the top. Also included is the catalyst loading monorail with hoist. Access doors, etc. are supplied by others in the flue or, if required, in the flue transitions. The Ammonia Injection Grid is included and it fits into the HGSR flue upstream of the reactor. Please refer to the Scope of Supply.

7. An aqueous ammonia tank was included with an estimated 2 week 27% solution supply for the oil fired cases. The requirements for these cases are given in Table 1. For comparison the corresponding flow rate for the gas fired cases is 110 #.hr.

8. Also guestimated is the piping from the tank and ammonia skids through to the injection grid. Without the location of the individual piece locations this estimate is simply an educated guess based upon past experience.

9. The pressure drop indicated in Table 1 includes the ammonia injection grid, the reactor inlet/outlet and the catalyst, i.e., all components FWEC would supply.

TECHNICAL:

The SCR system design is based on the steady-state operating conditions given in the reference. Table 1 includes performance data for two oil cases: outlet NOx = 3.5 and 9 ppmvd @ 15% O_2, respectively. Both easily satisfy the natural gas fired cases.

Also attached are the following:

General SCR Scope of Supply
Aqueous Ammonia Scope of Supply
Electric Heater Aqueous Ammonia P&ID - Typical

If you have any questions or require additional information please contact me at (908)713-2432. The fax number is (908)713-3210.

Very truly yours,

Howard N. Franklin

cc: M. A. Broadhurst

TABLE 1: SCR DESIGN CONDITIONS

Case	7	7
Fuel - Gas Turbine	Oil	Oil
Exhaust, lb/hr	3,950,000	3,950,000
Exhaust Composition, % Vol.		
O2	10.90	10.90
N2	71.24	71.24
CO2	5.35	5.35
H2O	11.44	11.44
Ar	0.85	0.85
SO2	0.0013	0.0013
Particulate, mg/Nm3	45 (est.)	45 (est.)
SCR Inlet Temp, °F	700	700
Inlet NOX, ppmvd @ 15% O2	42	42
Outlet NOX, ppmvd @ 15% O2*	**3.5**	**9**
Guarantee NH3 slip, ppmvd @ 15% O2*	10	10
Pressure drop, in wc*	≤ 2.0	≤ 2.0
NH3 Consumption, #/hr 27% Aqua Basis	570	530
Reactor Cross Section Required, Ft.2	2,975	2,257
Catalyst Life*	3 years	

* Conditions to be Guaranteed based upon Given Inlet Conditions

FOSTER WHEELER ENERGY CORPORATION
SCR SYSTEM
SCOPE OF SUPPLY - GENERAL

ITEM	DESCRIPTION	FWEC SCOPE	OPTION	NOT Included
1	SCR CATALYST IN BASKETS	X		
2	AQUEOUS AMMONIA INJECTION SYSTEM	X		
3	ANHYDROUS AMMONIA INJECTION SYSTEM			X
	CATALYST REACTOR HOUSING:			
4	CATALYST HOUSING WITH INTERNAL INSULATION AND LINER	X		
5	CATALYST MODULE SUPPORT STRUCTURE	X		
6	SPACE IN REACTOR FOR ADDITION OF CATALYST AT A LATER DATE			X
7	ADDITIONAL CATALYST SUPPORT STRUCTURE FOR ADDITION OF CATALYST IN THE FUTURE			X
	CATALYST HANDLING/MAINTENANCE FACILITIES:			
8	CATALYST LOADING DOORS	X		
9	ACCESS DOORS - IN TRANSITIONS			X
10	MONORAIL AND HOIST	X		
11	PLATFORMS, LADDERS AND STAIRWAYS			X
	HRSG TRANSITIONS:			
12	INLET AND OUTLET TRANSITION DUCTS WITH INTERNAL INSULATION AND LINER			X
	ACCESSORIES:			
13	HOUSING SAMPLING PORTS - IN TRANSITIONS			X
14	CATALYST FOR SAMPLING CELLS	X		
15	FOUNDATIONS			X
16	SELF-SUPPORTING OF ITEMS WITHIN THIS SCOPE OF SUPPLY	X		
17	SURFACE PREPARATION PER THE SPECIFICATION			X
18	SHIPMENT OF ALL EQUIPMENT TO SITE	X		

FOSTER WHEELER ENERGY CORPORATION
SCR SYSTEM
SCOPE OF SUPPLY - GENERAL Page 2 of 2

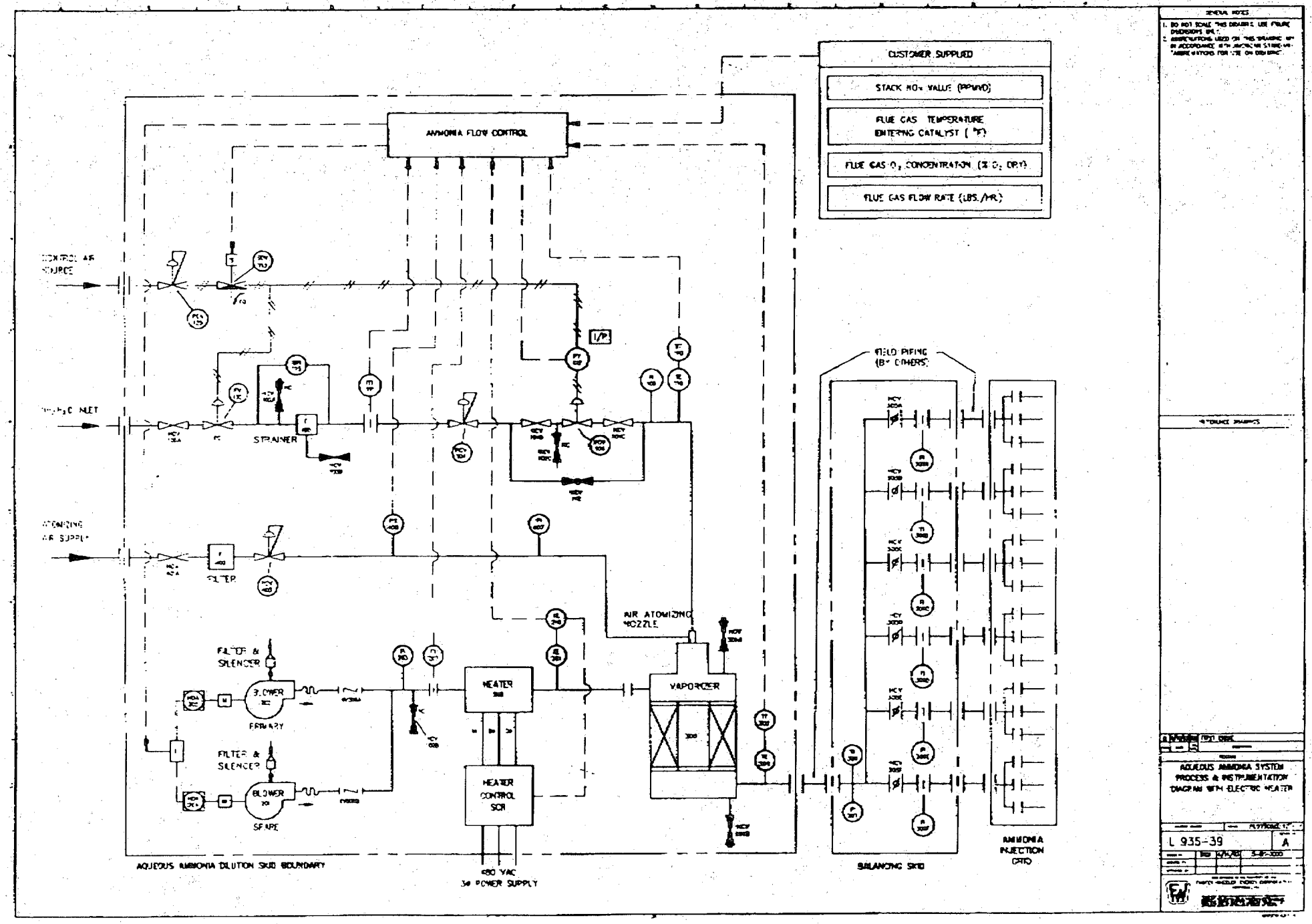
19	ERECTION OF CATALYST HOUSING			X
20	INSTALLATION OF AMMONIA INJECTION SKIDS			X
21	ALL CONSTRUCTION, STARTUP AND COMMISSION SPARES			X
	TECHNICAL FIELD ASSISTANCE:			
22	TECHNICAL FIELD ASSISTANCE FOR ERECTION AND INSTALLATION			X
23	TECHNICAL FIELD ASSISTANCE FOR START-UP OF CATALYST			X
24	TECHNICAL FIELD ASSISTANCE FOR PERFORMANCE TESTS			X

FOSTER WHEELER ENERGY CORPORATION
SCR SYSTEM SCOPE OF SUPPLY
AQUEOUS AMMONIA INJECTION SYSTEM Page 1 of 2

ITEM	DESCRIPTION	FWEC SCOPE	OPTION	NOT Included
1	AMMONIA INJECTION GRID WITH NOZZLES OR ORIFICES	X		
2	INJECTION GRID HOUSING AND SUPPORT			X
	AMMONIA INJECTION HEADER ASSEMBLY (MOUNTED AT GRADE):			
3	AMMONIA INJECTION HEADER	X		
4	MANUAL TRIM VALVES	X		
5	FLOW INDICATORS	X		
6	MANUAL SHUT-OFF VALVES	X		
7	SUPPORT OF INJECTION HEADER	X		
	AQUEOUS AMMONIA EVAPORATION & FLOW CONTROL SKID:			
8	DILUTION AIR FANS WITH MOTOR (QTY. 2)	X		
9	ELECTRIC AIR HEATER (2)	X		
10	AMMONIA VAPORIZER/MIXER WITH INJECTION NOZZLE	X		
11	ALL AMMONIA/AIR PIPING AND VALVES ON SKID	X		
12	ALL CONTROL INSTRUMENTATION	X		
13	TUBING AND WIRING ON SKID	X		
14	INSULATION ON SKID	X		
15	PROVISIONS FOR NITROGEN PURGE OF AMMONIA INJECTION SYSTEM		X	
	AQUEOUS AMMONIA STORAGE AND FORWARDING EQUIPMENT:			
16	AQUEOUS AMMONIA STORAGE TANK	X		
17	AQUEOUS AMMONIA TRUCK OFF-LOADING STA.	X		
18	AQUEOUS AMMONIA FORWARDING PUMPS	X		
19	AQUEOUS AMMONIA STRAINER	X		
	EXTERNAL PIPING:			
20	PIPING FROM FORWARDING SYSTEM TO AMMONIA INJECTION SKID	X		
21	PIPING FROM AMMONIA INJECTION SKID TO AMMONIA INJECTION HEADER	X		

FOSTER WHEELER ENERGY CORPORATION
SCR SYSTEM SCOPE OF SUPPLY
AQUEOUS AMMONIA INJECTION SYSTEM

22	PIPING FROM AMMONIA INJECTION HEADER TO HRSG DUCT (INJECTION GRID)	X		
23	AMMONIA FLOW CONTROL VALVE	X		
24	AMMONIA SHUT-OFF VALVE (SOLENOID OPERATED)	X		
25	AMMONIA FLOW TRANSMITTER	X		
26	DILUTION/VAPORIZING AIR FLOW TRANSMITTER	X		
27	ALL MANUAL BYPASS AND ISOLATION VALVES ON SKID	X		
28	PRESSURE/TEMPERATURE TRANSMITTERS FOR CONTROL	X		
29	LOCAL PRESSURE/TEMPERATURE INDICATORS	X		
30	ALL INSTRUMENTATION AND VALVES FOR CONTROL OF EQUIPMENT ON INJECTION SKID	X		
31	FLUE GAS INLET TEMPERATURE TRANSMITTER			X
32	CATALYST PRESSURE DROP TRANSMITTER (1 FOR EACH CATALYST BED) (WITH HEAD INDICATOR)			X
33	LOCAL CATALYST PRESSURE DROP INDICATOR (1 FOR EACH CATALYST BED)			X
34	CONTROL LOGIC	X		
35	CONTROL SYSTEM HARDWARE			X
36	MOTOR CONTROL CENTER			X
37	POWER SUPPLY OF ELECTRICAL EQUIPMENT			X
	FLUE GAS ANALYZERS:			
38	SCR INLET NOX/O2 ANALYZER WITH PROBE AND SAMPLING LINE			X
39	SCR OUTLET NOX/O2 ANALYZER WITH PROBE AND SAMPLING LINE			X
40	SCR OUTLET NH3 ANALYZER WITH PROBE AND SAMPLING LINE			X
	GAS SAMPLING PORTS:			
41	INLET NOX/O2 PORT			X
42	STACK SAMPLING PORTS			X

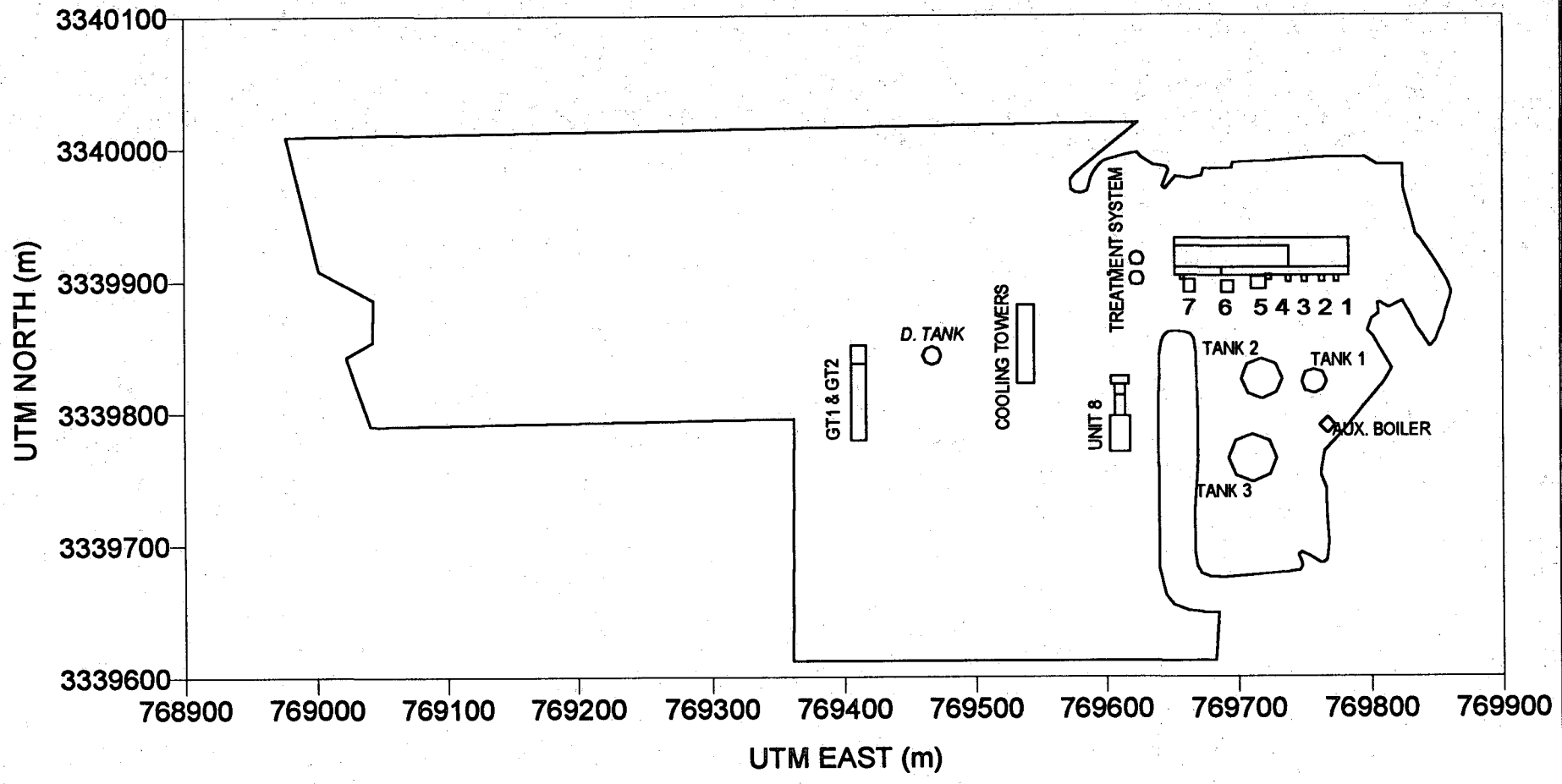

CUSTOMER SUPPLIED
STACK NOx VALUE (PPMVD)
FLUE GAS TEMPERATURE ENTERING CATALYST (°F)
FLUE GAS O2 CONCENTRATION (% O2 DRY)
FLUE GAS FLOW RATE (LBS./HR.)
AMMONIA FLOW CONTROL
STRAINER
FILTER
FILTER & SILENCER
BLOWER
PRIMARY
SPARE
AIR ATOMIZING NOZZLE
HEATER
HEATER CONTROL SCR
VAPORIZER
FIELD PIPING (BY OTHERS)
AMMONIA INJECTION GRID
BALANCING SKID
AQUEOUS AMMONIA DILUTION SKID BOUNDARY
480 VAC 3Ø POWER SUPPLY
GENERAL NOTES
AQUEOUS AMMONIA SYSTEM PROCESS & INSTRUMENTATION DIAGRAM WITH ELECTRIC HEATER
L 935-39
A

APPENDIX I

BPIP PROGRAM - INPUT/OUTPUT

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.



SOURCE: FOSTER WHEELER ENVIRONMENTAL CORPORATION

CITY OF TALLAHASSEE

PURDOM 8 BUILDING / STRUCTURE LOCATIONS USED IN BUILDING DOWNWASH ANALYSIS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

D:\SPP\P8BLDG.SRF (DISK1)
02/27/97 13:04:30

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'CITY OF TALLAHASSEE UNIT 8 (CT1/2 REMOVED - PROGRAM LIMIT)(p8bpip11.inp)'
'ST'
'METERS' 1.0
'UTMY' 360
12
'TANK 1' 1 0.00
8   12.8
 769766.2       3339823
 769763.4       3339830
 769756.8       3339832
 769750.4       3339830
 769747.8       3339823
 769750.6       3339816
 769757.2       3339814
 769763.6       3339817
'TANK 2' 1 0.00
8   12.2
 769733.3       3339825
 769728.6       3339836
 769717.8       3339840
 769707         3339836
 769702.7       3339825
 769707.4       3339814
 769718.3       3339810
 769729         3339815
'TANK 3' 1 0.00
8   12.2
 769729         3339765
 769723.5       3339778
 769710.7       3339783
 769698.1       3339778
 769693         3339765
 769698.5       3339752
 769711.4       3339747
 769724         3339753
'MAIN'   4    0.00
4   6
769653             3339931
769783             3339931
769783             3339903
769653             3339903
4    18.6
769653             3339925
769738             3339925
769738             3339909
769653             3339909
4       11.7
769653             3339909
769688             3339909
769688             3339903
769653             3339903
4       15.2
769688             3339909
769783             3339909
769783             3339903
769688             3339903
'UNIT 5'   2   0.00
8       26.2
769710             3339902
769721             3339902
```

```
769721              3339904
769725              3339904
769725              3339900
769721              3339900
769721              3339893
769710              3339893
4       32.3
769721              3339904
769725              3339904
769725              3339900
769721              3339900
'UNIT 6'     1      0.00
4        25.9
769688              3339899
769697              3339899
769697              3339890
769688              3339890
'UNIT 7'     2     0.00
8    29.6
769657              3339903
769660              3339903
769660              3339900
769668              3339900
769668              3339890
769660              3339890
769660              3339900
769657              3339900
4   35.0
769657              3339903
769660              3339903
769660              3339900
769657              3339900
'D-TANK'  1      0.00
8      12.2
769474       3339843
769472       3339848
769467       3339850
769462       3339848
769460       3339843
769462       3339838
769467       3339836
769472       3339838
'AUXBOIL'  1      0.00
4    6.1
769761       3339790
769767       3339784
769773       3339790
769767       3339796
'HSRG'  1     0.00
4       24.0
769603.5     3339769.5
769603.5     3339796.5
769618.5     3339796.5
769618.5     3339769.5
'UNIT8'   3      0.00
8      7.2
769607.1         3339796.5
769607.1         3339820.9
769604.2         3339820.9
769604.2         3339826.8
```

```
769617.8          3339826.8
769617.8          3339820.9
769614.9          3339820.9
769614.9          3339796.5
4         13.6
769607.1          3339813
769607.1          3339820.9
769614.9          3339820.9
769614.9          3339813
4         18.7
769604.2          3339820.9
769604.2          3339826.8
769617.8          3339826.8
769617.8          3339820.9
'cooltwr' 1   0.00
4         13.4
769532          3339822
769532          3339881
769545          3339881
769545          3339822
3
'AUXBOIL'     0.0    9.2   769767    3339784
'UNIT5'       0.0   38.2   769706    3339889
'UNIT6'       0.0   38.2   769706    3339889
```

==========
BPIP PROCESSING INFORMATION:
==========

The ST flag has been set for processing for an ISCST2 run.

Inputs entered in METERS will be converted to meters using a conversion factor of 1.0000. Output will be in meters.

The UTMP variable is set to UTMY. The input is assumed to be in UTM coordinates. BPIP will move the UTM origin to the first pair of UTM coordinates read. The UTM coordinates of the new origin will be subtracted from all the other UTM coordinates entered to form this new local coordinate system.

Plant north is set to 360.00 degrees with respect to True North.

CITY OF TALLAHASSEE UNIT 8 (CT1/2 REMOVED - PROGRAM LIMIT)(p8bpip11.inp)

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
AUXBOIL	9.20	.00	64.75	65.00
UNIT5	38.20	.00	64.75	65.00
UNIT6	38.20	.00	64.75	65.00

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

CITY OF TALLAHASSEE UNIT 8 (CT1/2 REMOVED - PROGRAM LIMIT)(p8bpip11.inp)

BPIP output is in meters

SO BUILDHGT AUXBOIL	6.10	6.10	6.10	6.10	12.20	12.20
SO BUILDHGT AUXBOIL	12.20	12.20	12.20	6.10	6.10	12.20
SO BUILDHGT AUXBOIL	12.20	25.90	25.90	25.90	12.80	12.80
SO BUILDHGT AUXBOIL	6.10	6.10	6.10	6.10	6.10	6.10
SO BUILDHGT AUXBOIL	6.10	6.10	6.10	6.10	6.10	6.10
SO BUILDHGT AUXBOIL	6.10	6.10	6.10	6.10	6.10	6.10
SO BUILDWID AUXBOIL	11.82	11.28	10.39	9.19	35.80	34.60
SO BUILDWID AUXBOIL	34.07	35.57	36.00	11.82	11.28	29.65
SO BUILDWID AUXBOIL	30.48	37.34	39.04	39.56	18.12	18.40
SO BUILDWID AUXBOIL	11.82	11.28	10.39	9.19	9.19	10.39
SO BUILDWID AUXBOIL	11.28	11.82	12.00	11.82	11.28	10.39
SO BUILDWID AUXBOIL	9.19	9.19	10.39	11.28	11.82	12.00
SO BUILDHGT UNIT5	25.90	25.90	25.90	25.90	25.90	25.90
SO BUILDHGT UNIT5	18.60	18.60	29.60	25.90	25.90	25.90
SO BUILDHGT UNIT5	25.90	25.90	25.90	25.90	25.90	25.90
SO BUILDHGT UNIT5	25.90	25.90	25.90	25.90	25.90	25.90
SO BUILDHGT UNIT5	18.60	18.60	18.60	25.90	25.90	25.90
SO BUILDHGT UNIT5	25.90	25.90	25.90	25.90	25.90	25.90
SO BUILDWID UNIT5	36.26	34.43	31.58	29.14	25.81	21.70
SO BUILDWID UNIT5	44.11	37.07	13.00	20.21	25.81	30.62
SO BUILDWID UNIT5	34.51	37.34	39.04	39.56	38.87	37.00
SO BUILDWID UNIT5	36.26	34.43	31.58	29.14	25.81	21.70
SO BUILDWID UNIT5	44.11	37.07	32.00	20.21	25.81	30.62
SO BUILDWID UNIT5	34.51	37.34	39.04	39.56	38.87	37.00
SO BUILDHGT UNIT6	25.90	25.90	25.90	25.90	25.90	25.90
SO BUILDHGT UNIT6	18.60	18.60	29.60	25.90	25.90	25.90
SO BUILDHGT UNIT6	25.90	25.90	25.90	25.90	25.90	25.90
SO BUILDHGT UNIT6	25.90	25.90	25.90	25.90	25.90	25.90
SO BUILDHGT UNIT6	18.60	18.60	18.60	25.90	25.90	25.90
SO BUILDHGT UNIT6	25.90	25.90	25.90	25.90	25.90	25.90
SO BUILDWID UNIT6	36.26	34.43	31.58	29.14	25.81	21.70
SO BUILDWID UNIT6	44.11	37.07	13.00	20.21	25.81	30.62
SO BUILDWID UNIT6	34.51	37.34	39.04	39.56	38.87	37.00
SO BUILDWID UNIT6	36.26	34.43	31.58	29.14	25.81	21.70
SO BUILDWID UNIT6	44.11	37.07	32.00	20.21	25.81	30.62
SO BUILDWID UNIT6	34.51	37.34	39.04	39.56	38.87	37.00

```
'CITY OF TALLAHASSEE UNIT 8 (aux boil removed  prog.limits ) (p8bpipl3.inp)'
'ST'
'METERS' 1.0
'UTMY' 360
12
'TANK 1' 1 0.00
8   12.8
 769766.2       3339823
 769763.4       3339830
 769756.8       3339832
 769750.4       3339830
 769747.8       3339823
 769750.6       3339816
 769757.2       3339814
 769763.6       3339817
'TANK 2' 1 0.00
8   12.2
 769733.3       3339825
 769728.6       3339836
 769717.8       3339840
 769707         3339836
 769702.7       3339825
 769707.4       3339814
 769718.3       3339810
 769729         3339815
'TANK 3' 1 0.00
8   12.2
 769729         3339765
 769723.5       3339778
 769710.7       3339783
 769698.1       3339778
 769693         3339765
 769698.5       3339752
 769711.4       3339747
 769724         3339753
'MAIN'   4    0.00
4   6
769653             3339931
769783             3339931
769783             3339903
769653             3339903
4    18.6
769653             3339925
769738             3339925
769738             3339909
769653             3339909
4       17.7
769653             3339909
769688             3339909
769688             3339903
769653             3339903
4       15.2
769688             3339909
769783             3339909
769783             3339903
769688             3339903
'UNIT 5'   2   0.00
8       26.2
769710             3339902
769721             3339902
```

```
769721              3339904
769725              3339904
769725              3339900
769721              3339900
769721              3339893
769710              3339893
4       32.3
769721              3339904
769725              3339904
769725              3339900
769721              3339900
'UNIT 6'     1      0.00
4        25.9
769688              3339899
769697              3339899
769697              3339890
769688              3339890
'UNIT 7'     2     0.00
8    29.6
769657              3339903
769660              3339903
769660              3339900
769668              3339900
769668              3339890
769660              3339890
769660              3339900
769657              3339900
4   35.0
769657              3339903
769660              3339903
769660              3339900
769657              3339900
'D-TANK'   1      0.00
8      12.2
769474       3339843
769472       3339848
769467       3339850
769462       3339848
769460       3339843
769462       3339838
769467       3339836
769472       3339838
'CTs'   2       0.00
4    9.1
769406       3339851
769417       3339851
769417       3339779
769406       3339779
4    4.0
769406       3339851
769417       3339851
769417       3339837
769406       3339837
'HSRG'   1     0.00
4        24.0
769603.5     3339769.5
769603.5     3339796.5
769618.5     3339796.5
769618.5     3339769.5
'UNIT8'    3      0.00
```

```
8       7.2
769607.1          3339796.5
769607.1          3339820.9
769604.2          3339820.9
769604.2          3339826.8
769617.8          3339826.8
769617.8          3339820.9
769614.9          3339820.9
769614.9          3339796.5
4         13.6
769607.1          3339813
769607.1          3339820.9
769614.9          3339820.9
769614.9          3339813
4        18.7
769604.2          3339820.9
769604.2          3339826.8
769617.8          3339826.8
769617.8          3339820.9
'cooltwr' 1  0.00
4        13.4
769532          3339822
769532          3339881
769545          3339881
769545          3339822
3
'CT1'          0.0    11.7 769421    3339825
'CT2'          0.0    11.7 769421    3339813
'UNIT8'        0.0    60.0 769611.5 3339767
```

==========
BPIP PROCESSING INFORMATION:
==========

The ST flag has been set for processing for an ISCST2 run.

Inputs entered in METERS will be converted to meters using a conversion factor of 1.0000. Output will be in meters.

The UTMP variable is set to UTMY. The input is assumed to be in UTM coordinates. BPIP will move the UTM origin to the first pair of UTM coordinates read. The UTM coordinates of the new origin will be subtracted from all the other UTM coordinates entered to form this new local coordinate system.

Plant north is set to 360.00 degrees with respect to True North.

CITY OF TALLAHASSEE UNIT 8 (aux boil removed prog.limits) (p8bpip13.inp)

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
CT1	11.70	.00	30.50	65.00
CT2	11.70	.00	30.50	65.00
UNIT8	60.00	.00	60.00	65.00

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

CITY OF TALLAHASSEE UNIT 8 (aux boil removed prog.limits) (p8bpip13.inp)

BPIP output is in meters

SO BUILDHGT CT1	9.10	9.10	9.10	9.10	9.10	9.10
SO BUILDHGT CT1	9.10	9.10	9.10	9.10	9.10	9.10
SO BUILDHGT CT1	9.10	9.10	9.10	9.10	9.10	9.10
SO BUILDHGT CT1	9.10	9.10	9.10	9.10	9.10	12.20
SO BUILDHGT CT1	12.20	12.20	9.10	9.10	9.10	9.10
SO BUILDHGT CT1	9.10	9.10	9.10	9.10	9.10	9.10
SO BUILDWID CT1	23.34	34.96	45.53	54.71	62.23	67.85
SO BUILDWID CT1	71.42	72.82	72.00	72.82	71.42	67.85
SO BUILDWID CT1	62.23	54.71	45.53	34.96	23.34	11.00
SO BUILDWID CT1	23.34	34.96	45.53	54.71	62.23	13.66
SO BUILDWID CT1	13.16	13.79	72.00	72.82	71.42	67.85
SO BUILDWID CT1	62.23	54.71	45.53	34.96	23.34	11.00

SO BUILDHGT CT2	9.10	9.10	9.10	9.10	9.10	9.10
SO BUILDHGT CT2	9.10	9.10	9.10	9.10	9.10	9.10
SO BUILDHGT CT2	9.10	9.10	9.10	9.10	9.10	9.10
SO BUILDHGT CT2	9.10	9.10	9.10	9.10	12.20	12.20
SO BUILDHGT CT2	12.20	9.10	9.10	9.10	9.10	9.10
SO BUILDHGT CT2	9.10	9.10	9.10	9.10	9.10	9.10
SO BUILDWID CT2	23.34	34.96	45.53	54.71	62.23	67.85
SO BUILDWID CT2	71.42	72.82	72.00	72.82	71.42	67.85
SO BUILDWID CT2	62.23	54.71	45.53	34.96	23.34	11.00
SO BUILDWID CT2	23.34	34.96	45.53	54.71	14.09	13.66
SO BUILDWID CT2	13.16	72.82	72.00	72.82	71.42	67.85
SO BUILDWID CT2	62.23	54.71	45.53	34.96	23.34	11.00

SO BUILDHGT UNIT8	24.00	24.00	24.00	24.00	24.00	24.00
SO BUILDHGT UNIT8	24.00	24.00	24.00	24.00	24.00	24.00
SO BUILDHGT UNIT8	24.00	24.00	24.00	24.00	24.00	24.00
SO BUILDHGT UNIT8	24.00	24.00	24.00	24.00	24.00	24.00
SO BUILDHGT UNIT8	24.00	24.00	24.00	24.00	24.00	24.00
SO BUILDHGT UNIT8	24.00	24.00	24.00	24.00	24.00	24.00
SO BUILDWID UNIT8	19.46	23.33	26.49	28.85	30.33	30.88
SO BUILDWID UNIT8	30.50	29.19	27.00	29.19	30.50	30.88
SO BUILDWID UNIT8	30.33	28.85	26.49	23.33	19.46	15.00
SO BUILDWID UNIT8	19.46	23.33	26.49	28.85	30.33	30.88
SO BUILDWID UNIT8	30.50	29.19	27.00	29.19	30.50	30.88
SO BUILDWID UNIT8	30.33	28.85	26.49	23.33	19.46	15.00

```
'COT UNIT 8 (aux boil/CT/D-TANK/cool-twr removed  prog.limits )(p8bpip14.inp)'
'ST'
'METERS' 1.0
'UTMY' 360
12
'TANK 1' 1 0.00
8   12.8
 769766.2       3339823
 769763.4       3339830
 769756.8       3339832
 769750.4       3339830
 769747.8       3339823
 769750.6       3339816
 769757.2       3339814
 769763.6       3339817
'TANK 2' 1 0.00
8   12.2
 769733.3       3339825
 769728.6       3339836
 769717.8       3339840
 769707         3339836
 769702.7       3339825
 769707.4       3339814
 769718.3       3339810
 769729         3339815
'TANK 3' 1 0.00
8   12.2
 769729         3339765
 769723.5       3339778
 769710.7       3339783
 769698.1       3339778
 769693         3339765
 769698.5       3339752
 769711.4       3339747
 769724         3339753
'MAIN'   4    0.00
4   6
769653             3339931
769783             3339931
769783             3339903
769653             3339903
4    18.6
769653             3339925
769738             3339925
769738             3339909
769653             3339909
4       17.7
769653             3339909
769688             3339909
769688             3339903
769653             3339903
4       15.2
769688             3339909
769783             3339909
769783             3339903
769688             3339903
'UNIT 5'   2   0.00
8       26.2
769710             3339902
769721             3339902
```

```
769721              3339904
769725              3339904
769725              3339900
769721              3339900
769721              3339893
769710              3339893
4       32.3
769721              3339904
769725              3339904
769725              3339900
769721              3339900
'UNIT 6'     1      0.00
4       25.9
769688              3339899
769697              3339899
769697              3339890
769688              3339890
'UNIT 7'     2     0.00
8    29.6
769657              3339903
769660              3339903
769660              3339900
769668              3339900
769668              3339890
769660              3339890
769660              3339900
769657              3339900
4   35.0
769657              3339903
769660              3339903
769660              3339900
769657              3339900
'HSRG'   1     0.00
4       24.0
769603.5     3339769.5
769603.5     3339796.5
769618.5     3339796.5
769618.5     3339769.5
'UNIT8'    3      0.00
8      7.2
769607.1          3339796.5
769607.1          3339820.9
769604.2          3339820.9
769604.2          3339826.8
769617.8          3339826.8
769617.8          3339820.9
769614.9          3339820.9
769614.9          3339796.5
4        13.6
769607.1          3339813
769607.1          3339820.9
769614.9          3339820.9
769614.9          3339813
4       18.7
769604.2          3339820.9
769604.2          3339826.8
769617.8          3339826.8
769617.8          3339820.9
'CONDTANK'    1   0.00
8        8.5
```

```
 769629.3       3339916
 769627.7       3339920
 769623.9       3339921
 769620.2       3339920
 769618.7       3339916
 769620.3       3339912
 769624.1       3339911
 769627.8       3339912
 'DISTTANK'   1   0.00
8        5.3
 769629.3       3339901
 769627.7       3339905
 769623.9       3339906
 769620.2       3339905
 769618.7       3339901
 769620.3       3339897
 769624.1       3339896
 769627.8       3339897
 'EVAPORAT'    1     0.00
8   10.0
 769603.8       3339904
 769603.5       3339905
 769603         3339905
 769602.4       3339905
 769602.3       3339904
 769602.5       3339904
 769603         3339903
 769603.6       3339904
1
'UNIT7'       0.0    54.9 769653    3339883
```

==========
BPIP PROCESSING INFORMATION:
==========

The ST flag has been set for processing for an ISCST2 run.

Inputs entered in METERS will be converted to meters using a conversion factor of 1.0000. Output will be in meters.

The UTMP variable is set to UTMY. The input is assumed to be in UTM coordinates. BPIP will move the UTM origin to the first pair of UTM coordinates read. The UTM coordinates of the new origin will be subtracted from all the other UTM coordinates entered to form this new local coordinate system.

Plant north is set to 360.00 degrees with respect to True North.

COT UNIT 8 (aux boil/CT/D-TANK/cool-twr removed prog.limits)(p8bpip14.inp)

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
UNIT7	54.90	.00	60.00	65.00

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 95086)
DATE : 11/14/96
TIME : 11:51:20

COT UNIT 8 (aux boil/CT/D-TANK/cool-twr removed prog.limits)(p8bpip14.inp)

BPIP output is in meters

SO BUILDHGT UNIT7	29.60	24.00	24.00	29.60	29.60	29.60
SO BUILDHGT UNIT7	29.60	29.60	18.60	18.60	18.60	.00
SO BUILDHGT UNIT7	8.50	8.50	8.50	18.60	18.60	18.60
SO BUILDHGT UNIT7	29.60	29.60	29.60	29.60	29.60	29.60
SO BUILDHGT UNIT7	29.60	29.60	18.60	18.60	18.60	.00
SO BUILDHGT UNIT7	.00	.00	.00	18.60	18.60	18.60
SO BUILDWID UNIT7	13.09	23.33	26.49	16.78	17.03	16.76
SO BUILDWID UNIT7	15.98	14.71	35.00	48.01	59.57	.00
SO BUILDWID UNIT7	10.88	10.81	10.41	85.35	86.49	85.00
SO BUILDWID UNIT7	13.09	14.78	16.03	16.78	17.03	16.76
SO BUILDWID UNIT7	15.98	14.71	35.00	48.01	59.57	.00
SO BUILDWID UNIT7	.00	.00	.00	85.35	86.49	85.00

```
'COT UNIT 8 (aux/ P8/CT/D-TANK/cool-twr removed  prog.limits )(p8bpip15.inp)'
'ST'
'METERS' 1.0
'UTMY' 360
11
'TANK 1' 1 0.00
8   12.8
 769766.2       3339823
 769763.4       3339830
 769756.8       3339832
 769750.4       3339830
 769747.8       3339823
 769750.6       3339816
 769757.2       3339814
 769763.6       3339817
'TANK 2' 1 0.00
8   12.2
 769733.3       3339825
 769728.6       3339836
 769717.8       3339840
 769707         3339836
 769702.7       3339825
 769707.4       3339814
 769718.3       3339810
 769729         3339815
'TANK 3' 1 0.00
8   12.2
 769729         3339765
 769723.5       3339778
 769710.7       3339783
 769698.1       3339778
 769693         3339765
 769698.5       3339752
 769711.4       3339747
 769724         3339753
'MAIN'   4    0.00
4   6
769653             3339931
769783             3339931
769783             3339903
769653             3339903
4    18.6
769653             3339925
769738             3339925
769738             3339909
769653             3339909
4       17.7
769653             3339909
769688             3339909
769688             3339903
769653             3339903
4       15.2
769688             3339909
769783             3339909
769783             3339903
769688             3339903
'UNIT 5'   2   0.00
8       26.2
769710             3339902
769721             3339902
```

```
769721              3339904
769725              3339904
769725              3339900
769721              3339900
769721              3339893
769710              3339893
4       32.3
769721              3339904
769725              3339904
769725              3339900
769721              3339900
'UNIT 6'     1      0.00
4        25.9
769688              3339899
769697              3339899
769697              3339890
769688              3339890
'UNIT 7'     2     0.00
8     29.6
769657              3339903
769660              3339903
769660              3339900
769668              3339900
769668              3339890
769660              3339890
769660              3339900
769657              3339900
4    35.0
769657              3339903
769660              3339903
769660              3339900
769657              3339900
'UNIT1'   1     0.00
4        21.9
769736              3339903
769740              3339903
769740              3339898
769736              3339898
'UNIT2'   1     0.00
4        21.9
769748              3339903
769752              3339903
769752              3339898
769748              3339898
'UNIT3'   1     0.00
4        21.9
769761              3339903
769765              3339903
769765              3339898
769761              3339898
'UNIT4'   1     0.00
4        21.9
769772              3339903
769776              3339903
769776              3339898
769772              3339898
4
'UNIT1'      0.0    26 769738     3339891
'UNIT2'      0.0    26 769750     3339891
'UNIT3'      0.0    26 769763     3339891
```

'UNIT4' 0.0 26 769774 3339891

==========
BPIP PROCESSING INFORMATION:
==========

The ST flag has been set for processing for an ISCST2 run.

Inputs entered in METERS will be converted to meters using a conversion factor of 1.0000. Output will be in meters.

The UTMP variable is set to UTMY. The input is assumed to be in UTM coordinates. BPIP will move the UTM origin to the first pair of UTM coordinates read. The UTM coordinates of the new origin will be subtracted from all the other UTM coordinates entered to form this new local coordinate system.

Plant north is set to 360.00 degrees with respect to True North.

COT UNIT 8 (aux/ P8/CT/D-TANK/cool-twr removed prog.limits)(p8bpip15.inp)

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
UNIT1	26.00	.00	64.75	65.00
UNIT2	26.00	.00	64.75	65.00
UNIT3	26.00	.00	63.63	65.00
UNIT4	26.00	.00	60.34	65.00

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

COT UNIT 8 (aux/ P8/CT/D-TANK/cool-twr removed prog.limits)(p8bpip15.inp)

BPIP output is in meters

SO BUILDHGT UNIT1	21.90	21.90	21.90	21.90	25.90	25.90
SO BUILDHGT UNIT1	18.60	18.60	18.60	25.90	25.90	25.90
SO BUILDHGT UNIT1	25.90	25.90	25.90	25.90	25.90	21.90
SO BUILDHGT UNIT1	21.90	21.90	21.90	21.90	25.90	25.90
SO BUILDHGT UNIT1	18.60	18.60	18.60	25.90	25.90	25.90
SO BUILDHGT UNIT1	25.90	25.90	25.90	25.90	25.90	21.90
SO BUILDWID UNIT1	30.24	29.56	27.98	25.55	25.81	21.70
SO BUILDWID UNIT1	55.13	41.70	25.00	20.21	25.81	30.62
SO BUILDWID UNIT1	34.51	37.34	39.04	39.56	38.87	30.00
SO BUILDWID UNIT1	30.24	29.56	27.98	25.55	25.81	21.70
SO BUILDWID UNIT1	55.13	41.70	25.00	20.21	25.81	30.62
SO BUILDWID UNIT1	34.51	37.34	39.04	39.56	38.87	30.00
SO BUILDHGT UNIT2	18.60	18.60	18.60	18.60	18.60	18.60
SO BUILDHGT UNIT2	18.60	18.60	18.60	25.90	25.90	25.90
SO BUILDHGT UNIT2	25.90	25.90	21.90	21.90	21.90	21.90
SO BUILDHGT UNIT2	18.60	18.60	18.60	18.60	18.60	18.60
SO BUILDHGT UNIT2	18.60	18.60	18.60	25.90	25.90	25.90
SO BUILDHGT UNIT2	25.90	25.90	21.90	21.90	21.90	21.90
SO BUILDWID UNIT2	102.18	102.26	99.24	93.19	84.32	72.88
SO BUILDWID UNIT2	59.23	41.70	25.00	20.21	25.81	30.62
SO BUILDWID UNIT2	34.51	37.34	30.98	31.61	31.28	30.00
SO BUILDWID UNIT2	102.18	102.26	99.24	93.19	84.32	72.88
SO BUILDWID UNIT2	59.23	41.70	25.00	20.21	25.81	30.62
SO BUILDWID UNIT2	34.51	37.34	30.98	31.61	31.28	30.00
SO BUILDHGT UNIT3	15.20	15.20	15.20	15.20	15.20	15.20
SO BUILDHGT UNIT3	15.20	18.60	18.60	25.90	25.90	25.90
SO BUILDHGT UNIT3	21.90	21.90	18.60	18.60	18.60	15.20
SO BUILDHGT UNIT3	15.20	15.20	15.20	15.20	15.20	15.20
SO BUILDHGT UNIT3	15.20	18.60	18.60	25.90	25.90	25.90
SO BUILDHGT UNIT3	21.90	21.90	18.60	18.60	18.60	15.20
SO BUILDWID UNIT3	94.60	91.32	85.27	76.63	65.66	52.70
SO BUILDWID UNIT3	38.13	43.32	25.00	20.21	25.15	25.15
SO BUILDWID UNIT3	26.94	29.41	81.61	90.98	96.45	95.00
SO BUILDWID UNIT3	94.60	91.32	85.27	76.63	65.66	52.70
SO BUILDWID UNIT3	38.13	43.32	25.00	20.21	25.15	25.15
SO BUILDWID UNIT3	26.94	29.41	81.61	90.98	96.45	95.00
SO BUILDHGT UNIT4	15.20	15.20	15.20	15.20	15.20	15.20
SO BUILDHGT UNIT4	15.20	15.20	18.60	25.90	25.90	21.90
SO BUILDHGT UNIT4	18.60	18.60	15.20	15.20	15.20	15.20
SO BUILDHGT UNIT4	15.20	15.20	15.20	15.20	15.20	15.20
SO BUILDHGT UNIT4	15.20	15.20	18.60	21.90	25.90	21.90
SO BUILDHGT UNIT4	18.60	18.60	15.20	15.20	15.20	15.20
SO BUILDWID UNIT4	94.60	91.32	85.27	76.63	65.66	52.70
SO BUILDWID UNIT4	40.43	26.11	25.00	20.21	22.96	23.66
SO BUILDWID UNIT4	66.89	75.40	85.27	91.32	94.60	95.00
SO BUILDWID UNIT4	94.60	91.32	85.27	76.63	65.66	52.70
SO BUILDWID UNIT4	40.43	26.11	25.00	21.83	22.96	23.66
SO BUILDWID UNIT4	66.89	75.40	85.27	91.32	94.60	95.00

```
'COT UNIT 8 ( Tank#1 AND  units 1-6 removed  prog.limits )(p8bpip16.inp)'
'ST'
'METERS' 1.0
'UTMY' 360
12
'TANK 2' 1 0.00
8   12.2
 769733.3       3339825
 769728.6       3339836
 769717.8       3339840
 769707         3339836
 769702.7       3339825
 769707.4       3339814
 769718.3       3339810
 769729         3339815
'TANK 3' 1 0.00
8   12.2
 769729         3339765
 769723.5       3339778
 769710.7       3339783
 769698.1       3339778
 769693         3339765
 769698.5       3339752
 769711.4       3339747
 769724         3339753
'D-TANK'  1     0.00
8      12.2
769474       3339843
769472       3339848
769467       3339850
769462       3339848
769460       3339843
769462       3339838
769467       3339836
769472       3339838
'CTs'  2     0.00
4    9.1
769406       3339851
769417       3339851
769417       3339779
769406       3339779
4    4.0
769406       3339851
769417       3339851
769417       3339837
769406       3339837
'cooltwr' 1  0.00
4       13.4
769532         3339822
769532         3339881
769545         3339881
769545         3339822
'MAIN'   4     0.00
4   6
769653             3339931
769783             3339931
769783             3339903
769653             3339903
4    18.6
769653             3339925
```

```
769738                3339925
769738                3339909
769653                3339909
4        17.7
769653                3339909
769688                3339909
769688                3339903
769653                3339903
4        15.2
769688                3339909
769783                3339909
769783                3339903
769688                3339903
'UNIT 7'     2     0.00
8    29.6
769657                3339903
769660                3339903
769660                3339900
769668                3339900
769668                3339890
769660                3339890
769660                3339900
769657                3339900
4    35.0
769657                3339903
769660                3339903
769660                3339900
769657                3339900
'HSRG'   1     0.00
4        24.0
769603.5     3339769.5
769603.5     3339796.5
769618.5     3339796.5
769618.5     3339769.5
'UNIT8'    3      0.00
8       7.2
769607.1          3339796.5
769607.1          3339820.9
769604.2          3339820.9
769604.2          3339826.8
769617.8          3339826.8
769617.8          3339820.9
769614.9          3339820.9
769614.9          3339796.5
4         13.6
769607.1          3339813
769607.1          3339820.9
769614.9          3339820.9
769614.9          3339813
4        18.7
769604.2          3339820.9
769604.2          3339826.8
769617.8          3339826.8
769617.8          3339820.9
'CONDTANK'    1   0.00
8         8.5
 769629.3        3339916
 769627.7        3339920
 769623.9        3339921
 769620.2        3339920
```

```
 769618.7       3339916
 769620.3       3339912
 769624.1       3339911
 769627.8       3339912
 'DISTTANK'   1  0.00
8        5.3
 769629.3       3339901
 769627.7       3339905
 769623.9       3339906
 769620.2       3339905
 769618.7       3339901
 769620.3       3339897
 769624.1       3339896
 769627.8       3339897
 'EVAPORAT'    1    0.00
8  10.0
 769603.8       3339904
 769603.5       3339905
 769603         3339905
 769602.4       3339905
 769602.3       3339904
 769602.5       3339904
 769603         3339903
 769603.6       3339904
1
'COOLT'       0.0    13.4 769538.5    3339852
```

==========
BPIP PROCESSING INFORMATION:
==========

The ST flag has been set for processing for an ISCST2 run.

Inputs entered in METERS will be converted to meters using a conversion factor of 1.0000. Output will be in meters.

The UTMP variable is set to UTMY. The input is assumed to be in UTM coordinates. BPIP will move the UTM origin to the first pair of UTM coordinates read. The UTM coordinates of the new origin will be subtracted from all the other UTM coordinates entered to form this new local coordinate system.

Plant north is set to 360.00 degrees with respect to True North.

COT UNIT 8 (Tank#1 AND units 1-6 removed prog.limits)(p8bpip16.inp)

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
COOLT	13.40	.00	60.00	65.00

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 95086)
DATE : 12/19/96
TIME : 17: 7:10

COT UNIT 8 (Tank#1 AND units 1-6 removed prog.limits)(p8bpip16.inp)

BPIP output is in meters

```
SO BUILDHGT COOLT      13.40   13.40   13.40   13.40   13.40   13.40
SO BUILDHGT COOLT      13.40   13.40   13.40   13.40   13.40   13.40
SO BUILDHGT COOLT      13.40   13.40   13.40   13.40   13.40   13.40
SO BUILDHGT COOLT      13.40   13.40   13.40   13.40   13.40   13.40
SO BUILDHGT COOLT      13.40   13.40   13.40   13.40   13.40   24.00
SO BUILDHGT COOLT      24.00   24.00   13.40   13.40   13.40   13.40
SO BUILDWID COOLT      23.05   32.40   40.76   47.88   53.55   57.60
SO BUILDWID COOLT      59.89   60.36   59.00   60.36   59.89   57.60
SO BUILDWID COOLT      53.55   47.88   40.76   32.40   23.05   13.00
SO BUILDWID COOLT      23.05   32.40   40.76   47.88   53.55   57.60
SO BUILDWID COOLT      59.89   60.36   59.00   60.36   59.89   30.88
SO BUILDWID COOLT      30.33   28.85   40.76   32.40   23.05   13.00
```

Attachment PGS-07

In developing the initial Title V application, the City of Tallahassee's consultant, Foster Wheeler Environmental Corporation, conducted a comprehensive emissions unit inventory of the Purdom Generating Station. The attached future inventory (File: PURREI.XLS) includes the initial Title V inventory with the addition of the proposed Unit 8 combustion turbine, cooling tower, auxiliary boiler, zero discharge facility, and the removal of units which will no longer be operated. The revised inventory includes the same fifteen emissions unit areas as the initial Title V inventory. These areas included the following:

1. Steam Generator (Boiler) Operations;
2. Gas Turbine Operations;
3. Emergency Generator;
4. Fuel Farm (Waste Water Storage);
5. Fuel Dispensing Operations;
6. Space Heating;
7. Evaporative Loss Sources;
8. Cooling Towers;
9. Water Treatment;
10. Laboratory;
11. Central Vacuum System;
12. Maintenance Activities;
13. Plant Operations;
14. Fugitive Particulate; and
15. Gasoline Engines.

The future inventory has attempted to identify every remaining and new emissions unit at the facility as a result of the project. The attached inventory provides descriptions of each emissions unit and lists its regulatory classification. The regulatory classifications encompass four categories. These categories include: 1) Regulated (with or without emissions limitations); 2) Unregulated; and 3) Proposed to be exempt under criteria listed in Rule 62-213.430(6), F.A.C.. All trivial emissions units and activities have been omitted from the inventory list per FDEP guidance dated March 15, 1996.

The PSD and revised Title V application includes all regulated emissions units, and the unregulated particulate matter and VOC sources. The regulated emissions units have specific emission limitations. The unregulated particulate matter dust and VOC sources are considered unregulated emissions units with no specific emission limited pollutants. The new cooling tower has been included under the unregulated particulate matter emissions unit.

The list of emissions units also includes those which met either the specific exemption criteria of Rule 62-210.300(3) or 62-213.430(6), F.A.C. The City of Tallahassee based its exemption request for these units on the regulations and requirements of the Title V Operating Permit Program.

The list of emissions units also contains several unpermitted emissions units which have been in operation since the facility started-up. These activities were operating under the temporary exemption of Rule 62-210.300(3)(b), F.A.C. The City of Tallahassee had requested that all of the existing unpermitted activities at the Purdom Generating Station be exempted from the permit requirements of Rule 62-210.300, F.A.C. under the authority provided to the FDEP in Rule 62-4.040(1)(b), F.A.C. The emissions units included the following:

- Fugitive Dust - Exemption was requested for the heavy construction activities listed under this category. Emissions from these activities are of the Fugitive Area type generated by the operation of heavy equipment on site. This activity has also been included in the revised Title V application within Emissions Unit No. 1 (EU01). The request was based on the fugitive nature of the emissions and the low quantities associated with these activities.

- Evaporative Loss Sources - Exemption for the small parts washers was requested based on their limited use, size and potential emissions. The units are typically vendor supplied (e,g., Safety-Kleen) on an as needed basis and considered unregulated. These units have been included in the revised Title V application within Emissions Unit No. 2 (EU02). Exemption was also requested for the surface coating operations at the facility based on the fugitive nature of the emissions and low quantities of surface coating material used. Surface coating activities have been included in the Title V application within EU02.

The initial list and the above comments were part of the initial Title V application and were intended to meet the requirements of Rule 62-213.420(3)(m), F.A.C. The list and attachment served as the official request for the exemption of all the units listed as unregulated from the requirements of Rule 62-210.300, F.A.C. For purposes of the proposal project, the City is requesting the Department to exempt additional units from the construction and Title V permit requirements. These units are noted in the attached list.

CITY OF TALLAHASSEE ELECTRIC DEPARTMENT FUTURE EMISSIONS UNIT INVENTORY SOURCE - PURDOM GENERATING STATION				
Unit No.	Emissions Unit	Emissions Unit Description	Regulatory [1] [2] Classification	Emission Unit Status
1	CT #1	Combustion Turbine - 228 mmBtu/hr	Regulated - Permit # AO37-242825	Existing
1a	Oil Vapor Extractor	Oil Vapor Extractor	Exempted Under Rule 62-213.430(6)	Existing
1b	Fuel Oil Piping	Fuel Oil Piping	Exempted Under Rule 62-213.430(6)	Existing
1c	Lube Oil Tank	Organic Liquid Storage	Exempted Under Rule 62-213.430(6)	Existing
2	CT #2	Combustion Turbine - 228 mmBtu/hr	Regulated - Permit # AO37-242825	Existing
2a	Oil Vapor Extractor	Oil Vapor Extractor	Exempted Under Rule 62-213.430(6)	Existing
2b	Fuel Oil Piping	Fuel Oil Piping	Exempted Under Rule 62-213.430(6)	Existing
2c	Lube Oil Tank	Organic Liquid Storage	Exempted Under Rule 62-213.430(6)	Existing
5	Steam Generator No. 7	Steam Generator - 621 mmBtu/hr	Regulated - Permit # AO37-242831	Existing
5a	Fuel Oil Piping	Fuel Oil Piping	Exempted Under Rule 62-213.430(6)	Existing
5b	Hydrogen Gas Vents	Hydrogen Gas Vents	Exempted Under Rule 62-213.430(6)	Existing
5c	Deareator Tank Vents	Deareator Tank Vents	Exempted Under Rule 62-213.430(6)	Existing
5d	Oil Vapor Extractors	Oil Vapor Extractors	Exempted Under Rule 62-213.430(6)	Existing
5e	Lube Oil Tank (storage)	Organic Liquid Storage	Exempted Under Rule 62-213.430(6)	Existing
5f	Lube/Fuel Oil Drip Pans	Lube/Fuel Oil Drip Pans	Exempted Under Rule 62-213.430(6)	Existing
5g	Noncondensable Gas	Noncondensable Gas Extractor	Exempted Under Rule 62-213.430(6)	Existing
6	Emergency Generator	Diesel Engine <400 hrs/yr	Exempt per Rule 62-210.300(3)(a)21	Existing
6a	Diesel Driven Fire Pump	Diesel Engine <400 hrs/yr	Exempt per Rule 62-210.300(3)(a)21	New
7	Fuel Farm	Fuel Oil Tank No. 1	Exempted Under Rule 62-213.430(6)	Existing
7a	Fuel Farm	Fuel Oil Tank No.3	Exempted Under Rule 62-213.430(6)	Existing
7b	Fuel Farm	Waste Water Tank	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
7d	Fuel Farm	Waste Oil Tank	Exempted Under Rule 62-213.430(6)	Existing
8	No. 2 Fuel Oil Tank	Organic Liquid Storage	Exempted Under Rule 62-213.430(6)	Existing
8a	Diesel Tank (300 gallons)	Organic Liquid Storage	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
8b	Truck Loading/Unloading	Fuel Dispensing Operation	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
9	Gasoline Tank	Organic Liquid Storage	Exempted Under Rule 62-213.430(6)	Existing
9a	Fuel Dispensing Operation	Fuel Dispensing Operation	Exempted Under Rule 62-213.430(6)	Existing
10	Diesel Tank	Organic Liquid Storage	Exempted Under Rule 62-213.430(6)	Existing
10a	Fuel Dispensing Operation	Fuel Dispensing Operation	Exempted Under Rule 62-213.430(6)	Existing
11	Barge Unloading Station	Fuel Dispensing Operation	Exempted Under Rule 62-213.430(6)	Existing
12	Fuel Dispensing Operation	Truck Loading/Unloading Rack 1	Exempted Under Rule 62-213.430(6)	Existing
12a	Fuel Dispensing Operation	Truck Loading/Unloading Rack 2	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
13	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13a	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13b	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing

CITY OF TALLAHASSEE ELECTRIC DEPARTMENT
FUTURE EMISSIONS UNIT INVENTORY
SOURCE - PURDOM GENERATING STATION

Unit No.	Emissions Unit	Emissions Unit Description	Regulatory [1] [2] Classification	Emission Unit Status
13c	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13d	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13e	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13f	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13g	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13h	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13i	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13j	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13k	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13l	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13m	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
13n	Solvent Cleaning	Parts Washer - Nonhalogenated	Exempted Under Rule 62-213.430(6)	Existing
14	Space Heater	Space Heater	Exempt Rule 62-210.300(3)(a)12	Existing
14a	Space Heater	Space Heater	Exempt Rule 62-210.300(3)(a)12	Existing
14b	Space Heater	Space Heater	Exempt Rule 62-210.300(3)(a)12	Existing
14c	Space Heater	Space Heater	Exempt Rule 62-210.300(3)(a)12	Existing
14d	Space Heater	Space Heater	Exempt Rule 62-210.300(3)(a)12	Existing
14e	Space Heater	Space Heater	Exempt Rule 62-210.300(3)(a)12	Existing
14f	Space Heater	Space Heater	Exempt Rule 62-210.300(3)(a)12	Existing
15	Fugitive Dust	Paved Roads	Exempted Under Rule 62-213.430(6)	Existing
15a	Fugitive Dust	Unpaved Roads	Exempted Under Rule 62-213.430(6)	Existing
15b	Fugitive Dust	Heavy Construction Activities	Unregulated	Existing
15c	Fugitive Dust	Heavy Construction Activities (Unit 8)	Unregulated	Temporary (New)
15d	Fugitive Dust	Aggregate Handling & Storage	Exempted Under Rule 62-213.430(6)	Existing
17	Laboratory	Laboratory Equipment	Exempt Rule 62-210.300(3)(a)15	Existing
17a	Laboratory	Chemical Usage	Exempted Under Rule 62-213.430(6)	Existing
17b	Laboratory	Vacuum Pumps	Exempt Rule 62-210.300(3)(a)9	Existing
17c	Laboratory	Laboratory Fume Hoods	Exempted Under Rule 62-213.430(6)	Existing
18	Central Vacuum System	Central Vacuum System	Exempted Under Rule 62-213.430(6)	Existing
19	Maintenance Activities	Welding	Exempt Rule 62-210.300(3)(a)16	Existing
20	Plant Operations	Lube Oil Storage Tanks	Exempted Under Rule 62-213.430(6)	Existing
20a	Plant Operations	Surface Coating Operations	Unregulated	Existing
20b	Plant Operations	Surface Coating Operations (Unit 8)	Unregulated	Temporary (New)
20a	Plant Operations	Propane Storage Tanks	Exempted Under Rule 62-213.430(6)	Existing
21	Auxiliary Boiler	Steam Generator - 16.74 mmBtu/hr	Regulated - Permit # 1290001-002-AC	Existing
21a	Hydrogen Gas Vents	Hydrogen Gas Vents	Exempted Under Rule 62-213.430(6)	Existing
21b	Deareator Tank Vents	Deareator Tank Vents	Exempted Under Rule 62-213.430(6)	Existing

CITY OF TALLAHASSEE ELECTRIC DEPARTMENT
FUTURE EMISSIONS UNIT INVENTORY
SOURCE - PURDOM GENERATING STATION

Unit No.	Emissions Unit	Emissions Unit Description	Regulatory [1] [2] Classification	Emission Unit Status
21c	Noncondensable Gas	Noncondensable Gas Extractor	Exempted Under Rule 62-213.430(6)	Existing
22	Unit 8	Combustion Turbine	Regulated	New
22a	Unit 8	Oil Vapor Extractor	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
22b	Unit 8	Fuel Oil Piping	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
22c	Unit 8	Organic Liquid Storage	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
22d	Unit 8	Heat Recovery Steam Generator	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
22e	Unit 8	Fuel Oil Piping	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
22f	Unit 8	Hydrogen Gas Vents	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
22g	Unit 8	Deareator Tank Vents	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
22h	Unit 8	Oil Vapor Extractors	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
22i	Unit 8	Organic Liquid Storage	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
22j	Unit 8	Lube/Fuel Oil Drip Pans	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
22k	Unit 8	Noncondensable Gas Extractor	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
23	Water Treatment	Zero Discharge Facility	Unregulated - Propose exemption under Rules 62-4.040 & 62-213.430(6)	New
23a	Water Treatment	Cooling Tower	Unregulated	New

[1] Note: The designation "proposed exemption under critieria in Rule 62-213.430(6)" indicates that an exemption is requested for this unit pursuant to Rule 62-213.420(3)(m), F.A.C., in accordance with the provisions of Rule 62-213.430(6), F.A.C.

[2] Note: All trivial emissions units and activities are omitted per FDEP 3/15/96 guidance memo. In addition, all mobil sources are omitted as outside the scope of Title V stationary source permitting.

Attachment PGS-08

This application package constitutes a supplemental Title V application to address the operation of the facility under the facility-wide emission caps upon completion of the compliance testing of Unit 8. These facility-wide emission caps will be federally enforceable through the PSD permit and Site Certification which will authorize construction of Unit 8. Until Unit 8 compliance testing has been completed, the City will continue to operate the facility as described in the initial Title V application.

Attachment PGS-09

The application seeks facility-wide emission caps for oxides of nitrogen (NO_x) and sulfur dioxide (SO_2) of 467 and 80 tons per year, respectively. Compliance with the emission caps will be ensured through an effective compliance strategy as addressed in PGS-10.

The facility-wide emission caps are associated with the Prevention of Significant Deterioration (PSD) application. The emission caps reflect "actual" annual emissions for the most recent two year period. The emission caps reflect an intent to hold emissions of these two pollutants at their current actual levels. By holding emissions at the current annual levels PSD review for these two pollutants has been avoided. Therefore, a federally enforceable permit condition which caps emissions of NO_x and SO_2 at these levels is requested.

Attachment PGS-10

The initial Title V Operating Permit application included a Compliance Report and Plan which noted that the facility was in compliance with the applicable regulations listed in each of the emissions unit sections. This remains true for the current operations; however, for the proposed project several new regulations and requirements will be triggered. Since the project is in the preconstruction phase, a certification of compliance with these future applicable regulations and additional requirements cannot be made at this time.

Once initial compliance testing has been completed, compliance with the annual emission caps on sulfur dioxide (SO_2)and oxides of nitrogen (NO_x) will be ensured through a program which accurately monitors and tracks fuel usage, fuel quality, and emissions. For compliance purposes, the proposed program consists of the following:

Combustion Turbine Nos. 1 & 2: Based on the power generation logs, fuel quality data, and the AP-42 emission factors, emission estimates will be developed for SO_2 and NO_x. These emission estimates will be based on a pound per megawatt factor developed for each unit. Fuel quality data will be supplied by the fuel vendors and as with Unit 8 an assumed 95 percent conversion of sulfur to SO_2 will be made.

Unit 7 Steam Generator: Continue monitoring and tracking SO_2 and NO_x emissions in accordance with the Acid Rain Program. This includes 40 CFR Part 75, Appendix D for SO_2, and a continuous emission monitoring system (CEMS) for NO_x. Fuel quality data for natural gas will be supplied by the fuel vendors.

Auxiliary Boiler: Monitor and track SO_2 and NO_x emissions based on fuel usage, AP-42 emission factors, and fuel vendor data for SO_2.

Unit 8 Combined Cycle: Monitor and track SO_2 and NO_x emissions in accordance with the Acid Rain Program. This includes 40 CFR Part 75, Appendix D (although, consistent with the GE data sheets, assume 95 percent conversion of sulfur to SO_2) for SO_2, and a CEMS for NO_x. Fuel quality data for natural gas will be supplied by the fuel vendors.

For purposes of tracking compliance with the facility-wide emission caps monitoring and emissions data will be recorded and kept for a period of 5 years. The semiannual period corresponds to the requested custom fuel monitoring program approval.

REQUEST FOR CUSTOM FUEL SAMPLING SCHEDULE

The Federal New Source Performance Standards (NSPS) for stationary combustion turbines establish emission limitations on oxides of nitrogen (NO_x) and sulfur dioxide (SO_2). For NO_x, the emission limitations provide an allowance for fuel bound nitrogen (FBN). For SO_2,

emissions are limited to either a stack gas concentration or by the firing of fuels with a maximum fuel sulfur content of 0.8 percent by weight. For Unit 8, the combustion turbine will be fired with either clean pipeline quality natural gas or Number 2 (0.05 % sulfur) diesel fuel oil. The maximum sulfur content of the natural gas is set at 10 grains per 100 cubic feet of natural gas (0.033 % by weight) by the pipeline tariff. The maximum sulfur content of the Number 2 diesel fuel oil proposed for the project is set at 0.05 percent by weight.

Under 40 CFR 60.334(b), the owner or operator is required to monitor both the sulfur content and the nitrogen content of the fuels fired. The monitoring requirements include daily samples when the fuel is supplied without intermediate bulk storage. At the Purdom Generating Station, Number 2 diesel fuel oil will be supplied by a vendor and stored on site prior to use. Natural gas will be supplied by pipeline without any bulk storage capabilities. Since there are no bulk storage capabilities at Purdom Generating Station for natural gas, daily samples must be collected and analyzed for sulfur and nitrogen contents. 40 CFR 60.334(b)(2), which requires the daily sampling allows for the development of custom schedules for reducing the sampling frequency. In a 1987 memorandum, the U.S. Environmental Protection Agency (EPA) issued guidance on the approval of custom schedules. Based on this guidance, it is requested that the Florida Department of Environmental Protection seek EPA approval of the following proposed custom fuel sampling schedule for the Purdom Generating Station Unit 8.

The request for approval and the associated semiannual sampling schedule is based on the data available from the Florida Gas Transmission (FGT) company. The proposed program includes the following:

No. 2 Fuel Oil

For all bulk shipments of Number. 2 (0.05% sulfur) diesel fuel oil received at the Purdom Generating Station an analysis which reports the sulfur content and FBN content of the fuel shall be provided by the fuel vendor. The analysis shall also specify the methods by which the analyses were conducted and shall comply with the requirements of 40 CFR 60.335(d).

Natural Gas

1. Monitoring of natural gas nitrogen content shall not be required in accordance with page 2 of the EPA guidance memorandum, attached.

2. Sulfur Monitoring

   a. Analysis for the sulfur content of the natural gas shall be conducted using one of the EPA-approved ASTM reference methods for the measurement of sulfur in gaseous fuels, or an approved alternative method.

   b. Two years' worth of recent sulfur monitoring data is attached. These data indicate an average sulfur content of 0.32 grains per 100 cubic feet of natural gas. (The data presented

were used to established the current actual emission levels for SO_2 and are based upon representative samples of natural gas used by the Purdom Generating Station taken by the Florida Gas Transmission Company in 1995 and 1996.) These data show little variability (Standard Deviation of 0.08 gr/100 CF) in the sulfur content and indicate consistent compliance with 40 CFR 60.333. Once the unit becomes operational, monitoring of the sulfur content of the natural gas shall be conducted semiannually.

c. Should any sulfur analysis indicate noncompliance with 40 CFR 60.333, the City will notify the Department of Environmental Protection of such excess emissions and the customized fuel monitoring schedule shall be reexamined. The sulfur content of the natural gas will be monitored weekly during the interim period while the monitoring schedule is reexamined

3. The City will notify the Department of Environmental Protection of any change in natural gas supply for reexamination of this monitoring schedule. A substantial change in natural gas quality (i.e., sulfur content variation of greater than 1 grain per 100 cubic foot of natural gas) shall be considered as a change in the natural gas supply. Sulfur content of the natural gas will be monitored weekly by the natural gas supplier during the interim period when this monitoring schedule is being reexamined

4. Records of sampling analysis and natural gas supply pertinent to this monitoring schedule shall be retained by the City for a period of three years, and shall be made available for inspection by the appropriate regulatory personnel.

5. The City will obtain the sulfur content of the natural gas from the fuel supplier (Florida Gas Transmission Company).

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

ATTACHMENT A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 14 1987

OFFICE OF
AIR AND RADIATION

MEMORANDUM:

SUBJECT: Authority for Approval of Custom Fuel Monitoring Schedules Under NSPS Subpart GG

FROM: John B. Rasnic, Chief
Compliance Monitoring Branch

TO: Air Compliance Branch Chiefs
Regions II, III, IV, V, VI and IX

Air Programs Branch Chiefs
Regions I-X

The NSPS for Stationary Gas Turbines (Subpart GG) at 40 CFR 60.334(b)(2) allows for the development of custom fuel monitoring schedules as an alternative to daily monitoring of the sulfur and nitrogen content of fuel fired in the turbines. Regional offices have been forwarding custom fuel monitoring schedules to the Stationary Source Compliance Division (SSCD) for consideration since it was understood that authority for approval of these schedules was not delegated to the Regions. However, in consultation with the Emission Standards and Engineering Division, it has been determined that the Regional Offices do have the authority to approve subpart GG custom fuel monitoring schedules. Therefore it is no longer necessary to forward these requests to Headquarters for approval.

Over the past few years, SSCD has issued over twenty custom schedules for sources using pipeline quality natural gas. In order to maintain national consistency, we recommend that any schedules Regional Offices issue for natural gas be no less stringent than the following: sulfur monitoring should

be bimonthly, followed by quarterly, then semiannual, given at least six months of data demonstrating little variability in sulfur content and compliance with §60.333 at each monitoring frequency; nitrogen monitoring can be waived for pipeline quality natural gas, since there is no fuel-bound nitrogen and since the free nitrogen does not contribute appreciably to NO_x emissions. Please see the attached sample custom schedule for details. Given the increasing trend in the use of pipeline quality natural gas, we are investigating the possibility of amending Subpart Da to allow for less frequent sulfur monitoring and a waiver of nitrogen monitoring requirements where natural gas is used.

Where sources using oil request custom fuel monitoring schedules, Regional Offices are encouraged to contact SSCD for consultation on the appropriate fuel monitoring schedule. However, Regions are not required to send the request itself to OSCD for approval.

If you have any questions, please contact Sally K. Farrell at FTS 382-2675.

Attachment

cc: John Cronshaw
George Walsh
Robert Ajax
Earl Salo

Enclosure

Conditions for Custom Fuel Sampling Schedule for Stationary Gas Turbines

1. Monitoring of fuel nitrogen content shall not be required while natural gas is the only fuel fired in the gas turbine.

2. Sulfur Monitoring

   a. Analysis for fuel sulfur content of the natural gas shall be conducted using one of the approved ASTM reference methods for the measuremant of sulfur in gaseous fuels, or an approved alternative method. The reference methods are: ASTM D1072-80; ASTM D3031-81; ASTM D3246-81; and ASTM D4084-82 as referenced in 40 CFR 60.335(b)(2).

   b. Effective the date of this custom schedule, sulfur monitoring shall be conducted twice monthly for six months. If this monitoring shows little variability in the fuel sulfur content, and indicates consistent compliance with 40 CFR 60.333, then sulfur monitoring shall be conducted once per quarter for six quarters.

   c. If after the monitoring required in item 2(b) above, or herein, the sulfur content of the fuel shows little variability and, calculated as sulfur dioxide, represents consistent compliance with the sulfur dioxide emission limits specified under 40 CFR 60.333, sample anaylsis shall be conducted twice per annum. This monitoring shall be conducted during the first and third quarters of each calendar year.

   d. Should any sulfur analysis as required in items 2(b) or 2(c) above indicate noncompliance with 40 CFR 60.333, the owner or operator shall notify the State Air Control Board) of such excess emissions and the custom schedule shall be re-examined by the Environmental Protection Agency. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.

3. If there is a change in fuel supply, the owner or operator must notify the State of such change for re-examination of this custom schedule. A substantial change in fuel quality shall be considered as a change in fuel supply. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.

4. Records of sample analysis and fuel supply pertinent to this custom schedule shall be retained for a period of three years, and be available for inspection by personnel of federal, state, and local air pollution control agencies.

FOSTER WHEELER ENVIRONMENTAL CORPORATION
EXCEL 5.0 CALCULATION SHEET

By: D. Graziani, P.E
Ckd. By: C. Moore
Rvd. By:

Date: 02/27/97
Date: 02/27/97
Date:

OFS No.: 1584.0007
File: FGTDATA.XLS
Sheet: Data Reduction

Client: City of Tallahassee
Project: Purdom Unit 8

Sulur Content			Sulur Content		
Reading	(gr/100 SCF)	(Xi-Xm)^2	Reading	(gr/100 SCF)	(Xi-Xm)^2
1/11/95	0.33	0.00013770	6/4/96	0.23	0.00840957
1/17/95	0.25	0.00466014	6/5/96	0.18	0.01911728
2/7/95	0.27	0.00232953	6/14/96	0.30	0.00033362
2/15/95	0.24	0.00612545	6/18/96	0.34	0.00046557
2/20/95	0.24	0.00612545	6/20/96	0.31	0.00006831
1/2/96	0.35	0.00077676	6/28/96	0.36	0.00174179
1/9/96	0.41	0.00824540	6/28/96	0.38	0.00352091
1/16/96	0.43	0.01203065	7/2/96	0.42	0.00942793
1/30/96	0.39	0.00517307	7/5/96	0.34	0.00047240
1/31/96	0.22	0.00965606	7/12/96	0.27	0.00232953
2/6/96	0.38	0.00352091	7/16/96	0.22	0.00960343
2/13/96	0.47	0.02173990	7/18/96	0.25	0.00466014
2/20/96	0.49	0.03045237	7/22/96	0.22	0.00960343
2/28/96	0.24	0.00612545	7/25/96	0.26	0.00339484
3/5/96	0.38	0.00352091	7/30/96	0.16	0.02589874
3/7/96	0.26	0.00339484	8/1/96	0.26	0.00339484
3/12/96	0.55	0.05255944	8/6/96	0.20	0.01366029
3/13/96	0.31	0.00006831	8/8/96	0.28	0.00146423
3/19/96	0.39	0.00490505	8/13/96	0.27	0.00227053
3/20/96	0.39	0.00514587	8/15/96	0.30	0.00033362
3/26/96	0.46	0.01992366	8/20/96	0.44	0.01495021
3/28/96	0.39	0.00514587	8/22/96	0.31	0.00006831
4/2/96	0.46	0.01992366	8/29/96	0.31	0.00006831
4/4/96	0.31	0.00006831	9/5/96	0.34	0.00047240
4/9/96	0.48	0.02561002	9/12/96	0.32	0.00000301
4/11/96	0.22	0.00965606	9/19/96	0.31	0.00006831
4/16/96	0.42	0.01068968	9/25/96	0.32	0.00000301
4/18/96	0.33	0.00013770	10/2/96	0.34	0.00047240
4/23/96	0.40	0.00611797	10/10/96	0.30	0.00033362
4/25/96	0.35	0.00100709	10/17/96	0.28	0.00171038
4/30/96	0.40	0.00611797	10/24/96	0.29	0.00082771
5/2/96	0.25	0.00466014	10/31/96	0.25	0.00442627
5/7/96	0.22	0.00960343	11/7/96	0.29	0.00082771
5/9/96	0.29	0.00079892	11/15/96	0.30	0.00050520
5/14/96	0.21	0.01222879	11/22/96	0.31	0.00009781
5/15/96	0.30	0.00033362	11/28/96	0.32	0.00000727
5/20/96	0.19	0.01676092	12/4/96	0.42	0.00942793
5/23/96	0.29	0.00079892	12/12/96	0.40	0.00611797
5/29/96	0.21	0.01222879	12/19/96	0.32	0.00000065
5/30/96	0.27	0.00232953	12/28/96	0.36	0.00163678

Number of Readings	80
Maximum	0.55
Minimum	0.16
Mean (Xm)	0.32
Sum (Xi-Xm)^2	0.51
Standard Deviation	0.08

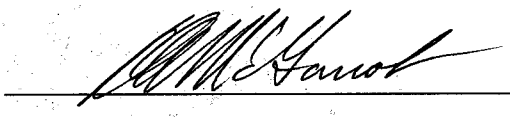
Attachment PGS-11

COMPLIANCE CERTIFICATION

In accordance with the instructions for the Florida Department of Environmental Protection's Form No. 62-210.900(1), F.A.C., and Rule 62-213.420(3)(j), F.A.C., a compliance statement must be included in each application for an air pollution permit (i.e., Construction, Modification, State Operating or Title V Operating Permit). This Compliance Certification is intended to meet the requirements of the instructions and the regulation.

CERTIFICATION STATEMENT

"I, the undersigned, am the responsible official as defined in Chapter 62-210.200, F.A.C., of the PSD and Title V Source for which this report is being submitted. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made and data contained in this report are true, accurate and complete.



Signed

5/4/97

Date

EMISSION UNIT - 01

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

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

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[ ] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[X] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

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

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

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

[X] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

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

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Unregulated PM Units and Activities**		
2. Emissions Unit Identification Number: [X] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code: **A/C**	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code: **49**
6. Emissions Unit Comment (limit to 500 characters): **This emissions unit includes the unregulated particulate matter units (Normal Heavy Construction Activities, Unit 8 Cooling Tower, and Heavy Construction Activities associated with Unit 8) and activities which emit or have a potential to emit more than five tons per year. The emissions unit does not include trivial or exempt units or activities.**		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **New Cooling Tower - Drift Eliminators**
2. Control Device or Method Code: **015** **Drift Eliminator**

B.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

C.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

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

Emissions Unit Details

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

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Operating Capacity Comment (limit to 200 characters):		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:	
2. Emission Point Type Code: [ ] 1 [ ] 2 [ ] 3 [ ] 4	
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:	
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [ ] V [ ] W	
6. Stack Height:	feet
7. Exit Diameter:	feet
8. Exit Temperature:	°F

9. Actual Volumetric Flow Rate:	acfm
10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate:	dscfm
12. Nonstack Emission Point Height:	feet
13. Emission Point UTM Coordinates: Zone: East (km): North (km):	
14. Emission Point Comment (limit to 200 characters):	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment: **1** of **3**

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Heavy Construction Activities**	
2. Source Classification Code (SCC):	
3. SCC Units: **Acre-Year**	
4. Maximum Hourly Rate: **0**	5. Maximum Annual Rate: **0**
6. Estimated Annual Activity Factor: **5**	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment (limit to 200 characters): **Heavy construction includes such activities as ground excavation and building construction and demolition. Annual construction activities may either fall short of or exceed the esimated annual activity factor above. However, this estimated annual activity factor is reflective of ordinary construction activity at the Purdom Plant.**	

Segment Description and Rate: Segment: **2** of **3**

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Cooling Tower (Fresh Water)**	
2. Source Classification Code (SCC):	
3. SCC Units: **thousand of gallons**	
4. Maximum Hourly Rate: **3,300**	5. Maximum Annual Rate: **28,908,000**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment (limit to 200 characters): **Emissions from the cooling tower are associated with drift loses. Drift loss emission include particulate matter and are a direct result of the dissolved solids contained within the the cooling tower water. Drift eliminators have been proposed as Best Avaiable Control Technolgy (BACT) for the cooling tower .**	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment: **3** of **3**

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Heavy Construction Activities - Unit 8**	
2. Source Classification Code (SCC):	
3. SCC Units: **Acre-Year**	
4. Maximum Hourly Rate: **0**	5. Maximum Annual Rate: **0**
6. Estimated Annual Activity Factor: **16**	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment (limit to 200 characters): **Heavy construction includes such activities as ground excavation and building construction and demolition. Annual construction activities may either fall short of or exceed the esimated annual activity factor above. However, this estimated annual activity factor is reflective of anticipated construction activity on Unit 8 at the Purdom Plant. These emissions are considered temporary.**	

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

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**015**		**NS**
PM	**061**		**NS**

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

Pollutant Detail Information:

1. Pollutant Emitted:
2. Total Percent Efficiency of Control: %
3. Potential Emissions: lb/hour tons/year
4. Synthetically Limited? [ ] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year
6. Emission Factor: Reference:
7. Emissions Method Code: [ ] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters):
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hour	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:
2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance:
5. Visible Emissions Comment (limit to 200 characters):

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:
2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance:
5. Visible Emissions Comment (limit to 200 characters):

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

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

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

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

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

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

2. Increment Consuming for Nitrogen Dioxide?
   If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

   [ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

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

3. Increment Consuming/Expanding Code:			
PM	[X] C	[ ] E	[ ] Unknown
SO2	[ ] C	[ ] E	[ ] Unknown
NO2	[ ] C	[ ] E	[ ] Unknown
4. Baseline Emissions:			
PM		lb/hour	tons/year
SO2		lb/hour	tons/year
NO2			tons/year
5. PSD Comment (limit to 200 characters):			
The cooling tower which is part of the proposed project consumes increment. Baseline, unregulated PM emissions have not been quantified.			

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1. Process Flow Diagram [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [ ] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [ ] Not Applicable
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [ ] Not Applicable
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation [ ] Attached, Document ID:_____ [ ] Not Applicable
11. Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID:_____ [ ] Not Applicable
12. Identification of Additional Applicable Requirements [ ] Attached, Document ID:_____ [ ] Not Applicable
13. Compliance Assurance Monitoring Plan [ ] Attached, Document ID:_____ [ ] Not Applicable
14. Acid Rain Application (Hard-copy Required) [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:_____ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:_____ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:_____ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:_____ [ ] Not Applicable

EMISSION UNIT - 02

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

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

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[ ] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[X] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

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

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

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

[X] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

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

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Unregulated VOC Sources**		
2. Emissions Unit Identification Number: [X] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code: **A**	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code: **49**
6. Emissions Unit Comment (limit to 500 characters): **This emissions unit includes the unregulated volatile organic compound units and activities (Surface Coating Activities) which emit or have the potential to emit five or more tons per year. This emission unit does not include trivial or exempt activities.**		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **None**
2. Control Device or Method Code: 0

B.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

C.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

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

Emissions Unit Details

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

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Operating Capacity Comment (limit to 200 characters):		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:
2. Emission Point Type Code: [ ] 1 [ ] 2 [ ] 3 [ ] 4
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [ ] V [ ] W
6. Stack Height: feet
7. Exit Diameter: feet
8. Exit Temperature: °F

9. Actual Volumetric Flow Rate:	acfm
10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate:	dscfm
12. Nonstack Emission Point Height:	feet
13. Emission Point UTM Coordinates: Zone: East (km): North (km):	
14. Emission Point Comment (limit to 200 characters):	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment: 1 of 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Surface Coating - Normal Operations**	
2. Source Classification Code (SCC):	
3. SCC Units: **Gallons**	
4. Maximum Hourly Rate: **0**	5. Maximum Annual Rate: **0**
6. Estimated Annual Activity Factor: **5065**	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment (limit to 200 characters): **Annual Activity Factor is based on maximum surface area coated.**	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment: 2 of 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Surface Coating - Unit 8**	
2. Source Classification Code (SCC):	
3. SCC Units: **Gallons**	
4. Maximum Hourly Rate: **0**	5. Maximum Annual Rate: **0**
6. Estimated Annual Activity Factor: **2500**	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment (limit to 200 characters): **Activity Factor is based on estimated initial coating usage for Unit 8. After construction and the initial painting of Unit 8, emissions will return to levels associated with normal operations.**	

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

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
VOC			NS
HAPS			NS
H120			NS
H169			NS
H186			NS
H123			NS
H085			NS

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

Pollutant Detail Information:

1. Pollutant Emitted:
2. Total Percent Efficiency of Control: %
3. Potential Emissions: lb/hour tons/year
4. Synthetically Limited? [ ] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year
6. Emission Factor: Reference:
7. Emissions Method Code: [ ] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters):
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hour	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:
2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance:
5. Visible Emissions Comment (limit to 200 characters):

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:
2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance:
5. Visible Emissions Comment (limit to 200 characters):

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

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

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

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

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

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

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

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

3. Increment Consuming/Expanding Code:			
PM	[ ] C	[ ] E	[ ] Unknown
SO2	[ ] C	[ ] E	[ ] Unknown
NO2	[ ] C	[ ] E	[ ] Unknown
4. Baseline Emissions:			
PM		lb/hour	tons/year
SO2		lb/hour	tons/year
NO2			tons/year
5. PSD Comment (limit to 200 characters):			

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1. Process Flow Diagram [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [ ] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [ ] Not Applicable
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [ ] Not Applicable
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [ ] Not Applicable

11. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [ ] Not Applicable

12. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [ ] Not Applicable

13. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [ ] Not Applicable

14. Acid Rain Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Not Applicable

EMISSION UNIT - 03

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

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

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

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

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

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

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

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

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Combustion Turbine No. 1**		
2. Emissions Unit Identification Number: [ ] No Corresponding ID [ ] Unknown **008**		
3. Emissions Unit Status Code: **A**	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code: **49**
6. Emissions Unit Comment (limit to 500 characters): **The maximum allowable operating rate is 228 mmBtu/hr (lower heating value) at an ambient temperature of 80 degrees fahrenheit when firing fuel oil or natural gas. The maximum hours of operation are currently limited to 6,993. Following completion of compliance testing of Unit 8, combustion turbine No. 1 will operate under the alternative method of operation and annual emissions will be limited by the proposed facility wide caps on SO_2 and NO_x emissions.**		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **FUEL QUALITY** **The City of Tallahassee is currently authorized to fire Number 2 fuel oil with a maximum sulfur content of 0.4 percent by weight. Following completion of compliance testing on Unit 8, only Number 2 (0.05% Sulfur) diesel fuel oil by weight) and natural gas will be fired in the combustion turbine.**
2. Control Device or Method Code: **Fuel Quality - No Code**

B.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

C.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

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

Emissions Unit Details

1. Initial Startup Date:	
2. Long-term Reserve Shutdown Date:	
3. Package Unit: Manufacturer: **Westinghouse**	Model Number **W171G:**
4. Generator Nameplate Rating: **12.3** MW	
5. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:	 °F seconds °F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate: **228** mmBtu/hr		
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Operating Capacity Comment (limit to 200 characters): **The maximum heat input rate reflects operation at an ambient temperature of 80 degrees Fahrenheit based on the lower heating value of the fuels.**		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:	
hours/day	days/week
weeks/year	**8,760** hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

Rule 62-210.700(1),(4),(6) F.A.C.	
Rule 62-296.320(4),(b) F.A.C.	
Rule 62-297.310(2)(a) F.A.C.	
Rule 62-297.310(4)(a)2 (except a-c) F.A.C.	
Rule 62-297.310(7)(a)3,4a,8,9 F.A.C.	
Rule 62-297.310(8) F.A.C.	
40 CFR 72.6(b)(1)	

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **EU03**
2. Emission Point Type Code: [X] 1 [ ] 2 [ ] 3 [ ] 4
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **This emission point, EU03, represents the exhaust for Combustion Turbine No. 1.**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [X] V [ ] W
6. Stack Height: **38** feet
7. Exit Diameter: **10** feet
8. Exit Temperature: **880** °F
9. Actual Volumetric Flow Rate: **395,080** acfm

10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate:	dscfm
12. Nonstack Emission Point Height:	feet
13. Emission Point UTM Coordinates: Zone:16 769.421 East (km): 3339.825 North (km):	
14. Emission Point Comment (limit to 200 characters): **Emissions Units 03 and 04 were assumed to be collocated for long-term dispersion modelling.**	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment 1 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Natural Gas**	
2. Source Classification Code (SCC): **20100201**	
3. SCC Units: **mmSCF**	
4. Maximum Hourly Rate: **0.252**	5. Maximum Annual Rate: **2207.52**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.033 ***	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **904 (LHV)**	
10. Segment Comment (limit to 200 characters): *** Clean pipeline quality natural gas (10gr/100cf).**	

Segment Description and Rate: Segment 2 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Number 2 (0.4% Sulfur) Fuel Oil**	
2. Source Classification Code (SCC): **20100101**	
3. SCC Units: **Gallons**	
4. Maximum Hourly Rate: **1,727**	5. Maximum Annual Rate: **12,076,911**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.4**	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **132,000 (LHV)**	
10. Segment Comment (limit to 200 characters): **Maximum Annual Rate reflects current allowables. Following completion of compliance testing on Unit 8, the combustion turbine will be limited to firing Number 2 (0.05 % Sulfur) diesel fuel oil as reported in Segment 3.**	

Segment Description and Rate: Segment **3** of **3**

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Number 2 (0.05% Sulfur) Diesel Fuel Oil**
2. Source Classification Code (SCC): **20100101**
3. SCC Units: **Gallons**
4. Maximum Hourly Rate: **1,727** | 5. Maximum Annual Rate: **10,147,075**
6. Estimated Annual Activity Factor:
7. Maximum Percent Sulfur: **0.05** | 8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **132,000 (LHV)**
10. Segment Comment (limit to 200 characters):

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

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			NS
NOX			EL
PM			NS
PM10			NS
SO2			EL
VOC			NS
H106			NS
H107			NS
H133			NS
HAPS			NS

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

Pollutant Detail Information:

1. Pollutant Emitted: **SO2**

2. Total Percent Efficiency of Control: %

3. Potential Emissions: **11.1** lb/hour, **CAP** tons/year

4. Synthetically Limited?
   [X] Yes [ ] No

5. Range of Estimated Fugitive/Other Emissions:
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor:
   Reference:

7. Emissions Method Code:
   [X] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

   Fuel Oil Sulfur Content: 0.05 % (wt)
   Fuel Oil Usage Rate: 1727 gal/hr
   MW SO_2: 64, MW S: 32

   lb/hr =(1727 gal/hr) x (6.75 lb/gal) x (0.05/100) x (64/32) x (95/100) = 11.1 lb/hr

   See Attachment EU03-01

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

   Potential emission rate reflects firing Number 2 (0.05% Sulfur) diesel fuel oil with 95 percent conversion of the sulfur to SO_2 following the completion of the compliance testing on Unit 8. Combustion turbine No. 1 will be part of the requested facility-wide SO_2 and NO_x caps.

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**
2. Future Effective Date of Allowable Emissions: **Upon completion of Unit 8 Compliance Testing**
3. Requested Allowable Emissions and Units: **0.05 % sulfur (wt) and 80 TPY cap for the facility.**
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters): **Compliance will be based on unit specific emission factors (lb/MW), power generation logs, and vendor fuel data.**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Annual emissions will be based on actual Sulfur content of the natural gas and Number 2 (0.05% Sulfur) diesel fuel oil.**

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

Pollutant Detail Information:

1. Pollutant Emitted: **NOx**

2. Total Percent Efficiency of Control: %

3. Potential Emissions: **159.1** lb/hour, **CAP** tons/year

4. Synthetically Limited?
   [**X**] Yes [ ] No

5. Range of Estimated Fugitive/Other Emissions:
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor:
   Reference:

7. Emissions Method Code:
   [ ] 0 [ ] 1 [ ] 2 [**X**] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

   Maximum Firing Rate: 228 mmBtu/hr
   Emission Factor: 0.698 lb/mmBtu

   lb/hr =(228 mmBtu) x (0.698 lb-NOx/mmBtu) = 159.1 lb/hr

   See Attachment EU03-01

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

   Future potential annual emissions will be part of the requested facility-wide cap on NO_x emissions.

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**
2. Future Effective Date of Allowable Emissions: **Upon Completion of Unit 8 Compliance Testing**
3. Requested Allowable Emissions and Units: **467 TPY Cap for the facility**
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters): **Compliance will be based on unit specific emission factors (lb/MW), power generation logs, AP-42 emission factors, and vendor fuel data.**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Annual emissions will be based on the AP-42 emission factors [0.44 lb/mmBtu - natural gas and 0.698 lb/mmBtu - No.2 diesel fuel oil].**

B.

1. Basis for Allowable Emissions Code:
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions: lb/hr tons/year
5. Method of Compliance (limit to 60 characters):
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**
2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **< 20 %** Exceptional Conditions: **100 %** Maximum Period of Excess Opacity Allowed: **60** min/hour
4. Method of Compliance: **EPA Method 9 in any fiscal year in which the turbine operates greater than 400 hours.**
5. Visible Emissions Comment (limit to 200 characters): **In accordance with Rule 62-210.700(1),F.A.C., excess emissions resulting from startup, shutdown, or malfunction are permitted providing that the duration of excess emissions be minimized but in no case to exceed two hours in any 24 hour period unless authorized by the Department for longer duration.**

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:
2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance:
5. Visible Emissions Comment (limit to 200 characters):

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

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

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

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

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

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

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

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

3. Increment Consuming/Expanding Code:			
PM	[ ] C	[X] E	[ ] Unknown
SO2	[ ] C	[X] E	[ ] Unknown
NO2	[ ] C	[X] E	[ ] Unknown
4. Baseline Emissions:			
PM		7.1 lb/hour	0.07 tons/year
SO2		66.4* lb/hour	0.5 tons/year
NO2			0.7 tons/year
5. PSD Comment (limit to 200 characters): *** Baseline hourly emissions of SO_2 are based on firing Number 2 fuel oil with 0.3 percent sulfur and 95 percent conversion to SO_2. Firing rate is based on 182 mmBtu/hr at baseload adjusted to 188 mmBtu/hr for the local elevation.**			

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1. Process Flow Diagram [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested
2. Fuel Analysis or Specification [X] Attached, Document ID: EU03-02 [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [X] Previously submitted, Date: *January 17, 1996* [ ] Not Applicable
6. Procedures for Startup and Shutdown [X] Attached, Document ID: EU03-03 [ ] Not Applicable
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID:EU03-04 [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [X] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation
[X] Attached, Document ID: EU03-05 [ ] Not Applicable

11. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID: _____ [X] Not Applicable

12. Identification of Additional Applicable Requirements
[X] Attached, Document ID: EU03-06 [ ] Not Applicable

13. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID: _____ [X] Not Applicable

14. Acid Rain Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID: _____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID: _____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID: _____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID: _____

[X] Not Applicable

Attachment EU03-01

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Hackel
Date: 08/19/94

Client: City of Tallahassee
OFS No: 1584.0005.0008

Ck'd By: D. Graziani, P.E.
Date: 08/26/94

Sheet No.: 1 of 3
Calc. No.: 940819DH01

Rv'd: 02/26/97 By: D. Graziani, P.E.

Emission Unit Description:
The emissions unit is a Westinghouse combustion turbine designated CT 1. The unit is currently operating under a nonfederally enforceable permit (AO65-242827) issued by the FDEP pending final issuance of a Title V Operating permit for the facility. The unit is capable of firing No. 2 fuel oil and natural gas. The unit has a maximum heat input rate of 228 mmBtu/hr at an ambient temperature of 80 F and is rated for a nominal production capacity of 12.3 MW. The unit operates as a peaking or emergency unit in a simple cycle mode. The existing permit limits visible emissions (VE) and the sulfur content of the fuel oil (0.4% by weight). Following completion of compliance testing of Unit 8, the combustion turbine will fire the No. 2 (0.05% Sulfur by Weight) diesel fuel. This calculation documents hourly and annual emissions of sulfur dioxide and nitrogen oxides following the modification.

References:
No. 1 - FDEP Permit No. AO65-242827, Spec. Condition Nos. 3, 4, and 6.
No. 2 -FDEP Rule 62-296.320.(4)(b)1
No. 3 -City of Tallahassee Title V application (6-14-96)
No. 3 -City of Tallahassee (typical distillate oil analysis)
No. 4 -FGT Maximum Sulfur content allowed by Tariff

Operating Parameters

Annual Hours Of Operation (hrs/yr)	AHOP := 8760	
Maximum Heat Input Rate on fuel oil (mmBtu/hr) - Ref. 3	MHR1 := 228	(lower heating value)
Maximum Heat Input Rate on Natural Gas (mmBtu/hr) - Ref. 3	MHR2 := 228	(lower heating value)
Fuel Oil Heat Content (Btu/Gal)	FOHC := 132000	
Fuel Oil Density (lb/gal) - Ref. 4	FOD := 6.75	
Fuel Oil Sulfur Content (%wt)	FOSC := 0.05	
Natural Gas Heat Content (Btu/CF)	NGHC := 904	(lower heating value)
Natural Gas Sulfur Content (grains/CF) - Ref 5	NGSC := 0.1	

Calculated Fuel Oil Usage Rate (lb/hr)

$$FOUR1 := MHR1 \cdot \frac{10^6}{FOHC} \cdot FOD \qquad FOUR1 = 1.17 \cdot 10^4$$

Calculated Fuel Oil Usage Rate (kgal/hr)

$$FOUR2 := \frac{FOUR1}{FOD \cdot 1000} \qquad FOUR2 = 1.727$$

Calculated Natural Gas Usage Rate (cf/hr)

$$FOUR3 := MHR2 \cdot \frac{10^6}{NGHC} \qquad FOUR3 = 2.52 \cdot 10^5$$

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Hackel
Date: 08/19/94

Ck'd By: D. Graziani, P.E.
Date: 08/26/94

Rv'd: 02/26/97 By: D. Graziani, P.E.

Client: City of Tallahassee
OFS No: 1584.0005.0008

Sheet No.: 2 of 3
Calc. No.: 940819DH01

Emission Estimates

The following emission estimates are provided as required by Rules 62-213.420(3)(c)1, 2, 3 and 4, FAC. The emission estimate is based on allowable emission limitations as specified by Rule or permit condition. The emissions estimates provide hourly rates (lbs/hr) denoted with an "H" and annual emission rates (tons/year) denoted with an "A".

Emission Estimates - Segment No. 1 Natural Gas Firing

Sulfur Dioxide - Mass Balance

$$NGHSO2 := FOUR3 \cdot \frac{NGSC}{7000} \cdot \frac{64}{32} \cdot \frac{95}{100} \qquad NGHSO2 = 6.8$$

Assumes 95 Percent Conversion

$$NGASO2 := NGHSO2 \cdot \frac{AHOP}{2000} \qquad NGASO2 = 30$$

Emission Estimates - Segment No. 1 Natural Gas Firing

Nitrogen Oxides - AP-42 Section 3.1 (Emission Factor = 0.44 lb/mmBtu)

$$NGHNOX := MHR2 \cdot 0.44 \qquad NGHNOX = 100.3$$

$$NGANOX := NGHNOX \cdot \frac{AHOP}{2000} \qquad NGANOX = 439.4$$

Emission Estimates - Segment No. 2 Fuel Oil Firing

Sulfur Dioxide - Mass Balance

$$FOHSO2 := FOUR1 \cdot \frac{FOSC}{100} \cdot \frac{64}{32} \cdot \frac{95}{100} \qquad FOHSO2 = 11.1$$

Assumes 95 Percent Conversion

$$FOASO2 := FOHSO2 \cdot \frac{AHOP}{2000} \qquad FOASO2 = 48.5$$

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Hackel
Date: 08/19/94

Client: City of Tallahassee
OFS No: 1584.0005.0008

Ck'd By: D. Graziani, P.E.
Date: 08/26/94

Sheet No.: 3 of 3
Calc. No.: 940819DH01

Rv'd: 02/26/97 By: D. Graziani, P.E.

Emission Estimates - Segment No. 2 Fuel Oil Firing

Nitrogen Oxides - AP-42 Section 3.1 (Emission Factor = 0.698 lb/mmBtu)

$FOHNOX := MHR1 \cdot 0.698$ $\quad FOHNOX = 159.1$

$FOANOX := FOHNOX \cdot \frac{AHOP}{2000}$ $\quad FOANOX = 697.1$

Based on the emission estimates, the combustion turbine's hours of operation at full load while firing No. 2 diesel fuel oil will be limited by the oxides of nitrogen cap.

Attachment EU03-02

The attached fuel sample analyses represent "typical" characterizations for the fuels combusted in EU03, Combustion Turbine No.1. Maximum values could be higher. The fuels represented by the analyses include clean pipeline quality natural gas and No. 2 (0.05% Sulfur) diesel fuel oil.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

TYPICAL NATURAL GAS ANALYSIS[1]	
Analysis	**Gravimetric Breakdown (%)**
Ultimate Analysis	
Carbon	64.84 - 75.25
Hydrogen	20.85 - 23.53
Oxygen	0 - 1.58
Nitrogen	0.76 - 12.90
Sulfur	0 - 0.34
Ash	0.0
Proximate Analysis	99.65 - 100.0
Volatile Matter	0.0
Fixed Carbon	0.0 - 0.00138
Moisture	0.0
Ash	0.0 - 0.034
Sulfur[2]	

(1) Heating value (HHV): 964 - 1129 Btu/ft^3
(2) Total sulfur (maximum) 10 grains/100 SCF

Source: Babcock & Wilcox, 1972 and RE&C, 1997

TYPICAL NUMBER 2 (0.05% S) DIESEL FUEL OIL ANALYSIS[1]

Analysis	Gravimetric Breakdown (%)
Ultimate Analysis	
Carbon	86.1 - 88.2
Hydrogen	11.8 - 13.9
Oxygen	0.0
Nitrogen	0.0 - 0.1
Sulfur[2]	0.0 - 0.05
Ash	0.0 - 0.05
Proximate Analysis	
Volatile Matter	99.05 - 99.5
Fixed Carbon	0.25 - 1.0
Moisture	0.0 - 0.1
Ash	0.0 - 0.05

(1) Higher heating value: 19,170 - 19,750 Btu/lb
(2) Total sulfur (maximum) 0.05%

Source: Babcock & Wilcox, 1972 and RE&C, 1997

Attachment EU03-03

The City of Tallahassee follows best operational practices in the startup and shutdown of the gas turbines at the Purdom Generating Station. Under normal conditions, standard operating guidelines are followed for startup and shutdown of the gas turbines. Under any abnormal condition of operation, best operational practices are followed to minimize emissions and to minimize the duration of any excess emissions.

Attachment EU03-04

The City of Tallahassee has requested facility-wide caps on SO_2 and NO_X emissions as part of the proposed project. In addition, combustion turbine No. 1 will fire No. 2 diesel fuel oil with a sulfur content of 0.05 percent sulfur by weight after the completion of compliance testing on Unit 8. Until that time, combustion turbine No. 1 will continue firing No. 2 (0.4% Sulfur) fuel oil as necessary.

Attachment EU03-05

Combustion Turbine No. 1 (EU03) is used as a peaking and emergency reserve unit. It is fueled by natural gas or No. 2 fuel oil. The alternative methods of operation (AMO) associated with the combustion turbine are related to the type of fuel being fired and rate of operation. The combustion turbine has a nominal production capacity of 12.3 MW. The current AMOs include the following:

Natural Gas Firing - Maximum Rate of 228 mmBtu/hr (LHV)

No. 2 Fuel Oil Firing - Maximum Rate of 228 mmBtu/hr (LHV)

The unit can vary load between 0 and 100 percent as required.

Attachment EU03-06

As part of its initial application for the Purdom Generating Station's Title V Operating Permit, the City of Tallahassee requested a specific revision to the existing operating permit No. A037-242825 (specific condition No. 2) pertaining to compliance testing. As part of the proposed project the City of Tallahassee requests that the revised Title V Operating Permit and the PSD Permit contain an additional specific condition revision limiting the maximum sulfur content of the fuel oil fired in Combustion Turbine No. 1 to 0.05 percent by weight.

The City of Tallahassee further requests that the condition become effective upon the completion of compliance testing on Unit 8.

EMISSION UNIT - 04

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

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

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

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

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

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

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

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

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Combustion Turbine No. 2**		
2. Emissions Unit Identification Number: [ ] No Corresponding ID [ ] Unknown **008**		
3. Emissions Unit Status Code: **A**	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code: **49**
6. Emissions Unit Comment (limit to 500 characters): **The maximum allowable operating rate is 228 mmBtu/hr (lower heating value) at an ambient temperature of 80 degrees fahrenheit when firing fuel oil or natural gas. The maximum hours of operation are currently limited to 6,993. Following completion of compliance testing of Unit 8, combustion turbine No. 1 will operate under the alternative method of operation and annual emissions will be limited by the proposed facility wide caps on SO_2 and NO_x emissions.**		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **FUEL QUALITY** **The City of Tallahassee is currently authorized to fire Number 2 fuel oil with a maximum sulfur content of 0.4 percent by weight. Following completion of compliance testing on Unit 8, only Number 2 (0.05% Sulfur) diesel fuel oil by weight) and natural gas will be fired in the combustion turbine.**
2. Control Device or Method Code: **Fuel Quality - No Code**

B.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

C.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

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

Emissions Unit Details

1. Initial Startup Date:	
2. Long-term Reserve Shutdown Date:	
3. Package Unit: Manufacturer: **Westinghouse**	Model Number **W171G:**
4. Generator Nameplate Rating: **12.3** MW	
5. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:	 °F seconds °F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate: **228** mmBtu/hr		
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Operating Capacity Comment (limit to 200 characters): **The maximum heat input rate reflects operation at an ambient temperature of 80 degrees fahreneit based on the lower heating value of the fuels.**		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	**8,760** hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

Rule 62-210.700(1),(4),(6) F.A.C.	
Rule 62-296.320(4),(b) F.A.C.	
Rule 62-297.310(2)(a) F.A.C.	
Rule 62-297.310(4)(a)2 (except a-c) F.A.C.	
Rule 62-297.310(7)(a)3,4a,8,9 F.A.C.	
Rule 62-297.310(8) F.A.C.	
40 CFR 72.6(b)(1)	

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **EU04**
2. Emission Point Type Code: [X] 1 [ ] 2 [ ] 3 [ ] 4
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **This emission point, EU04, represents the exhaust for Combustion Turbine No. 2.**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [X] V [ ] W
6. Stack Height: **38** feet
7. Exit Diameter: **10** feet
8. Exit Temperature: **880** °F
9. Actual Volumetric Flow Rate: **395,080** acfm

10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate:	dscfm
12. Nonstack Emission Point Height:	feet
13. Emission Point UTM Coordinates: Zone:16 **769.421** East (km): **3339.813** North (km):	
14. Emission Point Comment (limit to 200 characters): **Emissions Units 03 and 04 were assumed to be collocated for long-term modelling**	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment 1 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Natural Gas**	
2. Source Classification Code (SCC): **20100201**	
3. SCC Units: **mmSCF**	
4. Maximum Hourly Rate: **0.252**	5. Maximum Annual Rate: **2207.52**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.033 ***	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **904 (LHV)**	
10. Segment Comment (limit to 200 characters): *** Clean pipeline quality natural gas (10gr/100cf).**	

Segment Description and Rate: Segment **2** of **3**

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Number 2 (0.4% Sulfur) Fuel Oil**	
2. Source Classification Code (SCC): **20100101**	
3. SCC Units: **Gallons**	
4. Maximum Hourly Rate: **1,727**	5. Maximum Annual Rate: **12,076,911**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.4**	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **132,000 (LHV)**	
10. Segment Comment (limit to 200 characters): **Maximum Annual Rate reflects current allowables. Following completion of compliance testing on Unit 8, the combustion turbine will be limited to firing Number 2 (0.05% Sulfur) diesel fuel oil as reported in Segment 3.**	

Segment Description and Rate: Segment **3** of **3**

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Number 2 (0.05% Sulfur) Diesel Fuel Oil**	
2. Source Classification Code (SCC): **20100101**	
3. SCC Units: **Gallons**	
4. Maximum Hourly Rate: **1,727**	5. Maximum Annual Rate: **10,147,075**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.05**	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **132,000 (LHV)**	
10. Segment Comment (limit to 200 characters):	

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

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			NS
NOX			EL
PM			NS
PM10			NS
SO2			EL
VOC			NS
H106			NS
H107			NS
H133			NS
HAPS			NS

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

Pollutant Detail Information:

1. Pollutant Emitted: **SO2**

2. Total Percent Efficiency of Control: %

3. Potential Emissions: **11.1** lb/hour, **CAP** tons/year

4. Synthetically Limited?
   [X] Yes [ ] No

5. Range of Estimated Fugitive/Other Emissions:
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor:
   Reference:

7. Emissions Method Code:
   [X] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

   Fuel Oil Sulfur Content: 0.05 % (wt)
   Fuel Oil Usage Rate: 1727 gal/hr
   MW SO_2: 64, MW S: 32

   lb/hr =(1727 gal/hr) x (6.75 lb/gal) x (0.05/100) x (64/32) x (95/100) = 11.1 lb/hr

   See Attachment EU03-01

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

   Potential emission rate reflects firing Number 2 (0.05% Sulfur) diesel fuel oil with 95 percent conversion of the sulfur to SO_2 following the completion of the compliance testing on Unit 8. Combustion turbine No. 2 will be part of the requested facility-wide SO_2 and NO_x caps.

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**
2. Future Effective Date of Allowable Emissions: **Upon completion of Unit 8 Compliance Testing**
3. Requested Allowable Emissions and Units: **0.05 % sulfur (wt) and 80 TPY cap for the facility.**
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters): **Compliance will be based on unit specific emission factors (lb/MW), power generation logs, and vendor fuel data.**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Annual emissions will be based on actual Sulfur content of the natural gas and Number 2 (0.05% Sulfur) diesel fuel oil.**

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

Pollutant Detail Information:

1. Pollutant Emitted: **NOx**

2. Total Percent Efficiency of Control: %

3. Potential Emissions: **159.1** lb/hour, **CAP** tons/year

4. Synthetically Limited?
   [**X**] Yes [ ] No

5. Range of Estimated Fugitive/Other Emissions:
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor:
   Reference:

7. Emissions Method Code:
   [ ] 0 [ ] 1 [ ] 2 [**X**] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

   Maximum Firing Rate: 228 mmBtu/hr
   Emission Factor: 0.698 lb/mmBtu

   lb/hr =(228 mmBtu) x (0.698 lb-NOx/mmBtu) = 159.1 lb/hr

   See Attachment EU03-01

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

   Future potential annual emissions will be part of the requested facility-wide cap on NO_x emissions.

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**
2. Future Effective Date of Allowable Emissions: **Upon Completion of Unit 8 Compliance Testing**
3. Requested Allowable Emissions and Units: **467 TPY Cap for the facility**
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters): **Compliance will be based on unit specific emission factors (lb/MW), power generation logs, AP-42 emission factors, and vendor fuel data.**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Annual emissions will be based on the AP-42 emission factors [0.44 lb/mmBtu - natural gas and 0.698 lb/mmBtu - No.2 diesel fuel oil].**

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**
2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **< 20 %** Exceptional Conditions: **100 %** Maximum Period of Excess Opacity Allowed: **60** min/hour
4. Method of Compliance: **EPA Method 9 in any fiscal year in which the turbine operates greater than 400 hours.**
5. Visible Emissions Comment (limit to 200 characters): **In accordance with Rule 62-210.700(1),F.A.C., excess emissions resulting from startup, shutdown, or malfunction are permitted providing that the duration of excess emissions be minimized but in no case to exceed two hours in any 24 hour period unless authorized by the Department for longer duration.**

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:
2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance:
5. Visible Emissions Comment (limit to 200 characters):

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

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

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

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

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

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

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

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

3. Increment Consuming/Expanding Code:			
PM	[ ] C	[X] E	[ ] Unknown
SO2	[ ] C	[X] E	[ ] Unknown
NO2	[ ] C	[X] E	[ ] Unknown

4. Baseline Emissions:		
PM	**7.1** lb/hour	**0.07** tons/year
SO2	**66.4*** lb/hour	**0.5** tons/year
NO2		**0.7** tons/year

5. PSD Comment (limit to 200 characters):

*** Baseline hourly emissions of SO_2 are based on firing Number 2 fuel oil with 0.3 percent sulfur and 95 percent conversion to SO_2. Firing rate is based on 182 mmBtu/hr at baseload adjusted to 188 mmBtu/hr for the local elevation.**

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1. Process Flow Diagram [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested
2. Fuel Analysis or Specification [X] Attached, Document ID: EU04-02 [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [X] Previously submitted, Date: *January 17, 1996* [ ] Not Applicable
6. Procedures for Startup and Shutdown [X] Attached, Document ID: EU04-03 [ ] Not Applicable
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID:EU04-04 [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [X] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation
[X] Attached, Document ID: EU04-05 [ ] Not Applicable

11. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID: _____ [X] Not Applicable

12. Identification of Additional Applicable Requirements
[X] Attached, Document ID: EU04-06 [ ] Not Applicable

13. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID: _____ [X] Not Applicable

14. Acid Rain Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID: _____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID: _____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID: _____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID: _____

[X] Not Applicable

Attachment EU04-01

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Hackel
Date: 08/19/94

Client: City of Tallahassee
OFS No: 1584.0005.0008

Ck'd By: D. Graziani, P.E.
Date: 08/26/94

Sheet No.: 1 of 3
Calc. No.: 940819DH02

Rv'd: 02/26/97 By: D. Graziani, P.E.

Emission Unit Description:
The emissions unit is a Westinghouse combustion turbine designated CT 2. The unit is currently operating under a nonfederally enforceable permit (AO65-242827) issued by the FDEP pending final issuance of a Title V Operating permit for the facility. The unit is capable of firing No. 2 fuel oil and natural gas. The unit has a maximum heat input rate of 228 mmBtu/hr at an ambient temperature of 80 F and is rated for a nominal production capacity of 12.3 MW. The unit operates as a peaking or emergency unit in a simple cycle mode. The existing permit limits visible emissions (VE) and the sulfur content of the fuel oil (0.4% by weight). Following completion of compliance testing of Unit 8, the combustion turbine will fire the No. 2 (0.05% Sulfur by Weight) diesel fuel oil. This calculation documents hourly and annual emissions of sulfur dioxide and nitrogen oxides following the modification.

References:
No. 1 - FDEP Permit No. AO65-242827, Spec. Condition Nos. 3, 4, and 6.
No. 2 -FDEP Rule 62-296.320.(4)(b)1
No. 3 -City of Tallahassee Title V application (6-14-96)
No. 3 -City of Tallahassee (typical distillate oil analysis)
No. 4 -FGT Maximum Sulfur content allowed by Tariff

Operating Parameters

Annual Hours Of Operation (hrs/yr)	AHOP := 8760	
Maximum Heat Input Rate on fuel oil (mmBtu/hr) - Ref. 3	MHR1 := 228	(lower heating value)
Maximum Heat Input Rate on Natural Gas (mmBtu/hr) - Ref. 3	MHR2 := 228	(lower heating value)
Fuel Oil Heat Content (Btu/Gal)	FOHC := 132000	
Fuel Oil Density (lb/gal) - Ref. 4	FOD := 6.75	
Fuel Oil Sulfur Content (%wt)	FOSC := 0.05	
Natural Gas Heat Content (Btu/CF)	NGHC := 904	
Natural Gas Sulfur Content (grains/CF) - Ref 5	NGSC := 0.1	

Calculated Fuel Oil Usage Rate (lb/hr)

$$FOUR1 := MHR1 \cdot \frac{10^6}{FOHC} \cdot FOD \qquad FOUR1 = 1.17 \cdot 10^4$$

Calculated Fuel Oil Usage Rate (kgal/hr)

$$FOUR2 := \frac{FOUR1}{FOD \cdot 1000} \qquad FOUR2 = 1.727$$

Calculated Natural Gas Usage Rate (cf/hr)

$$FOUR3 := MHR2 \cdot \frac{10^6}{NGHC} \qquad FOUR3 = 2.52 \cdot 10^5$$

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Hackel
Date: 08/19/94

Ck'd By: D. Graziani, P.E.
Date: 08/26/94

Rv'd: 02/26/97 By: D. Graziani, P.E.

Client: City of Tallahassee
OFS No: 1584.0005.0008

Sheet No.: 2 of 3
Calc. No.: 940819DH02

Emission Estimates

The following emission estimates are provided as required by Rules 62-213.420(3)(c)1, 2, 3 and 4, FAC. The emission estimate is based on allowable emission limitations as specified by Rule or permit condition. The emissions estimates provide hourly rates (lbs/hr) denoted with an "H" and annual emission rates (tons/year) denoted with an "A".

Emission Estimates - Segment No. 1 Natural Gas Firing

Sulfur Dioxide - Mass Balance

$$NGHSO2 := FOUR3 \cdot \frac{NGSC}{7000} \cdot \frac{64}{32} \cdot \frac{95}{100} \qquad NGHSO2 = 6.8$$

Assumes 95 Percent Conversion

$$NGASO2 := NGHSO2 \cdot \frac{AHOP}{2000} \qquad NGASO2 = 30$$

Emission Estimates - Segment No. 1 Natural Gas Firing

Nitrogen Oxides - AP-42 Section 3.1 (Emission Factor = 0.44 lb/mmBtu)

$$NGHNOX := MHR2 \cdot 0.44 \qquad NGHNOX = 100.3$$

$$NGANOX := NGHNOX \cdot \frac{AHOP}{2000} \qquad NGANOX = 439.4$$

Emission Estimates - Segment No. 2 Fuel Oil Firing

Sulfur Dioxide - Mass Balance

$$FOHSO2 := FOUR1 \cdot \frac{FOSC}{100} \cdot \frac{64}{32} \cdot \frac{95}{100} \qquad FOHSO2 = 11.1$$

Assumes 95 Percent Conversion

$$FOASO2 := FOHSO2 \cdot \frac{AHOP}{2000} \qquad FOASO2 = 48.5$$

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Hackel
Date: 08/19/94

Client: City of Tallahassee
OFS No: 1584.0005.0008

Ck'd By: D. Graziani, P.E.
Date: 08/26/94

Sheet No.: 3 of 3
Calc. No.: 940819DH02

Rv'd: 02/26/97 By: D. Graziani, P.E.

Emission Estimates - Segment No. 2 Fuel Oil Firing

Nitrogen Oxides - AP-42 Section 3.1 (Emission Factor = 0.698 lb/mmBtu)

$FOHNOX := MHR1 \cdot 0.698$ $\quad FOHNOX = 159.1$

$FOANOX := FOHNOX \cdot \frac{AHOP}{2000}$ $\quad FOANOX = 697.1$

Based on the emission estimates, the combustion turbine's hours of operation at full load while firing No. 2 diesel fuel oil will be limited by the oxides of nitrogen cap.

Attachment EU04-02

The attached fuel sample analyses represent "typical" characterizations for the fuels combusted in EU03, Combustion Turbine No. 2. Maximum values could be higher. The fuels represented by the analyses include clean pipeline quality natural gas and No. 2 (0.05% Sulfur) diesel fuel oil.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

TYPICAL NATURAL GAS ANALYSIS[1]

Analysis	Gravimetric Breakdown (%)
Ultimate Analysis	
Carbon	64.84 - 75.25
Hydrogen	20.85 - 23.53
Oxygen	0 - 1.58
Nitrogen	0.76 - 12.90
Sulfur	0 - 0.34
Ash	0.0
Proximate Analysis	99.65 - 100.0
Volatile Matter	0.0
Fixed Carbon	0.0 - 0.00138
Moisture	0.0
Ash	0.0 - 0.034
Sulfur[2]	

(1) Heating value (HHV): 964 - 1129 Btu/ft^3

(2) Total sulfur (maximum) 10 grains/100 SCF

Source: Babcock & Wilcox, 1972 and RE&C, 1997

TYPICAL NUMBER 2 (0.05% S) DIESEL FUEL OIL ANALYSIS[1]

Analysis	Gravimetric Breakdown (%)
Ultimate Analysis	
Carbon	86.1 - 88.2
Hydrogen	11.8 - 13.9
Oxygen	0.0
Nitrogen	0.0 - 0.1
Sulfur[2]	0.0 - 0.05
Ash	0.0 - 0.05
Proximate Analysis	
Volatile Matter	99.05 - 99.5
Fixed Carbon	0.25 - 1.0
Moisture	0.0 - 0.1
Ash	0.0 - 0.05

(1) Higher heating value: 19,170 - 19,750 Btu/lb
(2) Total sulfur (maximum) 0.05%

Source: Babcock & Wilcox, 1972 and RE&C, 1997

Attachment EU04-03

The City of Tallahassee follows best operational practices in the startup and shutdown of the gas turbines at the Purdom Generating Station. Under normal conditions, standard operating guidelines are followed for startup and shutdown of the gas turbines. Under any abnormal condition of operation, best operational practices are followed to minimize emissions and to minimize the duration of any excess emissions.

Attachment EU04-04

The City of Tallahassee has requested facility-wide caps on SO_2 and NO_X emissions as part of the proposed project. In addition, combustion turbine No. 2 will fire No. 2 diesel fuel oil with a sulfur content of 0.05 percent sulfur by weight after the completion of compliance testing on Unit 8. Until that time, combustion turbine No. 2 will continue firing No. 2 (0.4% Sulfur) fuel oil as necessary.

Attachment EU04-05

Combustion Turbine No. 2 (EU04) is used as a peaking and emergency reserve unit. It is fueled by natural gas or No. 2 fuel oil. The alternative methods of operation (AMO) associated with the combustion turbine are related to the type of fuel being fired and rate of operation. The combustion turbine has a nominal production capacity of 12.3 MW. The current AMOs include the following:

Natural Gas Firing - Maximum Rate of 228 mmBtu/hr (LHV)

No. 2 Fuel Oil Firing - Maximum Rate of 228 mmBtu/hr (LHV)

The unit can vary load between 0 and 100 percent as required.

Attachment EU04-06

As part of its initial application for the Purdom Generating Station's Title V Operating Permit, the City of Tallahassee requested a specific revision to the existing operating permit No. A037-242825 (specific condition No. 2) pertaining to compliance testing. As part of the proposed project the City of Tallahassee requests that the revised Title V Operating Permit and the PSD Permit contain an additional specific condition revision limiting the maximum sulfur content of the fuel oil fired in Combustion Turbine No. 2 to 0.05 percent by weight.

The City of Tallahassee further requests that the condition become effective upon the completion of compliance testing on Unit 8.

EMISSION UNIT - 11

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

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

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

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

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

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

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

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

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Boiler No. 7**		
2. Emissions Unit Identification Number: [ ] No Corresponding ID [ ] Unknown **007**		
3. Emissions Unit Status Code: **A**	4. Acid Rain Unit? [X] Yes [ ] No	5. Emissions Unit Major Group SIC Code: **49**
6. Emissions Unit Comment (limit to 500 characters): **The maximum allowable heat input is 621 mmBtu/hr (higher Heating Value {HHV}). The emissions unit will be subject to the facility wide cap on SO_2 and NO_x.**		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

B.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

C.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

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

Emissions Unit Details

1. Initial Startup Date:	
2. Long-term Reserve Shutdown Date:	
3. Package Unit: Manufacturer: **Riley Stoker Corporation**	Model Number: **Type RX-33**
4. Generator Nameplate Rating: **44** MW	
5. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:	 °F seconds °F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate: **621** mmBtu/hr		
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Operating Capacity Comment (limit to 200 characters): **Annual operation, following completion of compliance testing of the Unit 8 combustion turbine will be limited by the facility-wide emission caps on SO_2 and NO_x.**		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:	
hours/day	days/week
weeks/year	**8,760** hours/year

B. FACILITY REGULATIONS

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

Rule 62-210.700(1),(2),(3),(4),(6) F.A.C.	**40 CFR 72.23**
Rule 62-214.300 F.A.C.	**40 CFR 72.30(a),(c),(d)**
Rule 62-214.350(2),(3),(5),(6) F.A.C.	**40 CFR 72.32**
Rule 62-214.430(1) F.A.C.	**40 CFR 72.40(a)(c)(d)**
Rule 62-296.405(1)(a),(b),(c)1,h, F.A.C.	**40 CFR 72.51**
Rule 62-296.405(1)(f)1,b,(e)1,2,3;(f)1a(i)	**40 CFR 72.90**
Rule 62-297.310(1) F.A.C.	**40 CFR 73.33(c)(d)(e)**
Rule 62-297.310(2)(b) F.A.C.	**40 CFR 73.35(c)(1)**
Rule 62-297.310(3) F.A.C.	**40 CFR 75.4**
Rule 62-297.310(4) F.A.C.	**40 CFR 75.5**
Rule 62-297.310(5) F.A.C.	**40CFR 75.10(a)(1),(a)(2),(a)(3)(ii)(b)-(d),(f),(g)**
Rule 62-297.310(6)(a),(c)-(g) F.A.C.	**40 CFR 75.11(d)(2)**
Rule 62-297.310(7)(a)2,3,4,5,9,(c) F.A.C.	**40 CFR 75.12(a),(b)**
Rule 62-297.310(8) F.A.C.	**40 CFR 75.13(a),(b)**
40 CFR 72.9(a),(b),(c)(1)-(3)(iii),(d)-(g)	**40 CFR 75.14(c)**
40 CFR 72.20(a)-(c)	**40 CFR 75.20(a)(5),(b),(c),(d),(g)**
40 CFR 72.21	**40 CFR 75.21(a),(c)**
40 CFR 72.22	**62-204.800(14),(15),(16),(18), F.A.C.***

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

40 CFR 75.22	40 CFR 75.64
40 CFR 75.24	40 CFR 75, Appendix A
40 CFR 75.30(a)(3),(d)(2)	40 CFR 75, Appendix B
40 CFR 75.31	40 CFR 75, Appendix C
40 CFR 75.32	40 CFR 75, Appendix D
40 CFR 75.33(a),(c)	40 CFR 75, Appendix G 2,4
40 CFR 75.53	40 CFR 75, Appendix H
40 CFR 75.54 [except (f)]	40 CFR 77.3**
40 CFR 75.55(c)	40 CFR 77.5(b)**
40 CFR 75.56	40 CFR 77.6**
40 CFR 75.60	40 CFR 72.80(b),(c),(d),(f),(g)
40 CFR 75.61	40 CFR 72.31
40 CFR 75.62	40 CFR 75.36
40 CFR 75.63	40 CFR 72.81** 40 CFR 72.82**
40 CFR 75.35	40 CFR 72.83** 40 CFR 72.84**
* State Only Requirement ** Potential Future Requirement	

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **EU11**
2. Emission Point Type Code: [**X**] 1 [ ] 2 [ ] 3 [ ] 4
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **This emission point, EU11, represents the exhaust for Boiler No. 7.**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [**X**] V [ ] W
6. Stack Height: **180** feet
7. Exit Diameter: **9.0** feet
8. Exit Temperature: **300** °F
9. Actual Volumetric Flow Rate: **180,798** acfm

10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate:	dscfm
12. Nonstack Emission Point Height:	feet
13. Emission Point UTM Coordinates: Zone:**16** East (km):**769.653** North (km):**3339.883**	
14. Emission Point Comment (limit to 200 characters):	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment 1 of 4

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Natural Gas**	
2. Source Classification Code (SCC): **10100601**	
3. SCC Units: **mmSCF**	
4. Maximum Hourly Rate: **0.597**	5. Maximum Annual Rate:**see field 10**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.033**	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **1040 (HHV)**	
10. Segment Comment (limit to 200 characters): **Maximum Annual Rate can vary based on facility-wide SO_2 and NO_x caps and actual emissions.**	

Segment Description and Rate: Segment 2 of 4

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters):

Fuel Oil Nos. 2 through 6

2. Source Classification Code (SCC): **10100401**

3. SCC Units: **Gallons**

4. Maximum Hourly Rate: **4140**	5. Maximum Annual Rate: **see field 10**

6. Estimated Annual Activity Factor:

7. Maximum Percent Sulfur: **1.8***	8. Maximum Percent Ash:

9. Million Btu per SCC Unit: **150,000 (HHV)**

10. Segment Comment (limit to 200 characters):

Maximum Annual Rates can vary based on facility-wide SO_2 and NO_x caps and actual emissions.

***Maximum sulfur content will vary based on the fuel's higher heating value and density.**

Segment Description and Rate: Segment **3** of **4**

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **On-Spec Used Oil**	
2. Source Classification Code (SCC): **10100401**	
3. SCC Units: **Gallons**	
4. Maximum Hourly Rate: **4140**	5. Maximum Annual Rate: **See Field 10**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **1.2***	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **0.15**	
10. Segment Comment (limit to 200 characters): **Maximum Annual Rate scan vary based on facility-wide SO_2 and NO_x caps and actual emissions.** *** Maximum sulfur content will vary based on the fuel's higher heating value and density.**	

Segment Description and Rate: Segment 4 of 4

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Any mixture of Fuel Oil No.6 (Residual Oil) ,On-Spec Used Oil, No. 2 Fuel Oil, or Natural Gas**	
2. Source Classification Code (SCC):	
3. SCC Units: **Gallons**	
4. Maximum Hourly Rate: **4140 / 0.621**	5. Max.Annual Rate **see field 10**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **1.8*/0.033**	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **150,000 / 1040 (HHV)**	
10. Segment Comment (limit to 200 characters): **Maximum Annual Rates can vary based on facility-wide caps and actual emissions.. The purpose of this segment is to indicate the potential to co-fire multiple fuels. In order to provide maximum hourly rates for the co-firing of a liquid and gaseous fuel, the maximum of each fuel is provided.** ***Maximum sulfur content will vary based on the fuel's higher heating value and density.**	

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

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			NS
NOX			EL
PM			EL
PM10			NS
SO2			EL
HAPS			NS

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

Pollutant Detail Information: Pollutant 1 of 3

1. Pollutant Emitted: **SO2**

2. Total Percent Efficiency of Control: %

3. Potential Emissions: **1.2×10^3** lb/hour, **80 (Cap)** tons/year

4. Synthetically Limited?
   [X] Yes [ ] No

5. Range of Estimated Fugitive/Other Emissions:
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor: **1.87 lb/mmBtu**
   Reference: **62-296.405(1)(c), F.A.C**

7. Emissions Method Code:
   [X] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

   Allowable Emission Rate: 1.87 lb/mmBtu
   Max Heat Input Rate: 621 mmBtu/hr

   lb/hr =(1.87 lb/mmBtu) x (621 mmBtu/hr) = 1.2×10^3 lb/hr

   See Attachment EU11-01

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

   The current maximum allowable emission rate is 1.87 lb/mmBtu and the maximum heat input rate is 621 mmBtu/hr. Current allowablel SO_2 emissions are 5086 TPY.. Annual emissions will be limited based on the requested annual cap following compliance testing of the Unit 8 combustion turbine .

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **RULE**
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **1.87 lb/mmBtu**
4. Equivalent Allowable Emissions: **1.2 x 10^3** lb/hour **80 (Cap)** tons/year
5. Method of Compliance (limit to 60 characters): **40 CFR Part 75, Appendix D**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Emissions limitation entered in Field 3 reflects the maximum allowable emission rate per the SIP regulations (62-296.405(1)(c)1,h, F.A.C.) .**

B.

1. Basis for Allowable Emissions Code: **ESCPSD**
2. Future Effective Date of Allowable Emissions: **Upon completion of compliance testing on the Unit 8 combustion turbine.**
3. Requested Allowable Emissions and Units: **80 TPY**
4. Equivalent Allowable Emissions:
5. Method of Compliance (limit to 60 characters): **40 CFR Part 75, Appendix D**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Annual emissions will be limited by facility wide cap after completion of compliance testing on Unit 8.**

Pollutant Detail Information: Pollutant **2** of **3**

1. Pollutant Emitted: **PM**

2. Total Percent Efficiency of Control: %

3. Potential Emissions: **77.6** lb/hour, **Caps** tons/year

4. Synthetically Limited?
   [**X**] Yes [ ] No

5. Range of Estimated Fugitive/Other Emissions:
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor: **0.1 lb/mmBtu (0.3 lb/mmBtu during Excess Emissions)**
   Reference: **62-296.405(1)(b) and 62-210.700, F.A.C.**

7. Emissions Method Code:
   [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):
   Allowable Emission Rate: 0.1 lb/mmBtu and 0.3 lb/mmBtu during excess Emissions
   Max Heat Input Rate = 621 mmBtu/hr
   Estimated 12.5% Excess Emissions

   lb/hr =(1-.125)x(621 mmBtu/hr x 0.1lb/mmBtu)+(.125)x(621 mmBtu/hr x 0.3 lb/mmBtu)
   lb/hr = 77.6

   See Attachment EU11-01

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

   The maximum allowable emission rate is 0.1 lb/mmBtu and 0.3 lb/mmBtu during excess emissions for load changes and boiler cleaning. The maximum heat input rate is 621 mmBtu/hr. Potential PM emissions are estimated utilizing these allowable rates, the annual emissions are limited indirectly by the requested facility-wide emission caps on SO_2 and NO_x.

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **RULE**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **0.1 lb/mmBtu and 0.3 lb/mmBtu during excess emissions when firing fuel oil**	
4. Equivalent Allowable Emissions: **77.6** lb/hour	**Caps** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Methods 1,2,3,5, or 17 in any fiscal year in which the fossil fuel system generator burns more than 400 hrs of fuel oil other than startup.**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Emissions limitations entered in Field 3 reflect the maximum allowable emission rates listed in the SIP regulations (62-296.405(1)(b) and 62-210.700(3), F.A.C.)**	

B.

1. Basis for Allowable Emissions Code:
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions:
5. Method of Compliance (limit to 60 characters):
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):

Pollutant Detail Information: Pollutant **3** of **3**

1. Pollutant Emitted: **NOx**

2. Total Percent Efficiency of Control: %

3. Potential Emissions: **204.93** lb/hour, **Caps** tons/year

4. Synthetically Limited?
   [**X**] Yes [ ] No

5. Range of Estimated Fugitive/Other Emissions:
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor:
   Reference:

7. Emissions Method Code:
   [ ] 0 [ ] 1 [ ] 2 [**X**] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

   Maximum Firing Rate: 621 mmBtu/hr
   Emission Factor: 0.33 lb/mmBtu (CEMS Data)

   lb/hr =(621 mmBtu) x (0.33 lb-NOx/mmBtu) = 204.93 lb/hr

   See Attachment EU11-01

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

   Potential emissions will be capped by the requested facility wide emission limitation, following the completion of compliance testing of the Unit 8 combustion turbine.

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**
2. Future Effective Date of Allowable Emissions: **Upon completion of compliance testing of the Unit 8 combustion turbine**
3. Requested Allowable Emissions and Units: **467 TPY**
4. Equivalent Allowable Emissions: **204.93** lb/hour **Cap** tons/year
5. Method of Compliance (limit to 60 characters): **CEMS Data**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitation: Visible Emissions Limitation **1** of **2**

1. Visible Emissions Subtype: **VE20**
2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20 %** Exceptional Conditions: **40 %** Maximum Period of Excess Opacity Allowed: **2** min/hour
4. Method of Compliance: **Annual VE in accordance with EPA Method 9 using the maximum fuel oil to gas ratio used during the fiscal year.**
5. Visible Emissions Comment (limit to 200 characters):

Visible Emissions Limitation: Visible Emissions Limitation **2** of **2**

1. Visible Emissions Subtype: **VE60**
2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **60 %** Exceptional Conditions:**100 %** Maximum Period of Excess Opacity Allowed: ***See Field 5**
4. Method of Compliance
5. Visible Emissions Comment (limit to 200 characters): **In accordance with 62-210.700(1),(2), &(3), F.A.C., excess emissions are allowed at the following opacities for the associated time periods: 60% - 3 hrs/ 24 hrs for boiler cleaning and load change, 100% - 2 hrs / 24 hrs for malfunction, 100 % - unlimited for start-up and shutdown**

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor 1 of 4

1. Parameter Code:	2. Pollutant(s): **Gas Fuel Flow**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Superior** Model Number: **GHFA 8" 600RF** Serial Number: **94128**	
5. Installation Date: **12-31-94**	
6. Performance Specification Test Date: **12-31-94**	
7. Continuous Monitor Comment (limit to 200 characters): **Orifice Meter. Installed in accordance with Rule 62-214.320, F.A.C., Rule 62-214.330, F.A.C., and 40 CFR Part 75 Appendix D, Section 2.1.** **Note: The serial number reflects the primary unit.**	

Continuous Monitoring System: Continuous Monitor 2 of 4

1. Parameter Code:	2. Pollutant(s): **Oil Fuel Flow Monitor (2)**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Micro Motion** Model Number: **CMF200M342NV & EX122A** Serial Number:**319657 & 9210S0005062**	
5. Installation Date: **12-21-94 & 12-16-94**	
6. Performance Specification Test Date: **12-21-94 & 12-16-94**	
7. Continuous Monitor Comment (limit to 200 characters): **Coriolis Type Meter. Installed in accordance with Rule 62-214.320, F.A.C., Rule 62-214.330, F.A.C., and 40 CFR Part 75 Appendix D, Section 2.1.** **Note: The serial number reflects the primary unit.**	

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor 3 of 4

1. Parameter Code: **EM**	2. Pollutant(s): **NOx**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Teco** Model Number: **42D**	Serial Number: **42D45683274**
5. Installation Date: **2-28-95**	
6. Performance Specification Test Date: **5-24-95 (certification date)**	
7. Continuous Monitor Comment (limit to 200 characters): **Installed in accordance with Rule 62-214.320, F.A.C., Rule 62-214.330, F.A.C., and 40 CFR Part 75 Appendix D, Section 2.1.** **Note: The serial number reflects the primary unit.**	

Continuous Monitoring System: Continuous Monitor 4 of 4

1. Parameter Code: **CO2**	2. Pollutant(s): **Carbon Dioxide**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Teco** Model Number: **41H**	Serial Number:**41H48548281**
5. Installation Date: **2-28-96**	
6. Performance Specification Test Date: **2-28-96**	
7. Continuous Monitor Comment (limit to 200 characters): **Installed in accordance with Rule 62-214.320, F.A.C., Rule 62-214.330, F.A.C., and 40 CFR Part 75 Appendix D, Section 2.1.** **Note: The serial number reflects the primary unit.**	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

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

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

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

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

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

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

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

3. Increment Consuming/Expanding Code:			
PM	[ ] C	[X] E	[ ] Unknown
SO2	[ ] C	[X] E	[ ] Unknown
NO2	[ ] C	[X] E	[ ] Unknown

4. Baseline Emissions:		
PM	**77.63** lb/hour	**155** tons/year
SO2	**1707.75** lb/hour	**3390** tons/year
NO2		**41.6** tons/year

5. PSD Comment (limit to 200 characters):

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1. Process Flow Diagram [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested
2. Fuel Analysis or Specification [X] Attached, Document ID: EU11-02 [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [X] Previously submitted, Date: September 19, 1996 [ ] Not Applicable
6. Procedures for Startup and Shutdown [X] Attached, Document ID: EU11-03 [ ] Not Applicable
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [X] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [X] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation
[X] Attached, Document ID: **EU11-04** [ ] Not Applicable

11. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [ ] Not Applicable

12. Identification of Additional Applicable Requirements
[ ] Attached, Document ID: _____[X] Not Applicable

13. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID: _____[X] Not Applicable

14. Acid Rain Application (Hard-copy Required)

[X] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID: **EU11-05**

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Not Applicable

Attachment EU11-01

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Hackel
Date: 08/19/94

Client: City of Tallahassee
OFS No: 1584.0005.0008

Ck'd By: D. Graziani, P.E.
Date: 08/26/94

Sheet No.: 1 of 3
Calc. No.: 940819DH09

Rv'd: 02/26/97 By: D. Graziani, P.E.

Emission Unit Description:
The emissions unit is a Riley steam generator designated Boiler No. 7. The unit is currently operating under a nonfederally enforceable operating permit issued by the FDEP and has been assigned the tracking number 10TLH65000107. The unit pre-dates the PSD regulations. The unit is capable of firing residual fuel oil, on-spec used oil, natural gas, any of the lighter fuel oils (i.e., fuel oil Nos. 5, 4, ..) or any combination thereof. The unit is rated for a maximum heat input rate of 621 mmBtu/hr when firing fuel oil or natural gas and a nominal 44 MW and 500,000 lbs/hr of steam. The existing operating permit allows continuous operation with restrictions on VE (20% & excess emissions), PM (0.1 lb.mmBtu - normal operation & 0.3 lb/mmBtu - soot blowing), and SO2 (1.87 lb/mmBtu & sulfur content of 1.8% by wt). The federally enforceable emission limitations established through the SIP are the same as those in the permit. Following the successful operation of Unit 8, annual emissions from Unit 7 will be limited by the requested facility wide caps on sulfur dioxide and nitrogen oxides.

References:
No. 1 - FDEP Permit No. AO37-242825, Spec. Condition Nos. 3, 4 & 6
No. 2 - FDEP Rules 62-210.700(1)(2) & (3), 62-296.405(1)(a),(b),(c),1,.h
No. 3 - FGT Maximum Sulfur Content allowed by Tariff
No. 4 - CEMS Data averages

Operating Parameters

Annual Hours Of Operation (hrs/yr)	AHOP := 8760	
Maximum Heat Input Rate (mmBtu/hr)	MHR1 := 621	(higher heating value) MHR2 := MHR1
Fuel Oil Heat Content (Btu/Gal)	FOHC := 150000	
Fuel Oil Sulfur Content (% wt)	FOSC := 1.8	
Natural Gas Heat Content (Btu/CF)	NGHC := 1040	
Natural Gasl Sulfur Content (gr/CF)	NGSC := 0.1	

Calculated Fuel Oil Usage Rate (kgal/hr)

$$FOUR := MHR1 \cdot \frac{10^6}{FOHC \cdot 1000} \qquad FOUR = 4$$

Calculated Natural Gas Usage Rate (mmCF/hr)

$$NGUR := MHR1 \cdot \frac{10^6}{NGHC \cdot 10^6} \qquad NGUR = 1$$

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Hackel
Date: 08/19/94

Client: City of Tallahassee
OFS No: 1584.0005.0008

Ck'd By: D. Graziani, P.E.
Date: 08/26/94

Sheet No.: 2 of 3
Calc. No.: 940819DH09

Rv'd: 02/26/97 By: D. Graziani, P.E.

Emission Estimates

The following emission estimates are provided as required by Rules 62-213.420(3)(c)1, 2, 3 and 4, FAC. The emission estimates are based on allowable emission limitations as specified by Rule or permit condition. The emission estimates provide hourly rates (lbs/hr) denoted with a "H" and annual emission rates (tons/year) denoted with an "A".

Emission Estimates - Segment No. 1 (Natural Gas Firing)

Sulfur Dioxide (SO2) - Potential Emissions (Reference No. 3)

$$NGHSO2 := NGUR \cdot 10^6 \cdot \frac{NGSC}{7000} \cdot \frac{64}{32} \qquad NGHSO2 = 17.1$$

$$NGASO2 := NGHSO2 \cdot \frac{AHOP}{2000} \qquad NGASO2 = 74.72$$

Nitrogen Oxides (NOx) - Potential Emissions (Reference No. 4)

$$NGHNOX := MHR2 \cdot 0.23 \qquad NGHNOX = 142.8$$

$$NGANOX := NGHNOX \cdot \frac{AHOP}{2000} \qquad NGANOX = 625.6$$

Emission Estimates - Segment No. 2 (Fuel Oil Firing)

Particulate Matter Emissions (Reference Nos. 1 & 2) based on 12.5% annual excess emissions.

$ER1PM := 0.1$ $ER2PM := 0.3$

$H1PM := MHR1 \cdot ER1PM$ $H1PM = 62$ Allowable Emissions

$H2PM := MHR1 \cdot ER2PM$ $H2PM = 186$ Excess Emissions

$HPM := (1 - .125) \cdot H1PM + .125 \cdot H2PM$ Annual Average

FOSTER WHEELER ENVIRONMENTAL CORPORATION
CALCULATION SHEET - MATHCAD 5.0+

By: D. Hackel
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Ck'd By: D. Graziani, P.E.
Date: 08/26/94

Sheet No.: 3 of 3
Calc. No.: 940819DH09

Rv'd: 02/26/97 By: D. Graziani, P.E.

Emission Estimates - Segment No. 2 (Fuel Oil Firing)

Sulfur Dioxide (SO2) - Federally Enforceable Limits (Reference No. 2)

ER1SO2 := 1.87

FOHSO2 := MHR1·ER1SO2 FOHSO2 =1161.27

$$FOASO2 := FOHSO2 \cdot \frac{AHOP}{2000} \qquad FOASO2 = 5086.36$$

Nitrogen Oxides (NOX) - Potential Emissions (Reference No. 4)

ER1NOX := 0.33

FOHNOX := MHR1·ER1NOX FOHNOX =204.9

$$FOANOX := FOHNOX \cdot \frac{AHOP}{2000} \qquad FOANOX = 897.6$$

In both cases, Unit 7 is limited by NOx emissions and is also limited by SO2 emissions in the case of fuel oil firing. The proposed emission caps of 80 tons and 467 tons of SO2 and NOx mean that Unit 7 can not continuously operate at full load. These caps also indirectly limit maximum annual emissions of particulate matter.

Attachment EU11-02

The attached fuel sample analyses represent "typical" characterizations for the fuels combusted in EU11, Boiler No. 7. Maximum values may be higher. The fuels represented in the analyses are natural gas, fuel oil, and on-spec used oil.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

TYPICAL NATURAL GAS ANALYSIS[1]

Analysis	Gravimetric Breakdown (%)
Ultimate Analysis	
Carbon	64.84 - 75.25
Hydrogen	20.85 - 23.53
Oxygen	0 - 1.58
Nitrogen	0.76 - 12.90
Sulfur	0 - 0.34
Ash	0.0
Proximate Analysis	99.65 - 100.0
Volatile Matter	0.0
Fixed Carbon	0.0 - 0.00138
Moisture	0.0
Ash	0.0 - 0.034
Sulfur[2]	

(1) Heating value (HHV): 964 - 1129 Btu/ft^3

(2) Total sulfur (maximum) 10 grains/100 SCF

Source: Babcock & Wilcox, 1972 and RE&C, 1997

TYPICAL NUMBER 6 FUEL OIL ANALYSIS[1, 2]

Analysis	Gravimetric Breakdown (%)
Ultimate Analysis	
Carbon	86.5 - 90.2
Hydrogen	9.5 - 12.0
Oxygen	-
Nitrogen	-
Sulfur[3]	0.7 - 3.5
Ash	0.01 - 0.5

(1) Higher heating value: 17,410 - 18,990 Btu/lb
(2) Density: 8.51 - 7.68 lb/gal
(3) Total sulfur (maximum) 1.8%

Source: Babcock & Wilcox, 1972

Attachment EU11-03

The City follows best operational practices in the start-up and shut-down of the boilers at the Purdom Generating Station. Under normal conditions, standard operating guidelines are followed for startup and shutdown of the boilers. Under any abnormal condition of operation, best operational practices are followed to minimize emissions and to minimize the duration of any excess emission.

Attachment EU11-04

Boiler No. 7 (EU11) located at the Purdom Generating Station has a maximum heat input capacity of 621 mmBtu/hour and produces 44 MW electricity. The alternative methods of operation (AMO) associated with the steam generator are related to the fuel type being fired and the operating rate. The current AMOs include the following:

Natural Gas - Up to Maximum Rate of 621 mmBtu/hour

Fuel Oil Firing - Up to Maximum Rate of 621 mmBtu/hour

Fuel Oil No. 6 (residual fuel oil)
Fuel Oil Nos. 2 through 6
On-Spec Used Oil
Co-firing any combination of Fuel Oil No. 6, Fuel Oil Nos. 2 through 6, On-Spec Used Oil, or Natural Gas up to 621 mmBtu/hr.

Attachment EU11-05

A new acid rain permit application is included as Attachment EU13-09. The new application includes Unit 7 (Existing Phase II Unit) and Unit 8 combustion turbine (New Unit).

EMISSION UNIT - 12

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

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

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

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

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

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

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

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

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Auxilary Boiler**		
2. Emissions Unit Identification Number: [ ] No Corresponding ID [ ] Unknown **010**		
3. Emissions Unit Status Code: **C**	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code: **49**
6. Emissions Unit Comment (limit to 500 characters): **Operation of Emissions Unit 12 (EU12) is restricted by a federally enforceable construction permit which limits operation to 2,000 hours per year, the firing of natural gas and only to periods when steam geneating units 5,6, and 7 are not operating. Following completion of compliance testing on Unit 8, the auxiliary boiler will be limited to operation only during periods when Units 7 and 8 are not operating.**		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

B.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

C.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

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

Emissions Unit Details

1. Initial Startup Date: **Pending**	
2. Long-term Reserve Shutdown Date:	
3. Package Unit: Manufacturer: **Kewanee** Model Number: **H3S-400-G**	
4. Generator Nameplate Rating: MW	
5. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:	 °F seconds °F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate: **16.74** mmBtu/hr		
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Operating Capacity Comment (limit to 200 characters): **The maximum heat input rate reported was based on the manufacturer specifications and a heating value of 1,000 Btu/ft^3 of natural gas. The actual heat input may vary from the manufacturer specifications based upon the heat content of the natural gas.**		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	2,000 hours/year

B. FACILITY REGULATIONS

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

Rule 62-204.800(7)(b)4,(d) (as applicable) F.A.C.	
Rule 62-210.700(1),(4),(6) F.A.C.	
Rule 62-296.406, F.A.C.	
Rule 62-297.310(2)(b) F.A.C.	
Rule 62-297.310(4)(a)2 (except a-c) F.A.C.	
Rule 62-297.310(7)(a)1,4a*9 F.A.C.	
Rule 62-297.310(8)(a), (b) F.A.C.	
40 CFR 60.7(a)(1),(2),(3),(b)	
40 CFR 60.12	
40 CFR 60.48c(a),(g),(i)	
The City of Tallahassee has requested that FDEP authorize visible emissions compliance testing once every 5 years, pursuant to Rule 62-297.310(7)(a)4, rather than annual compliance testing required pursuant to Rule 62-297.310(7)(a)4a.	

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **EU12**
2. Emission Point Type Code: [X] 1 [ ] 2 [ ] 3 [ ] 4
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **This emission point, EU12, represents the exhaust for the Auxilary Boiler.**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [ ] V [X] W
6. Stack Height: **30** feet
7. Exit Diameter: **2** feet
8. Exit Temperature: **420** °F
9. Actual Volumetric Flow Rate: **4,000** acfm

10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate:	dscfm
12. Nonstack Emission Point Height:	feet
13. Emission Point UTM Coordinates: Zone: **16** East (km): **769.767** North (km): **3,339.784**	
14. Emission Point Comment (limit to 200 characters): **The exhaust gas exit temperature and actual volumetric flow rate were estimated by a manufacturer service representative. The actual exit temperature and actual flow rate may vary.**	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Natural Gas**	
2. Source Classification Code (SCC): **1-02-006-02**	
3. SCC Units: **mmSCF**	
4. Maximum Hourly Rate: **0.017**	5. Maximum Annual Rate: **33.5**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.033**	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **1,000 (HHV)**	
10. Segment Comment (limit to 200 characters): **Maximum Annual Rate is based on 2000 hours per year operation at manufacturer specification. Actual Maximum Hourly Rate and Maximum Annual Rate may vary slightly from manufactures specifications.**	

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

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
SO_2			EL
NO_x			EL

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

Pollutant Detail Information: Pollutant 1 of 2

1. Pollutant Emitted: SO_2	
2. Total Percent Efficiency of Control:	%
3. Potential Emissions: 0.47 lb/hour,	Cap tons/year
4. Synthetically Limited? [X] Yes [ ] No	
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3	_____ to _____ tons/year
6. Emission Factor: Reference:	
7. Emissions Method Code: [ ] 0 [ ] 1 [X] 2 [ ] 3 [ ] 4 [ ] 5	
8. Calculation of Emissions (limit to 600 characters): lb/hr = (16.47 x 10^6 Btu/hr) x (CF/1000 Btu) x (10 gr-S/100 CF) x (lb-S/7000 gr) x (64 lb-SO_2/lb-S) = 0.47 lb/hr	
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Emissions unit will be subject to the proposed facility-wide cap following completion of compliance testing of the Unit 8 combustion turbine.**	

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**
2. Future Effective Date of Allowable Emissions: **Upon completion of compliance testing on the Unit 8 combustion turbine.**
3. Requested Allowable Emissions and Units: **facility-wide cap (80 TPY)***
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):. **FGT data on sulfur content and fuel flow meter**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): *** Auxiliary boiler is limited to firing natural gas and 2000 hours of operation per year by its construction permit. Its emissions are included in within the cap.**

B.

1. Basis for Allowable Emissions Code:
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions:
5. Method of Compliance (limit to 60 characters):
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):

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

Pollutant Detail Information: Pollutant 2 of 2

1. Pollutant Emitted: NO_x
2. Total Percent Efficiency of Control: %
3. Potential Emissions: 2.3 lb/hour, Cap tons/year
4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year
6. Emission Factor: 140 lb/mmCF Reference: AP-42
7. Emissions Method Code: [ ] 0 [ ] 1 [X] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): lb/hr = (16.47 x 10^6 Btu/hr) x (CF/1000 Btu) x (mmCF/10^6 CF) x (140 lb/mmCF) = 2.3 lb/hr
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Emissions unit will be subject to the proposed facility-wide cap following completion of compliance testing of the Unit 8 combustion turbine.**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**
2. Future Effective Date of Allowable Emissions: **Upon completion of compliance testing on the Unit 8 combustion turbine.**
3. Requested Allowable Emissions and Units: **Facility-wide cap 467 TPY**
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):. **AP-42 emission factor (140 lb-NO_x/mmCF) and fuel flow meter.**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): *** Auxiliary boiler is limited to firing natural gas and 2000 hours of operation per year by its construction permit. Its emissions are included in within the cap.**

B.

1. Basis for Allowable Emissions Code:
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions:
5. Method of Compliance (limit to 60 characters):
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE20**
2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20 %** Exceptional Conditions: **40 %** Maximum Period of Excess Opacity Allowed: **2 min/hour**
4. Method of Compliance: **VE in accordance with EPA Method 9** **Requested once prior to renewal**
5. Visible Emissions Comment (limit to 200 characters):

Visible Emissions Limitation: Visible Emissions Limitation of

1. Visible Emissions Subtype: **VE99**
2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: Exceptional Conditions: **100%** Maximum Period of Excess Opacity Allowed: **2 hours/24-hour period**
4. Method of Compliance
5. Visible Emissions Comment (limit to 200 characters): **In accordance with 62-210.700(1),F.A.C., excess emissions resulting from startup, shutdown or malfunction are permitted providing that the duration of excess emissions be minimized but in no case to exceed two hours in any 24 hour period unless authorized by the Department for longer duration.**

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor of

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date: 1	
7. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor of

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

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

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

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

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

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

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[X] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

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

3. Increment Consuming/Expanding Code:			
PM	[X] C	[ ] E	[ ] Unknown
SO2	[X] C	[ ] E	[ ] Unknown
NO2	[X] C	[ ] E	[ ] Unknown

4. Baseline Emissions:		
PM	0 lb/hour	0 tons/year
SO2	0 lb/hour	0 tons/year
NO2		0 tons/year

5. PSD Comment (limit to 200 characters):

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1. Process Flow Diagram [ ] Attached, Document ID: _____ [ ] Not Applicable [X] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID: _____ [ ] Not Applicable [X] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID: [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [X] Attached, Document ID: EU12-01 [ ] Not Applicable
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [X] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____[X] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

11. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Identification of Additional Applicable Requirements
[X] Attached, Document ID:EU12-02 [ ] Not Applicable

13. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID: _____ [X] Not Applicable

14. Acid Rain Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[X] Not Applicable

Attachment EU12-01

The City of Tallahassee follows best operational practices in the startup and shutdown of the boilers at the Purdom Generating Station. Under normal conditions, standard operating guidelines are followed for startup and shutdown of the boilers. Under any abnormal condition of operation, best operational practices are followed to minimize emissions and to minimize the duration of any excess emissions.

Attachment EU12-02

Following completion of compliance testing on the Unit 8 combustion turbine the auxiliary boiler's SO_2 and NO_x emisions will be subject to the facility-wide caps. This is an additional requirement outside the scope of the regulations. The City requests that a condition be included within the PSD permit, which will become effective upon the completion of compliance testing on Unit 8, which includes SO_2 and NO_x emissions within the facility-wide caps.

EMISSION UNIT - 13

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

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

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

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

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

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

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

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

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Unit 8 - Combined Cycle Combustion Turbine**		
2. Emissions Unit Identification Number: [ ] No Corresponding ID [X] Unknown		
3. Emissions Unit Status Code: **C**	4. Acid Rain Unit? [X] Yes [ ] No	5. Emissions Unit Major Group SIC Code: **49**
6. Emissions Unit Comment (limit to 500 characters):		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **Oxides of Nitrogen** **Dry Low NOx Combustors - Natural Gas Firing**
2. Control Device or Method Code: **025**

B.

1. Description (limit to 200 characters):
Oxides of Nitrogen **Water Injection - Fuel Oil Firing**
2. Control Device or Method Code: **028**

C.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

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

Emissions Unit Details

1. Initial Startup Date:	
2. Long-term Reserve Shutdown Date:	
3. Package Unit: Manufacturer: **General Electric**	Model Number: **MS7001FA**
4. Generator Nameplate Rating: **Nominal 160** MW	
5. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:	 °F seconds °F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate: **1914.1** mmBtu/hr		
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Operating Capacity Comment (limit to 200 characters): **The total generating capacity of the unit has been set at a nominal 250 MW (GT-160 MW and ST - 90 MW). Attachment EU13-01 contains the General Electric data sheets for the proposed unit. These data sheets provide the heat input rates for various loads, ambient temperatures and fuels. The maximum heat input occurs while firing distillate fuel oil at 100 percent load. At 20 °F this corresponds to 1914.1 mmBtu/hr for Number 2 (0.05% Sulfur) diesel fuel oil and 1682.2 mmBtu/hr for natural gas. Upon completion of compliance testing, the City will provide temperature and heat input curves.**		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:	
hours/day	days/week
weeks/year	**8,760** hours/year

B. FACILITY REGULATIONS

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

Rule 62-204.800(7)(b)38,(d), F.A.C.*	**40 CFR 60.13 (a),(b),(d)(1),(e),(f),(h)**
Rule 62-204.800(14);(15);(16);(18), F.A.C.	**40 CFR 60.332 (a)(1),(3); (b);(f);(i)**
Rule 62-210.300(1), F.A.C.	**40 CFR 60.333**
Rule 62-210.550, F.A.C.	**40 CFR 60.334**
Rule 62-210.650, F.A.C.	**40 CFR 60.335**
Rule 62-210.700(1),(4),(6) , F.A.C.	**40 CFR 72.6(a)(3)(i)**
Rule 62-214.300, F.A.C.	**40 CFR 72.9**
Rule 62-214.320(1)(b),(2) F.A.C	**40 CFR 72.20 (a)-(c)**
Rule 62-214.330(1), F.A.C.	**40 CFR 72.21**
Rule 62-214.350(2),(3),(5),(6), F.A.C.	**40 CFR 72.22**
Rule 62-296.320(4)(b), F.A.C.	**40 CFR 72.23**
Rule 62-297.310(1),(2),(3),(4),(5), F.A.C.	**40 CFR 72.24**
Rule 62-297.310(6)(a),(c)-(g) F.A.C.	**40 CFR 72.30(a),(b)(2)(ii),(c),(d)**
Rule 62-297.310(7)(a)1,3,4,5,8,9,(c) F.A.C.	**40 CFR 72.31**
Rule 62-297.310(8) F.A.C.	**40 CFR 72.32**
40 CFR 60.7(a)(1),(2),(3),(4),(5)	**40 CFR 72.40(a)(1)**
40 CFR 60.7(b),(c),(d),(f)	**40 CFR 72.51**
40 CFR 60.8(a),(b),(c),(d),(e),(f)	**40 CFR 72.80(b),(c),(d),(f),(g)**
40 CFR 60.11(a),(b),(c);(e)(1),(2)	**40 CFR 72.81****
40 CFR 60.12	**40 CFR 72.82****

List of Applicable Regulations (Required for Category I applications and Category III applications involving TitleV sources. See Instructions.)

40 CFR 72.83**	**40 CFR 75.33(a),(c)**
40 CFR 72.84**	**40 CFR 75.35**
40 CFR 72.90	**40 CFR 75.36**
40 CFR Part 72, Appendices A and B	**40 CFR 75.50(a),(b),(d),(e)**
40 CFR 75.4(b)(2)	**40 CFR 75.53**
40 CFR 75.5	**40 CFR 75.54 [except (c) & (f)]**
40 CFR 75.10(a)(1),(2),(3)	**40 CFR 75.55(c)**
40 CFR 75.10(b),(c),(d),(f),(g)	**40 CFR 75.56**
40 CFR 75.11(d)(2)	**40 CFR 75.60**
40 CFR 75.12 (a),(b)	**40 CFR 75.61**
40 CFR 75.13	**40 CFR 75.62**
40 CFR 75.14(c)	**40 CFR 75.63**
40 CFR 75.20(a)	**40 CFR 75.64**
40 CFR 75.20(b),(c),(d),(g)	**40 CFR 75, Appendix A**
40 CFR 75.22	**40 CFR 75, Appendix B**
40 CFR 75.24	**40 CFR 75, Appendix C**
40 CFR 75.30	**40 CFR 75, Appendix D**
40 CFR 75.31	**40 CFR 75, Appendix G, 2,4**
40 CFR 75.32	**40 CFR 75, Appendix H**

List of Applicable Regulations (Required for Category I applications and Category III applications involving TitleV sources. See Instructions.)

40 CFR 77.3**	
40 CFR 77.5(b)**	
40 CFR 77.6**	
40 CFR 73.33(c),(d),(e)	
40 CFR 73.35	
40 CFR 75.52	
40 CFR 72.21(a),(c)	

*** - State Only Requirements**
**** - Potential Future Regulations**

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **EU13**
2. Emission Point Type Code: [X] 1 [ ] 2 [ ] 3 [ ] 4
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **This emission point, EU13, represents the exhaust for the Unit 8 combustion turbine.**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [X] V [ ] W
6. Stack Height: **200 Above Ground Level** feet
7. Exit Diameter: **16.5** feet
8. Exit Temperature: **171 - 203** °F
9. Actual Volumetric Flow Rate: **622,306 - 1,119,935** acfm

10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate:	dscfm
12. Nonstack Emission Point Height:	feet
13. Emission Point UTM Coordinates: Zone: **16** East (km): **769.611** North (km): **3339.767**	
14. Emission Point Comment (limit to 200 characters):	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Natural Gas**	
2. Source Classification Code (SCC): **10100601**	
3. SCC Units: **mmSCF**	
4. Maximum Hourly Rate: **1.9**	5. Maximum Annual Rate: **see field 10**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.033**	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **904 (LHV)**	
10. Segment Comment (limit to 200 characters): **Maximum hourly usage rate is based on full load operation at an ambient temperature of 20 °F. Actual hourly rate will vary depending on ambient conditions.** **Actual Annual Rate will vary based on the requested facility-wide caps**	

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **No. 2 (0.05% Sulfur) Diesel Fuel Oil**	
2. Source Classification Code (SCC): **10100401**	
3. SCC Units: **Gallons**	
4. Maximum Hourly Rate: **14,500**	5. Maximum Annual Rate: **see field 10**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.05**	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **132,000 (LHV)**	
10. Segment Comment (limit to 200 characters): **Maximum hourly usage rate is based on full load operation at an ambient temperature of 20 °F. Actual hourly rate will vary depending on ambient conditions.** **Actual Annual Rate will vary based on the requested facility-wide caps**	

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

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			NS
PM			NS
PM10			NS
NOx			EL
SO2			EL
VOC			NS
H106			NS
H133			NS
HAPS			NS

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

Pollutant Detail Information: Pollutant **1** of **6**

1. Pollutant Emitted: **CO**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **192** lb/hour, **(See Field 9)** tons/year
4. Synthetically Limited? [**X**] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year
6. Emission Factor: Reference:
7. Emissions Method Code: [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **lb/hr - See Appendix A of the PSD Application.** **See Field 9**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Actual hourly emissions will vary based on load and ambient temperature. Actual annual emissions will be limited indirectly by the facility-wide emission caps on SO_2 and NO_x.**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Rule - BACT (62-212.400 (5) (c)), F.A.C.**
2. Future Effective Date of Allowable Emissions: **Upon completion of compliance testing**
3. Requested Allowable Emissions and Units: **See Field 6**
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **BACT for this unit is "good combustion practices," no short-term emission limits are proposed.**

B.

1. Basis for Allowable Emissions Code:
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions:
5. Method of Compliance (limit to 60 characters):
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):

Pollutant Detail Information: Pollutant **2** of **6**

1. Pollutant Emitted: **PM**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: 17 lb/hour, **(*See Field 9)** tons/year
4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year
6. Emission Factor: Reference:
7. Emissions Method Code: [X] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **lb/hr - See Appendix A of the PSD Application.**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Actual annual emissions will be limited indirectly by the facility-wide emission caps on SO_2 and NO_x.**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: : **RULE - BACT (62-212.400(5)(c), F.A.C.)**
2. Future Effective Date of Allowable Emissions: **Upon completion of compliance testing**
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **BACT for this unit is combustion turbine inlet air filtration, good combustion practices and fuel quality. No emission limits are proposed.**

B.

1. Basis for Allowable Emissions Code: :
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions:
5. Method of Compliance (limit to 60 characters):
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):

Pollutant Detail Information: Pollutant **3** of **6**

1. Pollutant Emitted: **PM10**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: 17 lb/hour, **(*See Field 9)** tons/year
4. Synthetically Limited? [**X**] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year
6. Emission Factor: Reference:
7. Emissions Method Code: [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **lb/hr - See Appendix A of the PSD Application.**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Actual annual emissions will be limited indirectly by facility-wide emission caps on SO_2 and NO_x.**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: : **RULE - BACT (62-212.400(5)(c).F.A.C.)**
2. Future Effective Date of Allowable Emissions: **Upon completion of compliance testing**
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **BACT for this unit is combustion turbine inlet air filtration, good combustion practices, and fuel quality. No emission limits are proposed.**

B.

1. Basis for Allowable Emissions Code: :
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions:
5. Method of Compliance (limit to 60 characters):
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):

Pollutant Detail Information: Pollutant 3 of 6

1. Pollutant Emitted: **NOx**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **347** lb/hour, **Cap** tons/year
4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year
6. Emission Factor: Reference:
7. Emissions Method Code: [] 0 [ ] 1 [X] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **lb/hr - See Appendix A of the PSD Application.** **TPY=467 TPY - Facility Wide Cap**
9. Pollutant Potential Estimated Emissions Comment (limit to 200 characters): **Potential hourly emissions based on 100 percent load at an ambient temperature of 20 °F while firing fuel oil. These short term potentials do not include start-up, shut-down or malfunctions which are included within the requested annual cap. Information in Appendix A of the PSD application regarding short term NOx emission rates reflects operations at steady-state and does not include allowances for fuels containing fuel bound nitrogen levels above 0.015 percent. Predicted short-term steady-state emission levels follow 2-4 hour start-up periods.**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Rule**
2. Future Effective Date of Allowable Emissions: **Upon Completion of Compliance Testing**
3. Requested Allowable Emissions and Units: **NSPS Emission Limits**
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 20**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **This unit is subject to 40 CFR Part 60, Subpart GG. Maximum short-term rates, excluding start-up, shutdown and malfunction must meet the limits of 40 CFR 60.332(a)(1), and (3). Actual annual emissions are limited by the proposed facility-wide caps on NO_x and SO_2.**

B.

1. Basis for Allowable Emissions Code: **ESCPSD**
2. Future Effective Date of Allowable Emissions: **Upon completion of compliance testing**
3. Requested Allowable Emissions and Units: **467 TPY**
4. Equivalent Allowable Emissions:
5. Method of Compliance (limit to 60 characters): **CEMS Data**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):

Pollutant Detail Information: Pollutant **3** of **6**

1. Pollutant Emitted: **SO2**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **98** lb/hour, **Cap** tons/year
4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year
6. Emission Factor: Reference:
7. Emissions Method Code: [] 0 [ ] 1 [X] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **lb/hr - See Appendix A of the PSD application** **TPY=80 TPY - Facility Wide Cap**
9. Pollutant Potential Estimated Emissions Comment (limit to 200 characters): **Potential hourly emissions are based on 100 percent load at an ambient temperature of 20 °F while firing No. 2 diesel fuel oil with a maximum sulfur content of 0.05 percent by weight, based on 95 percent conversion of the sulfur to SO_2 per the GE data sheets.**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Rule**
2. Future Effective Date of Allowable Emissions: **Upon start-up of Unit 8**
3. Requested Allowable Emissions and Units: **Maximum Fuel Sulfur Content of 0.8 percent by weight.**
4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters): **Custom Fuel Monitoring Schedule** **(See Appendix PGS-10)**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Short-term emissions are limited by 40 CFR 60.333(b) which limits fuel oil sulfur content to 0.8 percent by weight. Actual annual emissions are limited by the facility-wide caps on SO_2 and NO_x.**

B.

1. Basis for Allowable Emissions Code: **ESCPSD**
2. Future Effective Date of Allowable Emissions: **Upon completion of compliance testing**
3. Requested Allowable Emissions and Units: **80 tons/yr**
4. Equivalent Allowable Emissions:
5. Method of Compliance (limit to 60 characters): **40 CFR Part 75 Appendix D with a 95 percent conversion factor based on the custom fuel monitoring schedule.**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):

VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**
2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20 %** Exceptional Conditions: **100 %** Maximum Period of Excess Opacity Allowed: **2 hours/24 hours**
4. Method of Compliance: **EPA Reference Method 9**
5. Visible Emissions Comment (limit to 200 characters): **Excess emissions allowed per Rule 62-210.700(1), F.A.C.**

Visible Emissions Limitation: Visible Emissions Limitation _ of _

1. Visible Emissions Subtype:
2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: Exceptional Conditions Maximum Period of Excess Opacity Allowed: *
4. Method of Compliance

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor **1** of **3**

1. Parameter Code: **EM**	2. Pollutant(s): **NO_x**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters): **See Attachment EU13-01.** **(Acid Rain Regulations)**	

Continuous Monitoring System: Continuous Monitor **2** of **3**

1. Parameter Code: **O_2 or CO_2**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters): **See Attachment EU13-01.** **(Acid Rain Regulations)**	

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor **3** of **3**

1. Parameter Code: **WTF**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:)	
7. Continuous Monitor Comment (limit to 200 characters): **See Attachment EU13-01.** **(NSPS Regulations)**	

Continuous Monitoring System: Continuous Monitor of

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

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

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

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

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

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

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

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

3. Increment Consuming/Expanding Code:			
PM	[X] C	[ ] E	[ ] Unknown
SO2	[X] C	[ ] E	[ ] Unknown
NO2	[X] C	[ ] E	[ ] Unknown
4. Baseline Emissions:			
PM		0 lb/hour	0 tons/year
SO2		0 lb/hour	0 tons/year
NO2			0 tons/year
5. PSD Comment (limit to 200 characters):			

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1. Process Flow Diagram [X] Attached, Document ID: EU13-02 [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [X] Attached, Document ID: EU13-03 [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [X] Attached, Document ID: EU13-04 [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [X] Attached, Document ID: EU13-05 [ ] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable:_____
6. Procedures for Startup and Shutdown [X] Attached, Document ID: EU13-06 [ ] Not Applicable
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable
8. Supplemental Information for Construction Permit Application **PSD** [X] Attached, Document ID: PGS07 [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID: _____[X] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation
[X] Attached, Document ID: **EU13-07** [ ] Not Applicable

11. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Identification of Additional Applicable Requirements
[ ] Attached, Document ID: [X] Not Applicable

13. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID: _____ [X] Not Applicable

14. Acid Rain Application (Hard-copy Required)

[X] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID: **EU13-08**

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Not Applicable

Attachment EU13-01

The Unit 8 combustion turbine will be subject to the Acid Rain regulations and required to implement a continuous emissions monitoring program. Currently the pollutants expected to monitored include oxidies of nitrogen (NO_x) and a diluent gas (CO_2). In addition, a water-to-fuel ratio monitoring system will be required when firing Number 2 oil under Subpart GG. The City plans to submit a monitoring protocol prior to start-up of Unit 8. The specific parameters to monitored and equipment used for the monitoring will be provided in this protocol.

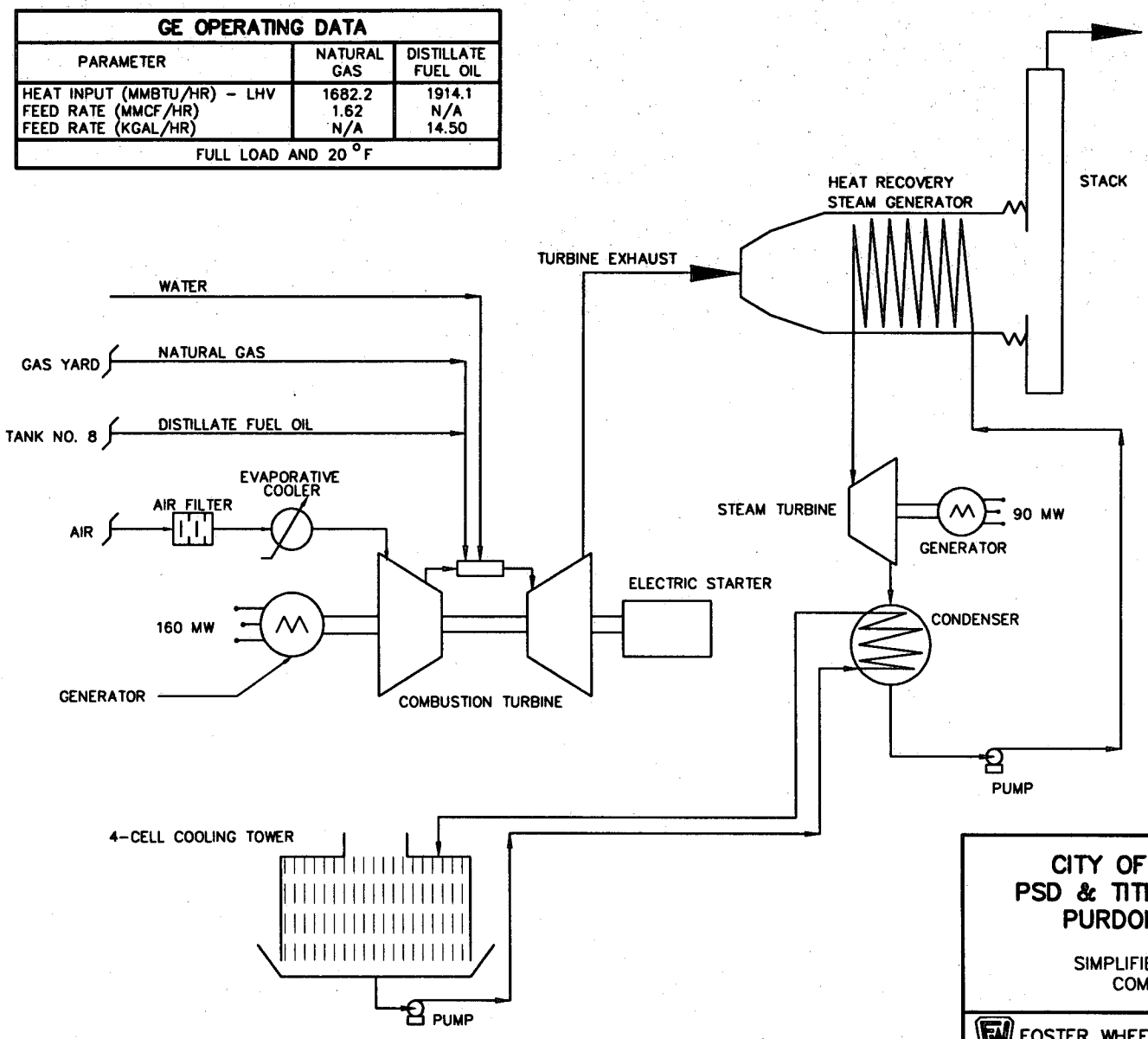
Attachment EU13-02

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

GE OPERATING DATA		
PARAMETER	NATURAL GAS	DISTILLATE FUEL OIL
HEAT INPUT (MMBTU/HR) – LHV	1682.2	1914.1
FEED RATE (MMCF/HR)	1.62	N/A
FEED RATE (KGAL/HR)	N/A	14.50
FULL LOAD AND 20 °F		

EU13 – EXHAUST PARAMETERS
EXHAUST TEMP. – 171 TO 203 °F
STACK HEIGHT – 200'
SO2 EMISSIONS – 80 TPY
NOx EMISSIONS – 467 TPY
OPACITY – 20% EXCEPT AS ALLOWED



SOURCE: FOSTER WHEELER ENVIRONMENTAL CORPORATION, 1997

CITY OF TALLAHASSEE, FLORIDA
PSD & TITLE V PERMIT APPLICATIONS
PURDOM GENERATING STATION

SIMPLIFIED PROCESS FLOW DIAGRAM
COMBINED CYCLE – UNIT 8

FOSTER WHEELER ENVIRONMENTAL CORPORATION

SCALE: N/A	BY: DJG	CAD FILE NO. PUNIT8.DWG
DATE: 02/27/97	CKD' BY: DF REV. BY: djg	FIGURE NO. EU13-02

Attachment EU13-03

The attached fuel sample analyses represent "typical" characterizations for the fuels combusted in the Unit 8 combustion turbine. Actual values may vary, The fuels represented in the analyses include natural gas and Number 2 (0.05% Sulfur) diesel fuel Oil

TYPICAL NATURAL GAS ANALYSIS[1]	
Analysis	**Gravimetric Breakdown (%)**
Ultimate Analysis	
Carbon	64.84 - 75.25
Hydrogen	20.85 - 23.53
Oxygen	0 - 1.58
Nitrogen	0.76 - 12.90
Sulfur	0 - 0.34
Ash	0.0
Proximate Analysis	99.65 - 100.0
Volatile Matter	0.0
Fixed Carbon	0.0 - 0.00138
Moisture	0.0
Ash	0.0 - 0.034
Sulfur[2]	

(1) Heating value (HHV): 964 - 1129 Btu/ft^3
(2) Total sulfur (maximum) 10 grains/100 SCF

Source: Babcock & Wilcox, 1972 and RE&C, 1997

TYPICAL NUMBER 2 (0.05% S) DIESEL FUEL OIL ANALYSIS[1]

Analysis	Gravimetric Breakdown (%)
Ultimate Analysis	
Carbon	86.1 - 88.2
Hydrogen	11.8 - 13.9
Oxygen	0.0
Nitrogen	0.0 - 0.1
Sulfur[2]	0.0 - 0.05
Ash	0.0 - 0.05
Proximate Analysis	
Volatile Matter	99.05 - 99.5
Fixed Carbon	0.25 - 1.0
Moisture	0.0 - 0.1
Ash	0.0 - 0.05

(1) Higher heating value: 19,170 - 19,750 Btu/lb
(2) Total sulfur (maximum) 0.05%

Source: Babcock & Wilcox, 1972 and RE&C, 1997

Attachment EU13-04

For the Unit 8 combustion turbine the proposed air pollution controls based on the evaluation of Best Available Control Technology (BACT) included the following:

- For the primary control of CO and VOC, good combustion practices which maximize NO_x reductions while minimizing CO, VOC, and PM_{10} emissions is proposed as BACT.
- For the primary control of PM_{10}, trace metals, and total fluorides combustion inlet air filtration coupled with good combustion practices and fuel quality is proposed as BACT. The use of clean pipeline quality natural gas and Number 2 (0.05% Sulfur) diesel fuel oil is the most stringent control technology available.
- For the primary control of NO_x, combustion controls including dry-low NO_x combustors and wet injection techniques coupled with fuel quality is representative of BACT given the regulatory status of NO_x emissions.
- For the primary control of SO_2, and H_2SO_4, and the secondary control of NO_x and PM_{10}, clean pipeline quality natural gas and Number 2 (0.05% Sulfur) diesel fuel oil is the most stringent control technology available.

The overall control strategy is based on the use of clean fuels and good combustion practices which are necessary for the proper operation of the combustion turbine. Appendix A of the PSD application contains a GE paper which further describes the operation of the Dry-Low NOx combustors.

Attachment EU13-05

Combined Cycle Unit 8 (EU13) will be required to conduct compliance testing of the stack gas emissions for oxides of nitrogen per 40 CFR 60 Subpart GG. Therefore, the project will include stack sampling facilities pursuant to Section 62-297.310(6), Florida Administrative Code (F.A.C.), on the stack. The final design of these facilities will meet the requirements of Rules 62-297.310(6)(a), (c), (d), (e), (f), and (g), or be capable of meeting the requirements on a temporary basis as allowed by Rule 62-297.310(6)(b).

Attachment EU13-06

The City of Tallahassee proposes to follow best operational practices in the startup and shutdown of the Unit 8 combined cycle at the Purdom Generating Station. Under normal conditions, standard operating guidelines will be followed for startup and shutdown of the unit. Under any abnormal condition of operation, best operational practices will followed to minimize emissions and to minimize the duration of any excess emissions. Available information indicates that the start-up of Unit 8, including the combustion turbine and the nonfired heat recovery steam generator will require more than the two hour time limit allowed to achieve steady-state operation.

Attachment EU13-07

The Unit 8 combustion turbine (EU13) is planned to be used as a base loaded unit. It will be fueled by either clean pipeline quality natural gas or Number 2 (0.05% Sulfur) diesel fuel oil. The alternative methods of operation (AMO) associated with the combustion turbine are related to the type of fuel being fired and the rate of operation. The current AMOs include the following:

Natural Gas Firing

No. 2 Fuel Oil Firing

The unit can also vary load between 50 and 100 percent as required.

Attachment EU13-08

The Acid Rain permit application is attached.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR RESOURCES MANAGEMENT

INSTRUCTIONS FOR DEP FORM NO. 62-210.900(1)(a)
AIR PERMIT APPLICATION FORM
ACID RAIN PART (PHASE II)

The Acid Rain Program regulations require that the designated representative submit an Acid Rain Part application for each Acid Rain source with an Acid Rain unit. The Acid Rain Part application is binding on the owners and operators of the Acid Rain source and is enforceable in the absence of a Title V permit until the Department either issues a permit to the source or disapproves the application. You must submit the Acid Rain Part application for an initial Title V permit for Acid Rain sources no later than the deadlines for Title V permit applications under Rule 62-213.420, F.A.C.

STEP 1

Please type the required entries in the form.

If you need more space, make copies of the pertinent page(s).

When you have completed the form, indicate the page order and total number of pages (e.g., 1 of 4, 2 of 4, etc.) on each page of the submission.

The alternate designated representative may sign in lieu of the designated representative.

If you need further assistance, contact the office listed below.

STEP 2

The monitor certification deadline is the date on which the tabulation of emissions for purposes of compliance begins. You must determine this date in accordance with 40 CFR 75.4. If the commence operation date or monitor certification date changes, you must notify the Department under the administrative Acid Rain Part correction procedures of Rule 62-214.370, F.A.C.

Submission Instructions

Mail one form and any required attachments with original signatures, and three photocopies of the entire submission, to the following address:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Air Resources Management
Bureau of Air Regulation
MAIL STATION #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

FLORIDA DEP LOGO

Department of Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

AIR PERMIT APPLICATION FORM
ACID RAIN PART (PHASE II)

For more information, see instructions, and refer to 40 CFR 72.30 and 72.31

This submission is: [ ] New [X] Revised Copy [ ] of [ ]

STEP 1

Identify the source by plant name, State, and ORIS code from the National Allowance Data Base (NADB).

Plant Name	State	ORIS* Code
Sam O. Purdom	FL	689

*Office of Regulatory Information Systems

STEP 2

Enter boiler ID# from NADB for each unit, and indicate whether a repowering plan is applicable by entering "yes" or "no" at column b. For **new units**, enter requested information in columns c and d.

a Boiler ID#	b Repowering Plan?	c **New Units** Commence Operation Date	d **New Units** Monitor Certification Deadline
7	NO		
8	NO	02/21/00	05/24/00

STEP 3

If you responded "yes" in column b of Step 2 for any unit, mark the box [ ] For each unit that will be repowered, the Repowering Extension Plan form is included and the Repowering Technology Petition form has been submitted, is included, or will be submitted by June 1, 1996.

DEP Form No. 62-210.900(1)(a) - Form
Effective: 1-2-95

Plant Name (from Step 1)
Sam O Purdom

STEP 4

Read the **Standard Requirements** and **Certification**, enter the name of the designated representative, and sign and date.

Standard Requirements

Permit Requirements.

(1) The designated representative of each Acid Rain source and each Acid Rain unit at the source shall:

(a) Submit a complete Acid Rain part, including a compliance plan, under this part in accordance with the deadlines specified in Rule 62-213.420, F.A.C.; and Rule 62-214.320, F.A.C.

(b) Submit in a timely manner any supplemental information that the State determines is necessary in order to review an Acid Rain part application and issue or deny a Title V permit;

(2) The owners and operators of each Acid Rain source and each Acid Rain unit at the source shall:

(a) Operate the unit in compliance with a complete Acid Rain part application or a superseding Title V permit issued by the Department; and

(b) Have a Title V permit with an Acid Rain part.

Monitoring Requirements.

(1) The owners and operators and, to the extent applicable, designated representative of each Acid Rain source, and each Acid Rain unit at the source shall comply with the monitoring requirements as provided in 40 CFR Parts 75 and 76.

(2) The emissions measurements recorded and reported in accordance with 40 CFR Parts 75 and 76 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.

(3) The requirements of 40 CFR Parts 75 and 76 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.

Sulfur Dioxide Requirements.

(1) The owners and operators of each Acid Rain source and each Acid Rain unit at the source shall:

(a) Hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount, after deductions by EPA under 40 CFR 73.34(c), not less than the total annual emissions of sulfur dioxide from the unit for the previous calendar year; and

(b) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide.

(2) Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act.

Plant Name (from Step 1)
Sam O. Purdom

Sulfur Dioxide Requirements (Continued).

(3) An Acid Rain unit shall be subject to the requirements under Rule 62-214.330(1), F.A.C., and 40 CFR 72.9(c)(1) as follows:

(a) Starting January 1, 2000, an Acid Rain unit under 40 CFR 72.6(a)(2) that is not a substitution or compensating unit; or

(b) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR Part 75, an Acid Rain Unit under 40 CFR 72.6(a)(3) that is not a substitution or compensating unit.

(4) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts by EPA in accordance with the Acid Rain Program.

(5) An allowance shall not be deducted in order to comply with the requirements under 40 CFR 72.9(c)(1)i prior to the calendar year for which the allowance was allocated.

(6) An allowance allocated by EPA under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Title V permit application that includes the Acid Rain Part, the Title V permit that includes the Acid Rain Part, or the written exemption under Rule 62-214.340, F.A.C., and 40 CFR 72.7 and 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.

(7) An allowance allocated by EPA under the Acid Rain Program does not constitute a property right.

Nitrogen Oxides Requirements.

The owners and operators of the Acid Rain source and each Acid Rain unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides, pursuant to 40 CFR Part 76.

Excess Emissions Requirements.

(1) The designated representative of an Acid Rain unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77.

(2) The owners and operator of an Acid Rain unit that has excess emissions in any calendar year shall:

(a) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR Part 77; and

(b) Comply with the terms of an approved offset plan, as required by 40 CFR Part 77.

Recordkeeping and Reporting Requirements.

(1) Unless otherwise provided, the owners and operators of the Acid Rain source and each Acid Rain unit at the source shall keep on-site at the source each of the following documents for a period of 5 years from the date the document is created. This period may by extended for cause in writing by EPA, at any time prior to the end of the 5 years.

Plant Name (from Step 1)
Sam O. Purdom

Recordkeeping and Reporting Requirements (Continued).

(a) The certificate of representation for the designated representative for the source and each Acid Rain unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on-site at the source beyond such 5-year period until such documents are superseded because of a new certificate of representation changing the designated representative;

(b) All emissions monitoring information, in accordance with 40 CFR Part 75;

(c) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and

(d) Copies of all documents used to complete the Acid Rain Part application, and any other submission under the Acid Rain Part, or to demonstrate compliance with the Acid Rain Program.

(2) The designated representative of an Acid Rain source and each Acid Rain unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR Part 72 subpart I and 40 CFR Part 75.

Liability.

(1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acid Rain Part application, a Title V permit with an Acid Rain Part, or a written exemption under Rule 62-214.340, F.A.C., or 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to 42 U.S.C. 7413(c).

(2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to 42 U.S.C. 7413(c) and 18 U.S.C. section 1001.

(3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.

(4) Each Acid Rain source and each Acid Rain unit shall meet the requirements of the Acid Rain Program, including Chapter 62-214, F.A.C.

(5) Any provision of the Acid Rain Program that applies to an Acid Rain source, including a provision applicable to the designated representative of an Acid Rain source, shall also apply to the owners and operators of such source and the Acid Rain units of the source.

(6) Any provision of the Acid Rain Program that applies to an Acid Rain unit, including a provision applicable to the designated representative of an Acid Rain unit, shall also apply to the owners and operators of such unit. Except as provided under 40 CFR 72.44, Phase II repowering extension plans, and 40 CFR Part 76, and except with regard to the requirements applicable to units with a common stack under 40 CFR Part 75, including 40 CFR 75.16, 75.17, and 75.18, the owners and operators and the designated representative of one Acid Rain unit shall not be liable for any violation by any other Acid Rain unit of which they are not owners or operators or the designated representative and that is located at a source of which they are not owners or operators or the designated representative.

Plant Name (from Step 1)
Sam O. Purdom

Liability (Continued).

(7) Each violation of a provision of 40 CFR Parts 72, 73, 75, 76, 77, 78, or Chapter 62-214, F.A.C., by an Acid Rain source or Acid Rain unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

Effect on Other Authorities.

No provision of the Acid Rain Program, an Acid Rain Part application, a Title V permit with Acid Rain Part, or a written exemption under 40 CFR 72.7 or 72.8 shall be construed as:

(1) Except as expressly provided in Title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an Acid Rain source or Acid Rain unit from compliance with any other provisions of the Act, including the provisions of Title I of the Act relating to applicable National Ambient Air Quality Standards or State Implementation Plans;

(2) Limiting the number of allowances a unit can hold; **provided**, that the number of allowances held by the unit shall not affect the source's obligation to comply with any other provisions of the Act;

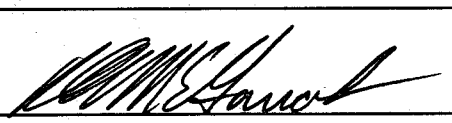
(3) Requiring a change of any kind in any State law regulating electric utility rates and charges, affecting any State law regarding such State regulation, or limiting such State regulation, including any prudence review requirements under such State law;

(4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,

(5) Interfering with or impairing any program of competitive bidding for power supply in a State in which such program is established.

Certification

I am authorized to make this submission on behalf of the owners and operators of the Acid Rain source or Acid Rain units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information, or omitting required statements and information, including the possibility of fine or imprisonment.

Robert E. McGarrah Name	
Signature 	Date 3/4/97

10.1.6 Coastal Zone Management Certifications

The Coastal Management Act of 1978 (Sections 380.21-25, Florida Statutes) requires certification of consistency with the Florida Coastal Management Program (FCMP) for all federal licenses, permits, activities, and projects listed in Section 380.23 (3)(c), F.S., when such activities are subject to federal consistency review and affect land or water use, are seaward of the jurisdiction of the state, or there is no state agency with sole jurisdiction for such consistency review.

We are not aware of any project-related federal licenses, permits, activities, etc. which are subject to federal consistency review.

10.1.7 FAA Notice of Proposed Construction of Alteration

Following is a copy of the Notice of Proposed Construction or Alteration (FAA Form 7460-1) submitted to the U.S. Department of Transportation, Federal Aviation Administration (FAA) in accordance with FAA regulations (14 CFR Part 77).

CITY OF TALLAHASSEE

CITY HALL
300 S. ADAMS ST.
TALLAHASSEE, FL
32301-1731
904/891-8100
TDD 1-800/955-8771

RON WEAVER
Mayor
SCOTT MADDOX
Mayor Pro Tem

JOHN PAUL BAILEY
Commissioner
DEBBIE LIGHTSEY
Commissioner
STEVE MEISBURG
Commissioner

STEVEN C. BURKETT
City Manager
ROBERT B. INZER
City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

February 28, 1997

Federal Aviation Administration
Southern Regional Office
Attn: Air Traffic Division, ASO 532
Mr. Barry A. Knight
P.O. Box 20636
Atlanta, Georgia 30320

Re: Request for Evaluation of Existing and Proposed Structures for Marking and Lighting

Dear Mr. Knight:

The City of Tallahassee (City) currently maintains three structures at the Sam O. Purdom Generating Station (Station) in St. Marks, Wakulla County, Florida, that are marked and/or lighted for aviation conspicuity. The structures include a water tower with a height of approximately 150 feet above ground level (AGL), an exhaust stack (Unit 7 Stack) with a height of 180 feet AGL, and a microwave transmission tower with a height of 223 feet AGL. The microwave tower was determined to need red lighting and orange and white paint under Study No. 71ASO0339 and was issued the National Oceanic and Atmospheric Administration, NOS Identification No. 10-0903.

The City is proposing the construction of an exhaust stack (Unit 8 Stack) 200 feet AGL in height at the Station. (A completed Federal Aviation Administration (FAA) Form 7460-1, Notice of Proposed Construction or Alteration, prepared pursuant to Chapter 14 Code of Federal Regulations (CFR), Part 77 for the Unit 8 Stack, is enclosed for informational purposes.)

Due to the fact that both Unit 7 and 8 stacks and water tower are 200 feet AGL or less, neither lighting nor marking, for purposes of aviation conspicuity, is required on these stacks or the water tower. Therefore, pursuant to the Federal Aviation Act of 1958, the City requests an FAA evaluation to confirm that neither lighting nor marking is required on the Unit 7 Stack, the proposed Unit 8 Stack, or the water tower.

It should also be noted that the closest public airport has been identified as the Wakulla County Airport and is located approximately 14.4 nautical miles from the microwave tower.

The City will continue to maintain the red lighting and orange and white paint required on the microwave tower. However, please note that the City is planning to either relocate or remove completely the microwave tower at the Station in the future. Once the City has finalized plans for the microwave tower relocation, a completed Form 7460-1 will be submitted to the FAA.

Please call me at (904) 891-8850 should you have any questions on this letter or on the attached form.

Sincerely,

Jennette Curtis

Jennette Curtis
Environmental Administrator

Enclosure
cc: R. McGarrah (COT)
A. Roberts (FDOT)

Printed on Recycled Paper with Soy Ink

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

Please Type or Print on This Form

Form Approved OMB No. 2120-0001

U.S. Department of Transportation
Federal Aviation Administration

Notice of Proposed Construction or Alteration

Failure To Provide All Requested Information May Delay Processing Of Your Notice

Aeronautical Study Number

1. Nature of Proposal

A. Type
- [X] New Construction
- [ ] Alteration *

B. Class
- [X] Permanent
- [ ] Temporary (Duration _____ months)

C. Work Schedule Dates
- Beginning 1998
- End 2000

* If Alteration, provide previous FAA Aeronautical Study Number, if available :

3A. Name, address, and telephone number of individual, company corporation, etc. proposing the construction or alteration. (Number, Street, City, State, and Zip Code)

Mr. Robert McGarrah, Production Superintendent
City of Tallahassee
2602 Jackson Bluff Road, Tallahassee, FL 32304

(904) 891-5535
Area Code Telephone Number

3B. Name, address and telephone number of proponent's representative, if different than 3A. above.

( ) _____
Area Code Telephone Number

2. Complete Description of Structure

Please describe the proposed construction or alteration.

A. For proposals involving transmitting stations, include effective radiated power (ERP) and assigned frequency. If not known, give frequency band and maximum ERP.

B. For proposals involving overhead wire, transmission lines, etc., include the size and the configuration of the wires and their supporting structures.

C. For buildings, include site orientation, dimensions, and construction materials.

D. **Optional**— Describe the type of obstruction marking and lighting system desired. The FAA will consider this in their study.

One (1) combustion turbine/heat recovery steam generator 16.5 foot diameter stack constructed of steel, at the existing Sam O. Purdom Generating Station.

4. Location Of Structure

A. Coordinates (to hundredths of seconds, if known)

Latitude 0	'	"	
30	9	40.	
Longitude 0	'	"	
84	12	01.	

B. Nearest City or Town and State: St. Marks

C. Nearest public or military airport, heliport, flightpark, or seaplane base: Wakulla Co.

(1). Distance to 4B: (0)within city limits

(1). Distance from structure to nearest point of nearest runway: 14.4 nautical miles

(2). Direction to 4B: (n/a) within city limits

(2). Direction from structure to airport: SW

4D. Source for item 4A data.
- [ ] USGS 7.5' Quad Chart
- [ ] Survey
- [X] Other Specify: d sheet and special purpose site boundary survey

Indicate the reference datum.
- [X] NAD 27
- [ ] NAD 83
- [ ] Other Specify

4E. **Description of site location with respect to highways, street, airports, prominent terrain, features, existing structures, etc.** Please attach a U.S. Geological Survey Map (or equivalent) showing the construction site. If available, attach a copy of a documented site survey with the surveyor's certification.

See Attachments 1 (topo), 2 (site survey), and 3 (site plan)

5. Height and Elevation (to nearest foot)

A. Elevation of ground above mean sea level: 7

B. Height of structure including all appurtenances and lighting above ground or water: 200

C. Overall height above mean sea level: 207

Notice is required by Part 77 of the Federal Aviation Regulations (14 C.F.R. Part 77) pursuant to Section 1101 of the Federal Aviation Act of 1958, as amended (49 U.S.C. app. § 1501). Persons who knowingly and willfully violate the Notice requirements of Part 77 are subject to a civil penalty of $1,000 per day until the notice is received, pursuant to Section 901(a) of the Federal Aviation Act of 1958, as amended (49 U.S.C. app § 1471(a)) as well as the fine (criminal penalty) of not more than $500 for the first offense and not more than $2,000 for subsequent offenses, pursuant to Section 902(a) of the Federal Aviation Act of 1958, as amended (49 U.S.C. app § 1472(a)).

I HEREBY CERTIFY that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to obstruction mark and/or light the structure in accordance with established marking & lighting standards as necessary.

Date	Typed or Printed Name and Title of Person Filing Notice	Signature
February 28, 1997	Robert McGarrah	

FOR FAA USE ONLY *FAA will either return this form or issue a separate acknowledgement.*

The Proposal:
- [ ] Does not require a notice to FAA.
- [ ] Is not identified as an obstruction under any standard of FAR, Part 77, Subpart C, and would not be a hazard to air navigation.
- [ ] Is identified as an obstruction under the standards of FAR, Part 77, Subpart C, but would not be a hazard to air navigation.
- [ ] Should be obstruction [ ] marked [ ] lighted per FAA Advisory Circular 70/7460-1, Chapters _____
- [ ] Obstruction marking and lighting are not necessary.

Supplemental Notice of Construction, FAA Form 7460-2, is required any time the project is abandoned, or
- [ ] At least 48 hours before the start of construction.
- [ ] Within five days after the construction reaches its greatest height.

This determination expires on _____ unless:
(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit is made to the FCC on or before the above expiration date. In such cases the determination expires on the date prescribed by the FCC for completion of construction, or on the date the FCC denies the application.

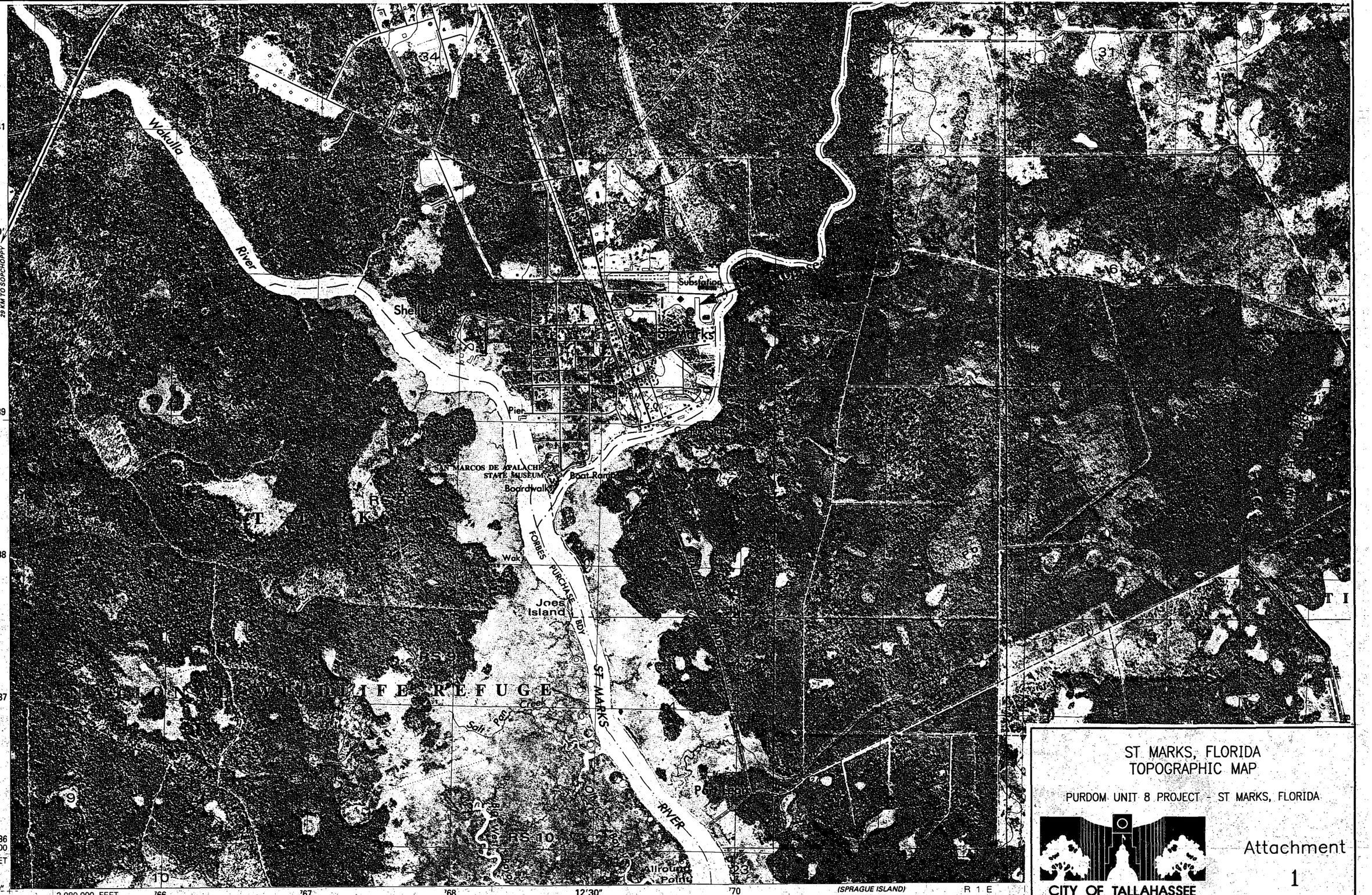
NOTE: Request for extension of the effective period of this determination must be postmarked or delivered to the issuing office at least 15 days prior to the expiration date.

If the structure is subject to the licensing authority of the FCC, a copy of this determination will be sent to that agency.

Remarks

NAD 83 Coordinates (Use these coordinates for any future correspondence with the FAA) Latitude ° ' " Longitude ° ' "

Issued in	Signature	Date



ST MARKS, FLORIDA
TOPOGRAPHIC MAP

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Attachment
1

PLOT DATE: FEB 27, 1997 C:\15840002\----\00000-44.DWG

P.O.B.

1224.22'
N 89°54'48" E

NORTHERLY BOUNDARY SOUTH HALF SECTION 2

N 89°54'48" E 2745.42'

P.O.C. N 12°50'03" W 62.70'

SEE DETAIL 1

SEE DETAIL 2

SEE DETAIL 3

SEE DETAIL 4

SEE DETAIL 5

SEE DETAIL 6

SEE DETAIL 7

DETAIL 1

DETAIL 2

DETAIL 3

DETAIL 4

DETAIL 5

DETAIL 6

DETAIL 7

1489.7 (D) 1480.84' (C)

DEED BOOK 36 PAGE 101

327.38'(D) 1320' (D) 494) 1321.50'(C)

729.19' (C)

400' (D) NORTH 35, (BEARING BASE) PAGE

CURVE DATA
Δ = 6°32'43"
R = 5717.82'
L = 653.18'
CH = N16°06'24"W 652.83'

100' R/W STATE ROAD 363

ROADWAY ENTRANCE

(O.B.)

DEED BOOK 35 PAGES 494 THROUGH 500

S 89°57'10" W 786.60' (F) WEST 787.1' (D)

Δ = 15°19'05"
R = 1071.62'
L = 286.50'
CH = N82°17'37"W 285.65'

CERTIFICATION

This certification is made exclusively to the City of Tallahassee for use in improving the real property hereon.

This certification does not take into consideration additional facts that an accurate and correct title search and/or examination might disclose. There may be unrecorded deeds, easements, or other instruments which could affect the boundary.
Boundary information compiled from adjoining deeds and plats and a field survey performed under my supervision and completed in January 1997.

Subject to all the above, I here certify that the boundary survey of the real property shown hereon is in compliance with the minimum Technical Standards as set forth by the Florida Board of Professional Land Surveyors pursuant to section 472.027 of the oFlorida Statutes.

BERTIE L. ANGLIN, PSM
Florida Surveyor/ Mapper
Registeration No. 2896

ABBREVIATIONS AND SYMBOLS

R/W	= RIGHT-OF-WAY
D.B.	= DEED BOOK
P.B.	= PLAT BOOK
O.R.	= OFFICIAL RECORD
P.	= PAGE
P.C.	= POINT OF CURVATURE
P.C.C.	= POINT OF COMPOUND CURVE
P.T.	= POINT OF TANGENCY
FND	= FOUND
I.P.	= IRON PIPE
CM	= CONCRETE MONUMENT
FCM	= FOUND CONCRETE MONUMENT
I.B	= IRON BAR
C.O.T	= CITY OF TALLAHASSEE
F.A.C.	= FLORIDA ADMINISTRATIVE CODE
P.O.B.	= POINT OF BEGINNING
P.O.C.	= POINT OF COMMENCEMENT
P.I.	= POINT OF INTERSECTION
□	= DENOTES FOUND CONCRETE MONUMENT/MEMBER
O	= DENOTES FOUND IRON PIPE OR REBAR/CAP
(C)	= CALCULATED INFORMATION
(D)	= DEED INFORMATION
(P)	= PLATTED INFORMATION
(D)	= DEGREE OF CURVE
Δ	= CENTERAL ANGLE OR DELTA
R	= RADIUS
T	= TANGENT
L	= LENGTH OF ARC
CH	= CHORD
℄	= CENTERLINE
EOP	= EDGE OF PAVEMENT
EOW	= EDGE OF WATER
TOB	= TOP OF BANK

NOTES:

Bearing Base is a Deed Bearing of South applied between the 1" I.P. on North Boundary, and the concrete monument marking the most Southwesterly Corner of subject property.

Improvements exist within this Boundary, but NOT located.

References are to the Public Records of Wakulla County, Florida

THE PURPOSE OF THIS SURVEY IS TO IDENTIFY THE WETLAND AREAS WITHIN THE BOUNDARY LIMITS OF THE PLANT SITE.

Edge of water reflects approximate high water on 1-2-97.

STATEMENT:

The meander line of the wetland areas, depicted hereon, was established by a combination of the Army Corps of Engineers; Foster Wheeler Environmental Corp. A Constructing Firm and the members of the Florida Department of Environmental Protection Agency, Jurisdictional Declaratory statement. The meander line were located by the City of Tallahassee Surveying Section/Engineering Division.

SCALE: 1"=100'

EXISTING GENERATING POWER PLANT AREA

EXISTING UNIT 7 STACK

PROPOSED UNIT 8 STACK

DEED BOOK 35 PAGES 494 THROUGH 500

ST. MARKS RIVER

NORTH CANAL

S 14°15'04" W 123.73'

N 89°43'19" E 61.00'

S 00°08'03" E 77.93'

S 04°00'43" E 42.93'

S 18°14'07" E 47.66'

S 52°13'24" E 22.73'

S 34°30'38" E 126.45'

S 14°45'41" E 53.71'

S 22°33'43" W 142.06'

TRAVERSE LINE TOP OF BANK

S 65°47'41" W 108.09'

S 36°49'45" W 279.25'

S 04°58'32" E 378.73'

SOUTH CANAL

592.31' (F)

NORTH

199.87'

S 89°57'43" W EAST 00 1051.61' (F)

S 87°05'16" W 287.12'

S 04°46'14" W 87.35'

(O.R. 218 PAGE 182)

ALL FENCES SHOWN ARE 6' HIGH CHAIN LINK

NUMBERS SHOWN ON WETLAND BOUNDARIES REFLECT NUMBERS MARKED ON FLAGGING LOCATED IN FIELD. ALL NUMBERS NOT SHOWN FOR CLARITY.

SOURCE: CITY OF TALLAHASSEE, 1997

EXISTING PURDOM STATION AND ITS SITE

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Attachment 2

PLOT DATE FEB 28, 1997 C:\15840007\—\00000-40.DWG

N

EXISTING UNIT 7 STACK

PROPOSED UNIT 8 STACK

SOURCE: RE&C, 1997; FOSTER WHEELER ENVIRONMENTAL CORP, 1997

LEGEND:

1. HEAT RECOVERY STEAM GENERATOR
2. COMBUSTION TURBINE GENERATOR
3. FEEDWATER PUMPS
4. BLOWDOWN TANK
5. WATER WASH SKID
6. STEAM TURBINE GENERATOR
7. CONDENSER
8. CONDENSATE PUMPS
9. CO2 FIRE PROTECTION SKID
10. WATER INJECTION SKID
11. ISO PHASE BUS DUCT
12. HRSG CHEMICAL FEED SYSTEM
13. AUXILIARY TRANSFORMER
14. VACUUM PUMPS
15. SWITCHGEAR BUILDING
16. COOLING TOWER
17. FUEL OIL TRANSFER PUMPS
18. CIRCULATING WATER PUMPS
19. CEMS
20. STG MAIN STEPUP TRANSFORMER
21. CLOSED COOLING WATER HEAT EXCHANGERS
22. COOLING TOWER CHEMICAL FEED SYSTEM
23. GENERATOR BREAKER
24. STATIC START SKID
25. CTG BUS ACCESSORY COMPARTMENT
26. ACCESSORY MODULE
27. PEECC
28. NATURAL GAS FILTER/SCRUBBER
29. CLOSED COOLING WATER PUMPS
30. STG LUBE OIL SKID
31. STG BUS ACCESSORY COMPARTMENT
32. CTG MAIN STEPUP TRANSFORMER
33. GLAND STEAM CONDENSER
34. COMBUSTION TURBINE
35. INLET FILTER
36. STACK
37. SAMPLE PANEL
38. STEAM TURBINE
39. GLAND STEAM CONTROL VALVE SKID
40. NON SEGREGATED BUS DUCT
41. COOLING TOWER LOAD CENTER
42. BAILEY CONTROL CABINETS
43. STM TURB/GENERATOR CONTROL CABINETS

SITE PLAN

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

CITY OF TALLAHASSEE

Attachment 3

PLOT DATE FEB 28, 1997 C:\15840002\----\00000-42.DWG

10.2 ZONING DESCRIPTIONS

Appendix 10.2 contains relevant excerpts from the draft (November 1990) St. Marks Land Development Code, specifically:

- Section 2.01.00 Land Use Districts
- Section 2.02.00 Uses Allowed in Land Use Districts

Multi-Family Dwelling

Any residential structure containing two (2) or more separate dwelling units.

Parcel

A unit of land within legally established property lines.

Recreation Vehicle

A vehicular-type portable structure without permanent foundation, which can be towed, hauled or driven and primarily designed as temporary living accommodation for recreation, camping, and travel use and including, but not limited to, travel trailers, truck campers, camping trailers, and self-propelled motor home.

Single-Family Dwelling

A structure containing one dwelling unit, and not attached to any other dwelling unit by any means. A single-family unit may contain an accessary apartment pursuant to this Code.

2.01.00 LAND USE DISTRICTS

2.01.01 Generally

Land use districts for the City/County are established in the Comprehensive Plan, Future Land Use Element, including a map

. The land use districts and classifications defined in the Future Land Use Element of the City Comprehensive Plan and delineated on the Future Land Use Map shall be the determinants of permissible activities on any parcel in the jurisdiction. Refer to the Future Land Use Element of the Comprehensive Plan for the definitions of each use category.

Allowable uses are shown in SECTION 2.02.03 to correlate individual land use activities with land use districts.

2.01.02 Residential

2.01.03 Commercial

2.01.04 Industrial

2.01.05 Public Buildings/Grounds

2.01.06 Recreation/Conservation

2.01.07 Agricultural

2.01.08 Mixed Use

2.02.00 USES ALLOWED IN LAND USE DISTRICTS

2.02.01 Generally

This Part defines and prescribes the specific uses allowed within each land use district described in the Comprehensive Plan and this Code.

2.02.02 Types Of Uses

A. **Residential**

1. The category of residential uses includes single-family dwellings, accessory apartments, multi-family dwellings in a variety of housing types, modular and manufactured housing, but specifically excludes recreational vehicles. (Recreational vehicle parks are considered commercial uses.)

2. While a district may be designated for residential use, it does not follow that any housing type (single-family, apartment, townhouse, etc.) is allowed. Certain areas are limited to one or more housing types in order to preserve the established character of the area. Refer to the table of density and dwelling unit types in SECTION 2.02.04 for regulations on housing types.

B. **Institutional**

This type of use includes educational facilities (public or private), pre-school and day care facilities (public or private), churches, cemeteries without funeral homes, residential care facilities, halfway housing, nursing home facilities, and all other similar institutional uses.

C. **Outdoor Recreational**

These uses include areas for outdoor recreational activities such as picnicking, jogging, cycling, arboretums, hiking, golf courses, play grounds, ball fields, outdoor ball courts, stables, outdoor swimming pools, and water-related or water-dependent uses such as boat ramps, fishing docks and piers, and all similar outdoor recreational uses, whether public or private. Specifically excluded from this group of uses are firing ranges, marinas, miniature golf courses, race tracks, and similar recreational or quasi-recreational activities inconsistent with the allowable outdoor recreational uses described.

D. **Professional Service And Office**

This group of uses includes business and professional offices, medical offices or clinics, government offices, financial institutions without drive-up facilities, and personal service businesses where the service is performed on an individual-to-individual basis as opposed to services which are performed on objects or personal property. Examples of

personal service businesses are barber shops, beauty shops, or photography studios. This group of uses may include a dispatching/communications/office center for the distribution of goods, but specifically excludes the warehousing or actual distribution of goods.

E. General Commercial

A wide variety of general commercial, commercial recreational, entertainment, and related activities is included in this group of uses. Examples include professional and office uses listed in SECTION 2.02.02D above, as well as the following specific uses, and all substantially similar types of uses:

1. Arcades, billiards/pool parlors, bowling alleys, indoor recreation centers and gymnasiums/spas/health clubs.
2. Community centers and fraternal lodges.
3. Commercial or trade schools such as dance and martial arts studios.
4. Department stores and other retail sales stores, such as shoe stores, clothing stores, pharmacies, florists, and book stores.
5. Funeral homes, cemeteries, and mortuaries.
6. Farm and garden supply, building supply, and vehicle parts and accessories (but specifically excluding vehicle sales/service/repair).

7. Grocery stores, supermarkets (excluding convenience stores), and specialty food stores (such as meat markets, and bakeries).
8. Hospitals.
9. Hotels or motels.
10. Service businesses such as blueprint, printing, catering, tailoring, travel agencies, upholstery shops, laundries/dry cleaners, and light mechanical repair stores (such as camera, TV, or bicycle repair shops).
11. Restaurants (standard sit-down, and high-turnover sit-down, but excluding all restaurants with drive-up facilities) including open air cafes.
12. Shopping centers (but not regional malls or centers).
13. Theaters and auditoriums.
14. Marinas.
15. Miniature golf, golf driving ranges.
16. Plant nurseries.
17. Veterinary offices and animal hospital, provided the facility has no outside kennels.

F. High Intensity Commercial

The uses in this group include those activities which require outdoor storage, have higher trip generations than general commercial listed above, or have the potential for greater nuisance to adjacent properties due to noise, light and glare, or typical hours of operation. This group of uses includes

the following list of specific uses and all substantially similar activities based upon similarity of characteristics.

1. Vehicle sales, rental, service, and repair, including truck stops, body shops, road services, car wash facilities, and the sales, rental, repair and service of new or used automobiles, boats, buses, farm equipment, motorcycles, trucks, recreational vehicles, and mobile homes.
2. Gasoline sales and service, combination gasoline sale and food marts, and similar facilities.
3. Recreational vehicle and travel trailer parks.
4. Taverns, bars, lounges, night clubs, and dance halls.
5. Financial institutions with drive-up facilities.
6. Restaurants with drive-up facilities.
7. Roadside produce stands, temporary or permanent.
8. Outdoor arenas, rodeo grounds, livestock auction facilities, race tracks (auto, dog, go-kart, horse, motorcycle), shooting and firing ranges), and similar activities.
9. Veterinary offices and animal hospital with outside kennels.
10. Storage yards for equipment, machinery, and supplies for building and trades contractors, garbage haulers.
11. Flea markets or similar outdoor or indoor/outdoor sales complexes.

G. **Public Service/Utility**

This group of activities includes those uses which provide essential or important public services, and which may have characteristics of outdoor storage, or potential nuisance to adjacent properties due to noise, light and glare, or appearance. Government offices or government agency offices specifically are not included in this group of uses. Uses include the following, and substantially similar activities, based upon similarity of characteristics:

1. Emergency service activities such as buildings, garages, parking, and/or dispatch centers for ambulances, fire, police and rescue.
2. Broadcasting stations, transmission towers.
3. Utility facilities, such as water plants, wastewater treatment plants, electricity substations serving 230 KV or greater.
4. Maintenance facilities and storage yards for schools, government agencies, and telephone and cable companies.
5. LP gas storage and/or distribution facility for up to one thousand (1000) gallons. This shall not be construed to prevent retail sales of LP gas in canisters or similar pre-filled containers.
6. Airports, airfields, and truck or bus terminals.

H. Agricultural

Agricultural uses include croplands, pastures, forestry, aquaculture, feed lots, and buildings which are an accessory to these agricultural uses. This category of uses does not include processing or distribution plants for agricultural products and supplies. Residential use may be allowed; refer to the table of residential densities.

I. Industrial

This type of use includes those wholesale and retail businesses for manufacturing, processing, storing, or distributing goods. Included in this category are uses which require primarily outdoor storage or the industrial activity itself is conducted outdoors. Such uses include, for example, LP gas storage and/or distribution exceeding 1000 gallons, junkyards or salvage yards, recycling centers, and borrow pits (but not excavation which requires blasting).

2.02.03 Allowable uses Within Each Land Use District

A. Residential

The following uses are allowed in the Residential land use district. All others are prohibited.

1. Residential

B. Commercial

The following uses are allowed in the Commercial land use district. All others are prohibited.

1. Institutional
2. Professional Service and Office
3. General Commercial
4. High Intensity Commercial
5. Public Service/Utility

C. Industrial

The following uses are allowed in the Industrial land use district. All others are prohibited.

1. Public Service/Utility
2. Industrial

D. Public Buildings/Grounds

The following uses are allowed in the Public Building/Grounds land use district. All others are prohibited.

1. Institutional
2. Outdoor Recreation
3. Public Service/Utility

E. Recreation/Conservation

The following uses are allowed in the Recreation/Conservation land use district. All others are prohibited.

1. Residential
2. Outdoor Recreation
3. Public Service/Utility
4. Agricultural

F. Agricultural
The following uses are allowed in the Agricultural land use district. All others are prohibited.

1. Residential
2. Agricultural

G. Mixed Use

The following uses are allowed in the Mixed Use land use district. All others are prohibited.

1. Residential
2. Institutional
3. Professional Service and Office
4. General Commercial
5. High Intensity Commercial
6. Public Service/Utility

2.02.04 Table of Density and Dwelling Unit Types for Residential Use

Land Use/Districts	Gross Density	Housing Types S-F	M-F	MH
Residential	4DU/1AC	A	A	A
Recreation/Conservation	1DU/1AC	A	P	A
Agricultural	1DU/10AC	A	P	P
Mixed Use	4DU/1AC	A	A	A

Notes for Table 2.02.04:
"A" stands for "Allowed". "P" stands for "Prohibited".
"S-F" stands for single-family which includes site built homes and modular homes manufactured under the Florida Manufactured Building Act and certified by the Florida Department of Community Affairs as complying with the structural requirements of the Standard Building Code. "M-F" stands for multi-family as defined in this Code. "MH" stands for manufactured housing not meeting the standards of the Florida Manufactured Building Act. Where indicated as being allowed, they are so allowed only if in a mobile home park designed exclusively for such houses.

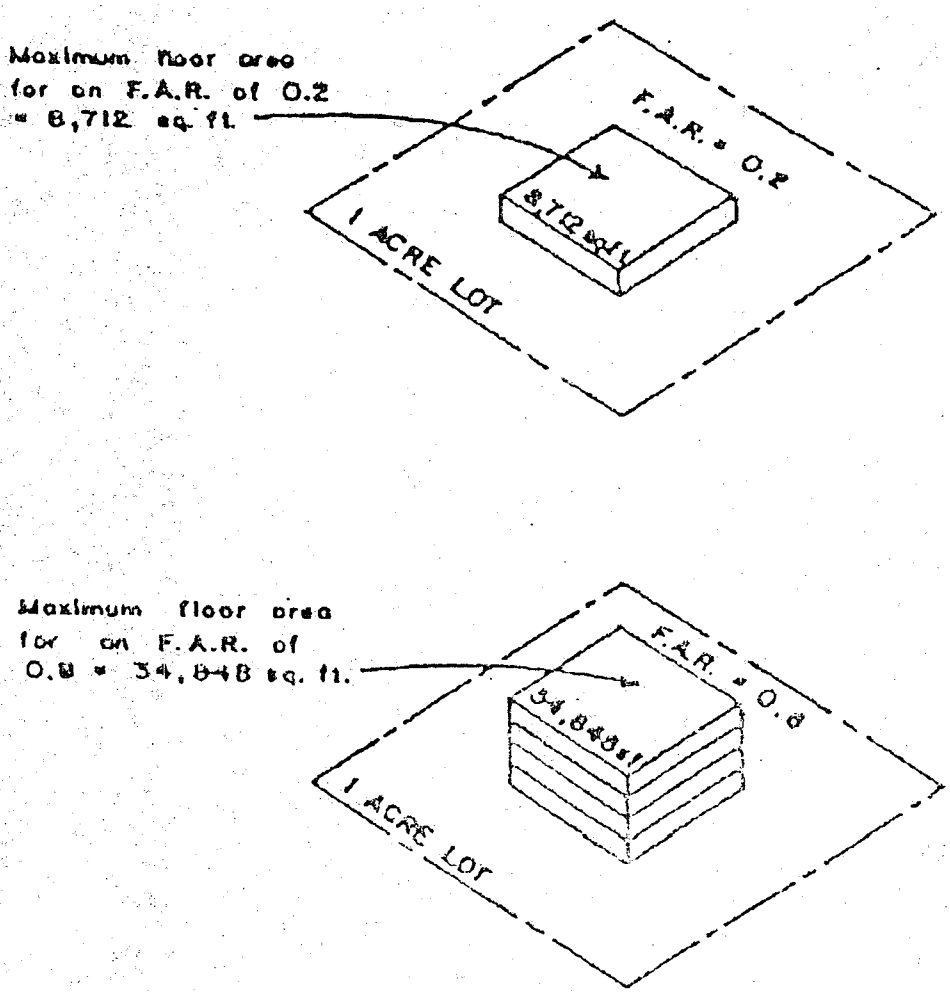
2.02.05 Floor Area Ratio

A. Generally

A floor area ratio is a measurement of the intensity of development on a site. For purposes of this Code, floor area ratios (FAR) are provided only for non-residential development.

B. Calculating Floor Area Ratio

The floor area ratio is the relationship between the total floor area on a site and the gross site area. The FAR is calculated by adding together all floor areas of all floors and dividing this total by the gross site area. See FIGURE 2.02.05-A for a graphic illustration of this concept.



$$F.A.R. = \frac{\text{Total building floor area}}{\text{Total lot area}}$$

Figure 2.02.04-A Floor Area Ratio

c. Table of Floor Area Ratios

Land Use/Districts	Maximum FAR
Commercial District	
Institutional	0.5
Professional Service and Office	1.0
General Commercial	1.0
High Intensity Commercial	0.5
Public Service/Utility	0.25
Industrial District	
Public Service/Utility	1.0
Industrial	0.5
Public Buildings/Grounds District	
Institutional	1.0
Public Service/Utility	1.0
Mixed Use District	
Institutional	0.5
Professional Service and Office	0.5
General Commercial	0.5
High Intensity Commercial	0.25
Public Service/Utility	0.25

10.3 LAND USE PLAN DESCRIPTIONS

Appendix 10.3 contains relevant excerpts from the Future Land Use Element of the St. Marks Comprehensive Plan, specifically:

- Policy 1.1.1
- Policy 1.2.4

CITY OF ST. MARKS

COMPREHENSIVE PLAN

Prepared by

St. Marks City Commission

The City of St. Marks

COMPREHENSIVE PLAN

	DATE
Local Planning Agency Public Hearing on Proposed Comprehensive Plan	11/27/89
Local Planning Agency Public Hearing on Proposed Comprehensive Plan	12/14/89
Local Planning Agency Recommendation of Proposed Comprehensive Plan to City Commission	12/14/89
City Commission Public Hearing on Proposed Comprehensive Plan	12/14/89
City Commission Approval for Transmittal of Proposed Comprehensive Plan	12/14/89
City Commission Public Hearing on Comprehensive Plan	08/21/90
City Commission Adoption of Comprehensive Plan	08/21/90
City Commission Public Hearing on Proposed Comprehensive Plan Amendment	07/17/91
City Commission Approval for Transmittal of Proposed Comprehensive Plan Amendemnt	07/17/91
City Commission Public Hearing on Comprehensive Plan Amendment	04/09/92
City Commission Adoption of Comprehensive Plan Amendment	06/18/92

Prepared for the St. Marks City Commission, as the Local Planning Agency, by the consultant firm of EDWARD WATERS ASSOCIATES, Post Office Box 502, Tallahassee, Florida 32302

"Preparation of this Document was Aided Through Financial Assistance Received from the State of Florida under the Local Comprehensive Planning Assistance Program Authorized by Chapter 86-119, Laws of Florida and Administered by the Florida Department of Community Affairs."

FUTURE LAND USE ELEMENT

Goals, Objectives and Policies

Goal 1: Ensure that future land uses are consistent with the existing character of the City of St. Marks and do not pose a threat to human health and safety or to natural resources.

Objective 1.1: Manage future growth and development through the adoption and enforcement of land development regulations.

Policy 1.1.1: Coordinate the implementation of land development activity with the distribution, extent, location, and performance characteristics of the land uses of the adopted future land use map:

a) Residential land use, includes land area used for housing purposes, including single family, duplex, multi-family structures and group quarters, owner or renter occupied, permanent or seasonal residents.
b) Commercial land use, includes land area used for retail and wholesale sale, rental, and distribution of products, or performance of services.
c) Industrial land use, includes land area used for manufacturing, assembly, processing, or storage of products.
d) Public Buildings/Grounds land use, includes land area used by public owned and operated facilities or other activities performing a public or quasi-public function.
e) Recreation/Conservation land use, includes land area used for neighborhood and community parks, spectator sport facilities, and certain pastoral open space areas; land area designated for the purpose of conserving or protecting natural resources or environmental quality; land area designated by a governmental entity as historically, architecturally, or archaeologically significant.

f) Agricultural land use, includes land area used for silvaculture production and harvesting, pasture, food and fiber crop production, land lying fallow which has been in agricultural production, and otherwise undesignated land area planned to remain rural in character; very low residential density.
g) Mixed land use includes land area consisting of a mixture of compatible, as identified in the land development regulations, residential and commercial activities. Residential activity is permitted up to 4 units per acre. Commercial activities include wholesale and retail sale activities, office activities, and service activities.

Policy 1.1.2: Adopt a set of land development regulations by 1990 which implement and are consistent with the goals, objectives and policies of the St. Marks' Comprehensive Plan, and as a minimum:

a) Regulate the subdivision of land;
b) Regulate the use of land and water consistent with this Element and ensure the compatibility of adjacent land uses and provide for open space;
c) Protect the environmentally sensitive land designated on the future land map series, and referenced in the Conservation Element and Coastal Management Element;
d) Regulate and protect areas subject to periodic flooding and provide for drainage and stormwater management;
e) Regulate signage;
f) Provide that development orders and permits shall not be issued which result in a reduction in the level of services for the affected public facilities below the level of service standards adopted in this Comprehensive Plan; and
g) Contain performance standards which address historically significant properties meriting protection.

Policy 1.1.3: Support the enforcement of a building code which requires new construction and/or substantial renovations to meet acceptable levels for safety, plumbing, electrical and other needs.

Policy 1.1.6: Manage the location of vehicle access to SR 363 and promote the sharing of access for adjacent parcels fronting on SR 363 by including an access assessment process which incorporates standards consistent with FDOT rules in the land development regulations.

Objective 1.2: Insure the provision of public facilities and services adequate to meet demands of existing and future needs.

Policy 1.2.1: The City shall review and evaluate each proposed land use development -- whether of a private or public nature -- within the broad context of all adopted elements and standards of the comprehensive plan so as to ensure that the overall health, safety, convenience, and general welfare of the City and its citizens will be reasonably and properly protected upon development of any said proposed land use.

Policy 1.2.2: Require that development orders and permits shall be issued only if public facilities necessary to meet level of services standards adopted in this Comprehensive Plan are available concurrent with the impacts of development.

Policy 1.2.3: Adequate and suitable land for utility facilities will be provided to serve future development.

Policy 1.2.4: Public Utilities needed to provide essential service to existing and future land uses in the City of St. Marks shall be permitted in all of the land use classifications established by this plan.

Objective 1.3: Consider future development in light of its ability to enhance, maintain, and be appropriately compatible with existing land use patterns and relationships.

Policy 1.3.1: The City's land development regulations shall contain specific and detailed provisions which preserve and protect the integrity and stability of established residential areas.

CITY OF ST. MARKS

ORDINANCE NO. 92-1

AN ORDINANCE OF THE CITY OF ST. MARKS, FLORIDA TO BRING THE COMPREHENSIVE PLAN INTO COMPLIANCE.

WHEREAS, the City of St. Marks, Florida, recognizes the necessity to amend the Comprehensive Plan to include terms and conditions of Exhibit B of the Stipulated Settelment Agreement with the Department of Community Affairs.

Duly passed and adopted in regular session of the City Commission of St. Marks, Florida this 18 day of June, 1992.

CITY OF ST. MARKS, FLORIDA

By: Charles C. Shields, Jr.
Mayor

First Reading: 14 May 1992

Second Reading: 18 June 1992

Attest:

Julie Brock
Julie Brock, City Clerk

10.4 EXISTING STATE PERMITS

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

JUN 3 1991

Florida Department of Environmental Regulation

Northwest District • 160 Governmental Center • Pensacola, Florida 32501-5794

Lawton Chiles, Governor

Carol M. Browner, Secretary

RECEIVED

DEC 19 1996

PERMITTEE:

Mr. P. R. Ellis
Production Superintendent
City of Tallahassee

I.D. Number: 1065MO2695
Permit/Certification Number: IO65-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996
County: Wakulla
Latitude/Longitude: 30°09'45"N/84°11'49"W
Section/Township/Range: 2/4-S/1-E
Project: Sam O. Purdom Generating Station

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-4, 17-302 and 17-660. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Operate a seven unit steam turbine electrical generating station with treated wastewater discharges into the St. Marks River. Wastewater from boiler blowdown, air preheater wash, and other minor process streams are discharged into the river after pretreatment in holding ponds. Condenser cooling water and demineralized wastewater are also discharged into the river.

Operation shall be in accordance with the renewal application and supporting documents received by the Department on October 29, December 14, 1990 and March 29, 1991.

Recycled Paper

PERMITTEE:

Mr. P. R. Ellis

I.D. Number: 1065MO2695
Permit/Certification Number: I065-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions", and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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

3. As provided in Subsections 403.087(6) and 403.722(5), 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. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use 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.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

PERMITTEE:

Mr. P. R. Ellis

I.D. Number: 1065MO2695
Permit/Certification Number: IO65-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of this permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. 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 provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

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.

9. 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 involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

PERMITTEE:

Mr. P. R. Ellis

I.D. Number: 1065M02695
Permit/Certification Number: I065-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

GENERAL CONDITIONS:

10. The 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.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-730.300, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically, unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurement;
- the person responsible for performing the sampling or measurement;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

PERMITTEE:

Mr. P. R. Ellis

I.D. Number: 1065M02695
Permit/Certification Number: I065-188446
Date of Issu

Expiration D

→ Moved to:
2815 Remington
Green Circle

GENERAL CONDITIONS:

14. When requested by the Department, the
reasonable time furnish any information req
determine compliance with the permit. If t
relevant facts were not submitted or were i
or in any report to the Department, such fa
corrected promptly.

SPECIFIC CONDITIONS:

15. Operation of the wastewater facilities
supervision of a person who is qualified by
experience in the field of water pollution

16. All analyses and reports on the monitoring of water quality required by this permit shall be submitted to the Northwest District Office, Department of Environmental Regulation, 160 Governmental Center, Pensacola, Florida 32501-5794 within 20 days after the specified reporting period. A copy shall also be submitted to the Northwest District Branch Office, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

17. Solids, sludges, waste, or other pollutants removed in the course of construction, treatment, or control of effluent shall be disposed of in such a manner so as to prevent said materials from entering waters of the State. Permittee shall obtain the Department's written approval prior to disposal of these materials.

18. Sampling, monitoring and effluent limitations for this facility are as follows:

A. Outfall 001*

Parameters	Frequency***	Type of Sample	Limitation
Temperature	Continuous**	Recorder	90°F (32.2°C) (mon. Avg) 95°F (35°C) (max.)
Chlorine Residual	Daily	Grab	0.01 mg/l

PERMITTEE:

Mr. P. R. Ellis

I.D. Number: 1065MO2695
Permit/Certification Number: I065-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

SPECIFIC CONDITIONS:

B. Outfall 002*

Parameters	Frequency	Type of Sample	Limitation
Temperature	Continuous**	Recorder	90°F (32.2°C) (mon. Avg) 95°F (35°C) (max.)
Chlorine Residual	Daily	Grab	0.01 mg/l
Copper	One per Quarter	8 hr. Composite	0.03 mg/l
Iron	One per Quarter	8 hr. Composite	1 mg/l
pH	Daily	Grab	6.0 (min.) 8.5 (max.)

C. Outfall 005*

Parameters	Frequency	Type of Sample	Limitation
Oil & Grease	~~One per Week~~ 1/Discharge (See Attached Amendment)	Grab	5 mg/l
Total Suspended Solids	~~One per Week~~ 1/Discharge	8 hr. Composite	30 mg/l (mon. Avg) 100 mg/l (max.)
Copper	One per Quarter	8 hr. Composite	0.03 mg/l
Iron	One per Quarter	8 hr. Composite	1 mg/l
pH	Daily	Grab	6.0 (min.) 8.5 (max.)

*Sampling point 001 is located at the throat of the discharge structure from units 1-5. Use reporting code 1065X10128 for this point. Sampling point 002 is located at the center of the discharge canal for units 6 and 7 opposite the turbine intake structure. Use reporting code 1065X10131 for this point. Sampling point 005 is a faucet on unit 7 intake structure. Use reporting code 1065X10133 for this point.

Florida Department of Environmental Regulation

Northwest District • 160 Governmental Center • Pensacola, Florida 32501-5794

Lawton Chiles, Governor

Carol M. Browner, Secretary

DEC 2 3 1992

Mr. Robert E. McGarrah
Production Superintendent
City of Tallahassee Electric Department
Route 4, Box 448
Tallahassee, Florida 32304

RECEIVED

DEC 23 1992

ELECTRIC DEPT.
ENVIRONMENTAL AFFAIRS

Dear Mr. McGarrah:

In accordance with Ms. Jennette Curtis' request, permit number IO65-188446 is modified as follows:

Add

Subparagraph D is added to Specific Condition 18.

D. Outfall 006*

Parameters	Frequency	Type of Sample	Limitations
	Discharge	(See attached amendment)	
Oil & Grease	One per ~~Week~~	Grab	5 mg/l
Total Suspended	One per ~~Week~~ Discharge	8 Hr. Composite	30 mg/l (Mon. Avg.)
Solids			100 mg/l (Max.)
pH	Daily	Grab	6.0 (min.) 8.5 (max.)

*Sampling point 006 is identical to sampling point 005.

This letter shall be attached to and become a part of permit number IO65-188446.

Sincerely,

Bobby A. Cooley
District Director

BAC/nmt

Recycled Paper

PERMITTEE:

Mr. P. R. Ellis

I.D. Number: 1065MO2695
Permit/Certification Number: IO65-188446
Date of Issue: MAY 31 1991
Expiration Date: May 1, 1996

SPECIFIC CONDITIONS:

**Two temperature readings shall be taken from the continuous temperature recorders on each operating shift. The average of these readings will be used in determining the monthly average discharge temperature. The average and maximum daily temperature readings shall be reported on the monthly operation report.

***The analytical results of all samples taken shall be reported on the monthly operation report.

19. Prior to commencement of the Chlorination/Dechlorination specified in Jennette D. Curtis' letter dated March 26, 1991, a 96 hour static screening acute toxicity test shall be performed on the once through condenser cooling water. Following testing, two additional 96 hour shall be performed at a 30 day interval. Testing shall be accomplished in accordance with Attachment 1.

20. The permittee shall conduct, on an annual basis during the first two weeks in August, Benthic Macroinvertebrate monitoring in the St. Marks River, above and below the points of discharge. Testing shall be accomplished in accordance with Attachment 2.

21. Polychlorinated Biphenyl compounds such as those commonly used for transformer fluid are specifically prohibited in the discharge.

22. Prior to sixty (60) days before the expiration date of this permit, the permittee shall apply for a renewal of the permit on proper forms and in a manner prescribed by the Department.

23. The Department telephone number for reporting problems, malfunctions or exceedances under this permit is (904) 436-8300, day or night, and for emergencies involving a significant threat to human health or the environment is (904) 488-1320. For routine business, telephone (904) 436-8380 during normal working hours.

Expiration date:

May 1, 1996

Issued this 31st day of May, 1991.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

for ROBERT V. KRIEGEL
Deputy Assistant Secretary

Attachment 1 to Permit Number IO65-188446

Biomonitoring Program

In accordance with specific condition 19 of this permit, the permittee shall initiate the tests described below to evaluate toxicity of the discharge from the once through condenser cooling water.

1. The permittee shall conduct 96 hour static screening toxicity tests on the test species Ceriodaphnia and Fathead minnow (Pimephales promelas), once prior to dechlorination on samples of 100% whole effluent. Two samples shall be taken after initiation of the dechlorination process during the year. Such static screening tests will be conducted on each of four grab samples of effluent collected over a 24 hour period in order to catch any peaks of toxicity and to account for diurnal variations in effluent quality. Results on 100% effluent for each grab sample shall be reported. The results of each toxicity test shall be submitted to FDER.

Once the permittee has demonstrated to the satisfaction of FDER that there are no effluent toxicity, the above requirement may be deleted.

2. If any such bimonthly screening test indicates toxicity (less than 50% survival of test organisms in 100% effluent) is found in any sample of effluent, further confirmatory acute static toxicity testing involving the determination of 96 hour LC_{50} values with 95 percent confidence limits will be required. A minimum of two (2) such 96 hour confirmatory tests are required to be conducted within 30 days form the date that any screening test indicates the presence of toxicity. Preferably, the first of these confirmatory tests shall be initiated within 48 hours of a failed screening test. The second confirmatory test shall be initiated at least seven days after completion of the first confirmatory test. Such tests shall be conducted using that test species which exhibited the most toxicity in the screening tests above, and shall be taken at the same time of day and day of the week during which the greatest toxicity was exhibited. Alternately, testing involving the use of 96 hour flow-through toxicity tests may also be required in place of the static tests, if the toxicity demonstrated in the screening tests show substantial variability over time. The results of each toxicity test shall be submitted to FDER concurrently with monthly discharge monitoring reports.

3. All test procedures, and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms,

IPA-600/4-85/013 and/or Quality Assurance Manual for Performing Acute Toxicity Tests, FDER Biology Section. If the test organisms specified in Part 2 are unavailable or unsuitable for use in the toxicity tests, appropriate substitutes from the list of recommended test organisms in the above referenced bioassay manuals may be used. This and any other deviation from the standard bioassay procedures, shall be submitted to FDER for review and approval prior to use.

4. If either of the above confirmatory tests indicate that the wastewaters are being discharged in violation of FAC 17-3 or 17-4 toxicity limits, the permittee shall submit to the FDER a toxicity control plan and accompanying implementation schedule within 90 days of the finalization of the acute toxicity study results. The control plan shall include appropriate measures such as the establishment or re-evaluation of a pretreatment program, the use of dechlorination, additional wastewater treatment, or changes in the operation of the facility to reduce the toxicity of the wastewater discharge to acceptable levels.

Attachment 2 to Permit Number IO65-188446

Benthic Macroinvertebrate Monitoring

The permittee shall provide biological data from the receiving waters above (control) and below (test site) the permitted point of discharge. Macroinvertebrate assemblages shall be collected with Hester-Dendy type artificial substrates incubated in the receiving waters for 28 days. Organisms retained on the artificial substrates after washing through a Number 30 standard sieve shall be analysed for number of species present, number of individuals per Taxa, total number of individuals in the sample, number per Meter^2, and Shannon-Weaver species diversity . Three replicates will be incubated at each site. Each replicate and the composite of all three shall be treated as stated above. The raw data, a discussion of results and conclusion shall be submitted to FDER within 90 days after completion of species identification.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT ISSUANCE

CERTIFIED MAIL

In the matter of an
Application for Permit
By:
Mr. P. R. Ellis
Production Superintendent
City of Tallahassee
City Hall
Tallahasssee, Florida 32301
_____/

DER File No. IO65-188446
Wakulla County

Enclosed is Permit Number IO65-188446 to operate the Sam O. Purdom Generating Station, issued pursuant to Section 403.087, Florida Statutes.

A person whose substantial interests are affected by this permit may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee 32399-2400, within 14 days of receipt of this Permit. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this permit. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes, and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

This permit is final and effective on the date filed with the Clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 17-103.070, F.A.C. Upon timely filing of a petition or a request for an extension of time this permit will not be effective until further Order of the Department.

When the Order (Permit) is final, any party to the Order has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date the Final Order is filed with the Clerk of the Department.

Executed in Pensacola, Florida.

State of Florida Department
of Environmental Regulation

ROBERT V. KRIEGEL
Deputy Assistant Secretary

160 Governmental Center
Pensacola, Florida 32501-5794
(904) 436-8300

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT ISSUANCE and all copies were mailed by certified mail before the close of business on MAY 31 1991 to the listed persons.

FILING AND ACKNOWLEDGEMENT FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department clerk, receipt of which is hereby acknowledged.

Clerk

MAY 31 1991
Date

CITY OF TALLAHASSEE

ELECTRIC DEPARTMENT

CITY OF TALLAHASSEE

MEMORANDUM

TO: Gordon King, Purdom Plant Supervisor

FROM: Jennette D. Curtis, Environmental Affairs Administrator

DATE: November 30. 1995

SUBJECT: Industrial Wastewater Permit Revision

Please find attached a copy of the revision to sampling requirements for Outfalls 005 and 006 as requested by the COT Electric Department. Note: This change clarifies the fact that we sample once per discharge.

If you have any questions please do not hesitate to call me at 8850.

JDC/pg

cc: Marty Black, Manager, Utility Support Services
Phil Bucci, Environmental Specialist
Hal Avery, Environmental Specialist

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

NOV 17 1995
ELECTRIC DEPT.
City of Tallahassee

November 7, 1995

Mr. Robert E. McGarrah
Production Superintendent
City of Tallahassee Electrical Department
300 South Adams Street
Tallahassee, Florida 32301-1731

RECEIVED
1995
ELECTRIC DEPT.
ENVIRONMENTAL AFFAIRS

RE: Permit Revision (Minor)
Wastewater Permit FL0025526
City of Tallahassee Electrical Department
Sam O. Purdom Generating Station

Dear Mr. McGarrah:

Pursuant to rule 62-620.330, Florida Administrative Code, the Department is revising Section II (State Permit IO65-188446) of Wastewater Permit FL0025526. Specific Condition 18, Subparagraphs C and D of the permit is revised as follows:

FROM:

Subparagraphs C and D include sampling, monitoring, and effluents limitations for Outfalls 005 and 006, respectively. Sampling frequencies for listed parameters are either daily, weekly, or quarterly.

TO:

Sampling frequencies for all listed parameters in Subparagraphs C and D shall be "once per discharge." All other requirements of Subparagraphs C and D remain the same.

The purpose of this permit revision is to provide a sampling frequency that is more compatible with the intermittent nature of the discharge. Outfall 005, metal cleaning waste, discharges approximately twice a year. Outfall 006, low volume waste, discharges approximately once per week.

This letter shall be attached to your existing Wastewater Permit. All other conditions of the permit shall remain in effect. If you object to this permit revision you may petition for an administrative hearing in accordance with the enclosed Notice Of Rights. If a petition is filed then this permit revision does not become effective. If you have any questions about this permit revision, you may contact Craig Diltz of the Industrial Wastewater Section at 904/488-4522.

Sincerely,

Richard M. Harvey, P.E.
Director
Division of Water Facilities

RMH/pc
Enclosure

cc: Bill Evans
Phil Coram
Craig Diltz

NOTICE OF RIGHTS

A person whose substantial interests are affected by this permit may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of receipt of this Permit. A petitioner, other than the applicant, shall mail a copy of the petition to the applicant at the address indicated in the attached letter at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that copies of this Permit Revision were mailed before the close of business on the date indicated below to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT
Filed, on this date, pursuant to section 120.52(9) of the Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

S. Shields 11-8-95

Clerk Date

Copies furnished to:

Robert McGarrah
Bill Evans
Phil Coram

Department of Environmental Protection

Lawton Chiles
Governor

Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794

Virginia B. Wetherell
Secretary

PERMITTEE:

City of Tallahassee
Sam O. Purdom Generating Station

AIRS I.D. Number: 1290001
Air Permit Number: 1290001-002-AC
Emission Unit: 010
Date of Issue: December 5, 1996
Expiration Date: December 31, 1997
County: Wakulla
Project: Natural Gas Fired Auxiliary Boiler

This permit is issued under the provisions of Section 403.087, Florida Statutes, and Florida Administrative Code Rules 62-296, 62-297 and 62-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Construction of a 16.74 MMBtu/hr natural gas fired auxiliary steam generating boiler (Kewanee, model number H3S-400-G) at the City of Tallahassee's Sam O. Purdom Generating Station.

Construction shall be consistent with the construction permit application signed September 20, 1996.

Located on the east side of State Road 363 at 667 Port Leon Drive, St. Marks

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

Printed on recycled paper.

PERMITTEE:

Sam O. Purdom Generating Station

AIRS I.D. Number: 1290001
Air Permit Number: 1290001-002-AC
Emission Unit: 010
Date of Issue: December 5, 1996
Expiration Date: December 31, 1997

SPECIFIC CONDITIONS:

General

1. The attached General Conditions are part of this permit. [FAC Rule 62-4.160]

Construction

2. The Department shall be notified of the date construction of this emission unit commences postmarked no later than 30 days after such date, of the anticipated date of initial startup postmarked not more than 60 days nor less than 30 days prior to such date, and of the actural date of initial startup postmarked within 15 days after such date. [FAC Rule 62-4.070, 62.204.800(7)(d)]

3. The Department shall be notified and prior approval shall be obtained of any changes or revisions made during construction. [FAC Rule 62-4.030]

Operation

4. The maximum allowable operating rate is 16.74 MMBtu/hr heat input. [FAC Rule 62-4.070]

5. The maximum hours of operation are 2000 hours per year. The Permittee shall maintain an operation log available for Department inspection certifying the total hours of operation and fuel consumption annually. [FAC Rule 62-4.070 and construction permit application]

6. This emission unit shall only be operated as an auxiliary source of steam when the existing steam generating units (boilers 5,6, &7) are not operating. (Construction permit application)

7. All applicable requirements of 40 CFR 60 Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, shall be met. (FAC Rule 62-204.800)

PERMITTEE:

Sam O. Purdom Generating Station

AIRS I.D. Number: 1290001
Air Permit Number: 1290001-002-AC
Emission Unit: 010
Date of Issue: December 5, 1996
Expiration Date: December 31, 1997

SPECIFIC CONDITIONS:

Emissions

8. The maximum allowable emission limit for each pollutant is as follows:

Pollutant	FAC Rule	Allowable Emissions
VE	62-296.406	20% opacity except for one two minute period per hour during which the opacity shall not exceed 40%.

9. Excess emissions resulting from startup, shutdown or malfunction shall be allowed providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. The Permittee shall immediately notify the Department's Tallahassee Branch Office of excess emissions resulting from malfunctions. The notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence. (Rules 62-210.700, 62-4.130)

Testing

10. Visible emissions tests are required to show compliance with the standards of the Department. The test results must provide reasonable assurance that the source is capable of compliance at the permitted maximum operating rate. [FAC Rule 62-297.310(2)] A sixty minute visible emissions tests shall be conducted in accordance with DEP method 9 within 60 days after achieving the maximum production rate at which the emission unit will be operated, but not later than 180 days after initial startup of the emission unit. The Department shall be notified at least 15 days prior to testing to allow witnessing. Results shall be submitted to the Department within 45 days after testing.

The test report shall comply with F.A.C. Rule 62-297.310(8), Test Reports.

The Department can require special compliance tests in accordance with F.A.C. Rule 62-297.310(7)(b).

Other test methods and alternate compliance procedures may be used only after prior Departmental approval has been obtained in writing.

SPECIFIC CONDITIONS:

[10. (cont.'d)]

Testing of emissions shall be conducted with the source operating at capacity. Capacity is defined as 90 to 100% of the maximum allowable heat input rate. If it is impractical to test at capacity, then sources may be tested at less than capacity; in this case subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen days for purposes of additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department. [FAC Rule 62-297.310(2)]

Administrative

11. An annual operating report for air pollutant emitting facility, DEP Form 62-210.990(5), shall be submitted by March 1 of each year. A copy of the form and instructions may be obtained from the Department of Environmental Protection, Northwest District Air Resources Management Program, (904) 444-8364. [FAC Rule 62-210.370(3)]

12. The applicant shall retain a Professional Engineer, registered in the State of Florida, for the inspection of this project. Upon completion the engineer shall inspect for conformity to the permit application and associated documents. An application for an operation permit [Form DEP 62-210.900(1), Long Form]shall be submitted with the compliance test results and appropriate fee when applicable. These are to be submitted within 105 days after achieving the maximum production rate at which the emission unit will be operated, but no later than 225 days after initial startup of the emission unit. The permittee shall obtain an operating permit for this source before the expiration of this construction permit if the permittee desires to continue operation. [FAC Rule 17-210.300]

13. The emission unit covered by this permit is 1290001010. Please cite this number on all test reports and other correspondence specific to this permitted emission unit. [FAC Rule 62-297.310(8)]

14. The Permittee, for good cause, may request that this construction permit be extended. Such a request with the required $50 extension fee shall be submitted 60 days prior to the expiration date of this permit. (FAC Rule 17-4.080(3)

PERMITTEE:

Sam O. Purdom Generating Station

AIRS I.D. Number: 1290001
Air Permit Number: 1290001-002-AC
Emission Unit: 010
Date of Issue: December 5, 1996
Expiration Date: December 31, 1997

SPECIFIC CONDITIONS:

15. The Department telephone number for reporting problems, malfunctions or exceedances under this permit is (904) 444-8364, day or night, and for emergencies involving a significant threat to human health or the environment is (904) 413-9911. For routine business, telephone (904) 488-3704 during normal working hours. [FAC Rule 62-4.130]

Expiration Date:

December 31, 1997

Issued this 5th day of DEC, 1996.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Ed K. Middleswart

ED K. MIDDLESWART, P.E.
Air Program Administrator

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions", and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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

3. As provided in Subsections 403.087(6) and 403.722(5), 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. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use 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.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

GENERAL CONDITIONS:

a. Having access to and copying any records that must be kept under the conditions of this permit;
b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,
c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. 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 provide the Department with the following information:

a. A description of and cause of noncompliance; and
b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. 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 for revocation of this permit.

9. 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 involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The 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.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

GENERAL CONDITIONS:

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurement;
- the person responsible for performing the sampling or measurement;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

14. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Department of Environmental Protection

RECEIVED
CITY OF TALLAHASSEE
96 DEC -9 PM 1:09
ELECTRIC UTILITIES ( )
GAS UTILITIES ( )
WATER UTILITIES ( )

Lawton Chiles
Governor

Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794

Virginia B. Wetherell
Secretary

December 6, 1996

Robert E. McGarrah
Production Superintendent
City of Tallahassee, Electric Utility
2602 Jackson Bluff Road
Tallahassee, Florida 32304

Dear Mr. McGarrah:

On December 5, 1996, the Department issued permit 1290001-002-AC to construct an auxiliary boiler. This letter will correct an error made in that permit.

The Emission Unit number for the auxiliary boiler was listed incorrectly. The correct Emission Unit number for the auxiliary boiler is 011.

By this letter Specific Condition 13 is changed

From:

13. The emission unit covered by this permit is 1290001010. Please cite this number on all test reports and other correspondence specific to this permitted emission unit. [FAC Rule 62-297.310(8)]

To:

13. The emission unit covered by this permit is 1290001011. Please cite this number on all test reports and other correspondence specific to this permitted emission unit. [FAC Rule 62-297.310(8)]

Sincerely,

Ed K. Middleswart

Ed K. Middleswart, P.E.
Air Program Administrator

EKM:cmc

cc: Jennette Curtis, City of Tallahassee
DEP Northwest District Branch Office, Tallahassee

RECEIVED
CITY OF TALLAHASSEE
DEC 5 PM 12:52
ELECTRIC UTILITIES ( )
GAS UTILITIES ( )
WATER UTILITIES ( )

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PERMIT

In the matter of an
Application for Permit
By:
Robert E. McGarrah, Production Superintendent
City of Tallahassee, Electric Utility
2602 Jackson Bluff Road
Tallahassee, FL 32304

DEP File No. 1290001-002-AC
Wakulla County

Enclosed is Permit Number 1290001-002-AC, issued pursuant to Section 403.087, Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Pensacola, Florida.

State of Florida Department
of Environmental Protection

Ed K. Middleswart

ED K. MIDDLESWART, P.E.
Director of District Management

160 Governmental Center
Pensacola, Florida 32501-5794
(904) 444-8364

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on December 5, '96 to the listed persons.

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department clerk, receipt of which is hereby acknowledged.

Clerk Patricia Curle Date 12/5/96

Copies Furnished to:
Jennette D. Curtis, City of Tallahassee
DEP Northwest District Branch Office, Tallahassee

Department of
Environmental Protection

Lawton Chiles
Governor

Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794

Virginia B. Wetherell
Secretary

RECEIVED
JUN 30 1994
ELECTRIC DEPT
ENVIRONMENTAL AFFAIRS

PERMITTEE:

City of Tallahassee
Sam O. Purdom Generating Station

I.D. Number: 10TLH65000108,09
Permit/Certification Number: AO65-242827
Date of Issue: March 8, 1994
Modification Date: June 10, 1994
Modification Date: June 24, 1994
Expiration Date: March 1, 1999
County: Wakulla
Latitude/Longitude: 30°09'30"N\84°12'00"W
Project: Purdom Combustion Turbines 1 & 2

This permit is issued under the provisions of Section 403.087, Florida Statutes, and Florida Administrative Code Rules 17-296, 17-297 and 17-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Operation of combustion turbines 1 and 2, manufactured by Westinghouse, model W171G, each with a heat input rate of 228 MMBtu/hour, fueled by natural gas or No. 2 fuel oil with a maximum of 0.4% sulfur. These turbines are used as peaking units during peak demand hours, during emergencies, and during controls testing; and each runs a nominal 12.3 MW generator.

Located on the east side of SR 363 in St. Marks, Wakulla County.

Specific Condition No. 2 establishes maximum operating and testing rates.

Specific Condition No. 4 establishes maximum allowable emission rates.

Specific Condition No. 5 establishes testing requirements.

Specific Condition No. 6 limits the sulfur content of the fuel oil.

Specific Condition No. 7 requires submission of an annual operation report.

Specific Condition No. 8 requires submission of a Major Air Pollution Source Annual Operation Fee Form.

Specific Condition No. 9 requires submission of a renewal permit application prior to December 31, 1998.

PERMITTEE:

City of Tallahassee

I.D. Number: 10TLH65000108,09
Permit/Certification Number: AO65-242827
Date of Issue: March 8, 1994
Modification Date: June 10, 1994
Modification Date: June 24, 1994
Expiration Date: March 1, 1999

SPECIFIC CONDITIONS:

1. The attached General Conditions are part of this permit.

2. The maximum allowable heat input rate per combustion turbine is 228 MMBtu/hour (LHV) at an ambient temperature of 80 degrees Fahrenheit. Testing of emissions shall be conducted at 95-100% of the permitted rated heat input based on the average ambient air temperature during the test. Data for correcting heat input rates (corrected for air temperatures other than 80 degrees Fahrenheit) must be submitted with the compliance test report. If it is impracticable to test at 95-100% of the maximum allowable heat input rate corrected for the average ambient air temperature, then sources may be tested at less than 95% of the maximum allowable heat input. If the source is tested at less than 95% of the maximum allowable heat input, subsequent source operation is limited to 110% of the tested heat input rate corrected for average ambient air temperature until a new test is conducted. Once the unit is so limited, then operation at higher capacity is allowed for no more than fifteen days for purposes of additional compliance testing to regain the rated capacity in the permit with prior notification to the Department.

3. The maximum hours of operation are 6993 hours/year for each turbine. The Permittee shall maintain an operation log available for Department inspection certifying the total hours of operation annually.

4. The maximum allowable emission rate for each pollutant is as follows:

Pollutant	FAC Rule	Allowable Emissions
VE	17-296.310(2)	less than 20% opacity

The excess emissions provision of F.A.C. Rule 17-210.700 shall apply during periods of startup, shutdown and malfunctions.

5. Emissions tests for the following pollutants shall be performed annually between July 1 and September 30, in accordance with the test methods and frequency indicated, with notification to the Department 15 days prior to testing. The test results must provide reasonable assurance that the source is capable of compliance at the permitted maximum operating rate. For good cause, the Permittee may request an extension of a compliance test due date. However, inadequate planning of testing does not constitute good cause for an extension of the compliance test due date. The test report documentation must be submitted to the Department within 45 days after completion of testing.

Pollutant	Frequency	Test Method
VE	Annually	DEP 9

However, with the following exceptions, the visible emissions test shall only be required during those federal fiscal years during which the individual turbines operate greater than 400 hours.

- An initial VE test is required within 15 days of any use of fuel oil.
- A VE test is required in 1998 while operating on fuel oil.

PERMITTEE:

City of Tallahassee

I.D. Number: 10TLH65000108,09
Permit/Certification Number: AO65-242827
Date of Issue: March 8, 1994
Modification Date: June 10, 1994
Modification Date: June 24, 1994
Expiration Date: March 1, 1999

SPECIFIC CONDITIONS:

6. If fueled 100% by oil the sulfur content of the oil shall not exceed 0.4% sulfur by weight. Records of fuel oil sulfur content shall be kept and made available for Department inspections.

7. An annual operation report [DEP Form 17-210.900(4) enclosed] shall be submitted by March 1 each year. The enclosed form shall be reproduced by the Permittee and used for future annual submittals.

8. In accordance with F.A.C. Rule 17-213, a Major Air Pollution Source Annual Operation Fee Form [DEP Form 17-213.900(11) enclosed] must be completed and submitted with appropriate fee between January 15 and March 1 of each year. If the Department has not received the fee payment by March 1, the Department shall impose, in addition to the fee, a penalty of 50 percent of the amount of the fee, plus interest on such amount computed in accordance with s.220.807, Florida Statutes. The Department may revoke any major air pollution source operation permit if it finds that the permit holder has failed to pay timely and required annual operation license fee, penalty or interest. The enclosed form shall be reproduced by the Permittee and used for future annual submittals. The completed form and appropriate fees must be submitted to the Department of Environmental Protection, Title V (Facility I.D. Number), 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

9. An application to renew this permit shall be submitted prior to December 31, 1998.

10. The permanent source identification numbers for these point sources are:

10TLH65000108 -- Combustion Turbine No. 1
10TLH65000109 -- Combustion Turbine No. 2

Please cite these numbers on all test reports and other correspondence specific to this permitted point source.

11. The Department telephone number for reporting problems, malfunctions or exceedances under this permit is (904) 444-8300, day or night, and for emergencies involving a significant threat to human health or the environment is (904) 488-1320. For routine business, use telephone number (904) 488-3704 during normal working hours.

Expiration Date:

March 1, 1999

Modified this 24th day of June, 1994.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

BOBBY A. COOLEY
District Director

PERMITTEE:

City of Tallahassee

I.D. Number: 10TLH65000108,09
Permit/Certification Number: AO65-242827
Expiration Date: March 1, 1999

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions", and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The Permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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

3. As provided in Subsections 403.087(6) and 403.722(5), 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. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use 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.

5. This permit does not relieve the Permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the Permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The Permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the Permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The Permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of this permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

GENERAL CONDITIONS:

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. 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 provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. 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 for revocation of this permit.

9. 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 involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The 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.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, as applicable. The Permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. The Permittee shall comply with the following:

a. Upon request, the Permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The Permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous

GENERAL CONDITIONS:

monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurement;
- the person responsible for performing the sampling or measurement;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

14. When requested by the Department, the Permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the Permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Florida Department of
Environmental Protection

Lawton Chiles
Governor

Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794

Virginia B. Wetherell
Secretary

PERMITTEE:

City of Tallahassee
Sam O. Purdom Power Plant

I.D. Number: 10TLH65000105,06,07
Permit/Certification Number: AO65-242831
Date of Issue: March 8, 1994
Expiration Date: March 1, 1999
County: Wakulla
Latitude/Longitude: 30°09'30"N/84°12'00"W
Project: Purdom Boilers 5,6,7

This permit is issued under the provisions of Section 403.087, Florida Statutes, and Florida Administrative Code Rules 17-296, 17-297 and 17-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Operation of Boilers 5, 6, and 7 at the City of Tallahassee's Purdom Power Plant. Boilers 5 and 6 each have a maximum 300 MMBtu/hr heat input, are natural gas and/or No. 6 fuel oil fired, produce nominally 220,000 pounds of steam per hour, and each run a nominal 22 MW turbine-generator. Boiler 7 has a maximum 621 MMBtu/hr heat input, is fired with natural gas and/or No. 6 fuel oil, produces nominally 500,000 pounds of steam per hour, and runs a nominal 44 MW turbine-generator.

Located on the east side of State Road 363 in St. Marks.

Specific Condition No. 2 establishes maximum allowable operating and testing rates.

Specific Condition No. 4 establishes maximum allowable emission rates.

Specific Condition No. 5 establishes compliance testing requirements.

Specific Condition No. 6 limits fuel oil sulfur content.

Specific Condition No. 8 requires submission of an annual operation report.

Specific Condition No. 9 requires submission of a Major Air Pollution Source Annual Operation Fee Form.

Specific Condition No. 10 requires submission of a renewal permit application by December 31, 1998.

Printed on recycled paper.

PERMITTEE:

City of Tallahassee
Sam O. Purdom Power Plant

I.D. Number: 10TLH65000105,06,07
Permit/Certification Number: AO65-242831
Date of Issue: March 8, 1994
Expiration Date: March 1, 1999

SPECIFIC CONDITIONS:

1. The attached General Conditions are part of this permit.

2. The maximum allowable heat input rate is for Boilers 5 and 6 is 300 MMBtu/hour per boiler. The maximum allowable heat input rate for Boiler 7 is 621 MMBtu/hour. Testing of particulate emissions shall be conducted with the source operating at capacity. Capacity is defined as 90 to 100% of the maximum allowable heat input rate for the fuel or mix of fuels being burned. If it is impracticable to test at capacity, then sources may be tested at less than capacity; if the source is tested at less than capacity subsequent source operation is limited to 110% of the test capacity until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen days for purposes of additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department.

3. The maximum hours of operation are 24 hours/day, 7 days/week, and 52 weeks/year. The Permittee shall maintain an operation log available for Department inspection certifying the total hours of operation annually.

4. The maximum allowable emission rate for each pollutant per source is as follows:

Pollutant	FAC Rule	Allowable Emission Rate
VE	17-296.405 17-210.700	20% opacity * 60% during Excess Emissions
PM	17-296.405 17-210.700	0.1 lbs/MMBtu heat input** 0.3 lbs/MMBtu heat input during Excess Emissions**
SO_2	17-296.405	1.87 lbs/MMBtu heat input

* except for one two-minute period per hour of not more than 40% opacity

** Emissions of particulate matter shall not exceed 0.1 (normal operations) and 0.3 (during excess emissions) lbs/MMBtu heat input when firing fuel oil. No particulate matter limit shall apply when firing natural gas.

The excess emissions provisions of F.A.C. Rule 17-210.700 shall apply during periods of startup, shutdown and malfunctions.

PERMITTEE:

City of Tallahassee
Sam O. Purdom Power Plant

I.D. Number: 10TLH65000105,06,07
Permit/Certification Number: AO65-242831
Date of Issue: March 8, 1994
Expiration Date: March 1, 1999

SPECIFIC CONDITIONS:

5. Emissions tests for the following pollutants for each source shall be performed annually between July 1 and September 30, in accordance with the test methods and frequency indicated below, with notification to the Department 15 days prior to testing. The test results must provide reasonable assurance that the source is capable of compliance at the permitted maximum heat input rate. ~~The tests shall be conducted using the maximum fuel oil/natural gas ratio to be used during the subsequent operating year~~. For good cause, the Permittee may request an extension of a compliance test due date. However, inadequate planning of testing does not constitute good cause for an extension of the compliance test due date. The test report documentation must be submitted to the Department within 45 days after completion of testing.

See letter dated 4/8/94 to J. Curtis Attachment "A"

Pollutant	Frequency	Test Method
VE*	Annually, during normal operation	DEP 9
	Annually, during excess emissions, when applicable	DEP 9
PM*,*1	Annually	EPA 1, 2, 3 and 5, or 17
	Annually, during excess emissions, when applicable	EPA 1, 2, 3 and 5, or 17

* shall be conducted using the maximum fuel oil to gas ratio in use during the current test year

*1 No particulate tests shall be required in any federal fiscal year in which the fossil fuel steam generator did not burn fuel oil for more than 400 hours, other than during startup.

The VE test shall be conducted during one of the P.M. test runs. Test reports shall comply with F.A.C. Rule 17-297.570, Test Reports. The Department can require special compliance tests in accordance with F.A.C. Rule 17-297.340(2).

6. If fueled 100% by oil the sulfur content of the oil shall not exceed 1.8% sulfur by weight. Records of fuel sulfur content shall be kept and made available for Department inspections.

7. Satisfactory ladders, platforms, and other safety devices as well as necessary parts shall be provided, maintained, and made available as necessary to facilitate compliance inspections.

8. An annual operation report [DEP Form 17-210.900(4) attached] shall be submitted by March 1 each year. The attached form shall be reproduced by the Permittee and used for future annual submittals.

PERMITTEE:

City of Tallahassee
Sam O. Purdom Power Plant

I.D. Number: 10TLH65000105,06,07
Permit/Certification Number: AO65-242831
Date of Issue: March 8, 1994
Expiration Date: March 1, 1999

SPECIFIC CONDITIONS:

9. In accordance with F.A.C. Rule 17-213, a Major Air Pollution Source Annual Operation Fee Form [DEP Form 17-213.900(11) attached] must be completed and submitted with appropriate fee between January 15 and March 1 of each year. If the Department has not received the fee payment by March 1, the Department shall impose, in addition to the fee, a penalty of 50 percent of the amount of the fee, plus interest on such amount computed in accordance with s.220.807, Florida Statutes. The Department may revoke any major air pollution source operation permit if it finds that the permit holder has failed to pay timely and required annual operation license fee, penalty or interest. The attached form shall be reproduced by the Permittee and used for future annual submittals. The completed form and appropriate fees must be submitted to the Department of Environmental Protection, Title V (Facility I.D. Number), 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

10. An application to renew this permit shall be submitted prior to December 31, 1998.

11. The permanent source identification number for these point sources are:

10TLH65000105 - Boiler 5
10TLH65000106 - Boiler 6
10TLH65000107 - Boiler 7

Please cite these numbers on all test reports and other correspondence specific to a permitted point source.

12. The Department telephone number for reporting problems, malfunctions or exceedances under this permit is (904) 444-8300, day or night, and for emergencies involving a significant threat to human health or the environment is (904) 488-1320. For routine business, use telephone number (904) 444-8300 during normal working hours.

Expiration Date:

March 1, 1999

Issued this 8th day of March, 1994.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

BOBBY A. COOLEY
District Director

PERMITTEE:

City of Tallahassee

I.D. Number: 10TLH65000105,06,07
Permit/Certification Number: AO65-242831
Date of Issue: March 8, 1994
Expiration Date: March 1, 1999

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions", and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The Permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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

3. As provided in Subsections 403.087(6) and 403.722(5), 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. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use 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.

5. This permit does not relieve the Permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the Permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The Permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the Permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The Permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of this permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

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City of Tallahassee

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GENERAL CONDITIONS:

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. 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 provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. 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 for revocation of this permit.

9. 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 involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The 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.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, as applicable. The Permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. The Permittee shall comply with the following:

a. Upon request, the Permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The Permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous

PERMITTEE:

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GENERAL CONDITIONS:

monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurement;
- the person responsible for performing the sampling or measurement;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

14. When requested by the Department, the Permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the Permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

10.5 MONITORING PROGRAMS

10.5.1 Human Resources

10.5.1.1 Visual Analysis

Following is a description of the methodology used to complete the visual analysis conducted in conjunction with the discussion of aesthetic and scenic values presented in Section 7.2.2.2.

Field Methodology

In preparation of the field work, the project site plan was superimposed on a current aerial photograph at a scale of 1" = 200'. The potential for viewing the proposed project is greatest for boaters along the St. Marks River. Existing structures located on and near the project site were photographed from a variety of viewpoints. The viewpoints were established along the river from the bend near Rattlesnake Branch to the McKenzie Tank Lines property along the Purdom Station's south property line. Several of the photographs were used to further analyze the potential for visual impact. The existing structures were utilized to scale the photographic simulation. The view for boaters on the St. Marks River heading south was selected as the worst case view and a visual simulation was prepared for that key viewpoint.

Photographs were taken with a Canon EOS camera using a 50mm lens and Kodak Gold ASA 100 film. The camera was placed at approximately 5 feet 6 inches above the elevation of the St. Marks River and a series of photographs taken at each location. Photographs were taken on December 6, 1996, between the hours of 10:00 a.m. and 12:00 noon, and the weather was overcast.

The film was developed professionally and 4 x 6 inch prints were made of all exposures. The 4 x 6 inch prints were reviewed and one print was selected for use in the simulation effort. An enlargement of the selected print was made in preparation of this work for use in assessing potential visual impact.

Techniques Used in Preparation of the Simulation

In order to place the proposed facilities as accurately as possible, the following techniques were utilized to address position, scale, shape, color, detail and texture. Locating proposed facilities on photographs involved the following steps for each structural component of the new generating unit:

Step 1. On a 1" = 200' scale aerial photograph, lines were drawn connecting the view point with two existing stacks and the existing water tower.

Step 2. The angle between the sight lines to the water tower and the existing stacks were measured.

Step 3. On the color photograph, the distance between the stacks and water tower was measured in inches from center to center.

Step 4. The result of Step 3 was divided by the result of Step 2 to determine the number of inches on the photograph represented by each degree of angle as measured on the aerial. For example, if the angle between the two stacks was measured on the

aerials as 10 degrees and the distance between the stacks was measured on the photograph as 5 inches, the result would be a factor of 1 inch equals 2 degrees.

Step 5. The proposed facilities, as depicted on a 1" = 200' scale site plan, were drawn on the aerial photograph. Additional lines were then drawn connecting the view point with the proposed facilities to determine the left and right boundaries of the viewing area and the sight progression of the facilities from the view point.

Step 6. The angle between each proposed facility identified in Step 5 and the existing stacks was measured.

Step 7. Using the factor determined in Step 4, the angles measured in Step 6 were converted to inches on the photograph.

Step 8. The distances yielded in Step 7 were then plotted on the photograph along the water line. Perpendicular lines extending up from the horizon line at each of the plotted points were then drawn.

Step 9. The height of each proposed facility on the photograph was determined by the following method:

a. For an existing object of known height in a particular image, the following simple equation was used to determine a multiplier for the vertical dimension objects on the photograph:

Vertical Multiplier = image height/actual height X viewing distance.

b. The stack height for Unit 7 is approximately 180 feet above grade (190 feet above water line), measures 9 inches on the photograph, and is 1,200 feet from the viewpoint, as measured on the aerial photograph. This yields a vertical multiplier of 24.6.

c. To determine the heights of the proposed facilities on the photograph, the above formula was converted to solve for the unknown variable, image height:

Image Height = actual height/viewing distance X vertical multiplier.

d. Actual heights of the proposed stack was provided by the project engineer. Viewing distances from the view point were measured on the 1 inch equals 200 feet scale aerial.

e. The calculated height for the stack was plotted on the photograph at the points on the horizon line plotted in Step 8.

10.5.2 Cultural Resources

There are no monitoring programs associated with this technical category.

10.5.3 Groundwater

There are no monitoring programs associated with this technical category.

CITY OF TALLAHASSEE

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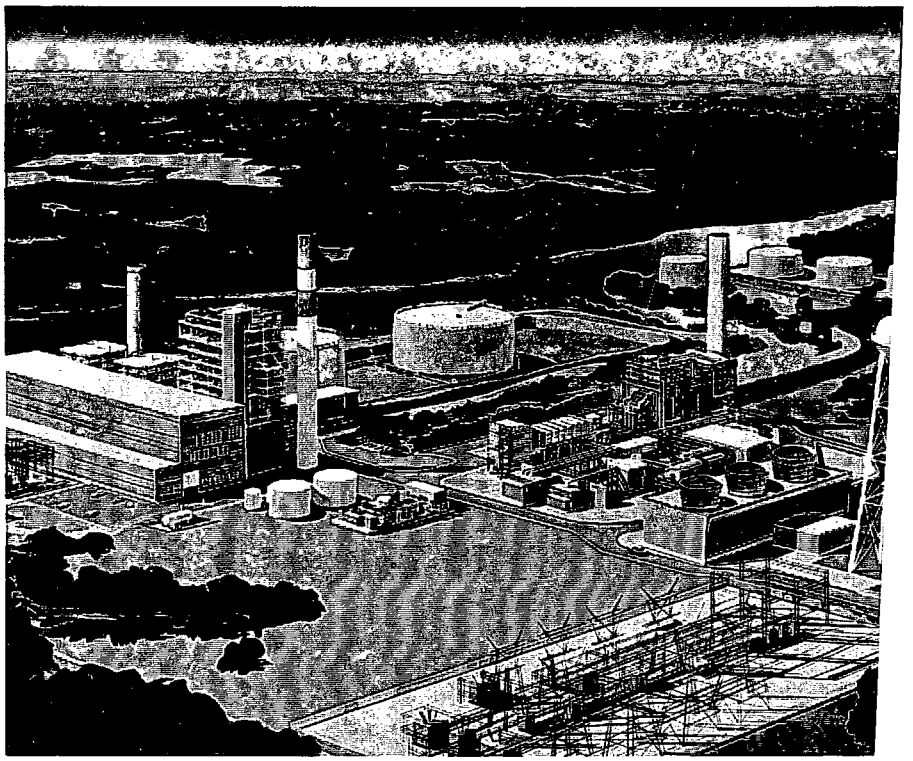

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VOLUME 4

Raytheon Engineers &
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CITY OF TALLAHASSEE

SITE CERTIFICATION APPLICATION

PURDOM UNIT 8

MARCH 1997

VOLUME 4

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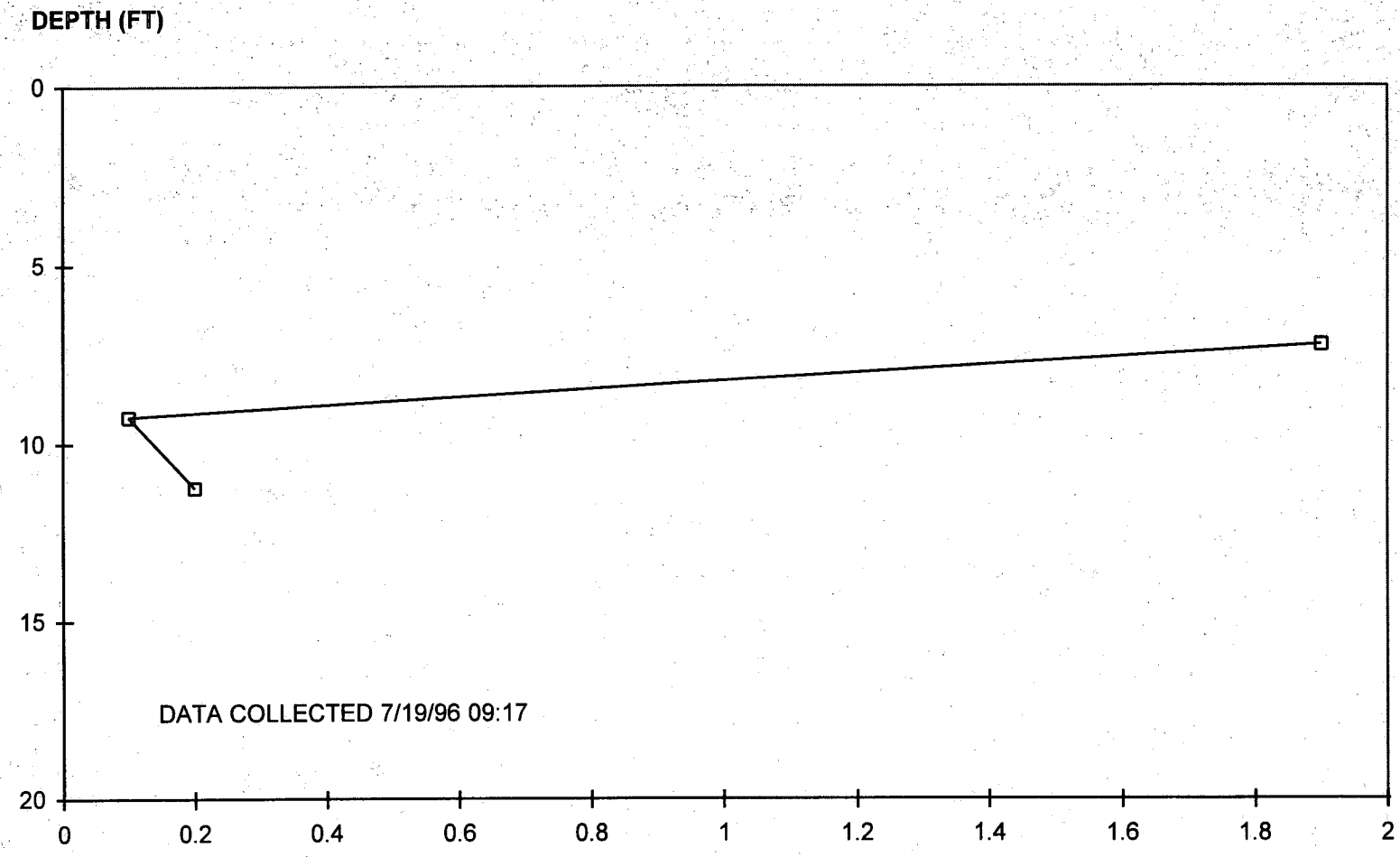
IMAGE QUALITY

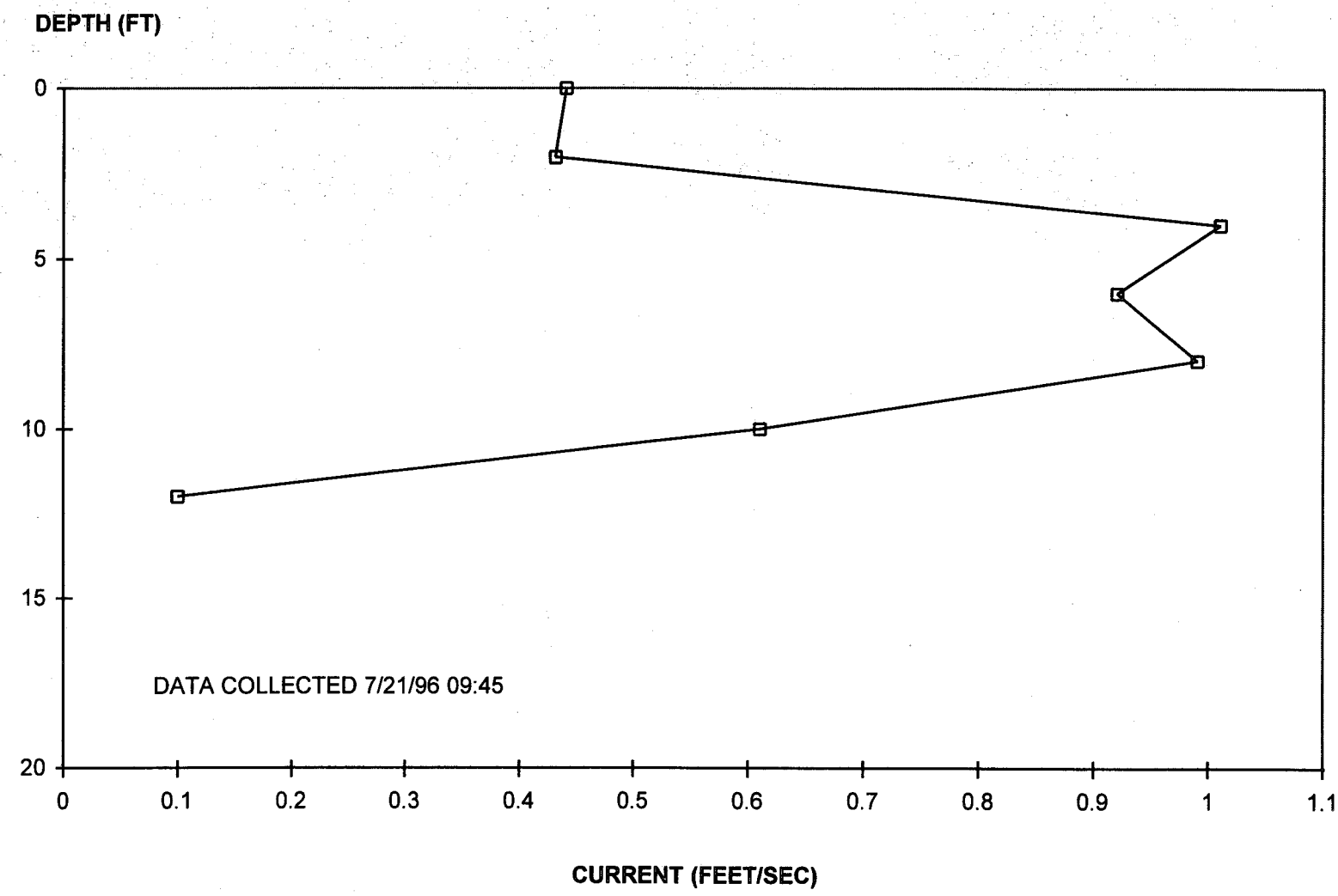
AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

Figure
10.5.4-1



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LOCATION 1
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

Figure
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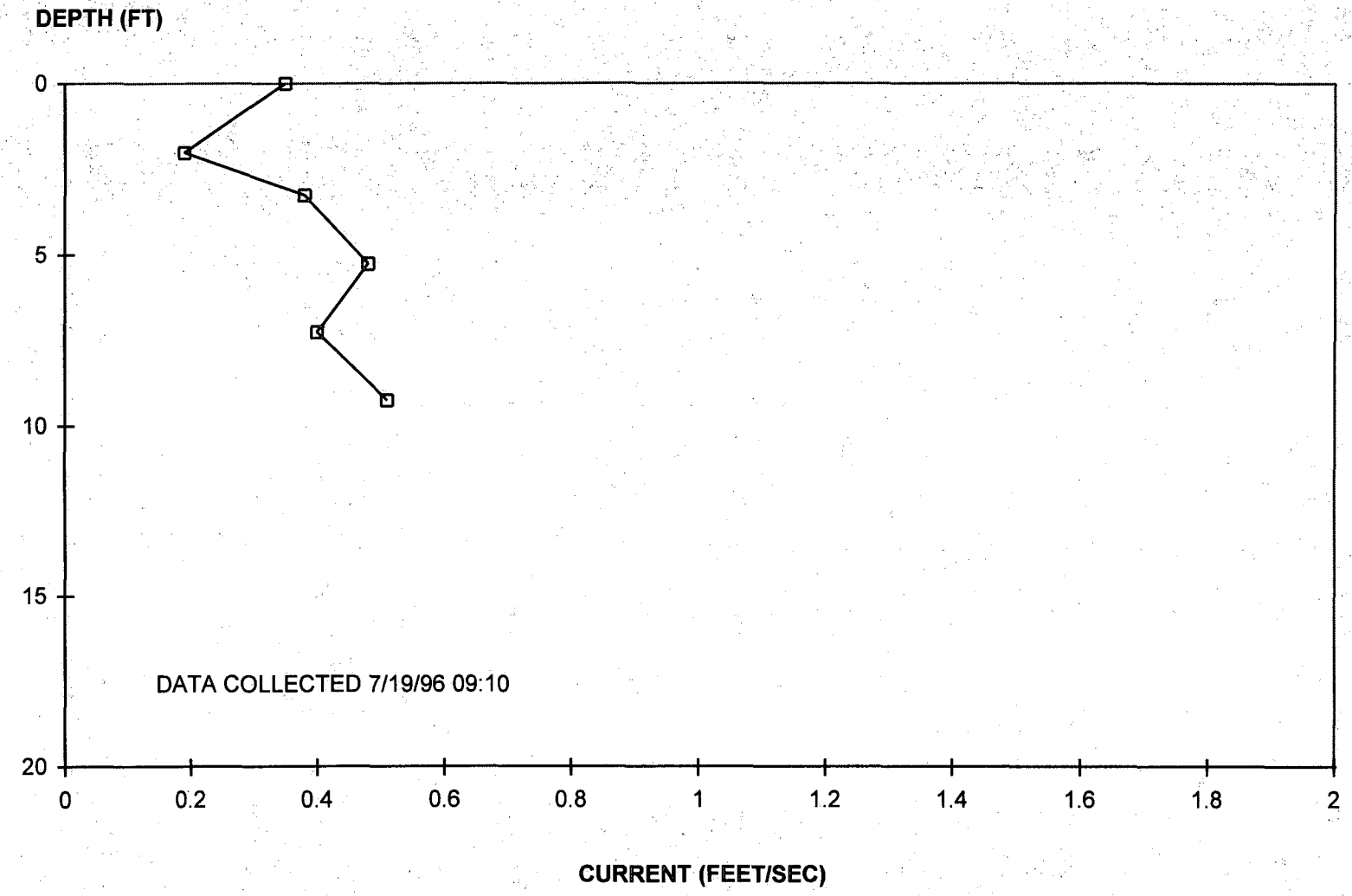
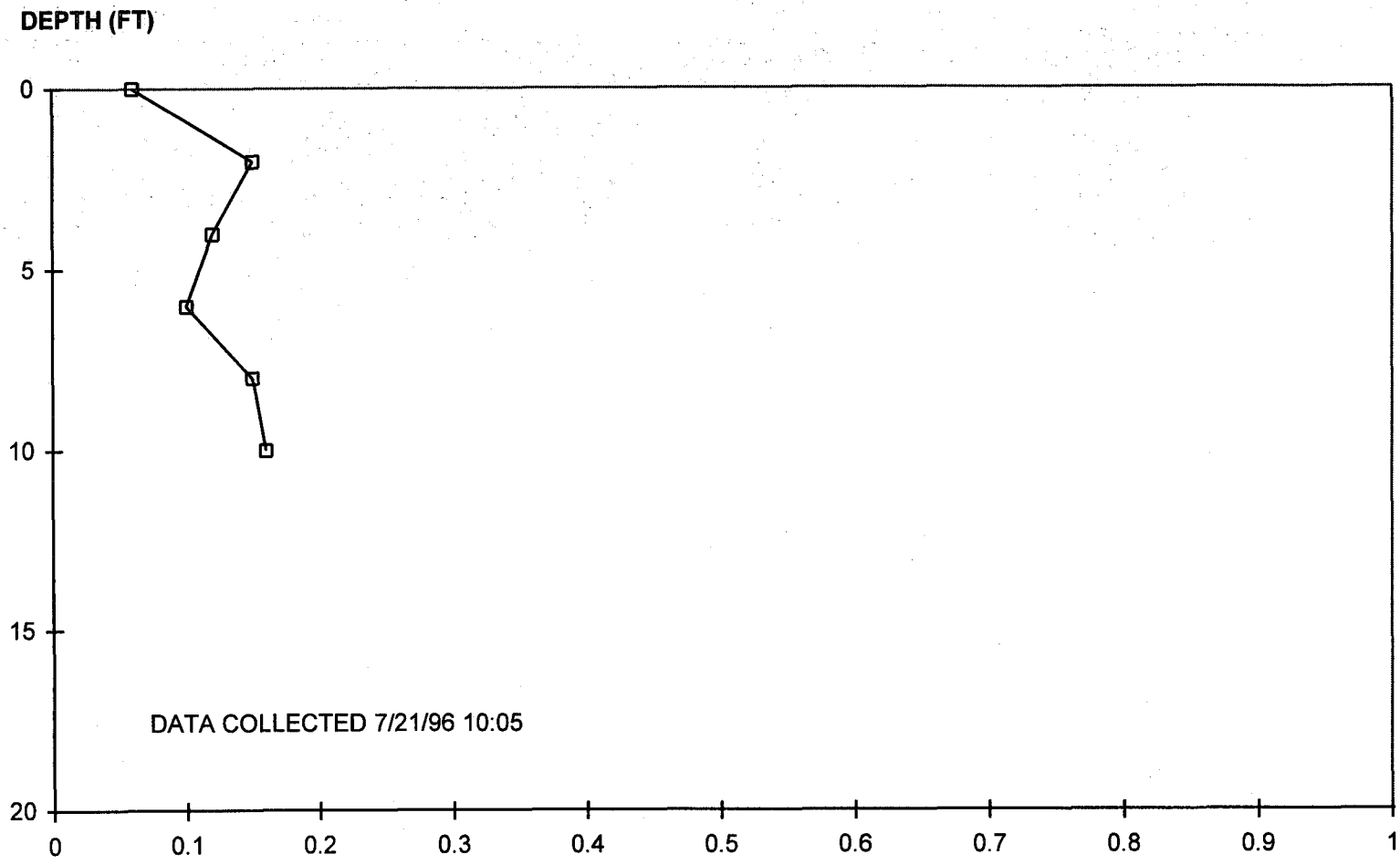


CITY OF TALLAHASSEE

LOCATION 2
WATER COLUMN CURRENT PROFILE
AT UNIT 7 INTAKE STRUCTURE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

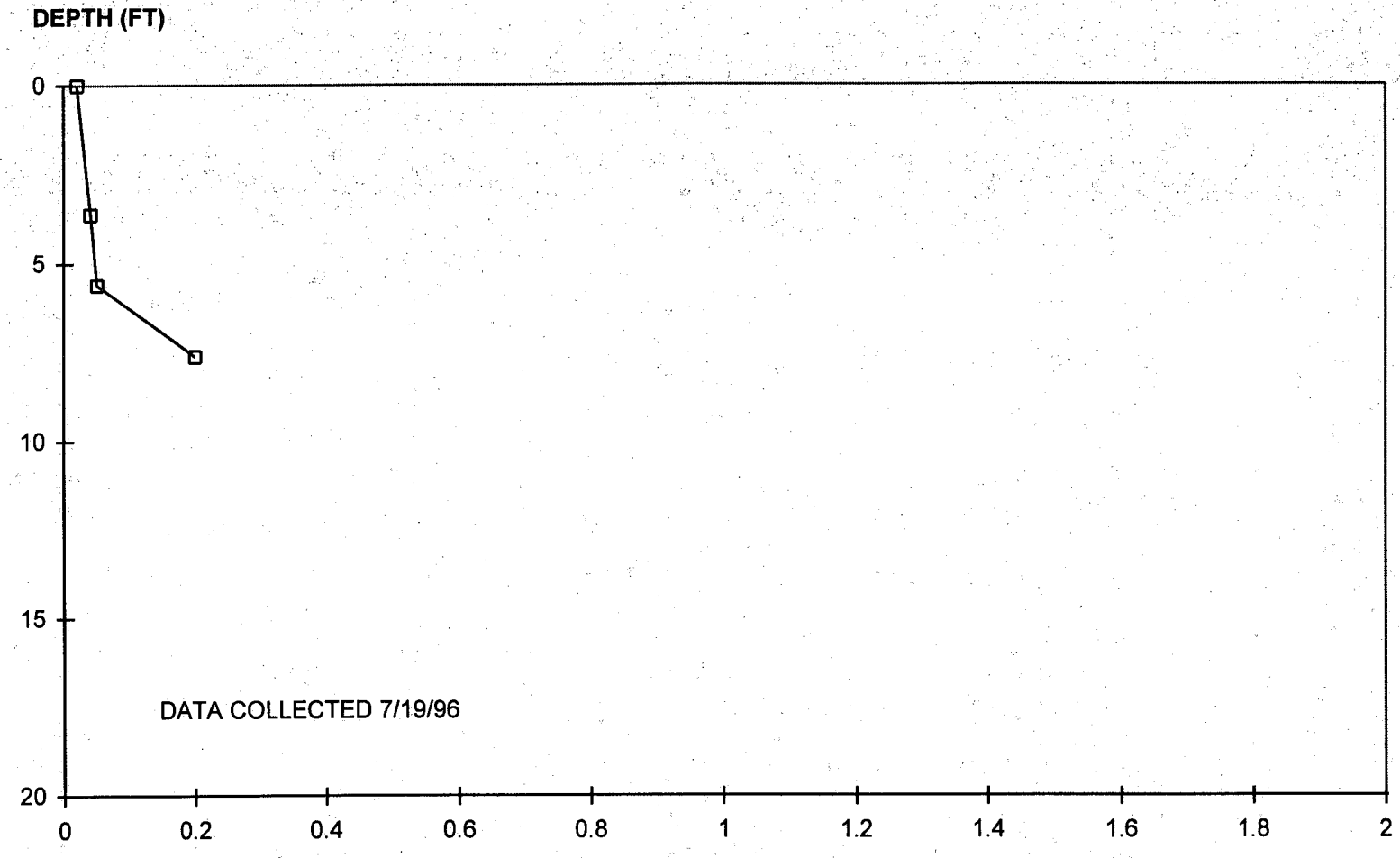
Figure
10.5.4-3



CITY OF TALLAHASSEE

LOCATION 2
WATER COLUMN CURRENT PROFILE
AT UNIT 7 INTAKE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

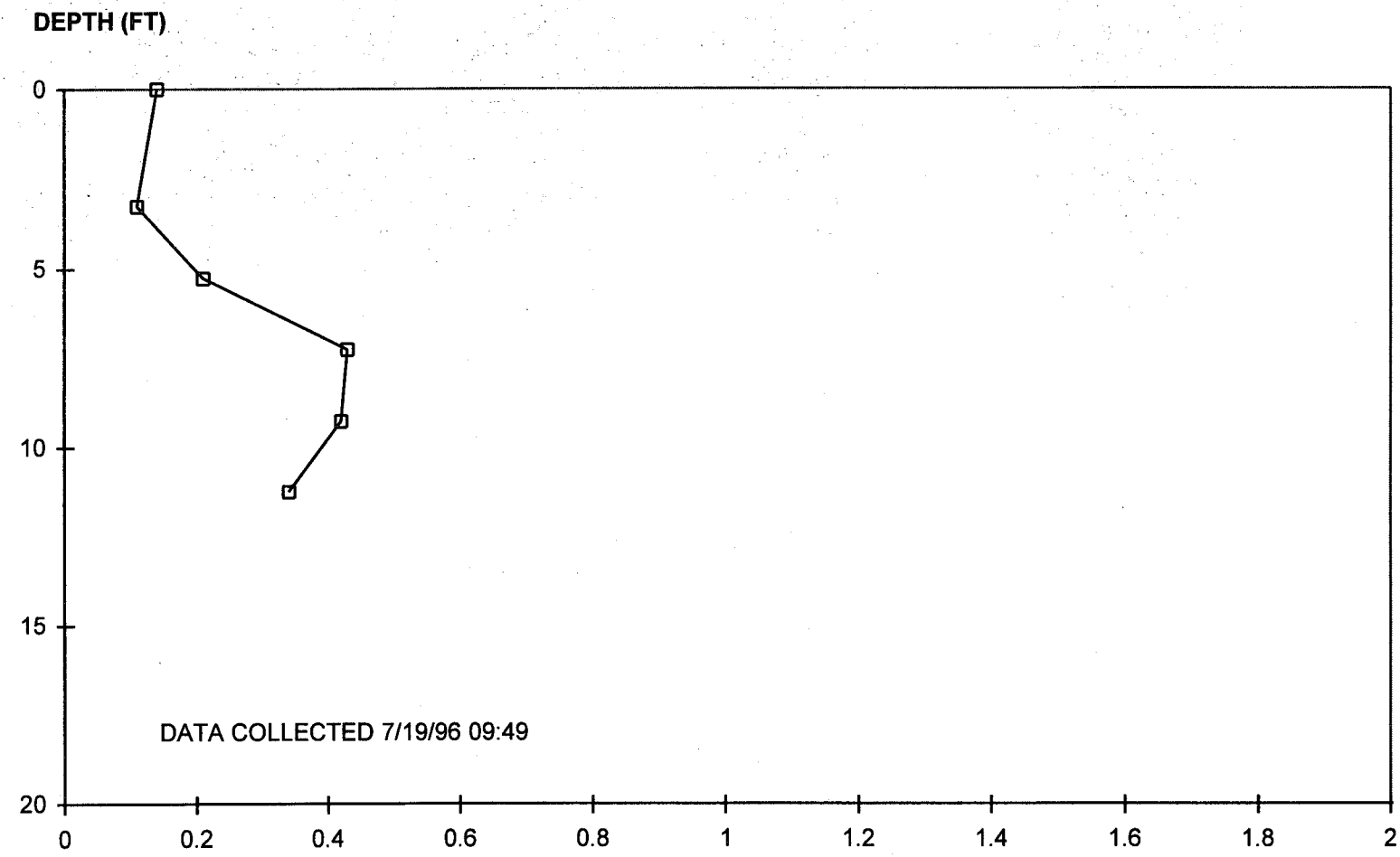
Figure
10.5.4–4



CITY OF TALLAHASSEE

LOCATION 3
WATER COLUMN CURRENT PROFILE
AT OPENING OF INTAKE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

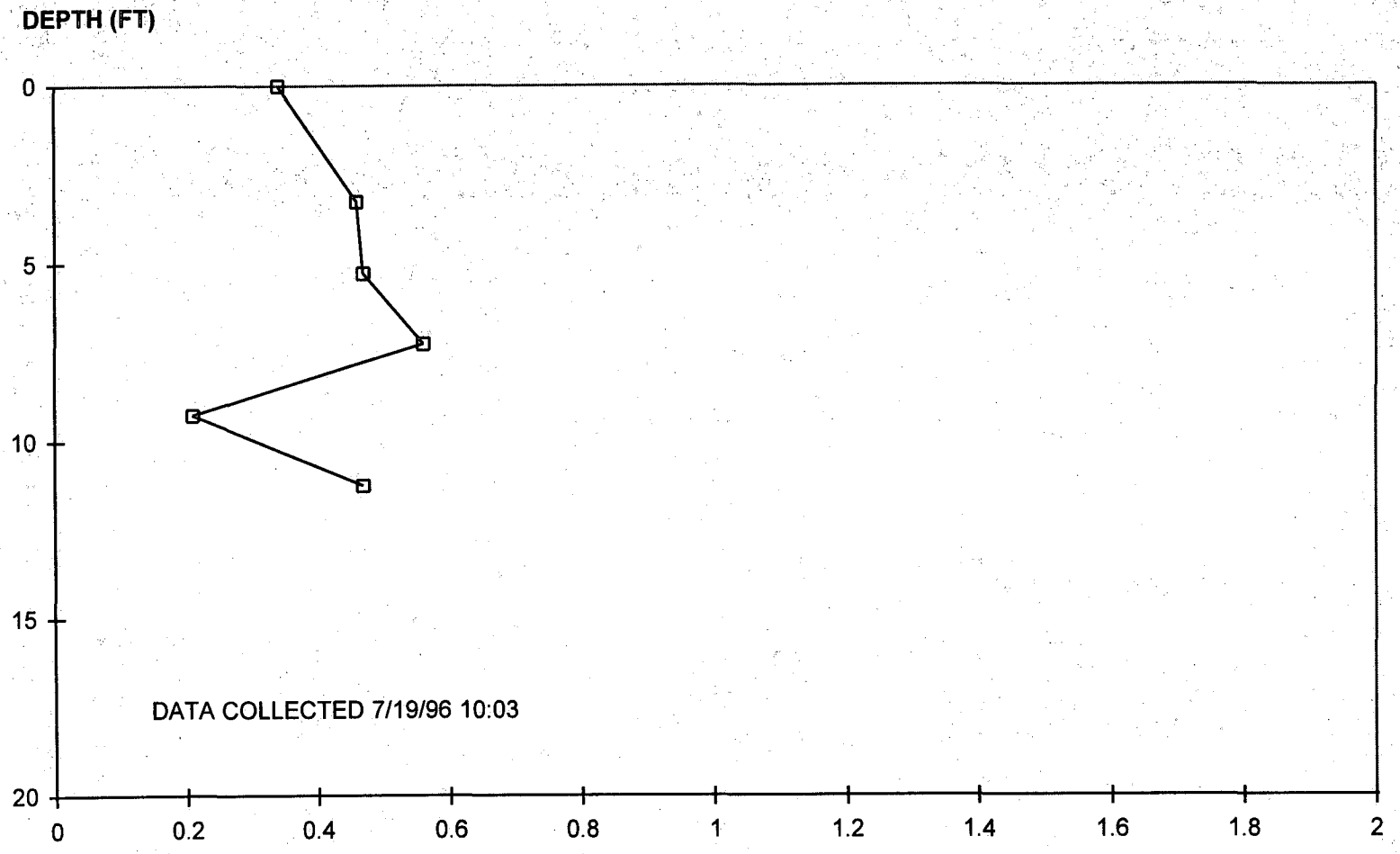
Figure
10.5.4-5



CITY OF TALLAHASSEE

LOCATION 4
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, AT UNIT 5 INTAKE STRUCTURE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

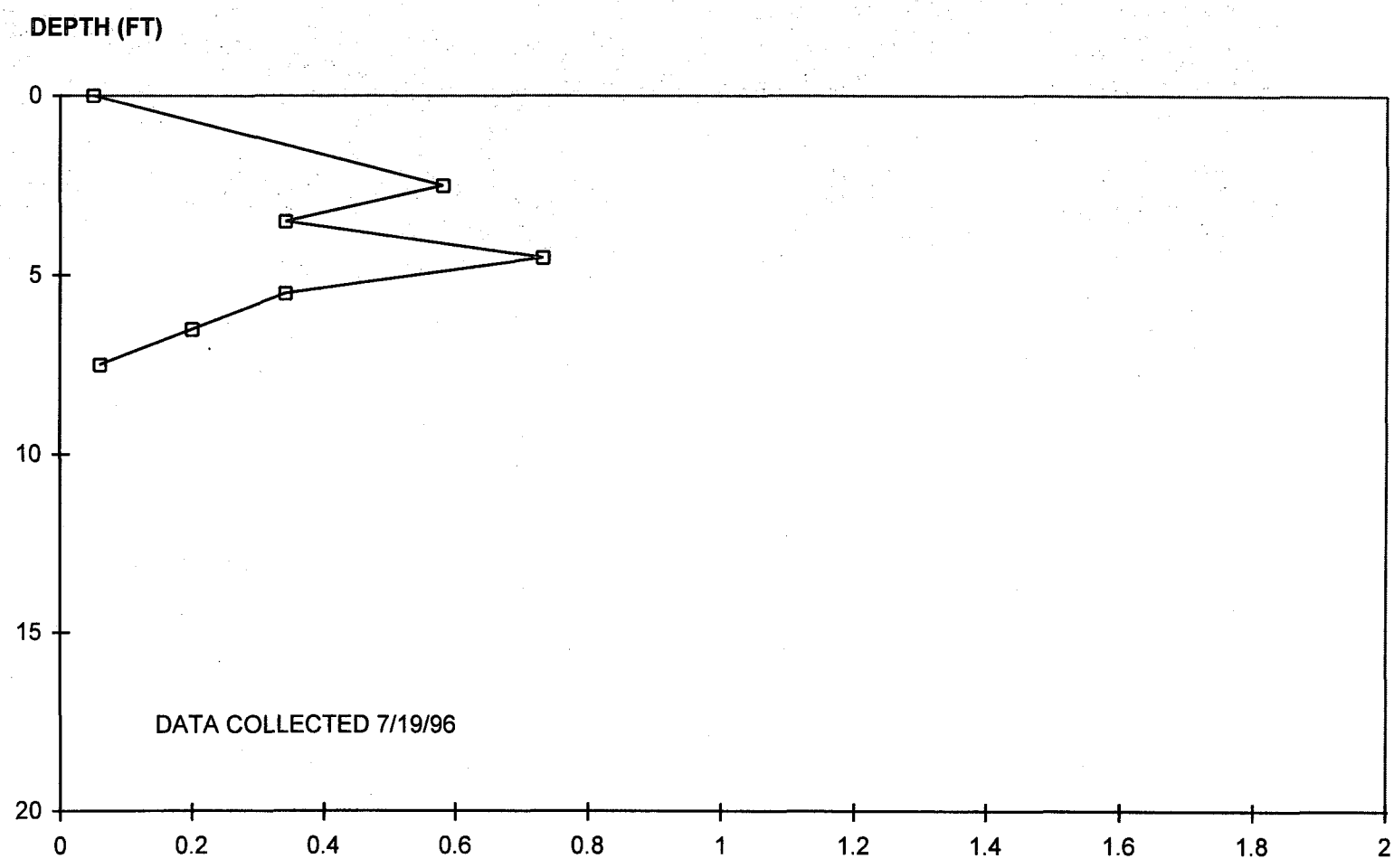
Figure
10.5.4-6



CITY OF TALLAHASSEE

LOCATION 5
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, BELOW INTAKE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

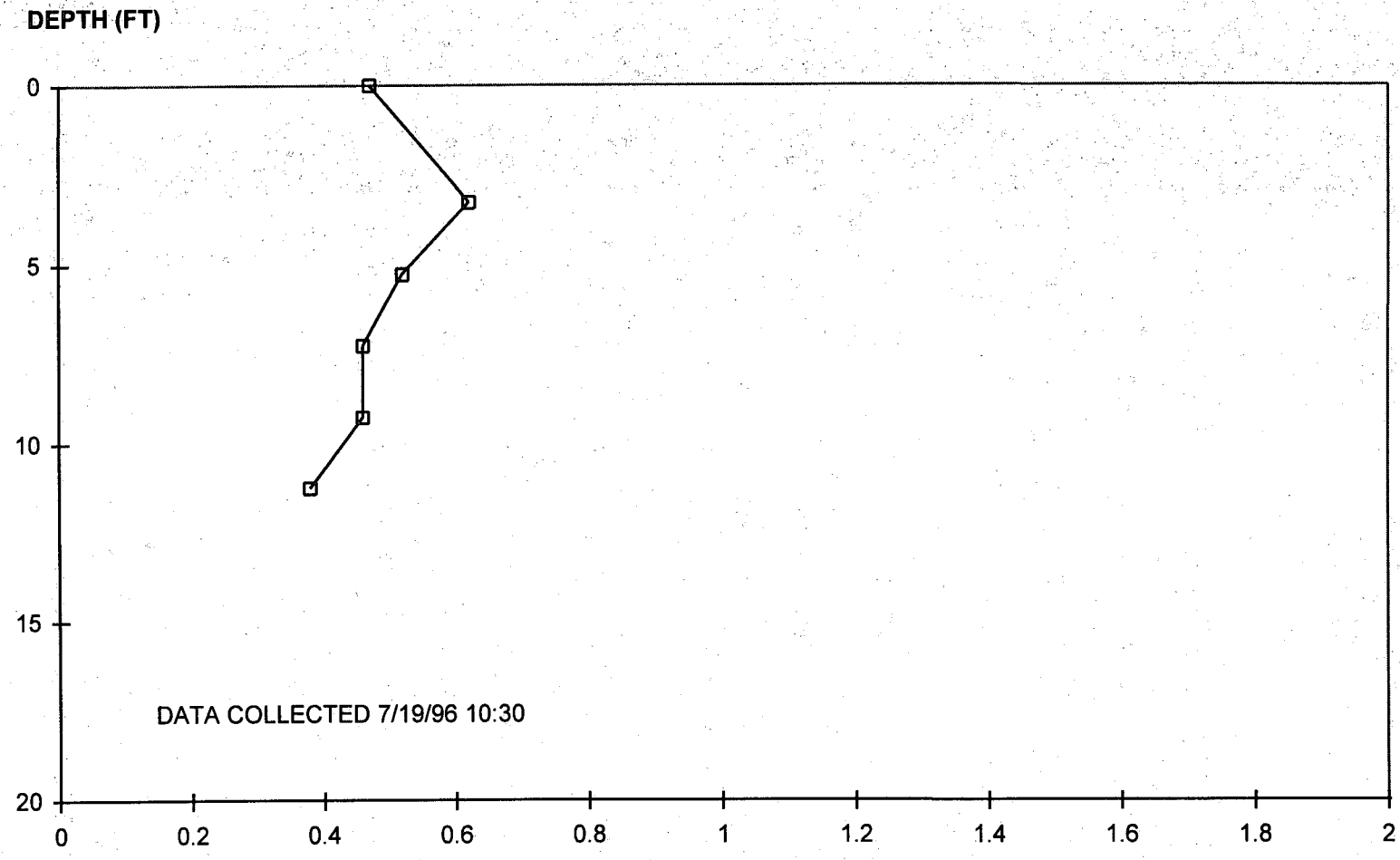
Figure
10.5.4-7



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN CURRENT PROFILE
AT UNIT 5 DISCHARGE
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

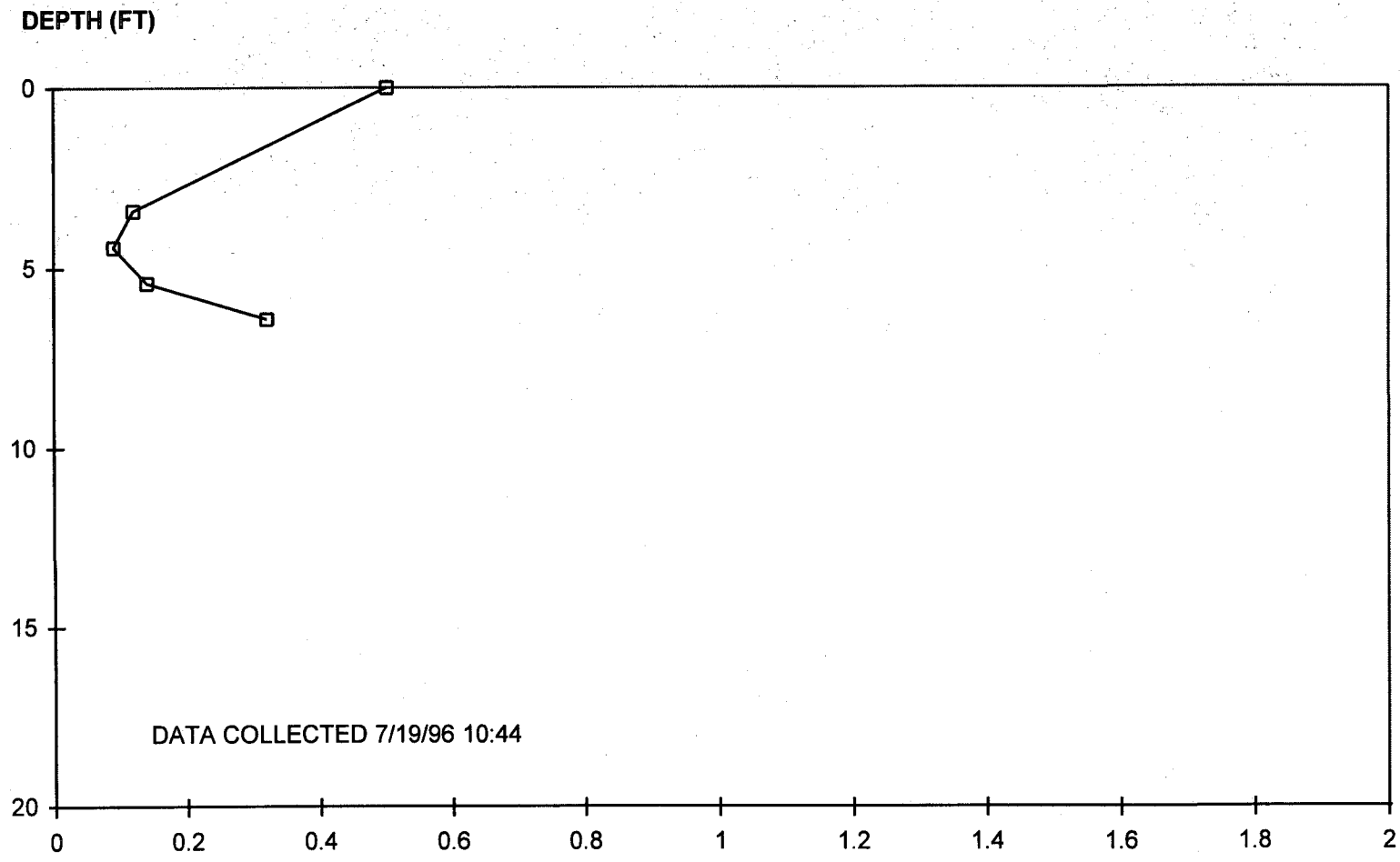
Figure
10.5.4-8



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, AT UNIT 5 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

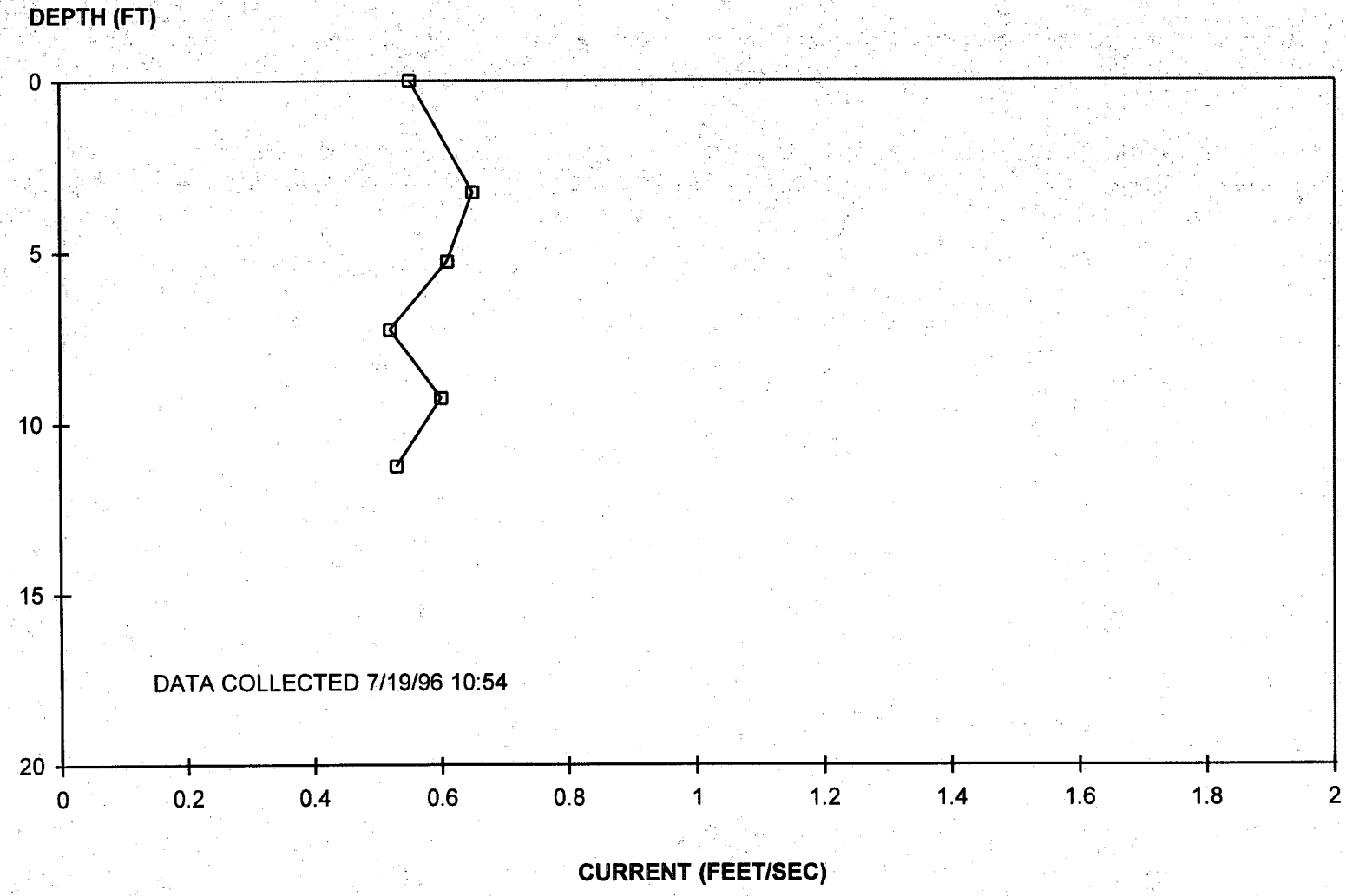
Figure
10.5.4-9



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, AT UNIT 5 DISCHARGE, BETWEEN DISCHARGE/MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

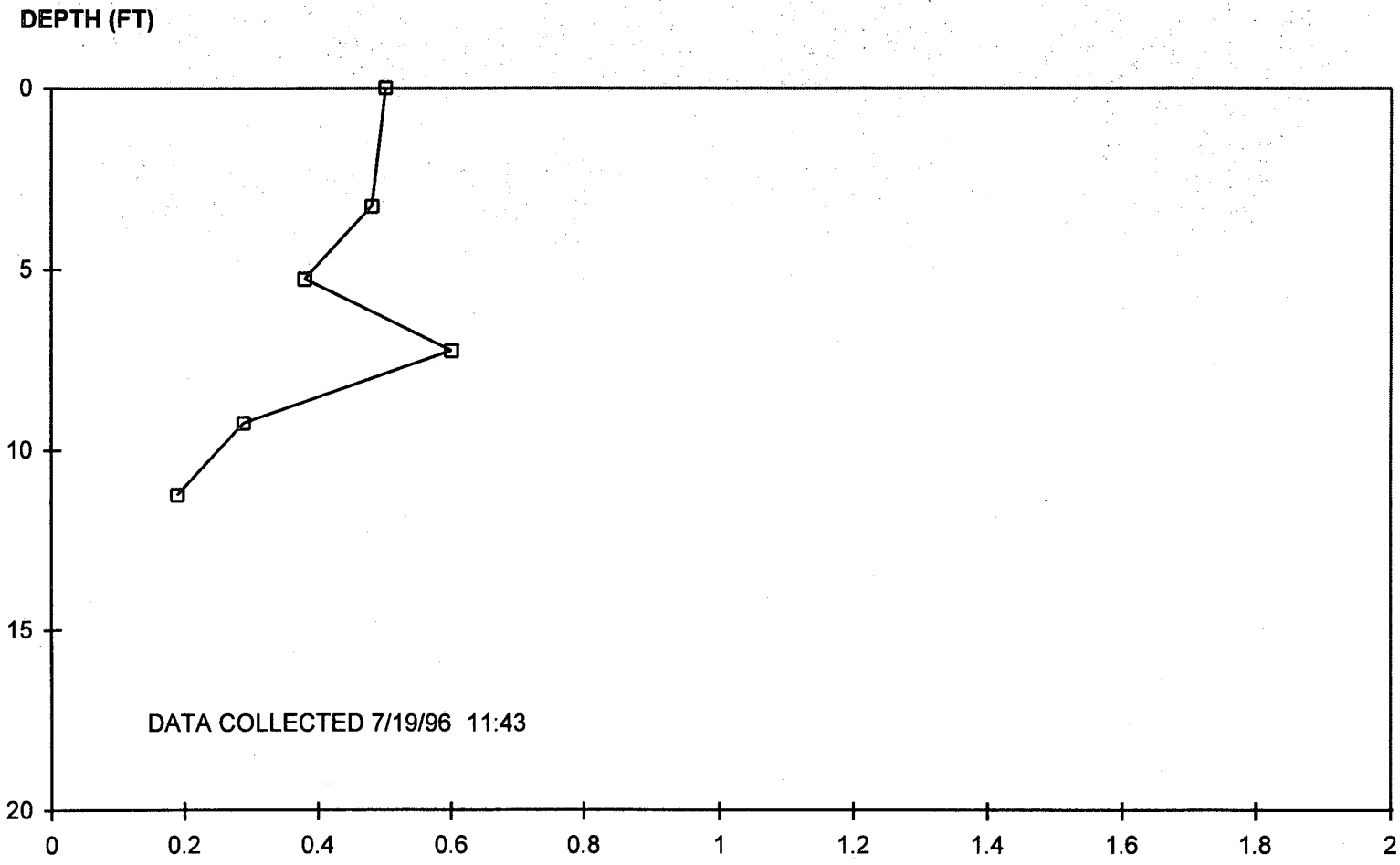
Figure
10.5.4-10



CITY OF TALLAHASSEE

LOCATION 7
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 5 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

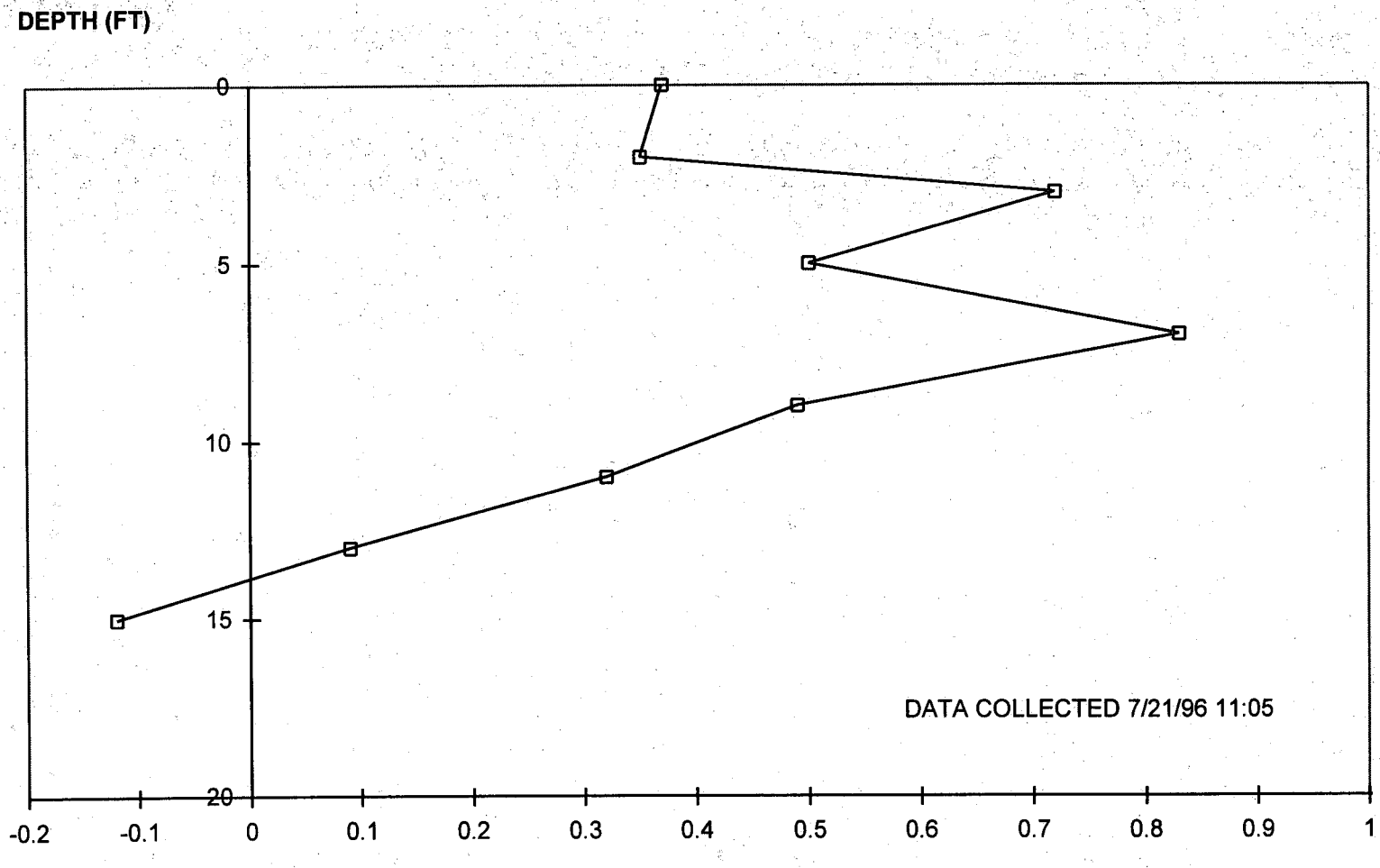
Figure
10.5.4-11



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

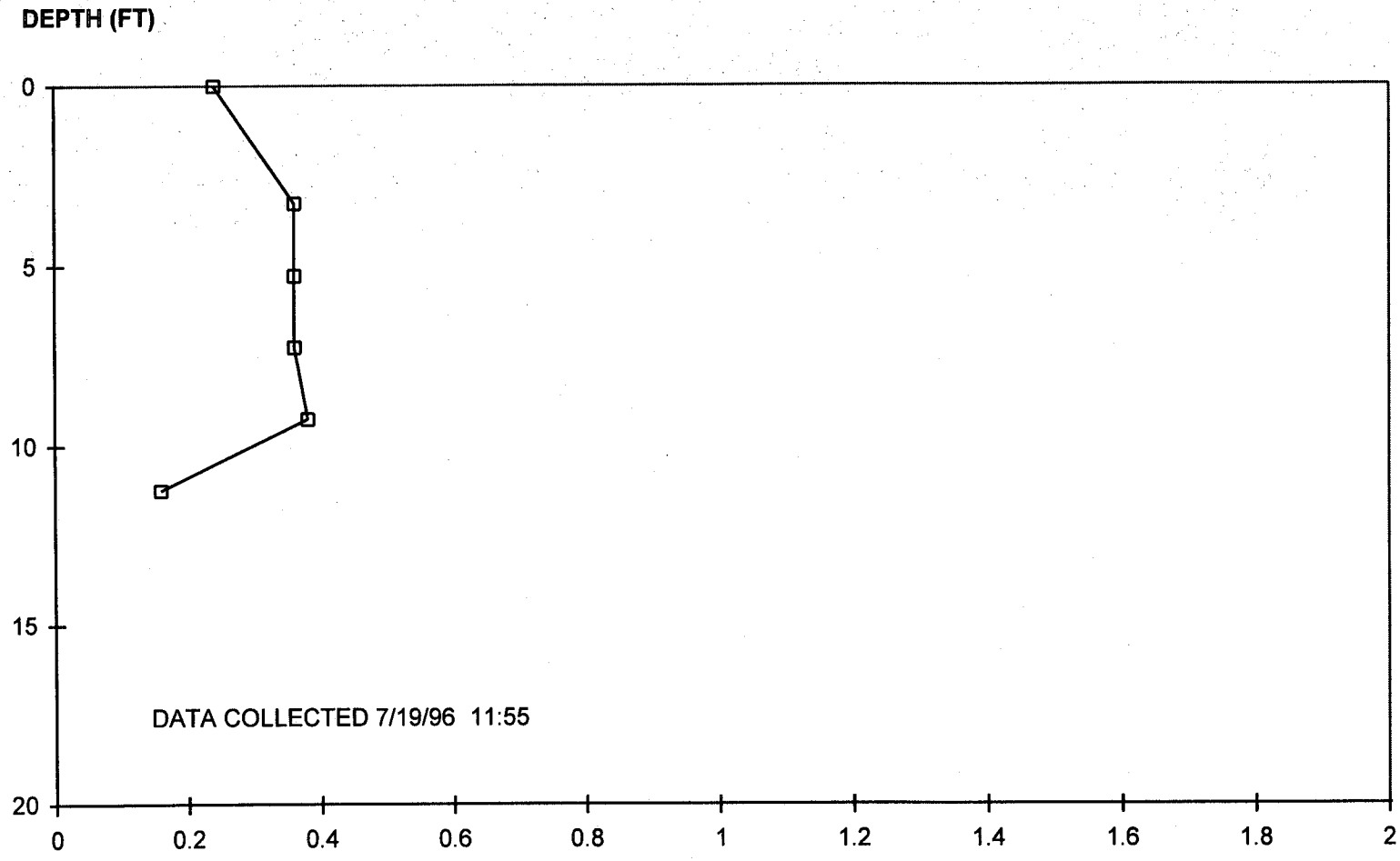
Figure
10.5.4-12



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

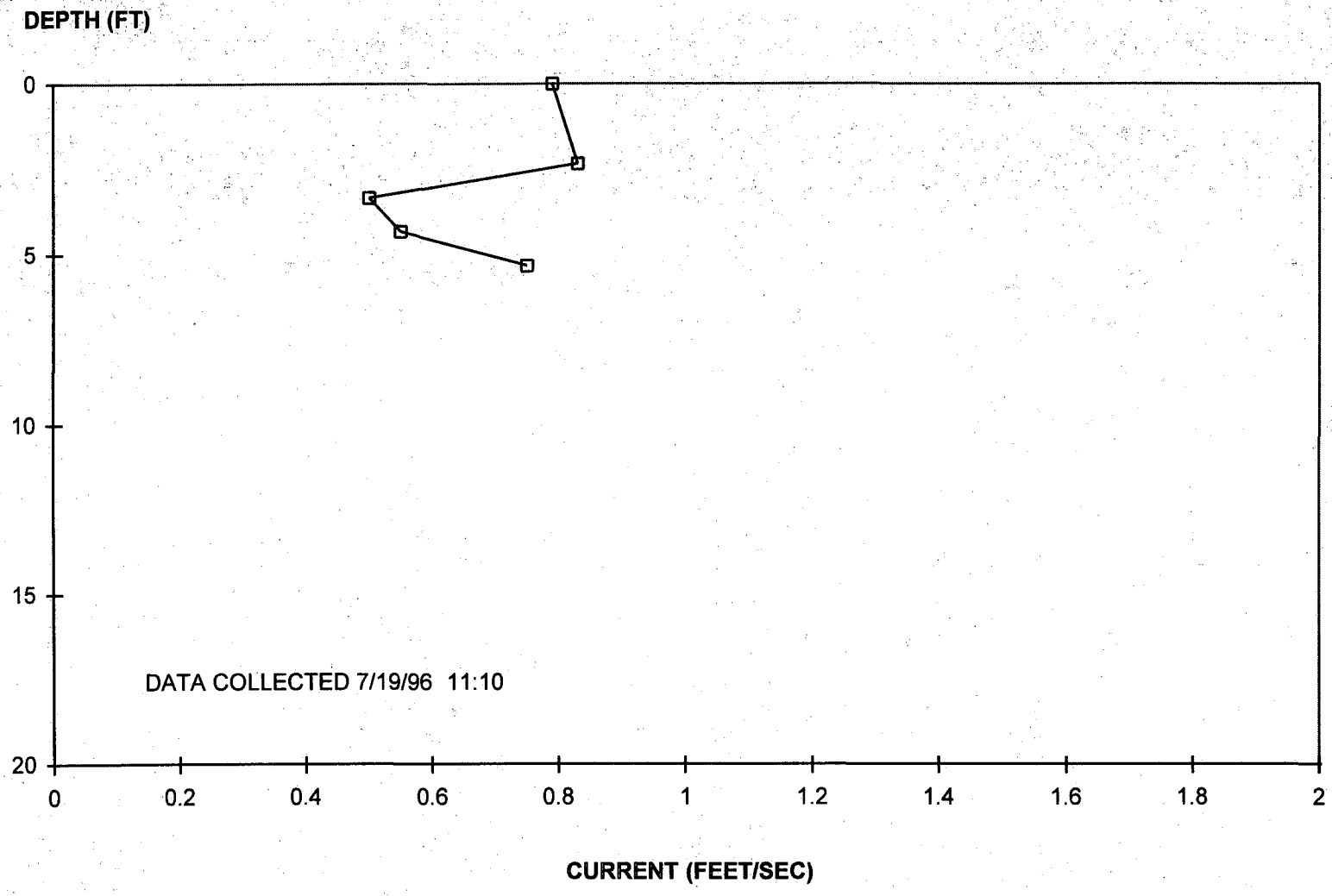
Figure
10.5.4-13



CITY OF TALLAHASSEE

LOCATION 9
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, SHIELD'S MARINA, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

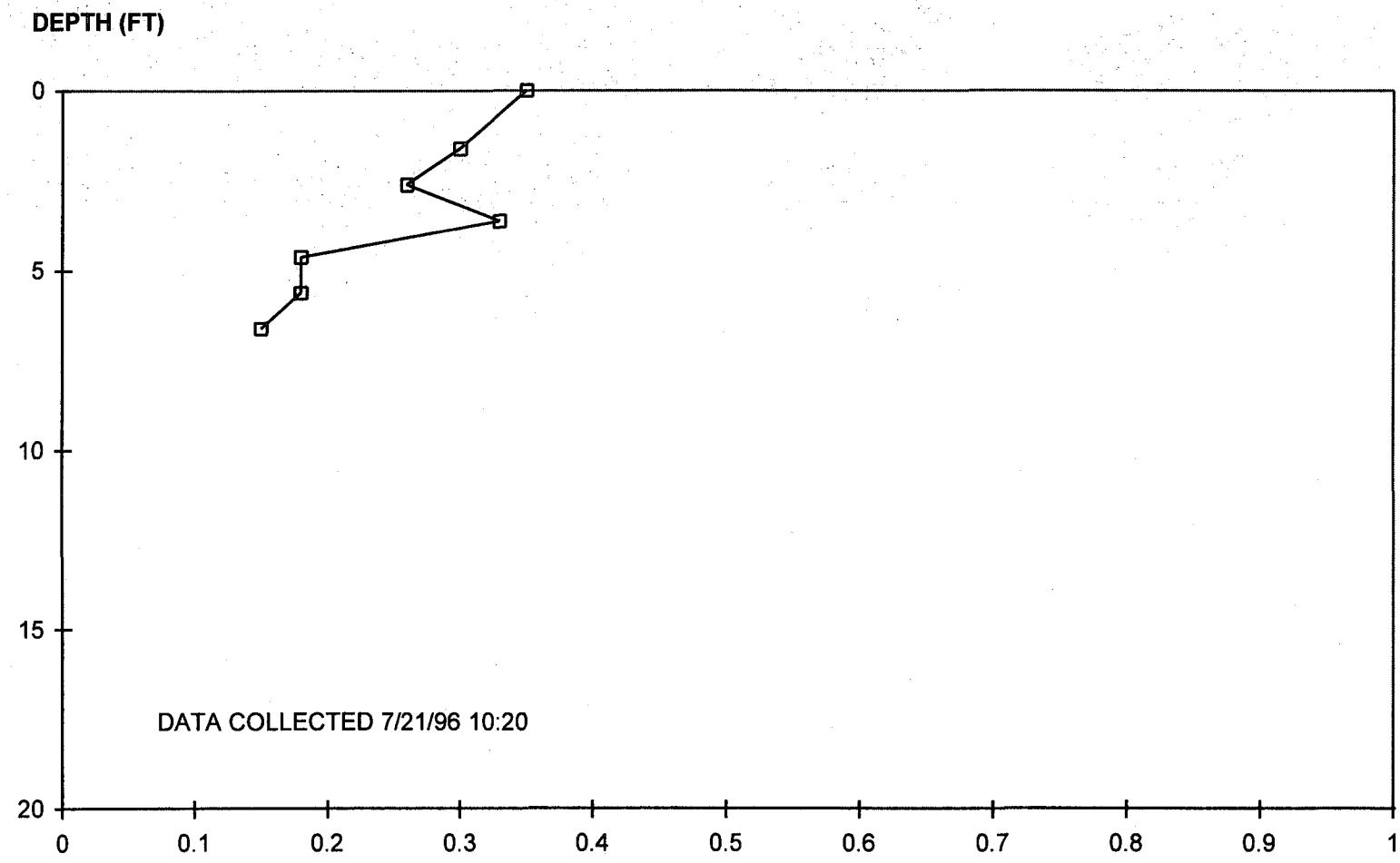
Figure
10.5.4-14



CITY OF TALLAHASSEE

LOCATION 10
WATER COLUMN CURRENT PROFILE
AT UNITS 6/7 DISCHARGE, IMMEDIATELY DOWNSTREAM OF DISCHARGE POINT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

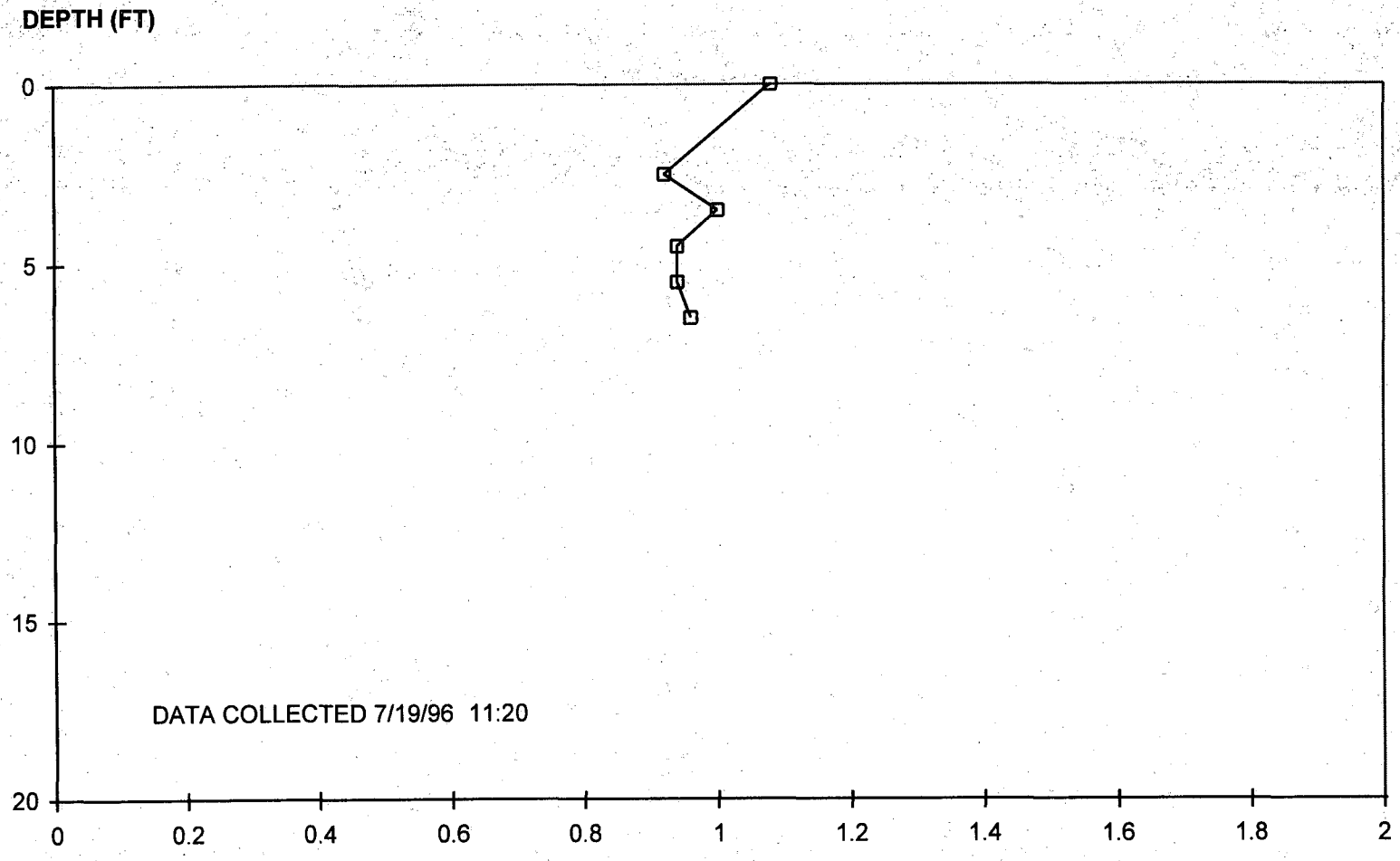
Figure
10.5.4–15



CITY OF TALLAHASSEE

LOCATION 10
WATER COLUMN CURRENT PROFILE
AT UNITS 6/7 DISCHARGE, IMMEDIATELY DOWNSTREAM OF DISCHARGE POINT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

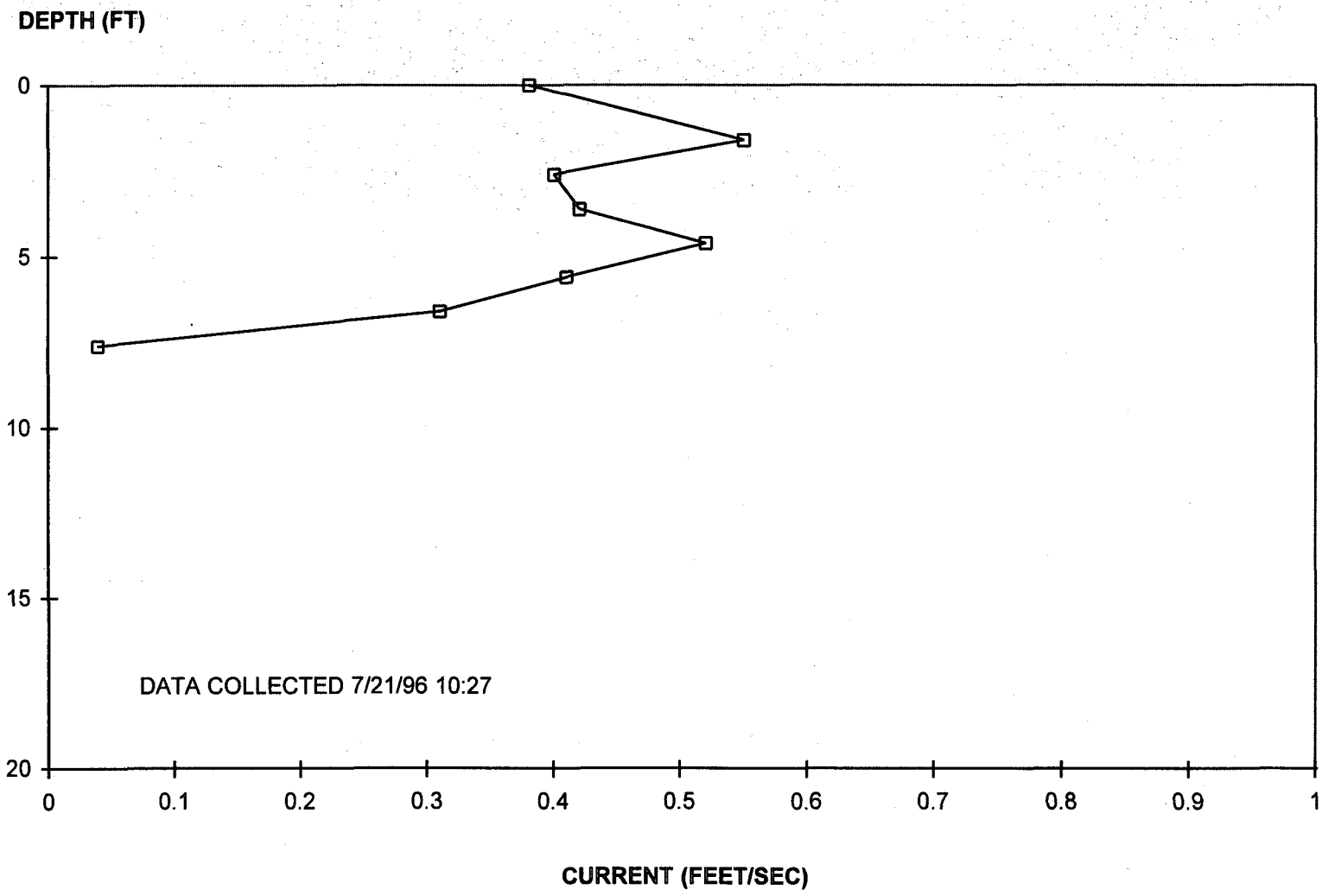
Figure
10.5.4–16



CITY OF TALLAHASSEE

LOCATION 11
WATER COLUMN CURRENT PROFILE
AT UNITS 6/7 DISCHARGE, PRIOR TO BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

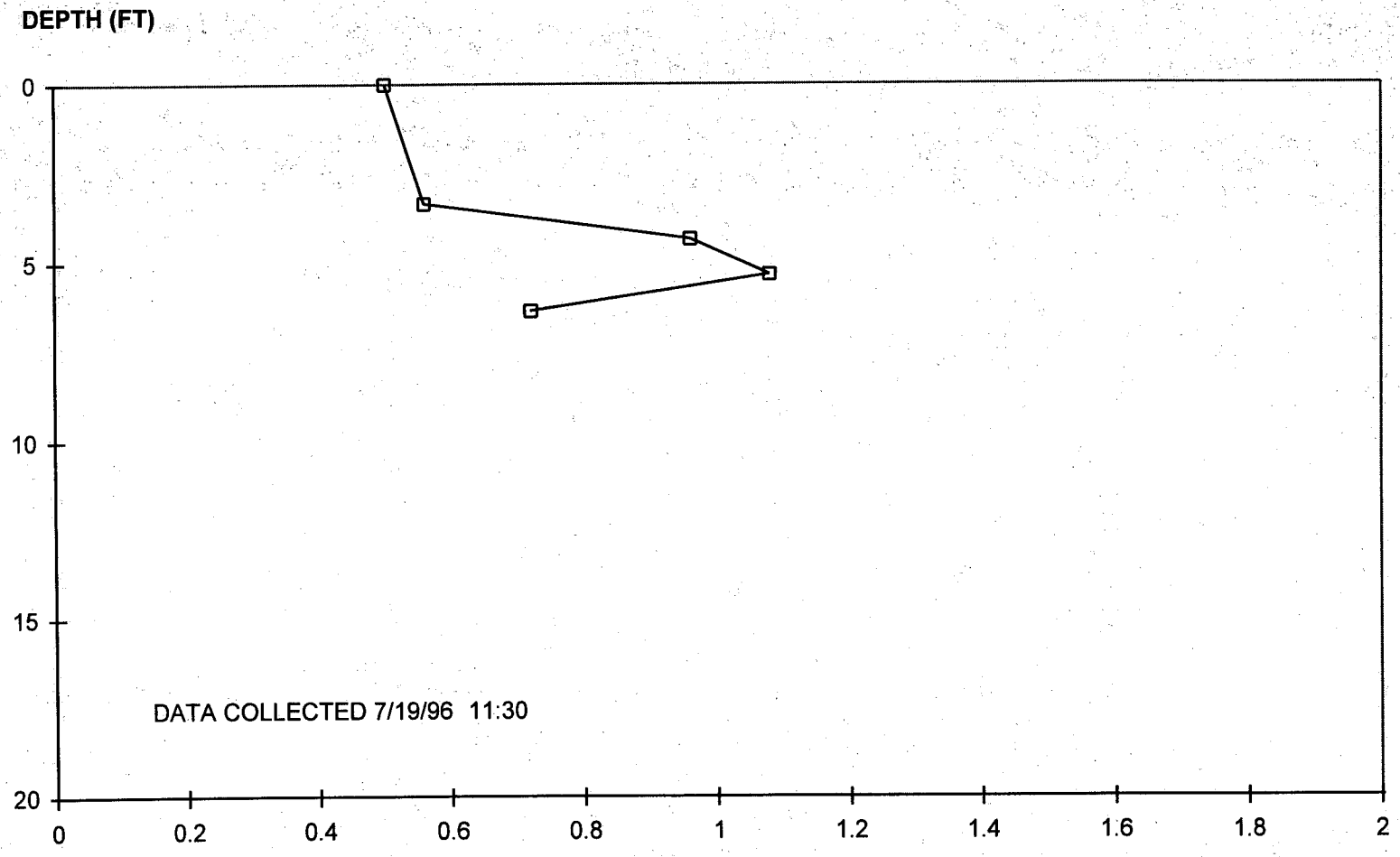
Figure
10.5.4–17



CITY OF TALLAHASSEE

LOCATION 11
WATER COLUMN CURRENT PROFILE
AT UNITS 6/7 DISCHARGE, PRIOR TO BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

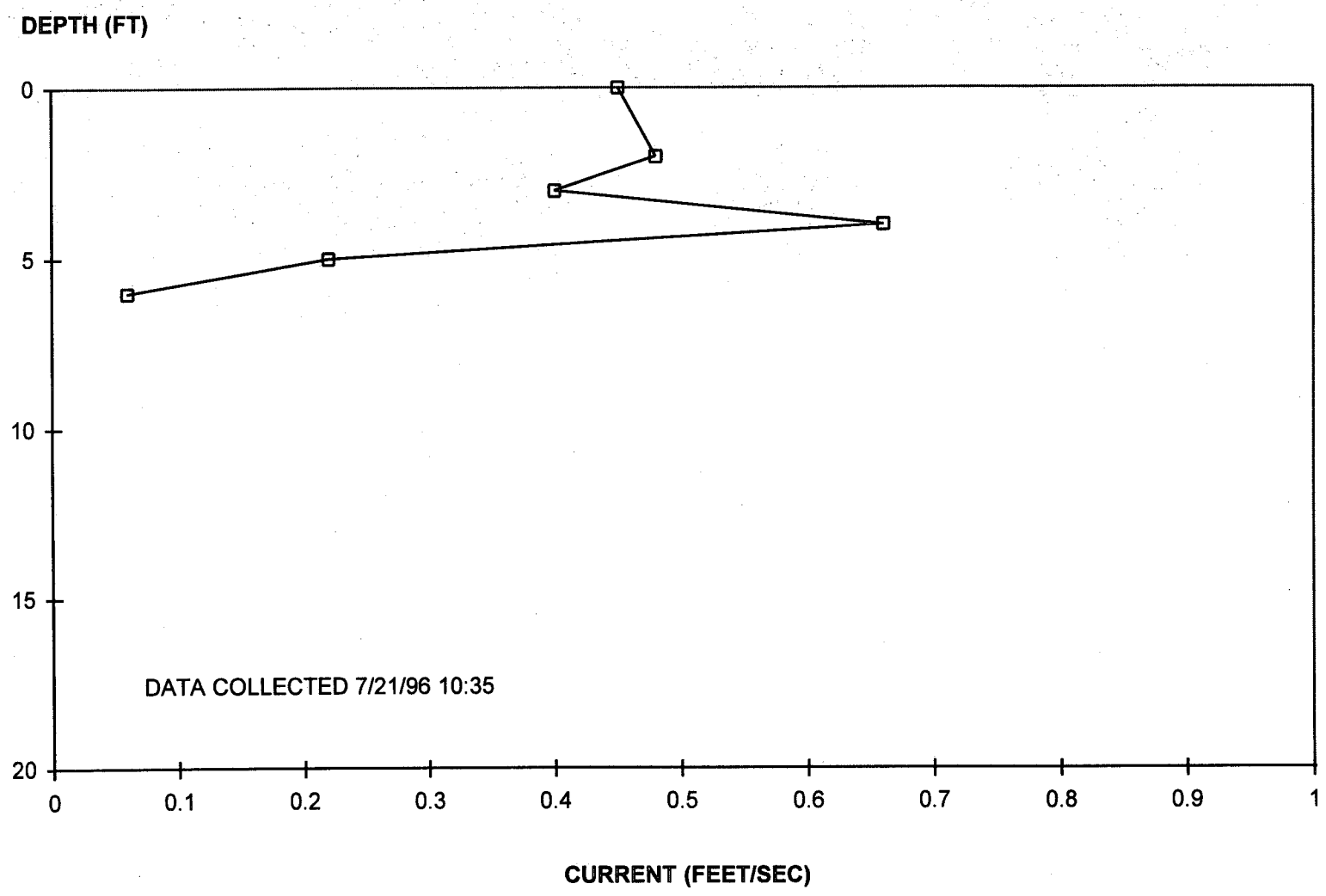
Figure
10.5.4–18



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN CURRENT PROFILE
AT UNITS 6/7 DISCHARGE, AFTER BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

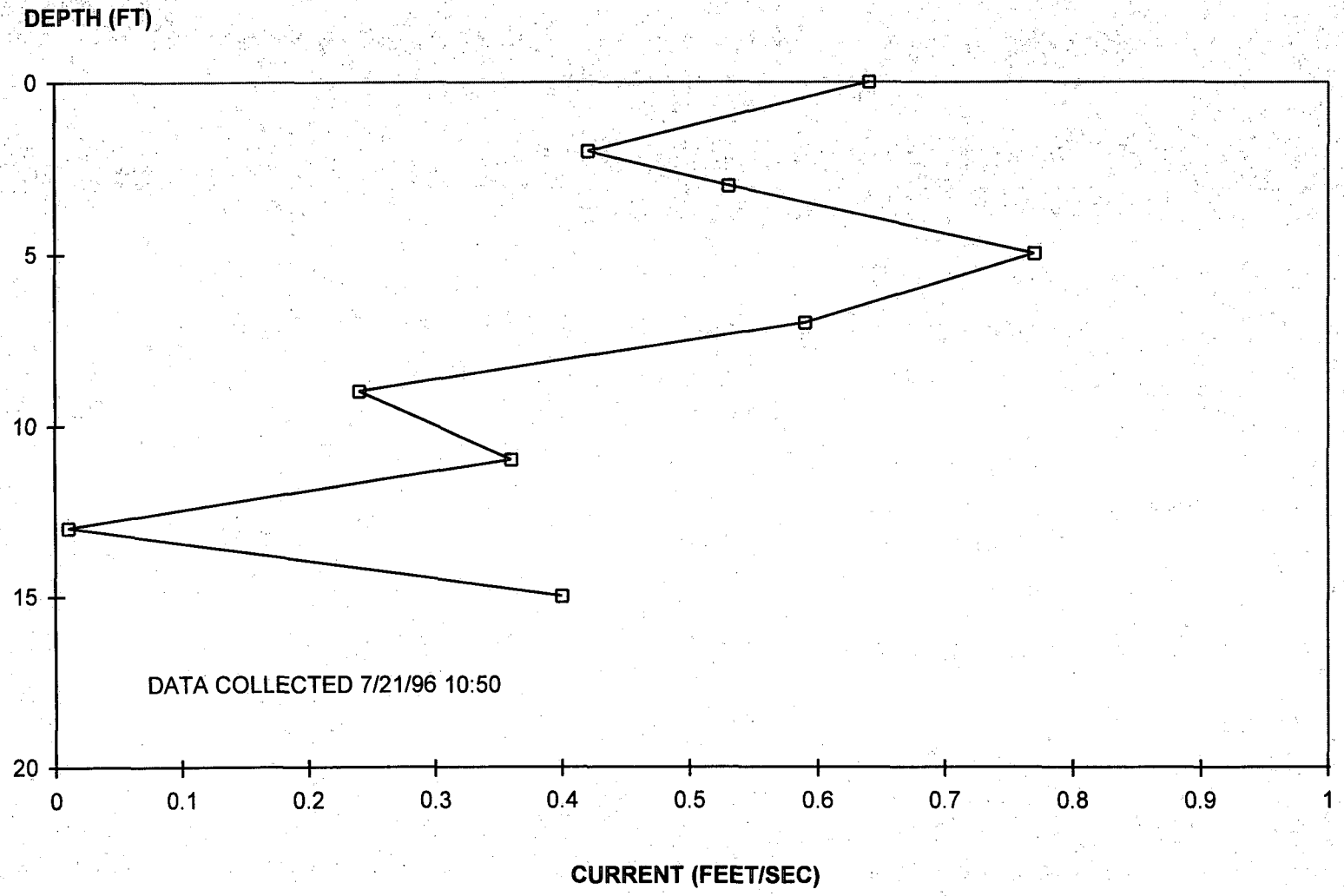
Figure
10.5.4–19



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN CURRENT PROFILE
AT UNITS 6/7 DISCHARGE, AFTER BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

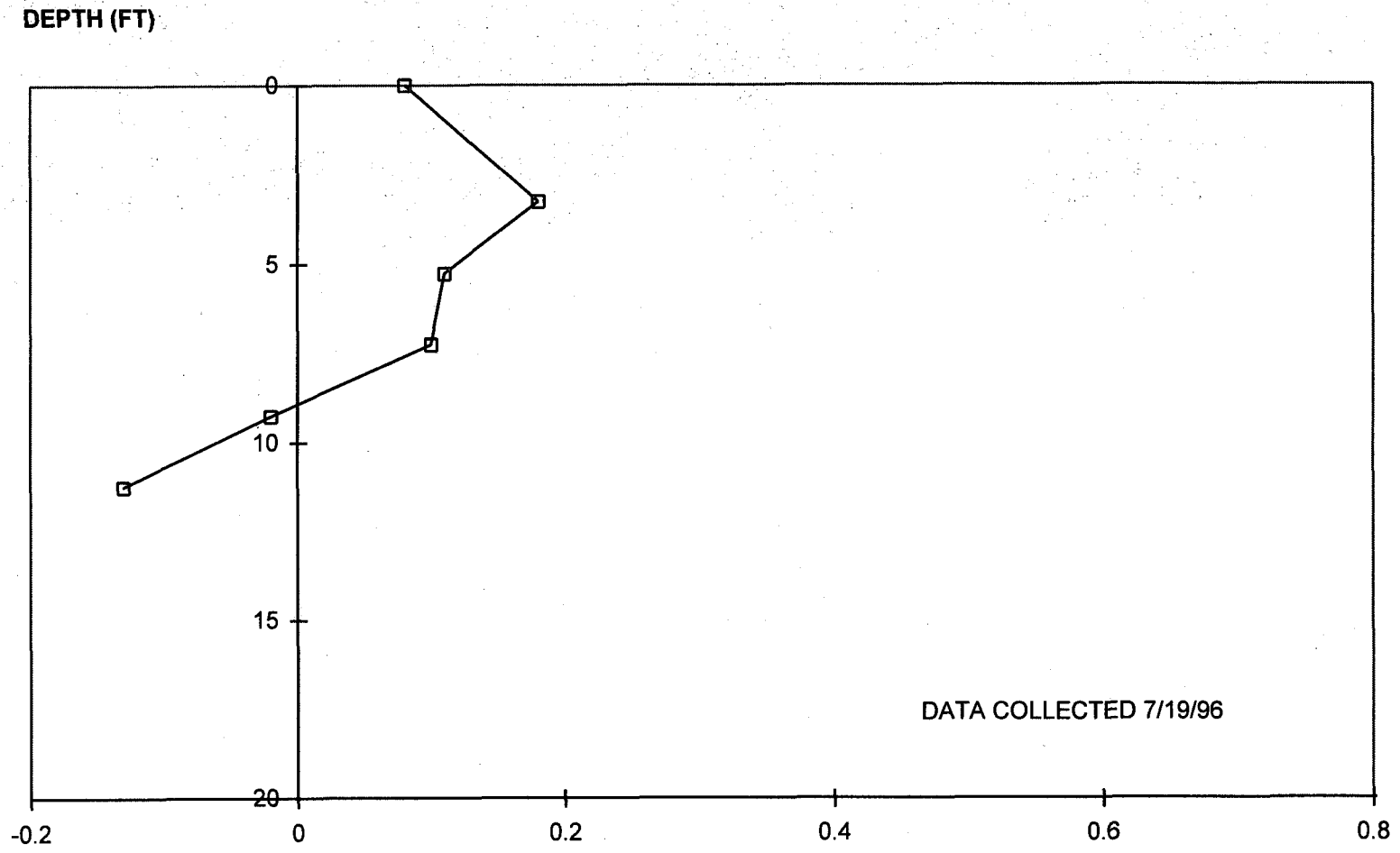
Figure
10.5.4–20



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN CURRENT PROFILE
AT UNITS 6/7 DISCHARGE, AFTER BEND IN DISCHARGE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

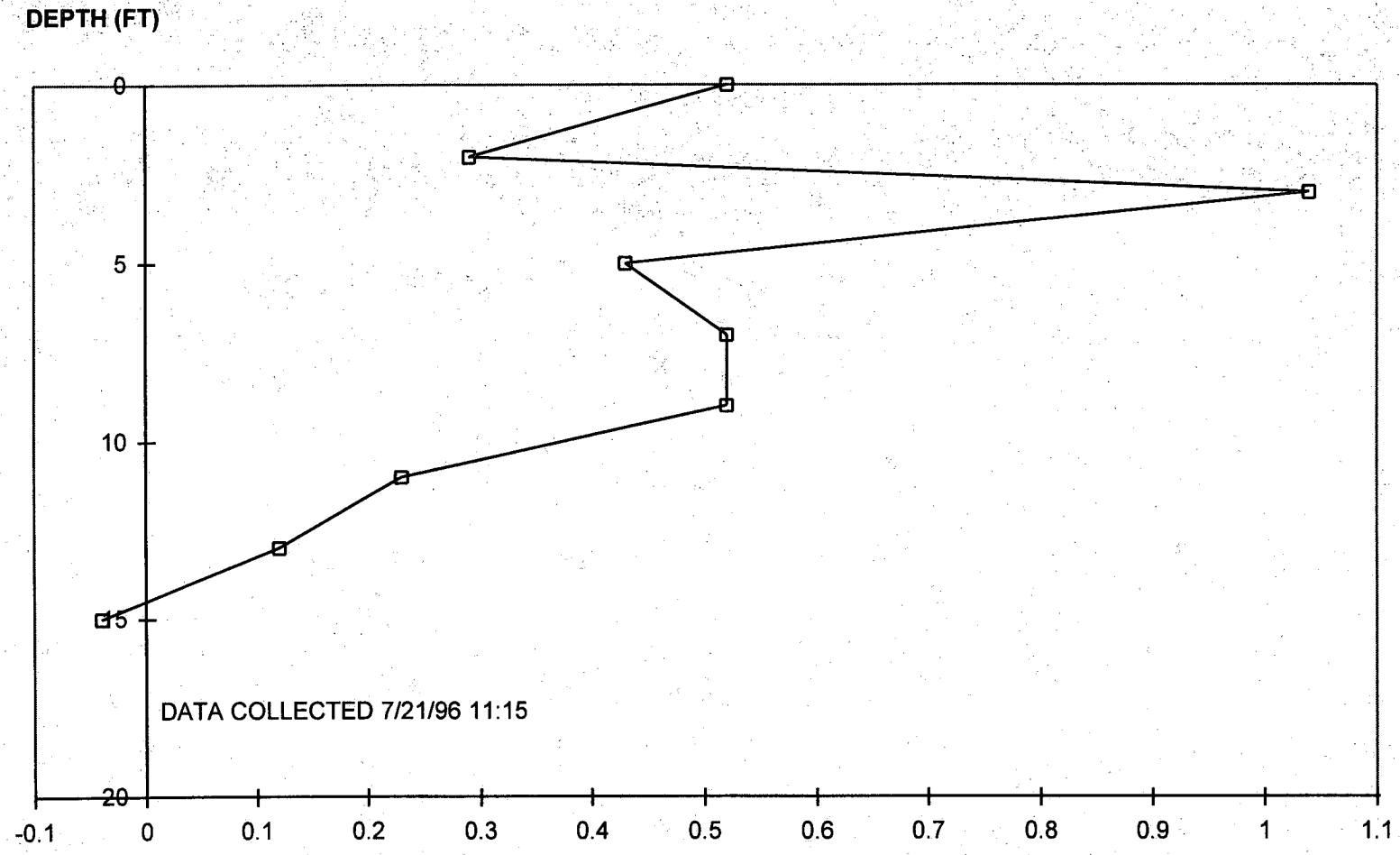
Figure
10.5.4-21



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

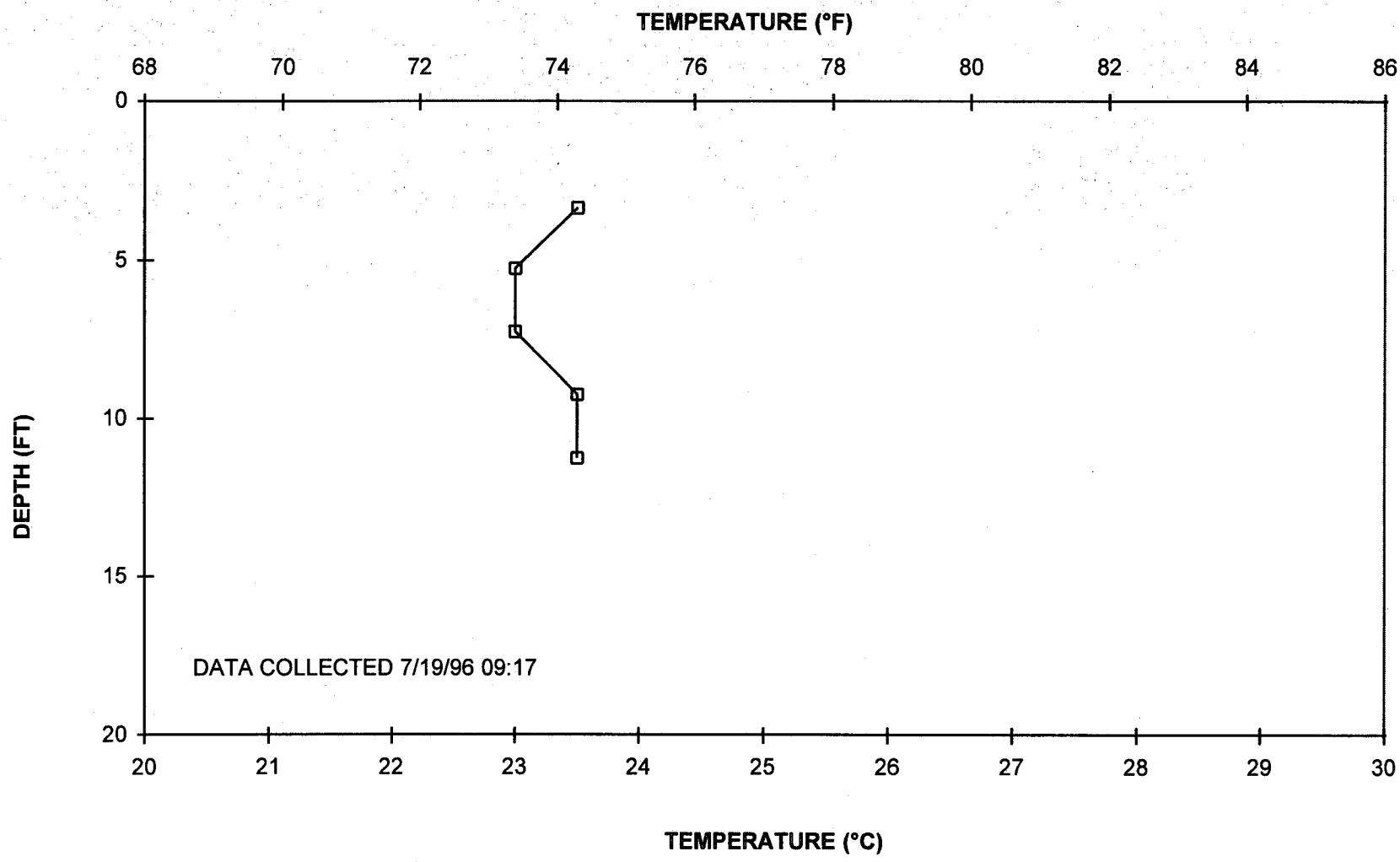
Figure
10.5.4-22



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN CURRENT PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

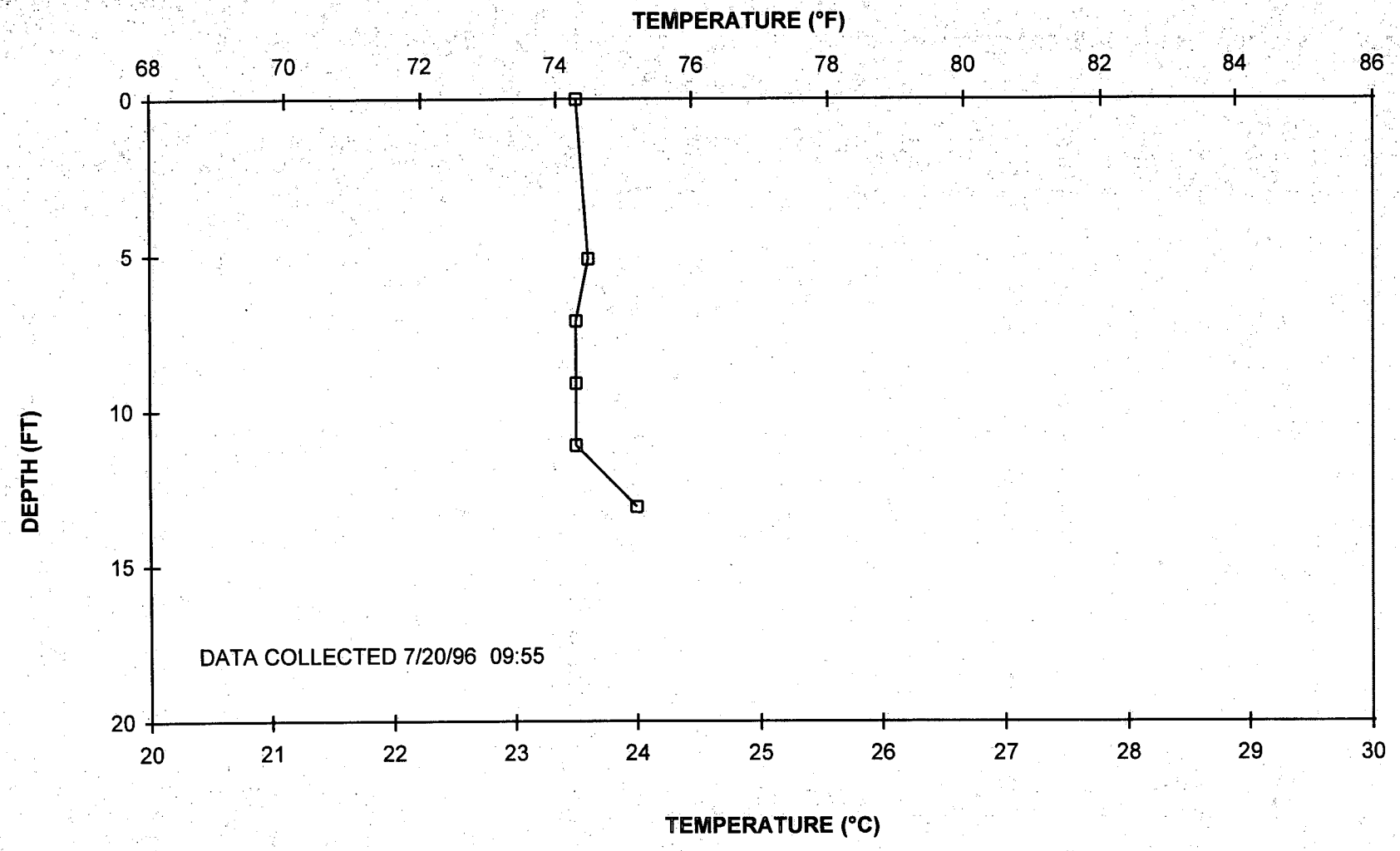
Figure
10.5.4-23



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

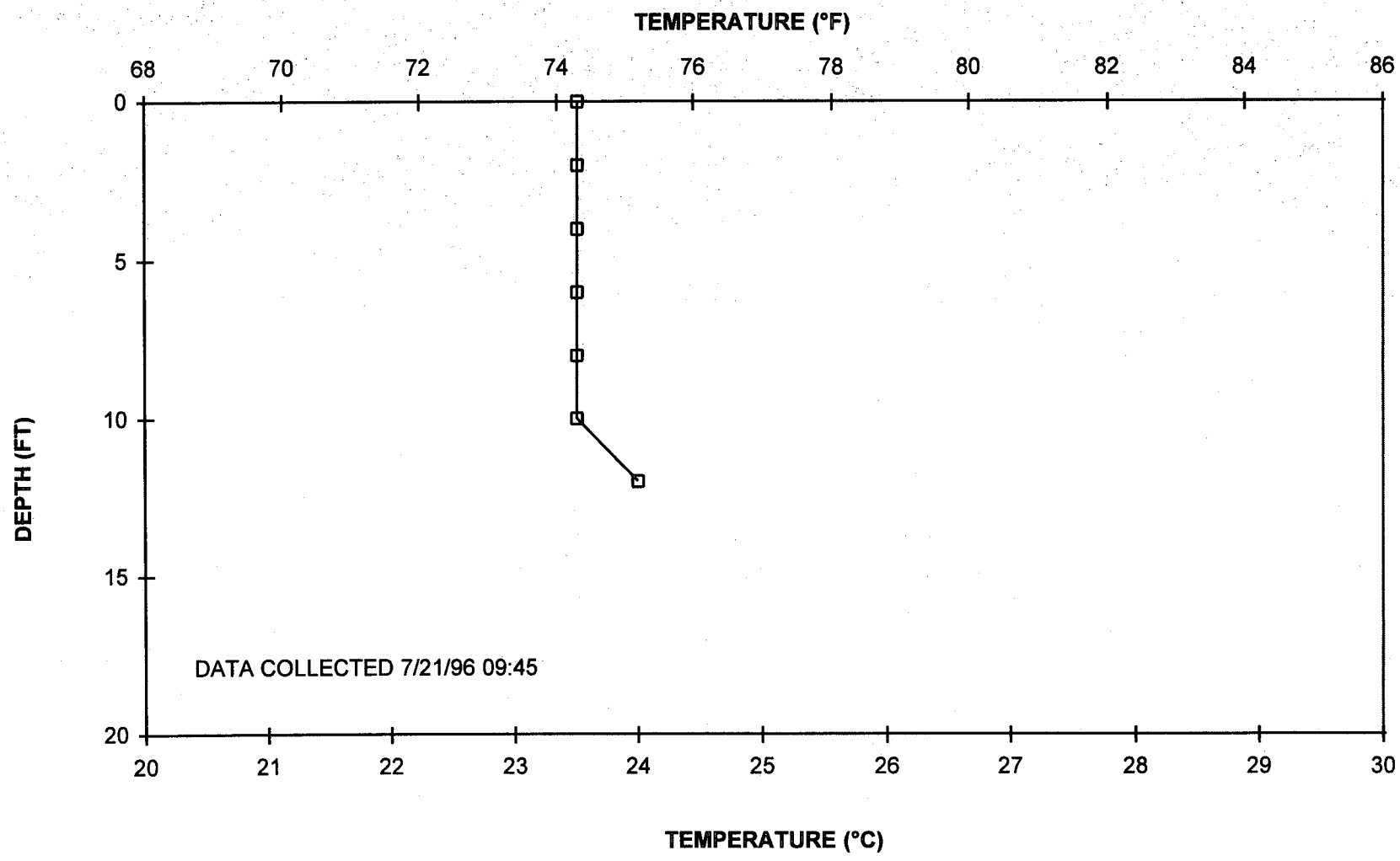
Figure
10.5.4-24



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

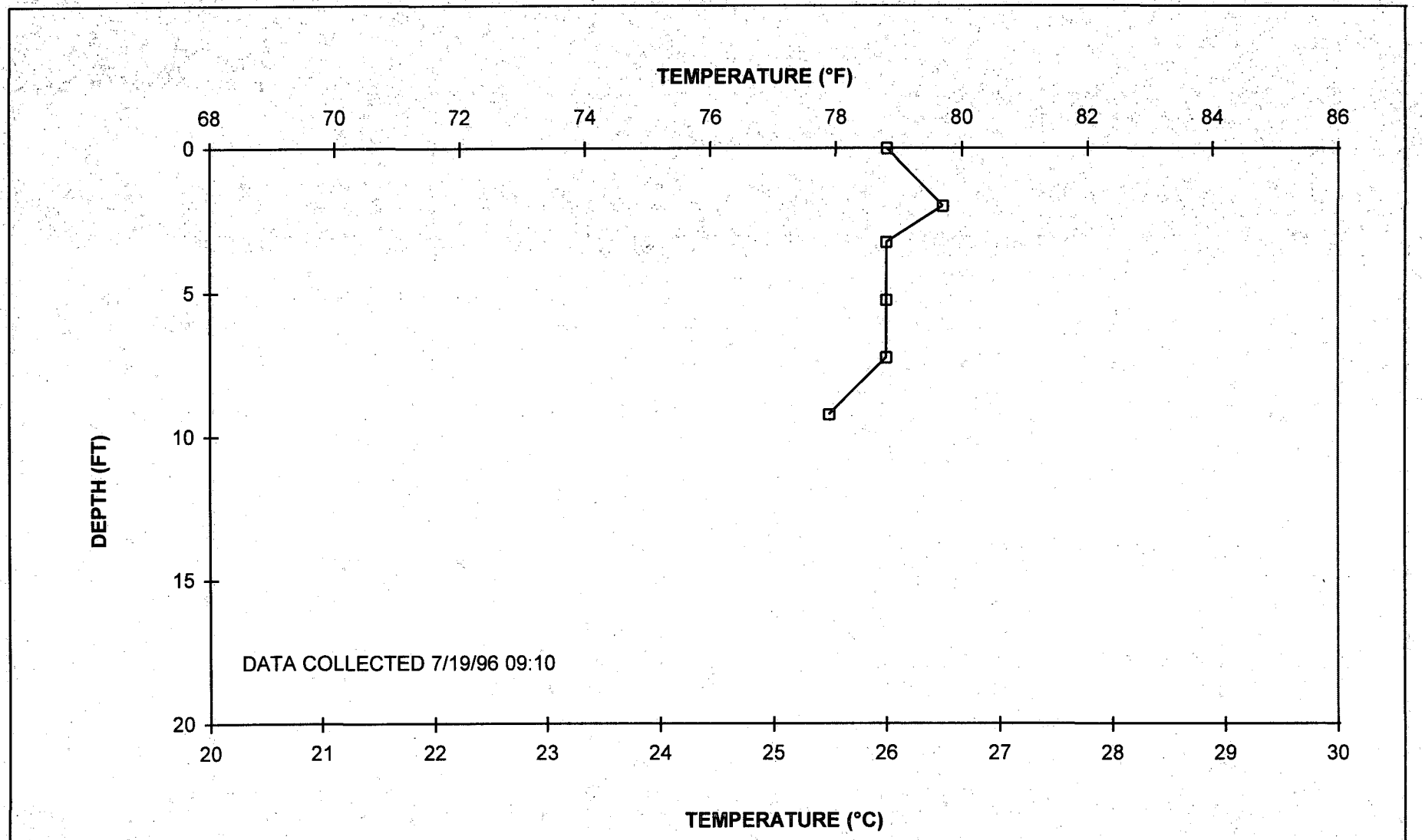
Figure
10.5.4–25



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

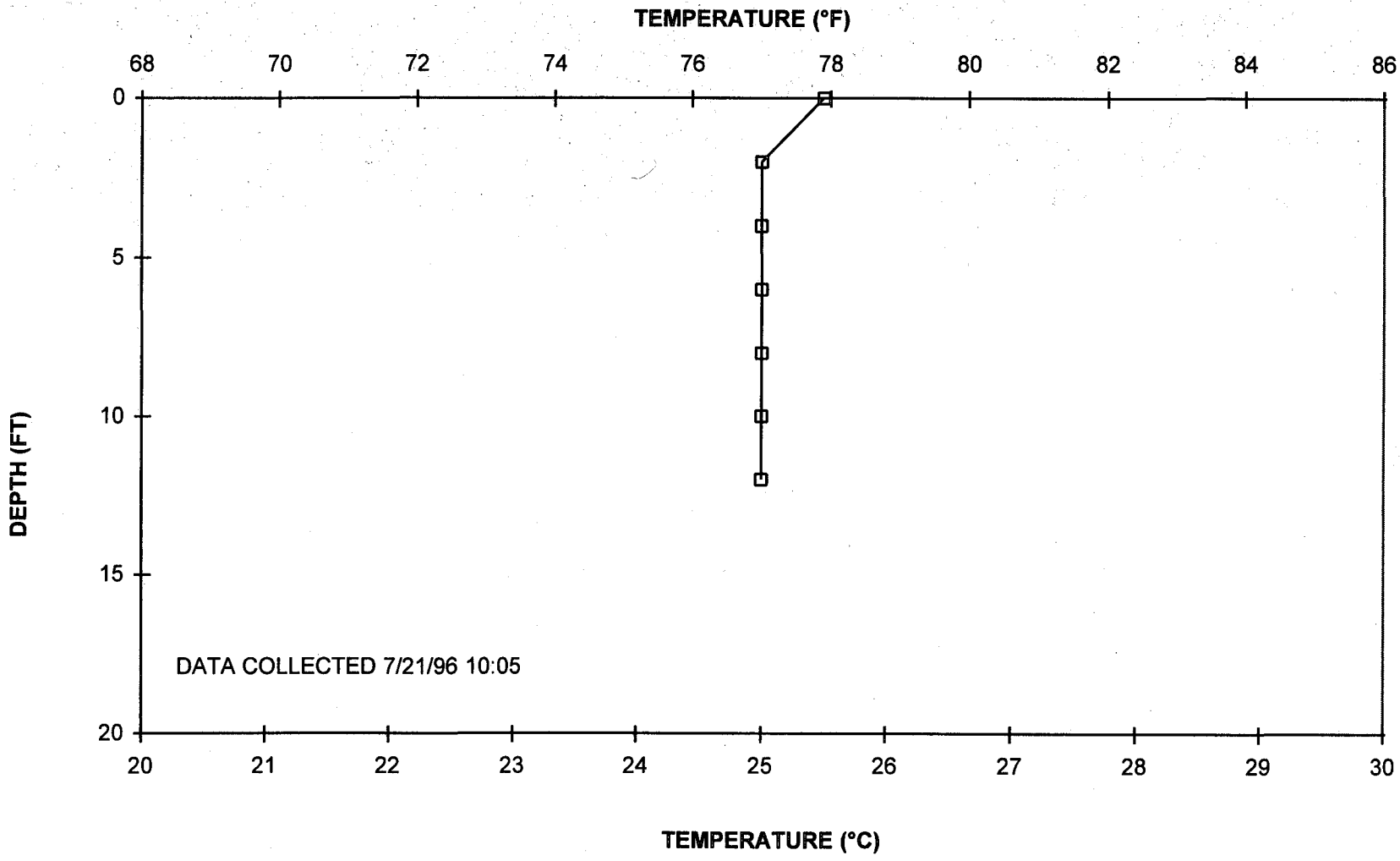
Figure
10.5.4-26



CITY OF TALLAHASSEE

LOCATION 2
WATER COLUMN TEMPERATURE PROFILE
AT UNIT 7 INTAKE STRUCTURE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

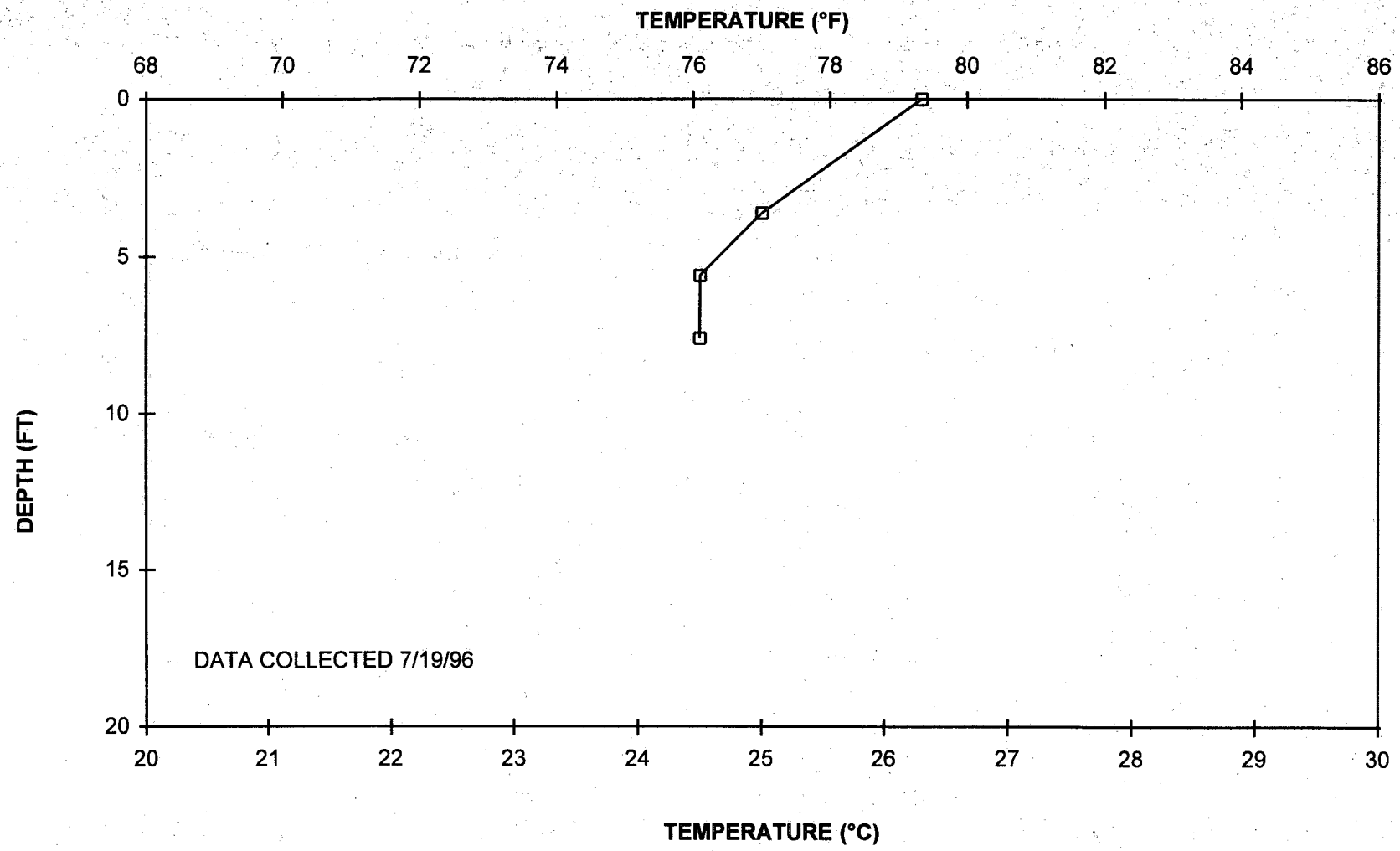
Figure
10.5.4-27



CITY OF TALLAHASSEE

LOCATION 2
WATER COLUMN TEMPERATURE PROFILE
AT UNIT 7 INTAKE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

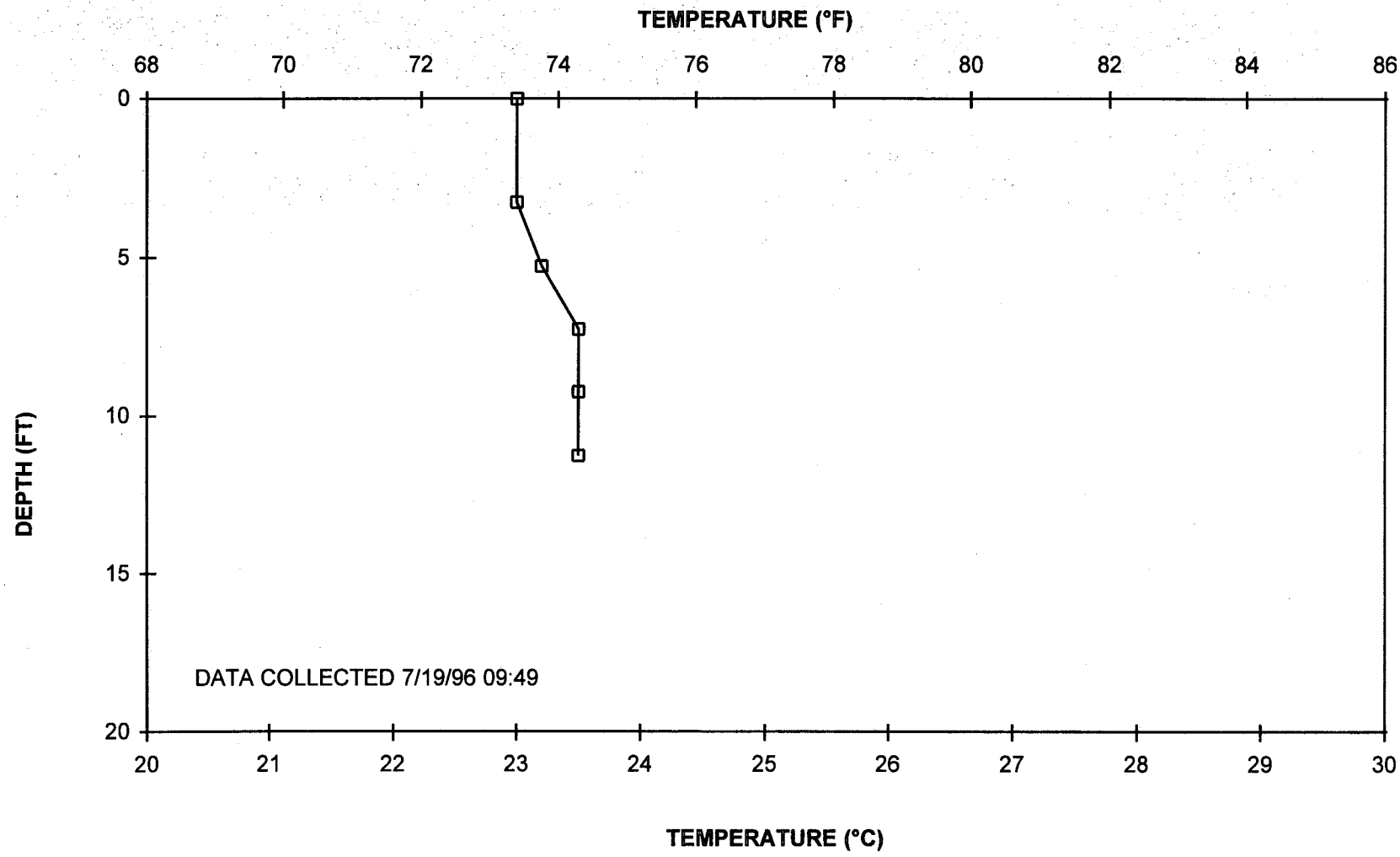
Figure
10.5.4-28



CITY OF TALLAHASSEE

LOCATION 3
WATER COLUMN TEMPERATURE PROFILE
AT OPENING OF INTAKE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

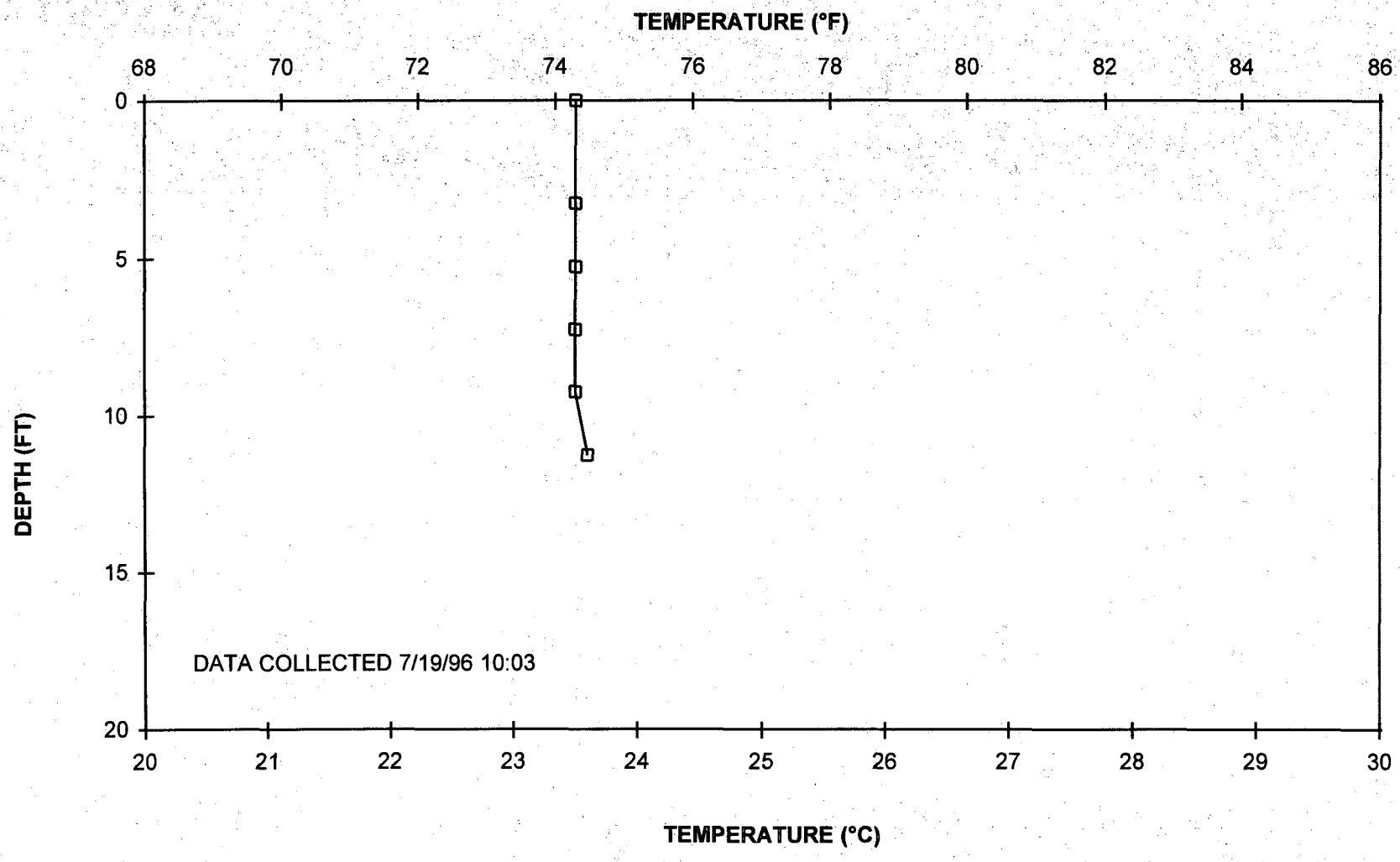
Figure
10.5.4-29



CITY OF TALLAHASSEE

LOCATION 4
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, AT UNIT 5 INTAKE STRUCTURE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

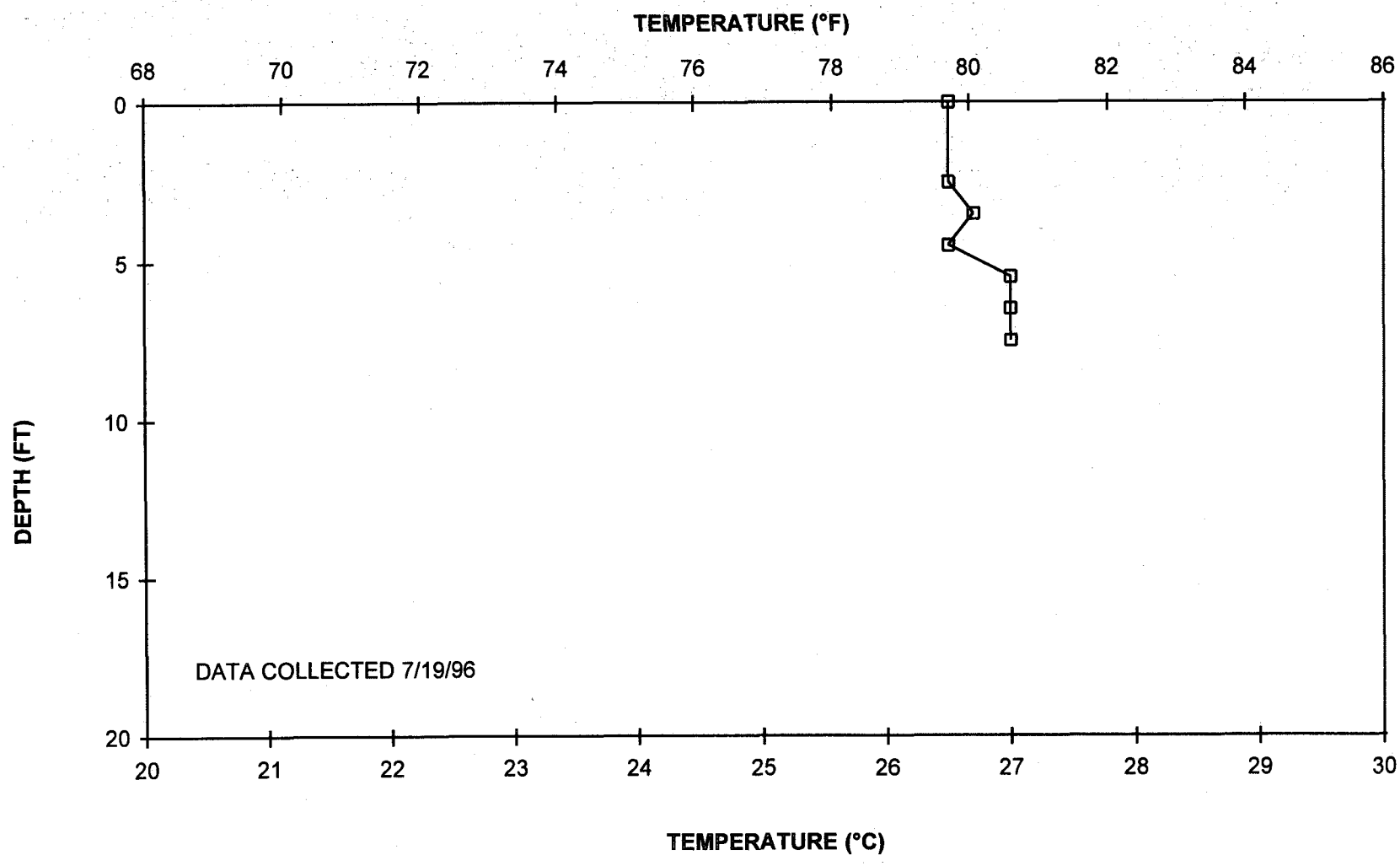
Figure
10.5.4-30



CITY OF TALLAHASSEE

LOCATION 5
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, BELOW INTAKE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

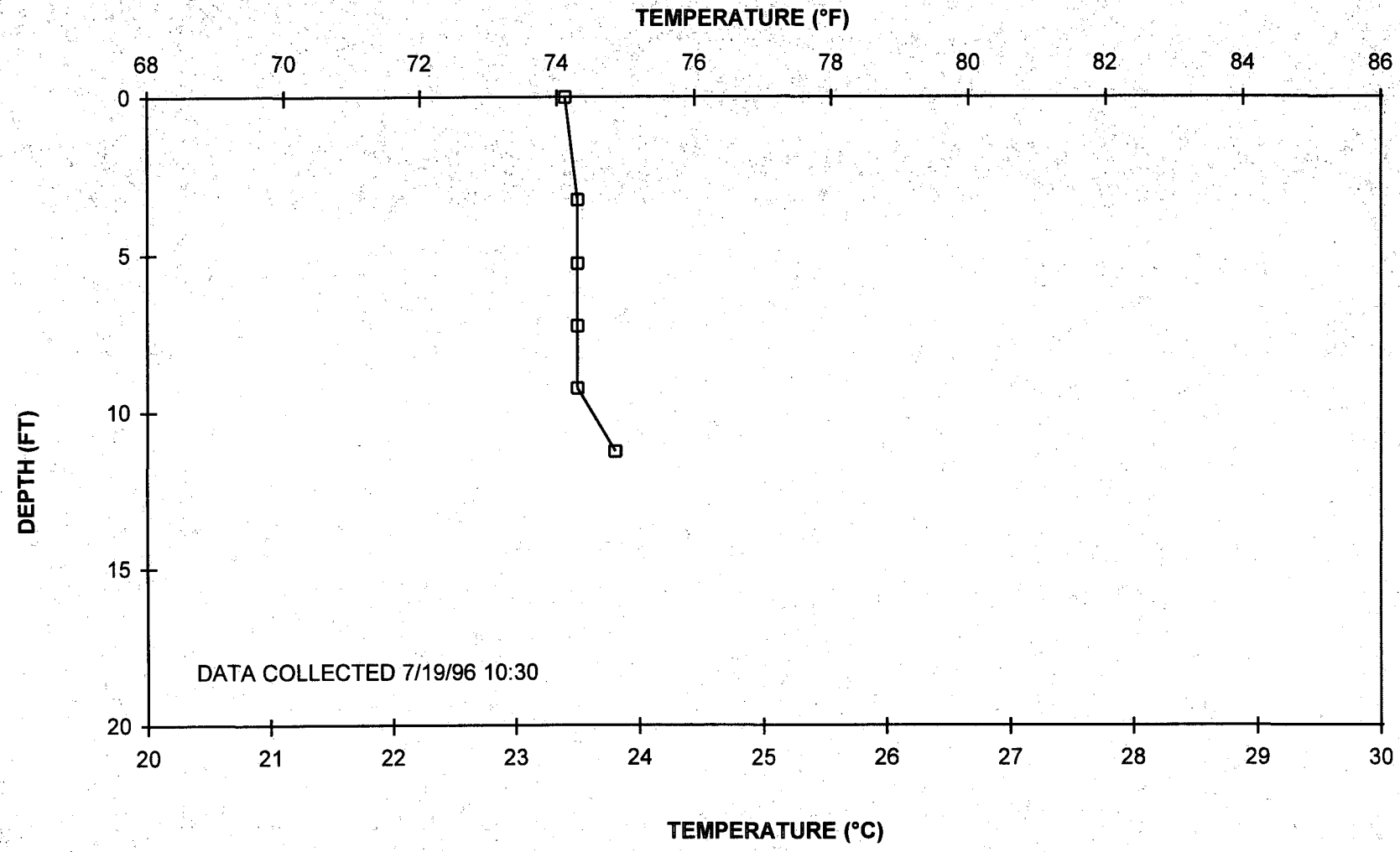
Figure
10.5.4-31



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN TEMPERATURE PROFILE
AT UNIT 5 DISCHARGE
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

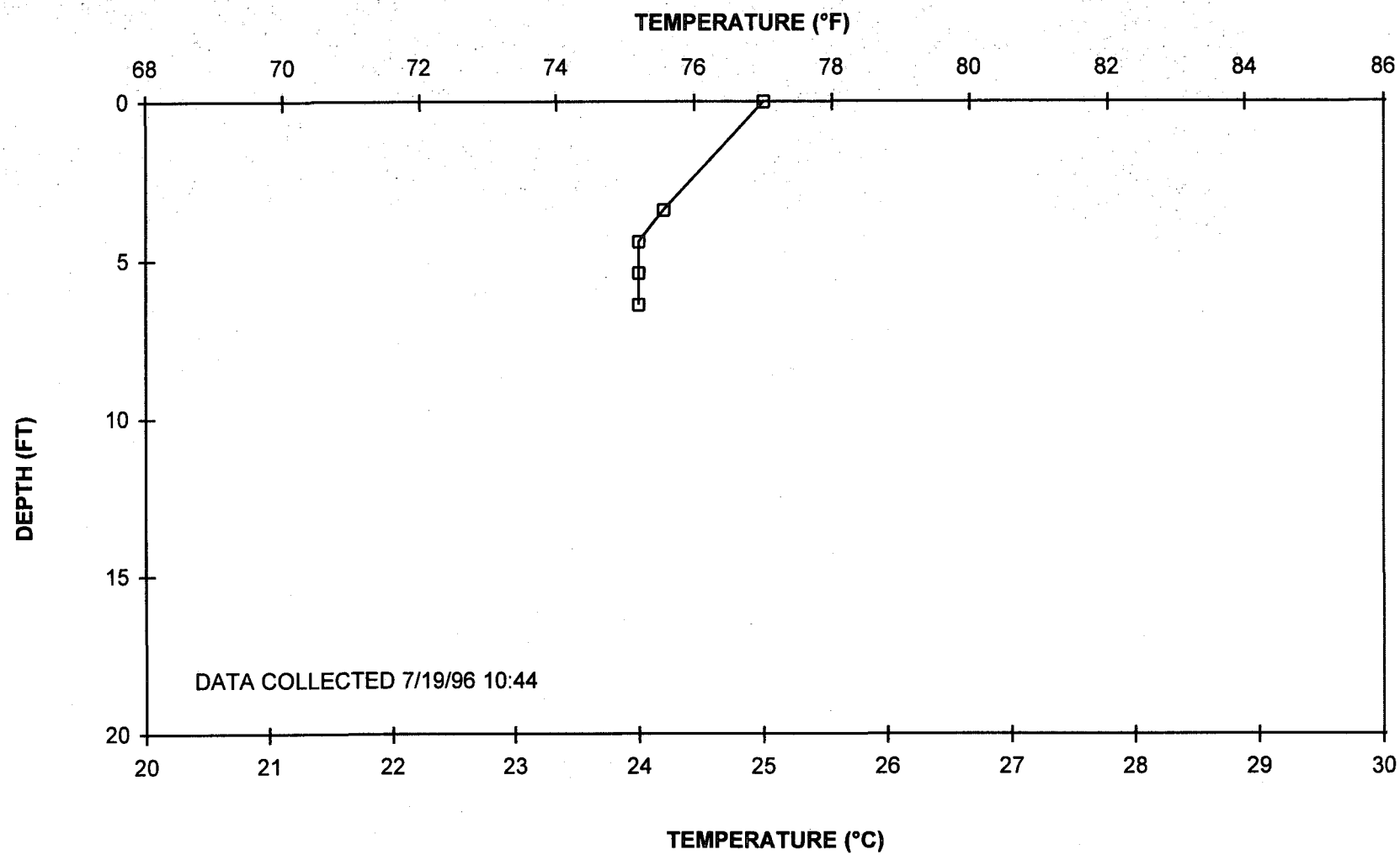
Figure
10.5.4-32



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, AT UNIT 5 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

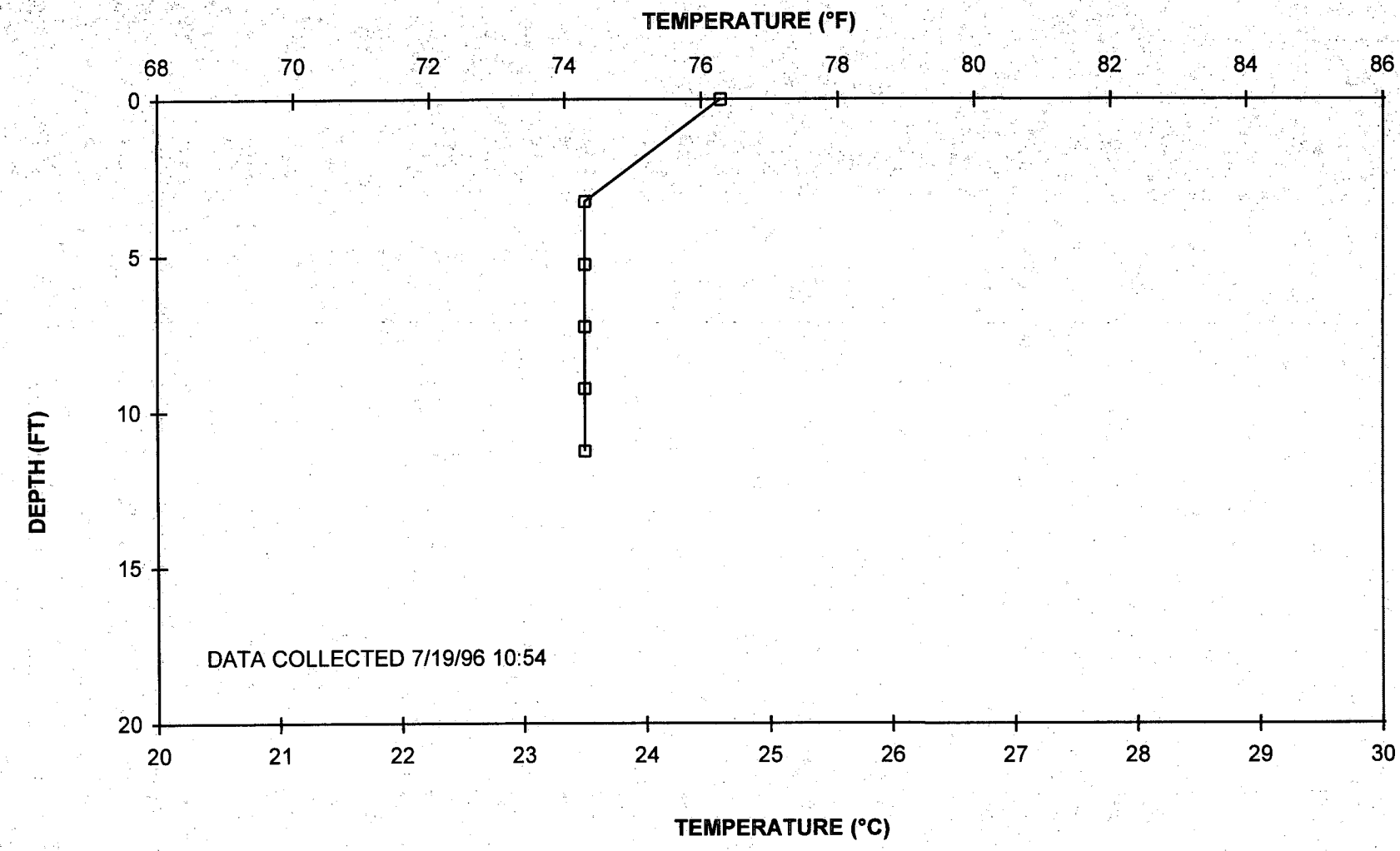
Figure
10.5.4-33



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, AT UNIT 5 DISCHARGE, BETWEEN DISCHARGE/MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

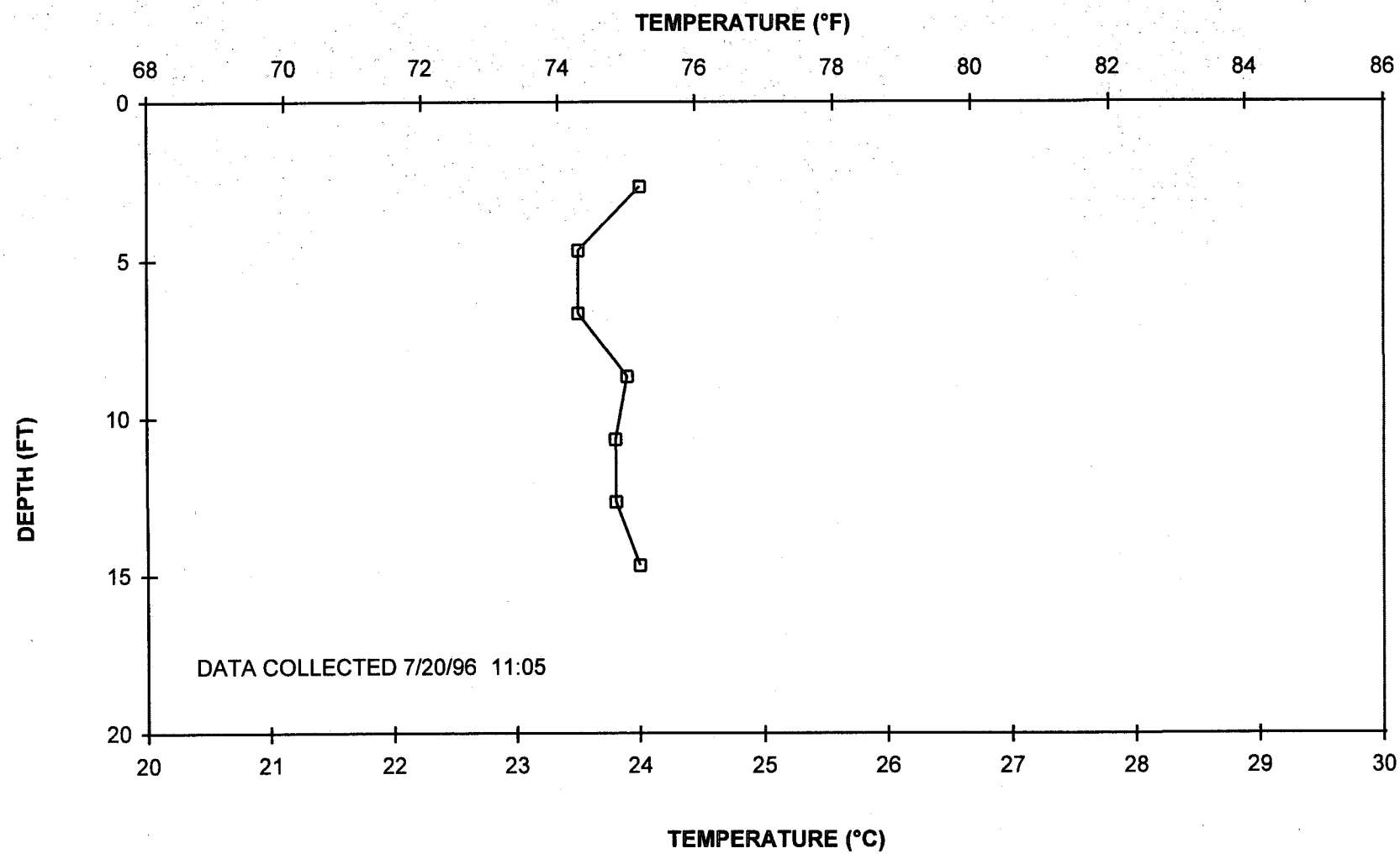
Figure
10.5.4-34



CITY OF TALLAHASSEE

LOCATION 7
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 5 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

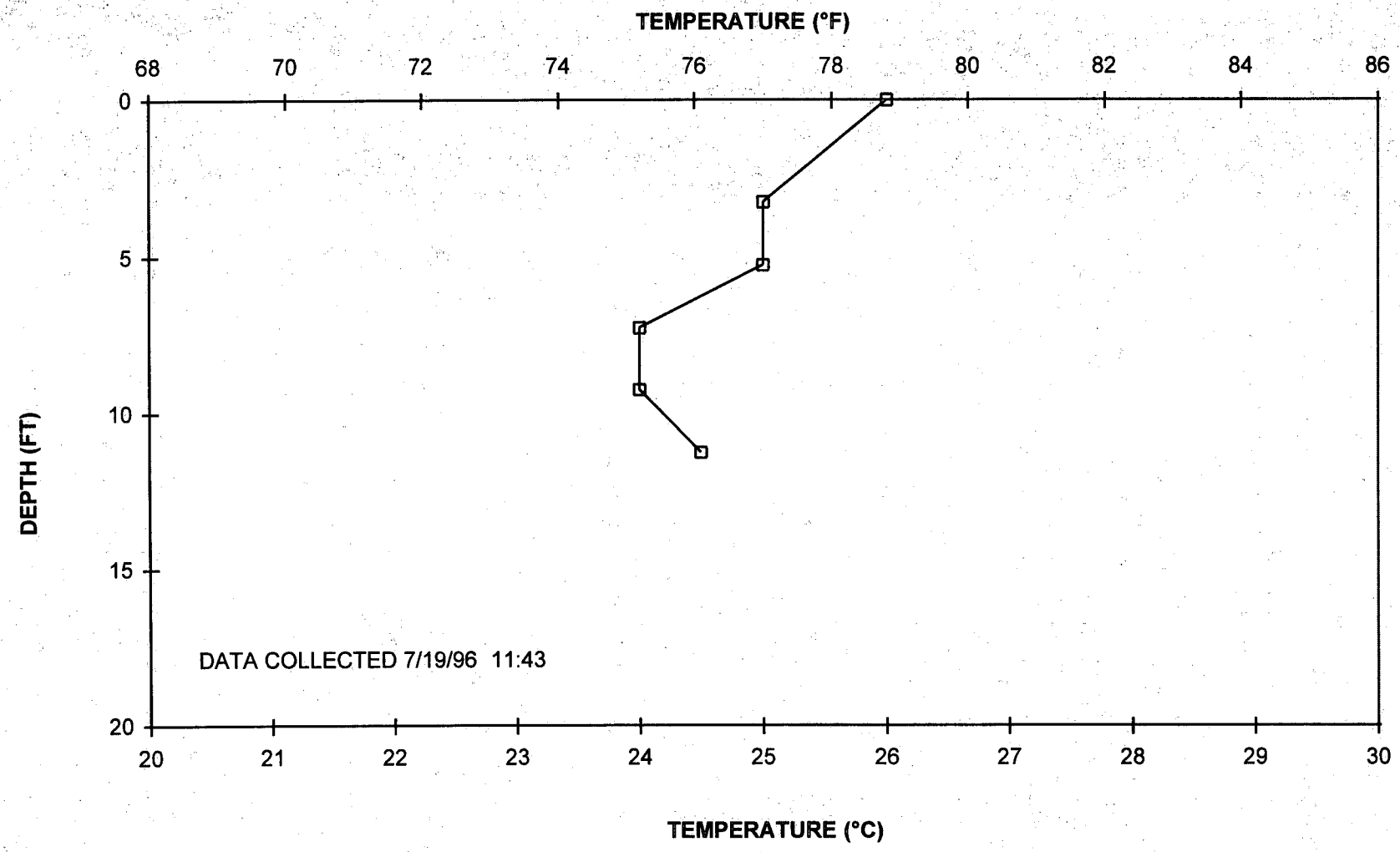
Figure
10.5.4-35



CITY OF TALLAHASSEE

LOCATION 7
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 5 DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

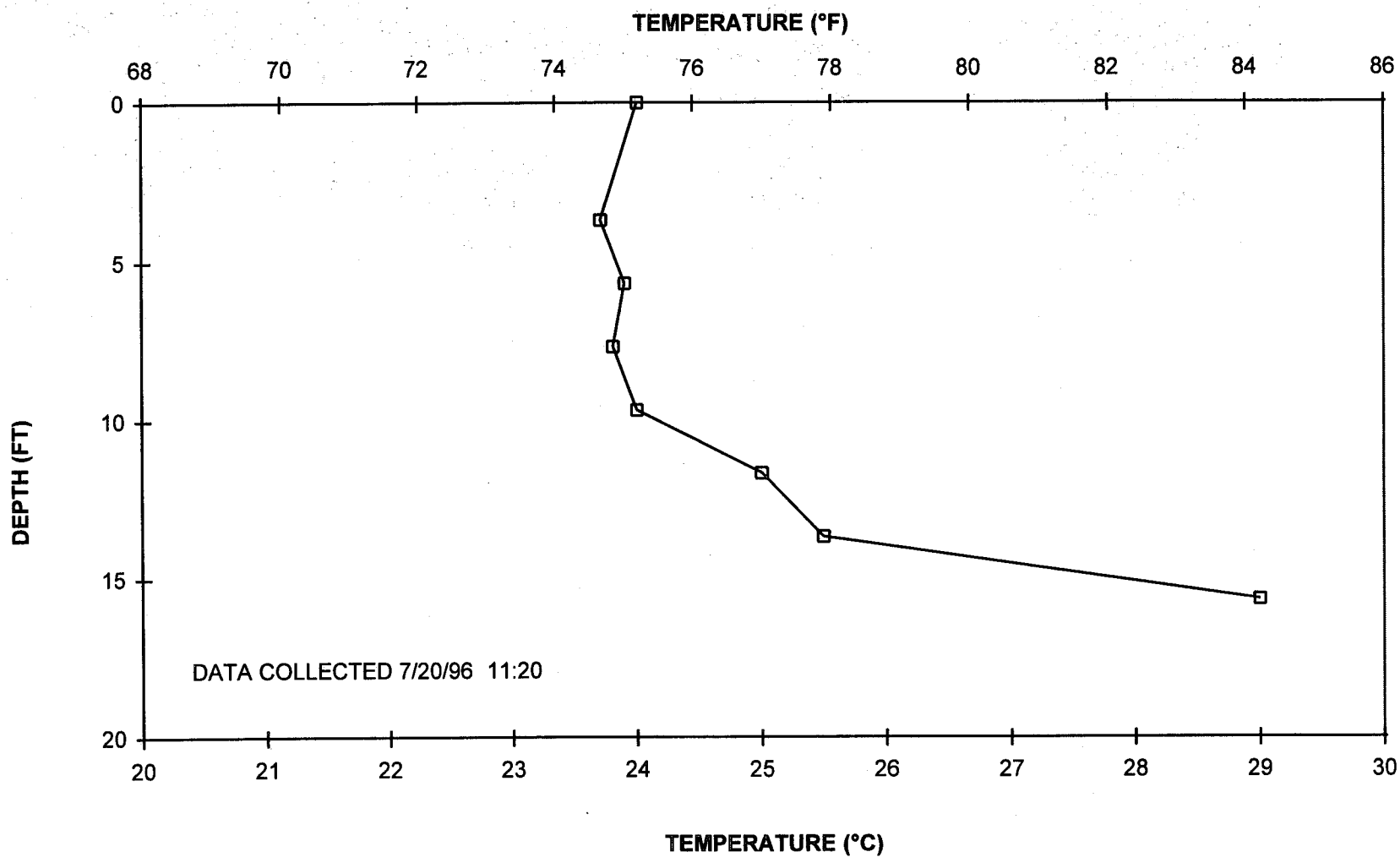
Figure
10.5.4-36



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

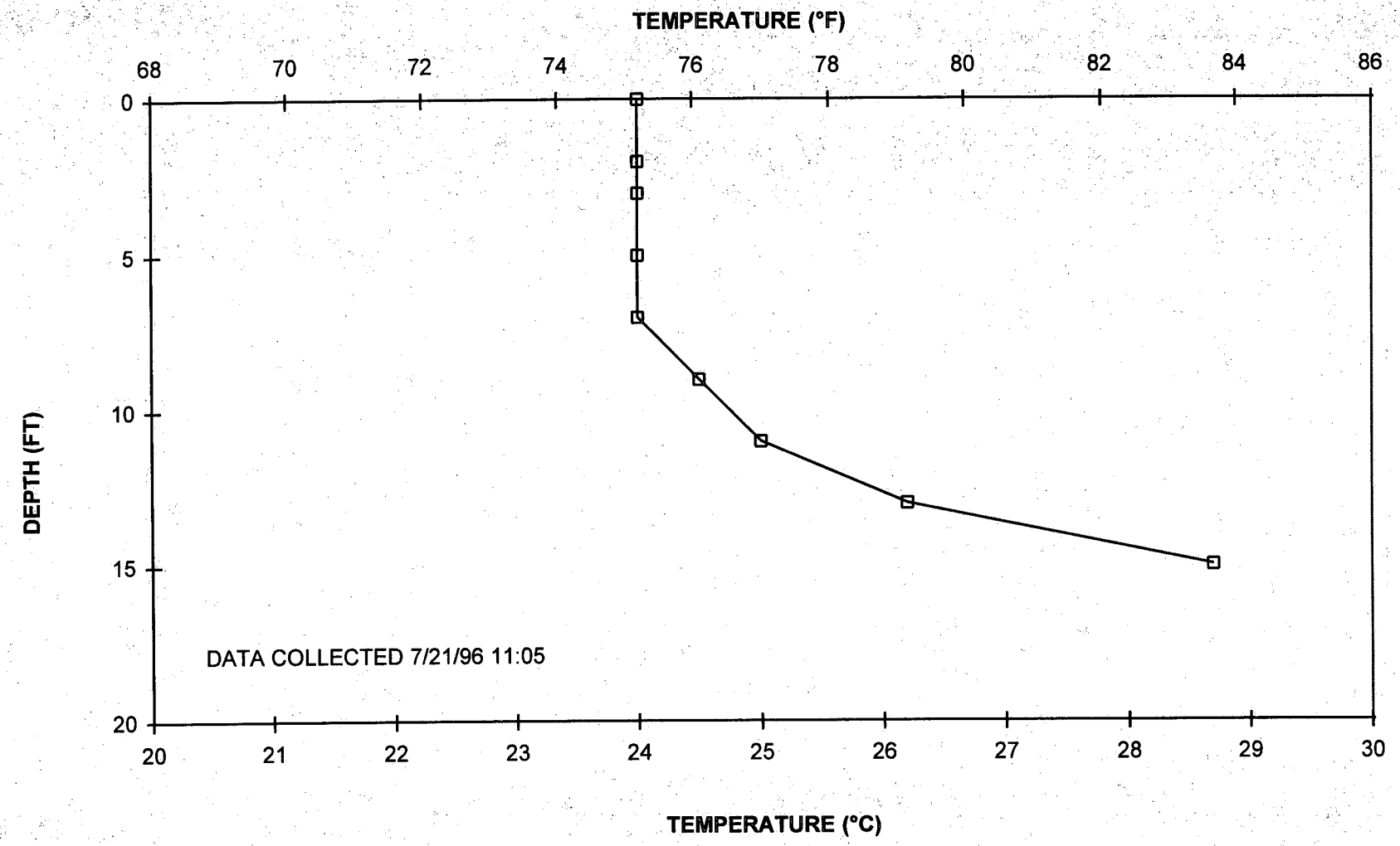
Figure
10.5.4-37



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

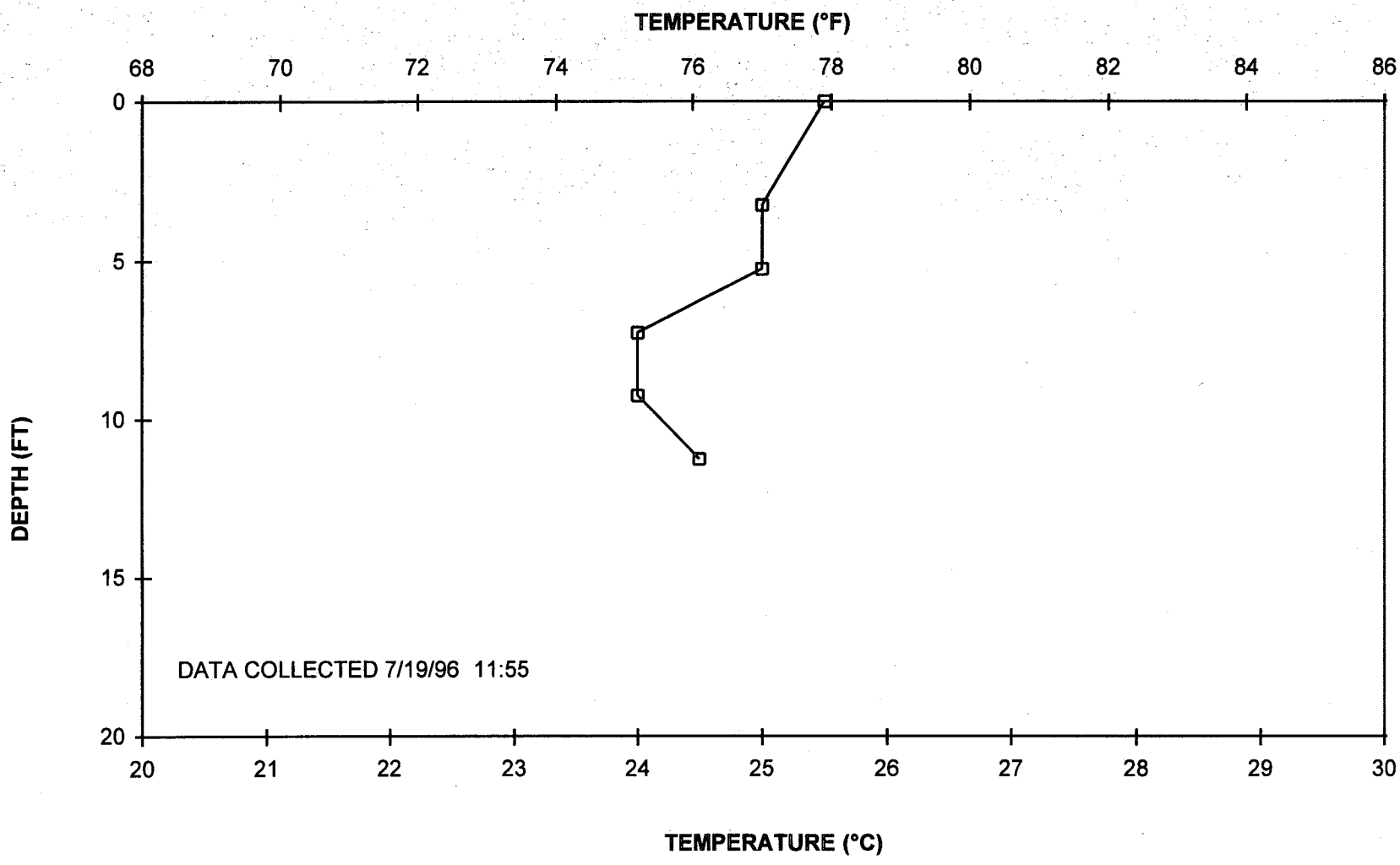
Figure
10.5.4-38



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

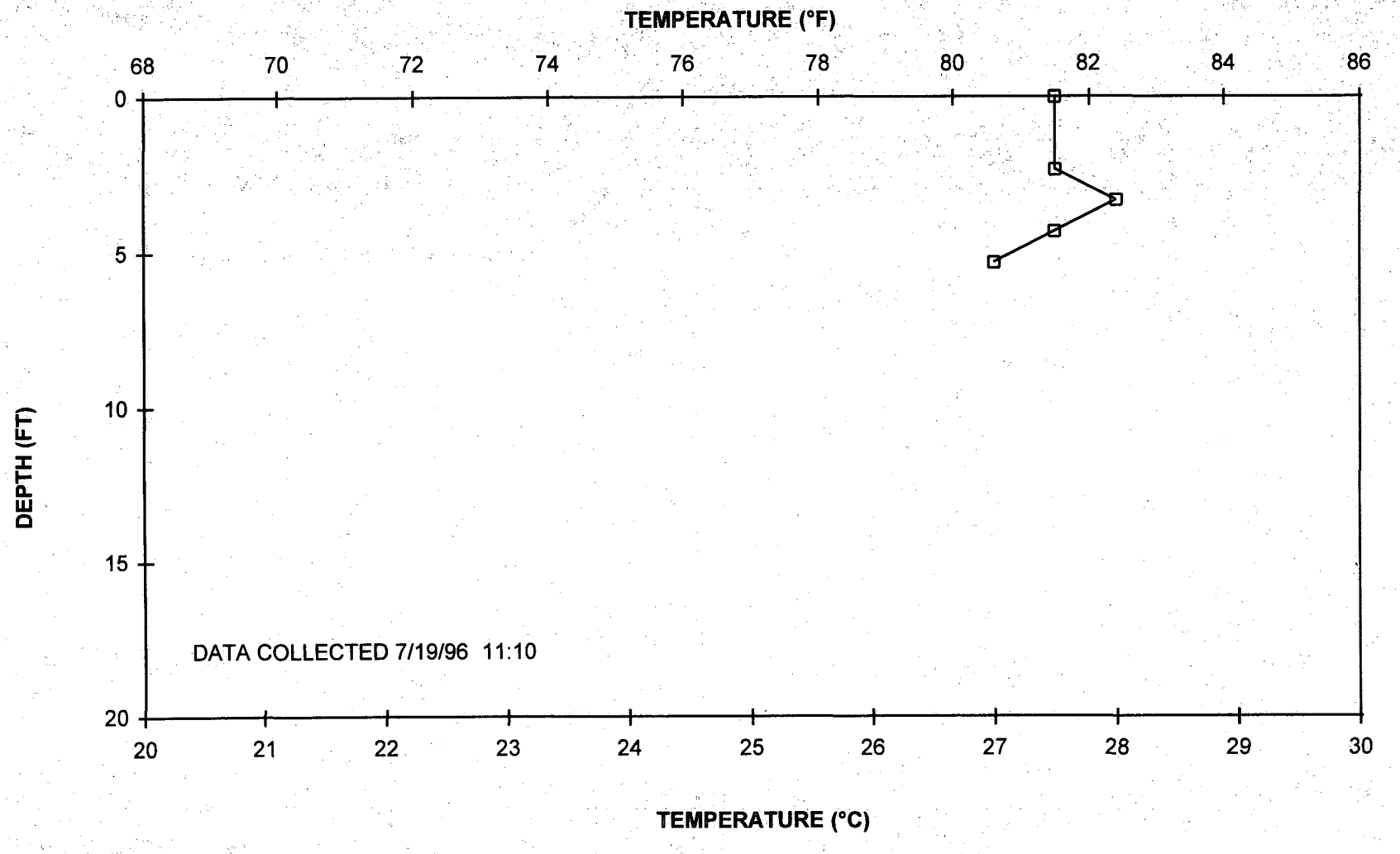
Figure
10.5.4-39



CITY OF TALLAHASSEE

LOCATION 9
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, SHIELD'S MARINA, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

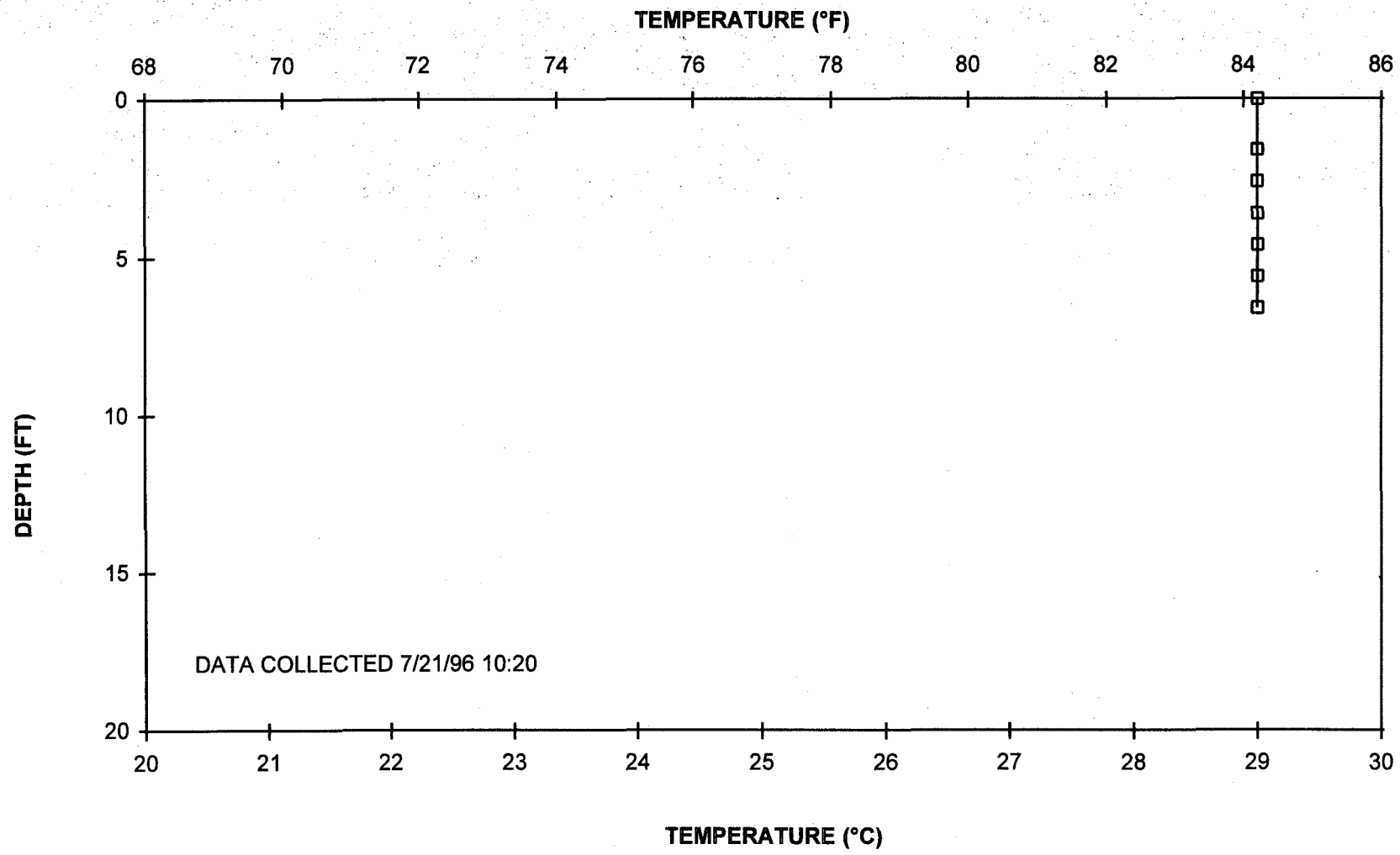
Figure
10.5.4-40



CITY OF TALLAHASSEE

LOCATION 10
WATER COLUMN TEMPERATURE PROFILE
AT UNITS 6/7 DISCHARGE, IMMEDIATELY DOWNSTREAM OF DISCHARGE POINT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

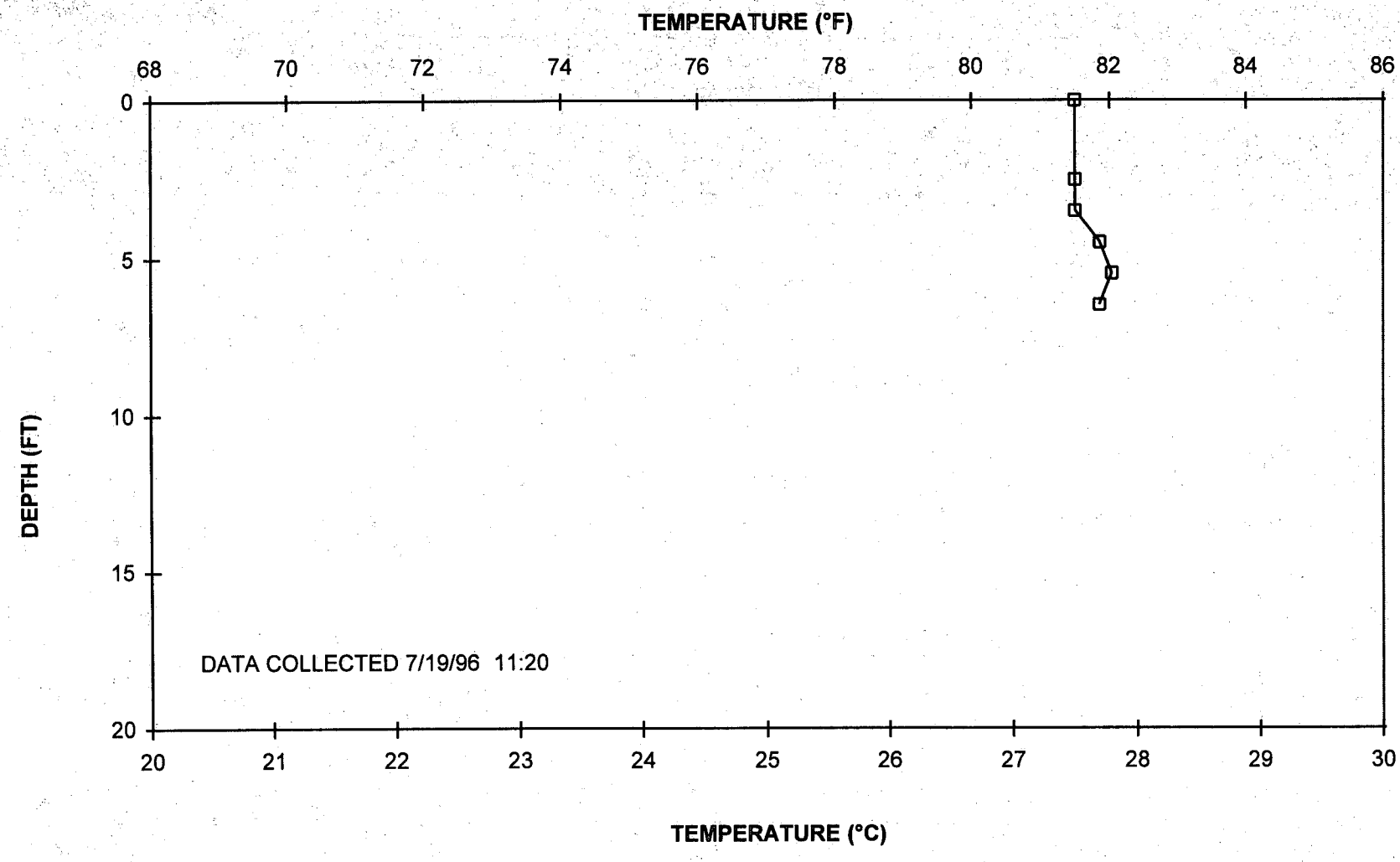
Figure
10.5.4-41



CITY OF TALLAHASSEE

LOCATION 10
WATER COLUMN TEMPERATURE PROFILE
AT UNITS 6/7 DISCHARGE, IMMEDIATELY DOWNSTREAM OF DISCHARGE POINT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

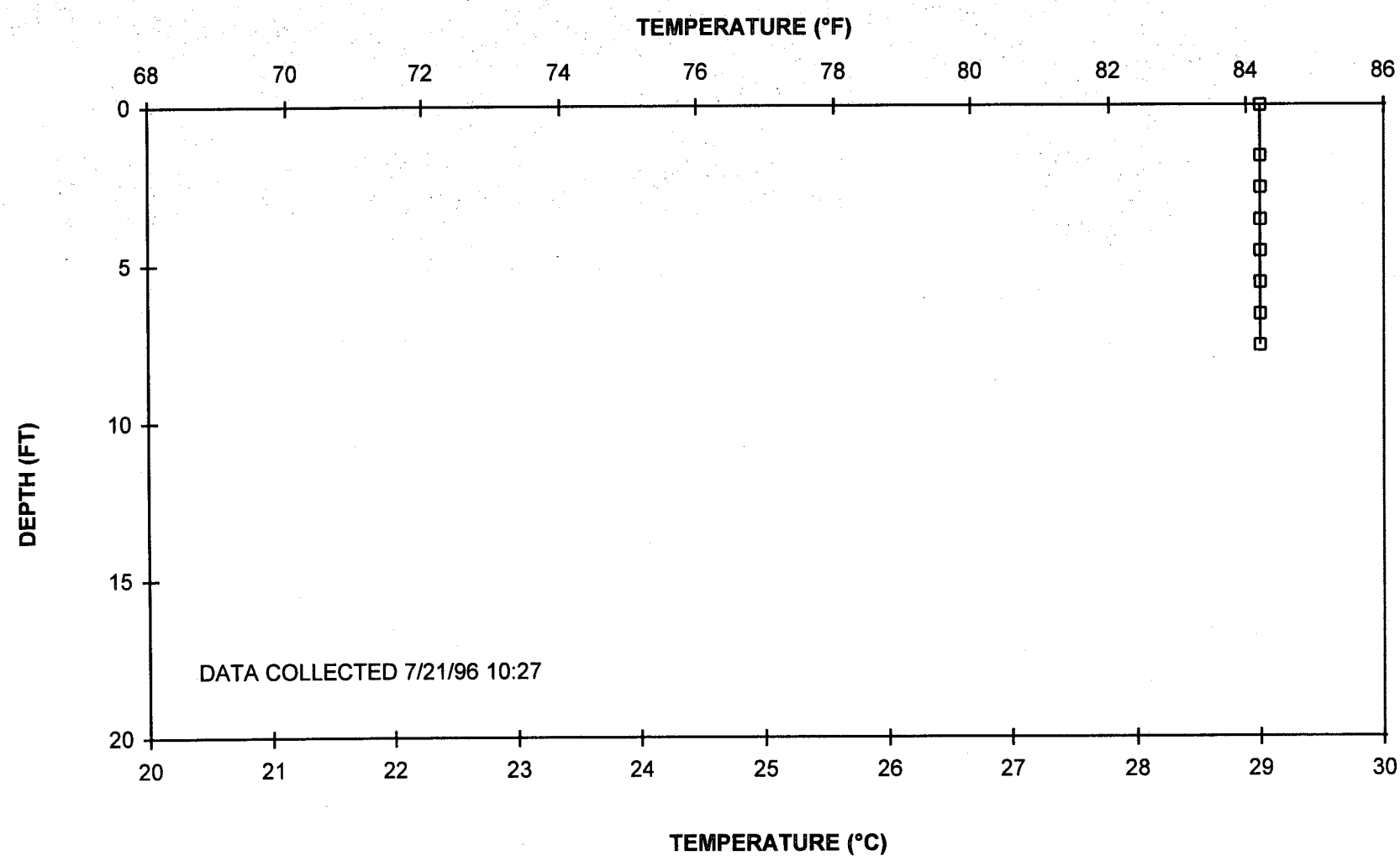
Figure
10.5.4-42



CITY OF TALLAHASSEE

LOCATION 11
WATER COLUMN TEMPERATURE PROFILE
AT UNITS 6/7 DISCHARGE, PRIOR TO BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

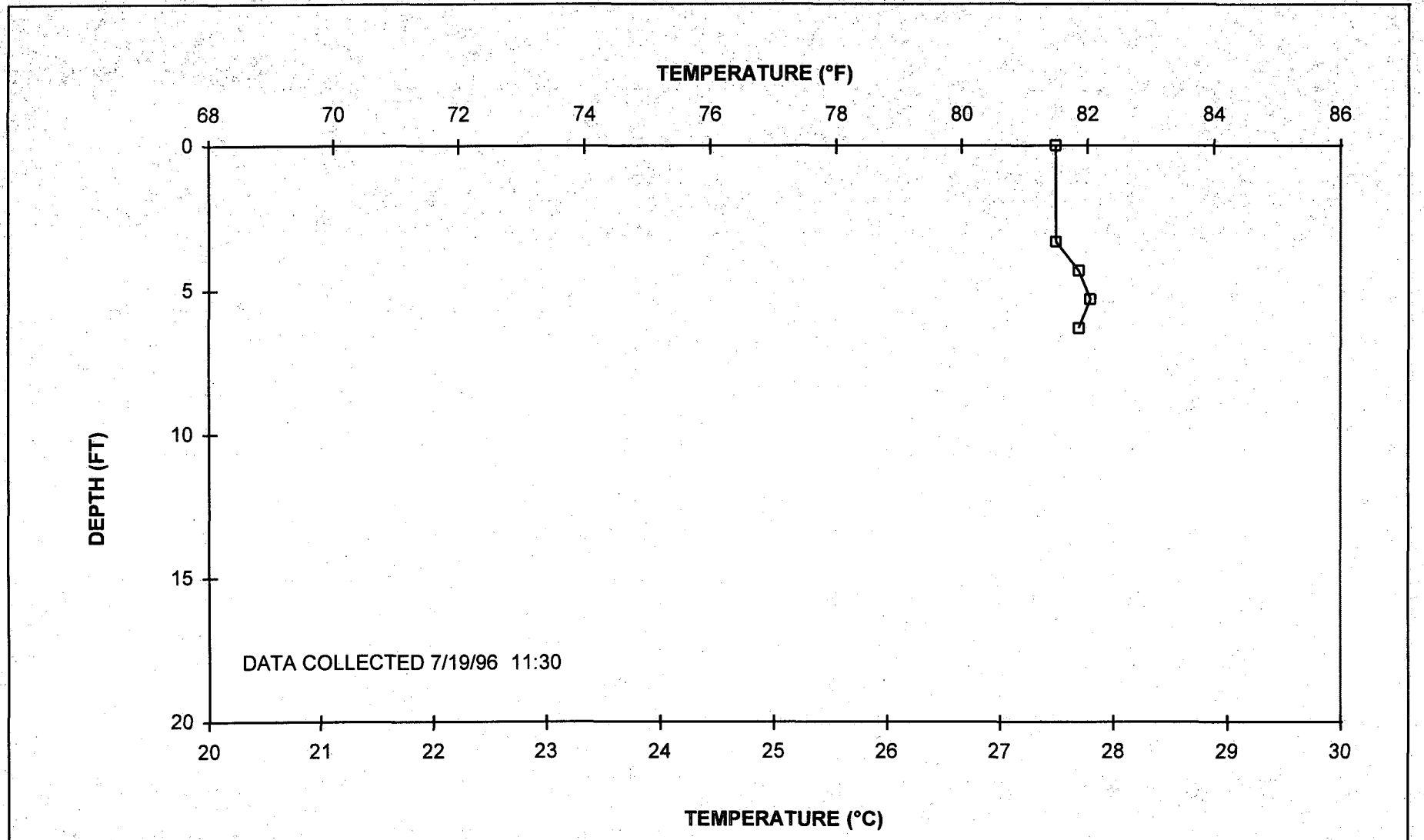
Figure
10.5.4-43



CITY OF TALLAHASSEE

LOCATION 11
WATER COLUMN TEMPERATURE PROFILE
AT UNITS 6/7 DISCHARGE, PRIOR TO BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

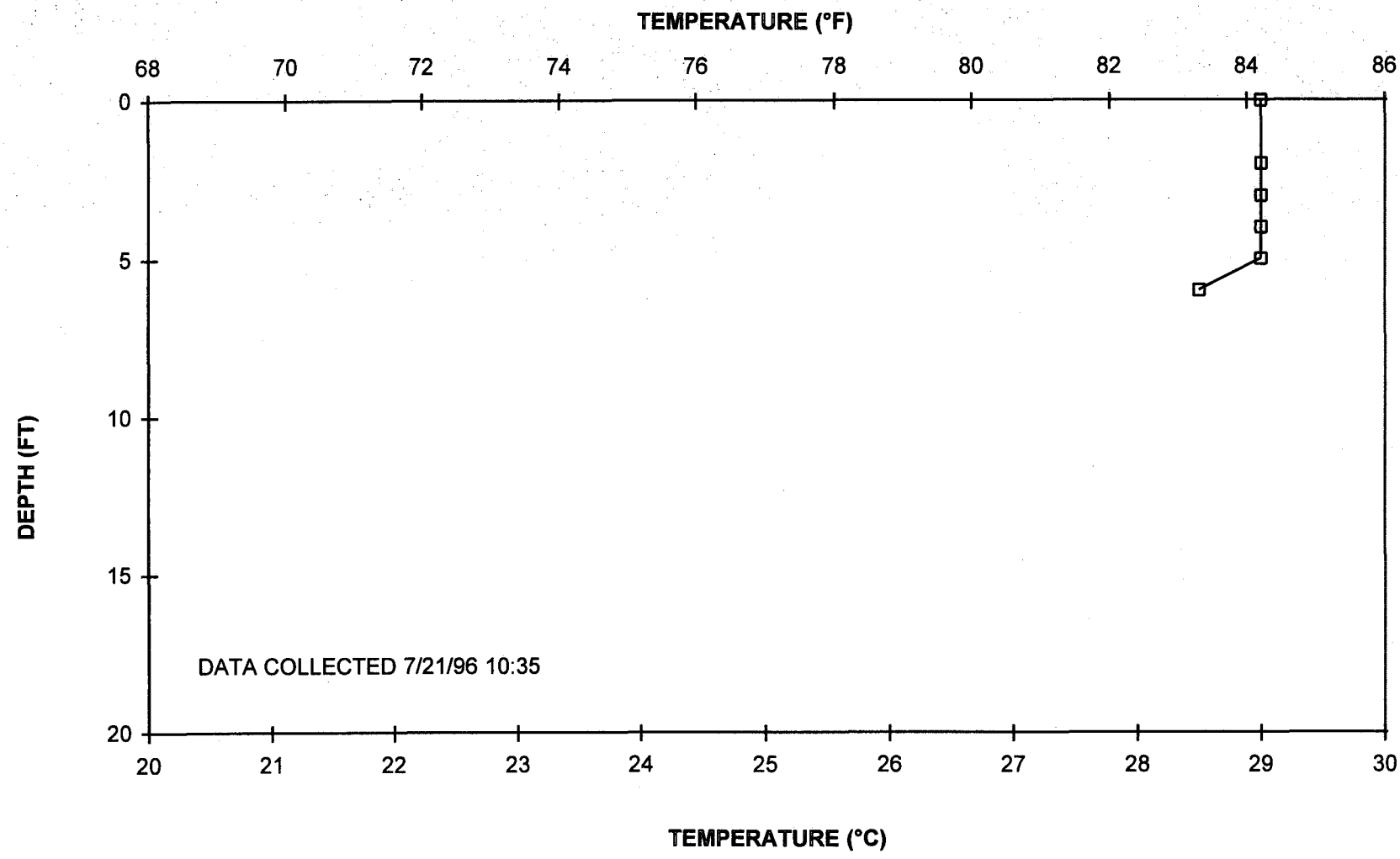
Figure
10.5.4–44



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN TEMPERATURE PROFILE
AT UNITS 6/7 DISCHARGE, AFTER BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

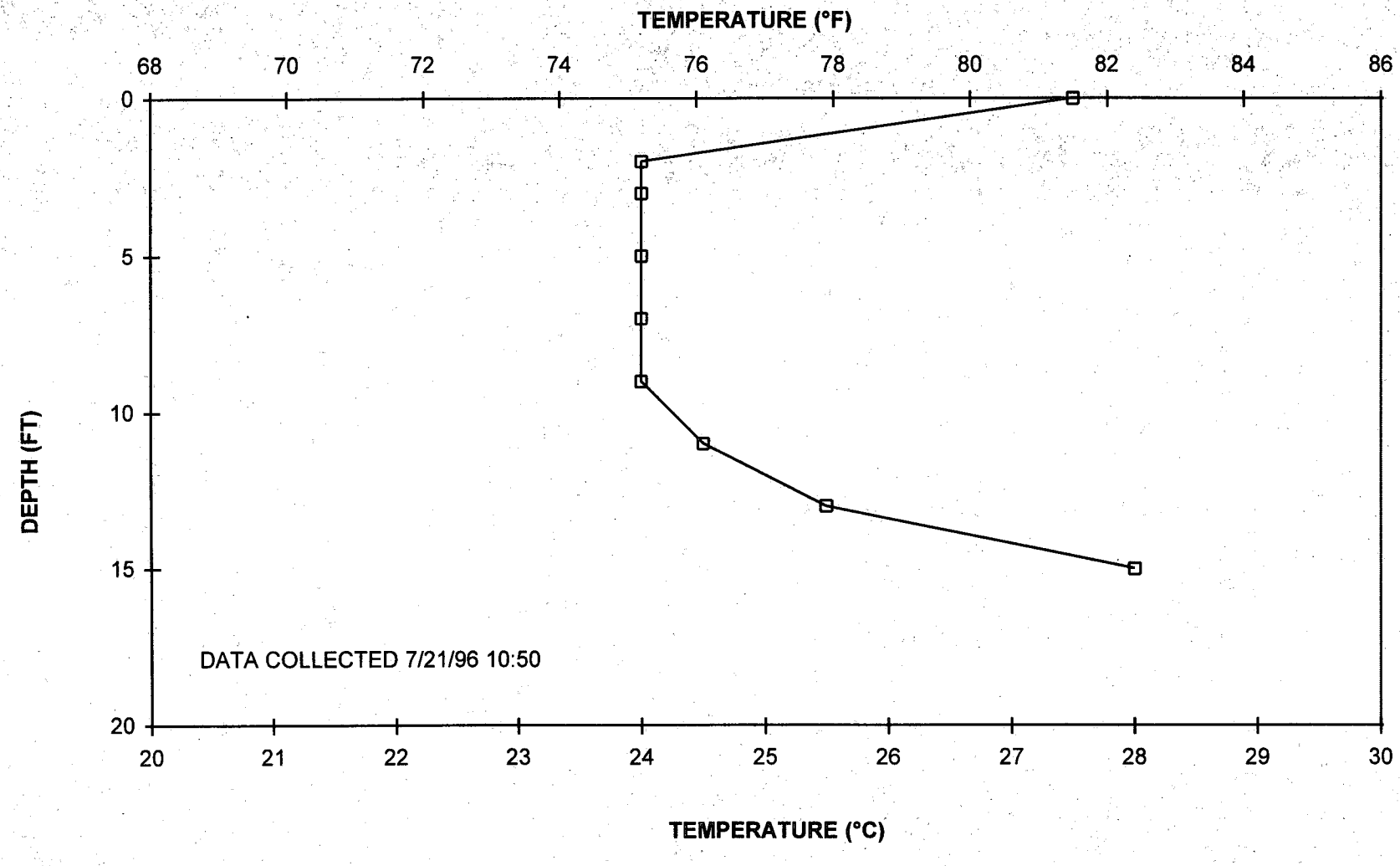
Figure
10.5.4-45



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN TEMPERATURE PROFILE
AT UNITS 6/7 DISCHARGE, AFTER BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

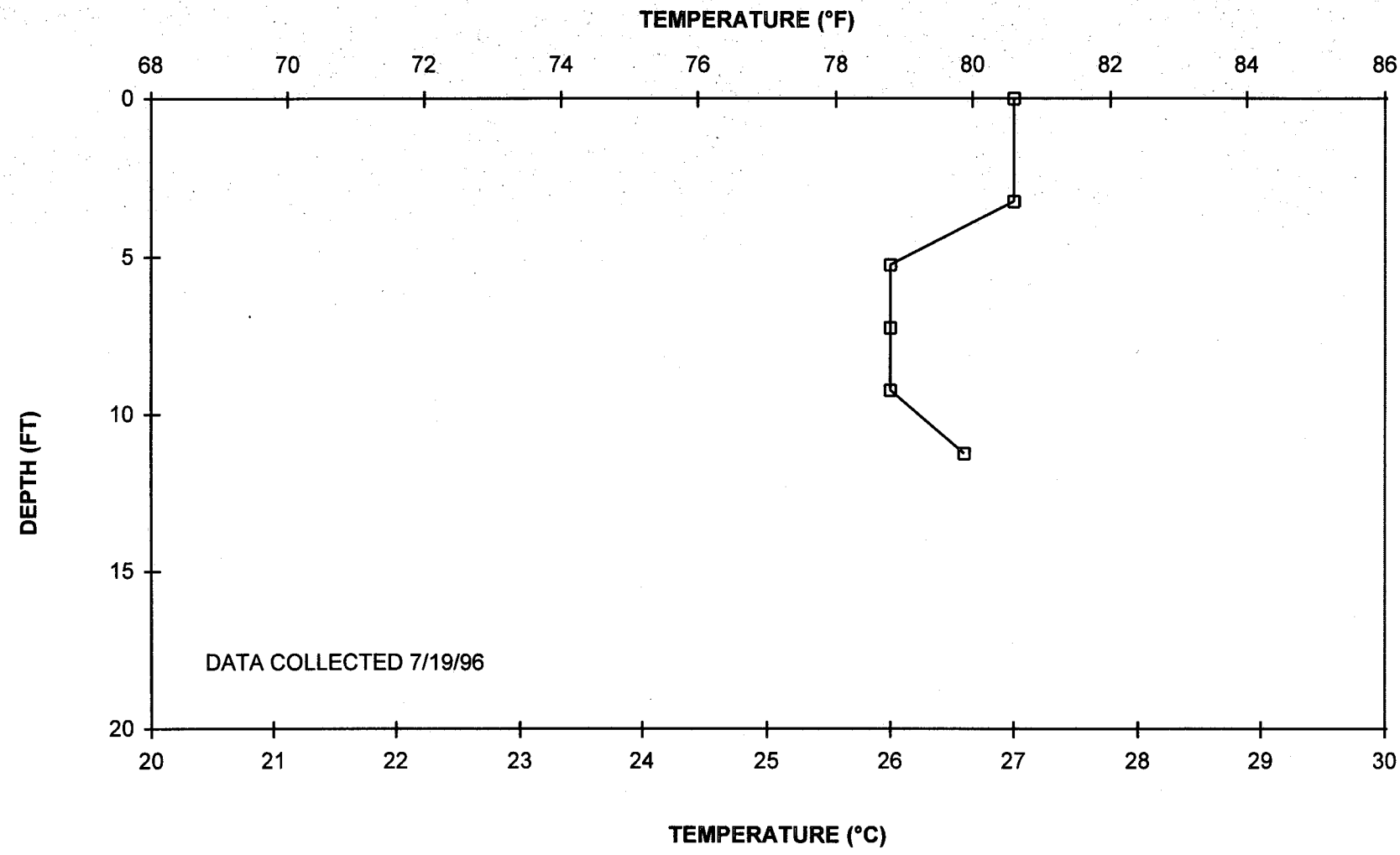
Figure
10.5.4-46



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN TEMPERATURE PROFILE
AT UNITS 6/7 DISCHARGE, AFTER BEND IN DISCHARGE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

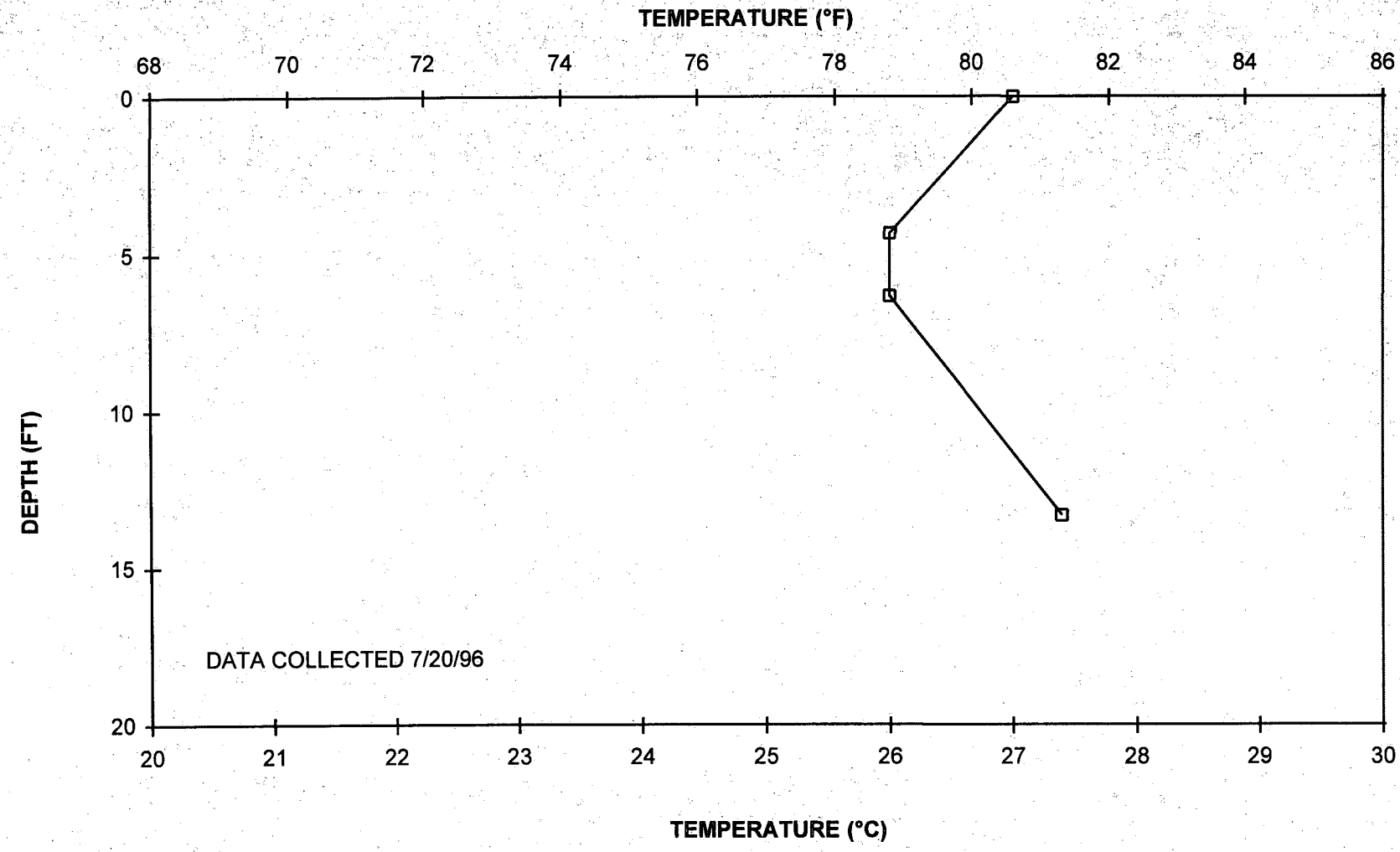
Figure
10.5.4-47



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

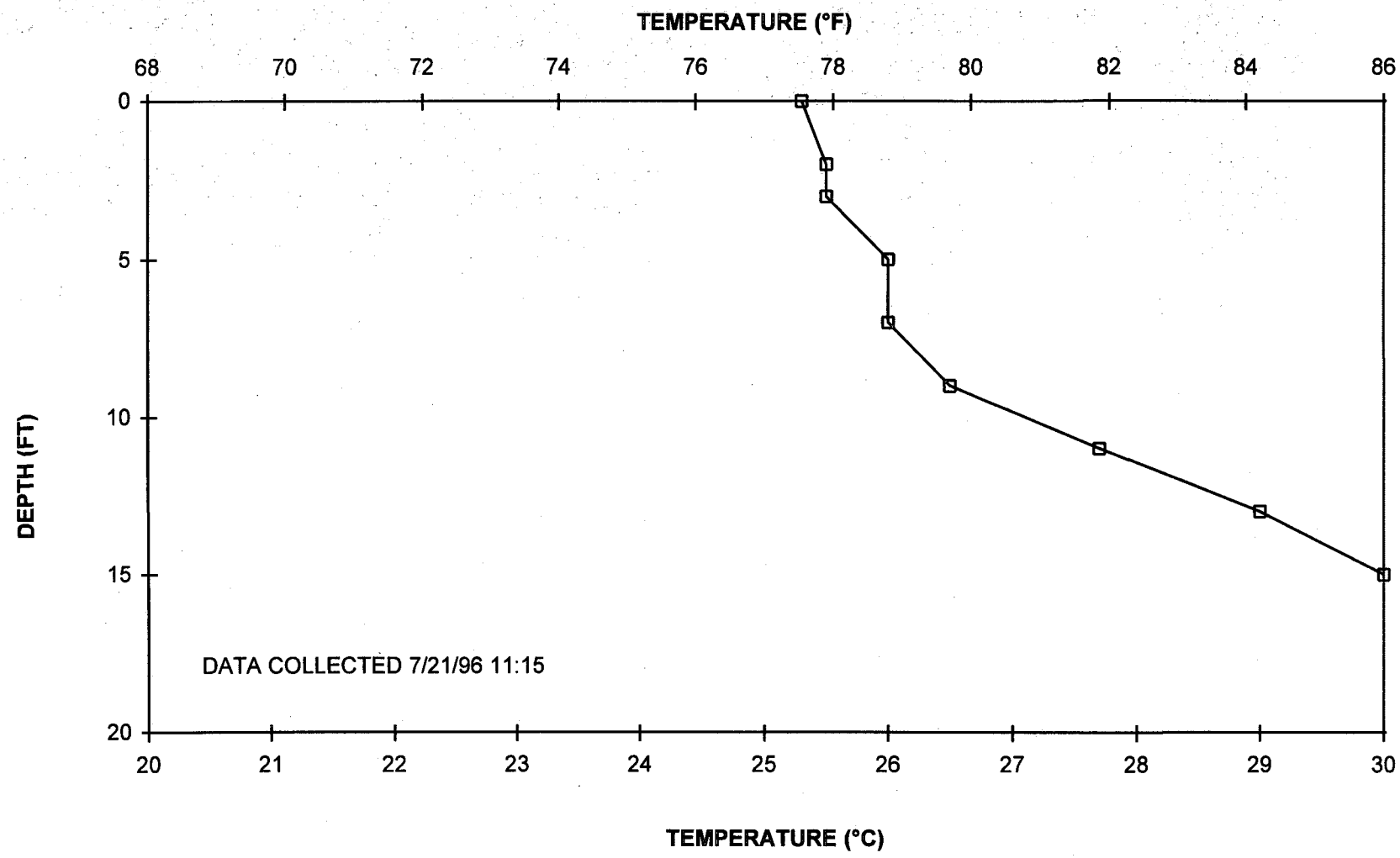
Figure
10.5.4-48



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE TREATMENT FACILITY DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

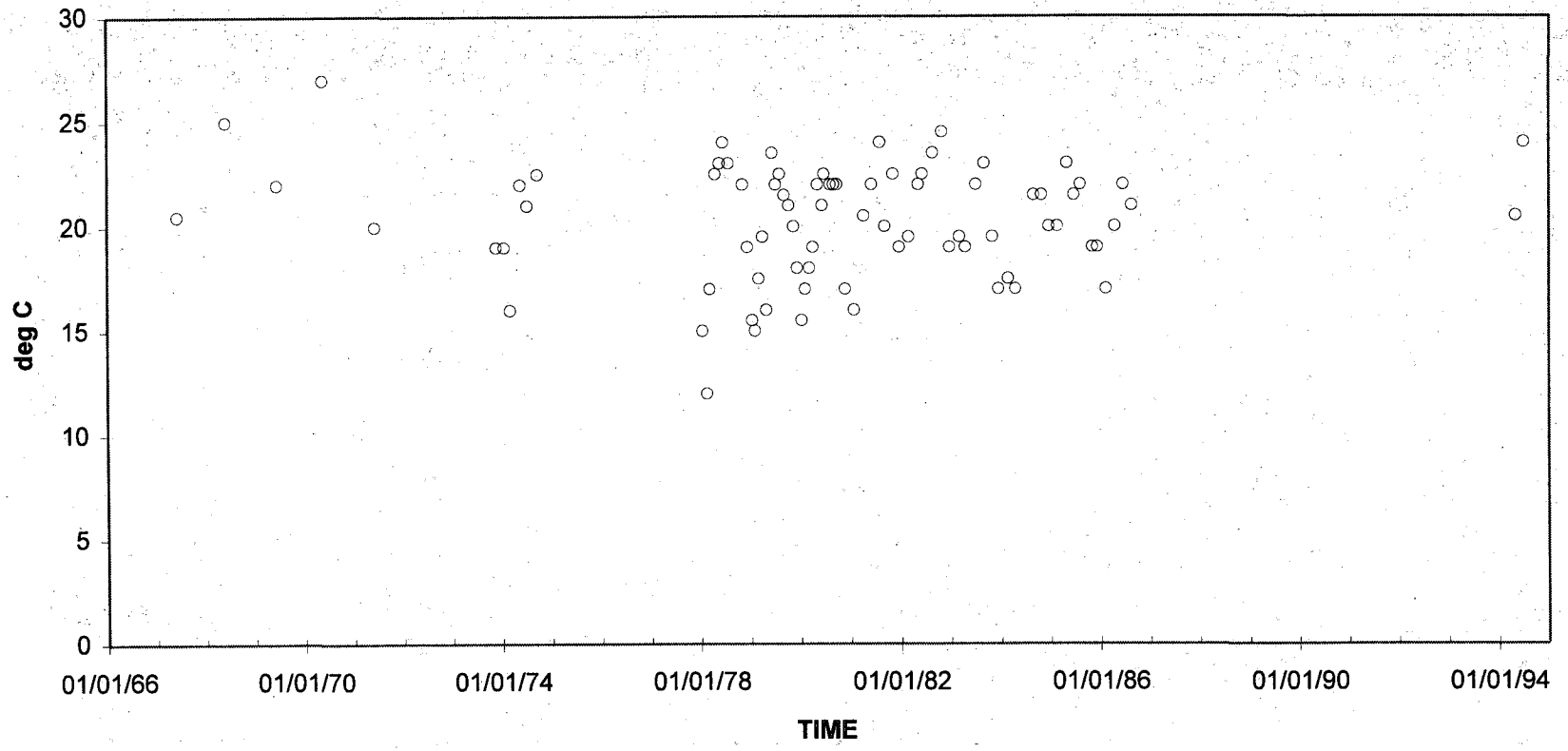
Figure
10.5.4–49



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN TEMPERATURE PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

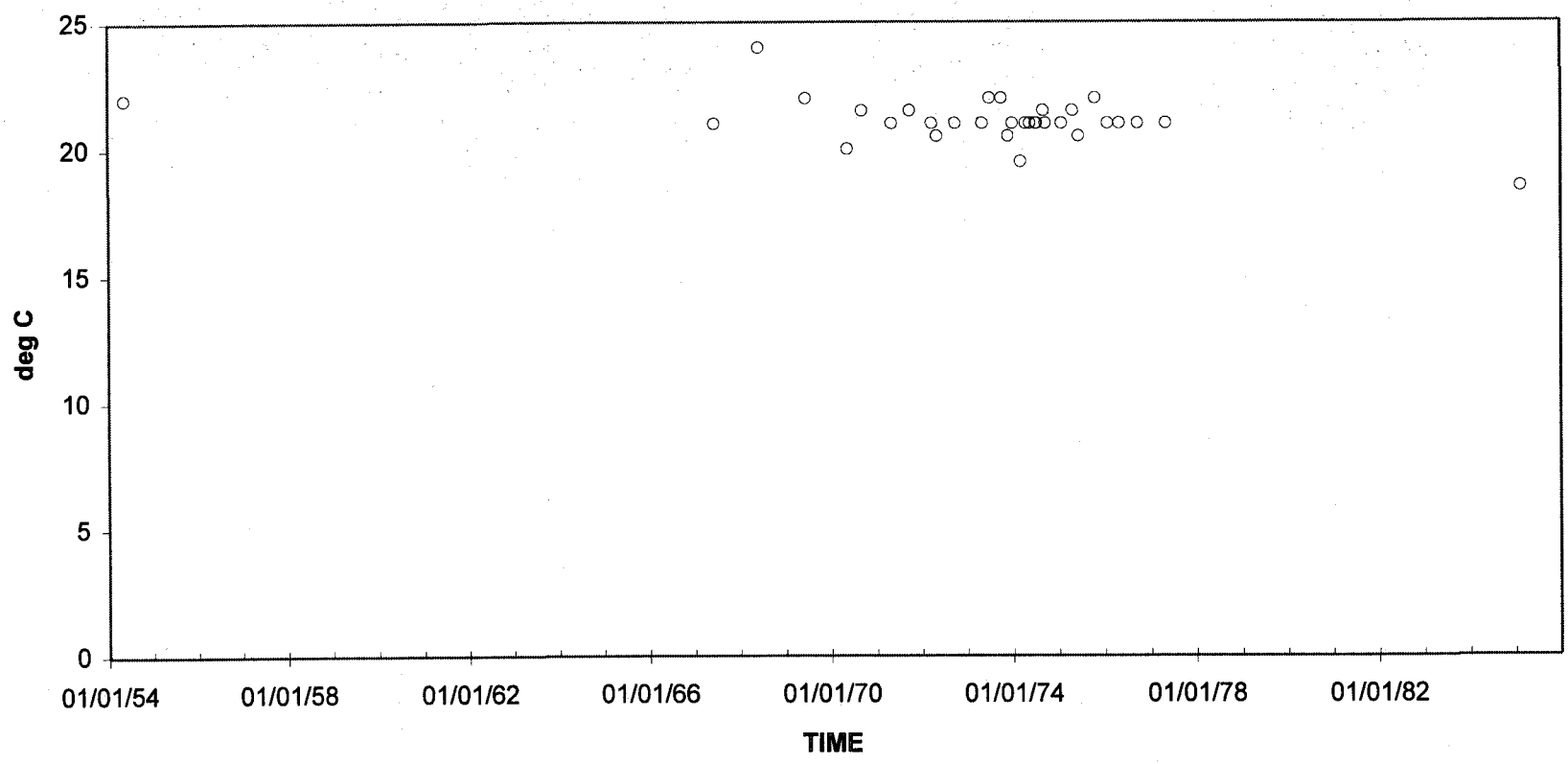
Figure
10.5.4-50



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
TEMPERATURE, WATER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

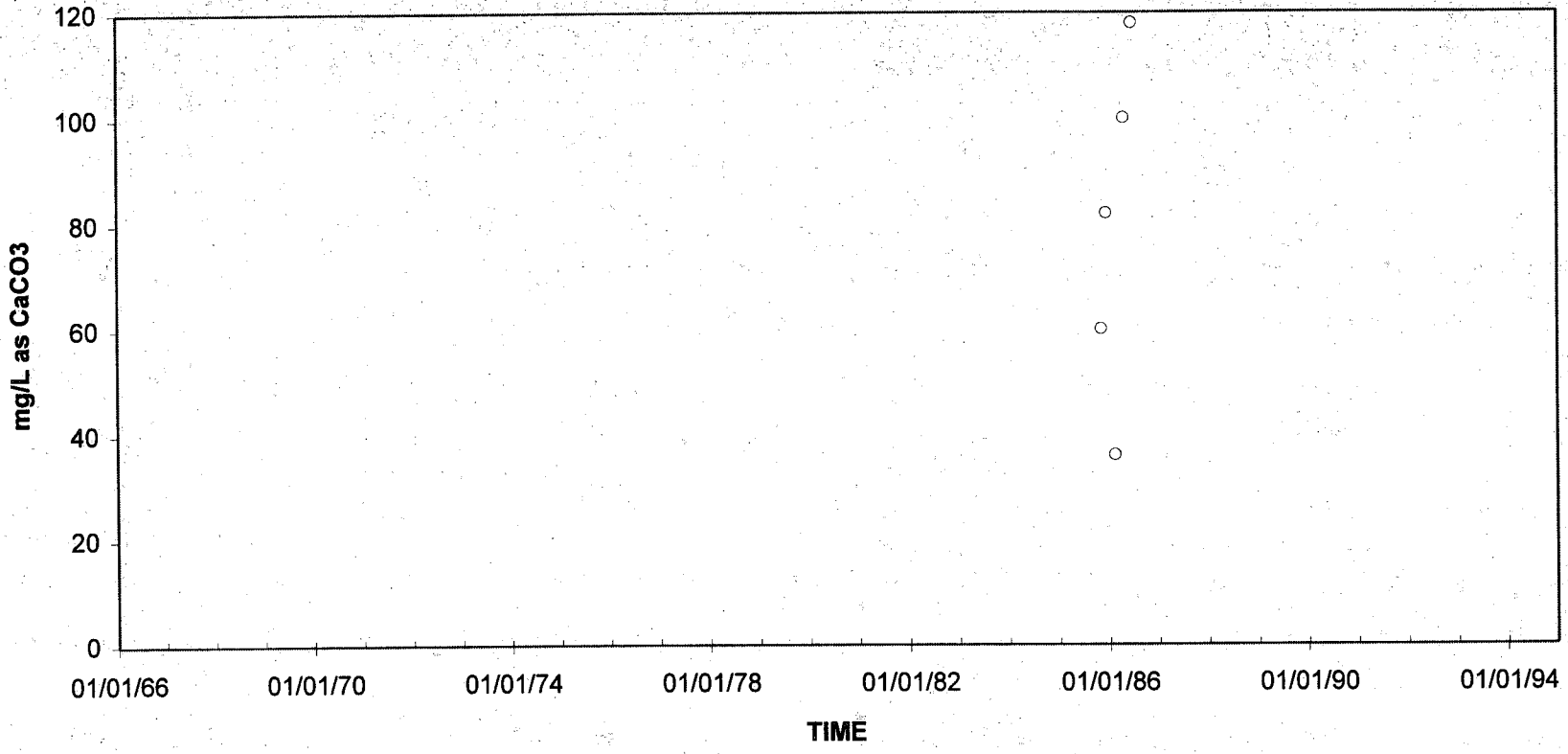
Figure
10.5.4-51



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
TEMPERATURE, WATER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

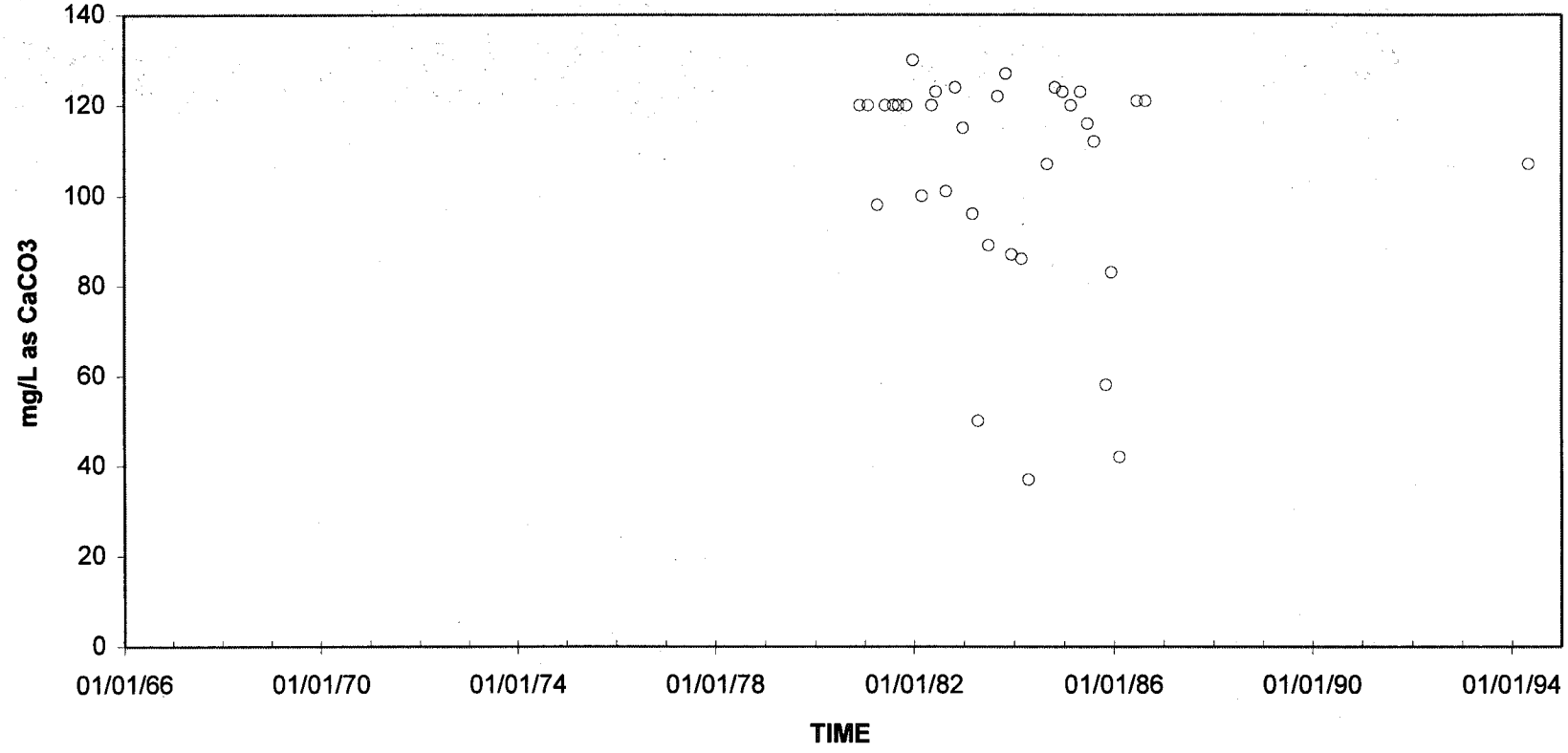
Figure
10.5.4-52



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ALKALINITY, CARBONATE IT FLD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

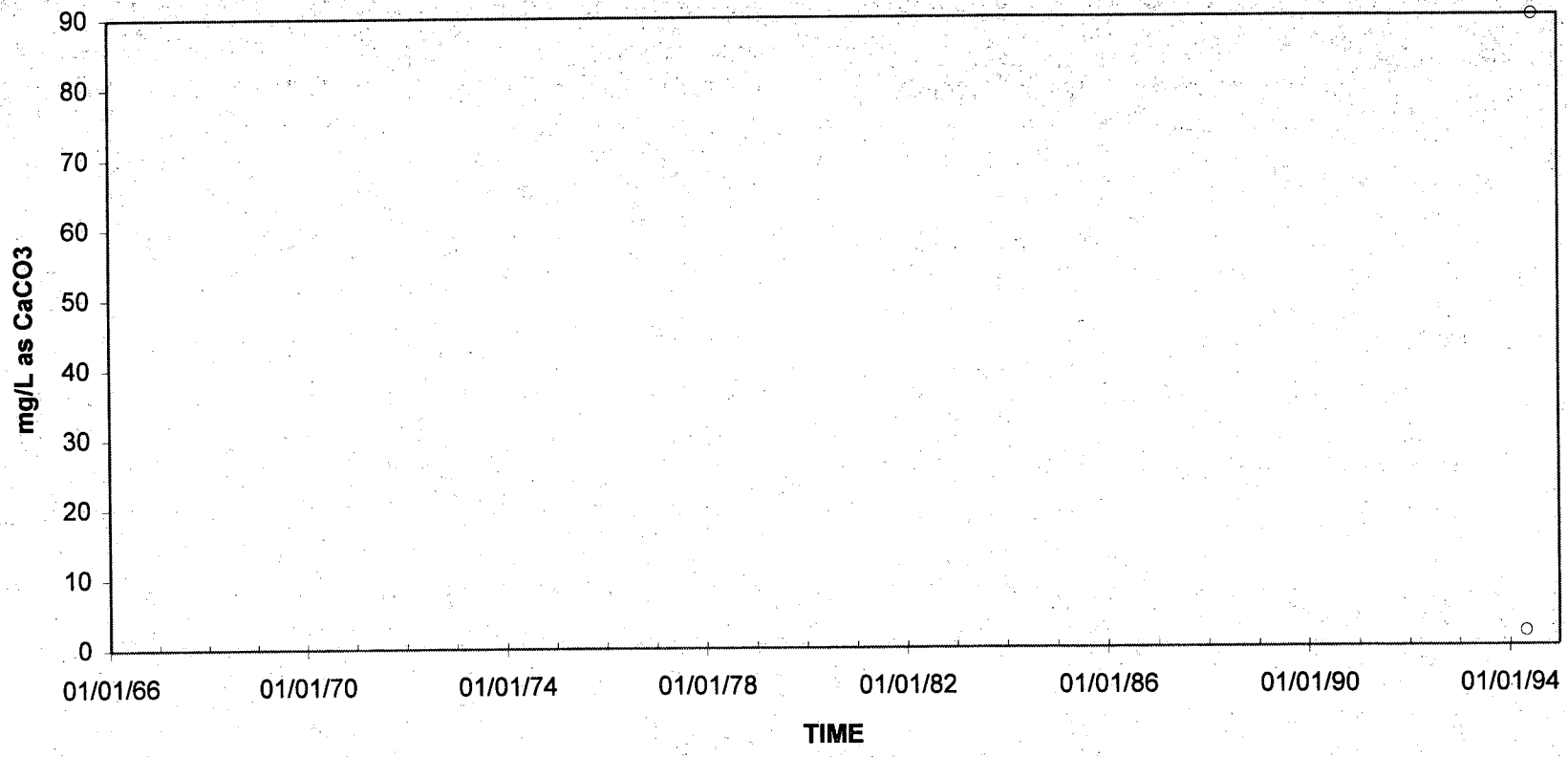
Figure
10.5.4-53



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ALKALINITY, LAB
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

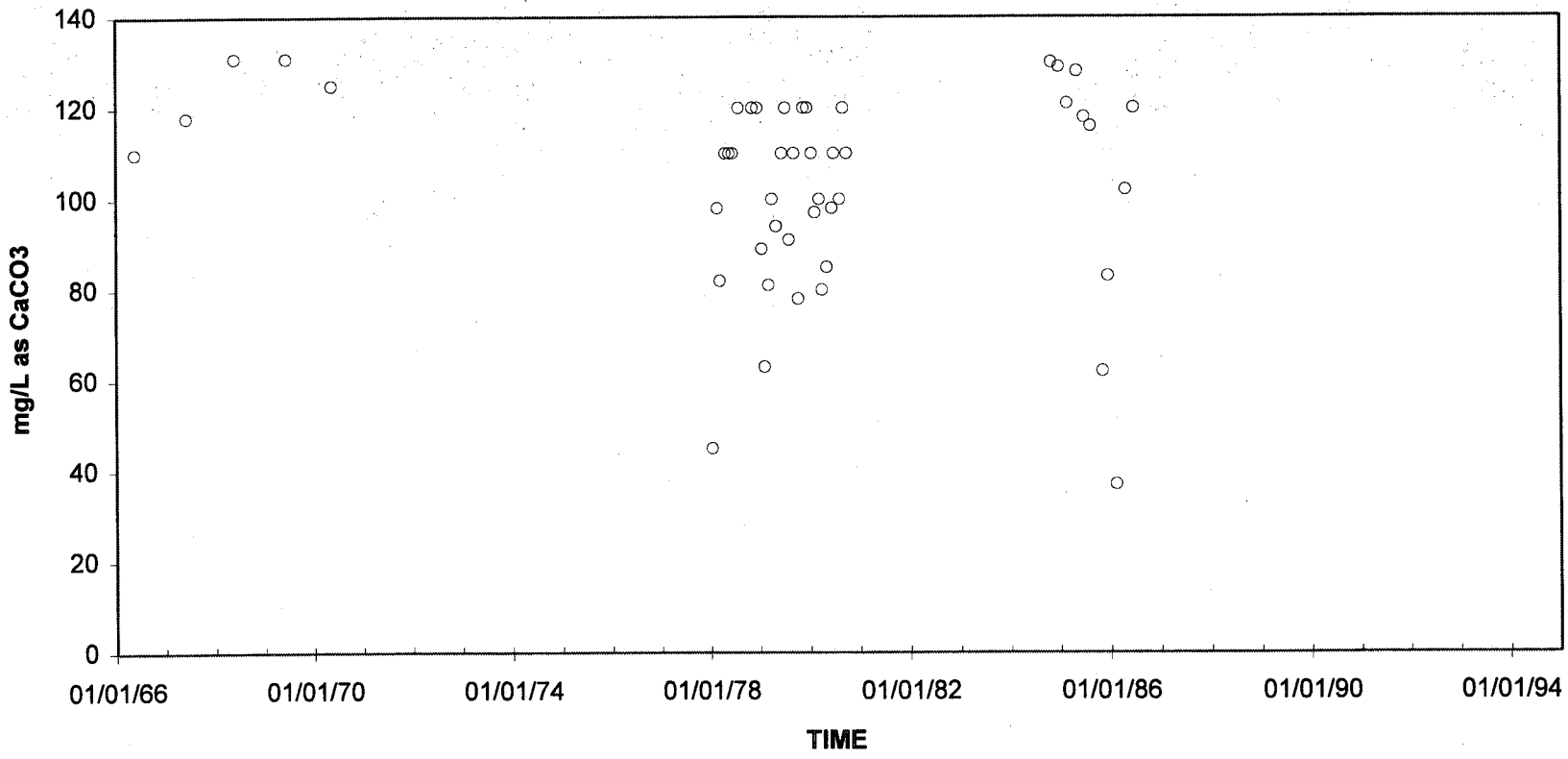
Figure
10.5.4–54



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ALKALINITY, WAT DIS TOT IT FIELD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

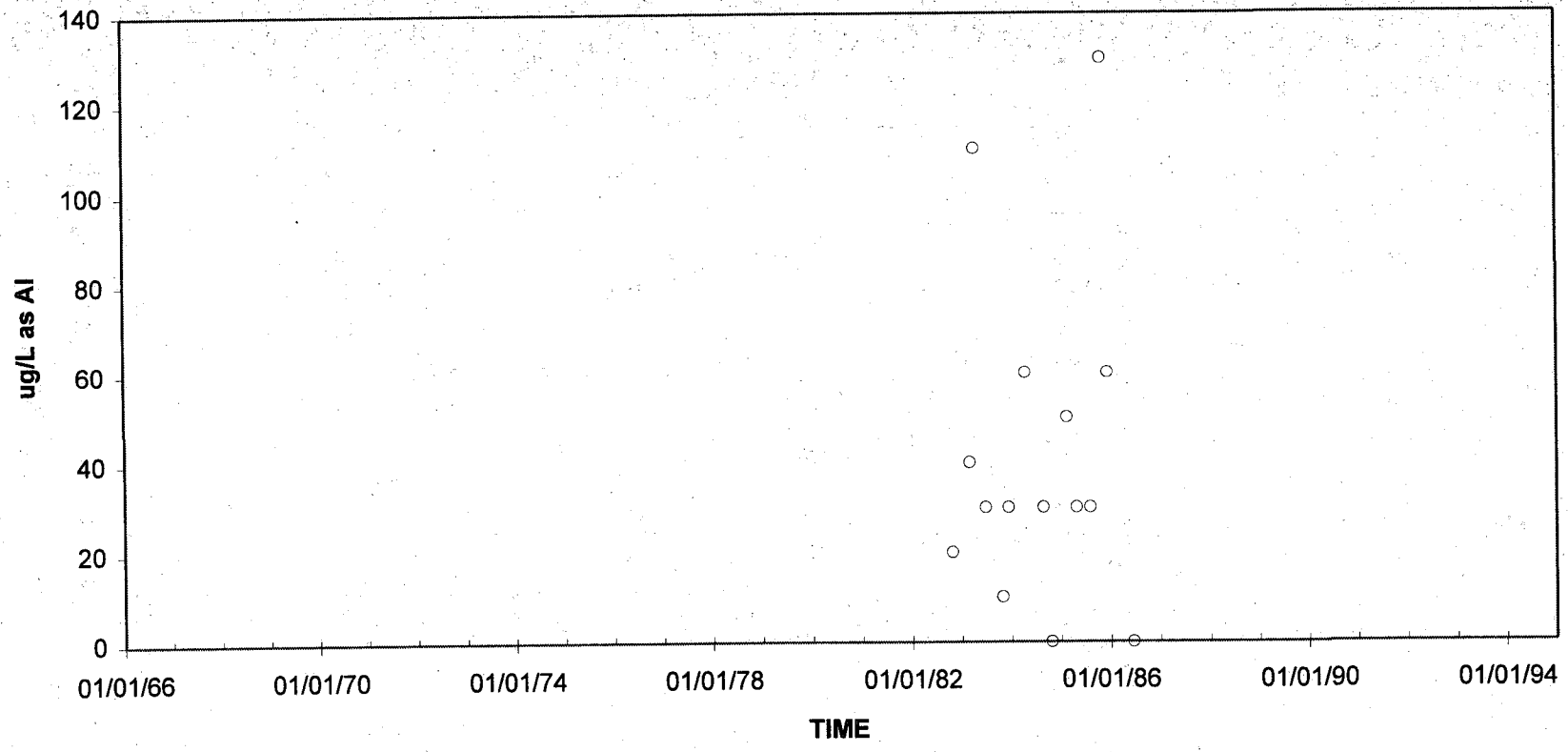
Figure
10.5.4-55



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ALKALINITY, WAT WH TOT FET FIELD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

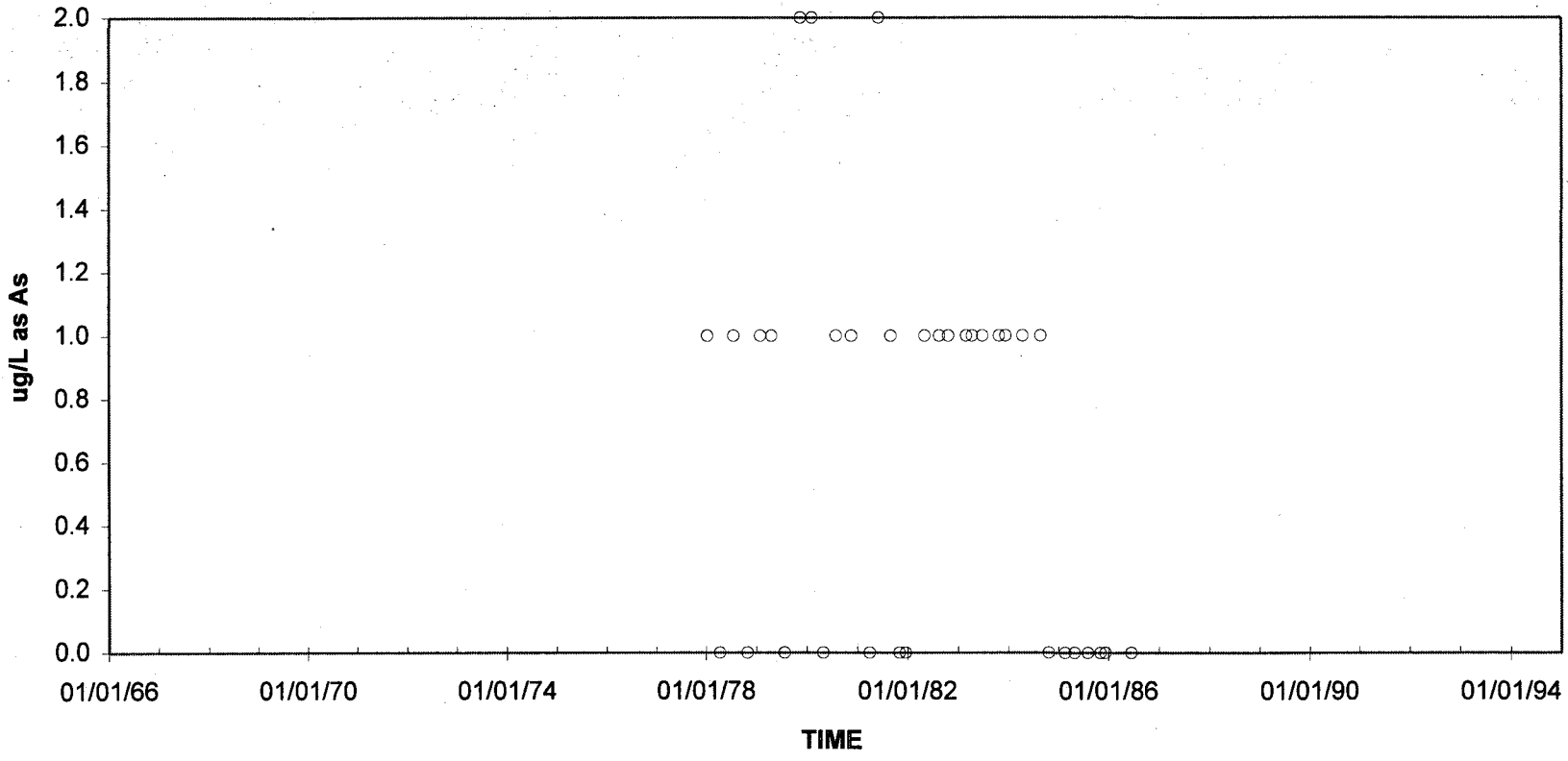
Figure
10.5.4–56



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ALUMINUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

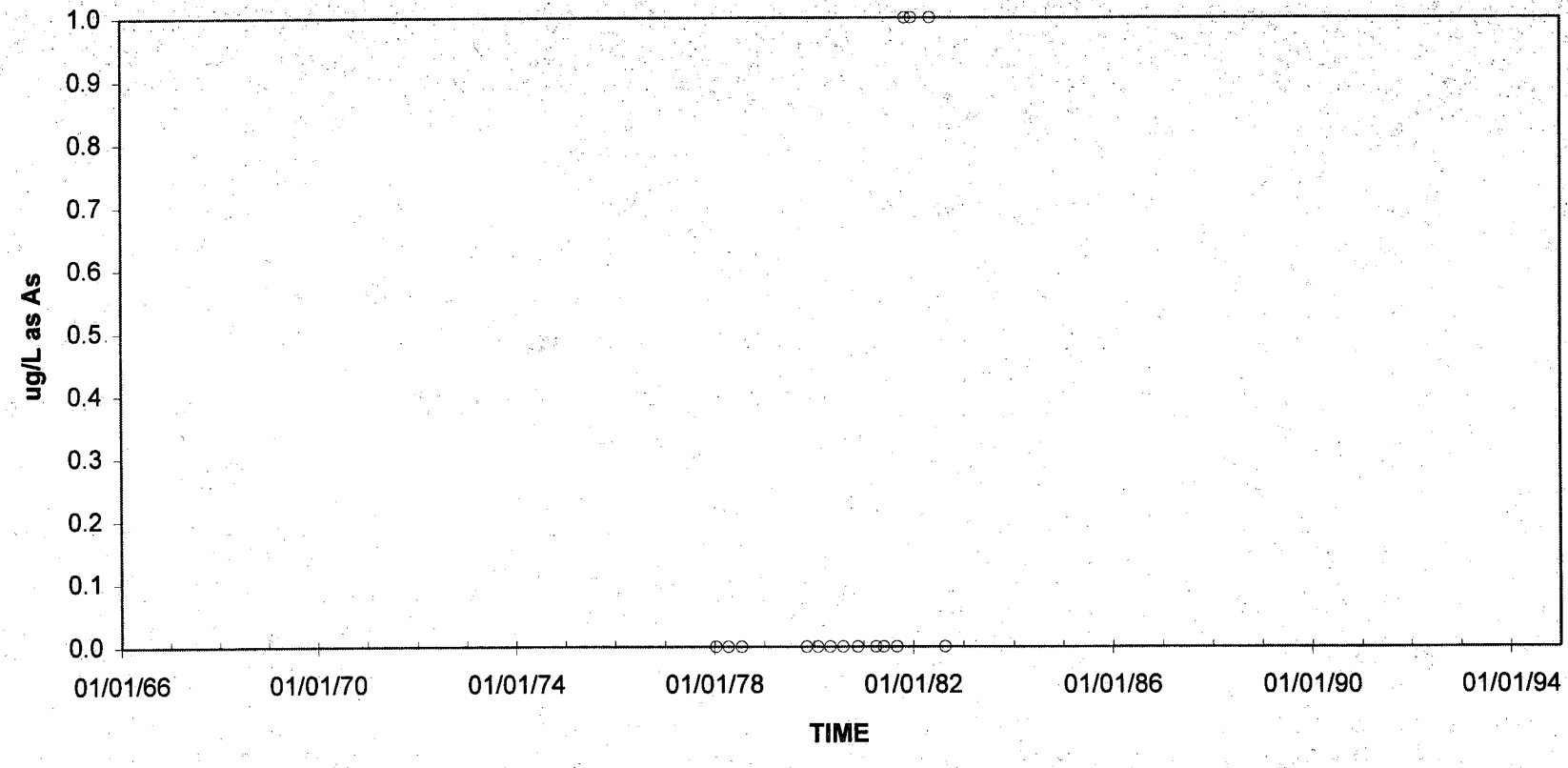
Figure
10.5.4–57



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ARSENIC, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

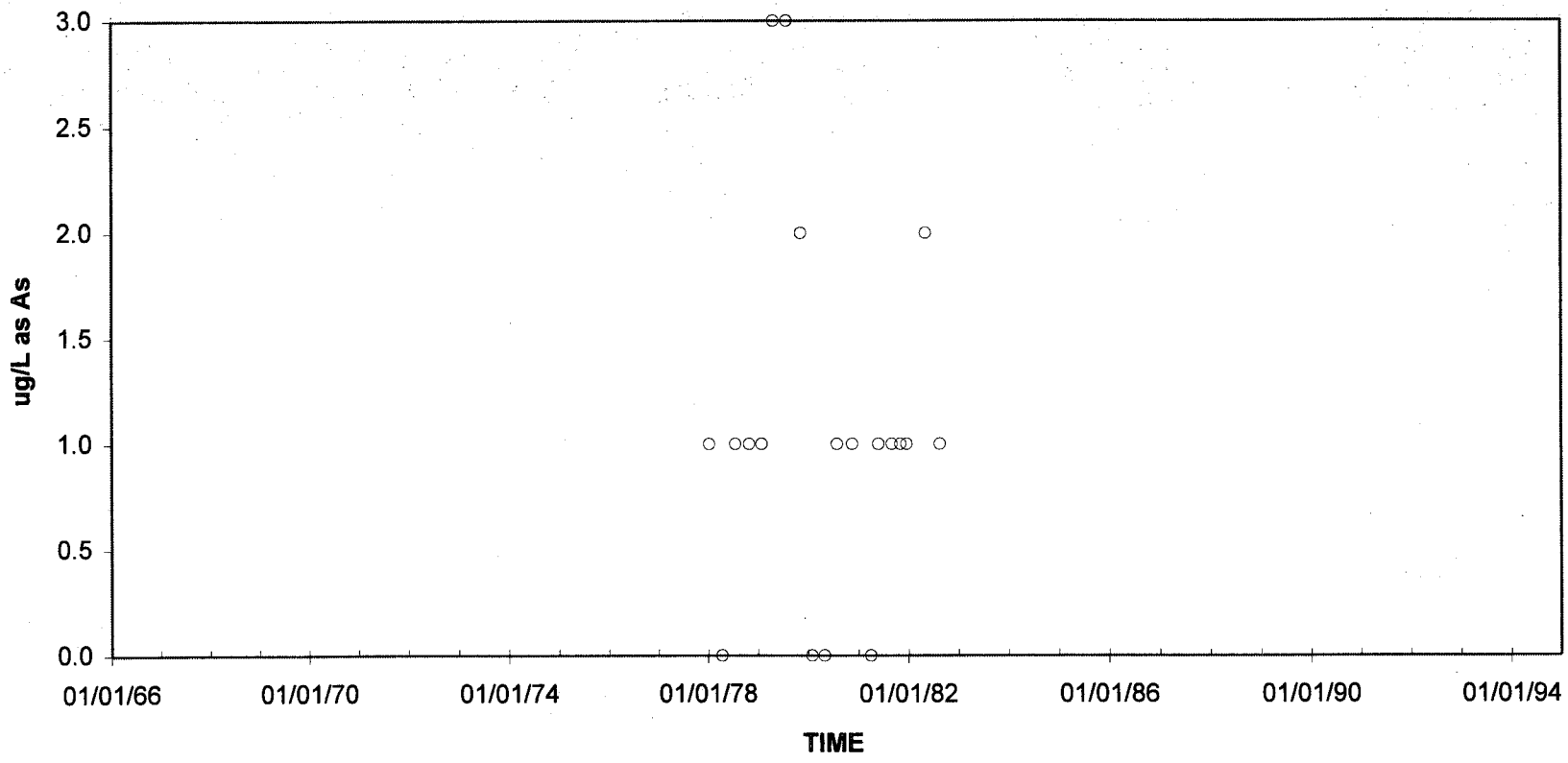
Figure
10.5.4-58



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ARSENIC, SUSPENDED TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

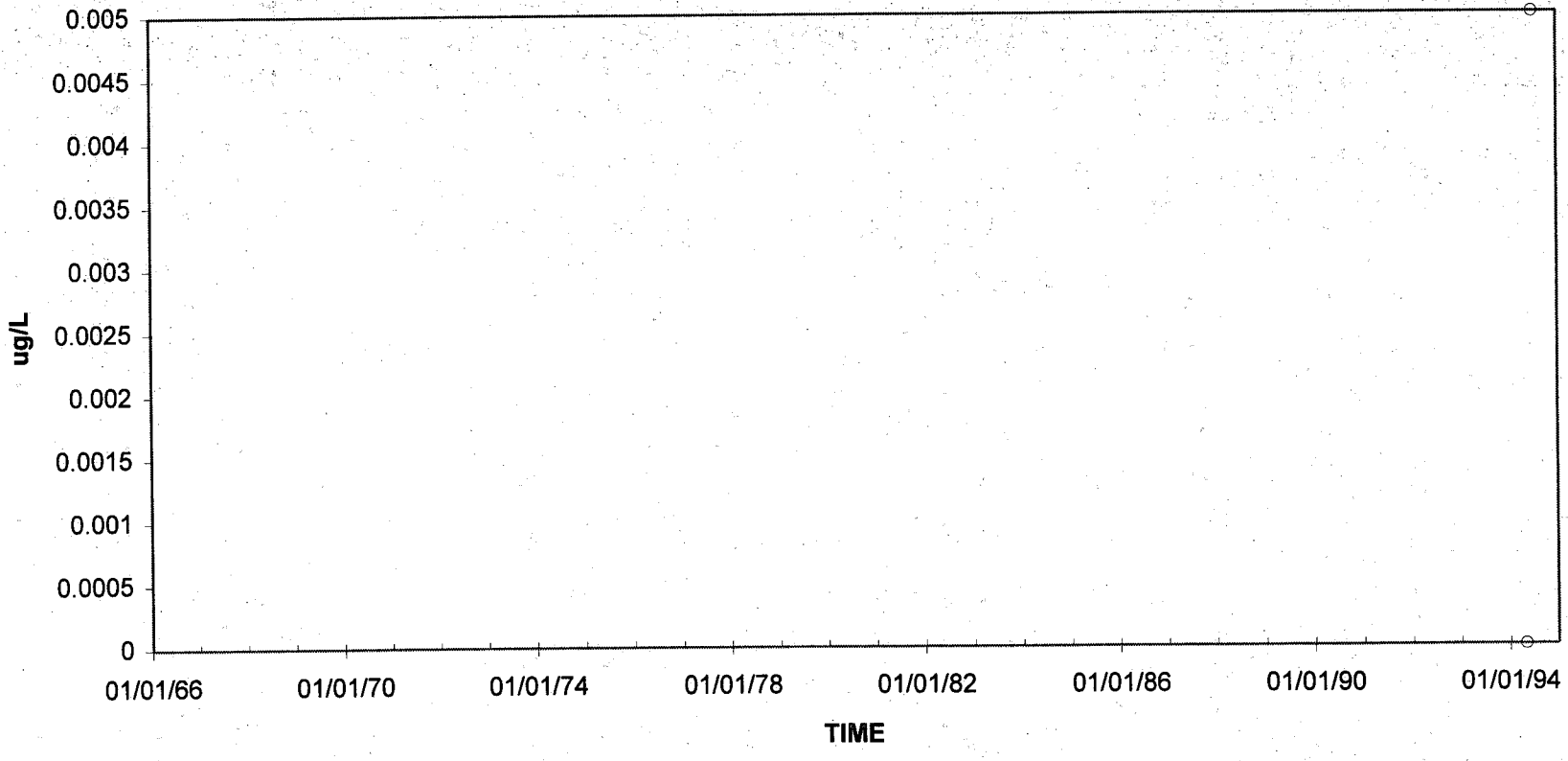
Figure
10.5.4–59



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ARSENIC, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

Figure
10.5.4–60

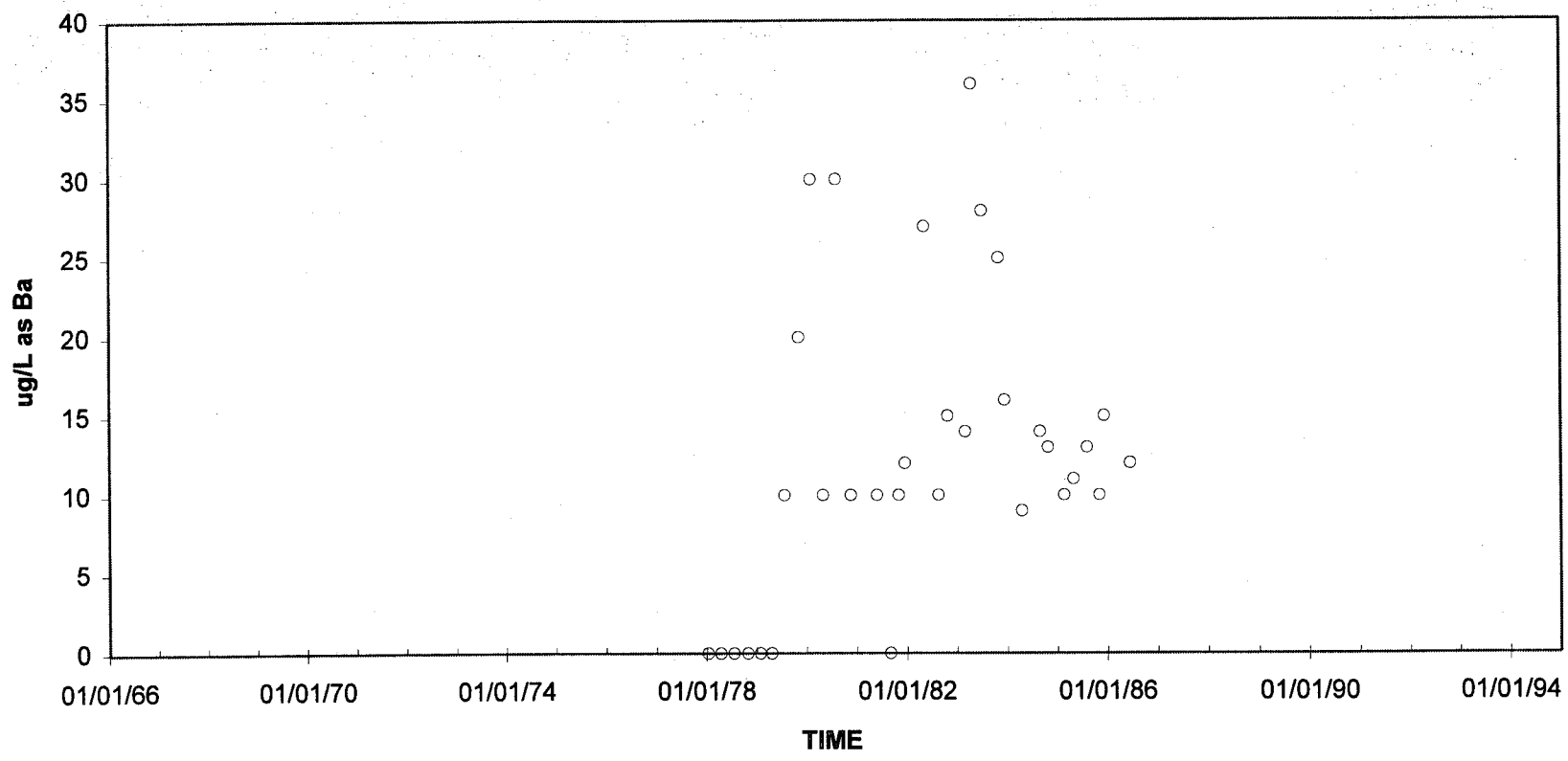


CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ATRAZINE, WATER DISSOLV

PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

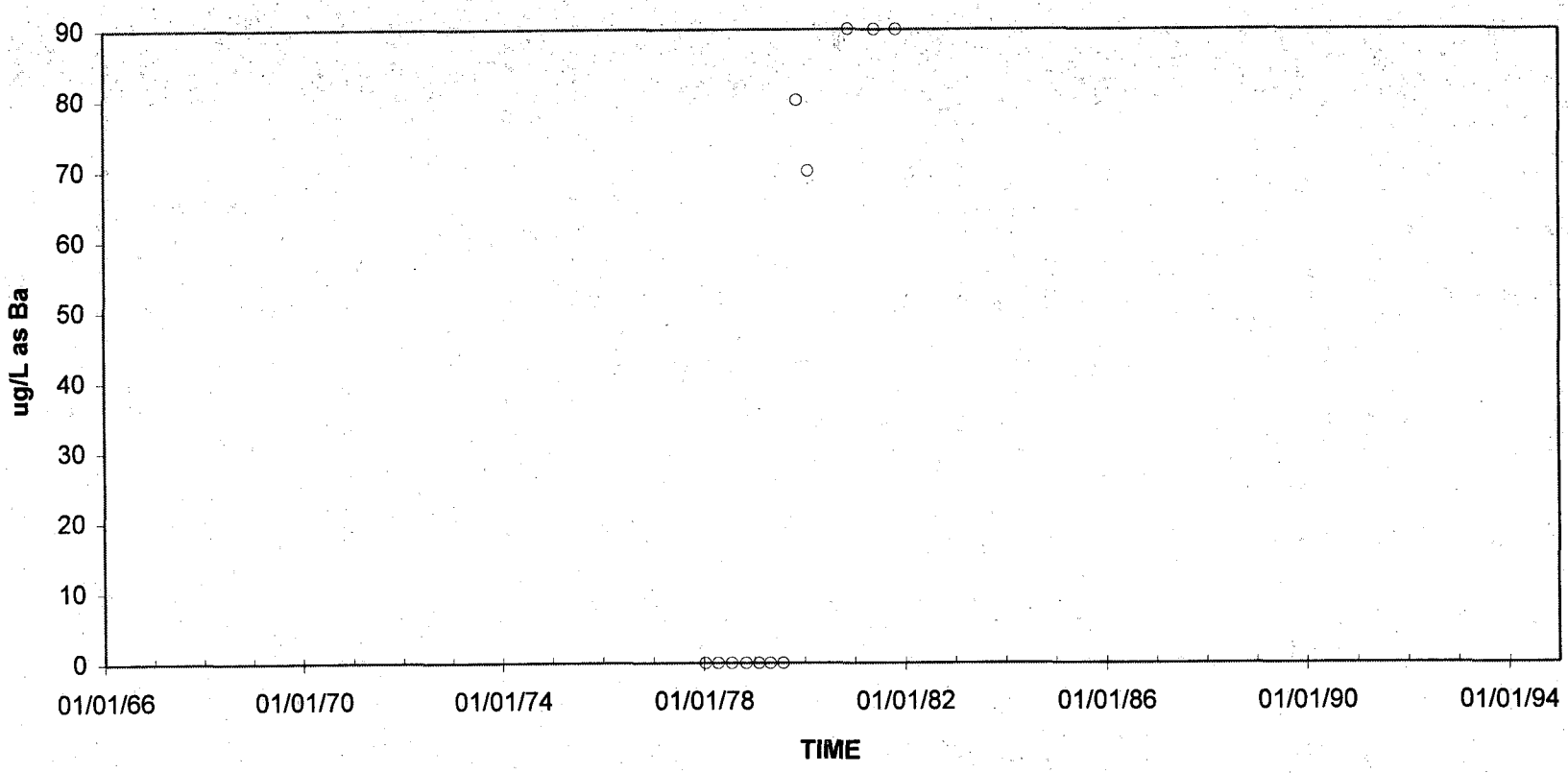
Figure
10.5.4-61



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
BARIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

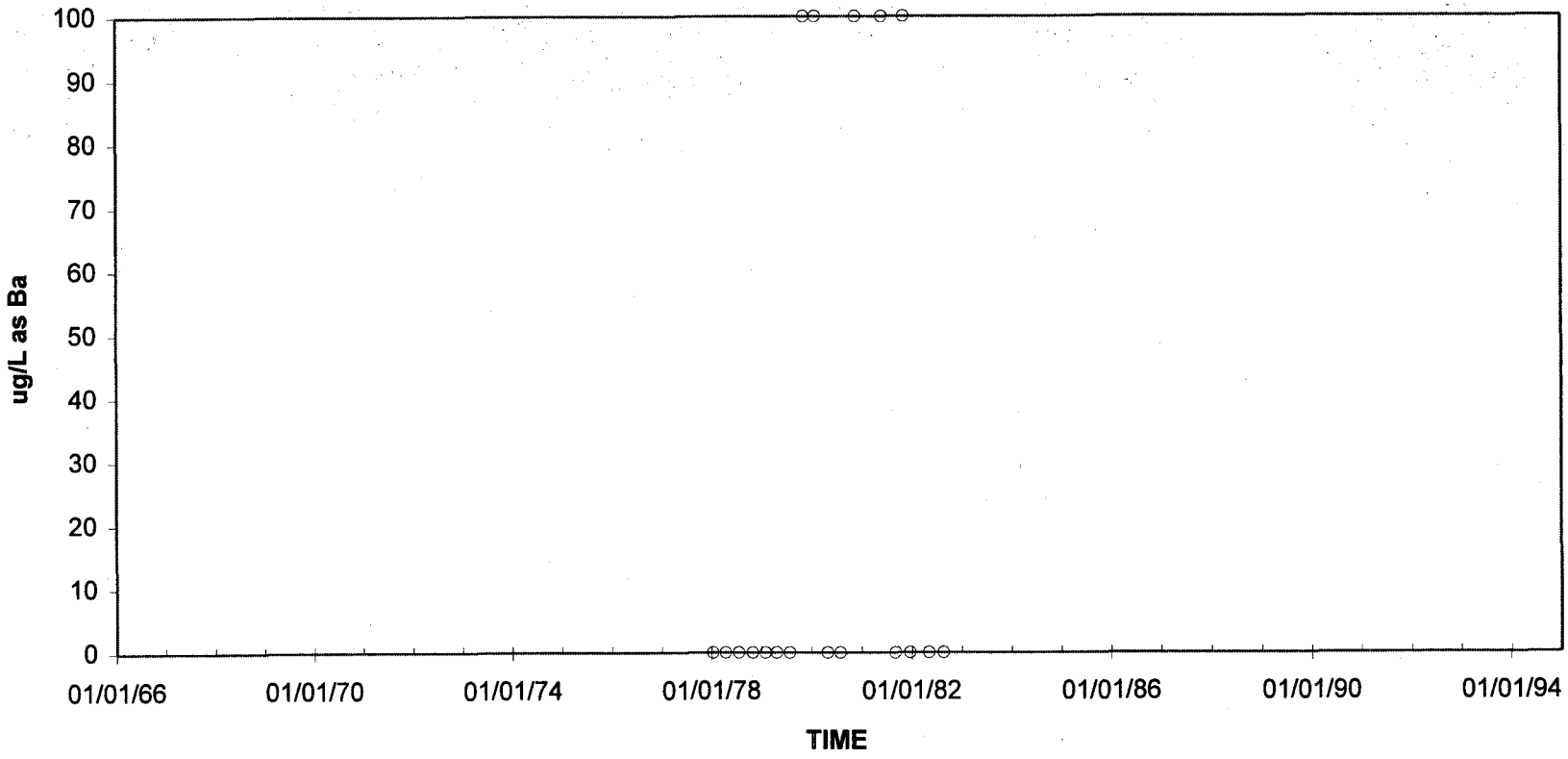
Figure
10.5.4-62



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
BARIUM, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

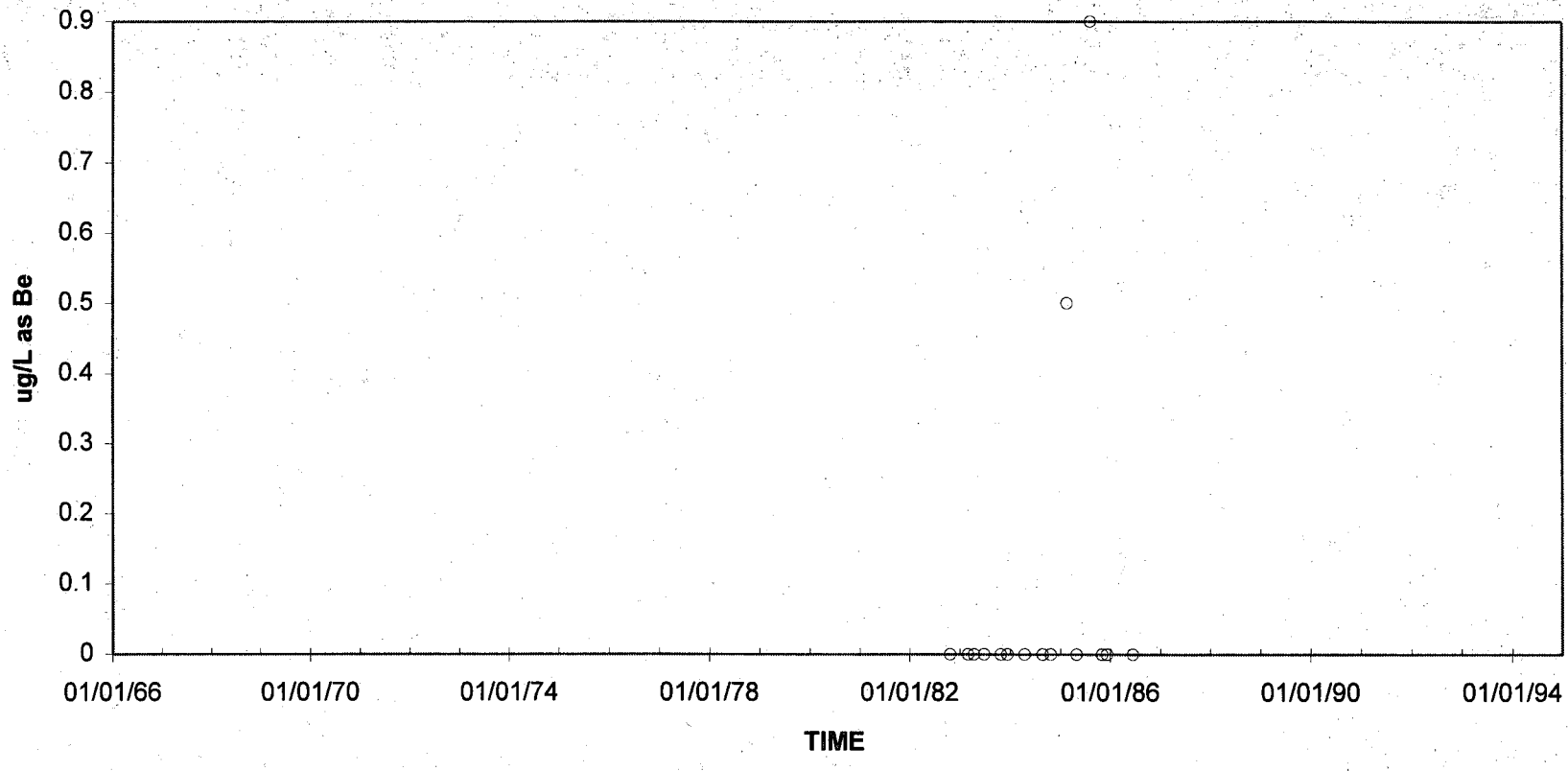
Figure
10.5.4-63



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
BARIUM, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

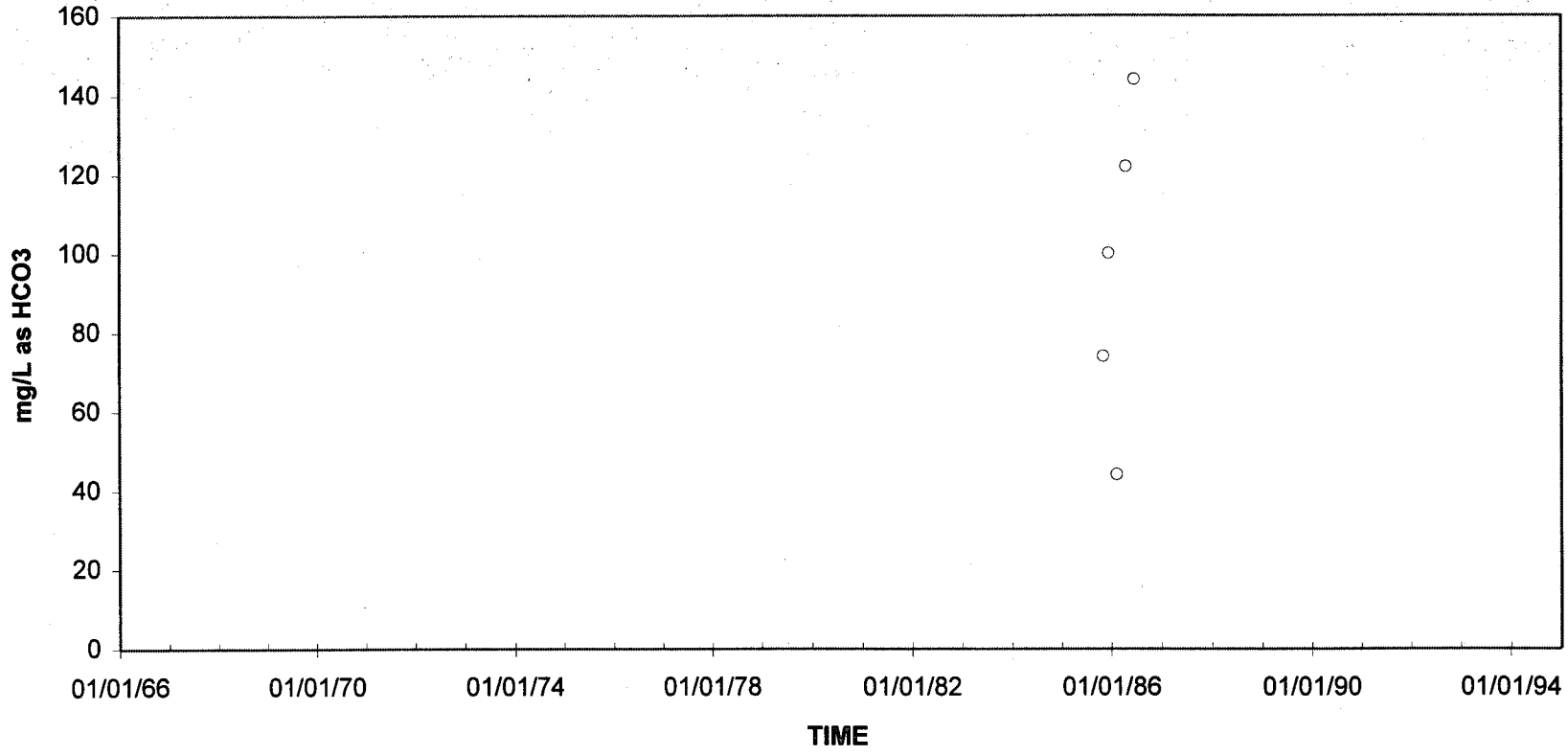
Figure
10.5.4–64



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
BERYLLIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

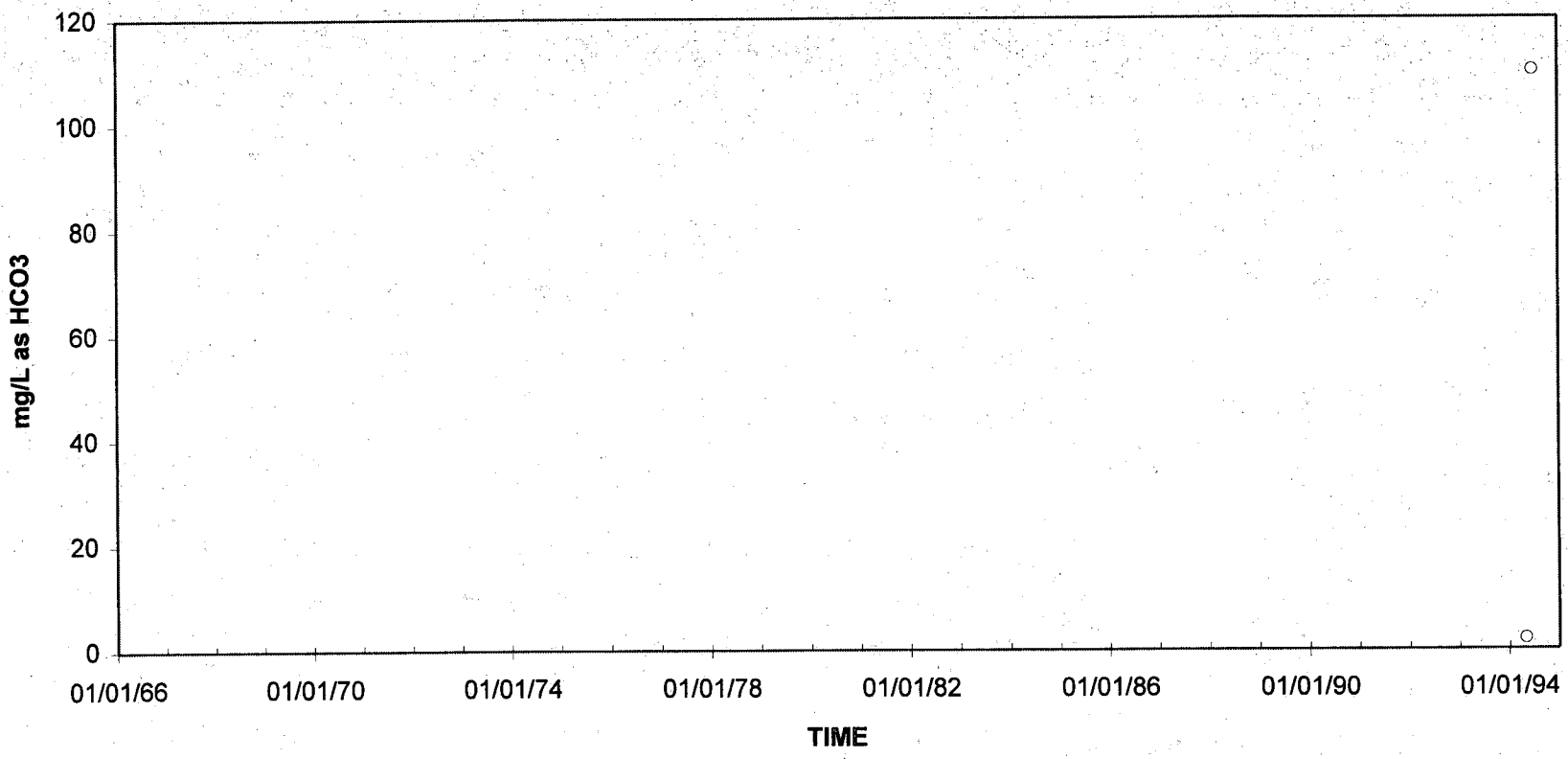
Figure
10.5.4-65



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
BICARBONATE, IT FLD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

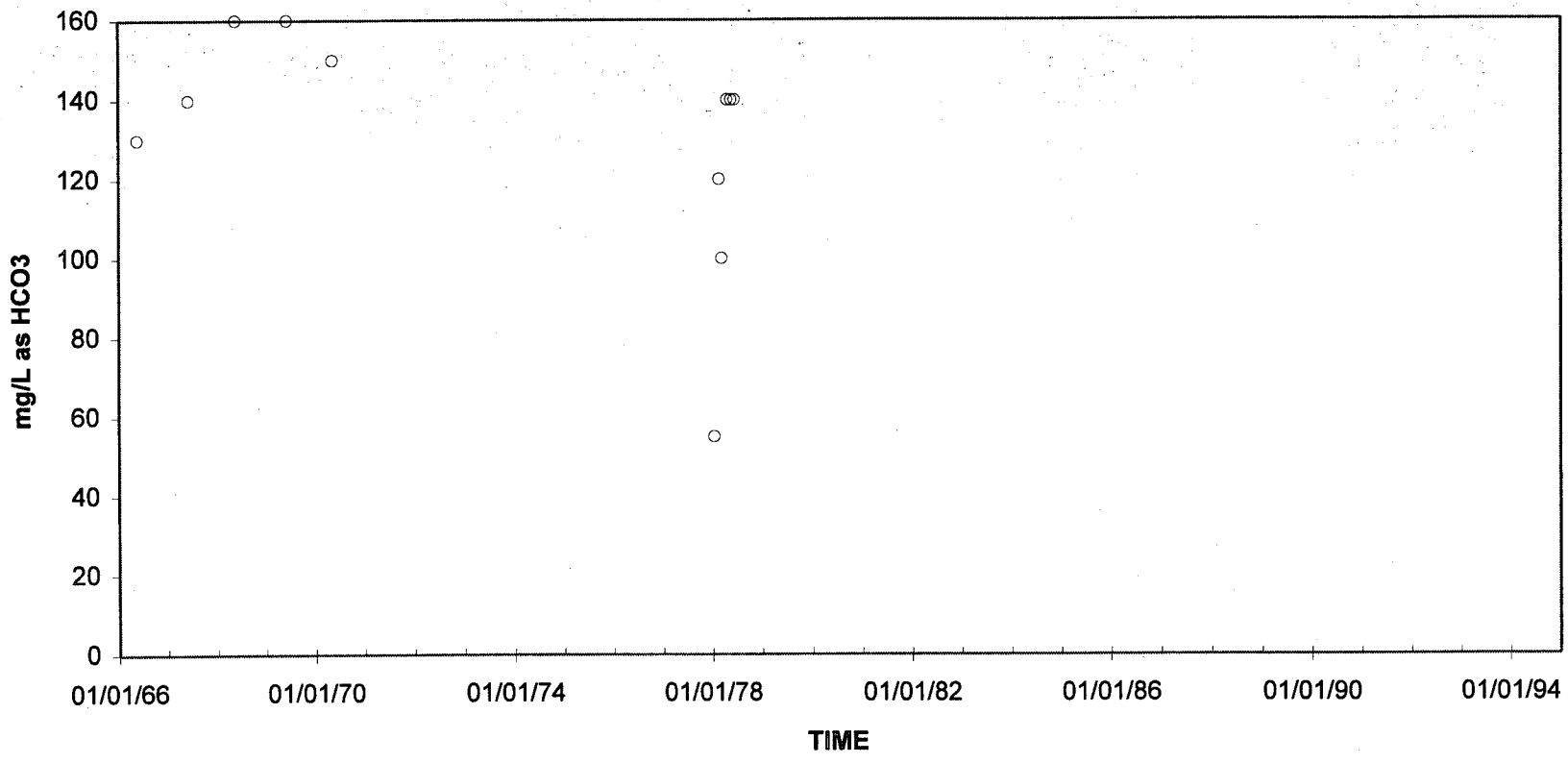
Figure
10.5.4–66



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
BICARBONATE, WAT DIS IT FIELD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

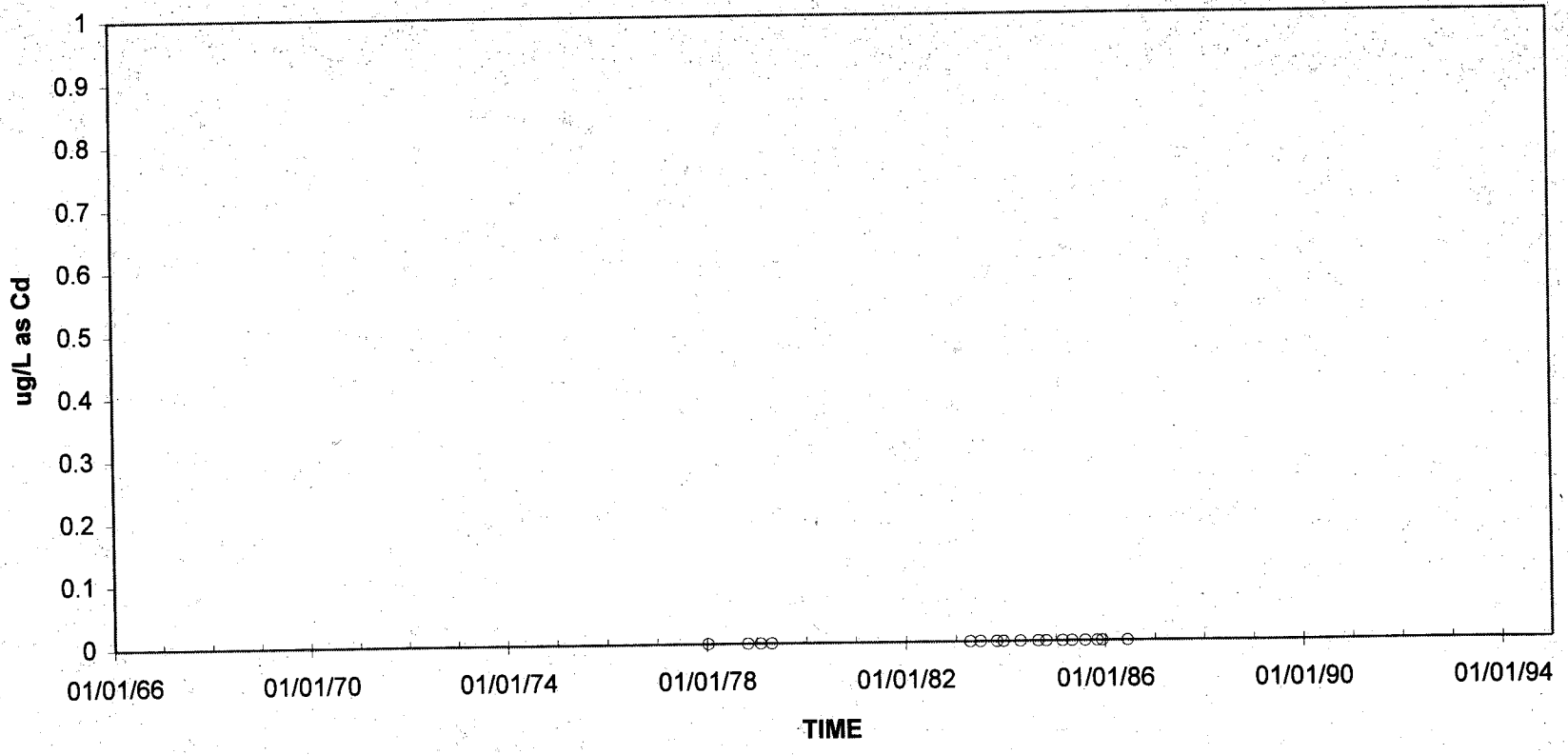
Figure
10.5.4–67



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
BICARBONATE, WAT WH TOT FET FIELD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

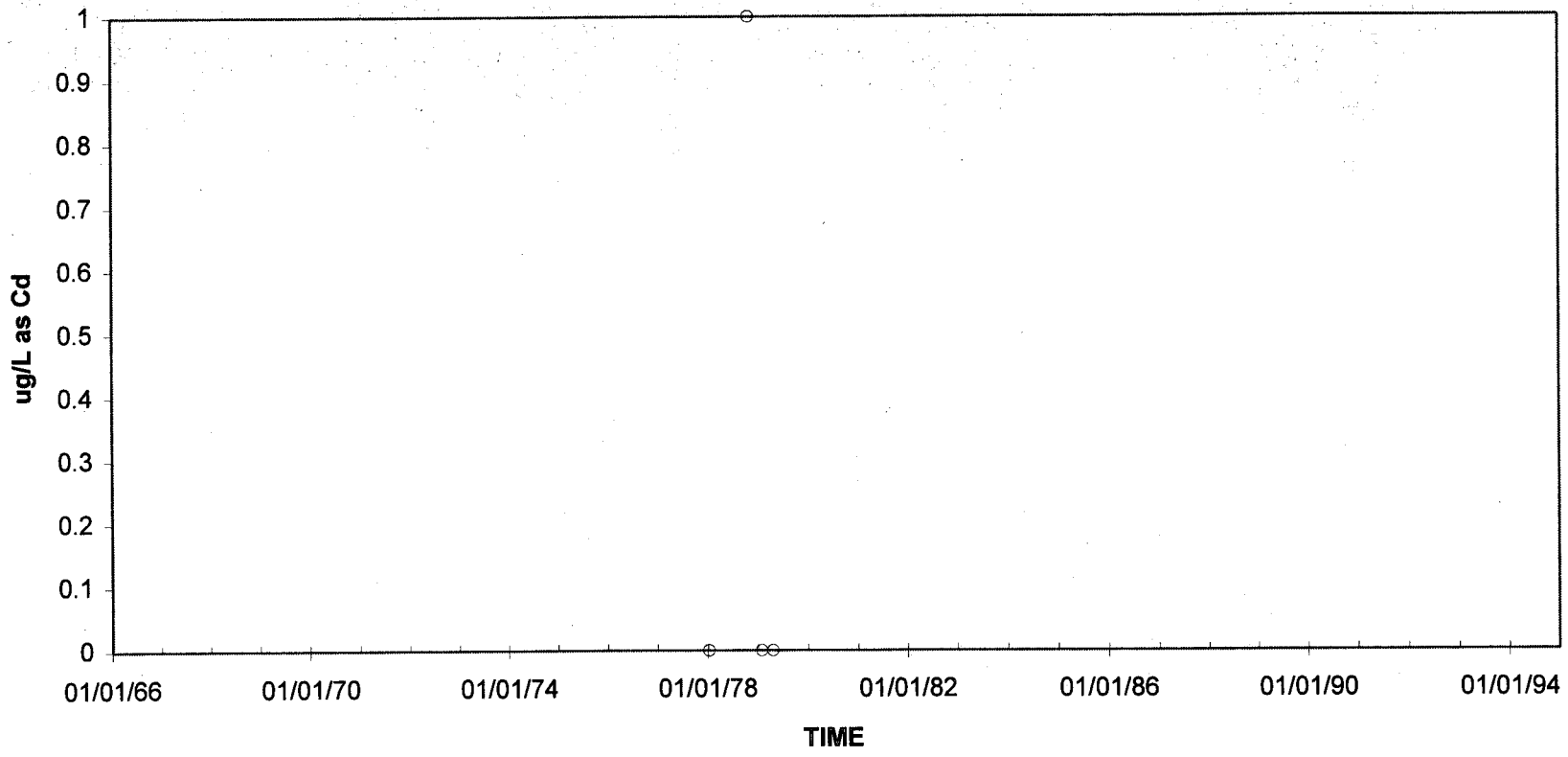
Figure
10.5.4–68



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CADMIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

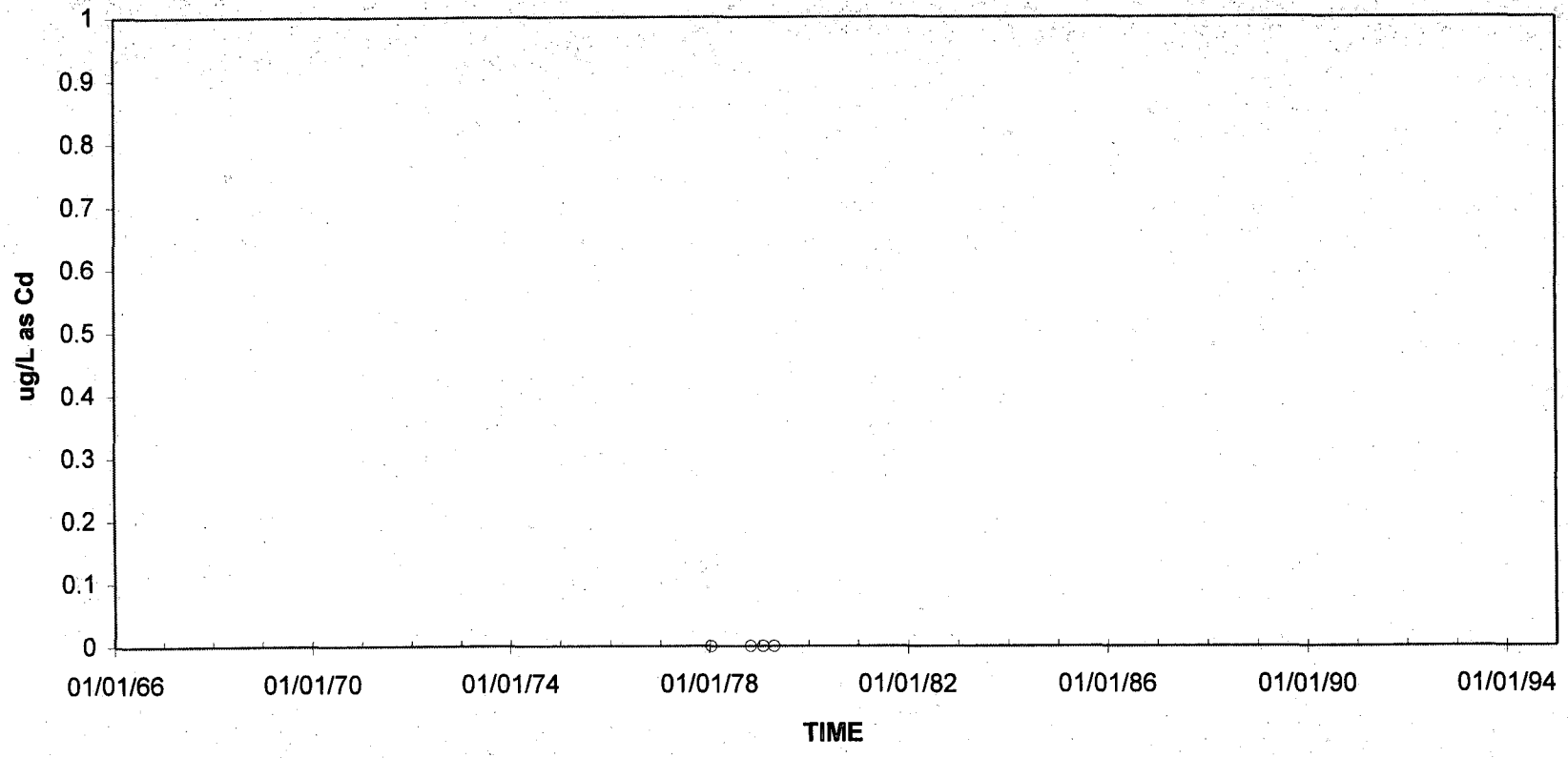
Figure
10.5.4–69



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CADMIUM, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

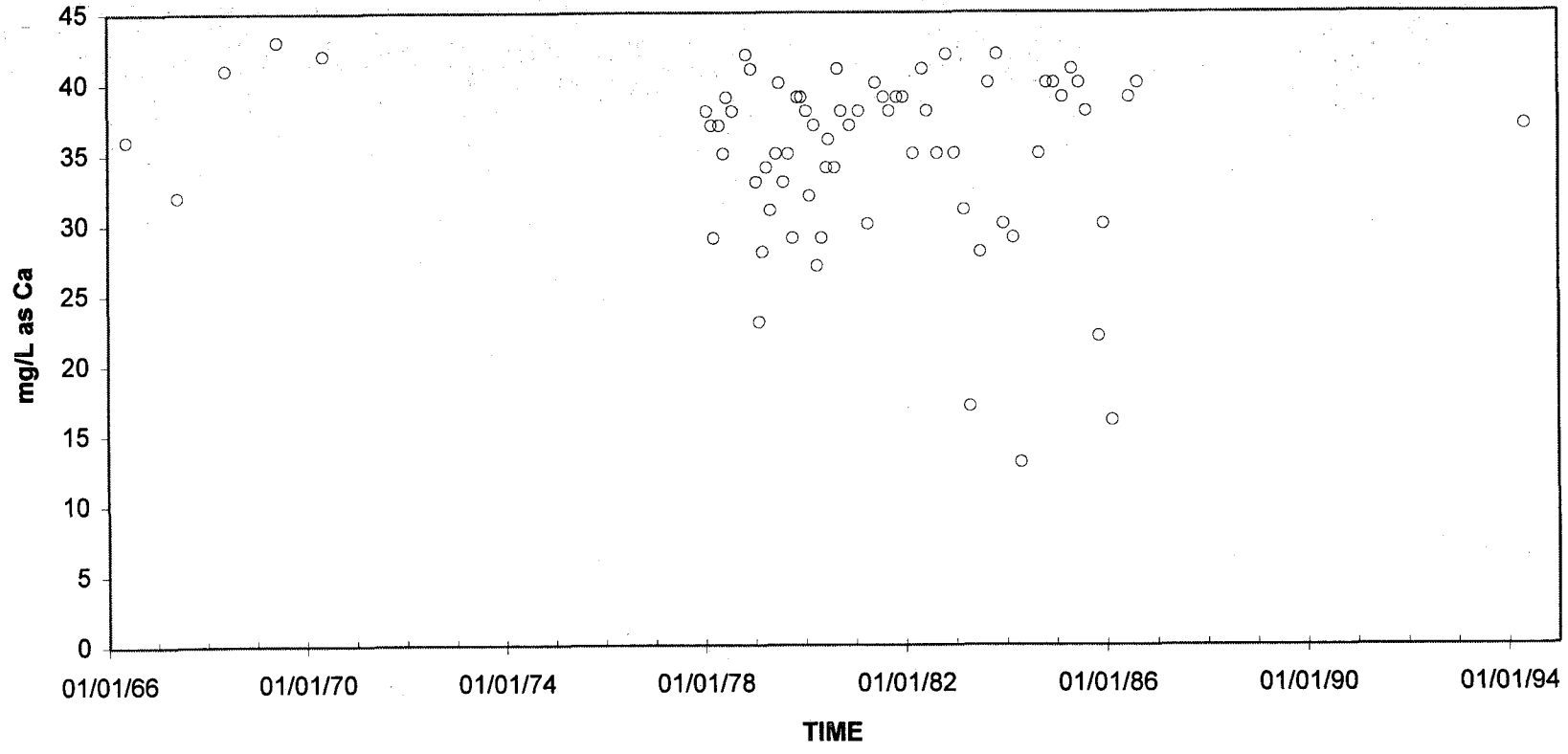
Figure
10.5.4-70



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CADMIUM, WATER UNFLTRD TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

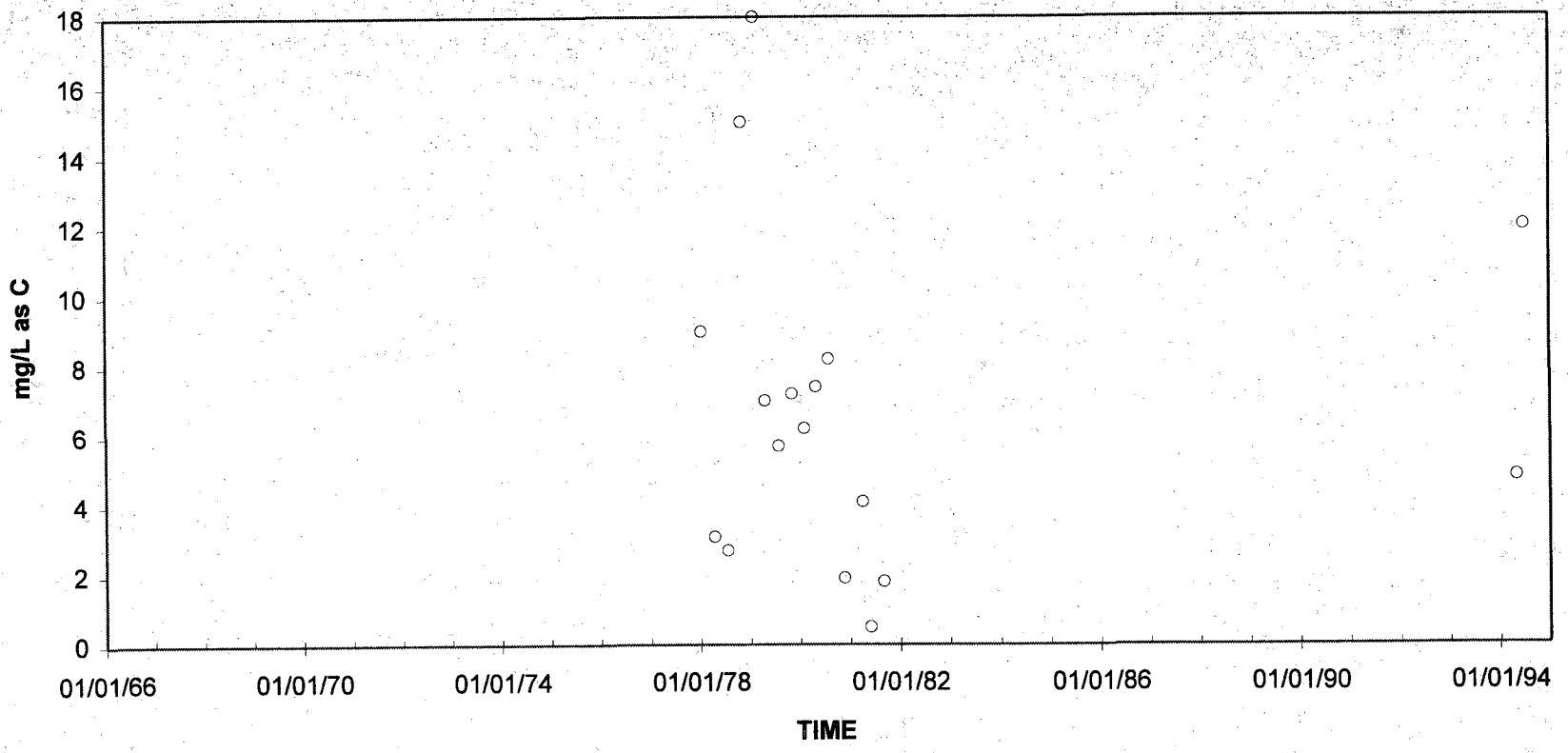
Figure
10.5.4–71



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CALCIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

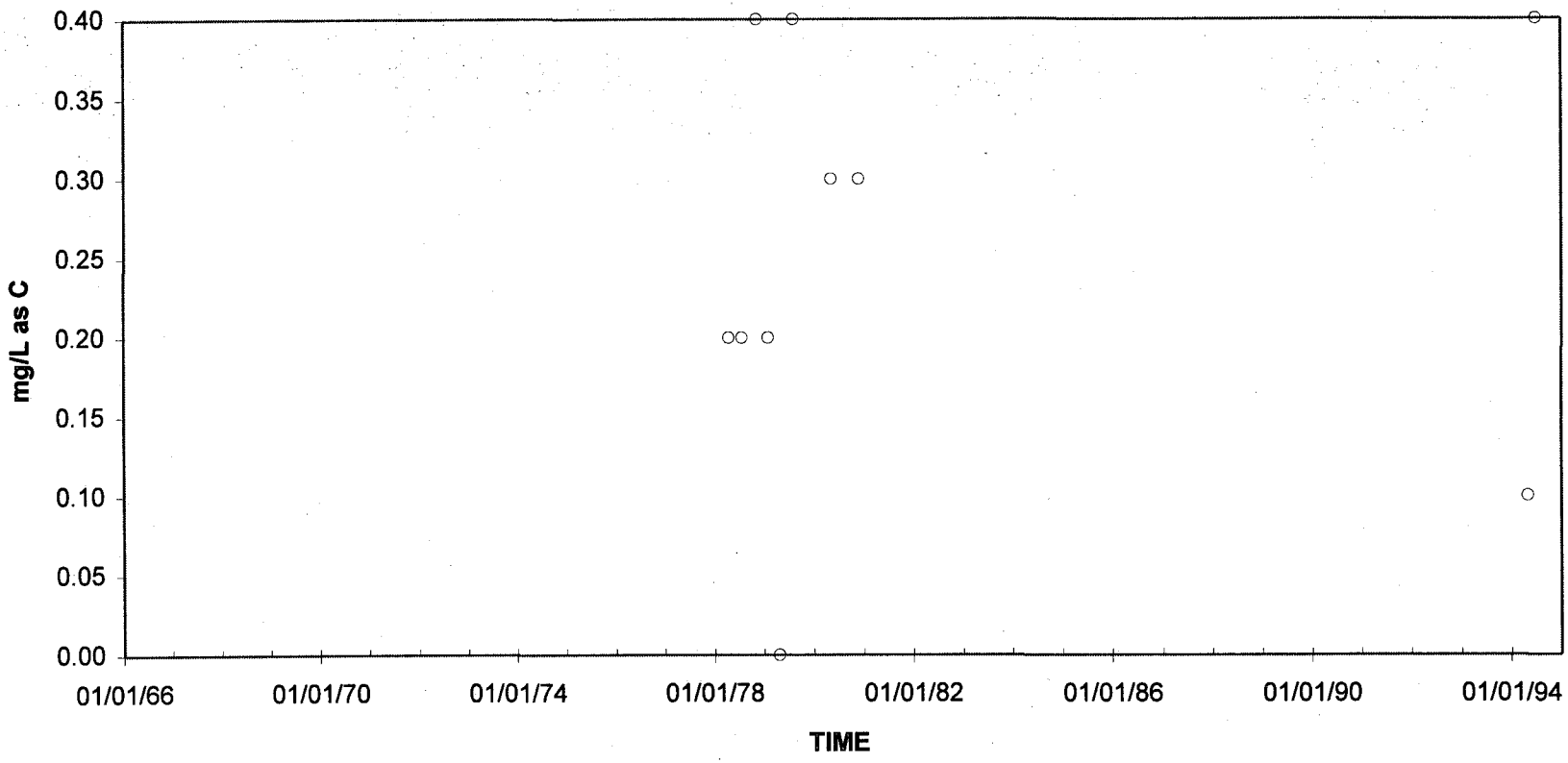
Figure
10.5.4–72



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CARBON, ORGANIC DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

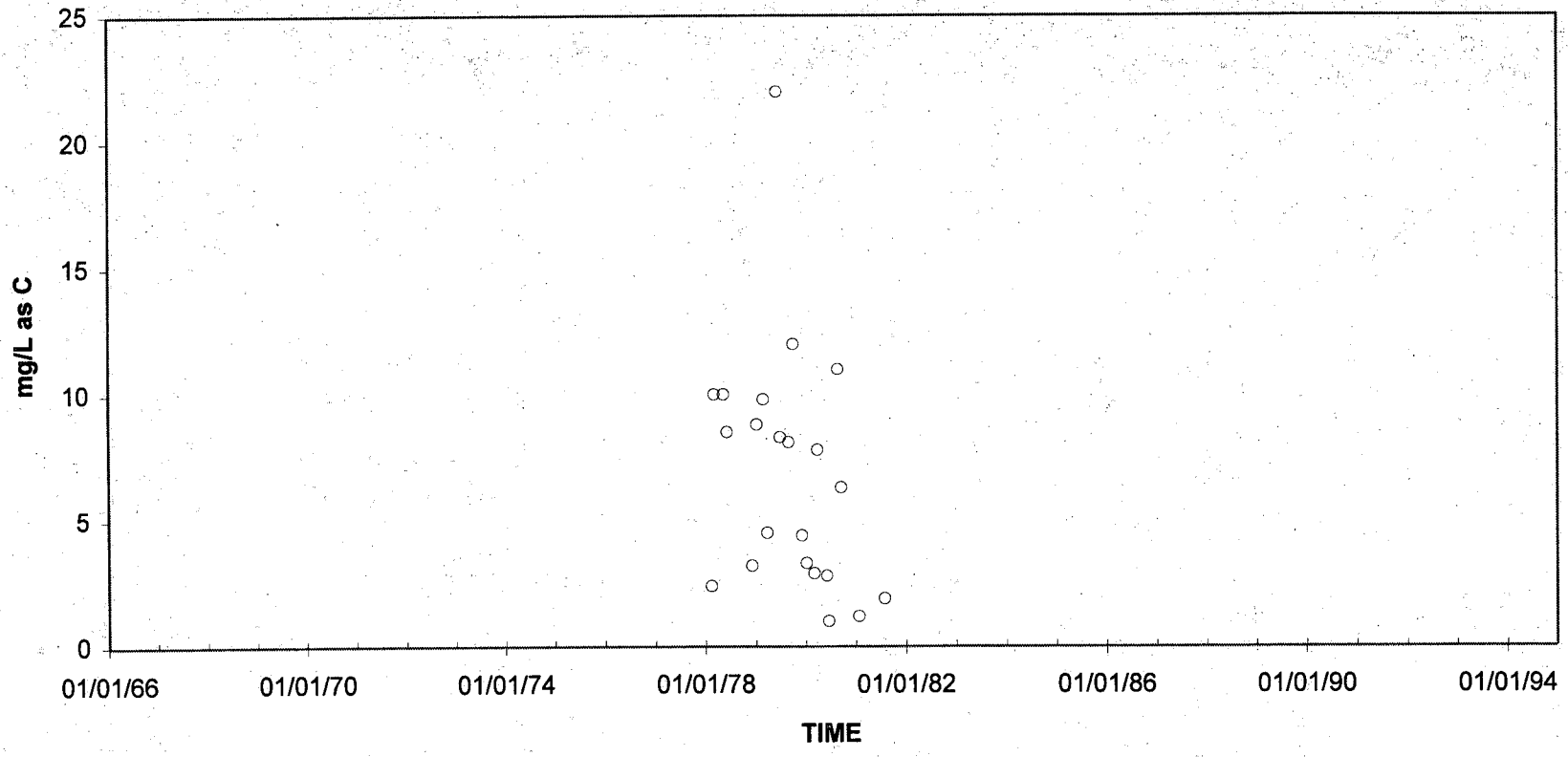
Figure
10.5.4–73



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CARBON, ORGANIC SUSPENDED TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

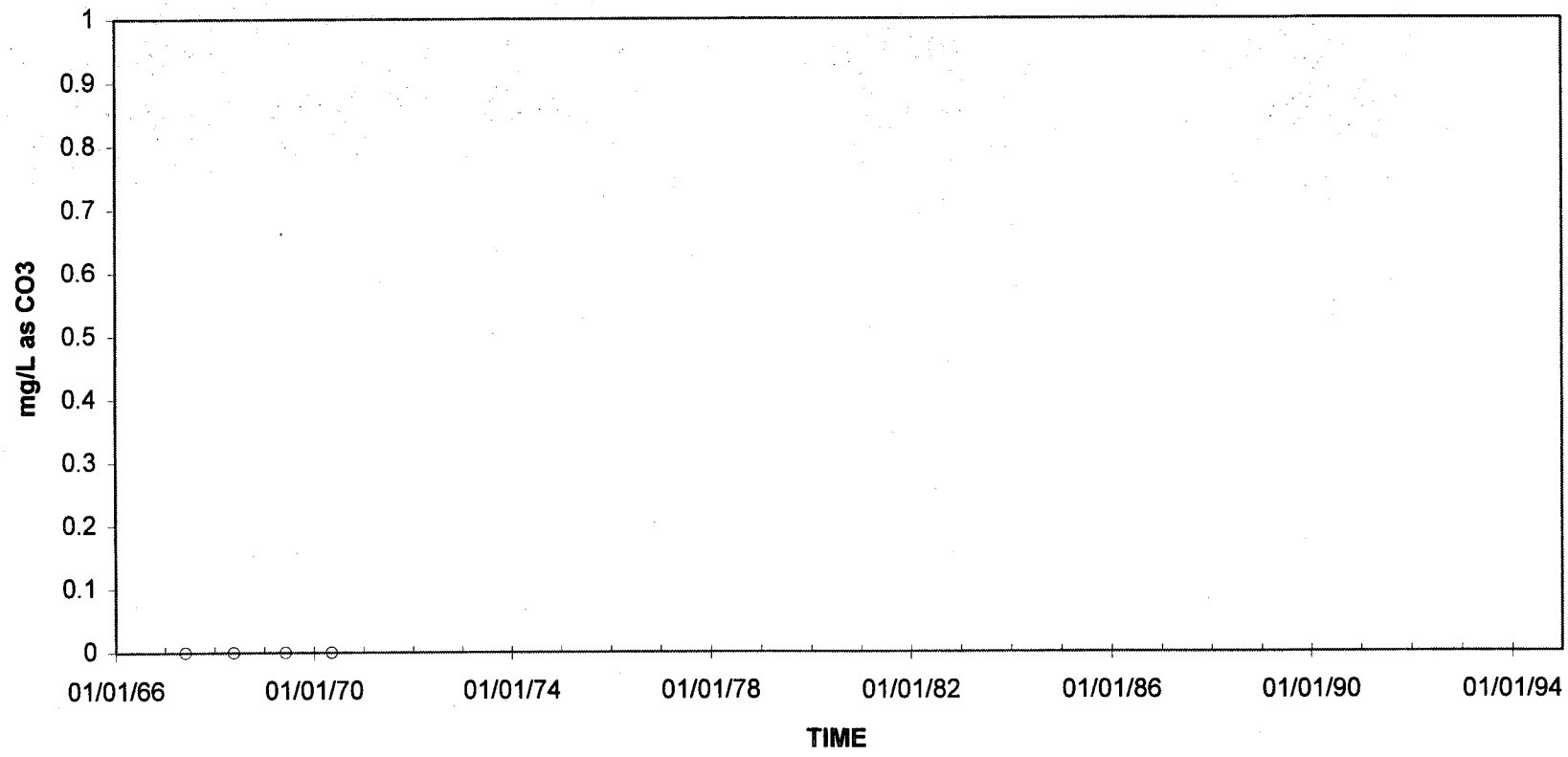
Figure
10.5.4-74



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CARBON, ORGANIC TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

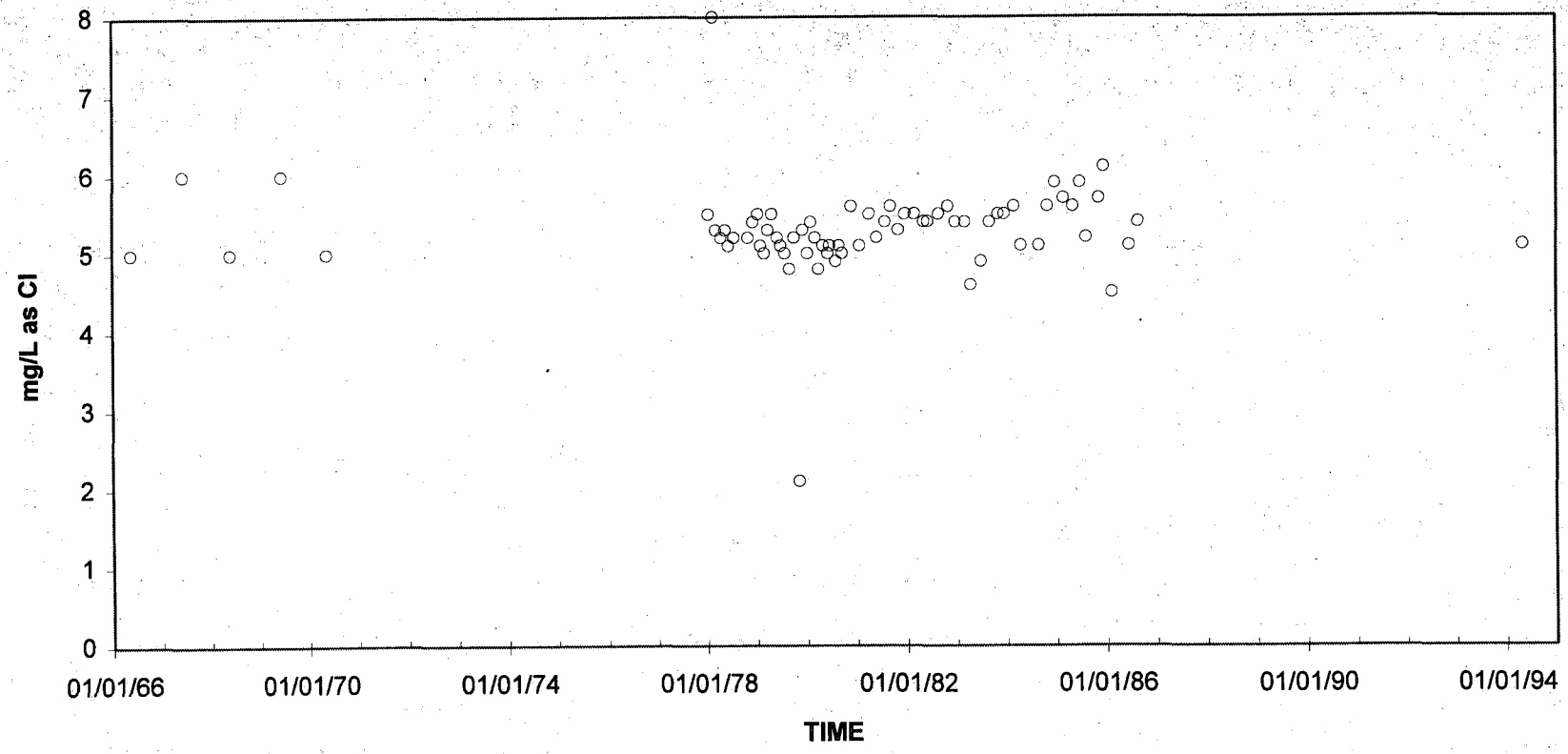
Figure
10.5.4-75



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CARBONATE, WAT WH TOT FET FIELD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

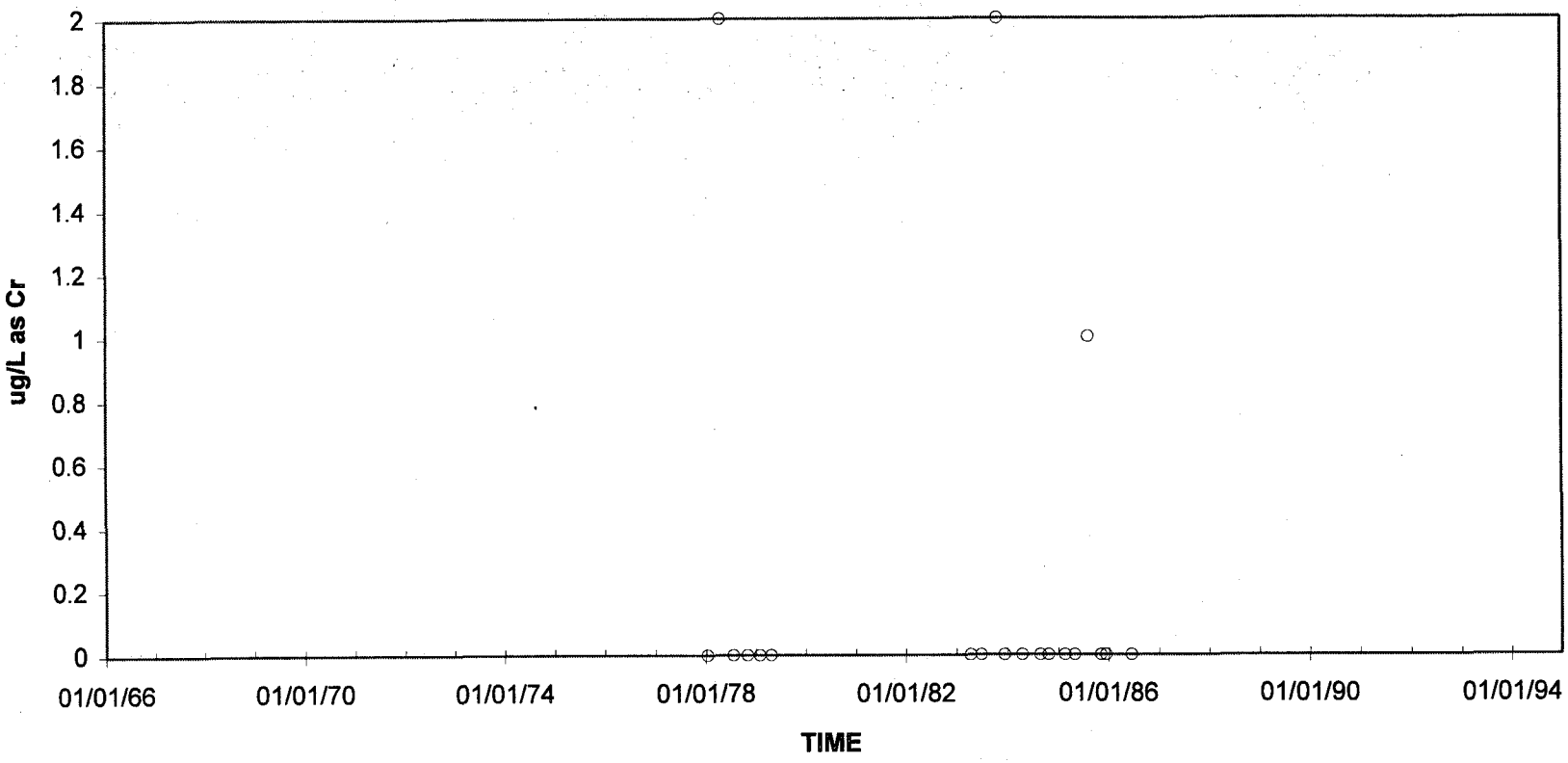
Figure
10.5.4-76



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CHLORIDE, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

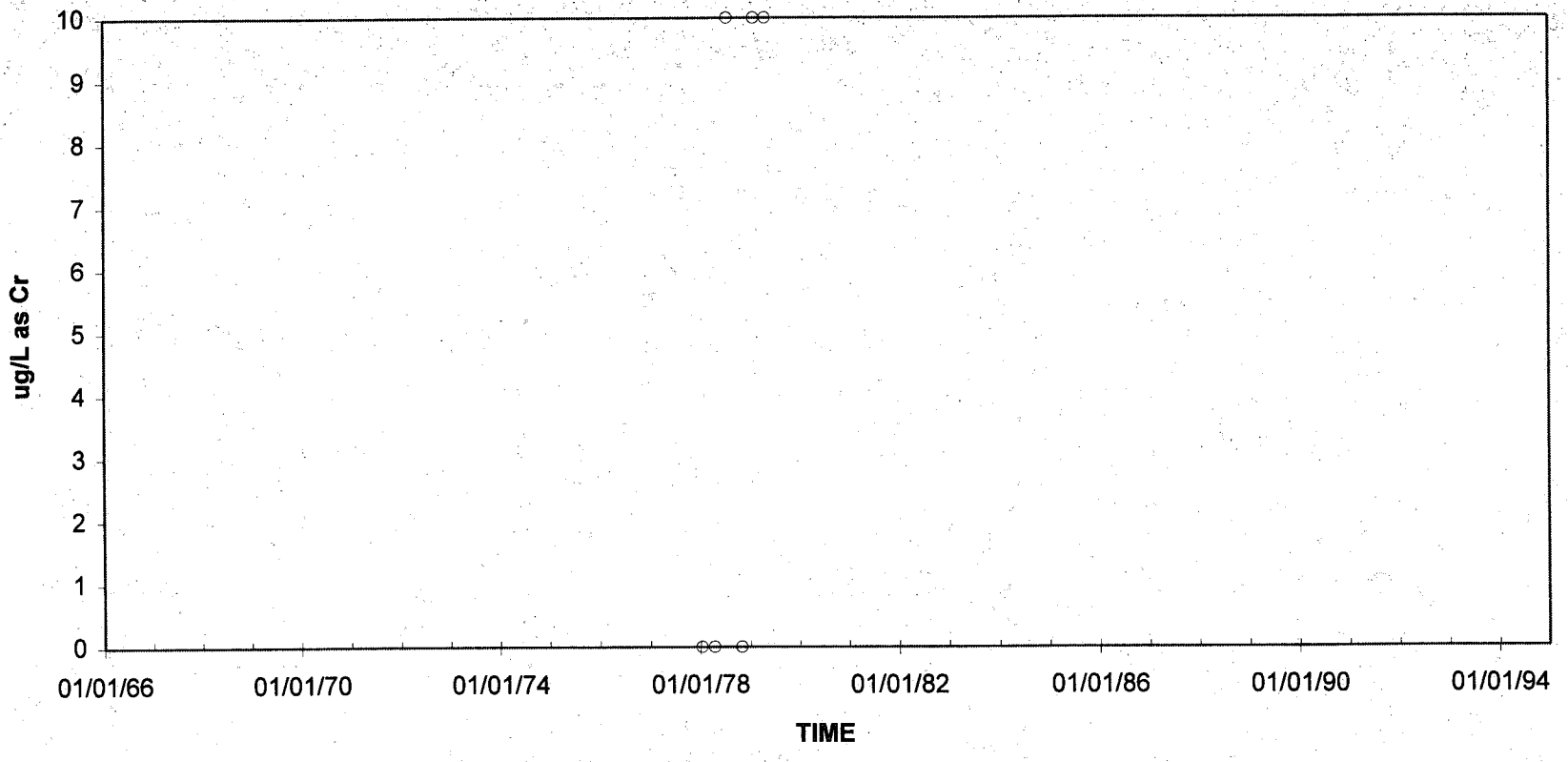
Figure
10.5.4-77



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CHROMIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

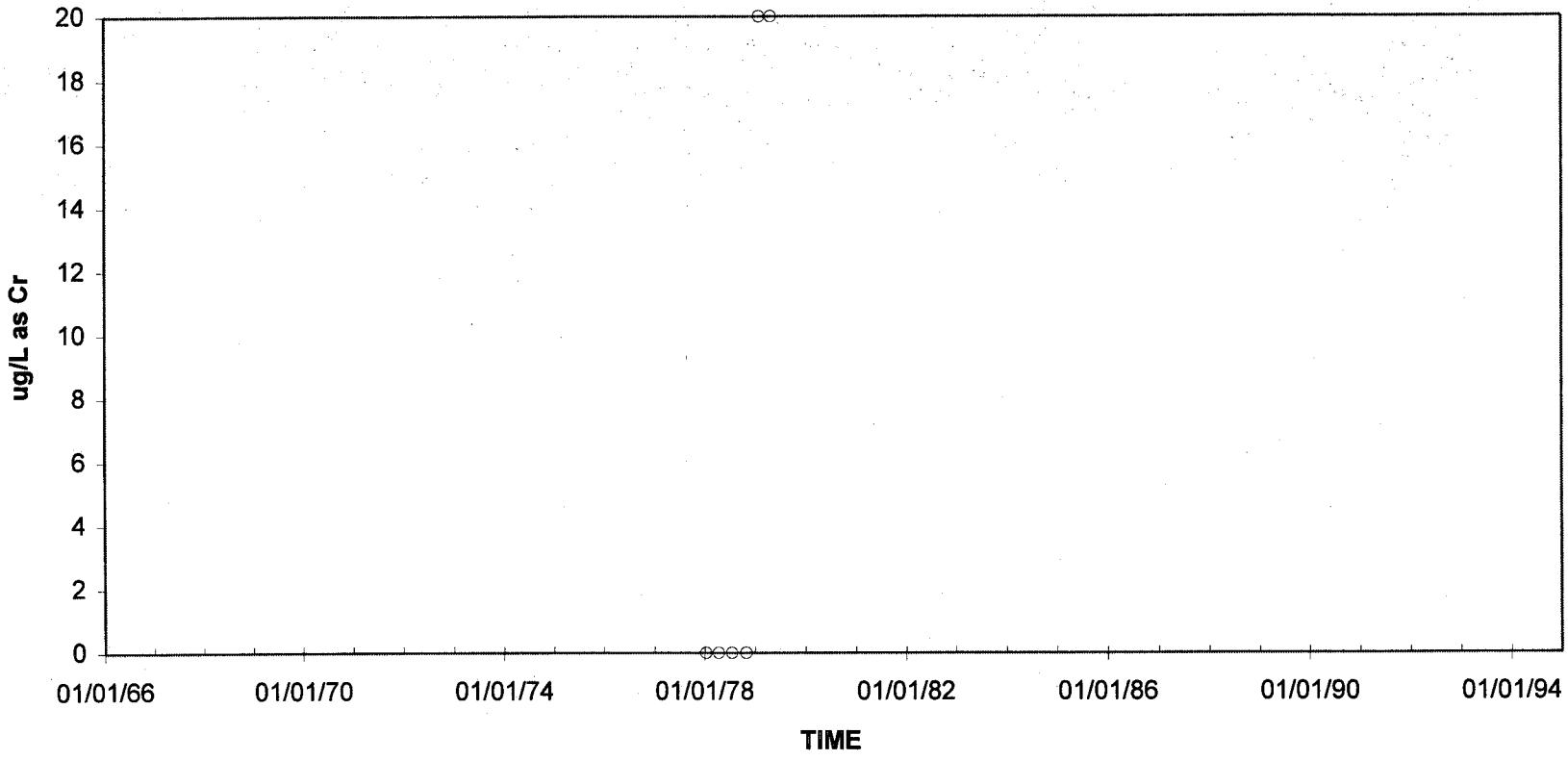
Figure
10.5.4–78



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CHROMIUM, SUSPENDED RECOV
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

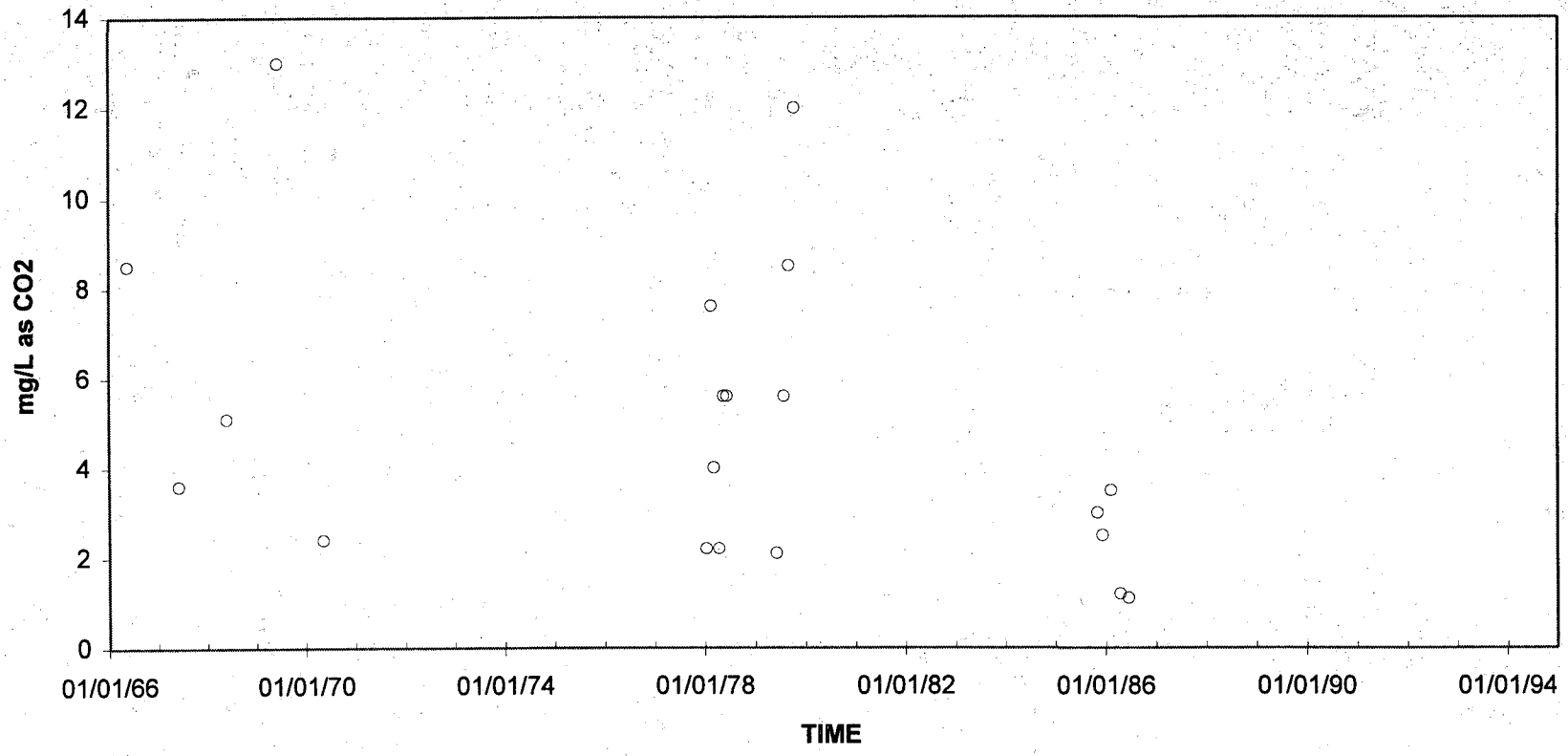
Figure
10.5.4-79



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CHROMIUM, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

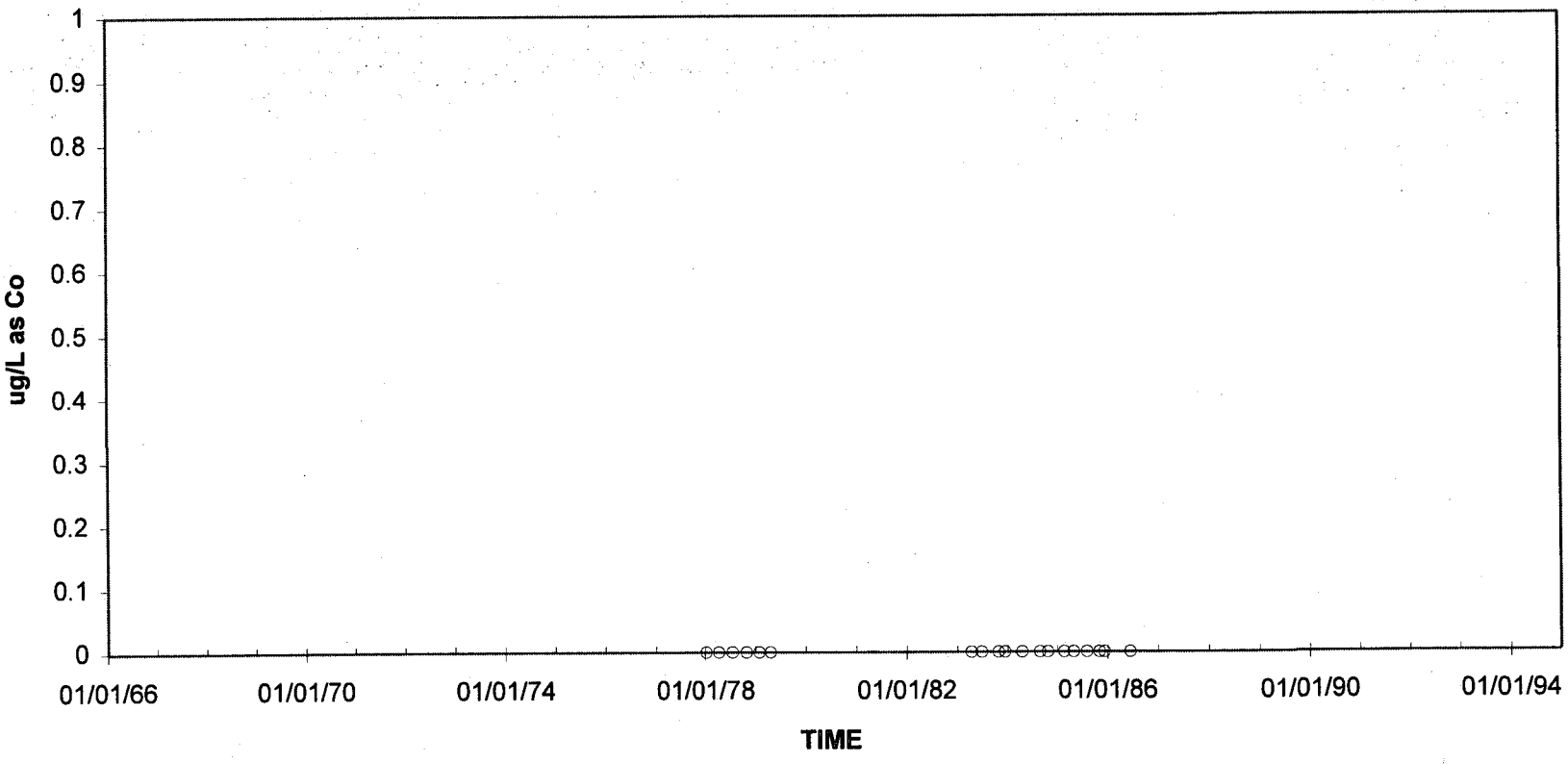
Figure
10.5.4-80



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
CO2, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

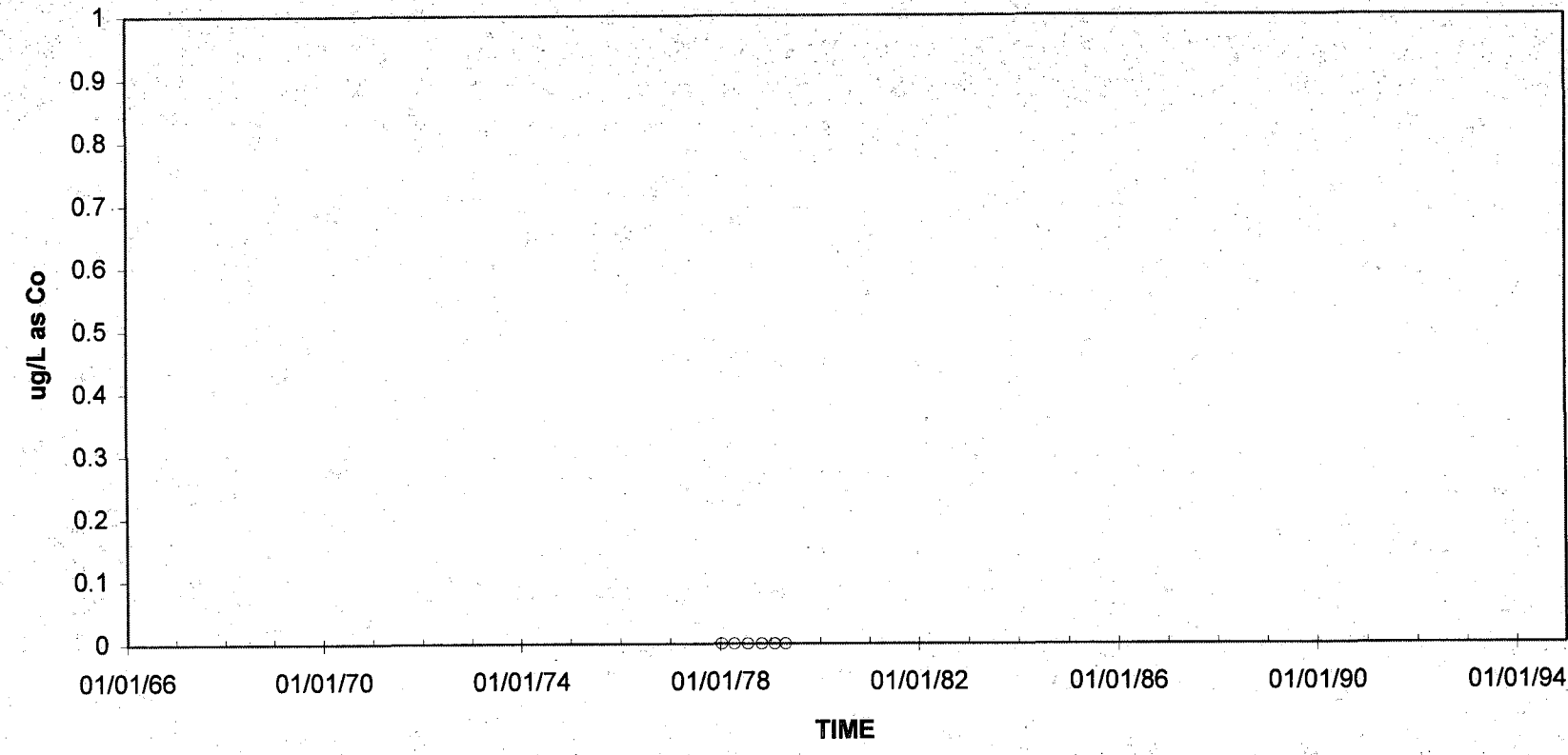
Figure
10.5.4-81



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
COBALT, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

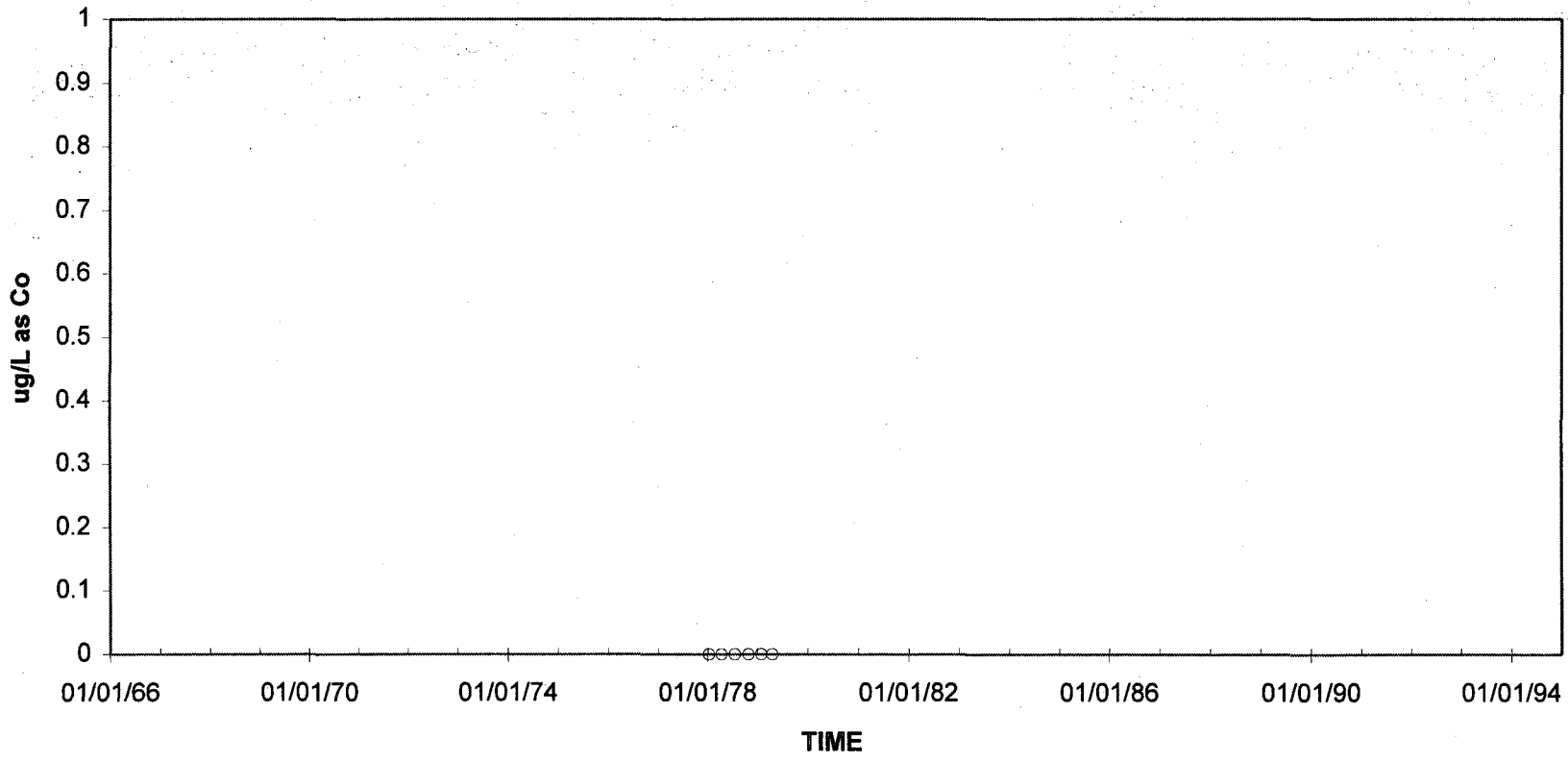
Figure
10.5.4-82



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
COBALT, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

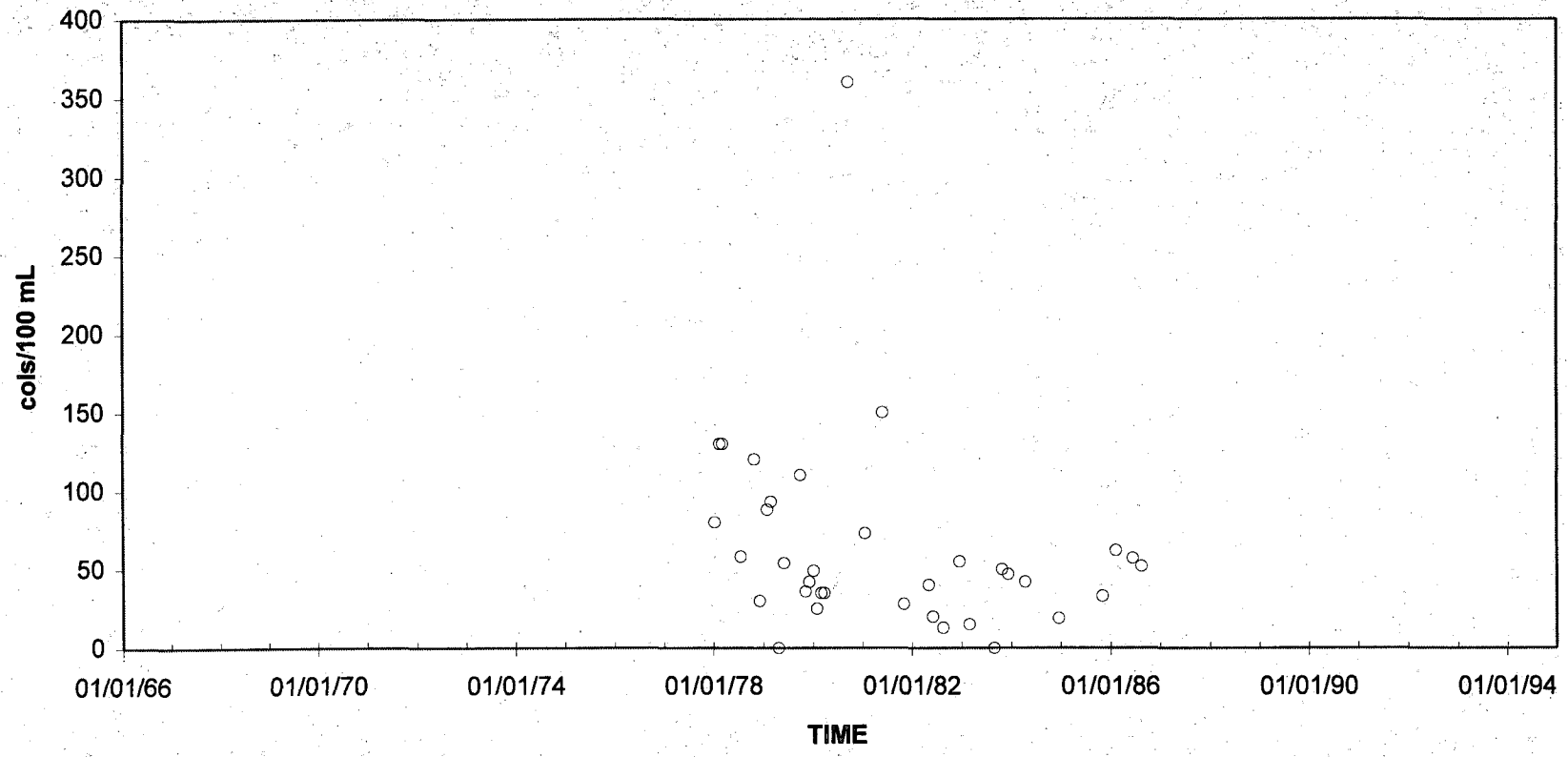
Figure
10.5.4-83



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
COBALT, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

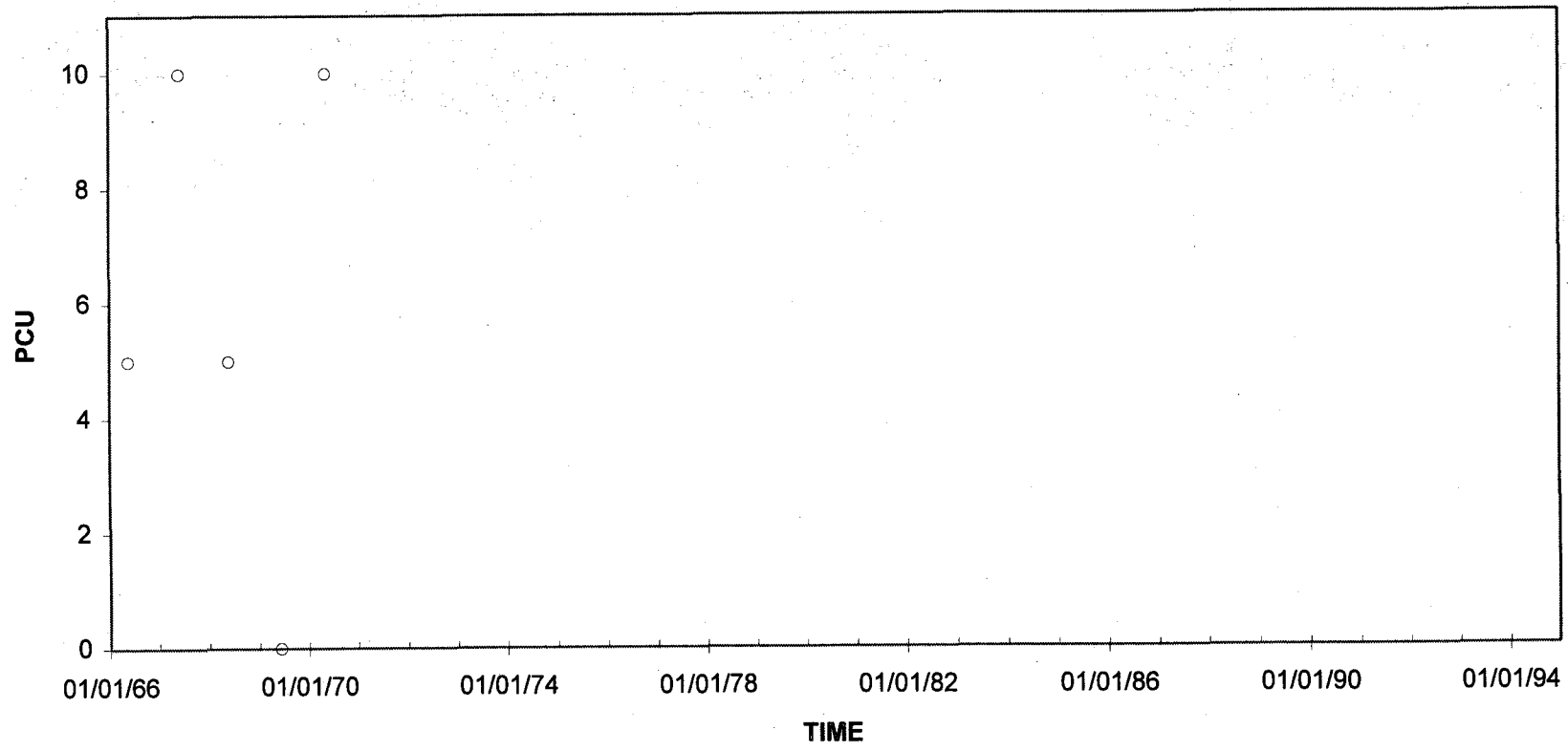
Figure
10.5.4-84



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
COLIFORM, FECAL 0.7 UM-MF
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

Figure
10.5.4-85

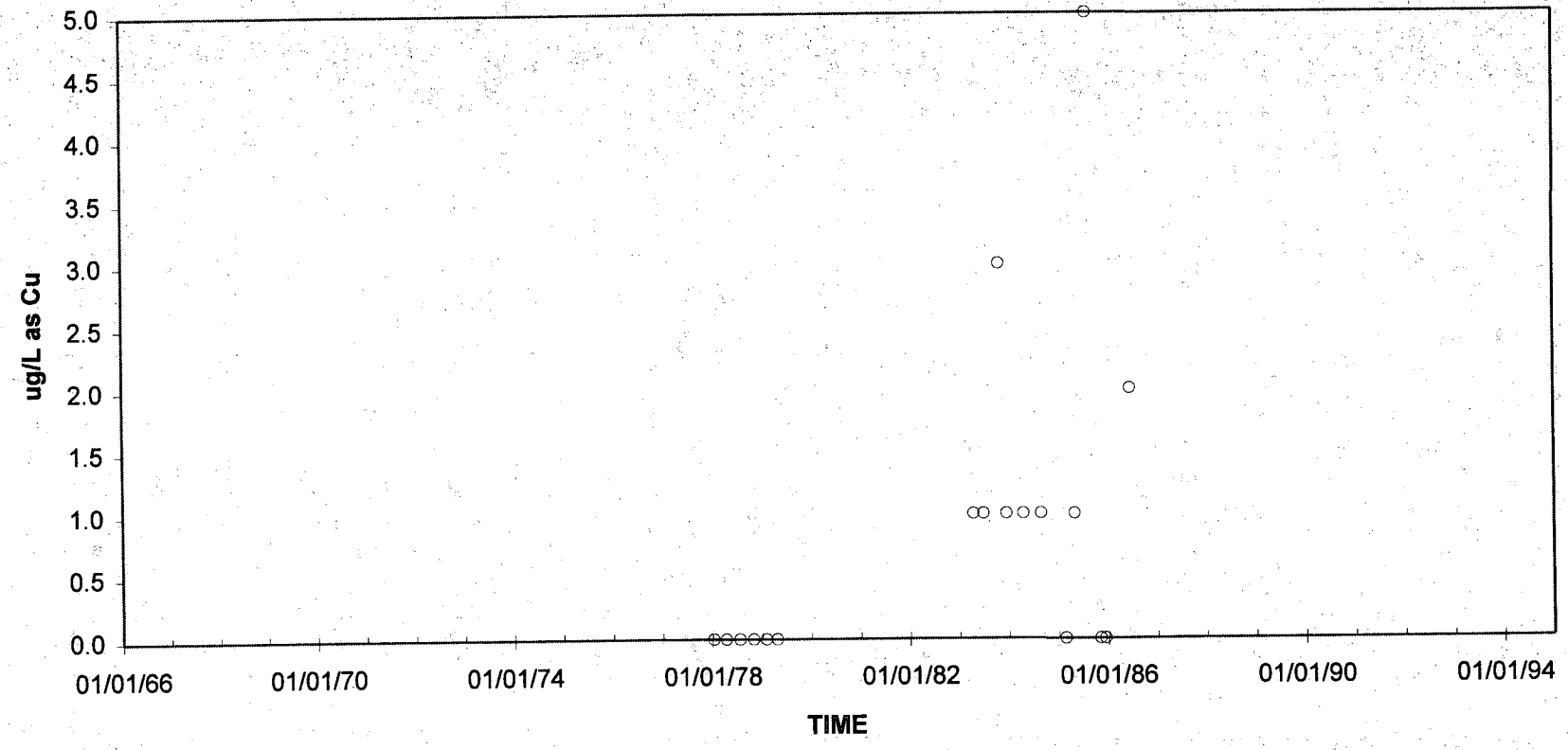


CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
COLOR

PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

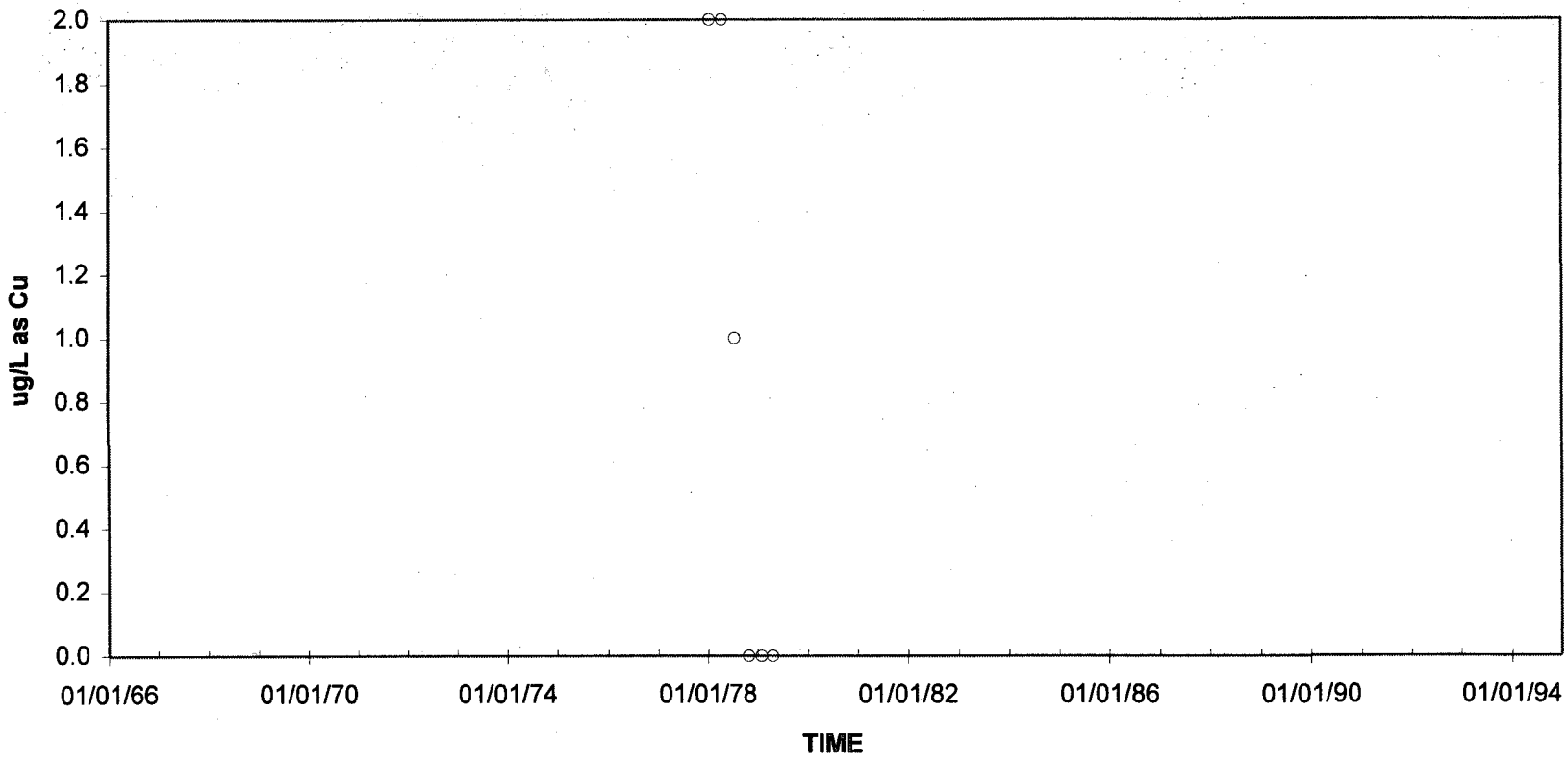
Figure
10.5.4–86



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
COPPER, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

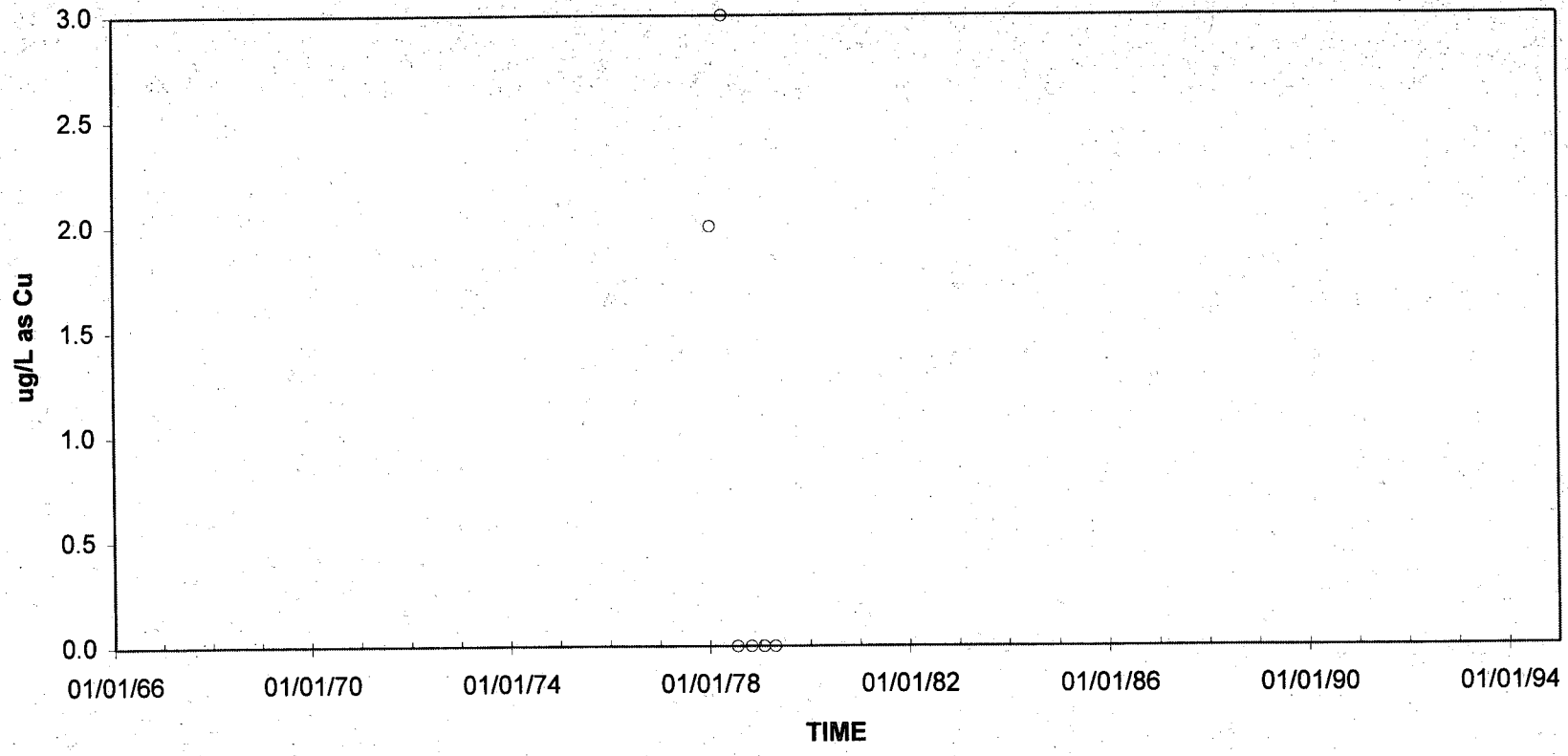
Figure
10.5.4–87



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
COPPER, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

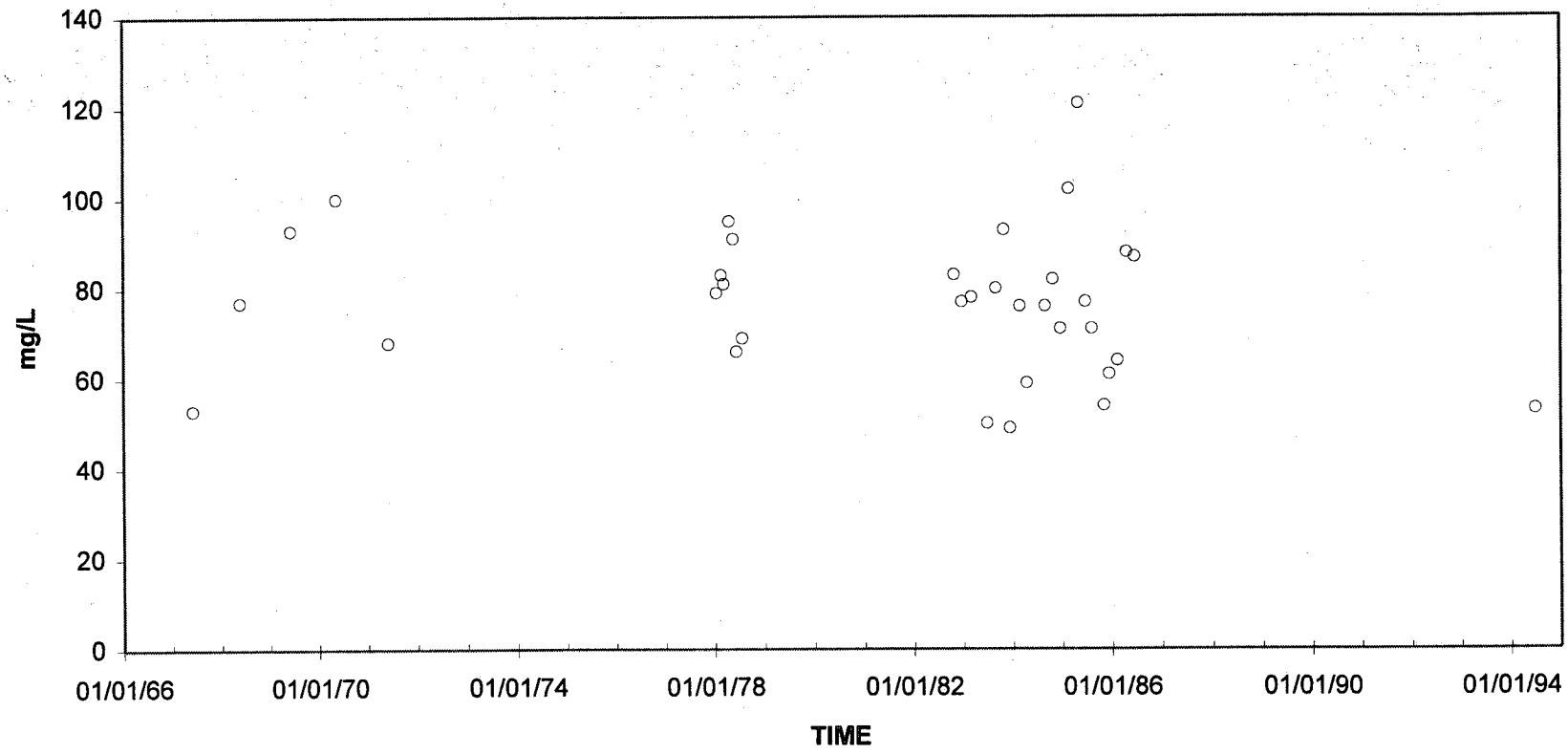
Figure
10.5.4–88



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
COPPER, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

Figure
10.5.4-89

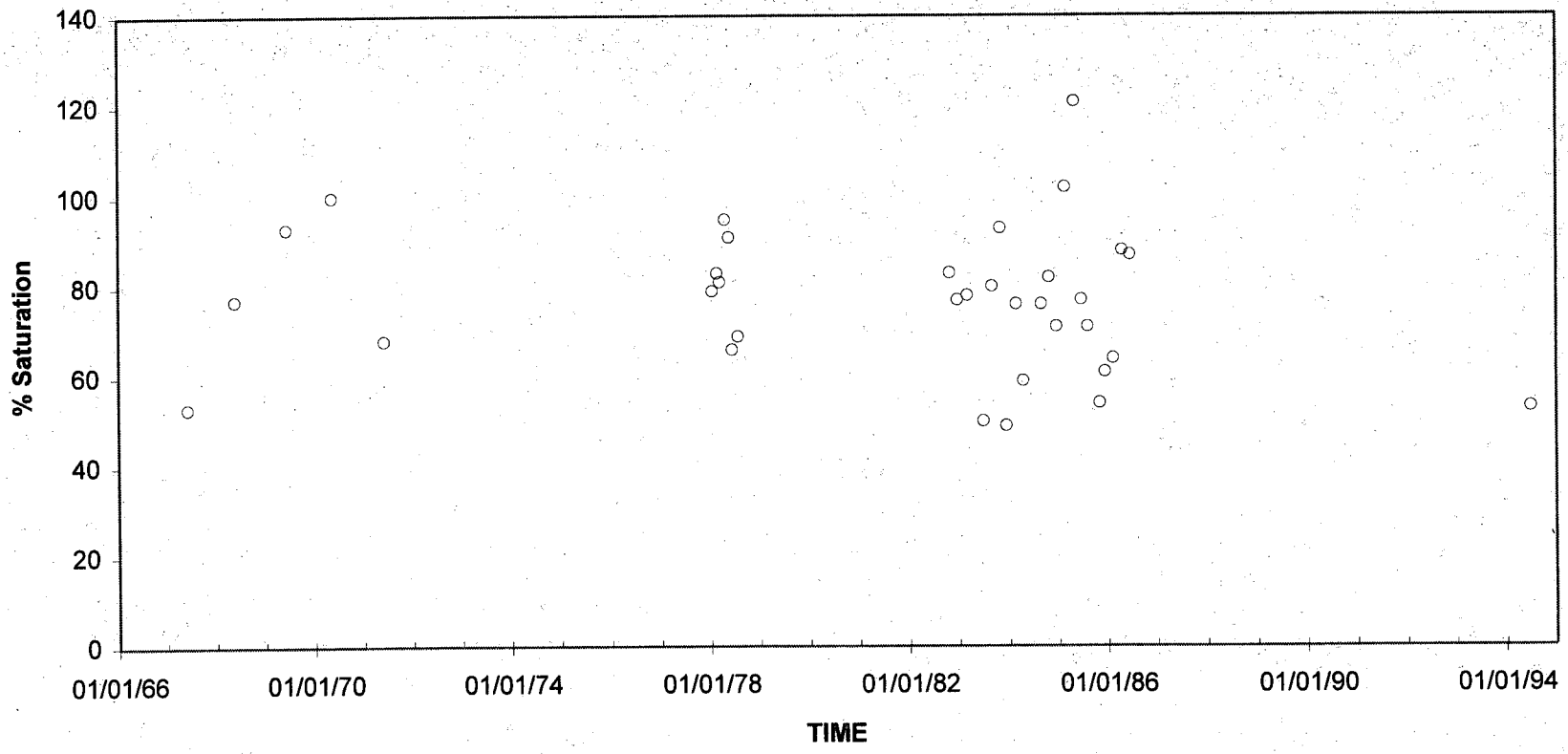


CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
DISSOLVED OXYGEN

PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

Figure
10.5.4-90

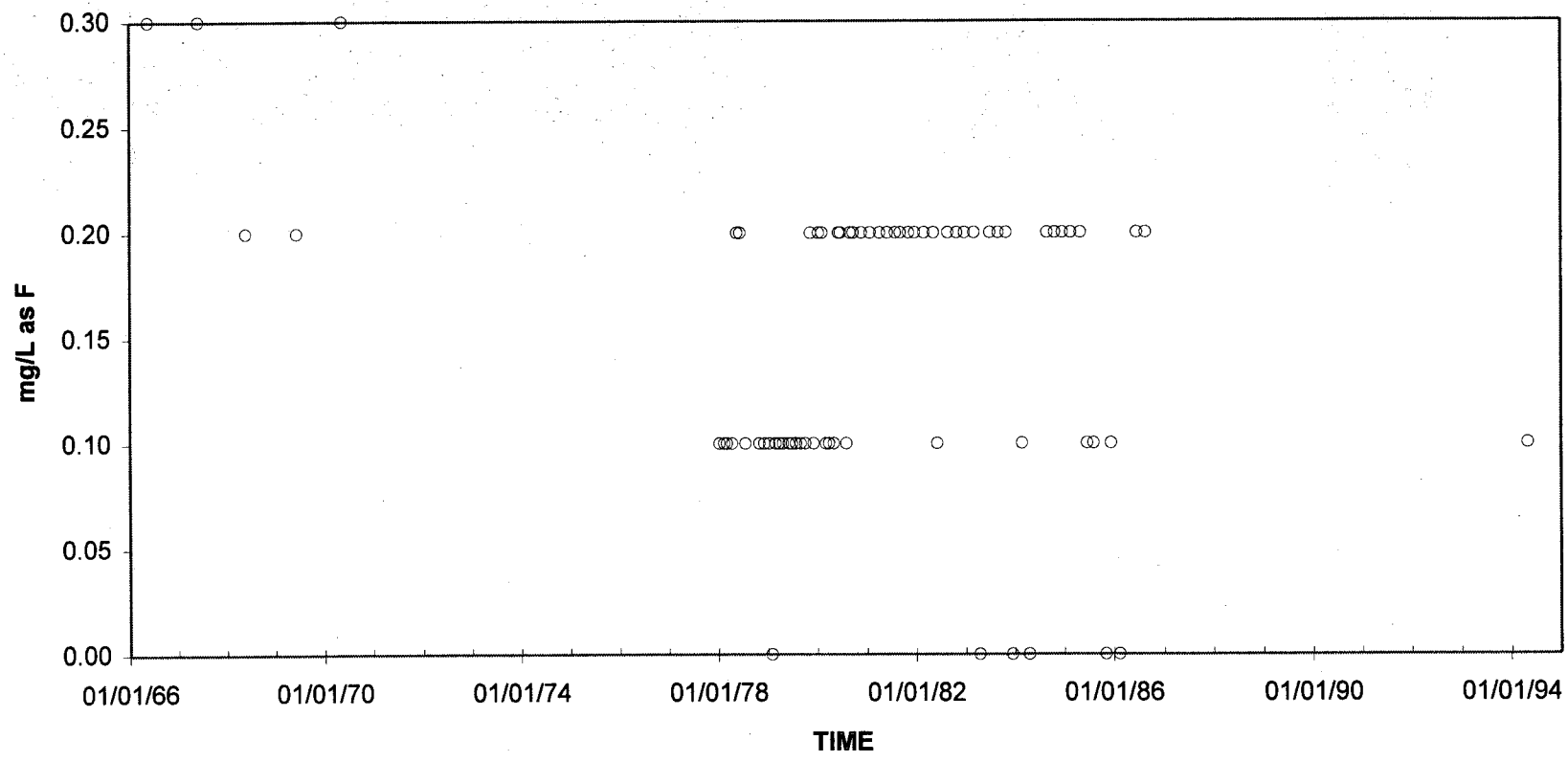


CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
DISSOLVED OXYGEN

PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

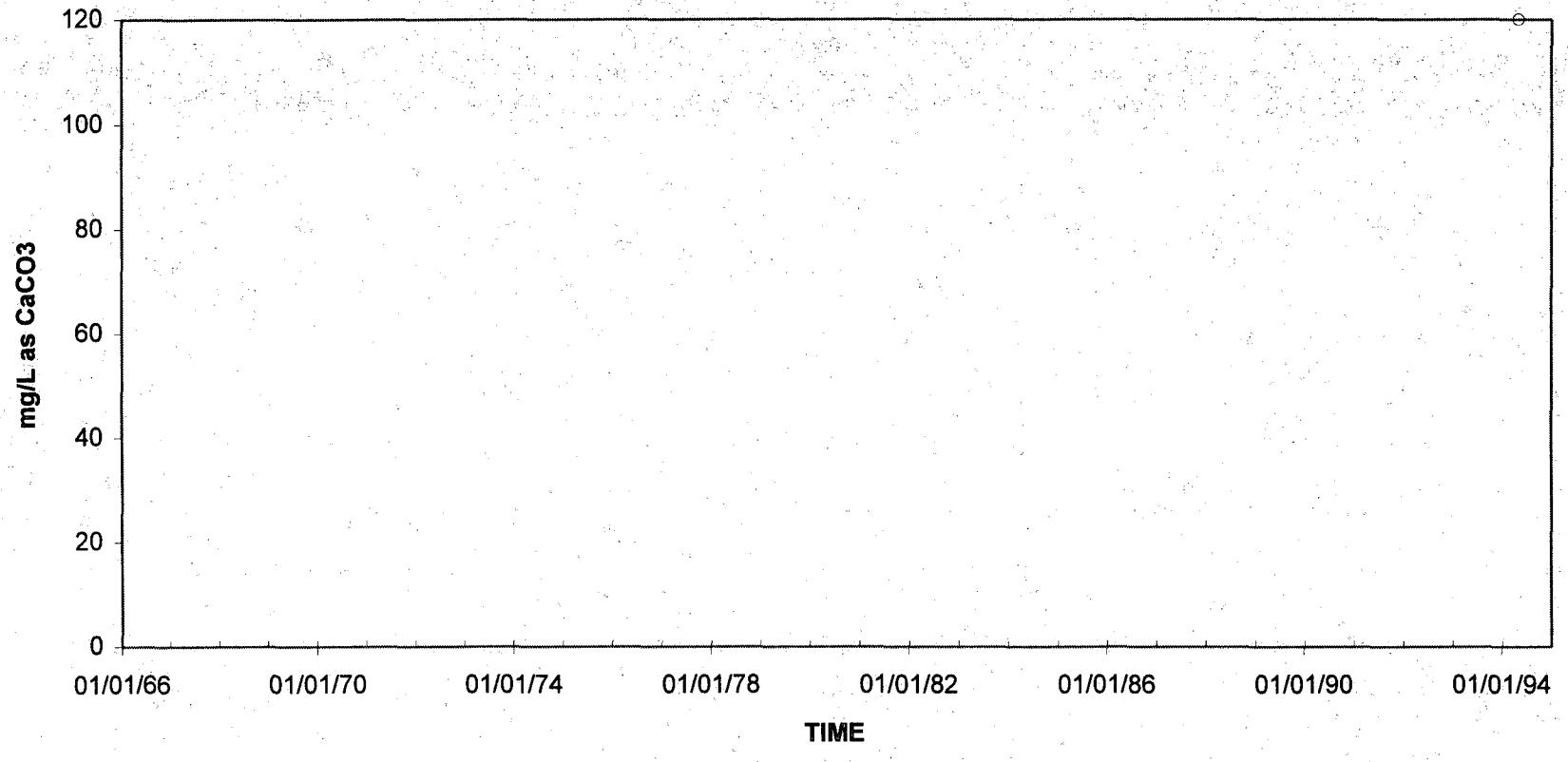
Figure
10.5.4-91



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
FLUORIDE, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

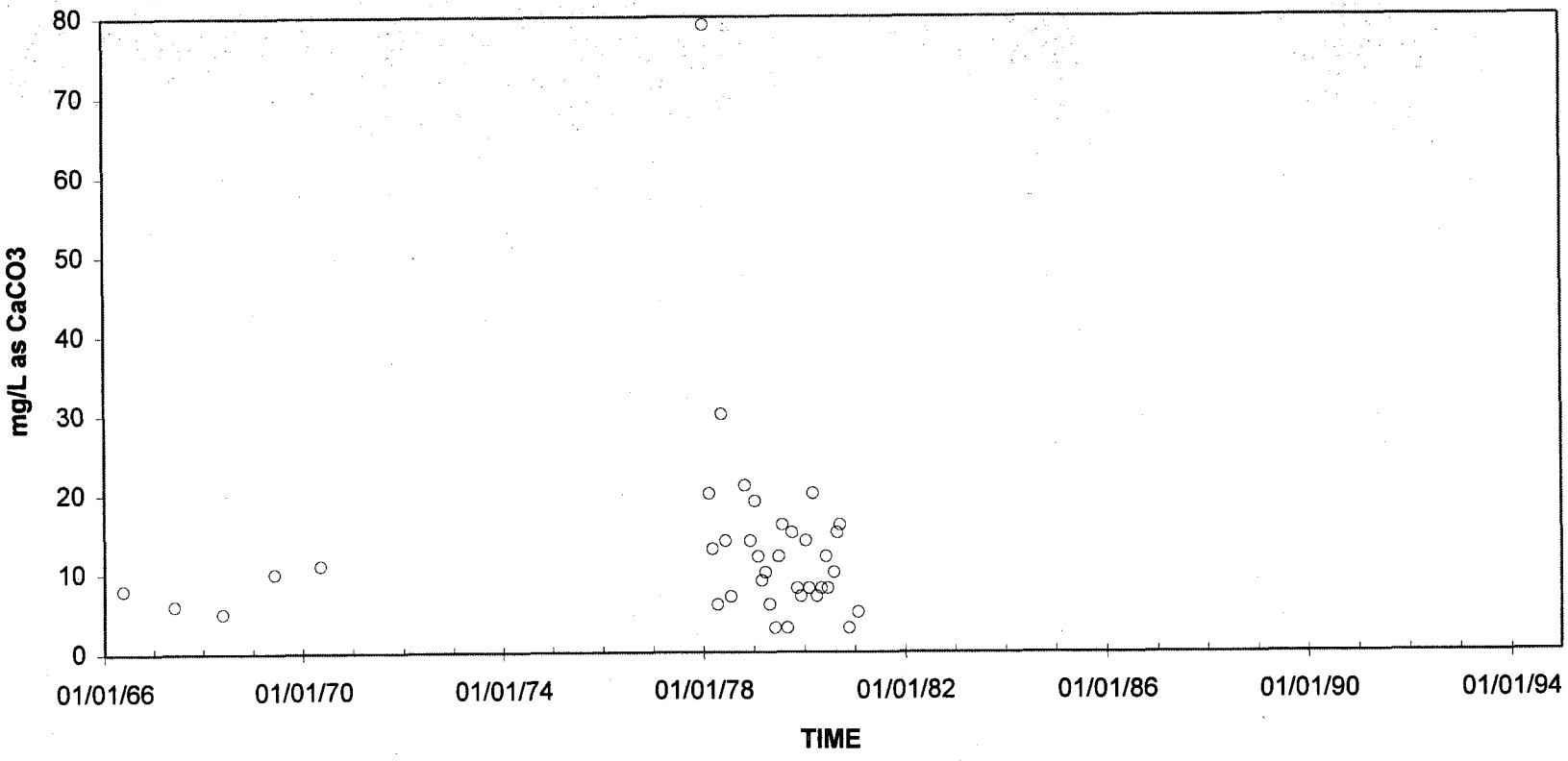
Figure
10.5.4-92



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
HARDNESS, NONCARB DISSOLV FLD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

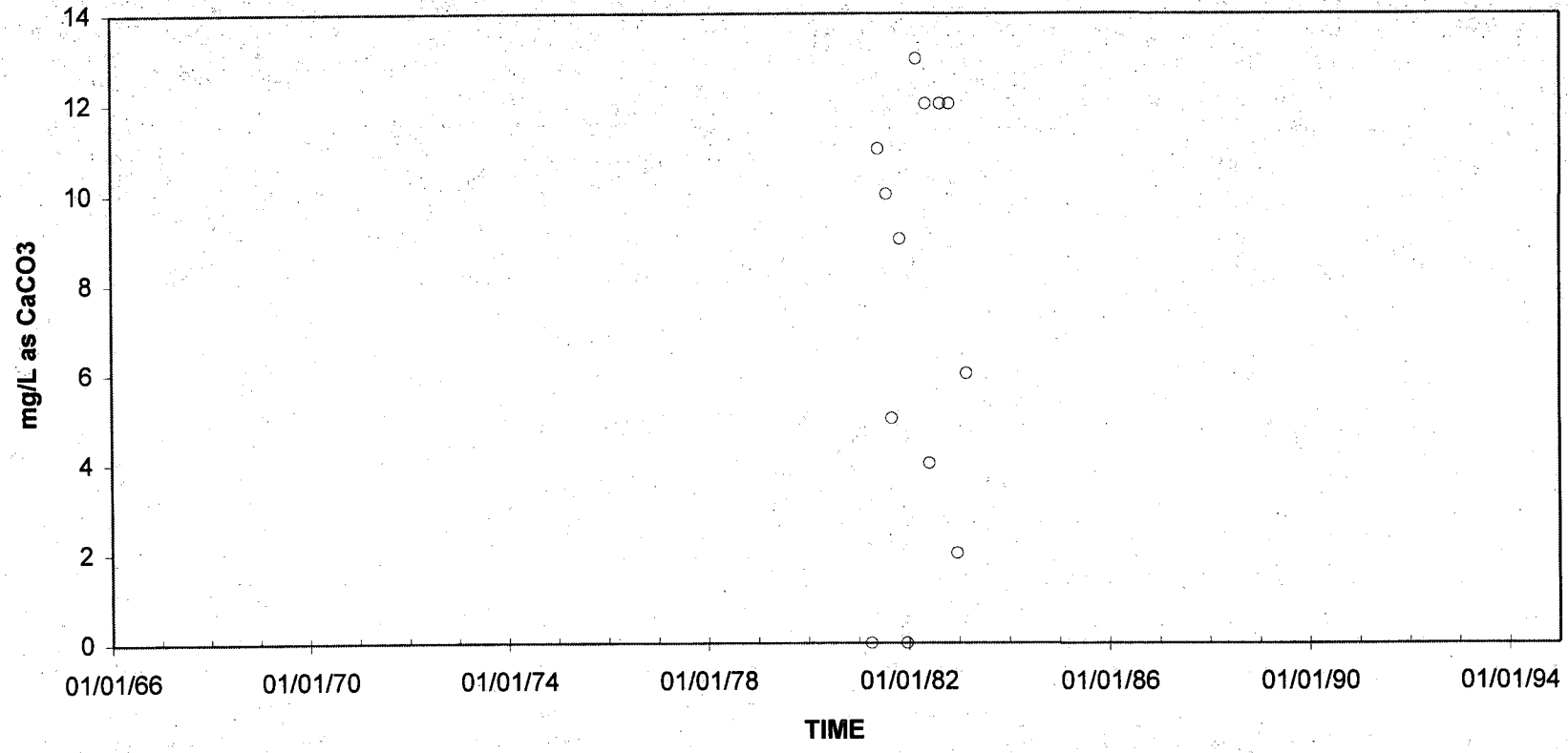
Figure
10.5.4–93



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
HARDNESS, NONCARB WH WAT TOT FLD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

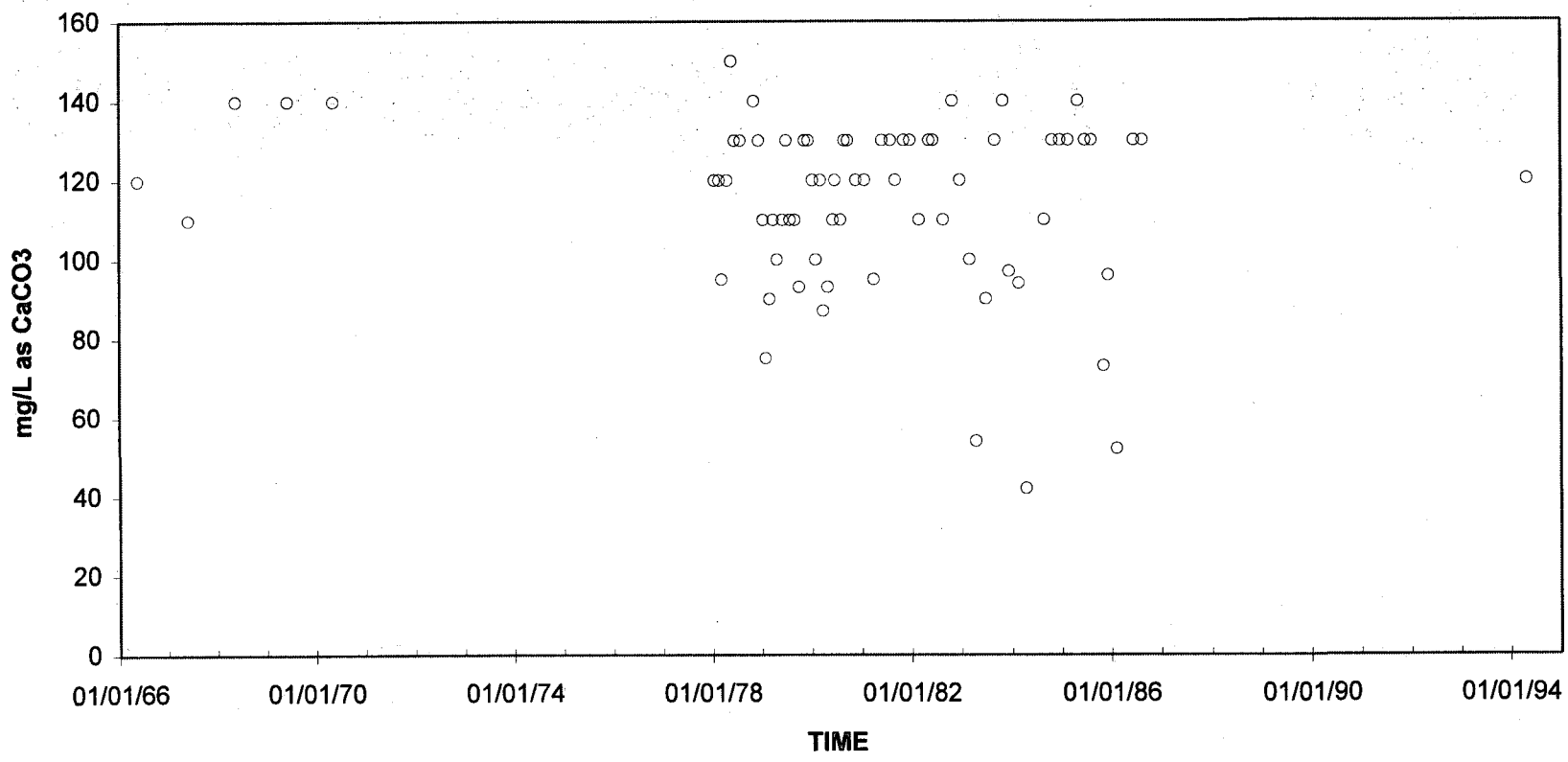
Figure
10.5.4–94



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
HARDNESS, NONCARB WH WAT TOT LAB
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

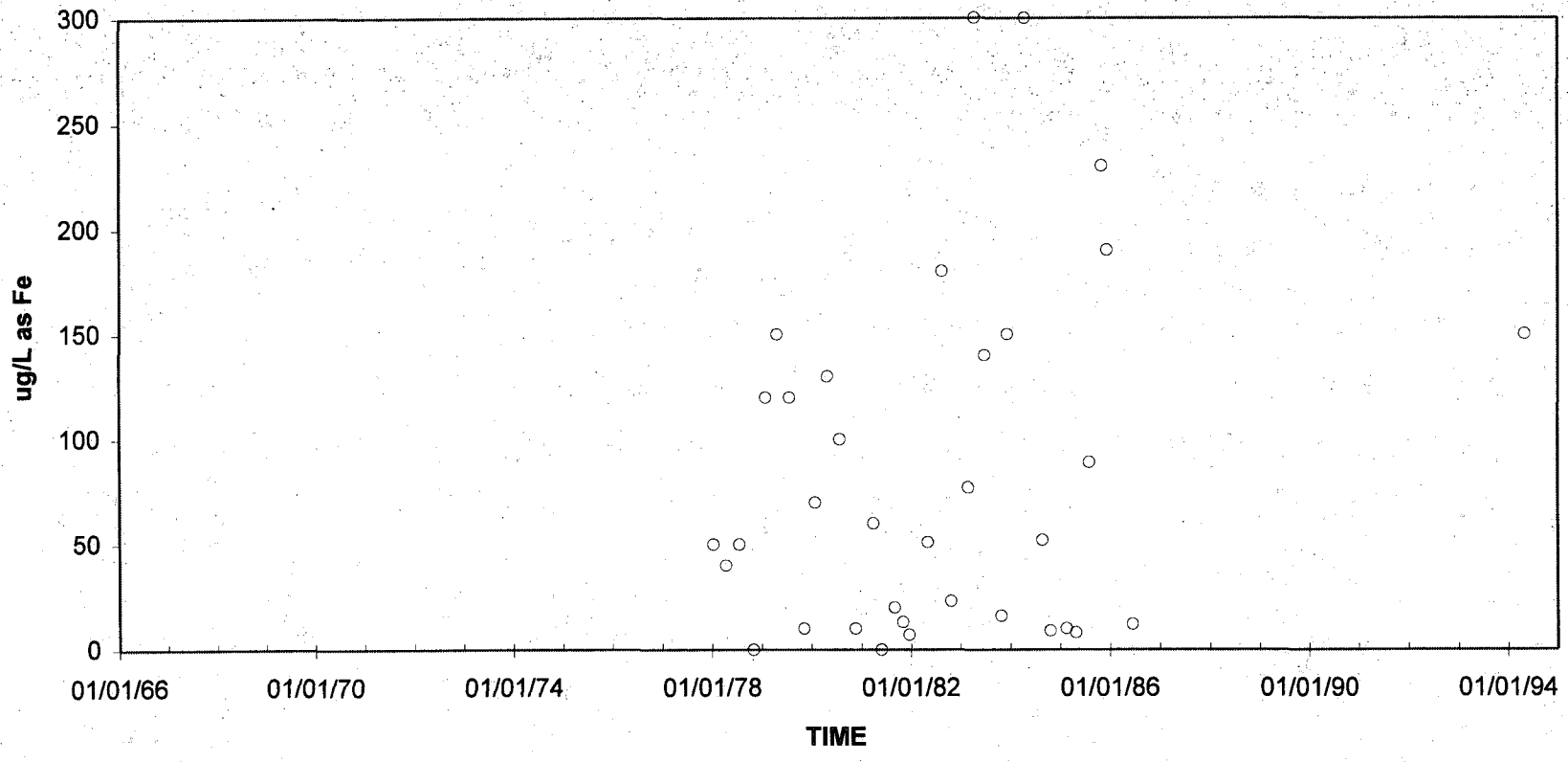
Figure
10.5.4-95



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
HARDNESS, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

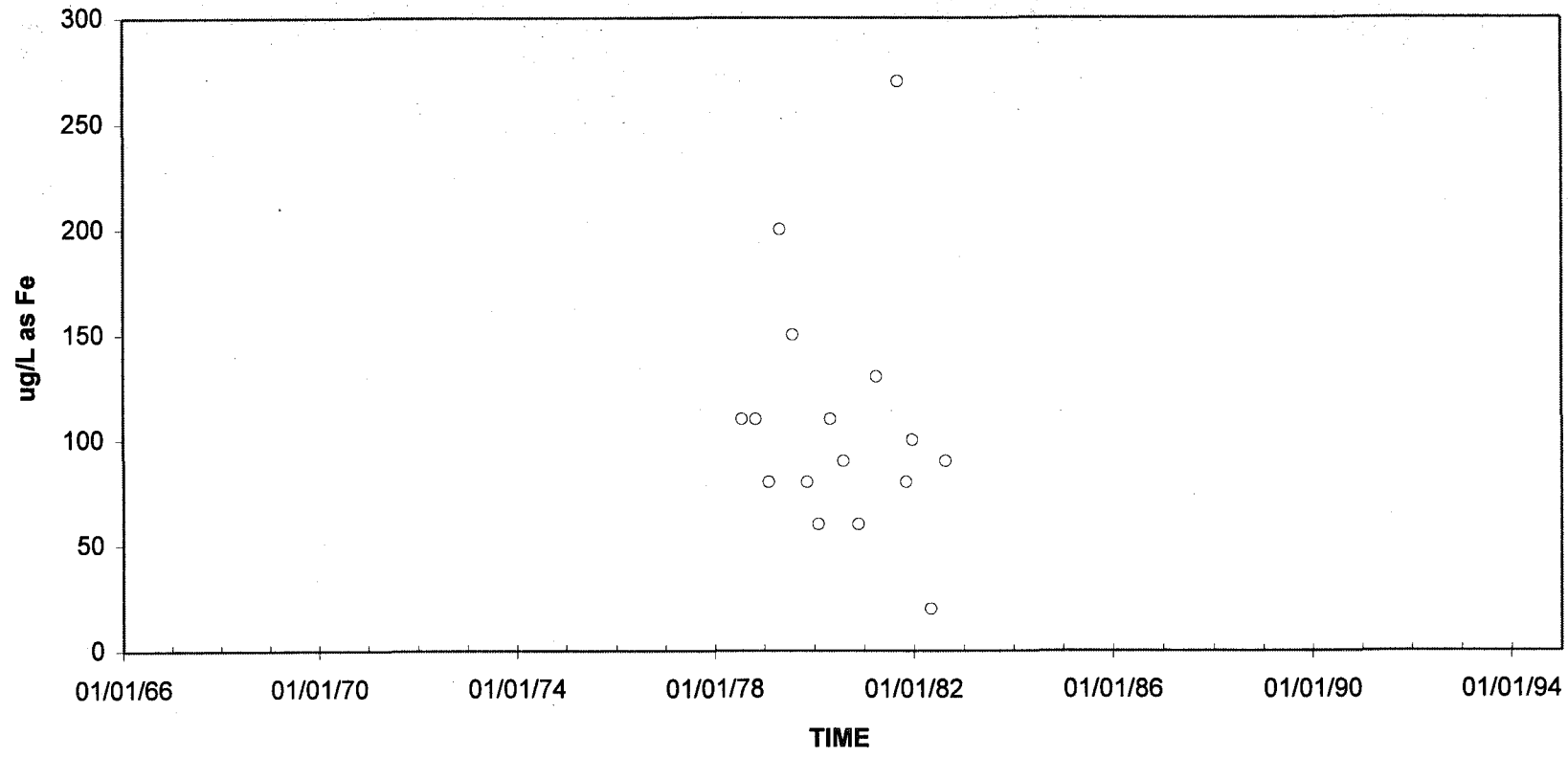
Figure
10.5.4–96



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
IRON, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

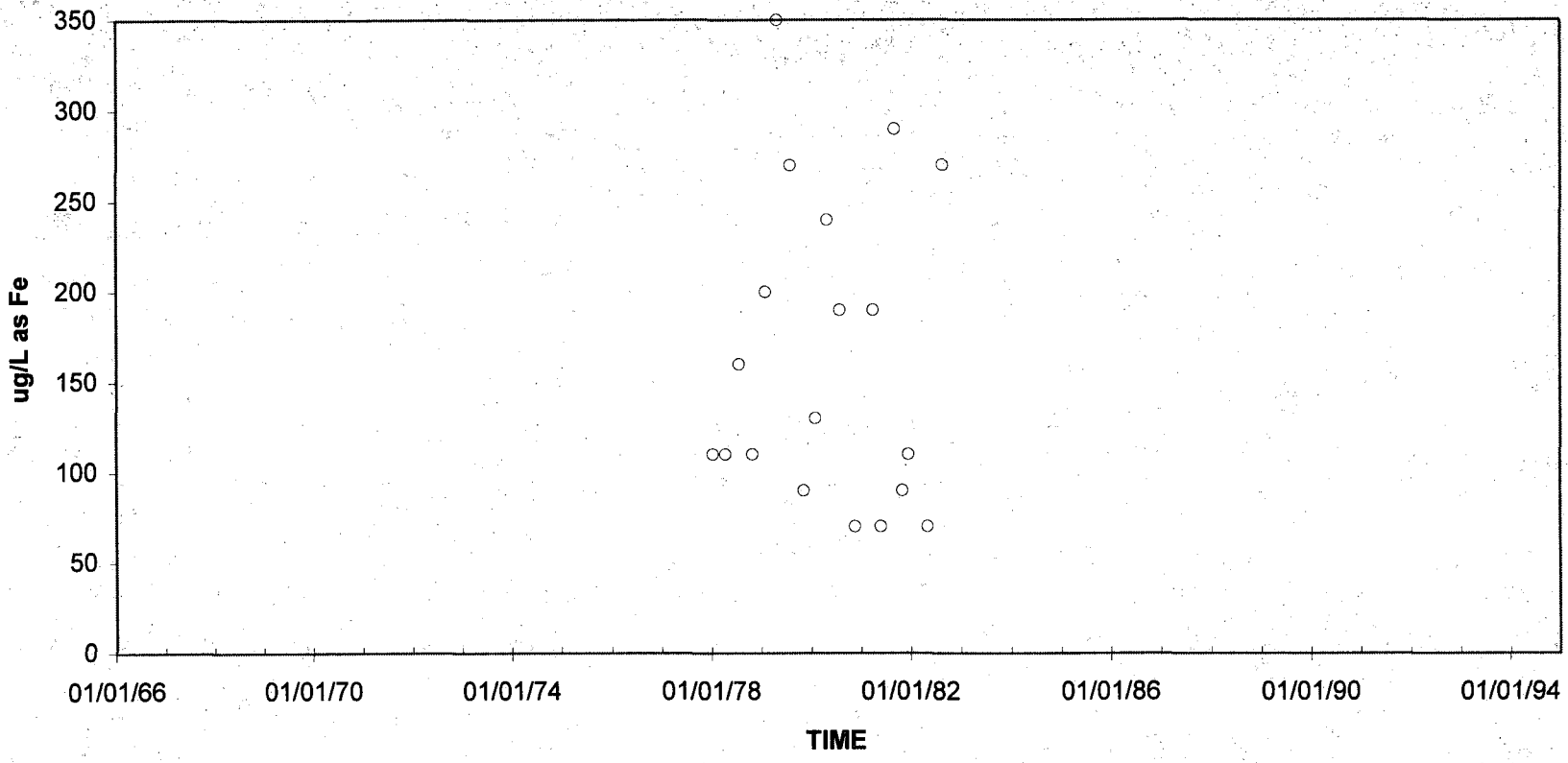
Figure
10.5.4-97



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
IRON, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

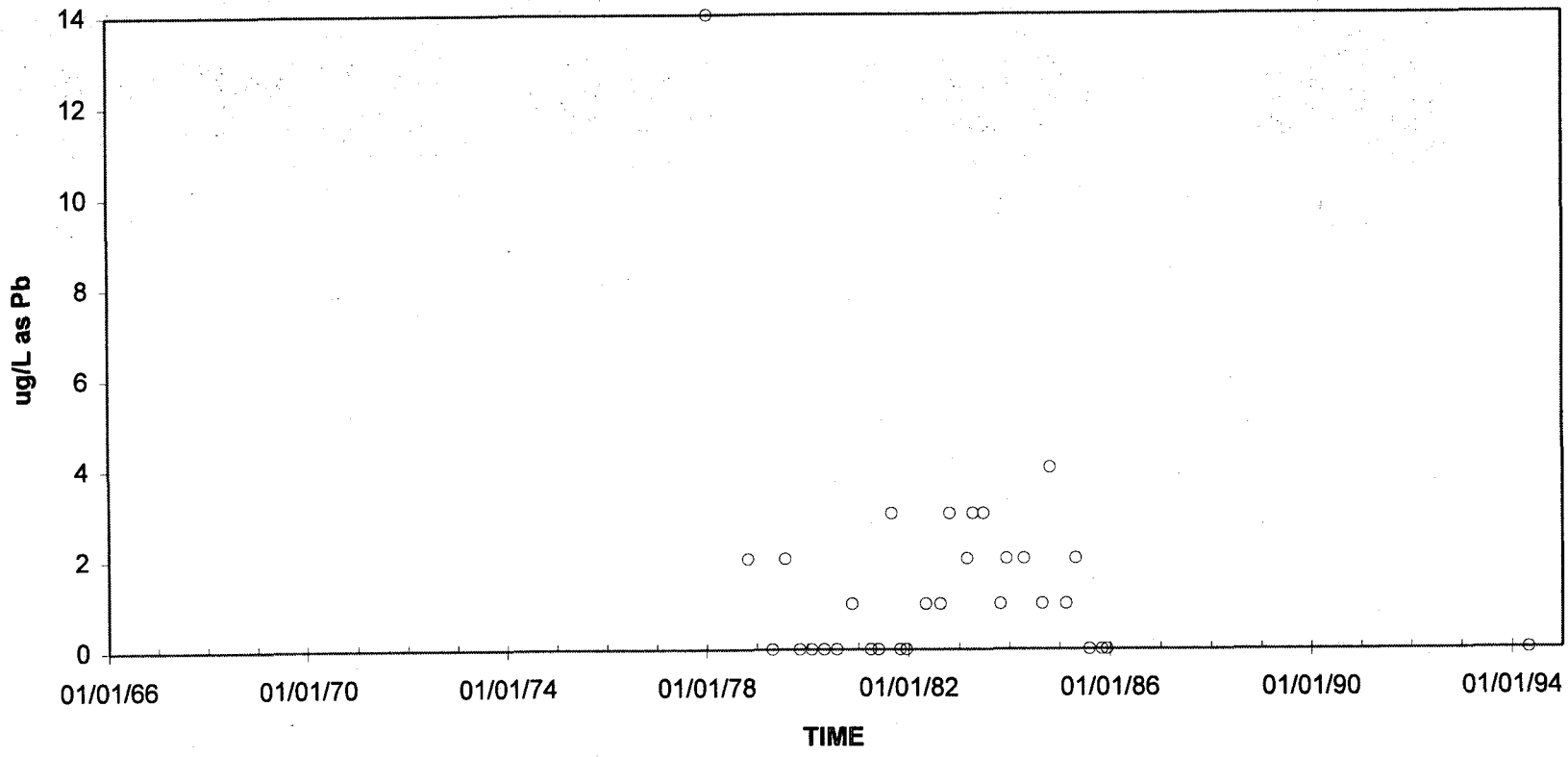
Figure
10.5.4–98



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
IRON, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

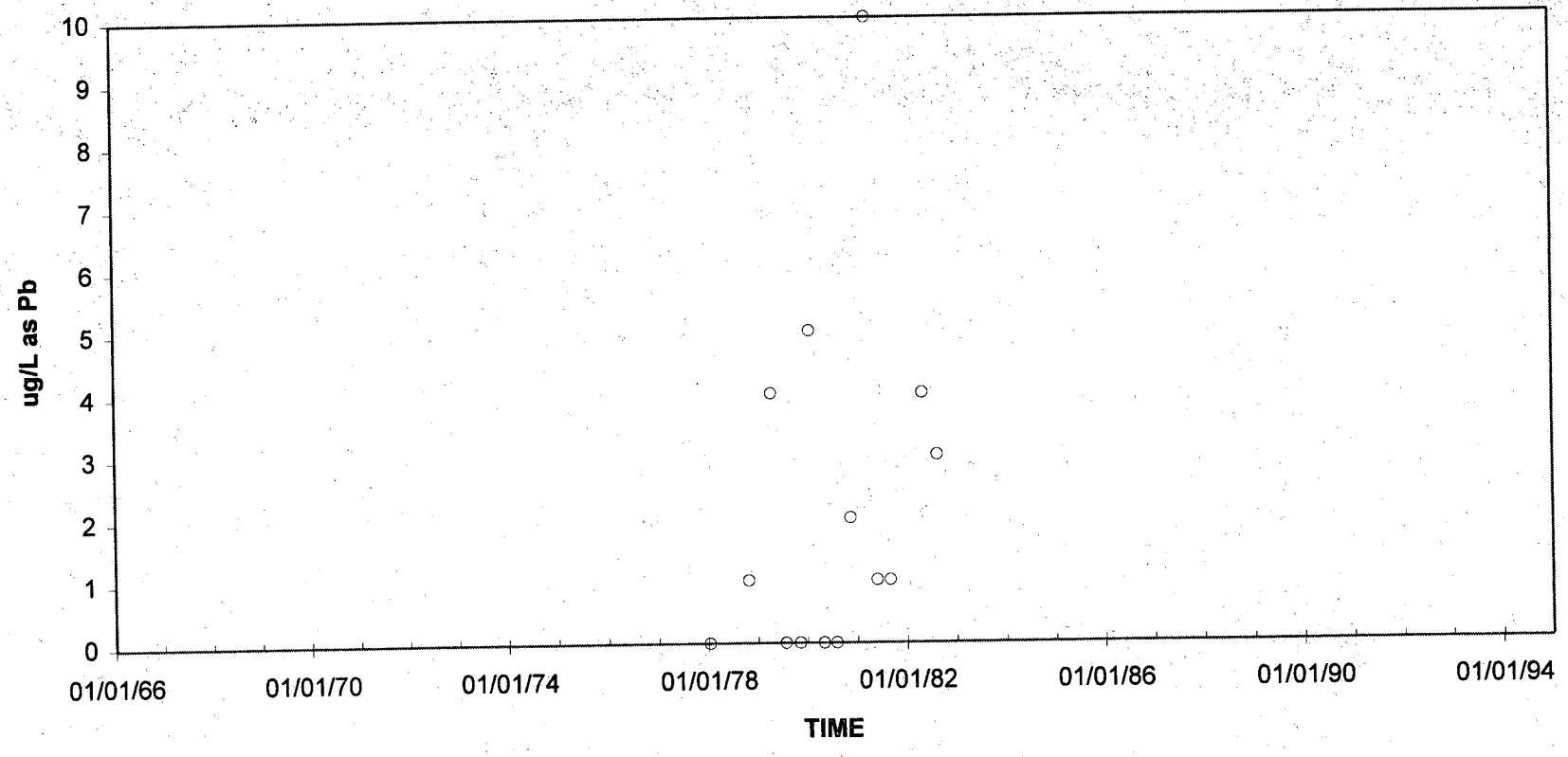
Figure
10.5.4–99



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
LEAD, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

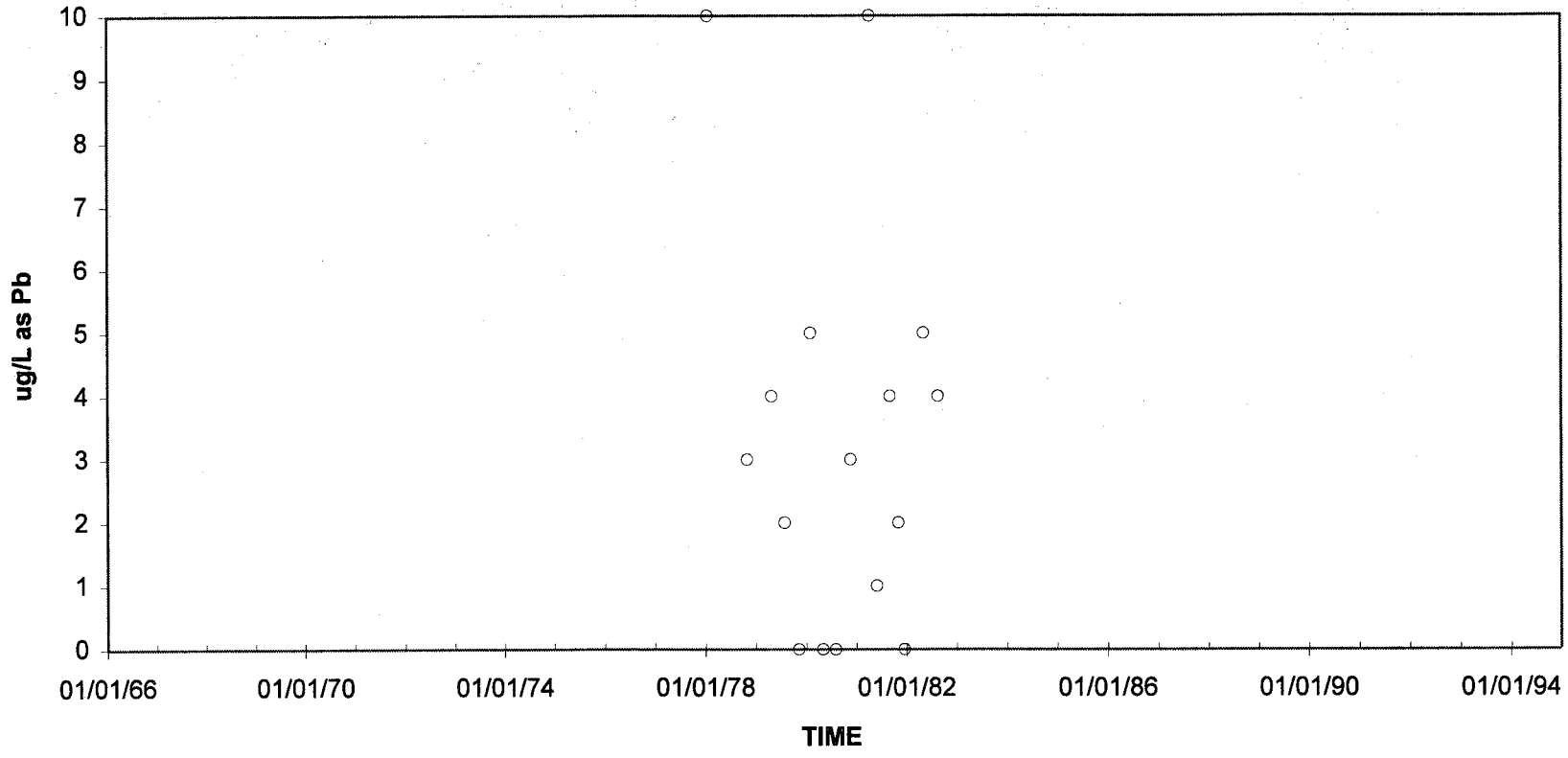
Figure
10.5.4–100



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
LEAD, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

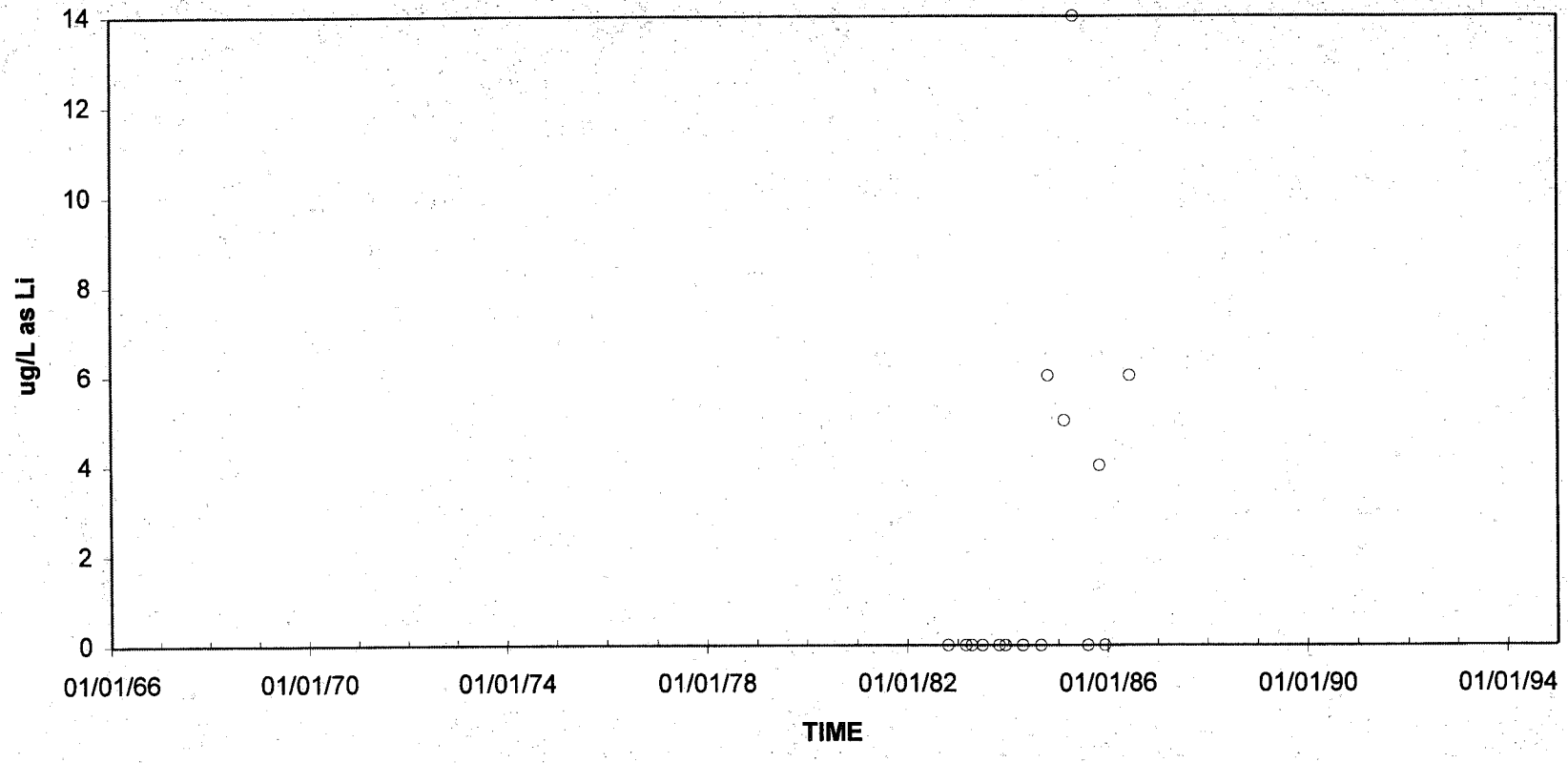
Figure
10.5.4-101



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
LEAD, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

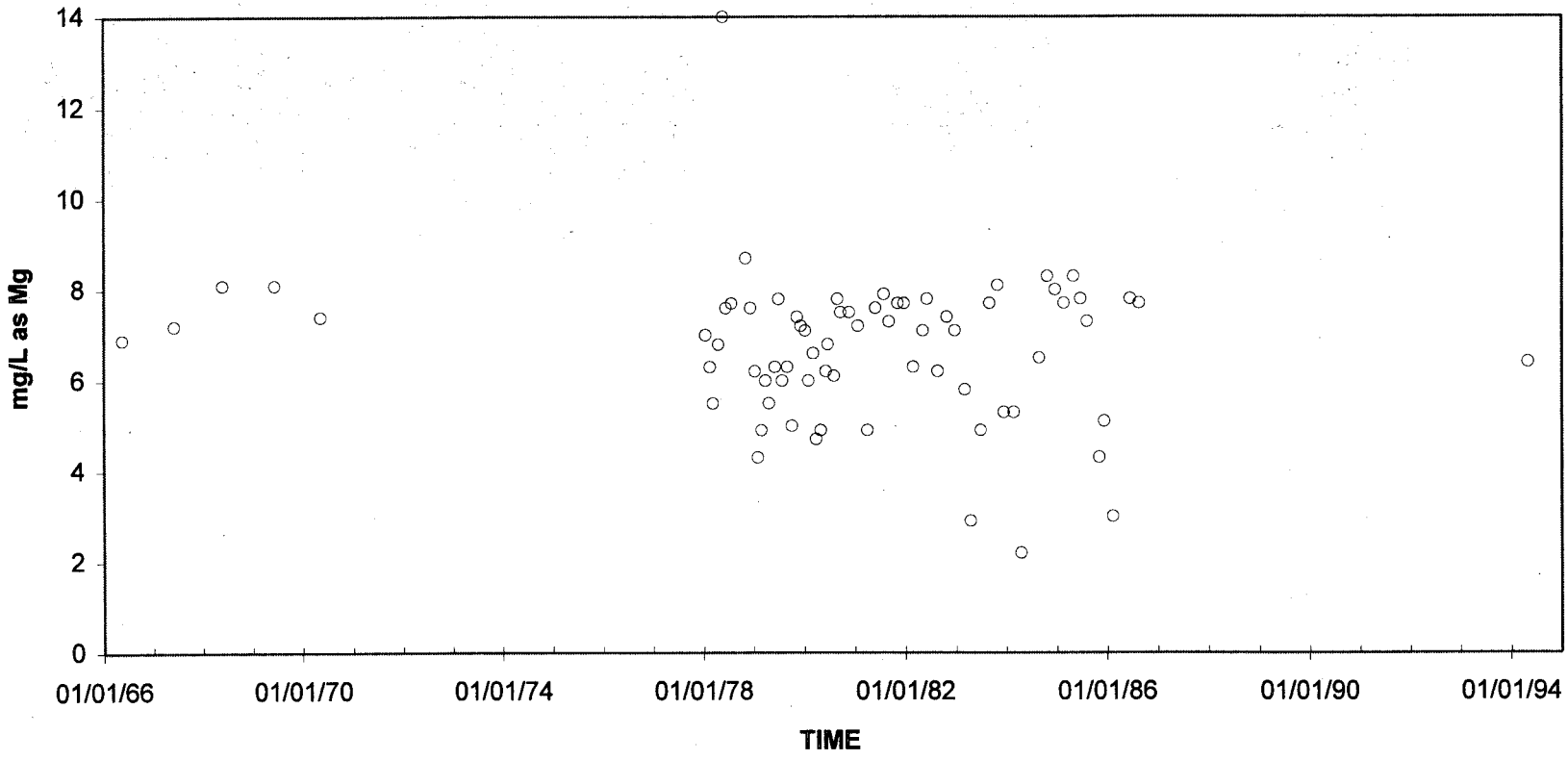
Figure
10.5.4–102



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
LITHIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

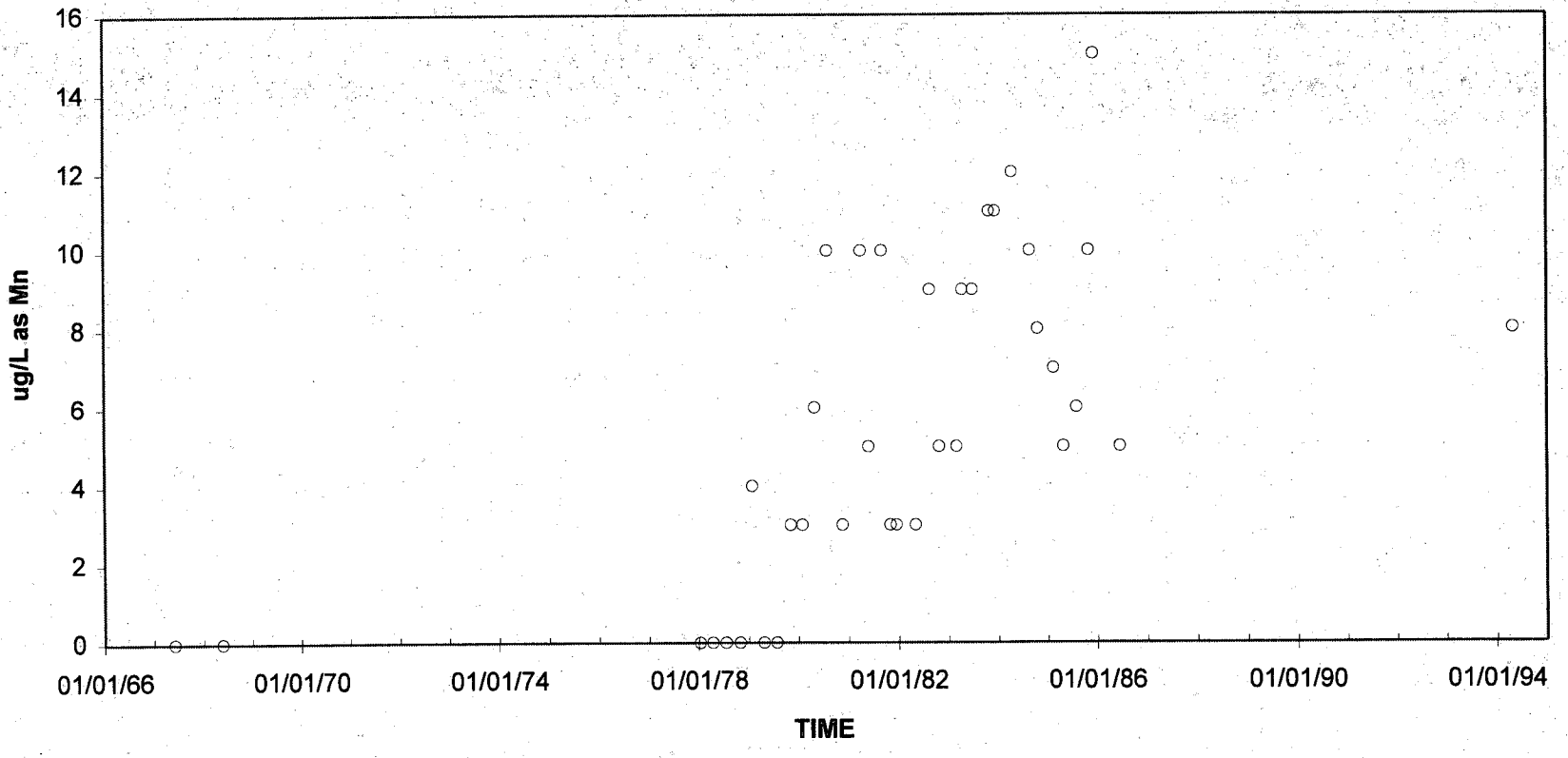
Figure
10.5.4-103



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
MAGNESIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

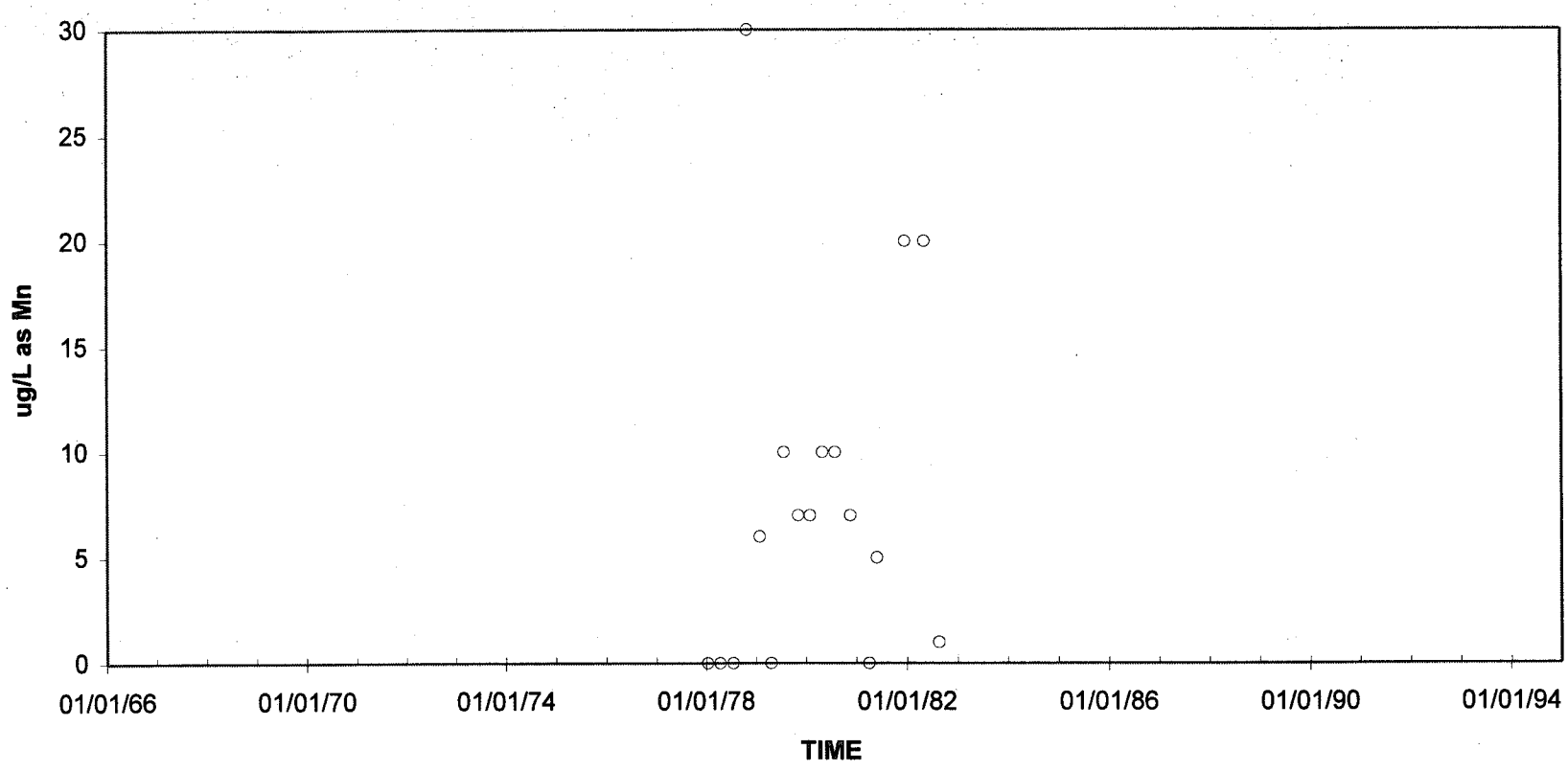
Figure
10.5.4–104



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
MANGANESE, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

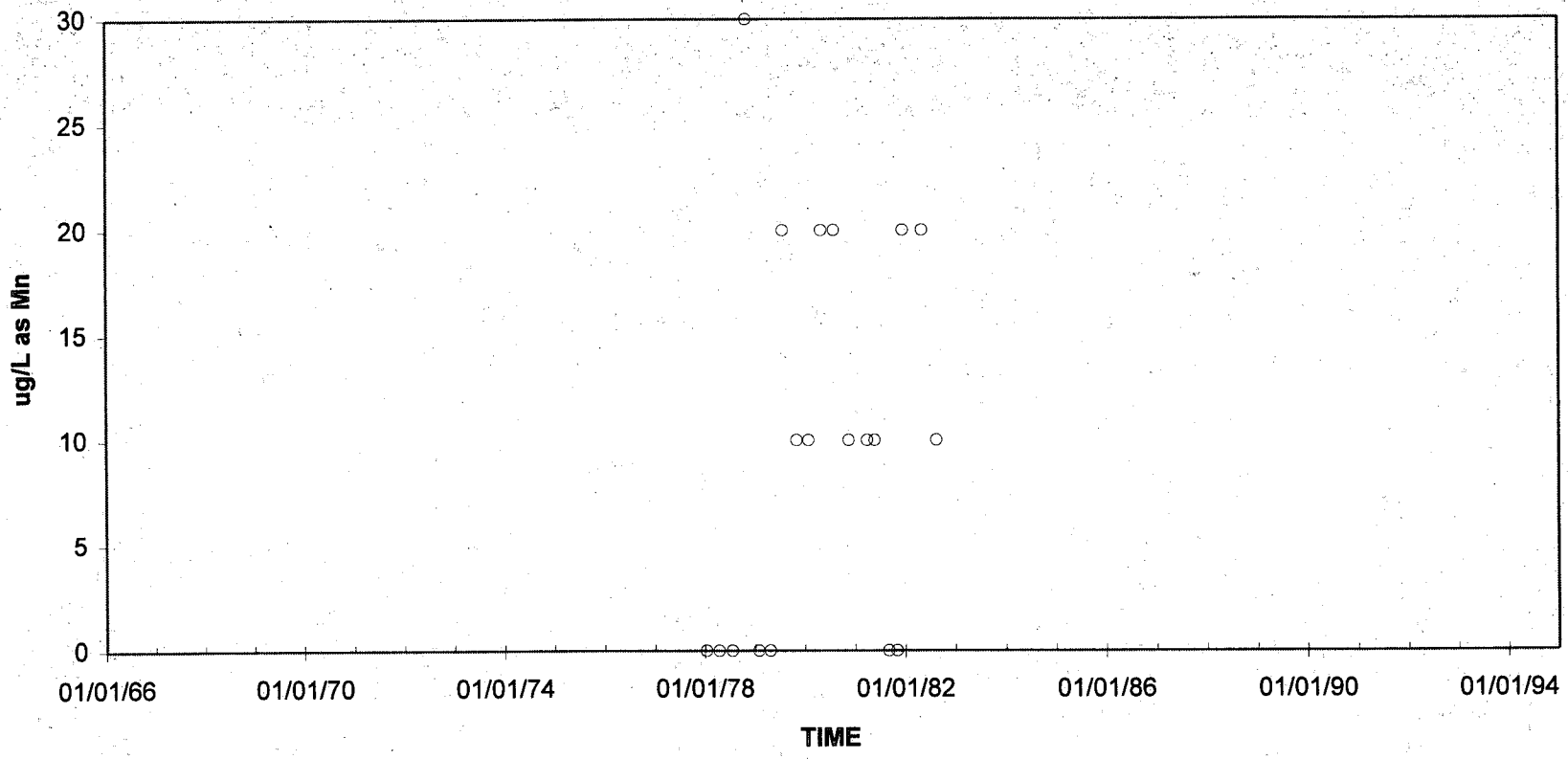
Figure
10.5.4-105



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
MANGANESE, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

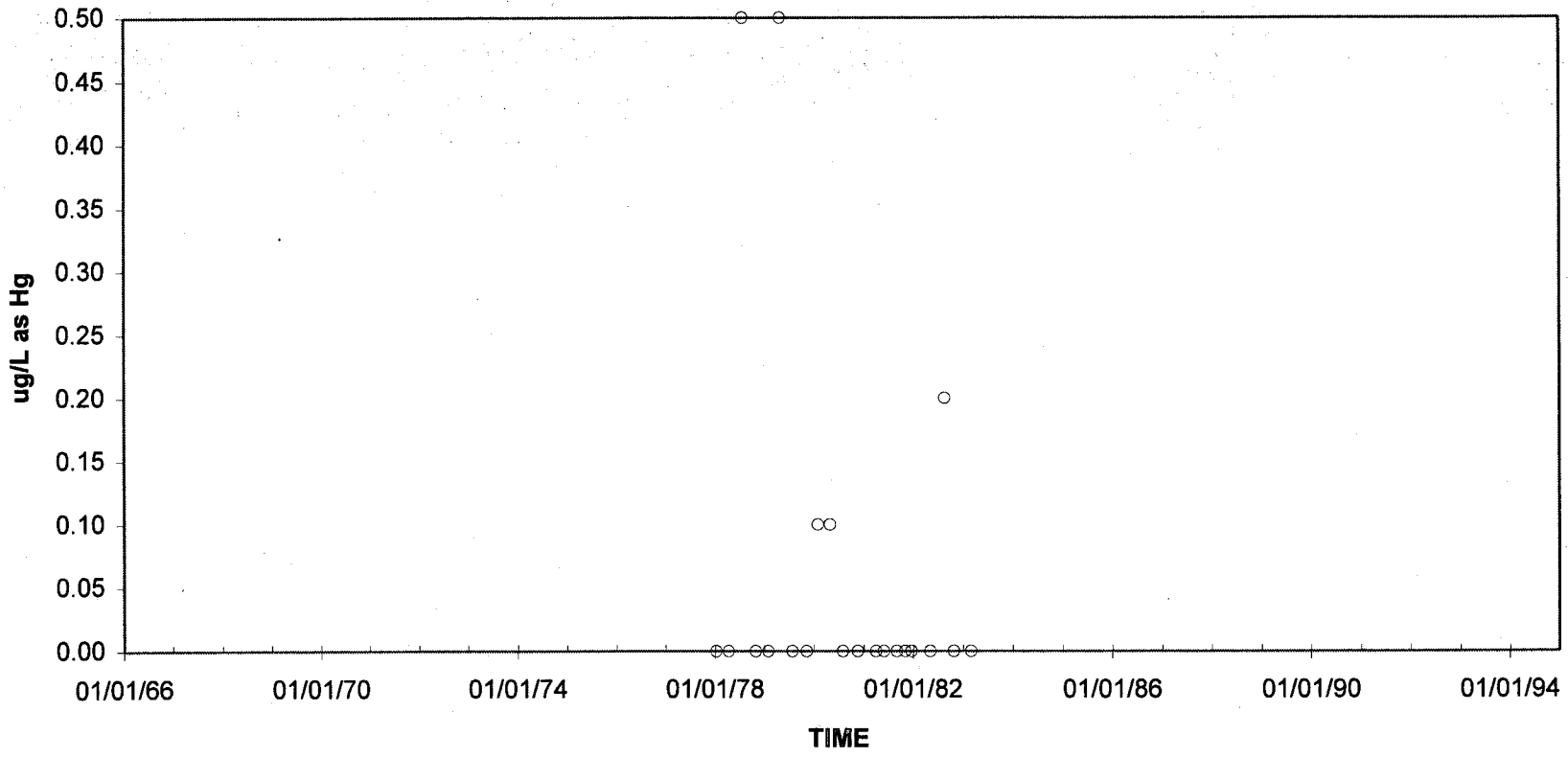
Figure
10.5.4–106



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
MANGANESE, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

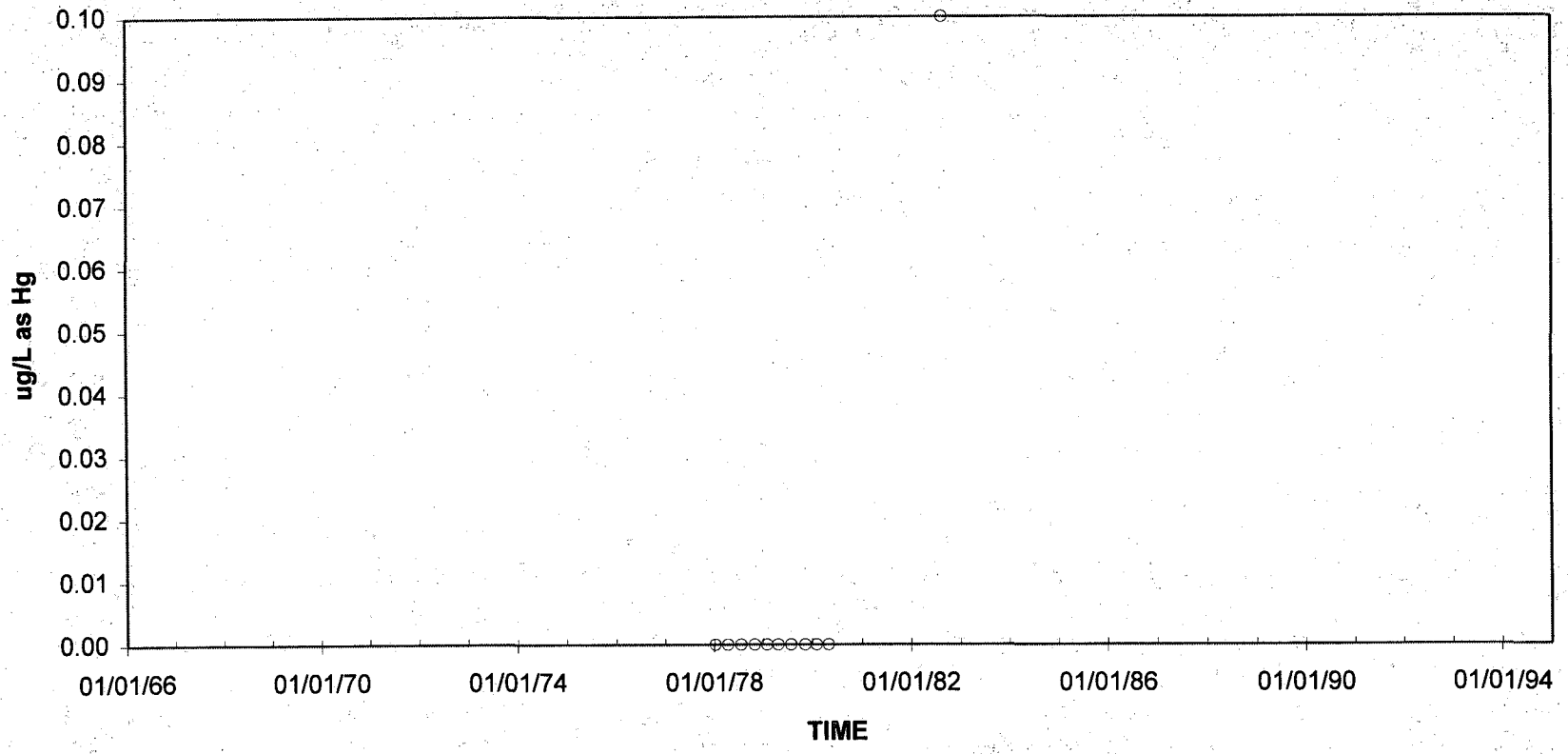
Figure
10.5.4–107



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
MERCURY, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

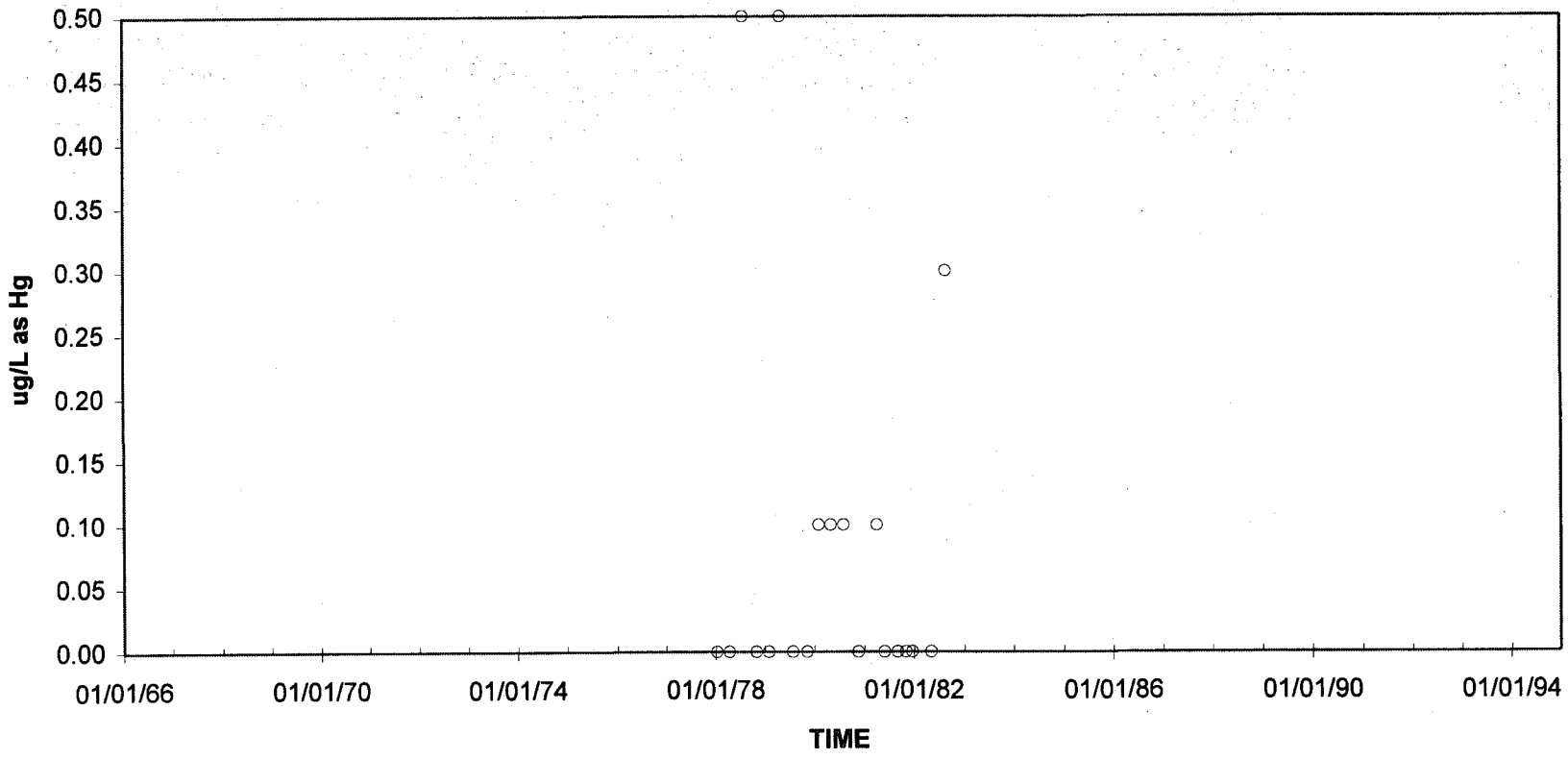
Figure
10.5.4–108



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
MERCURY, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

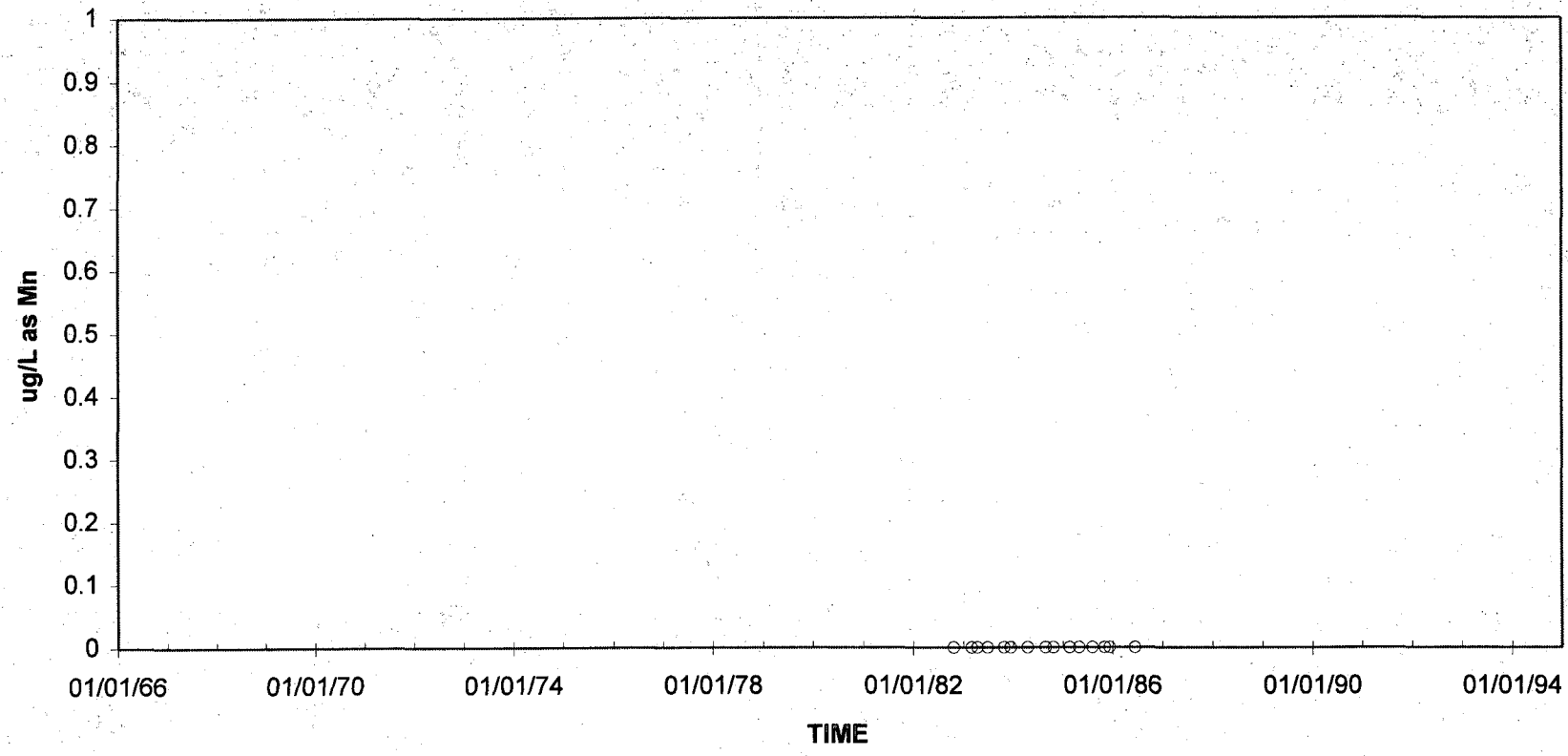
Figure
10.5.4-109



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
MERCURY, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

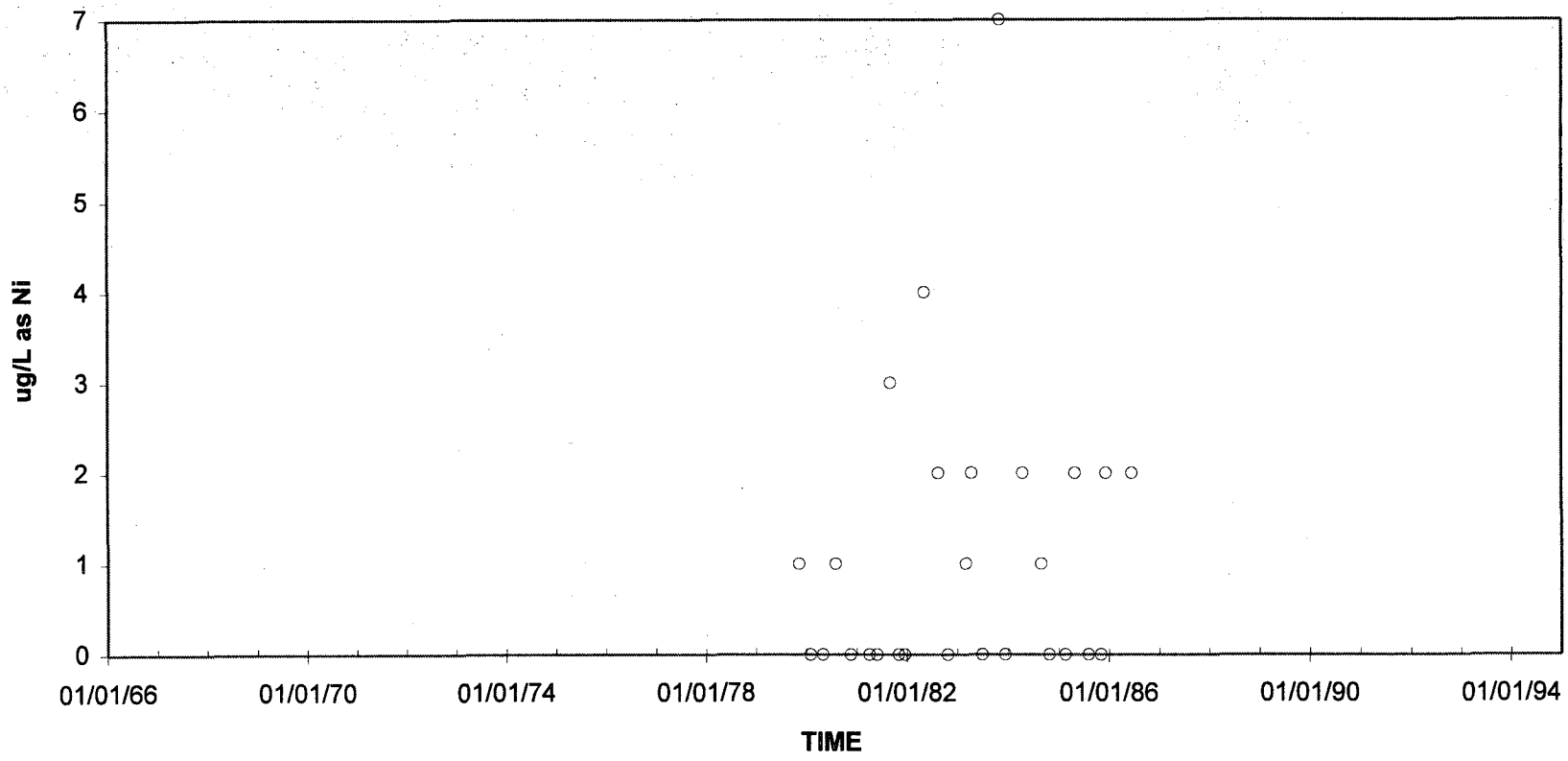
Figure
10.5.4-110



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
MOLYBDENUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

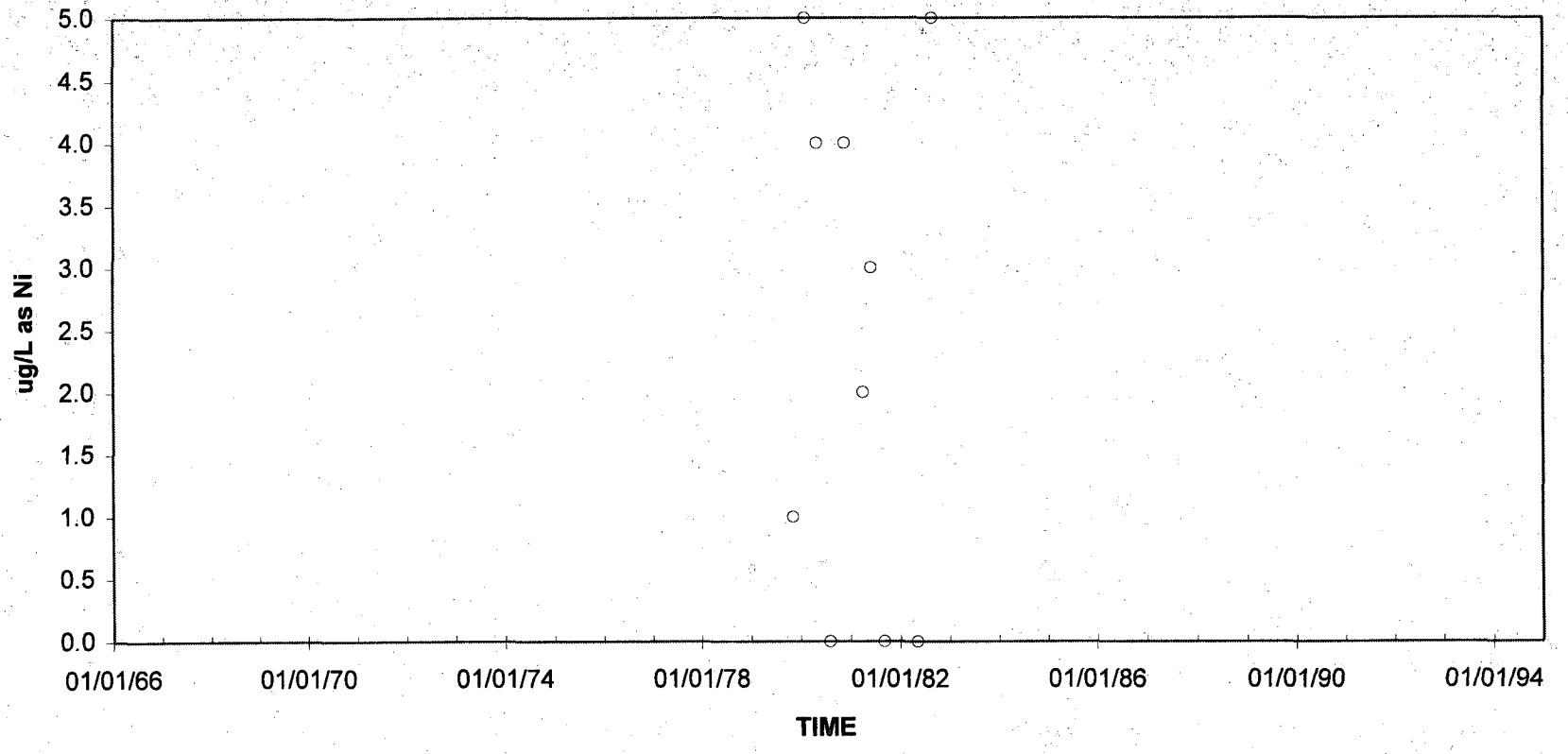
Figure
10.5.4–111



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NICKEL, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

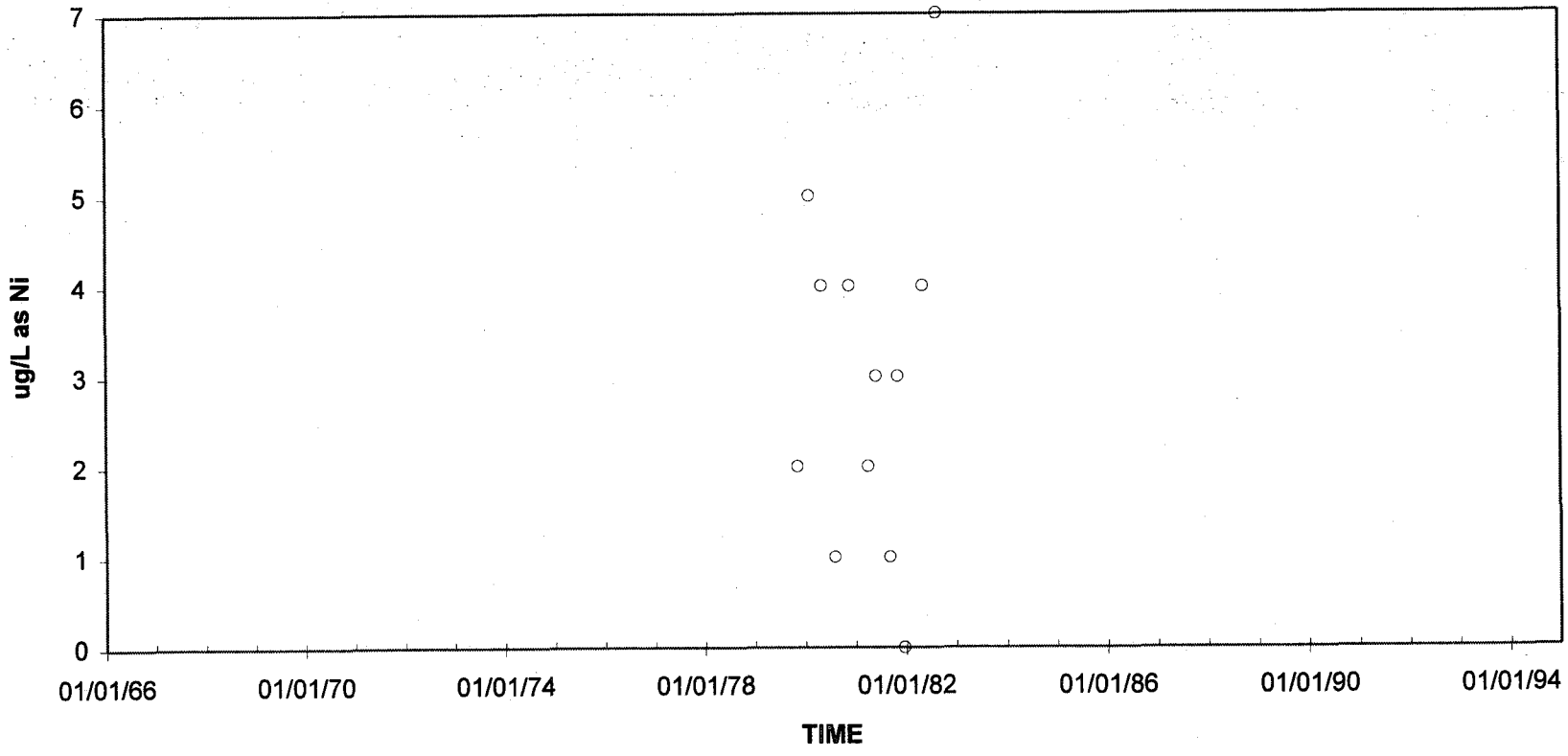
Figure
10.5.4–112



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NICKEL, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

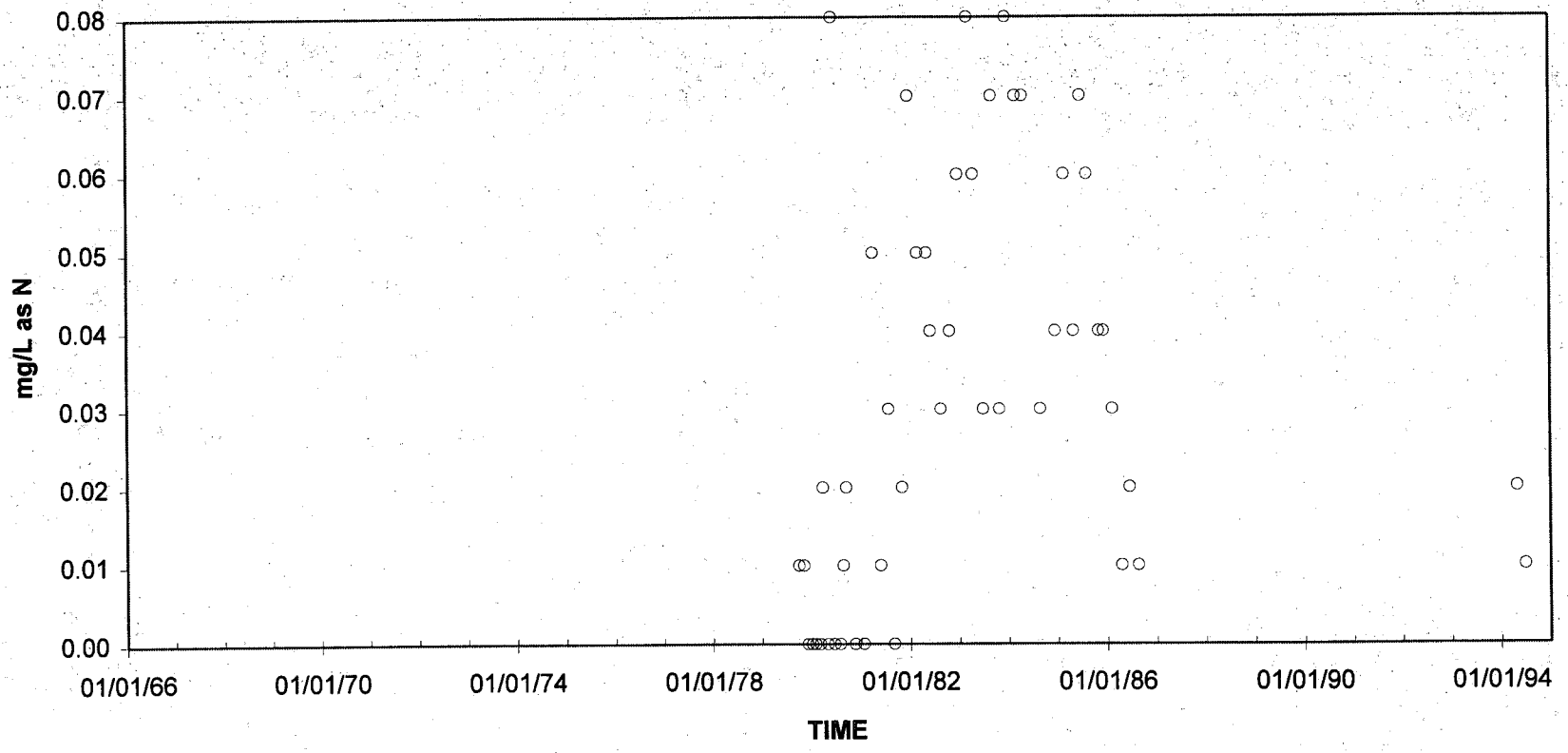
Figure
10.5.4-113



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NICKEL, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

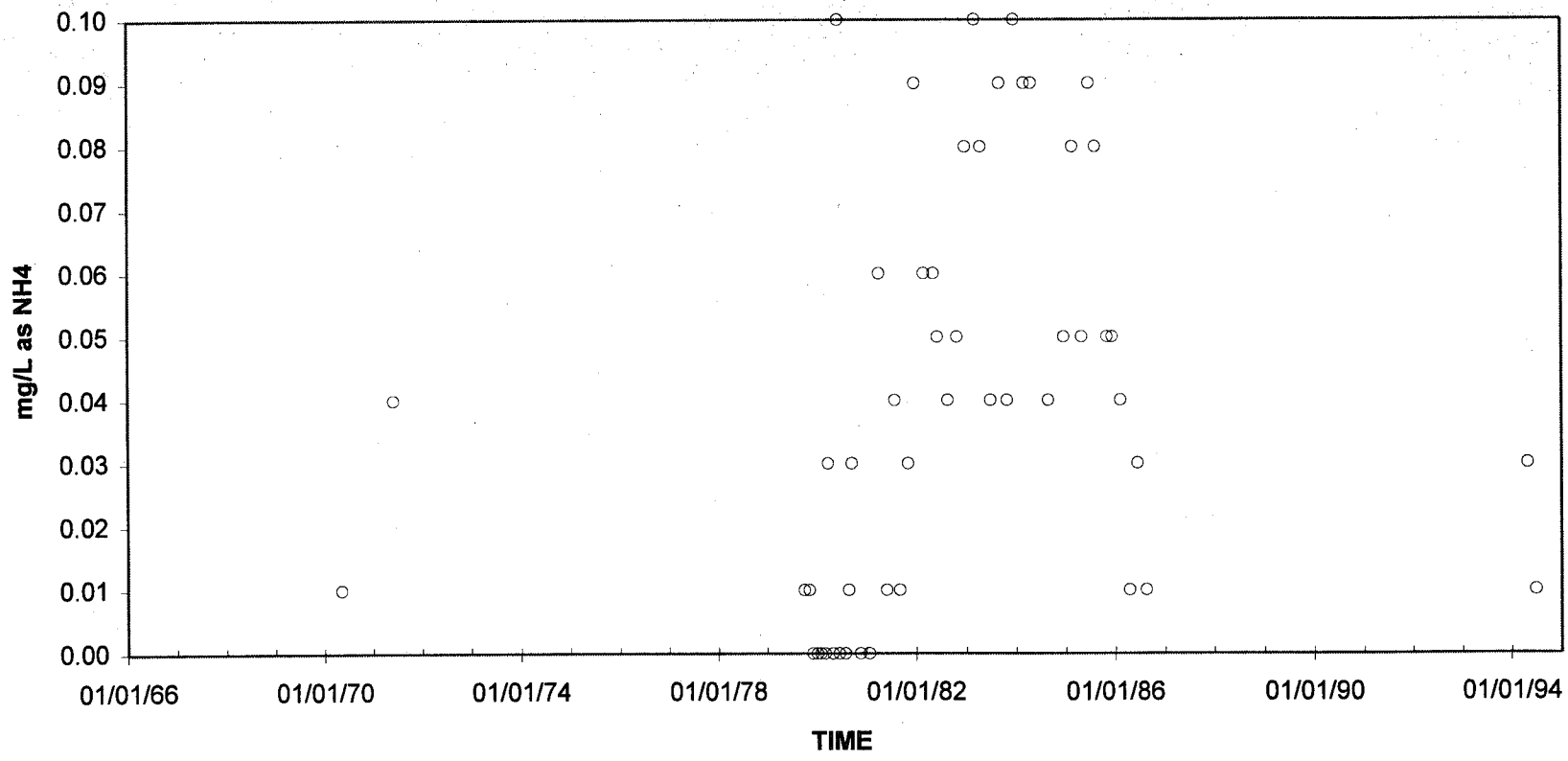
Figure
10.5.4-114



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, AMMONIA DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

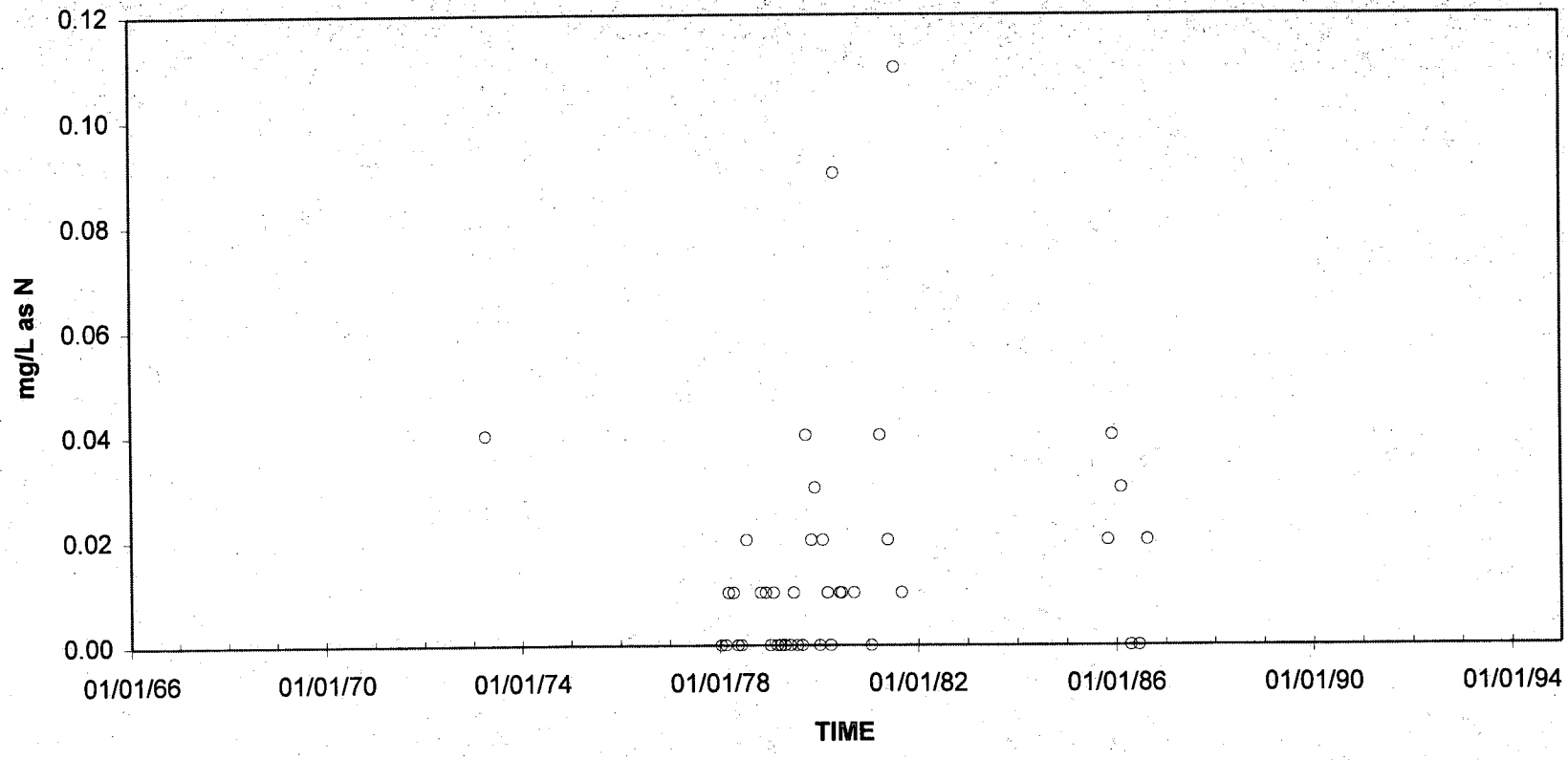
Figure
10.5.4–115



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, AMMONIA DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

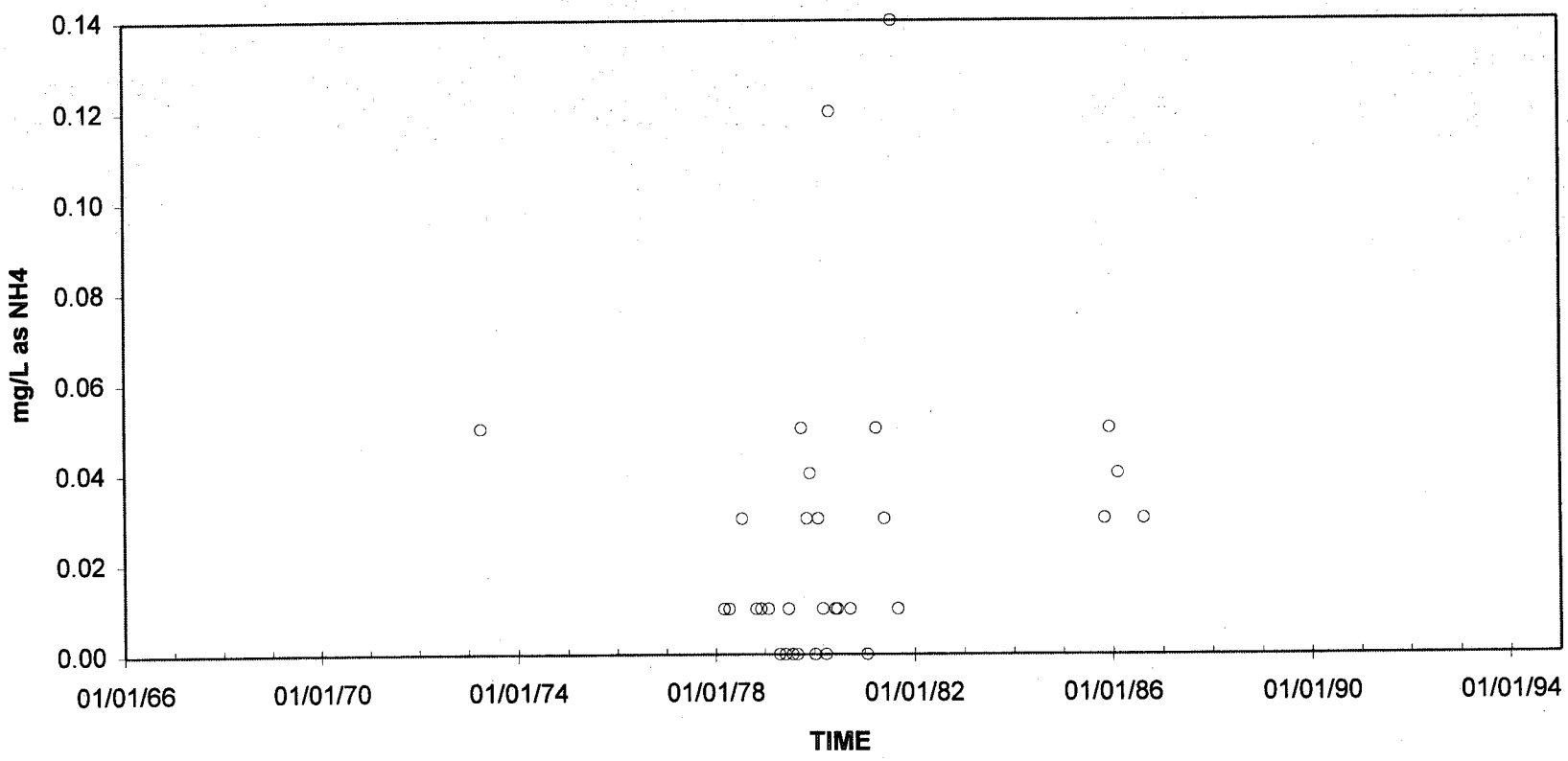
Figure
10.5.4–116



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, AMMONIA TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

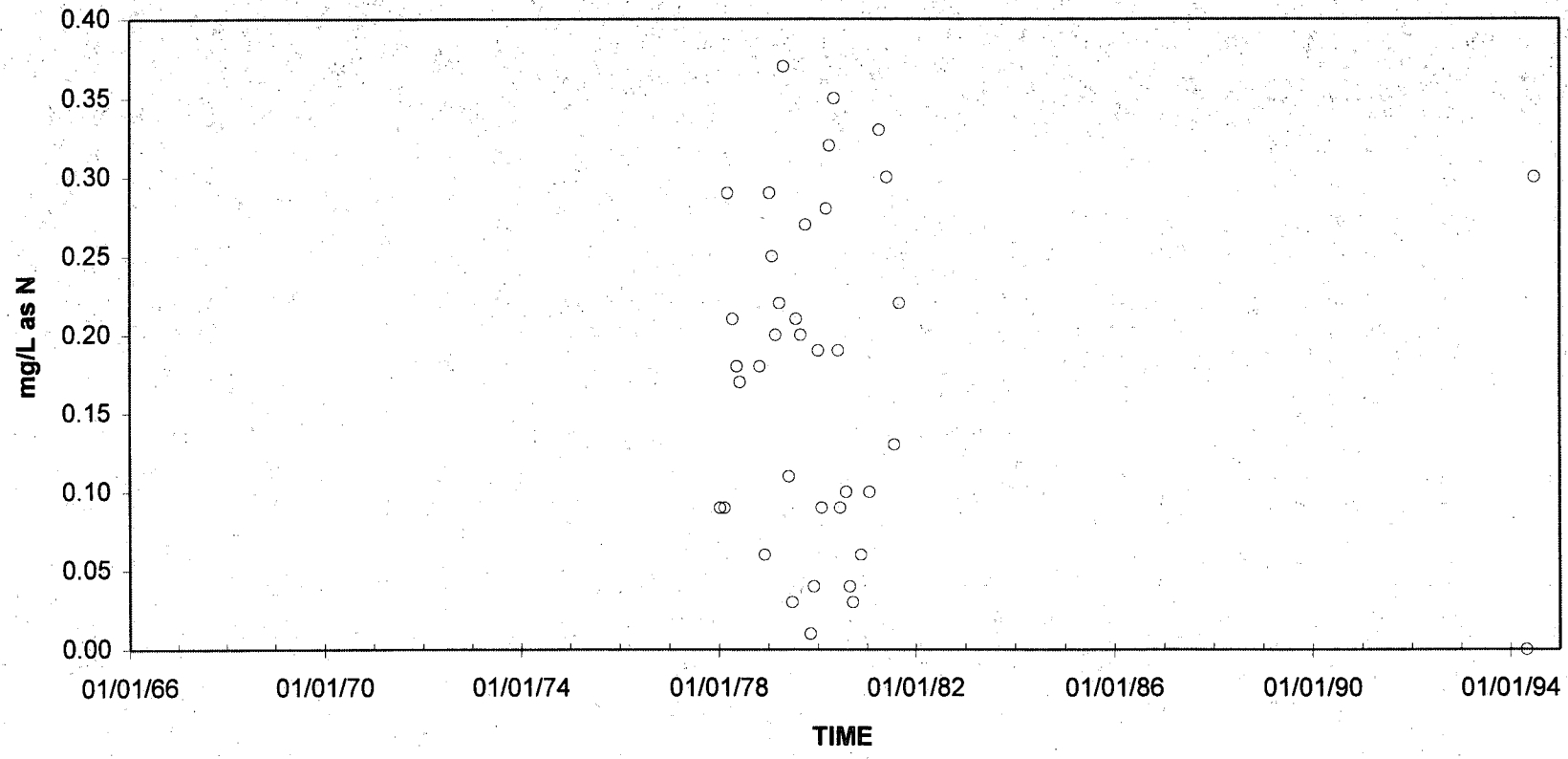
Figure
10.5.4–117



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, AMMONIA TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

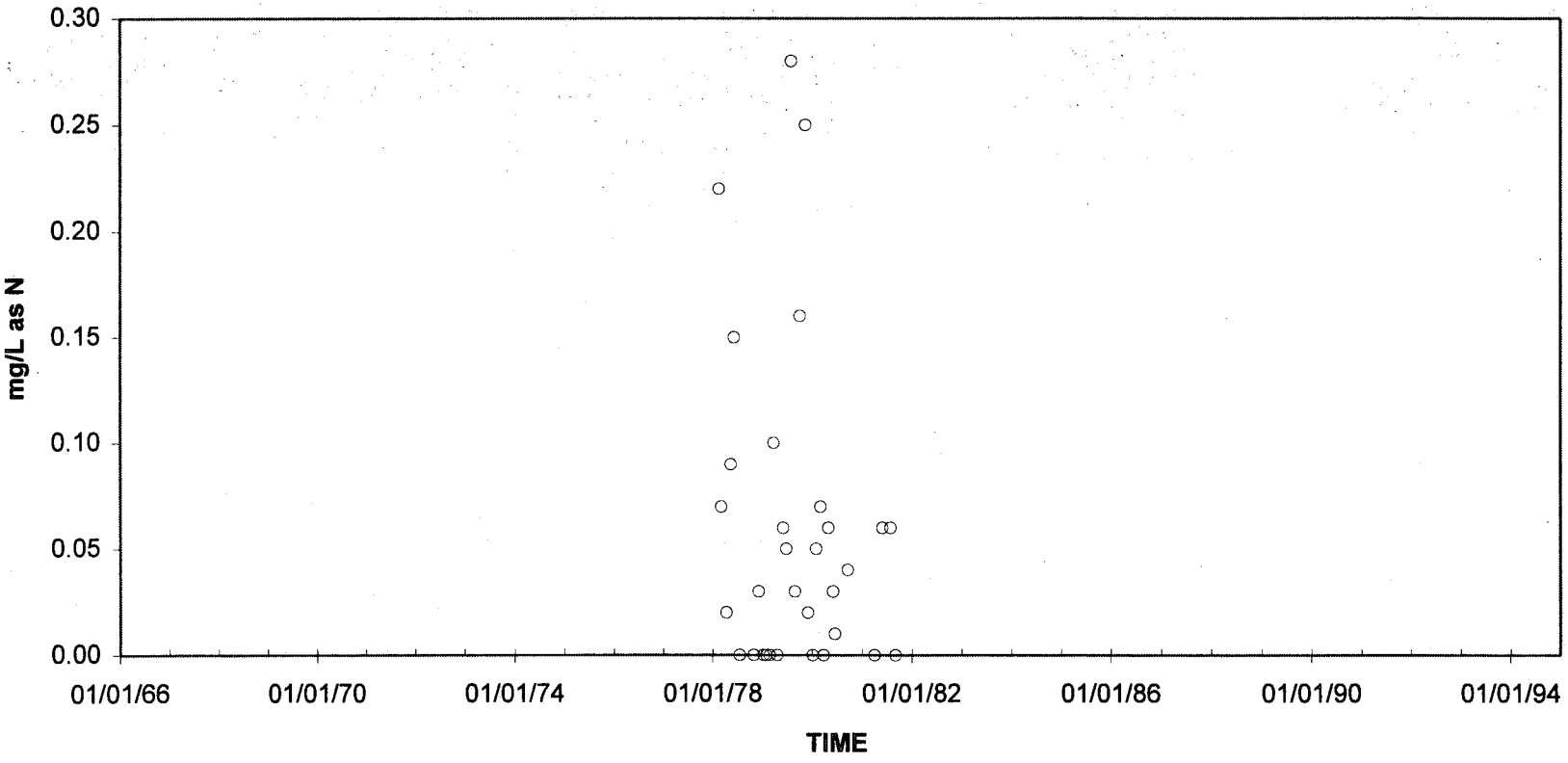
Figure
10.5.4–118



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, AMMONIA + ORGANIC DIS
PURDOM UNIT 8 PROJECT – St. MARKS, FLORIDA

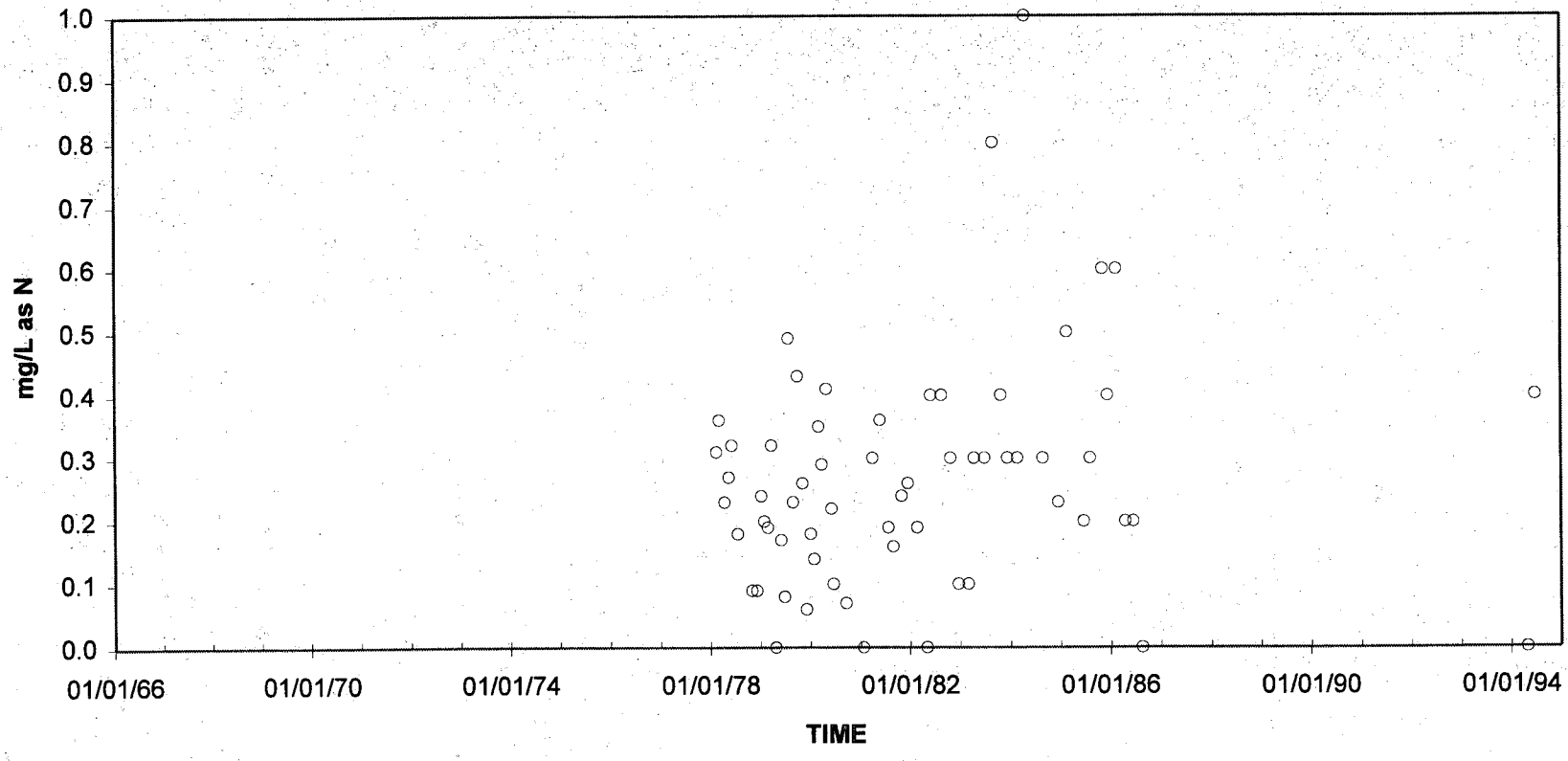
Figure
10.5.4–119



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, AMMONIA + ORGANIC SUSP TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

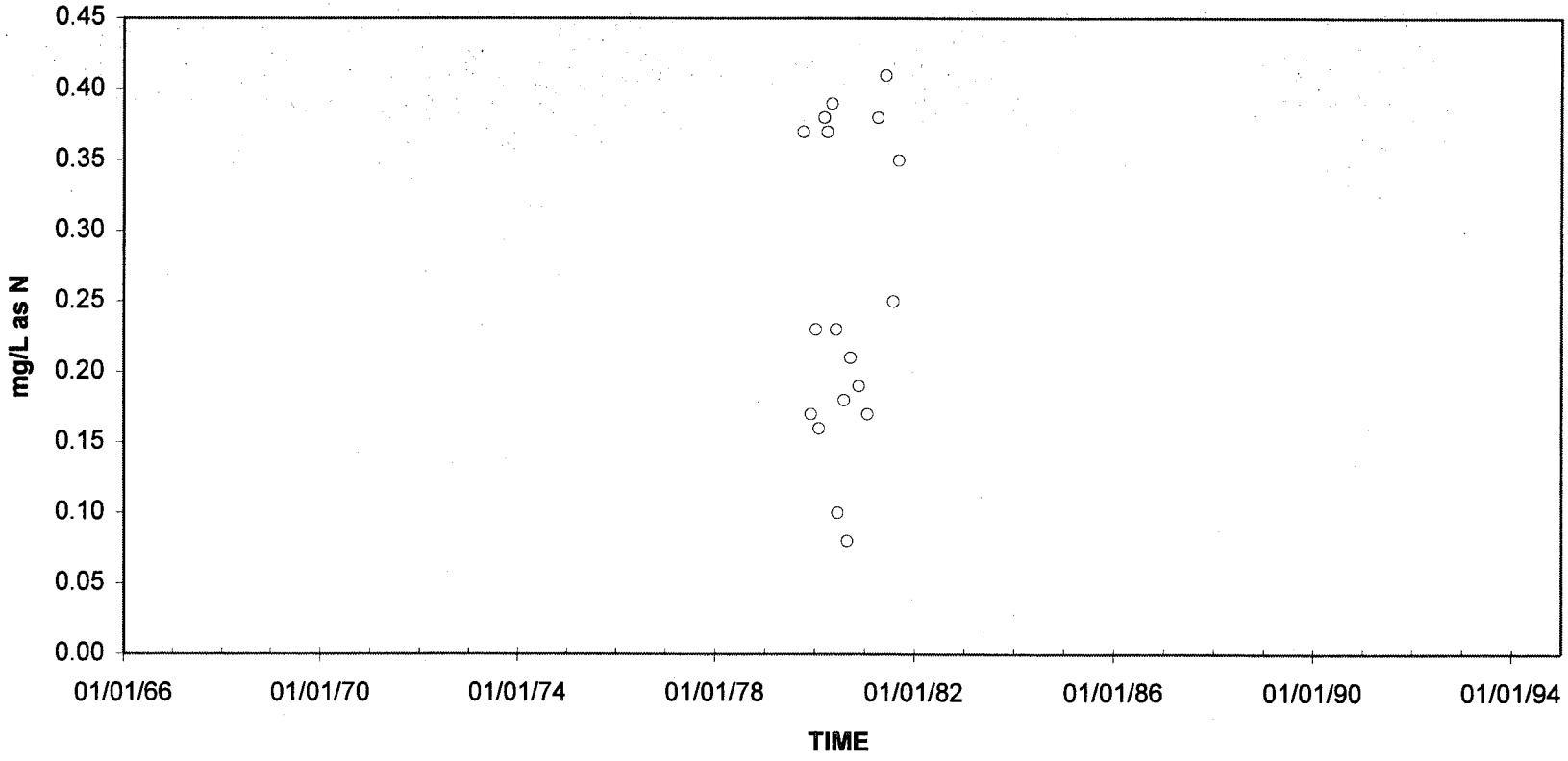
Figure
10.5.4–120



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, AMMONIA + ORGANIC TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

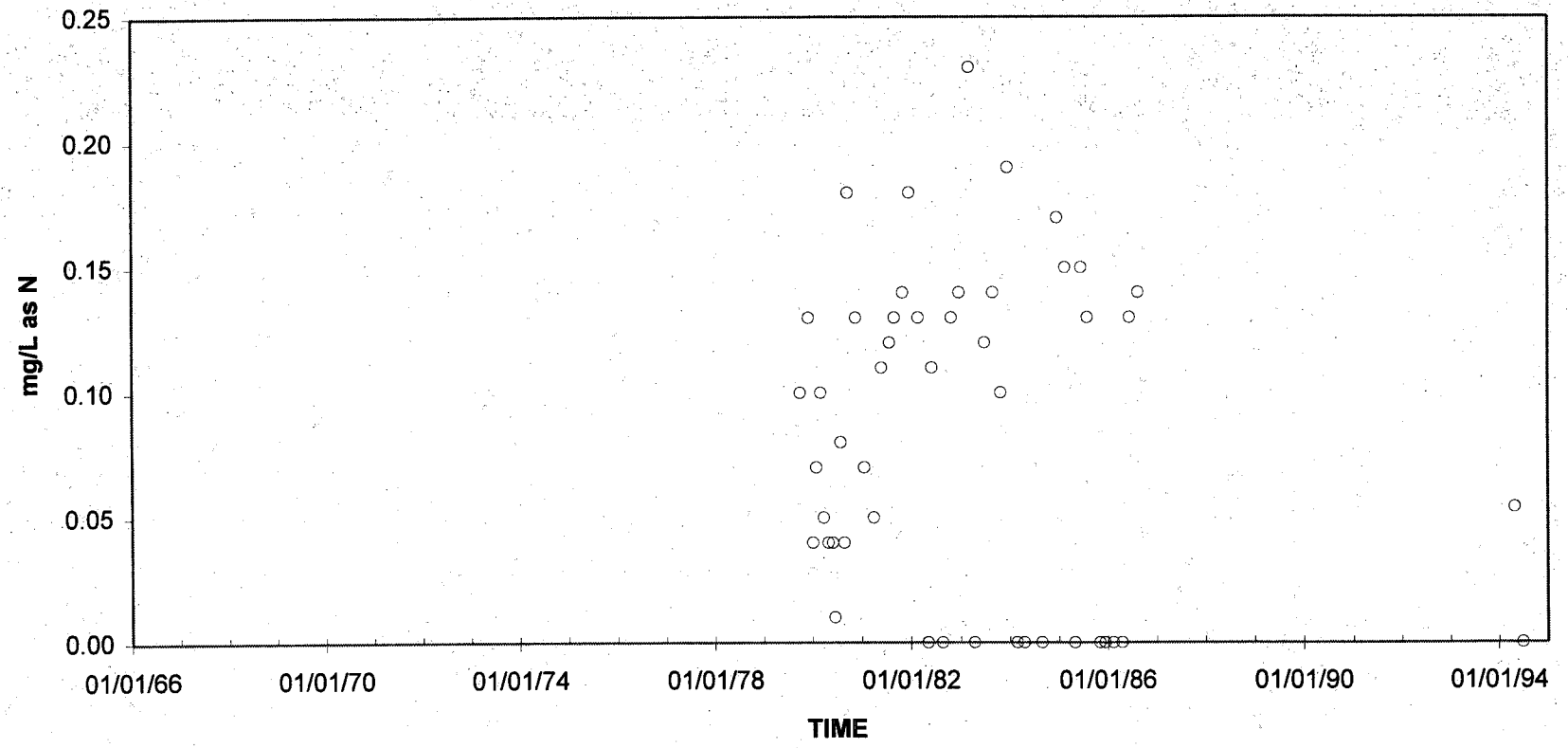
Figure
10.5.4-121



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

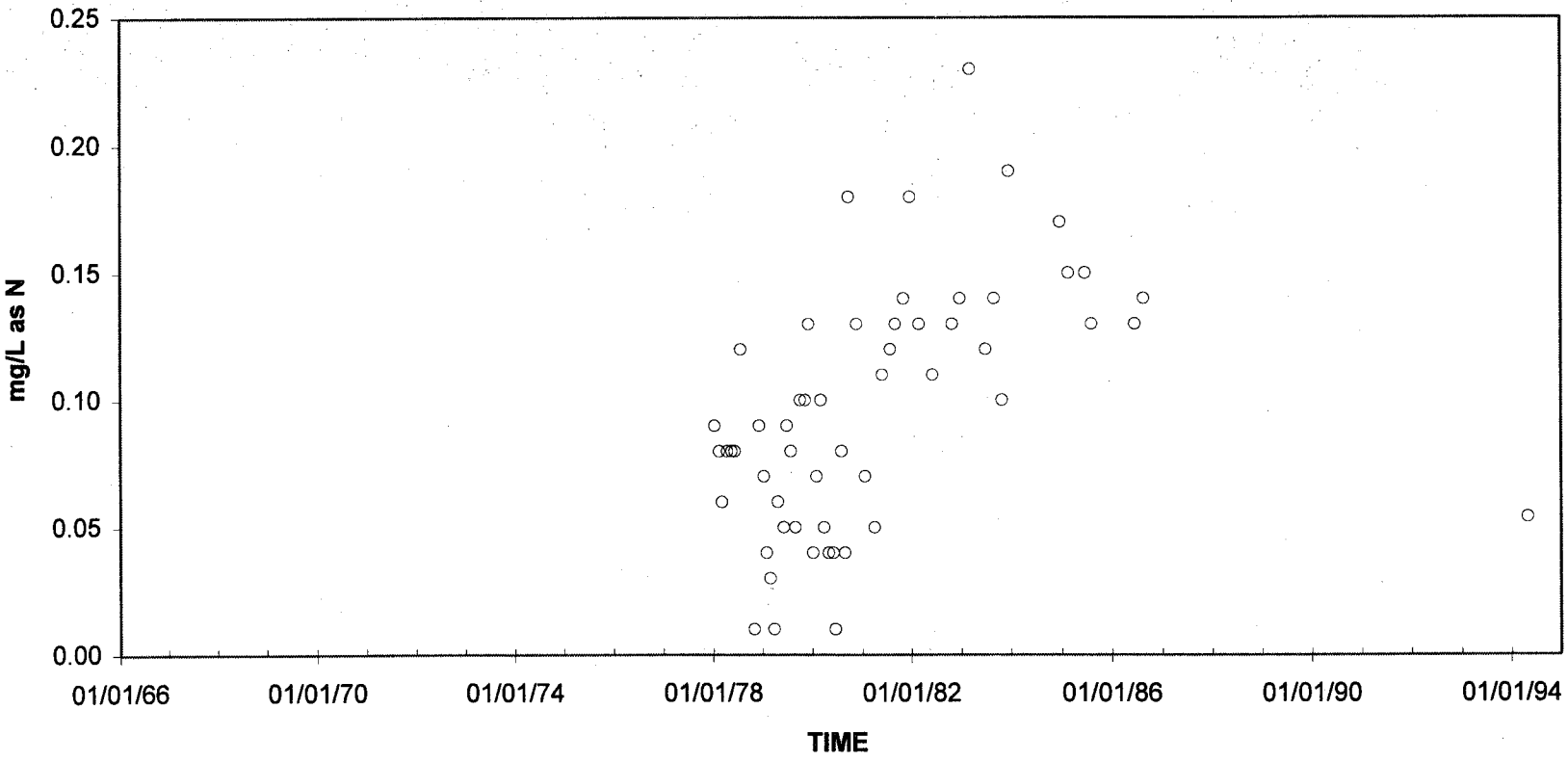
Figure
10.5.4–122



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, NITRITE + NITRATE DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

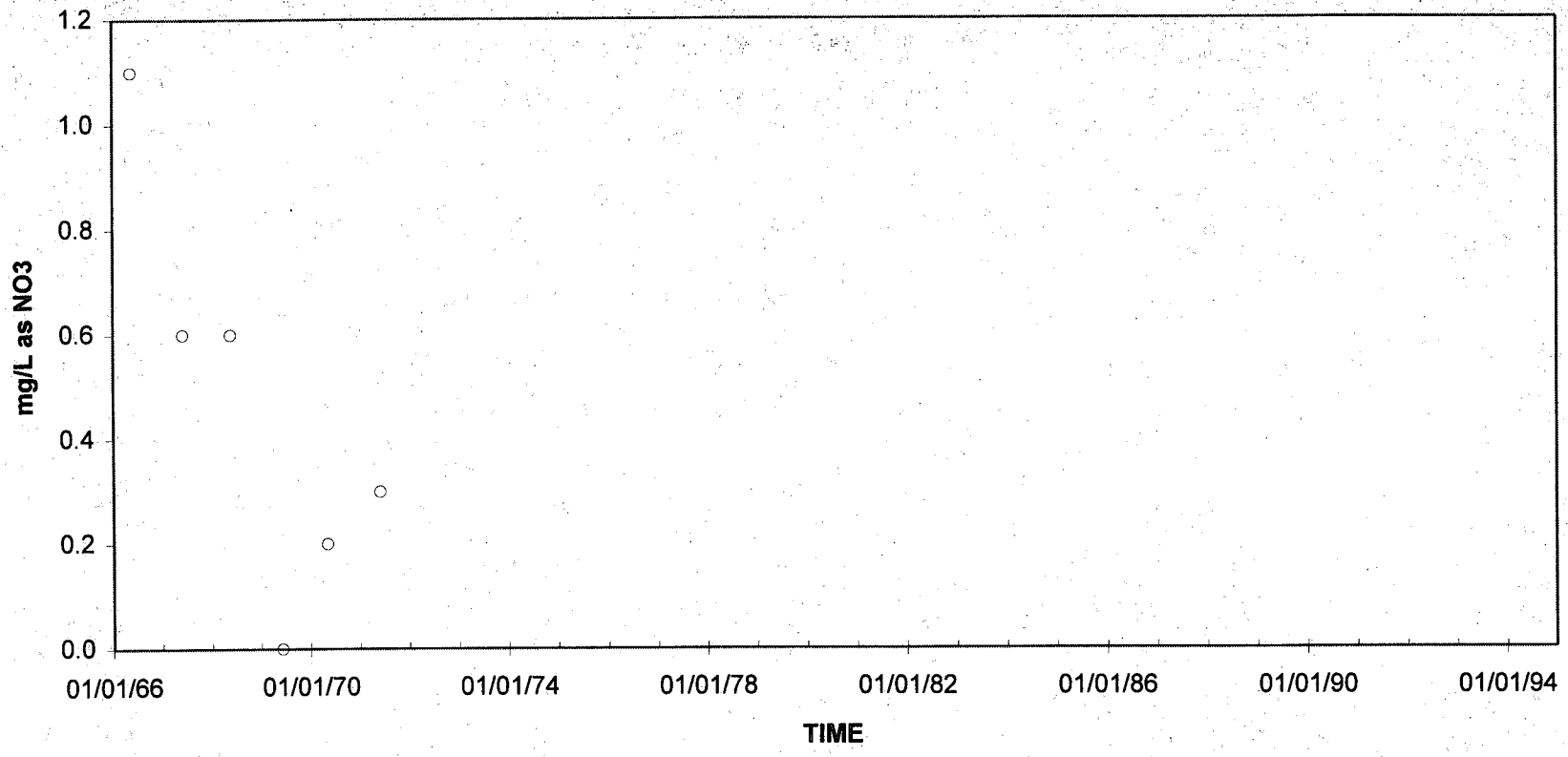
Figure
10.5.4–123



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, NITRITE + NITRATE TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

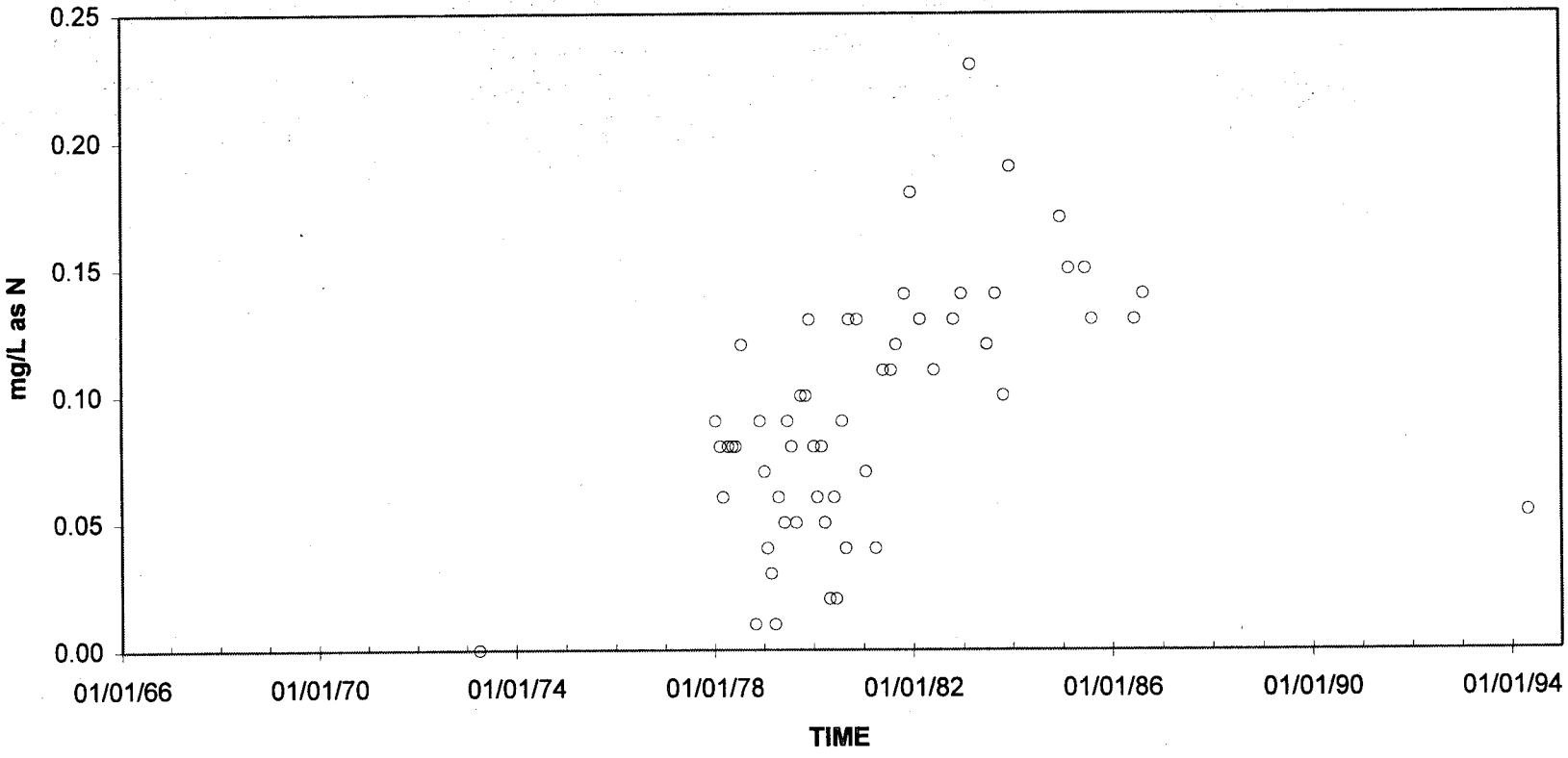
Figure
10.5.4–124



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, NITRATE DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

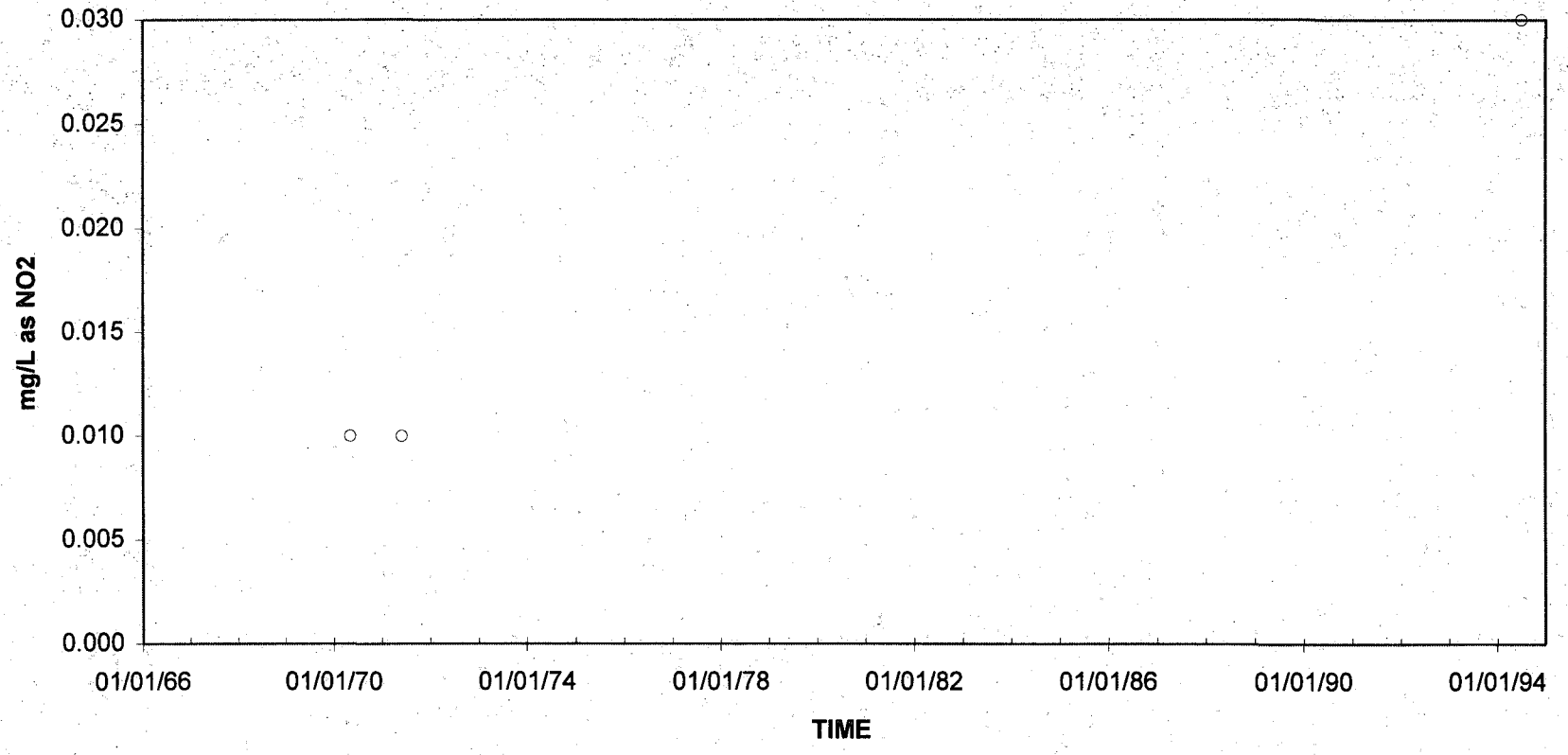
Figure
10.5.4–125



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, NITRATE TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

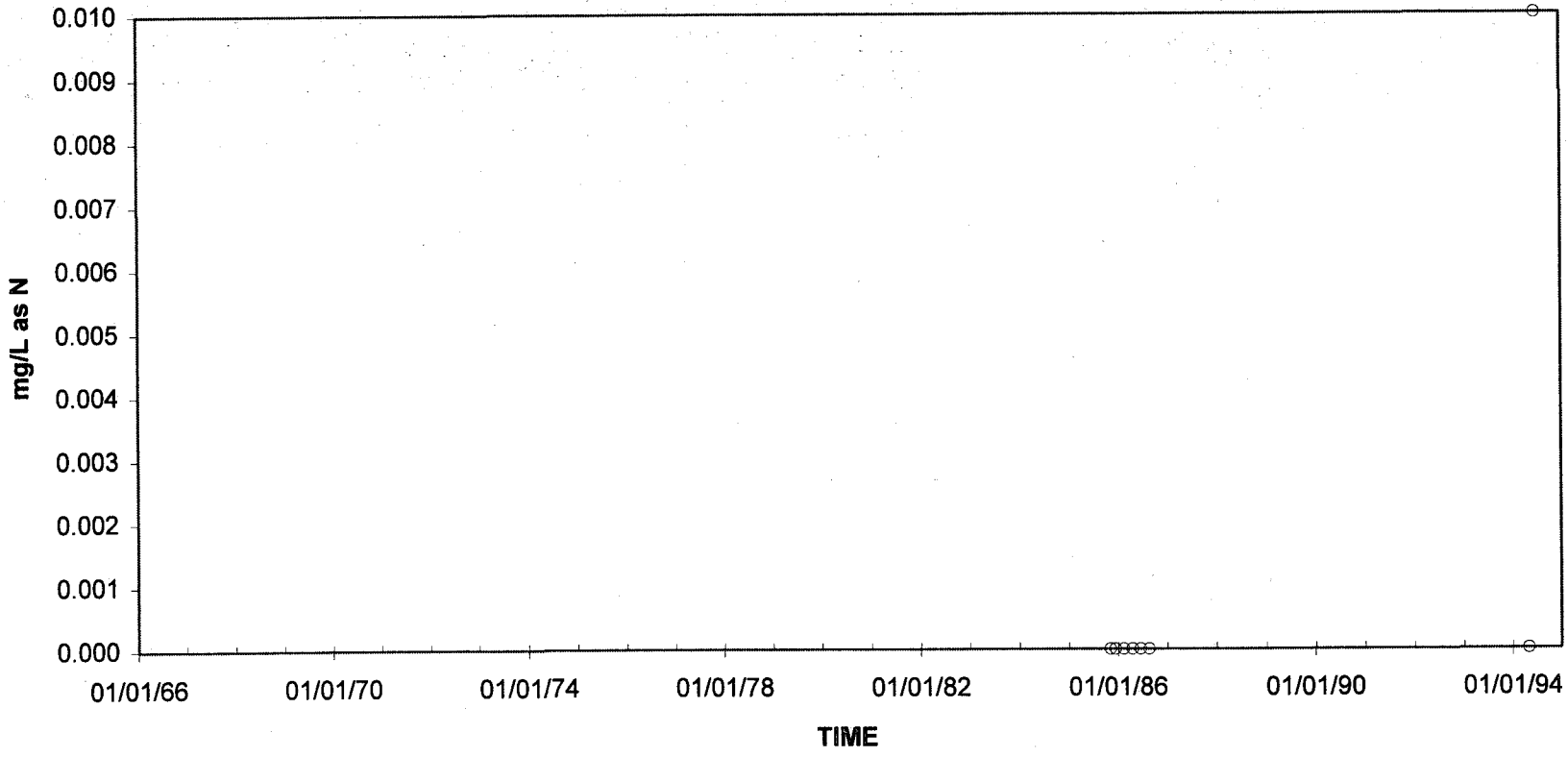
Figure
10.5.4–126



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, NITRITE DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

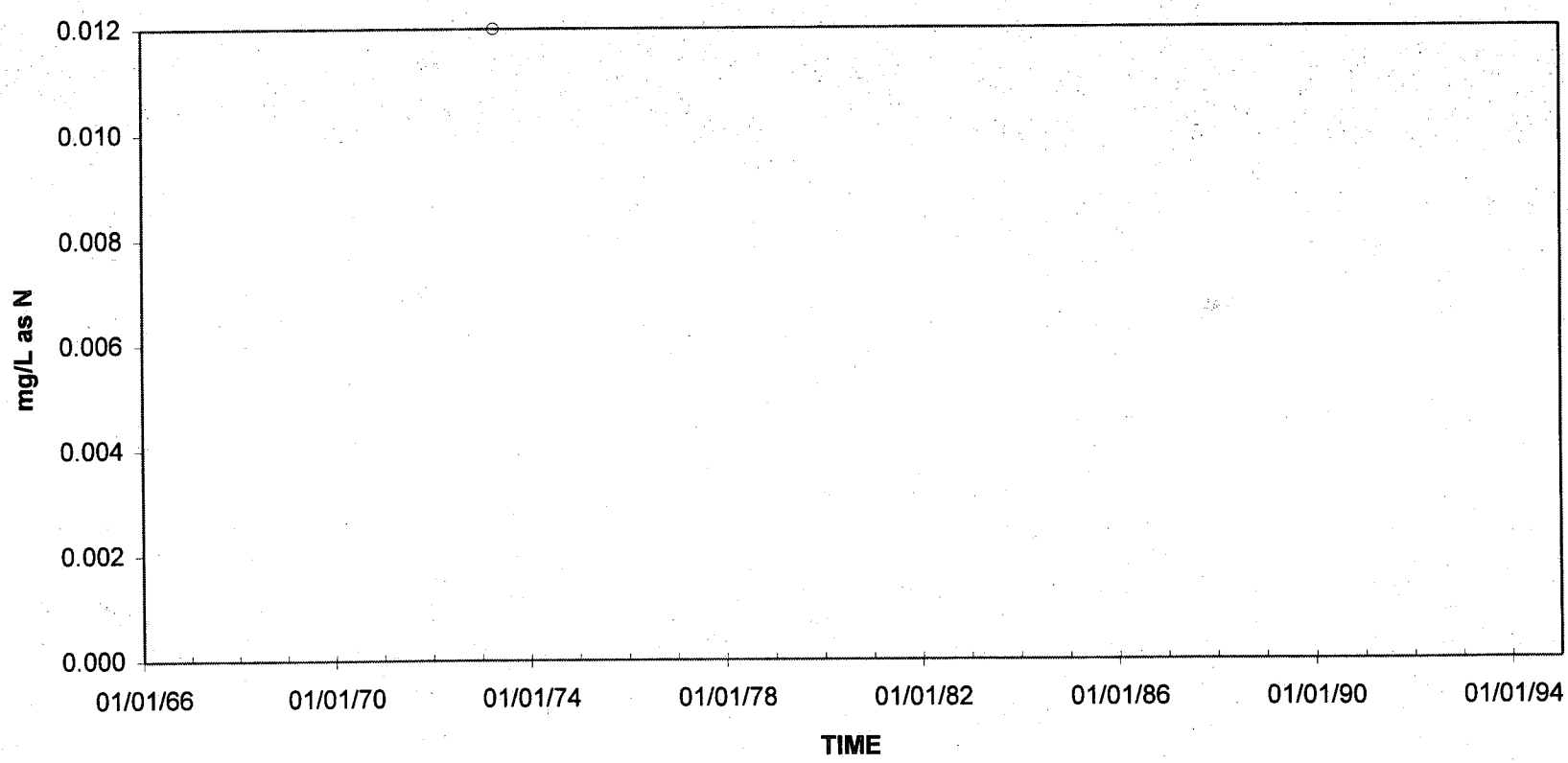
Figure
10.5.4–127



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, NITRITE DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

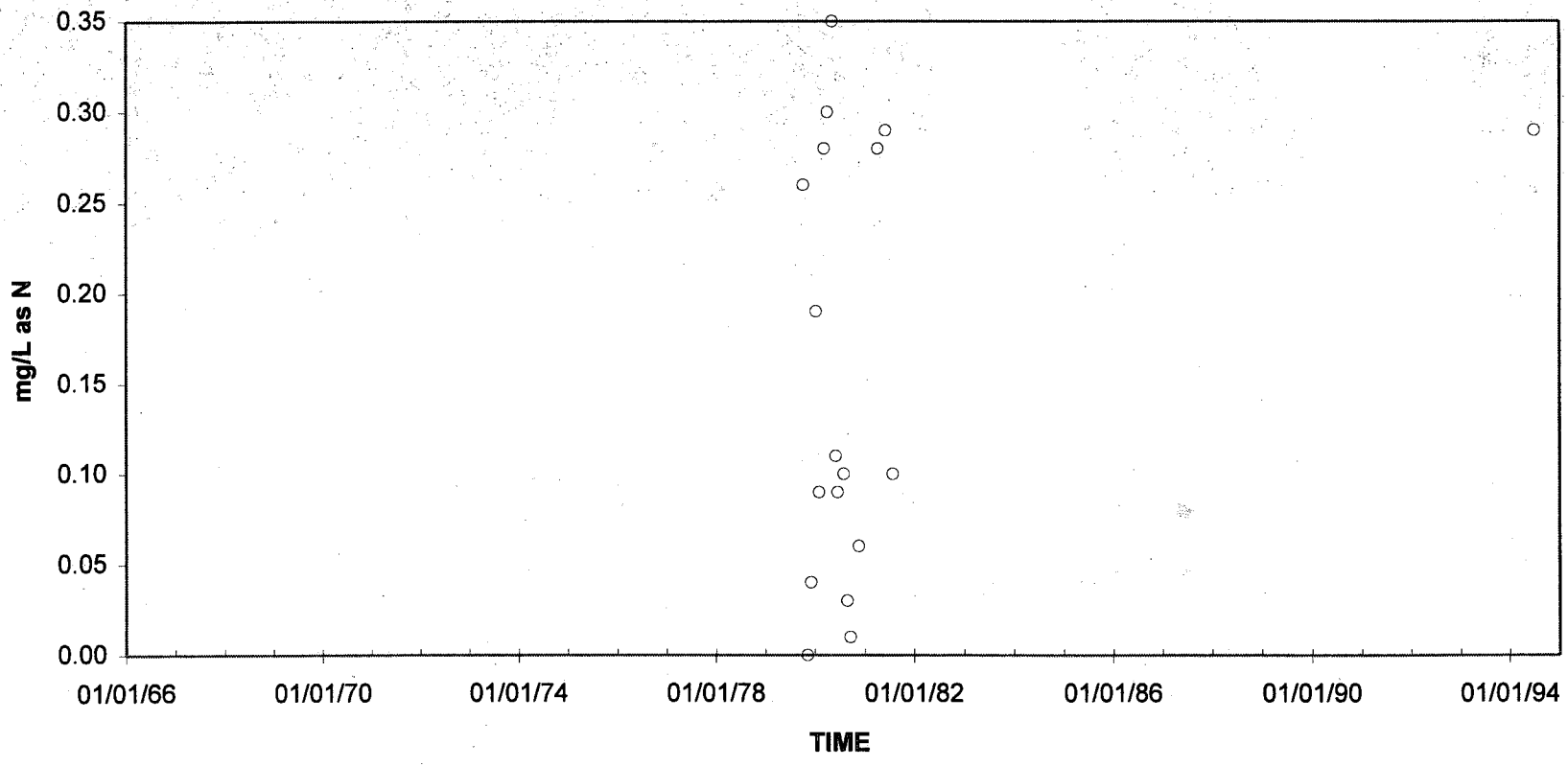
Figure
10.5.4–128



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, NITRITE TOTAL
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

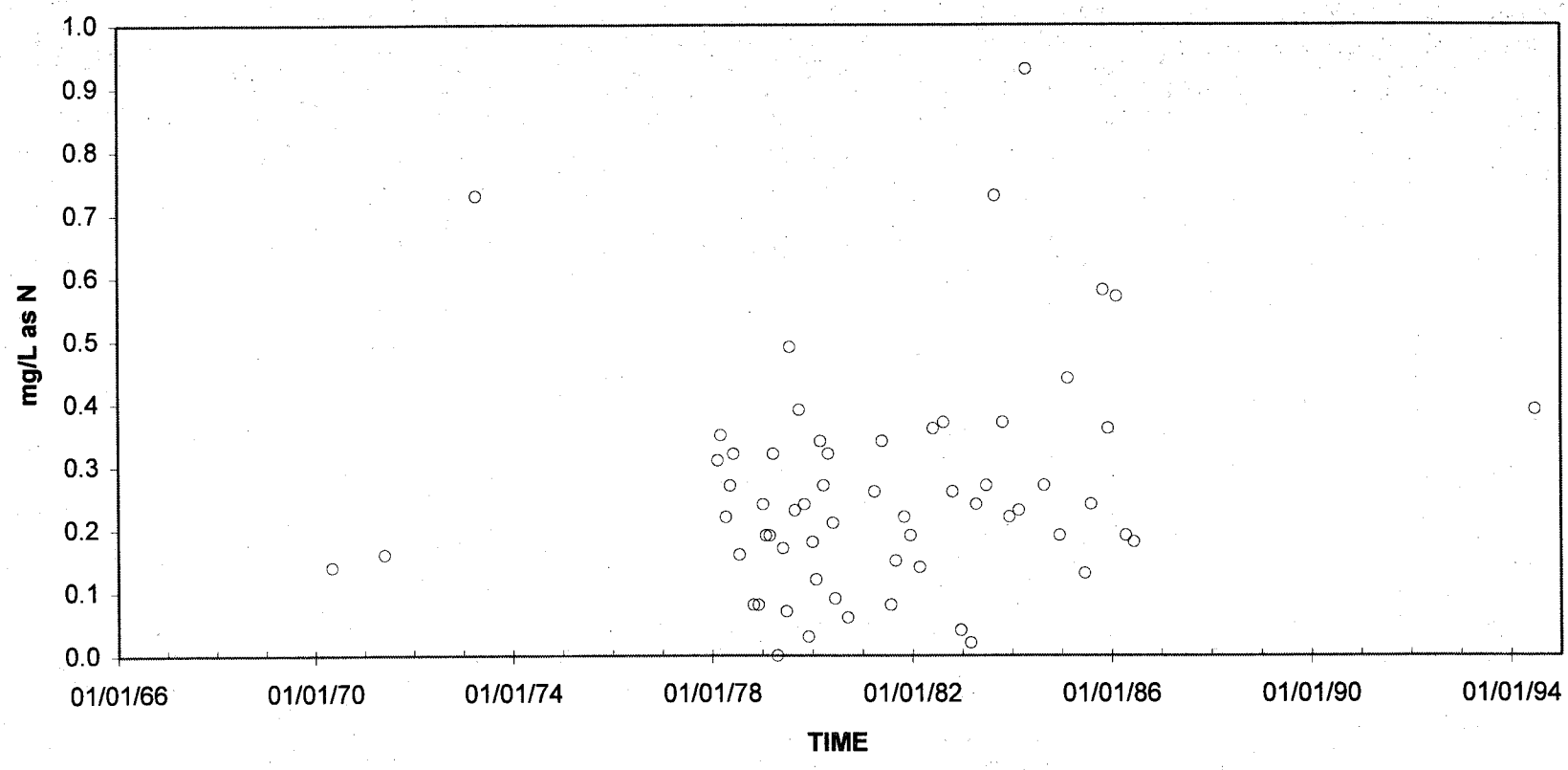
Figure
10.5.4-129



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, ORGANIC DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

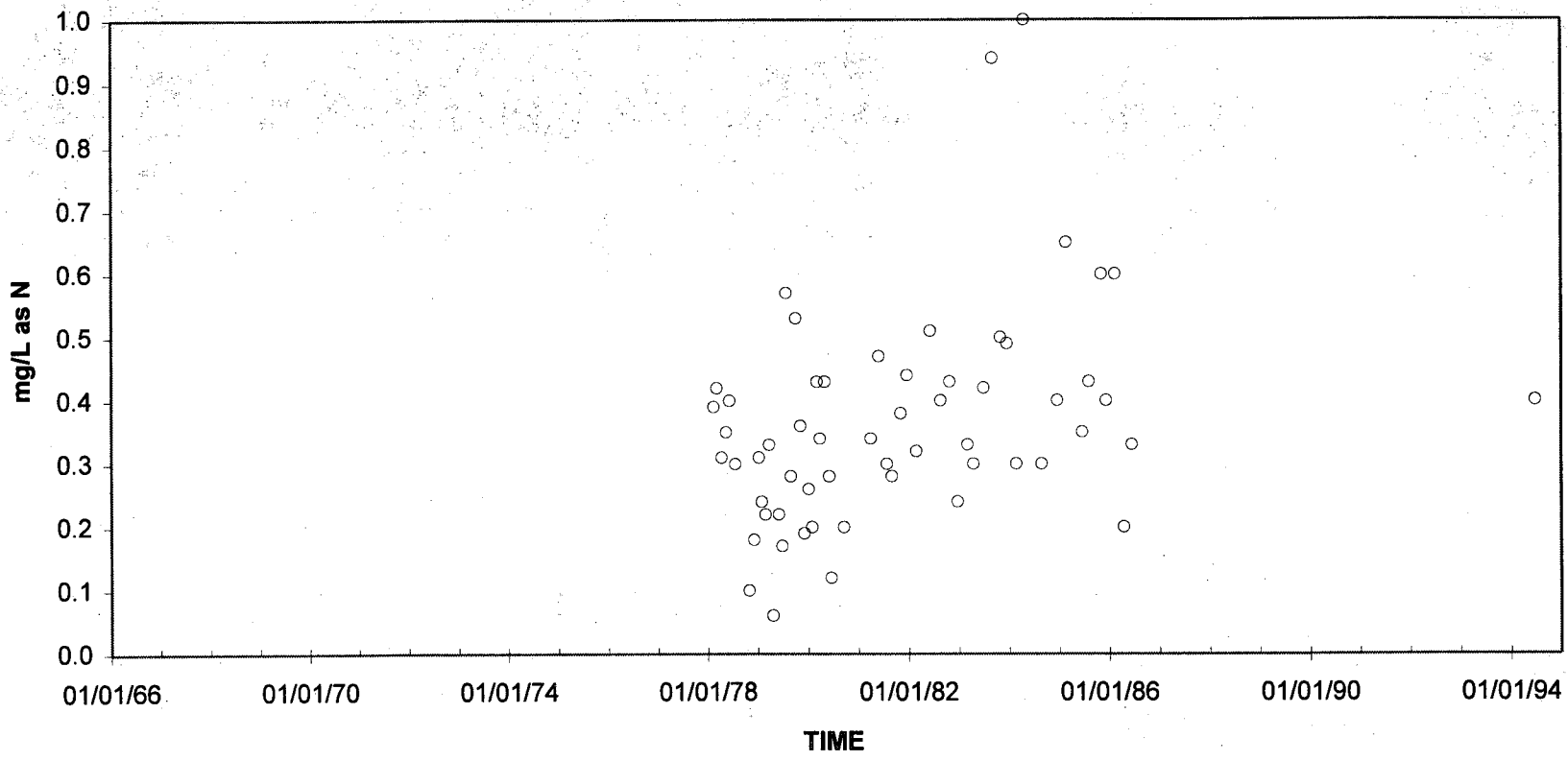
Figure
10.5.4–130



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, ORGANIC TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

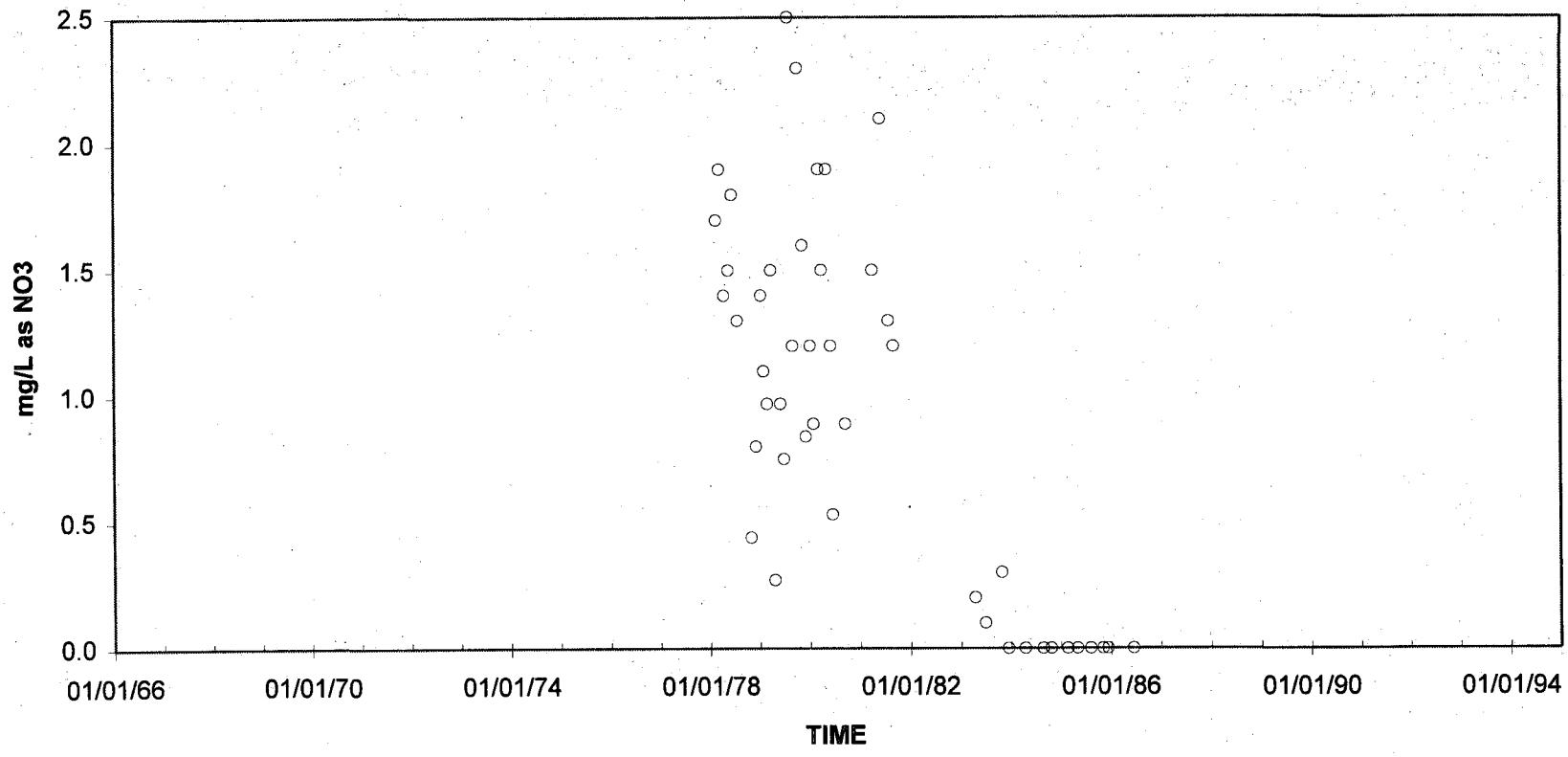
Figure
10.5.4–131



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

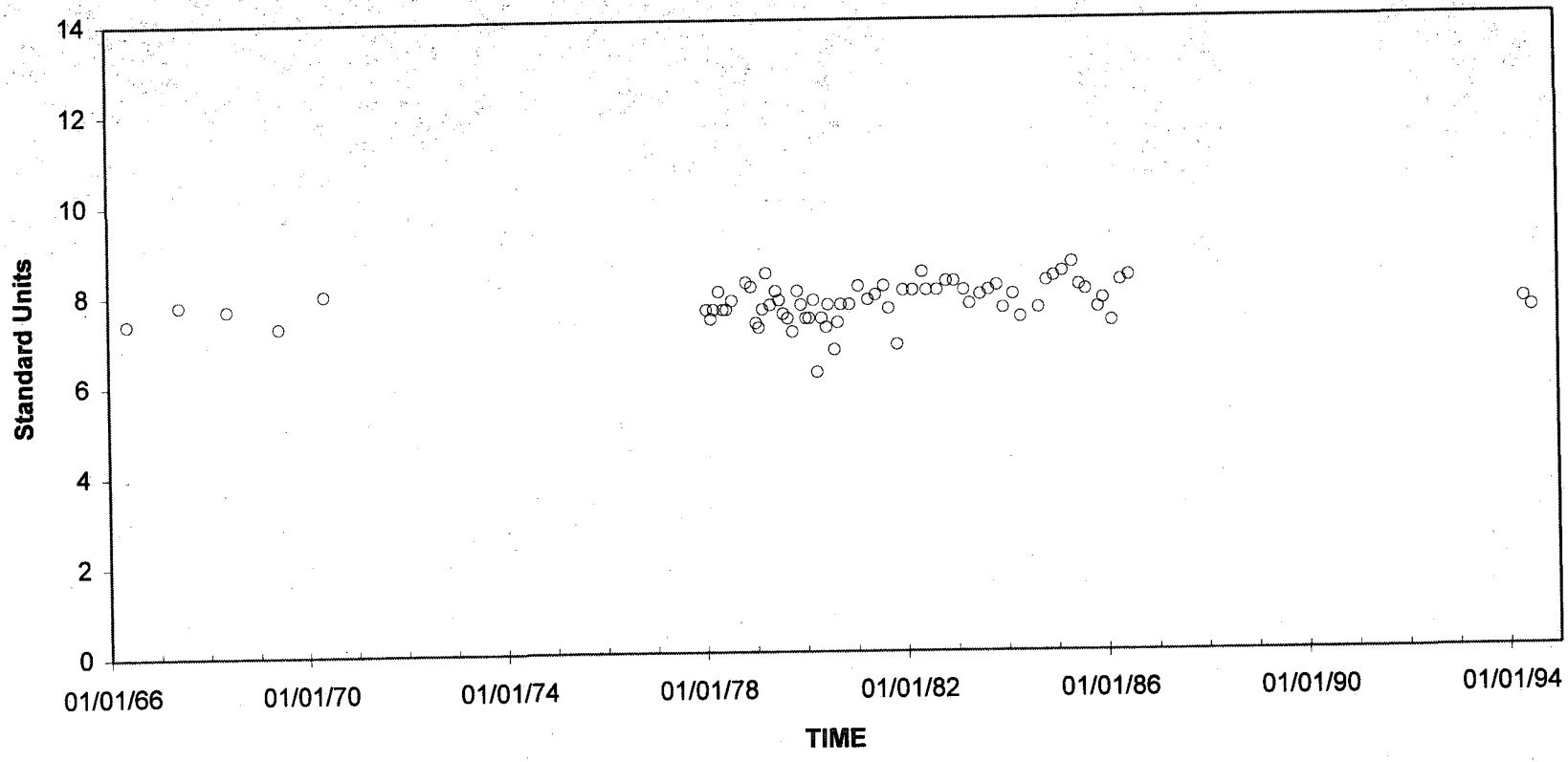
Figure
10.5.4–132



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
NITROGEN, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

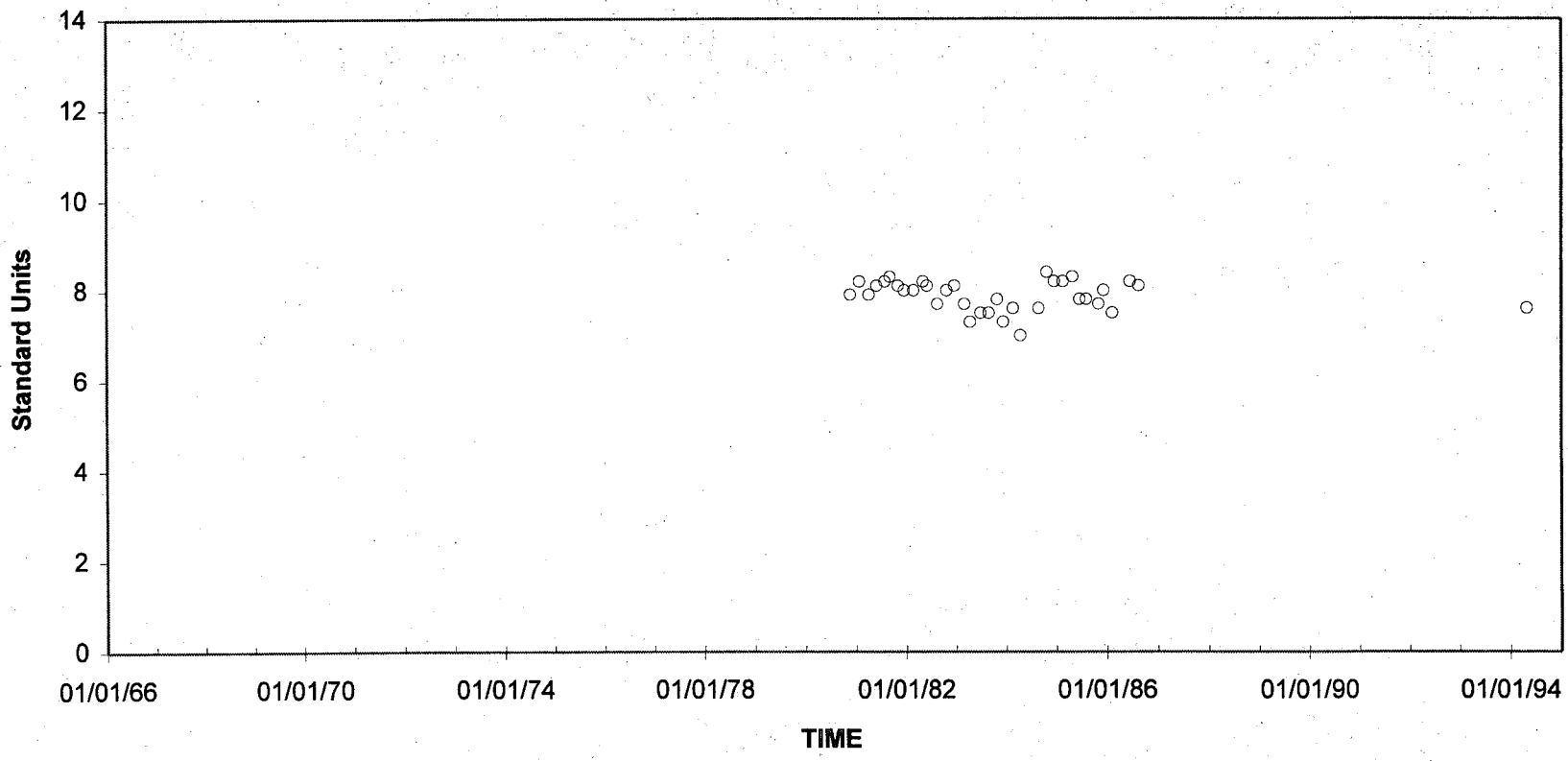
Figure
10.5.4–133



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
pH WATER WHOLE FIELD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

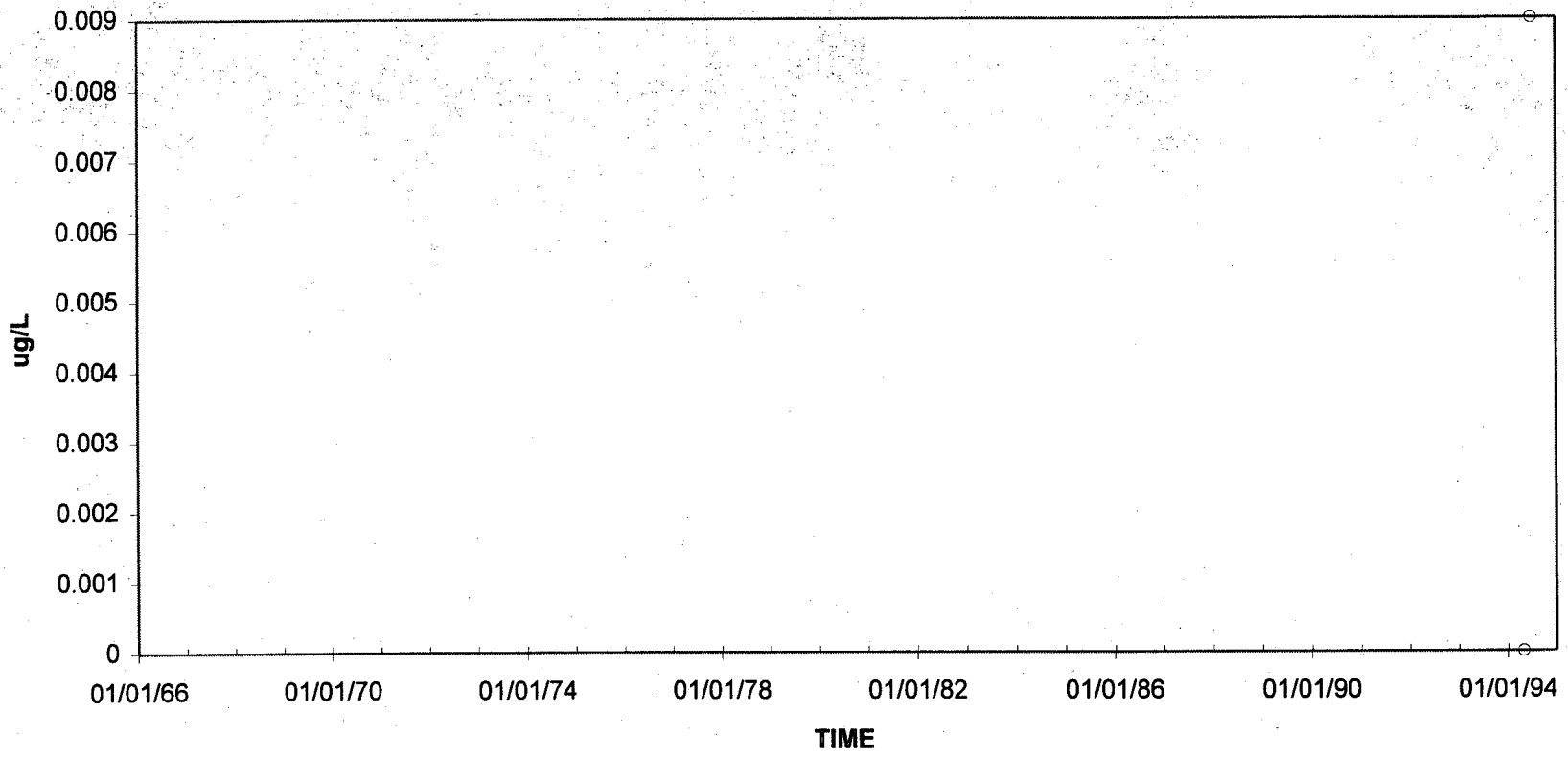
Figure
10.5.4-134



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
pH WATER WHOLE LAB
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

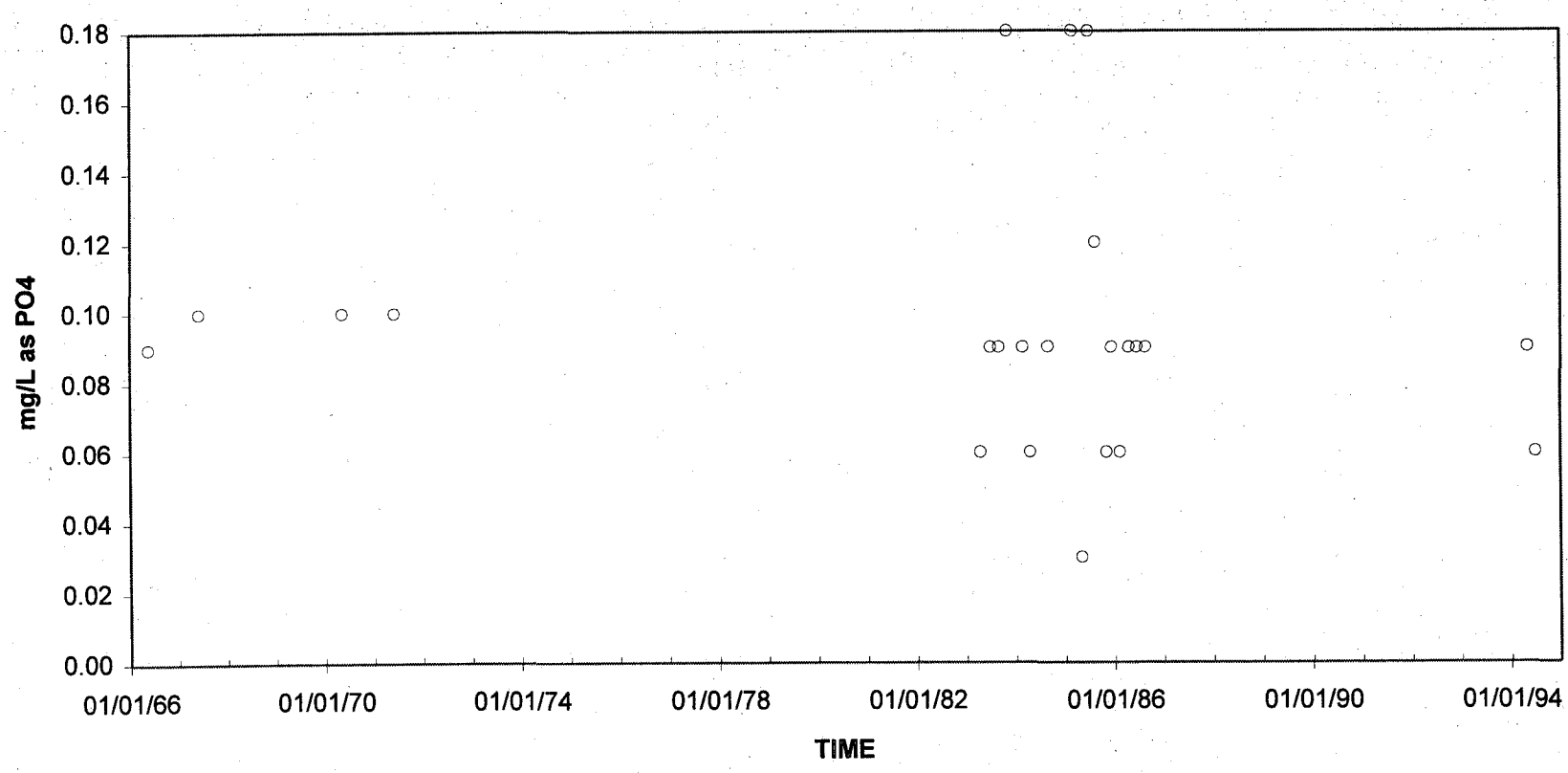
Figure
10.5.4–135



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
PHORATE, WATER FLTRD GF 0.7U REC
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

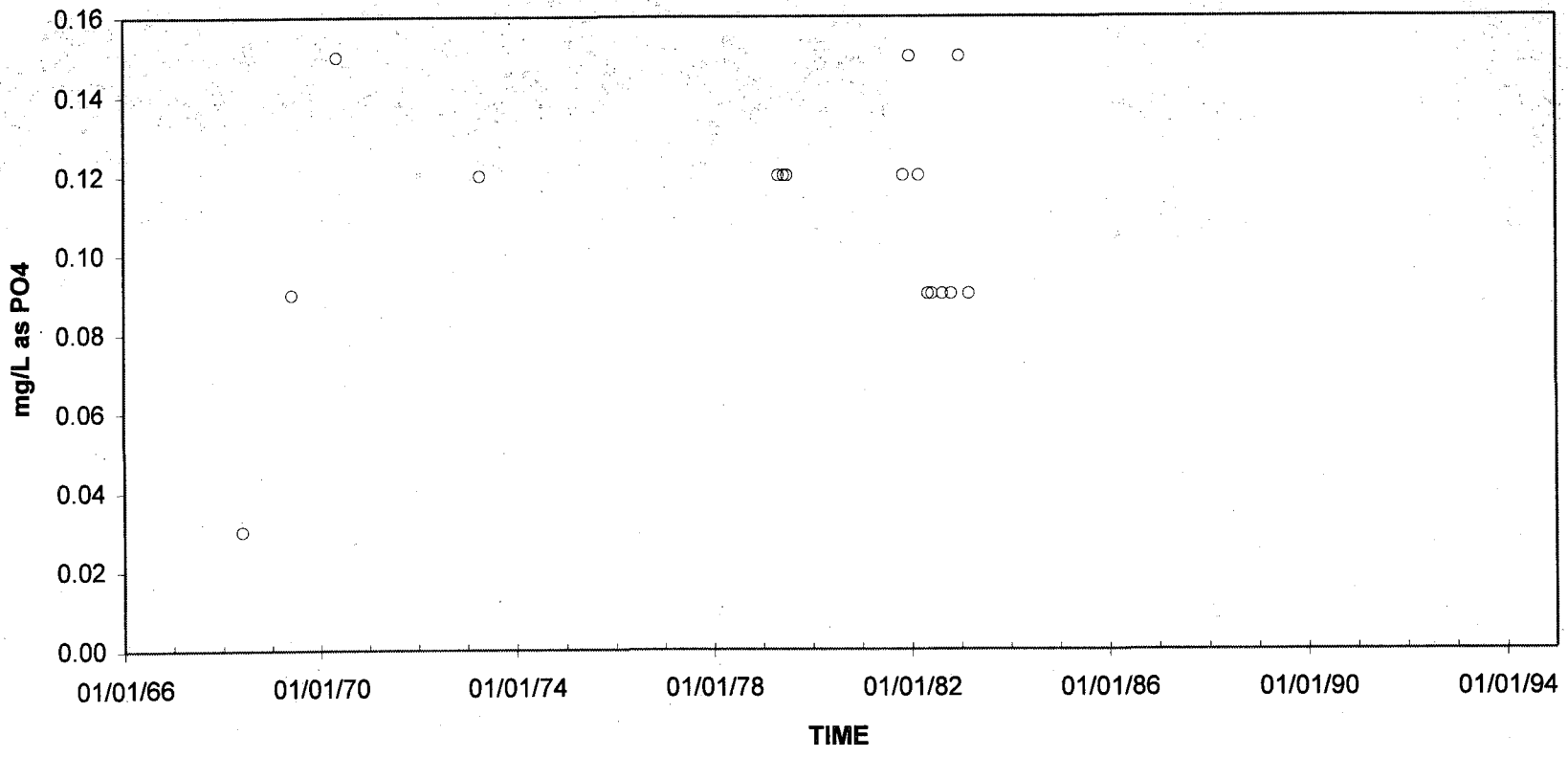
Figure
10.5.4–136



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
PHOSPHATE, ORTHO DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

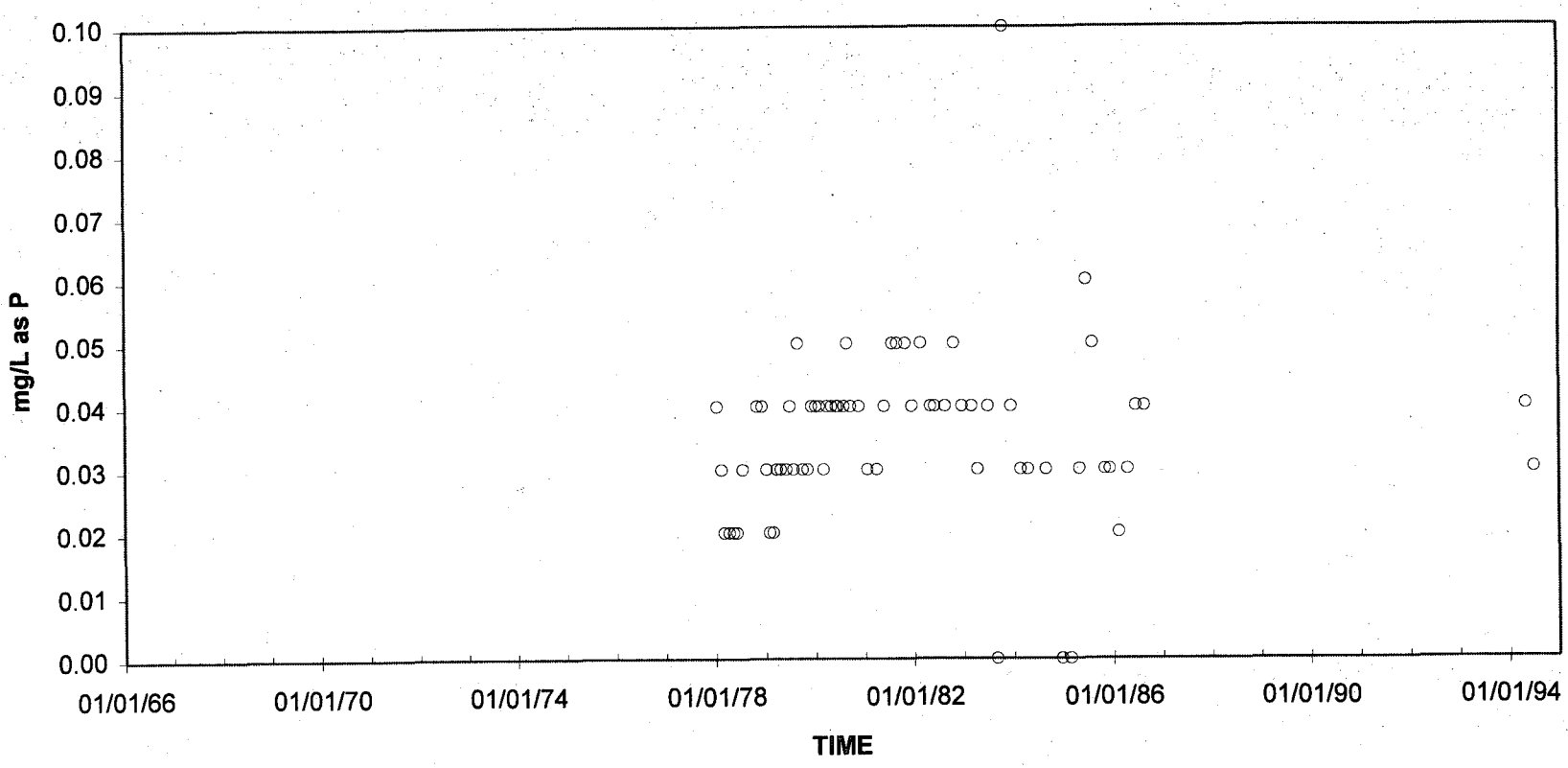
Figure
10.5.4–137



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
PHOSPHATE, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

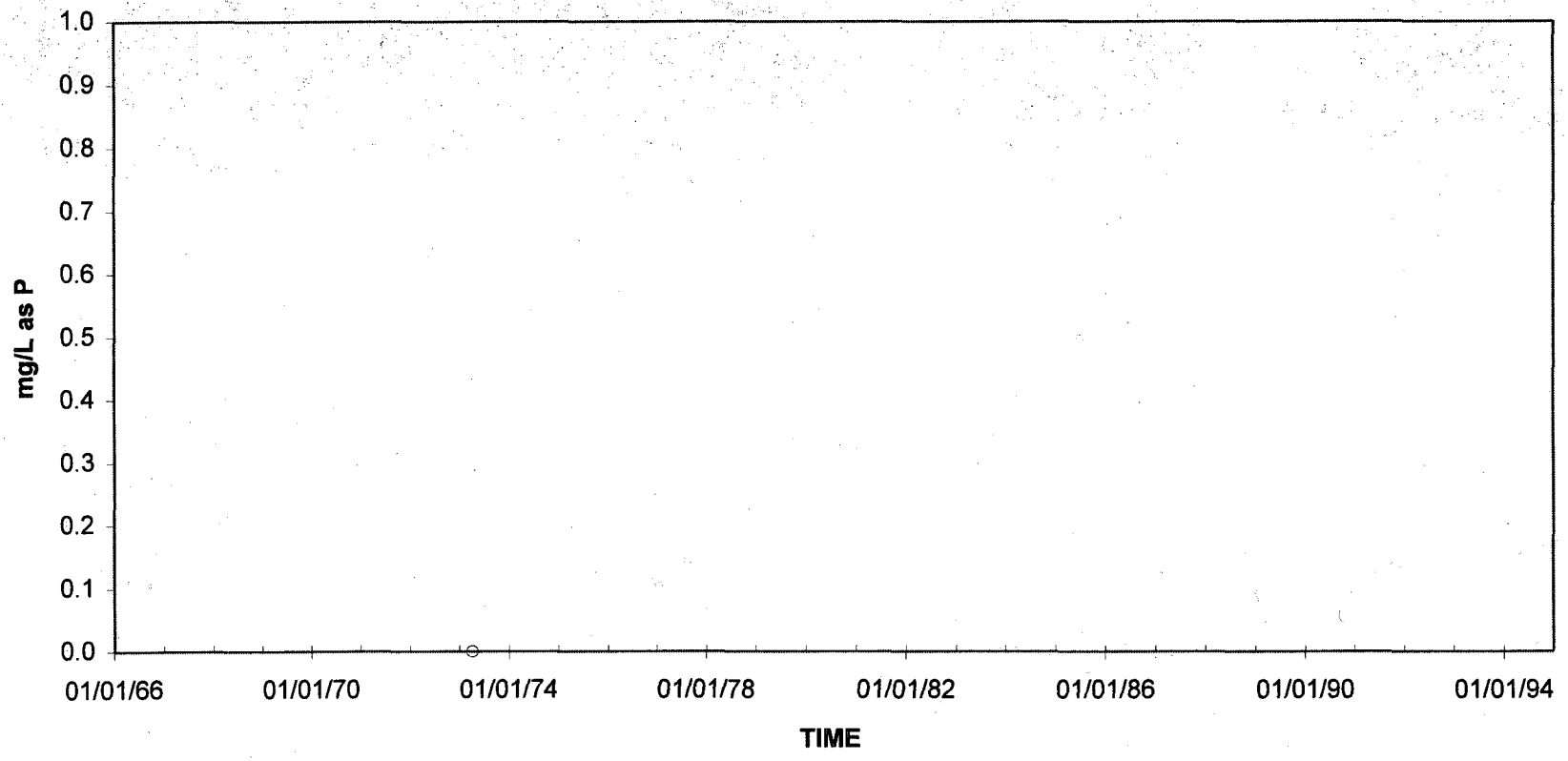
Figure
10.5.4–138



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
PHOSPHORUS, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

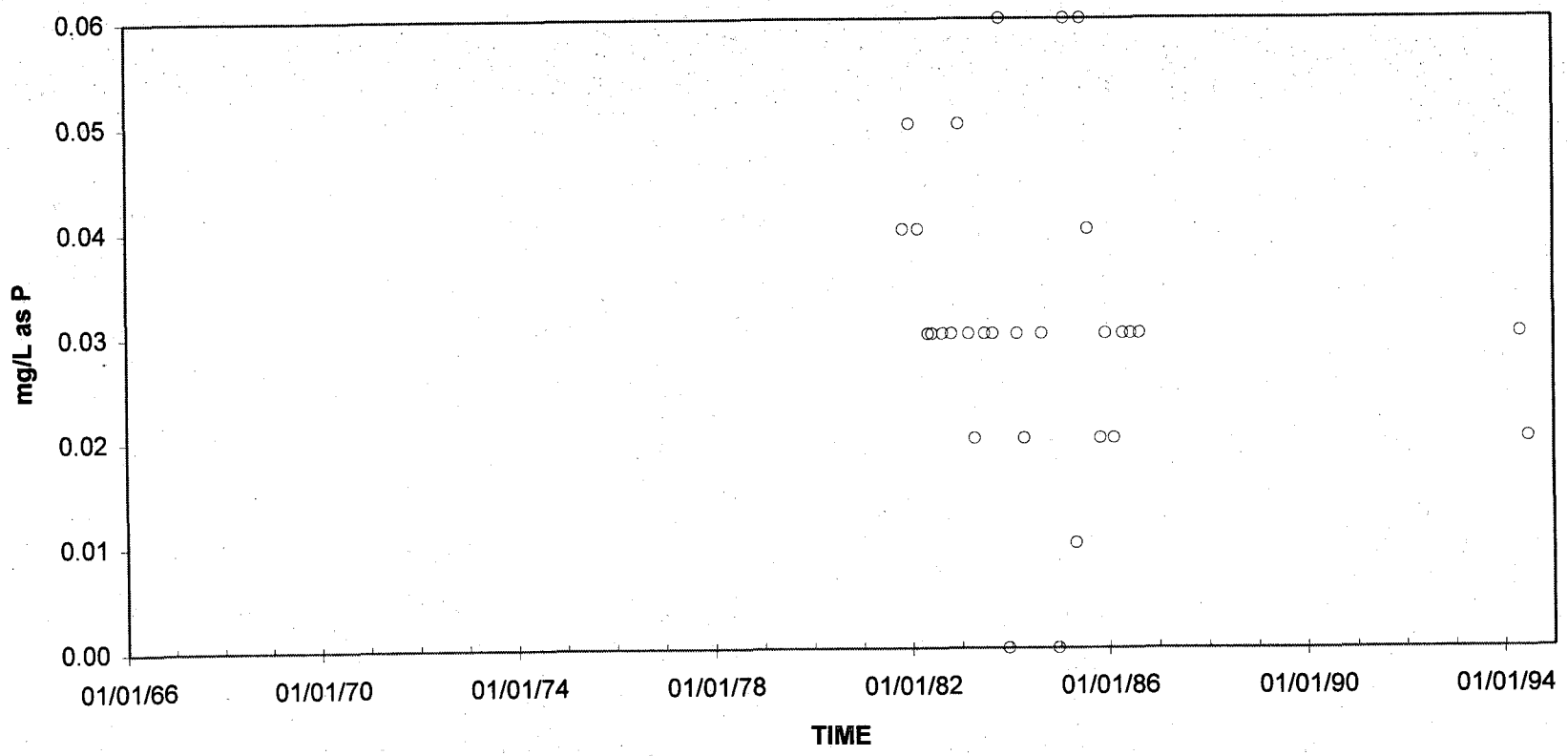
Figure
10.5.4–139



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
PHOSPHORUS, ORGANIC TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

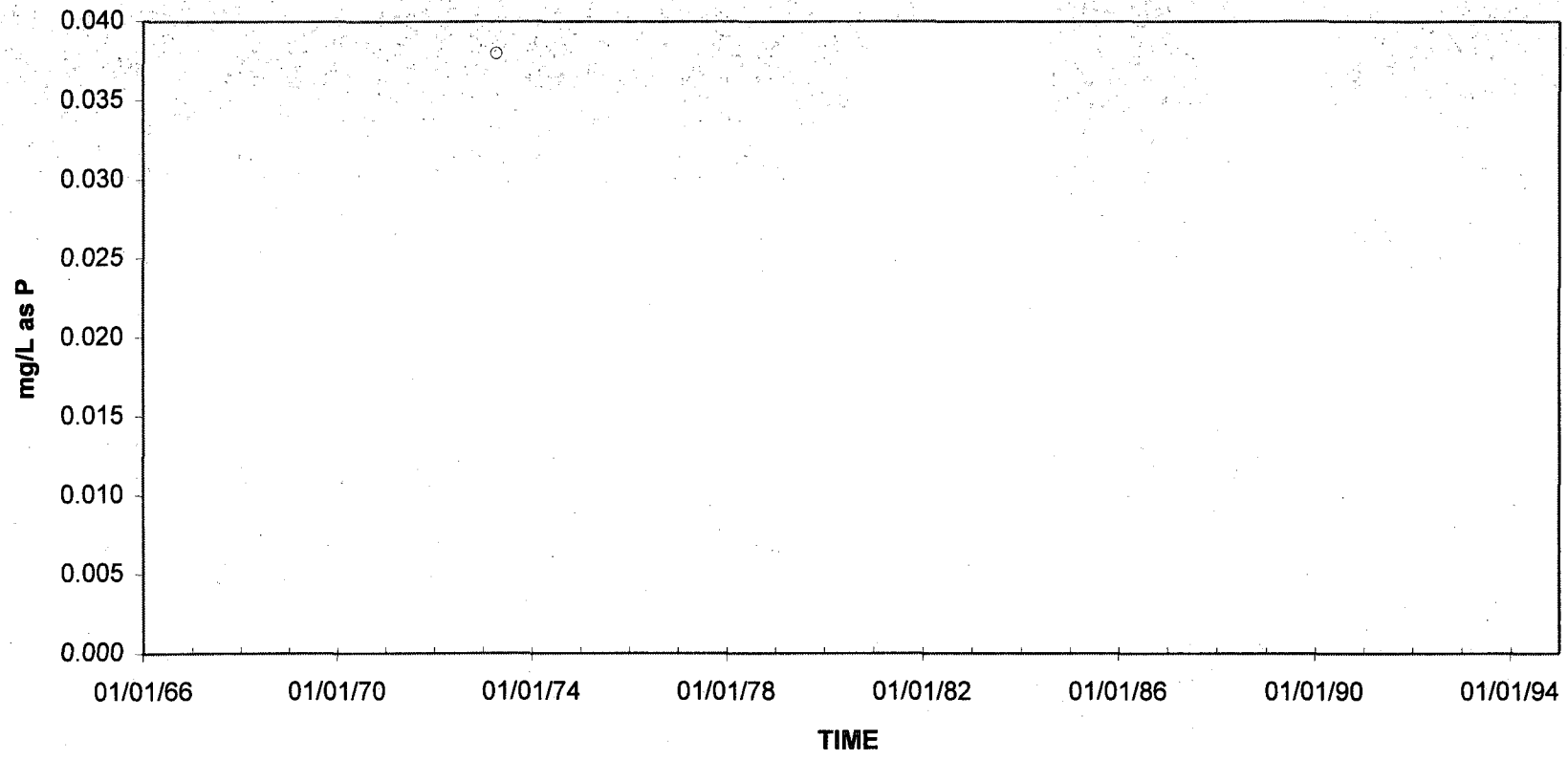
Figure
10.5.4–140



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
PHOSPHORUS, ORTHO DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

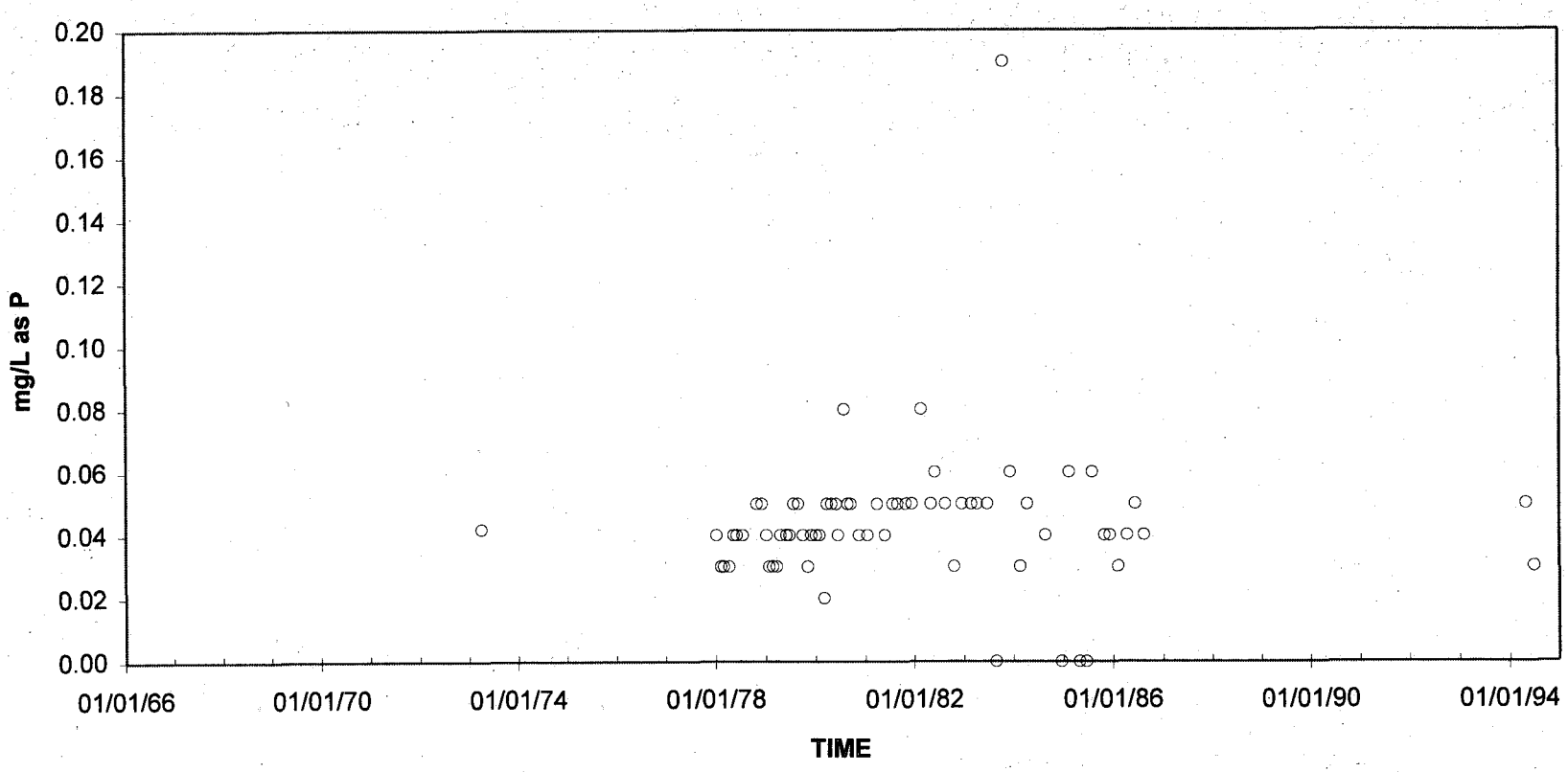
Figure
10.5.4-141



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
PHOSPHORUS, ORTHO TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

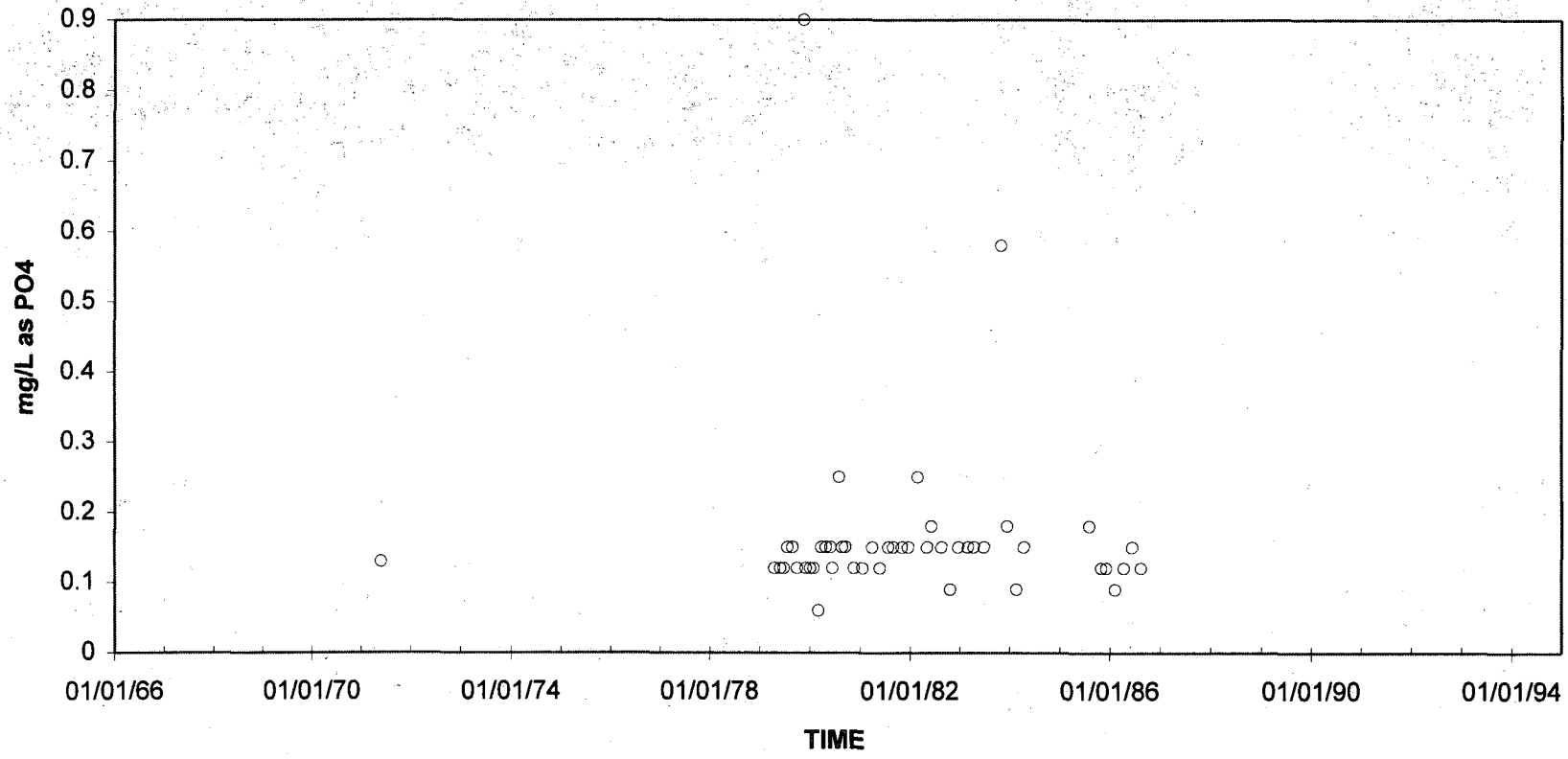
Figure
10.5.4–142



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
PHOSPHORUS, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

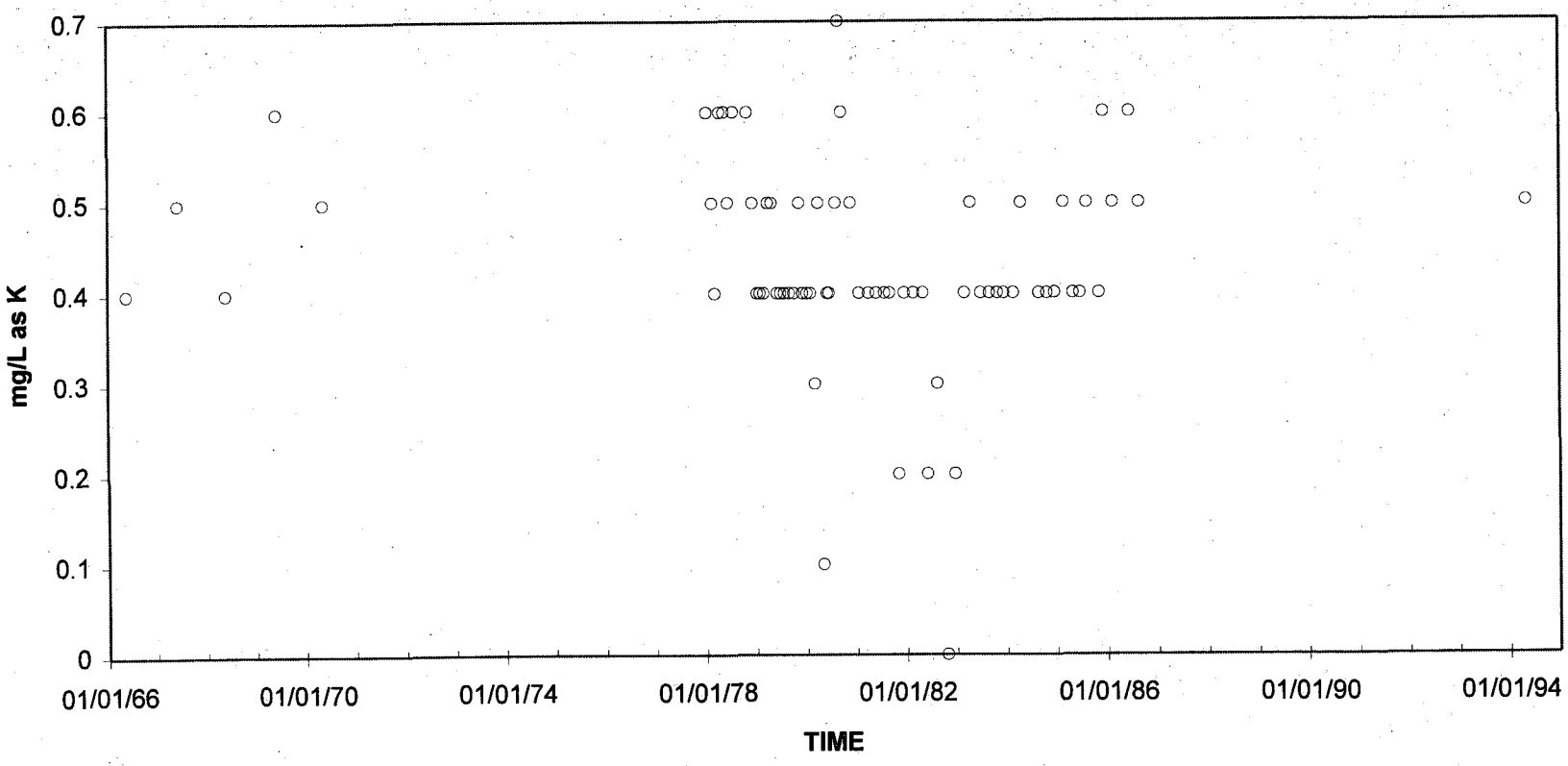
Figure
10.5.4-143



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
PHOSPHORUS, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

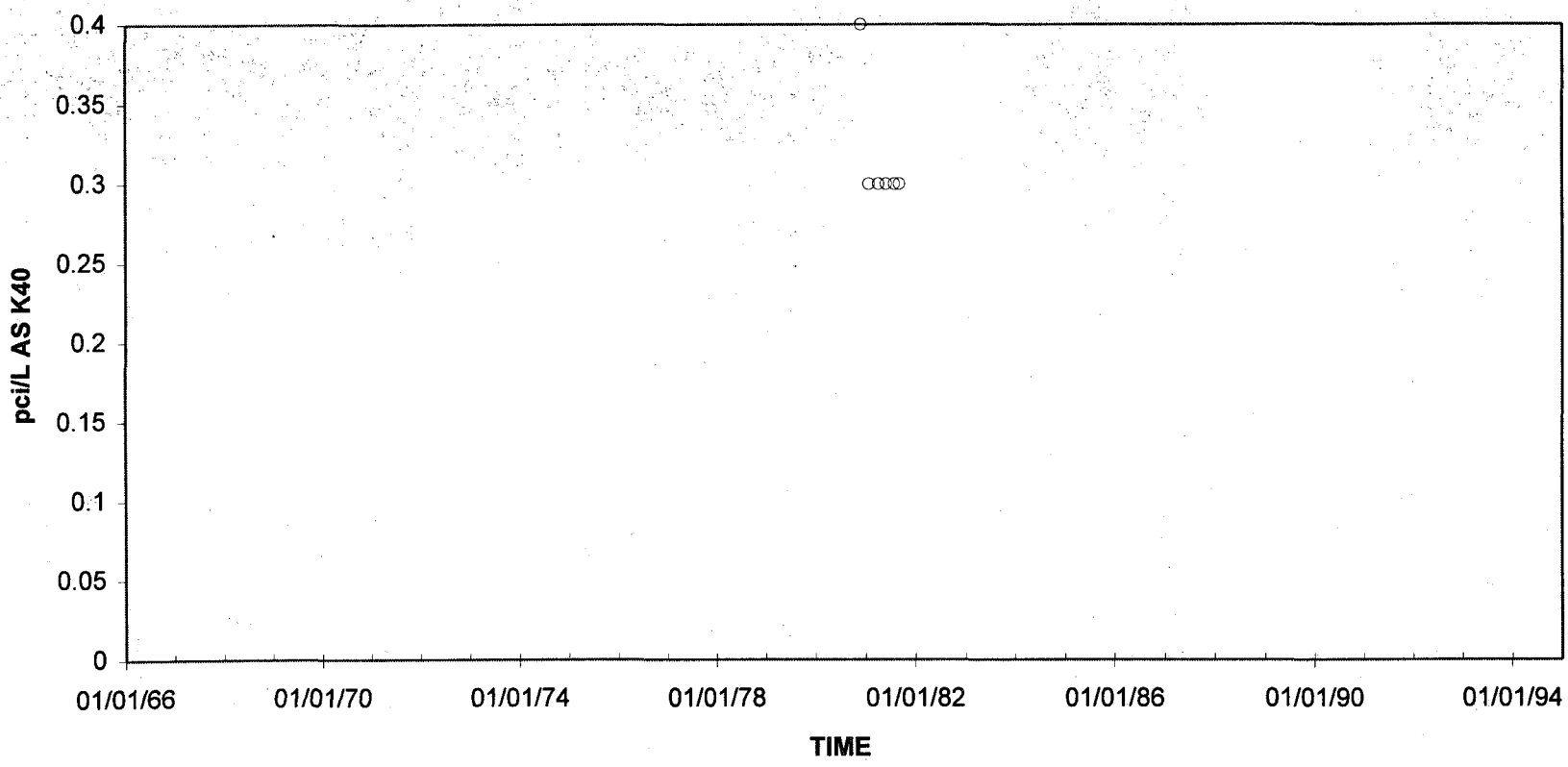
Figure
10.5.4-144



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
POTASSIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

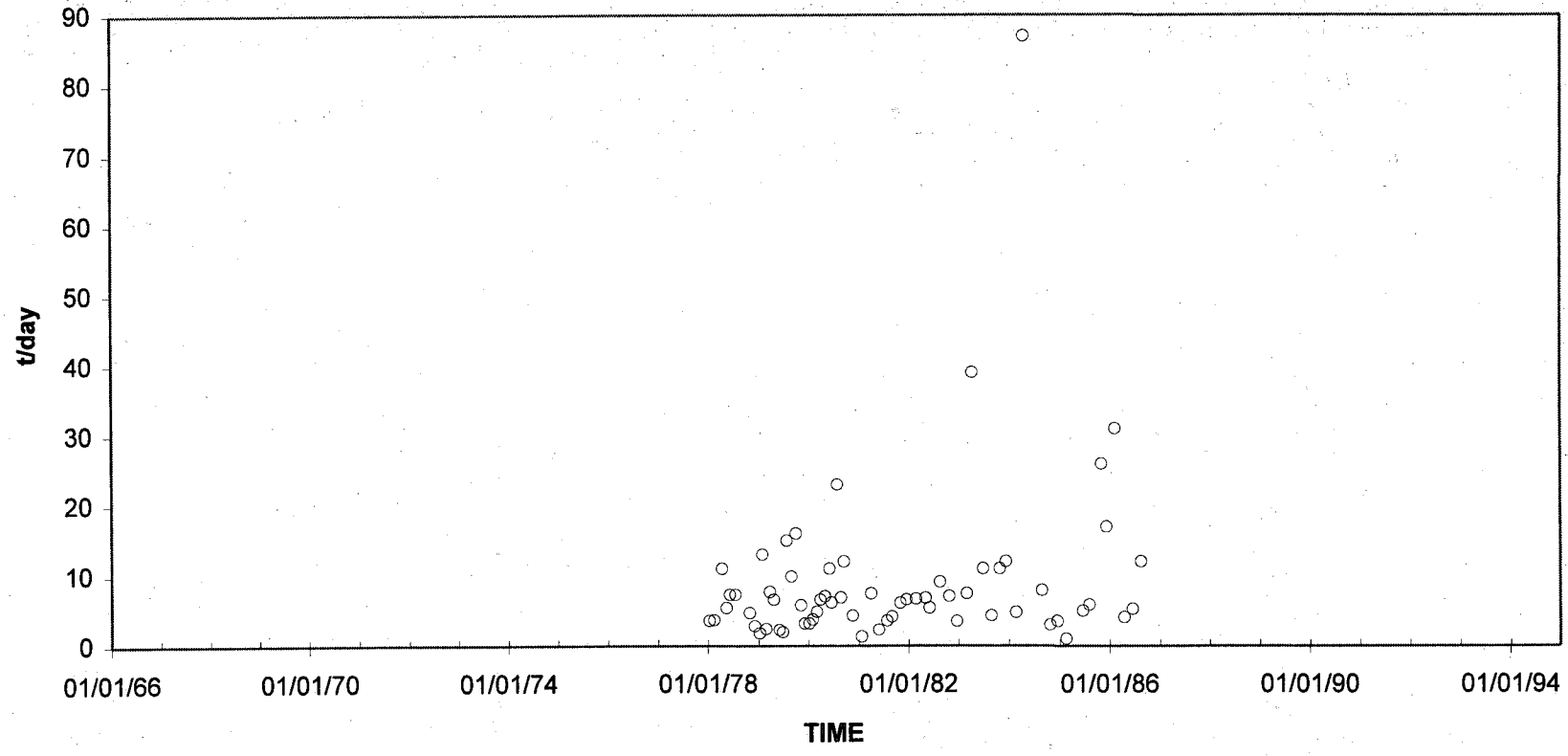
Figure
10.5.4-145



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
POTASSIUM 40, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

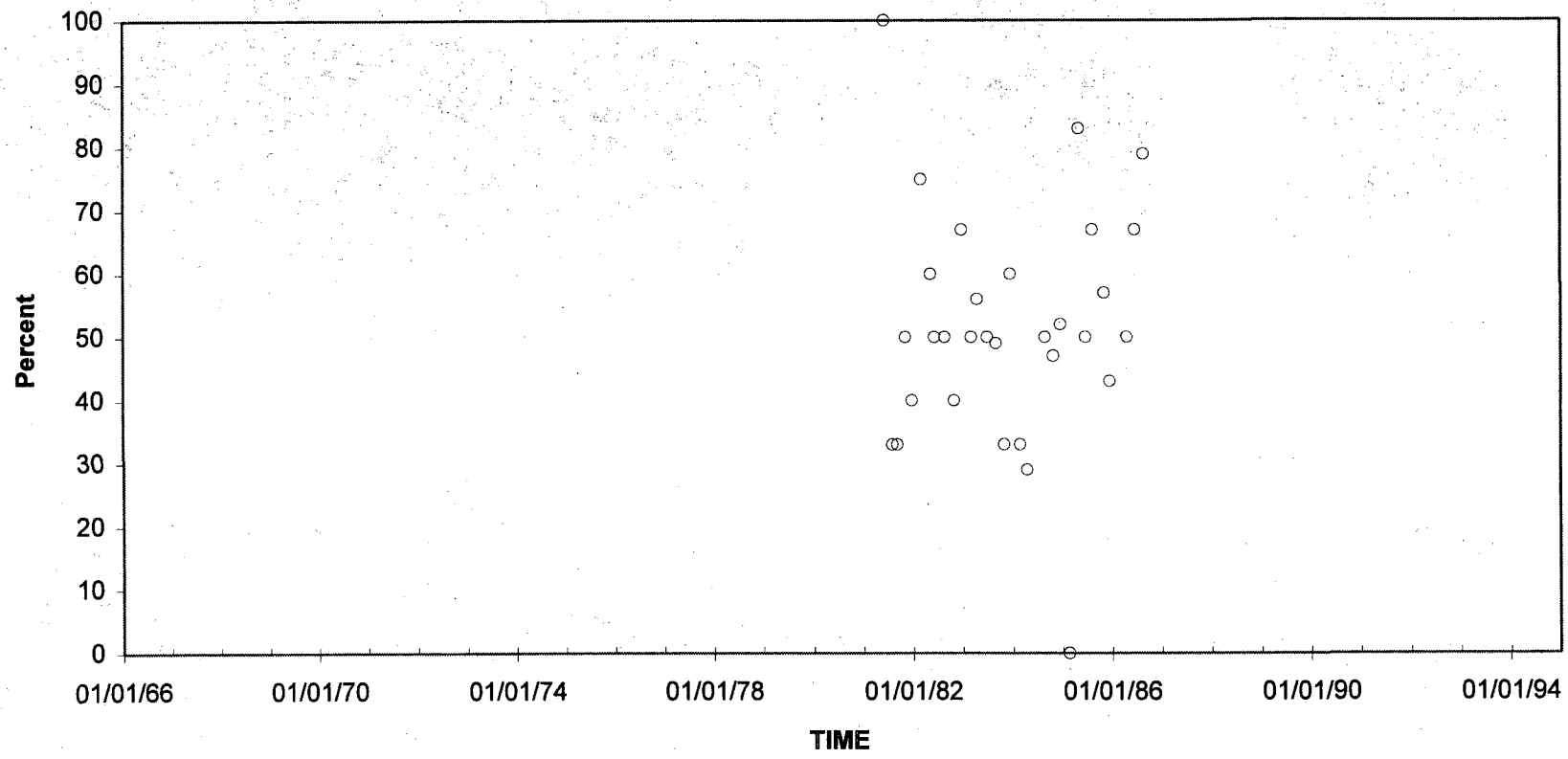
Figure
10.5.4–146



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SEDIMENT, DISCHARGE SUSPENDED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

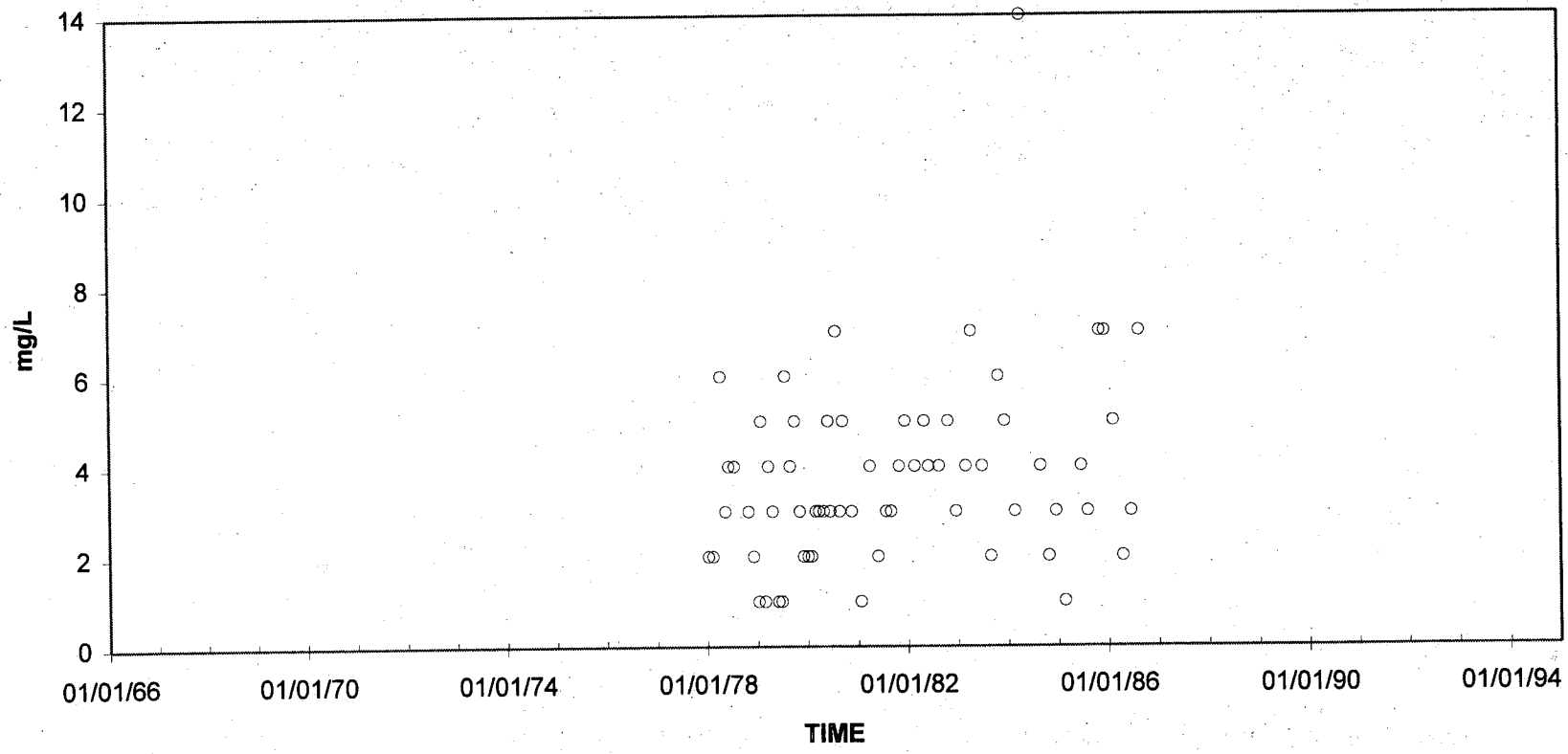
Figure
10.5.4–147



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SED SUSP SIEVE DIAM % FINER THAN .062MM
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

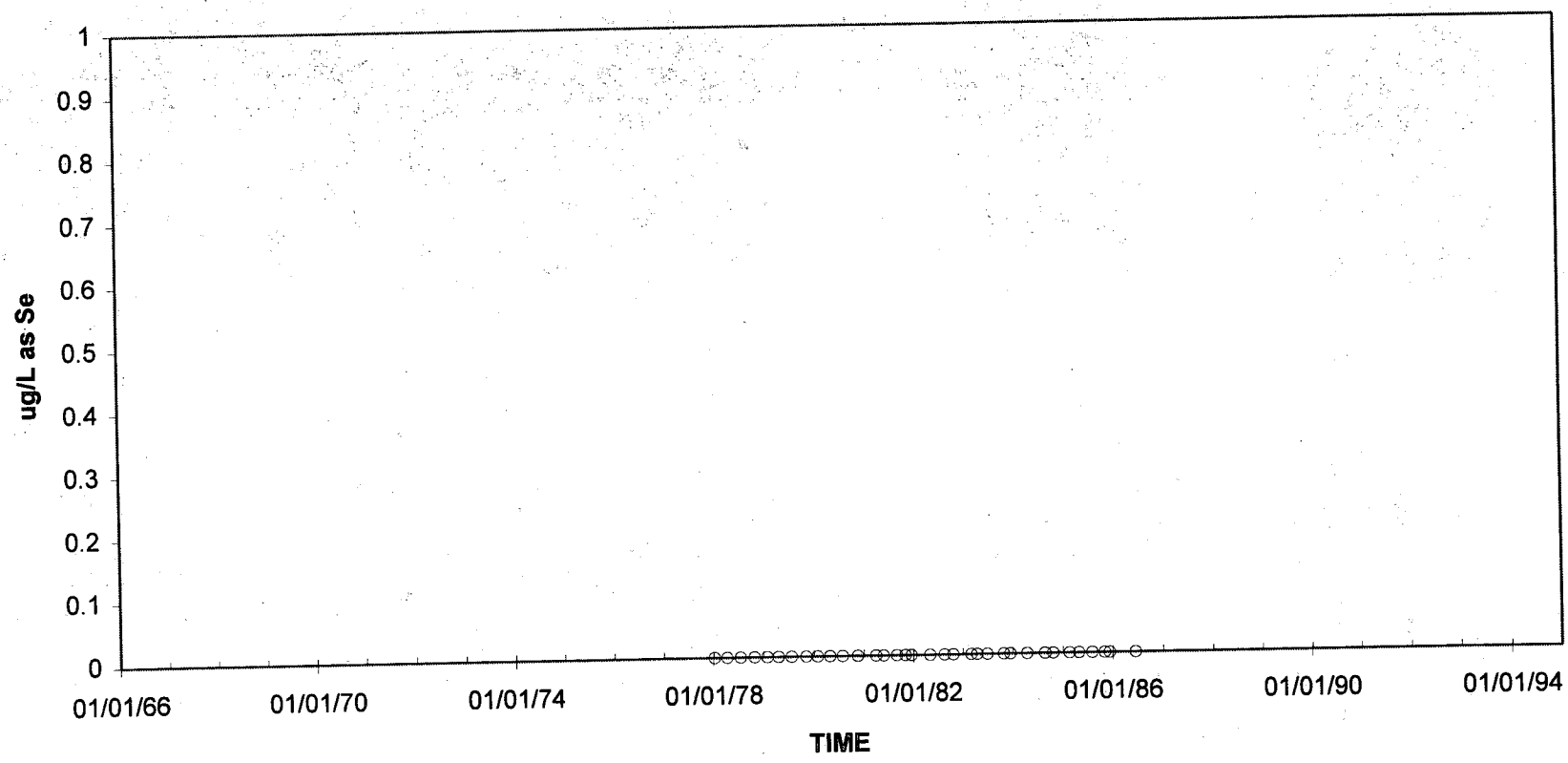
Figure
10.5.4–148



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SEDIMENT, SUSPENDED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

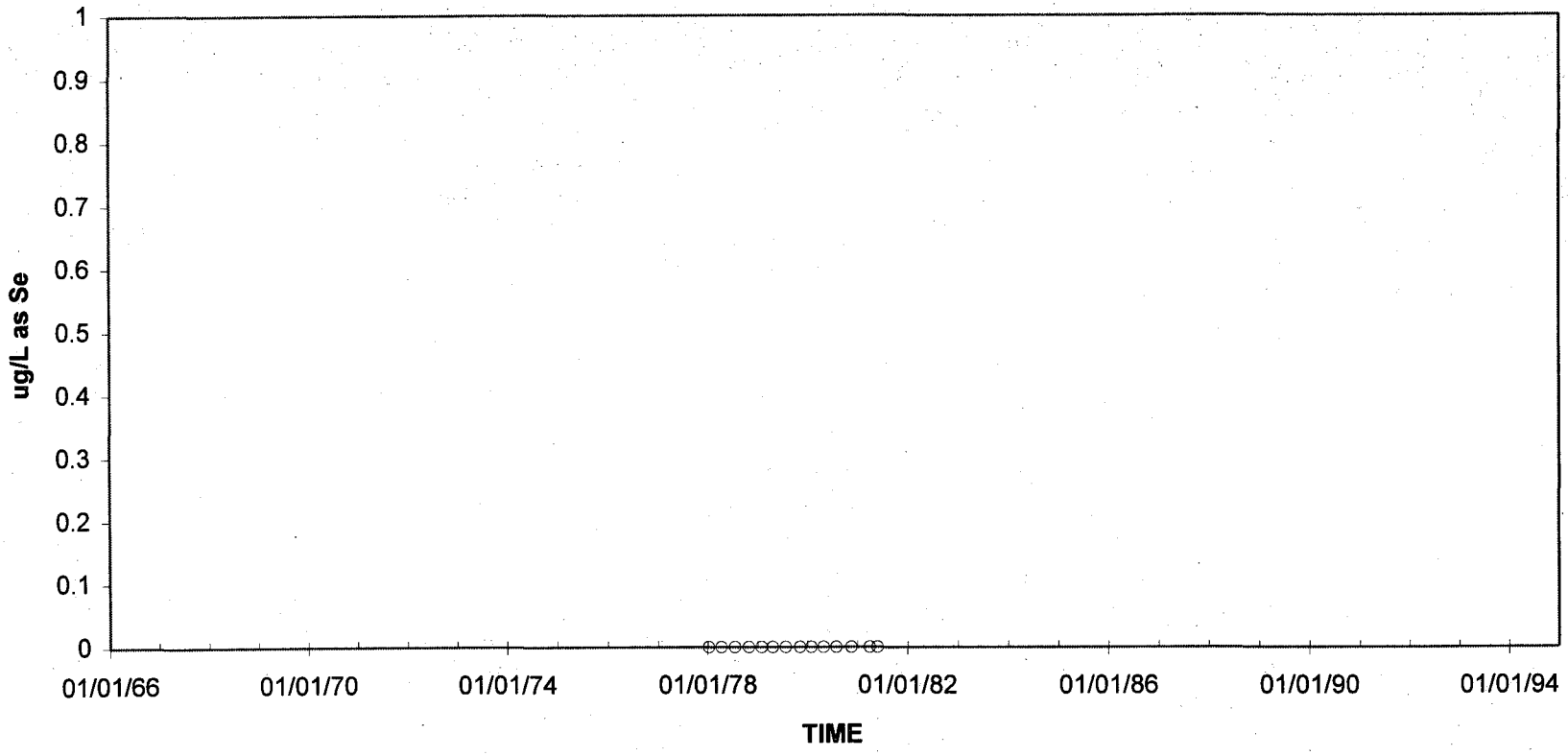
Figure
10.5.4–149



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SELENIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

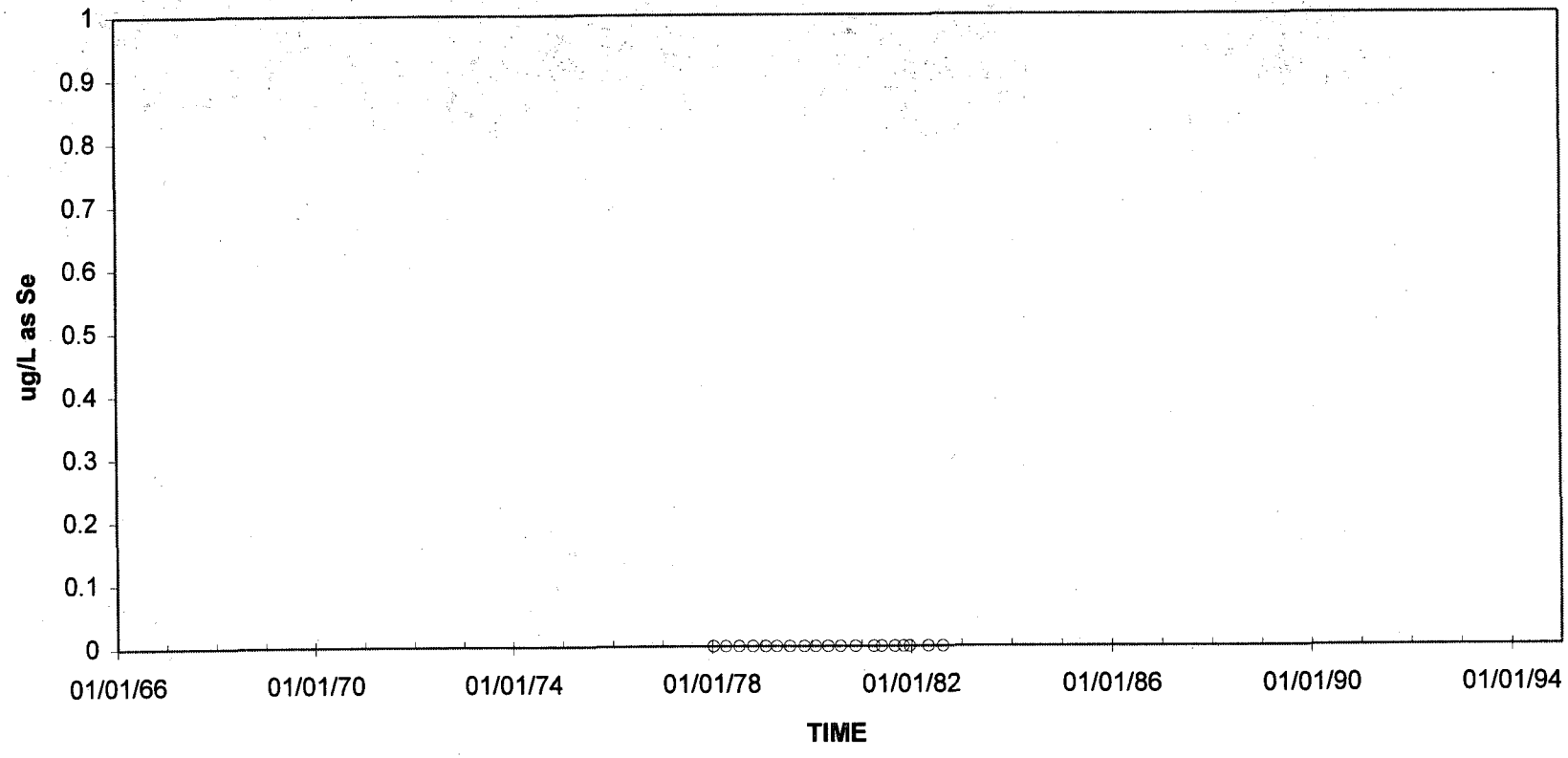
Figure
10.5.4-150



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SELENIUM, SUSPENDED TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

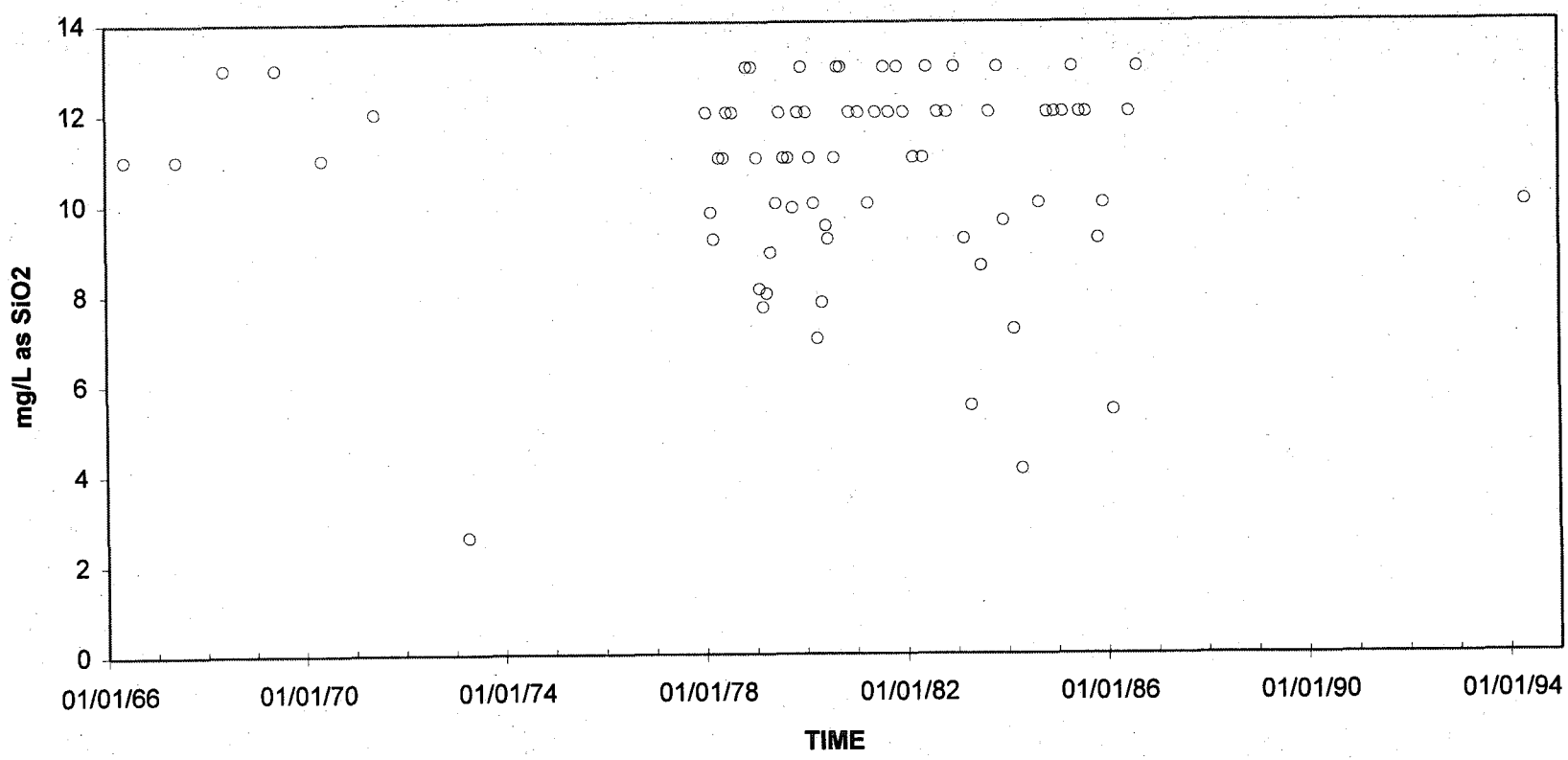
Figure
10.5.4-151



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SELENIUM, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

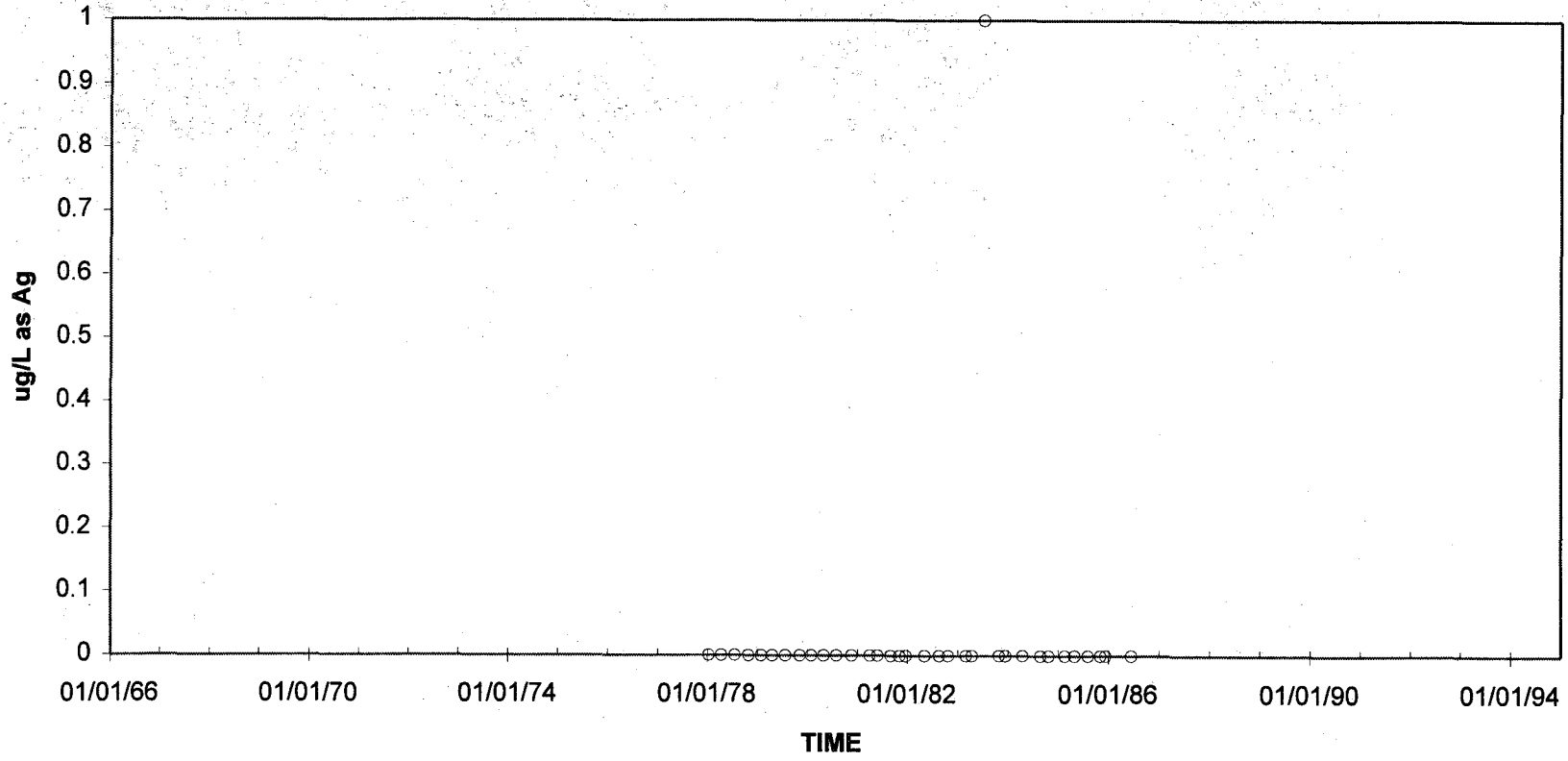
Figure
10.5.4–152



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SILICA, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

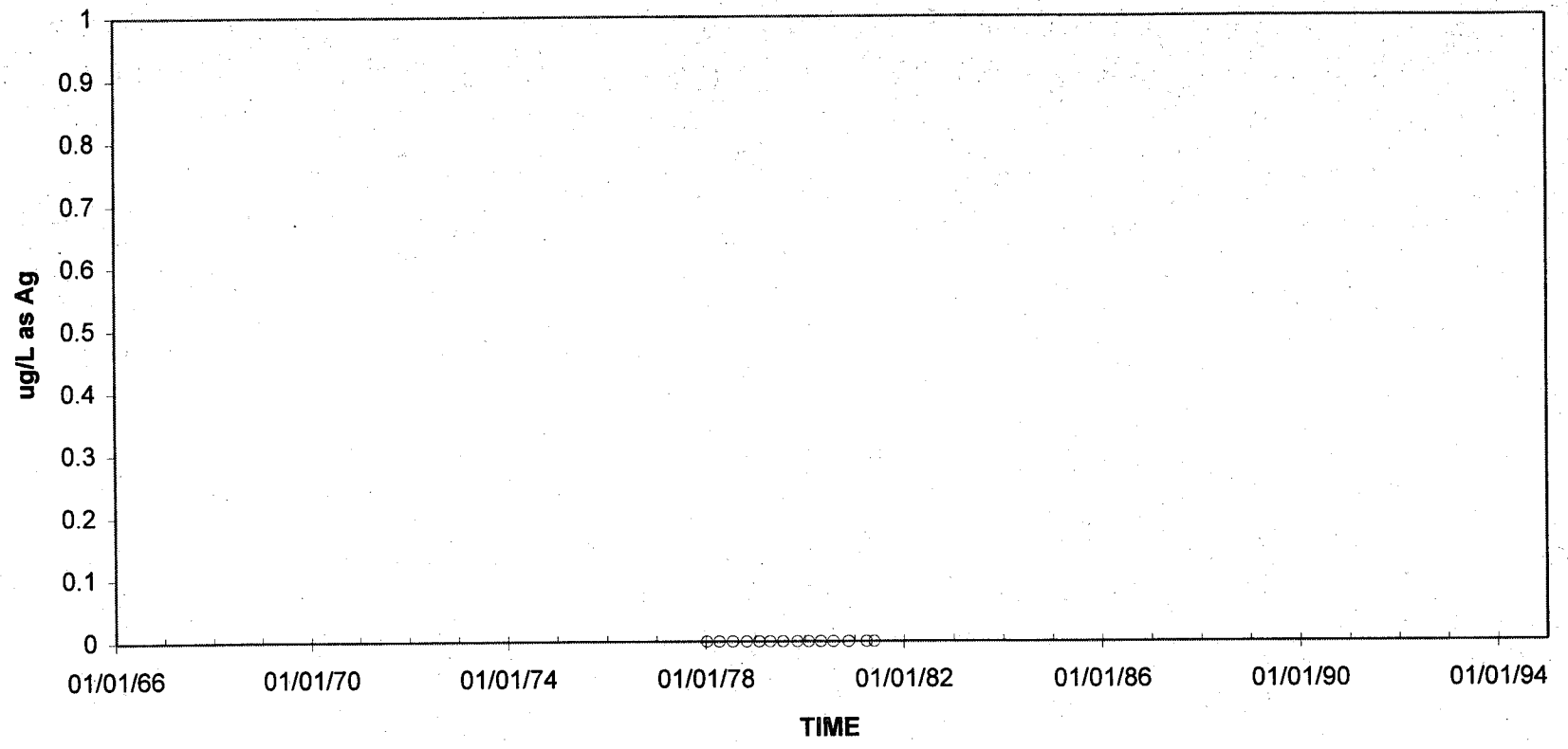
Figure
10.5.4-153



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SILVER, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

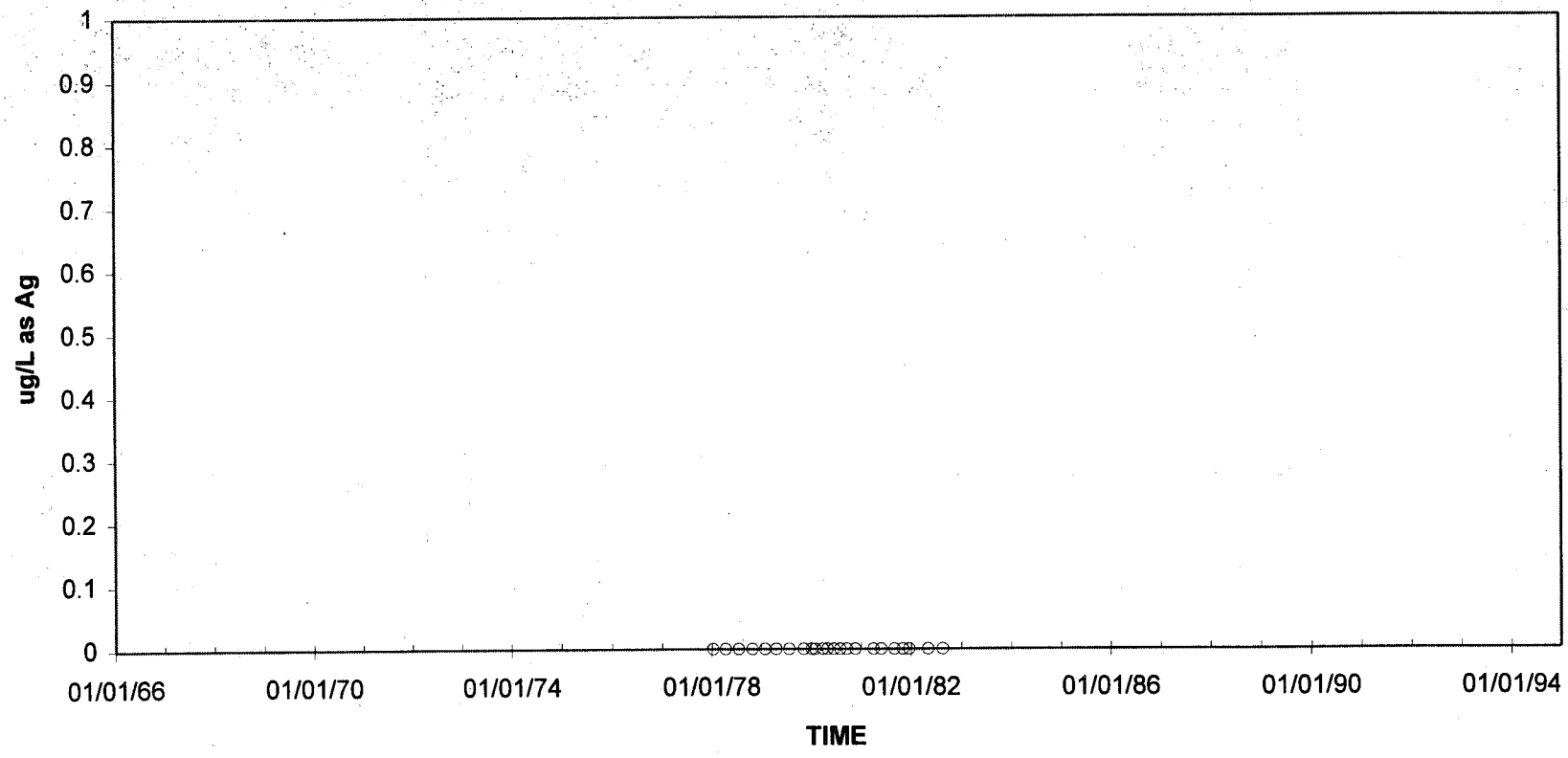
Figure
10.5.4-154



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SILVER, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

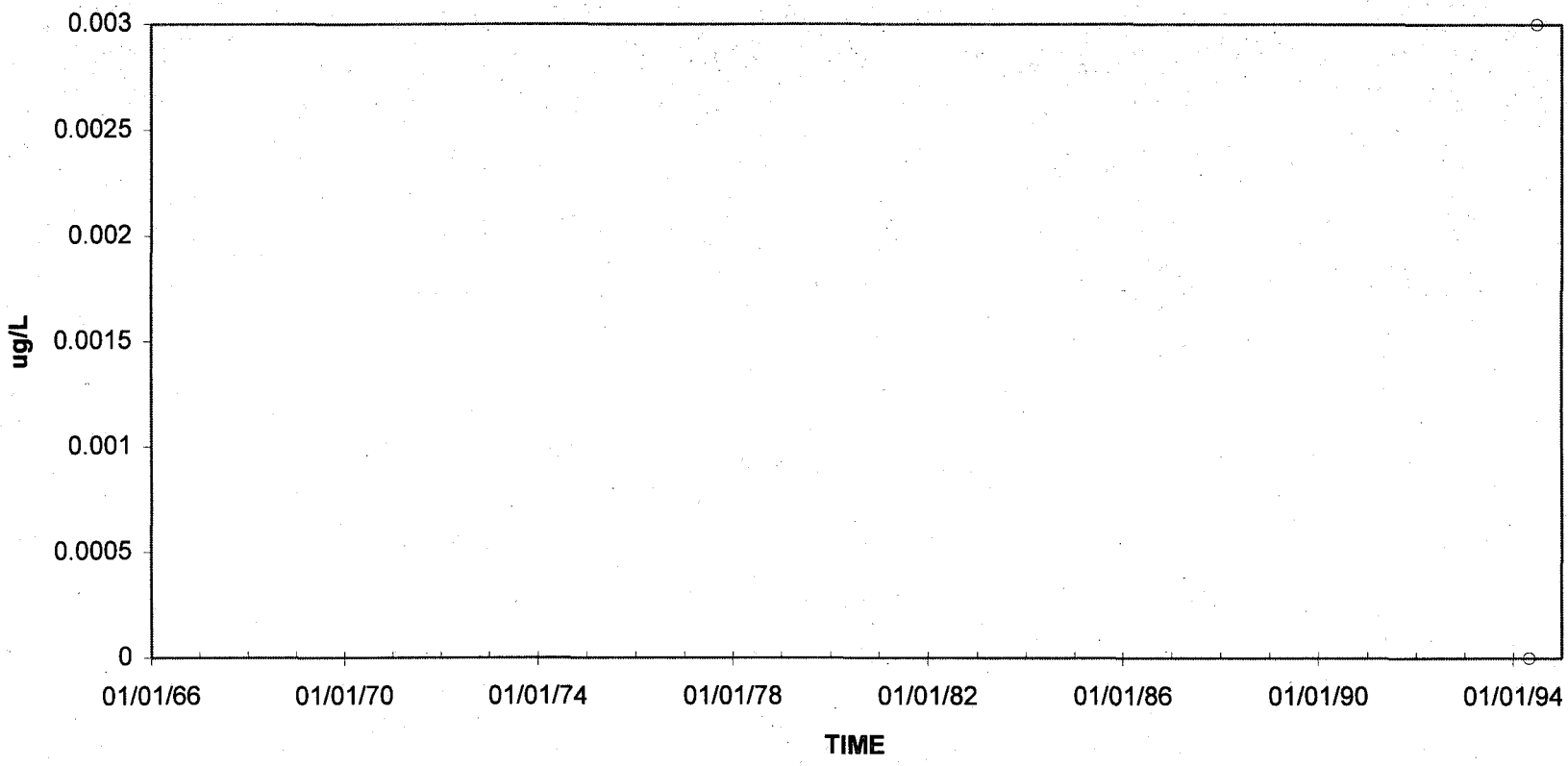
Figure
10.5.4-155



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SILVER, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

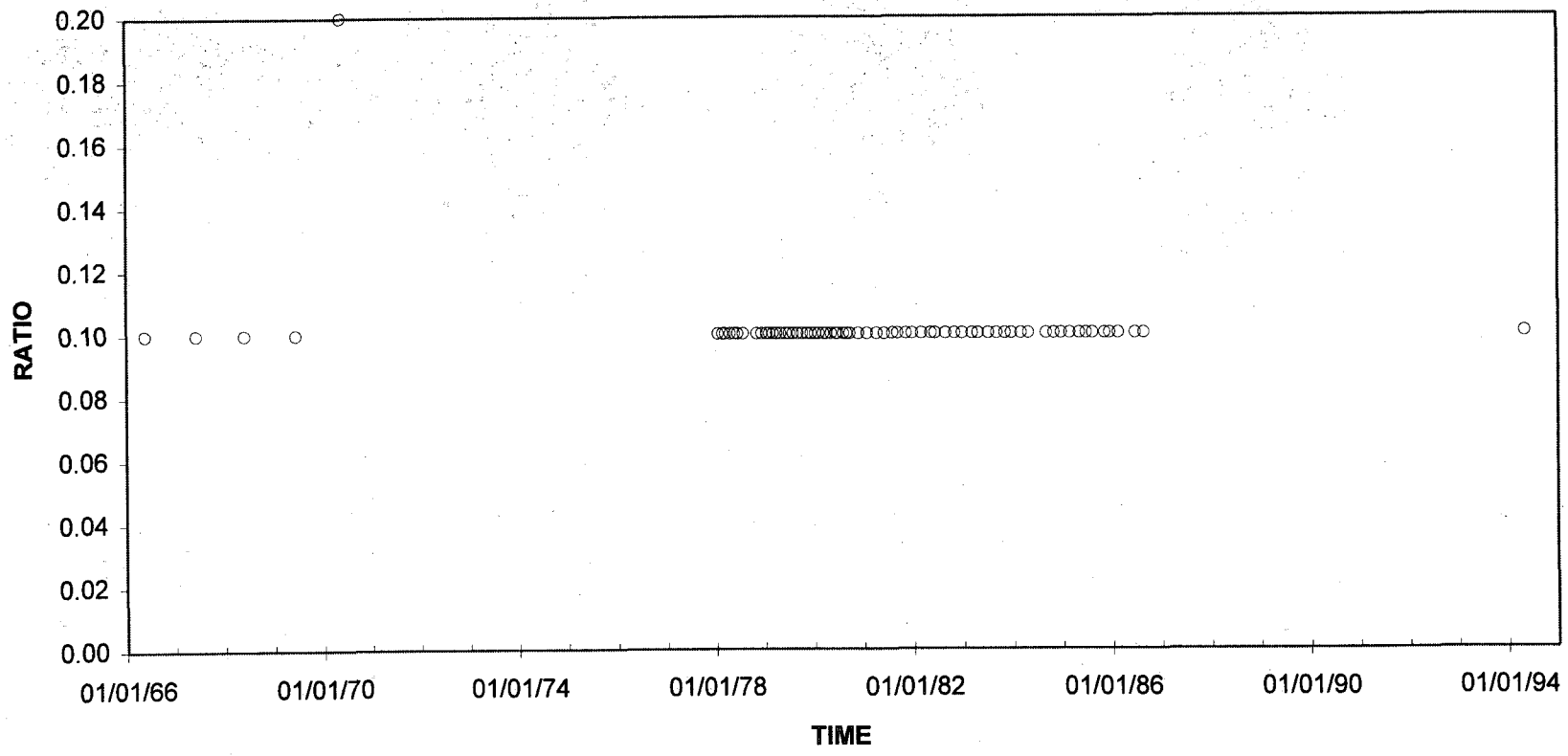
Figure
10.5.4–156



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SIMAZINE, WATER DISS REC
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

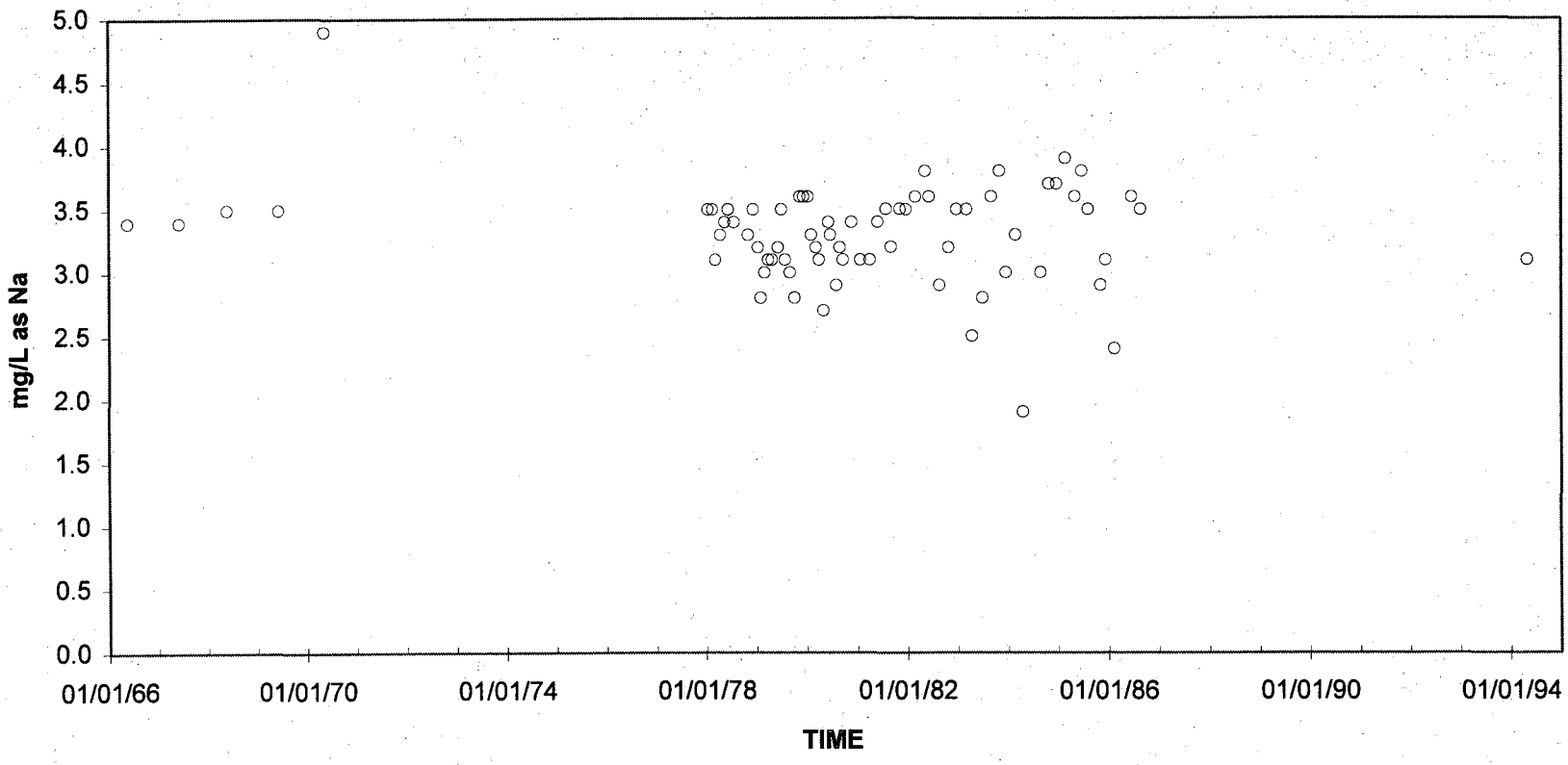
Figure
10.5.4–157



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SODIUM, ADSORPTION RATIO
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

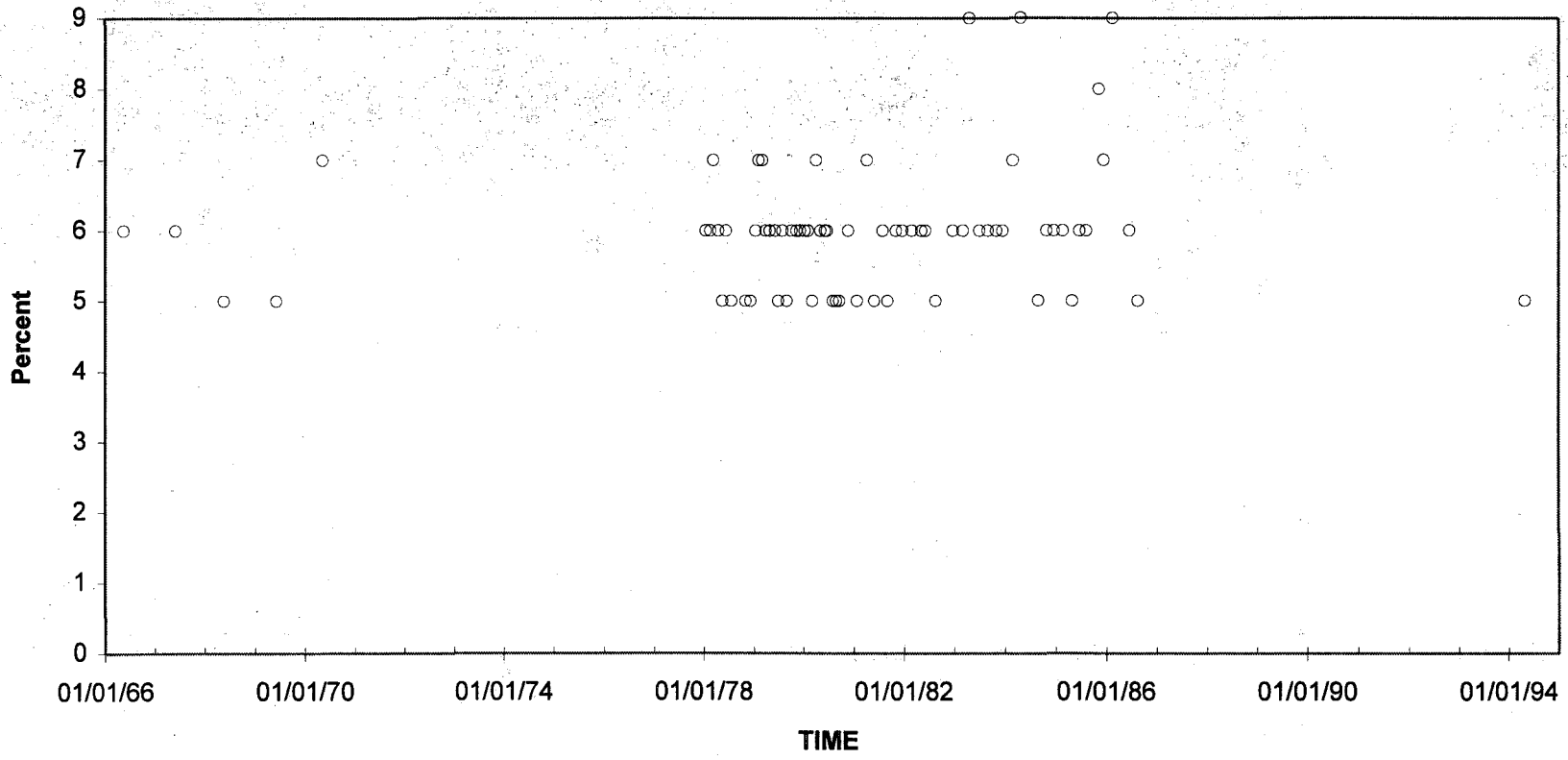
Figure
10.5.4–158



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SODIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

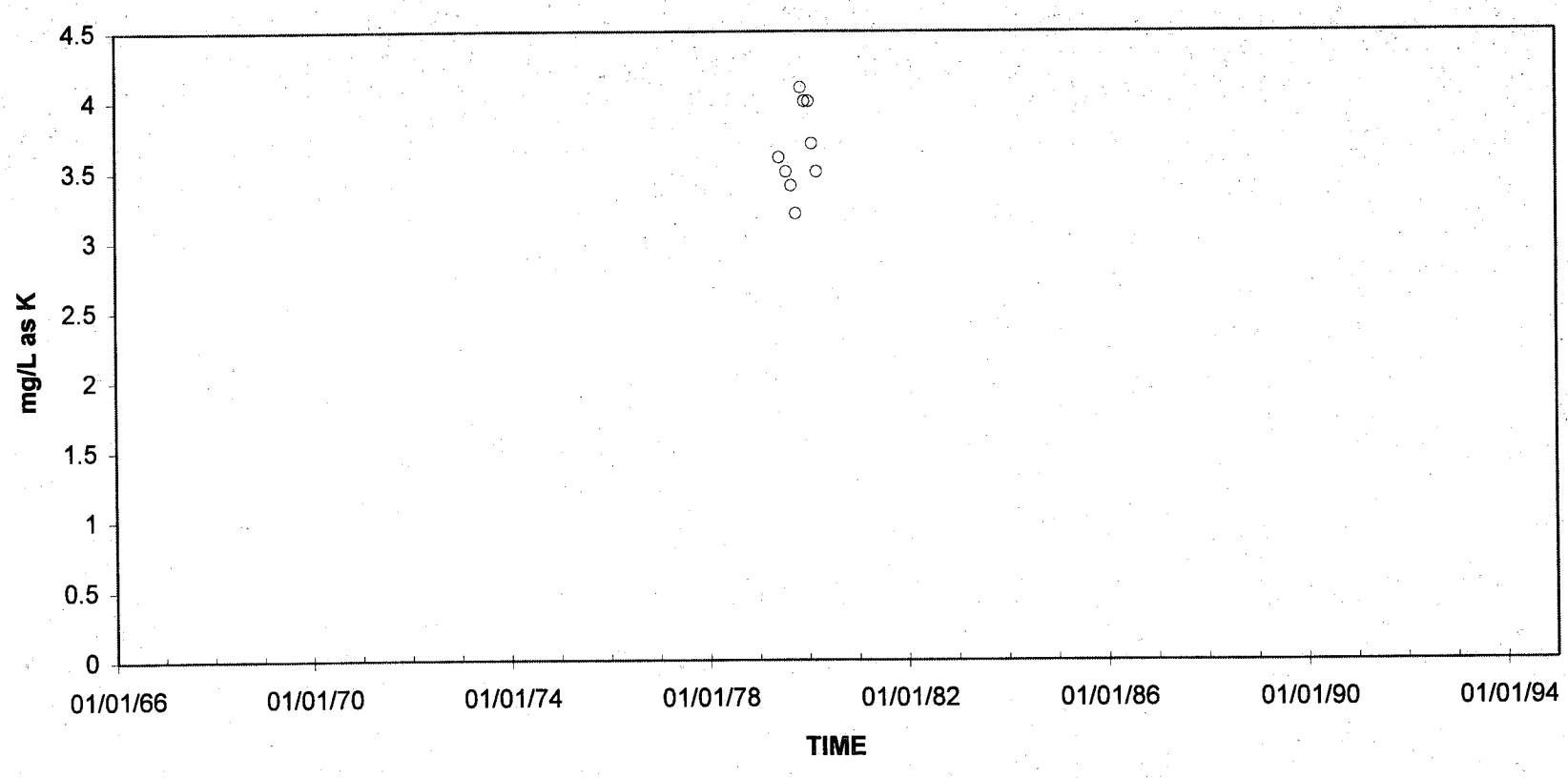
Figure
10.5.4–159



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SODIUM, PERCENT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

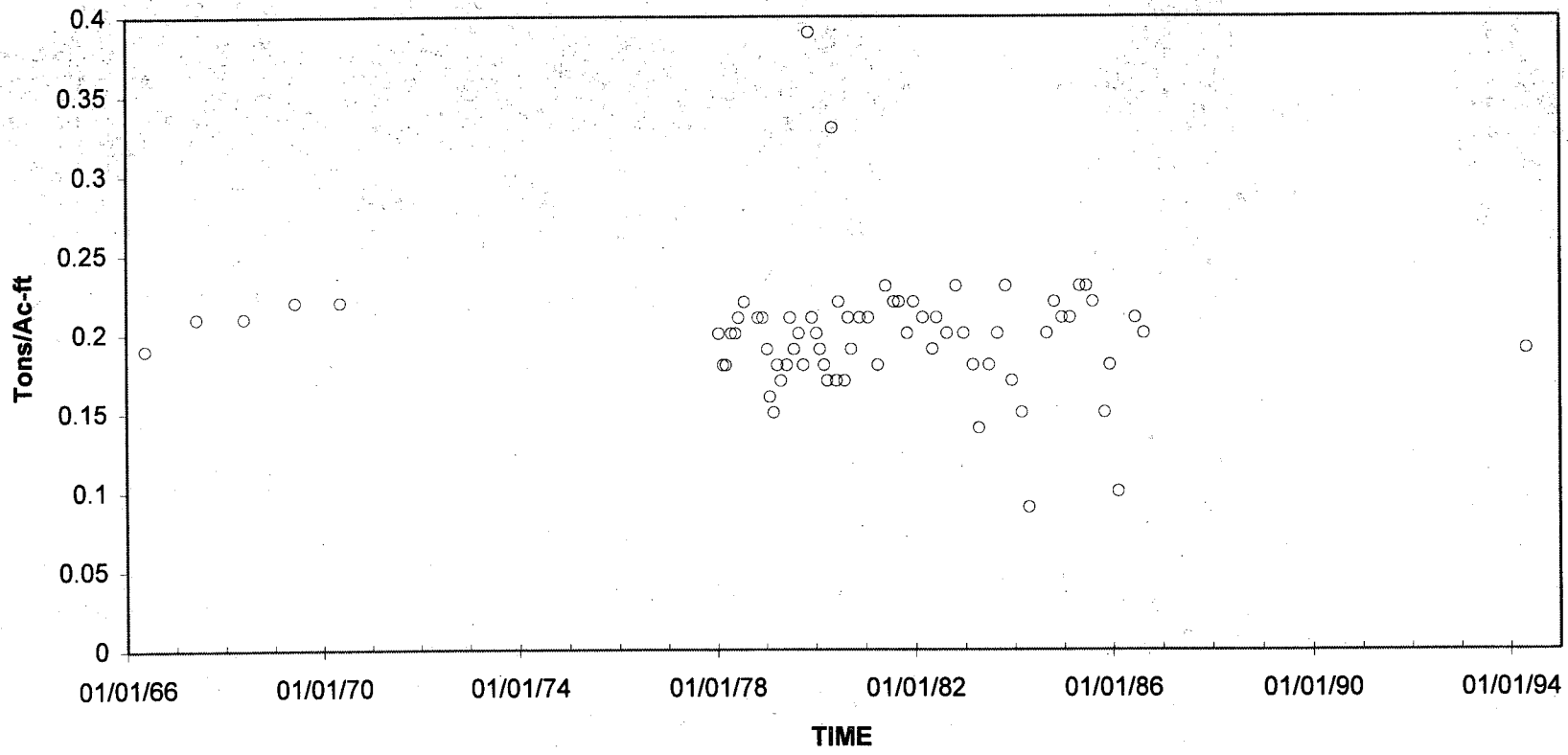
Figure
10.5.4–160



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SODIUM + POTASSIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

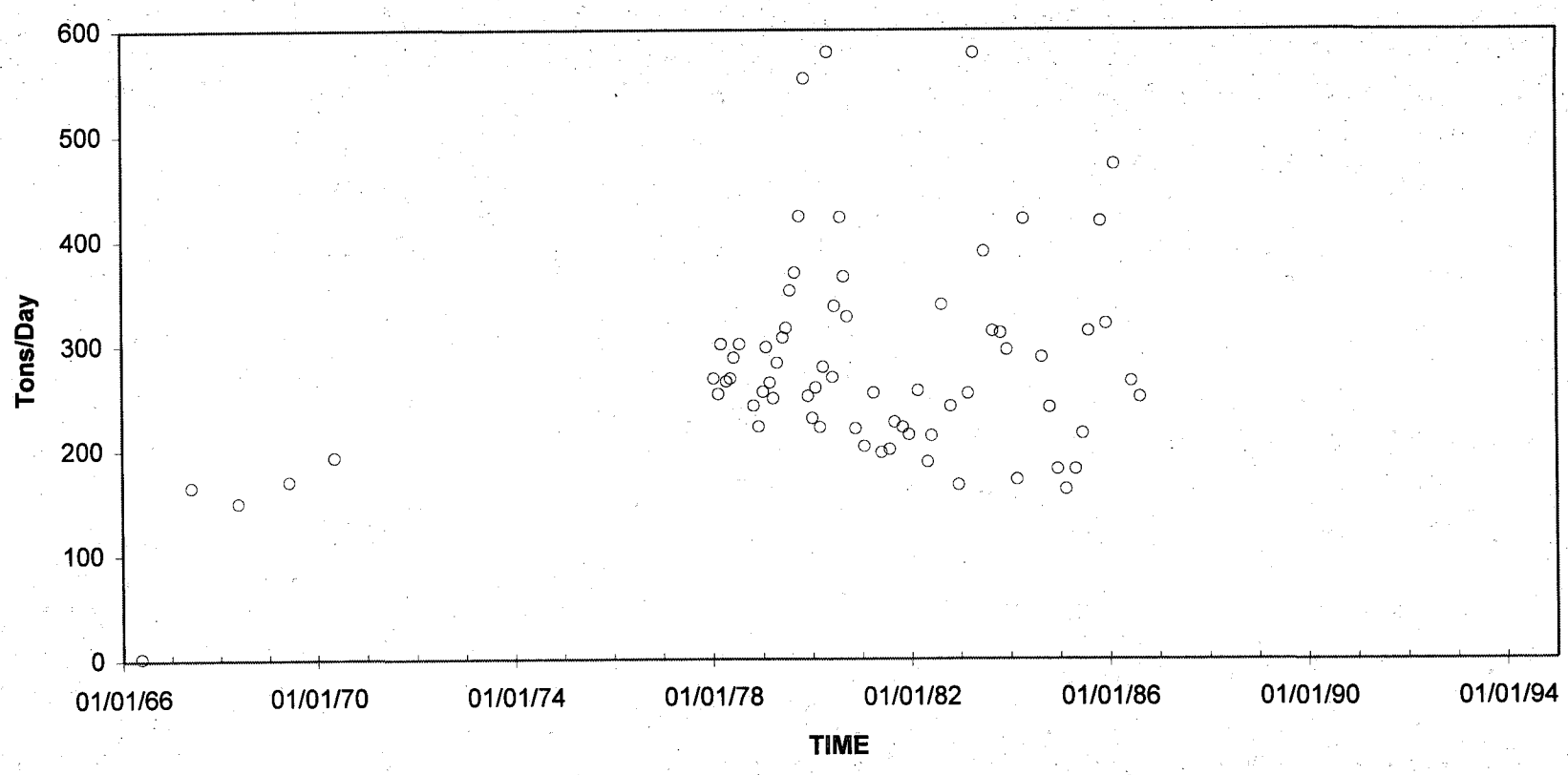
Figure
10.5.4–161



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SOLIDS, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

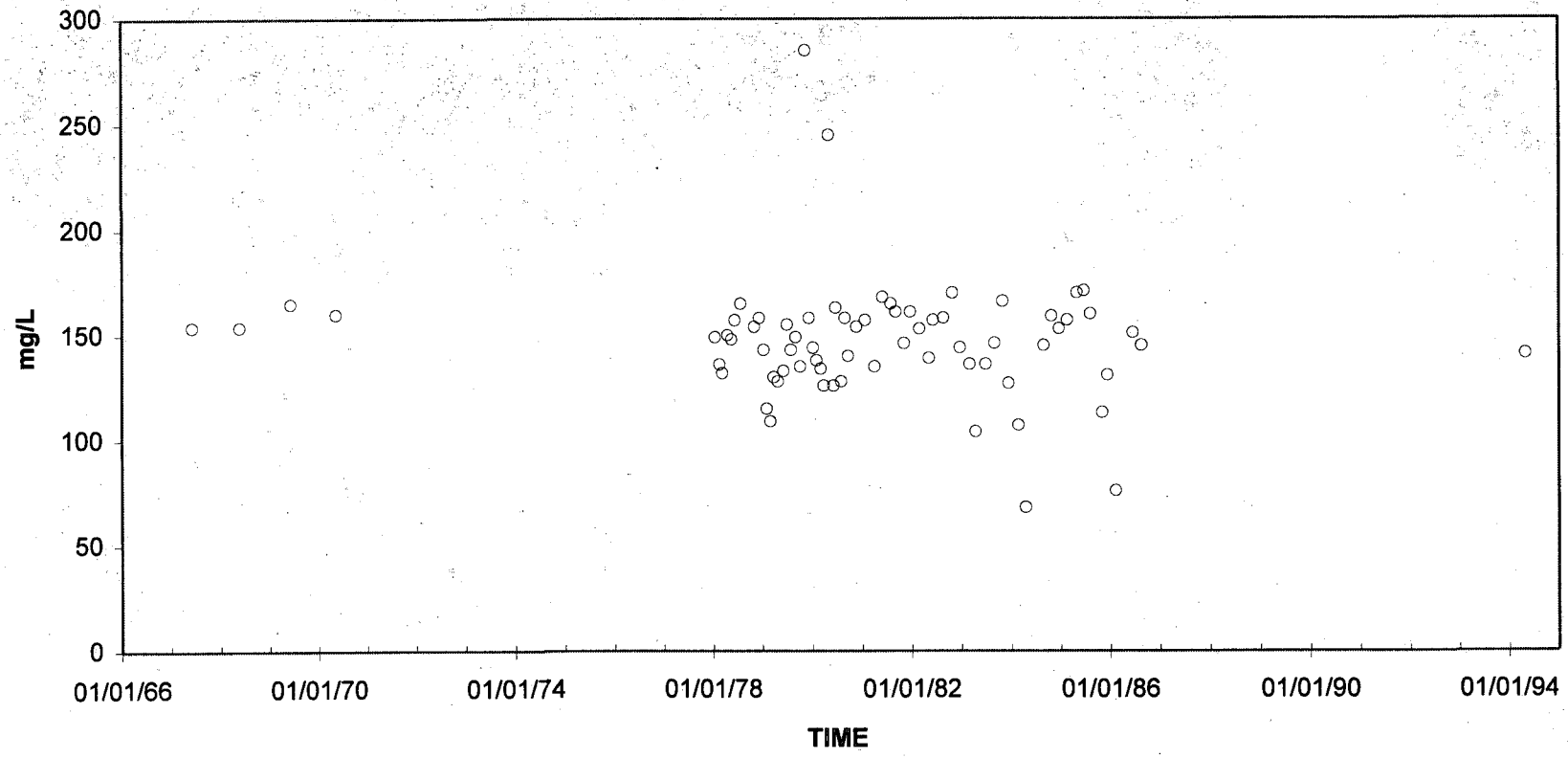
Figure
10.5.4–162



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SOLIDS, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

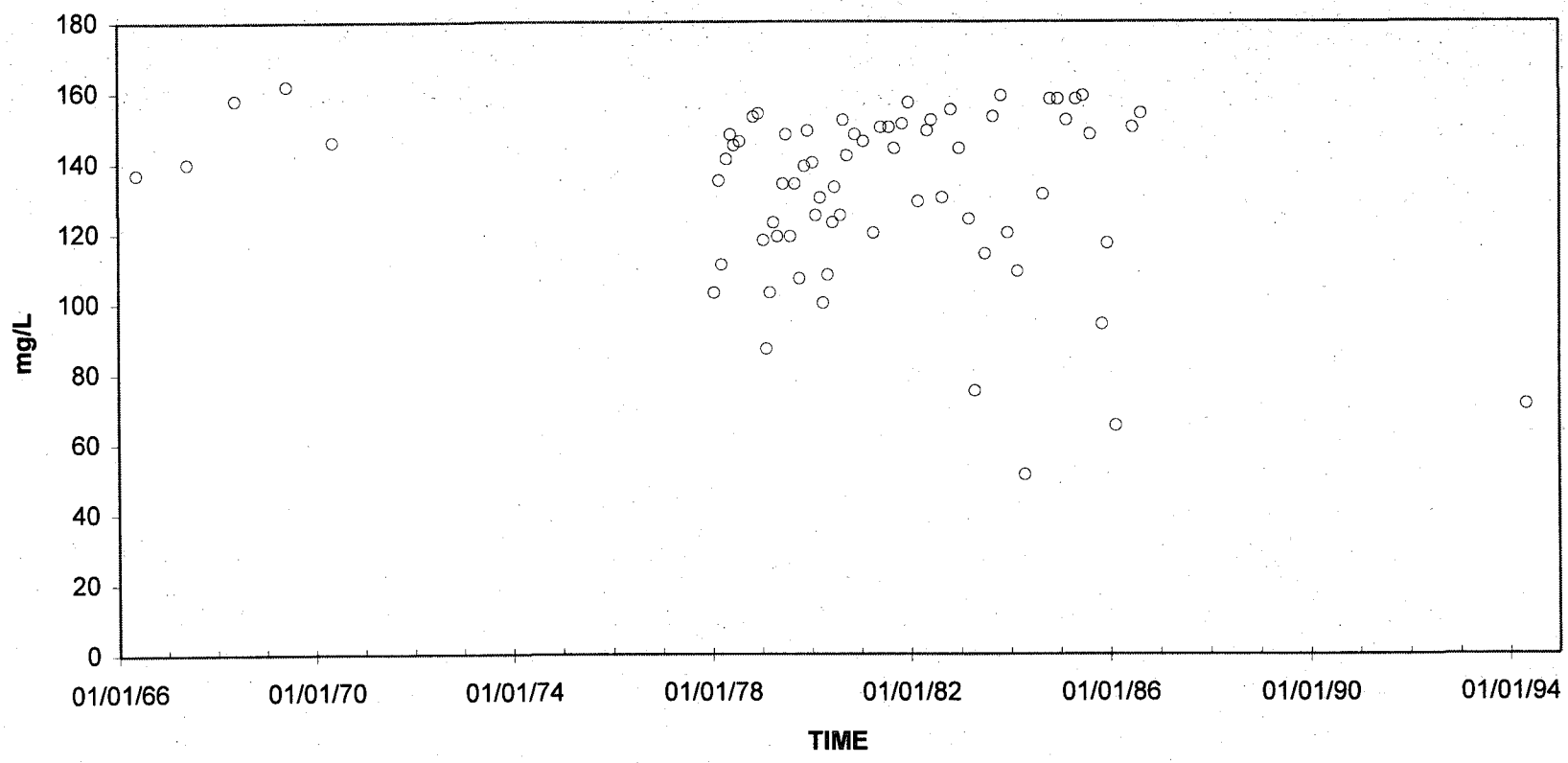
Figure
10.5.4–163



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SOLIDS, RESIDUE AT 180 DEG C DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

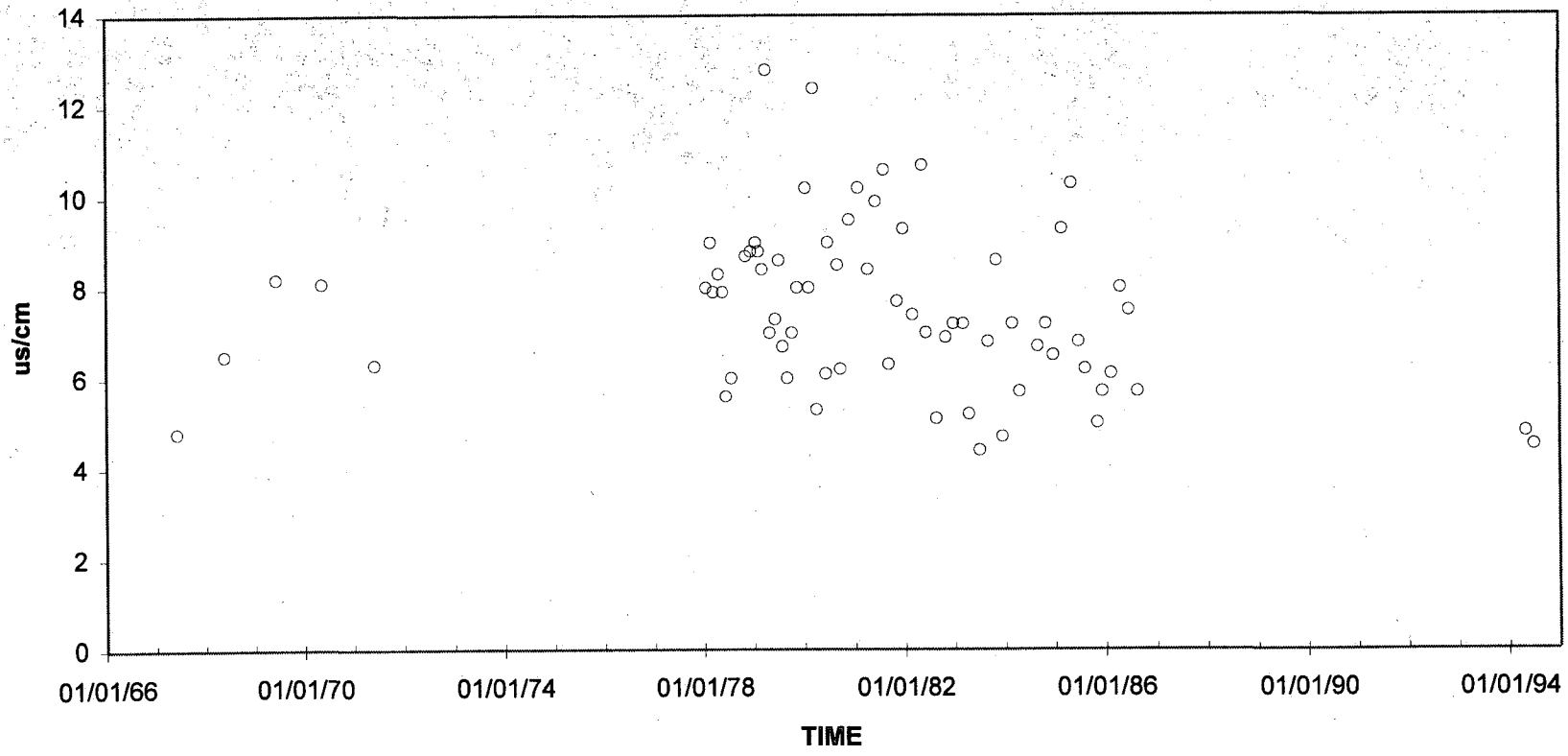
Figure
10.5.4-164



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SOLIDS, SUM OF CONSTITUENTS DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

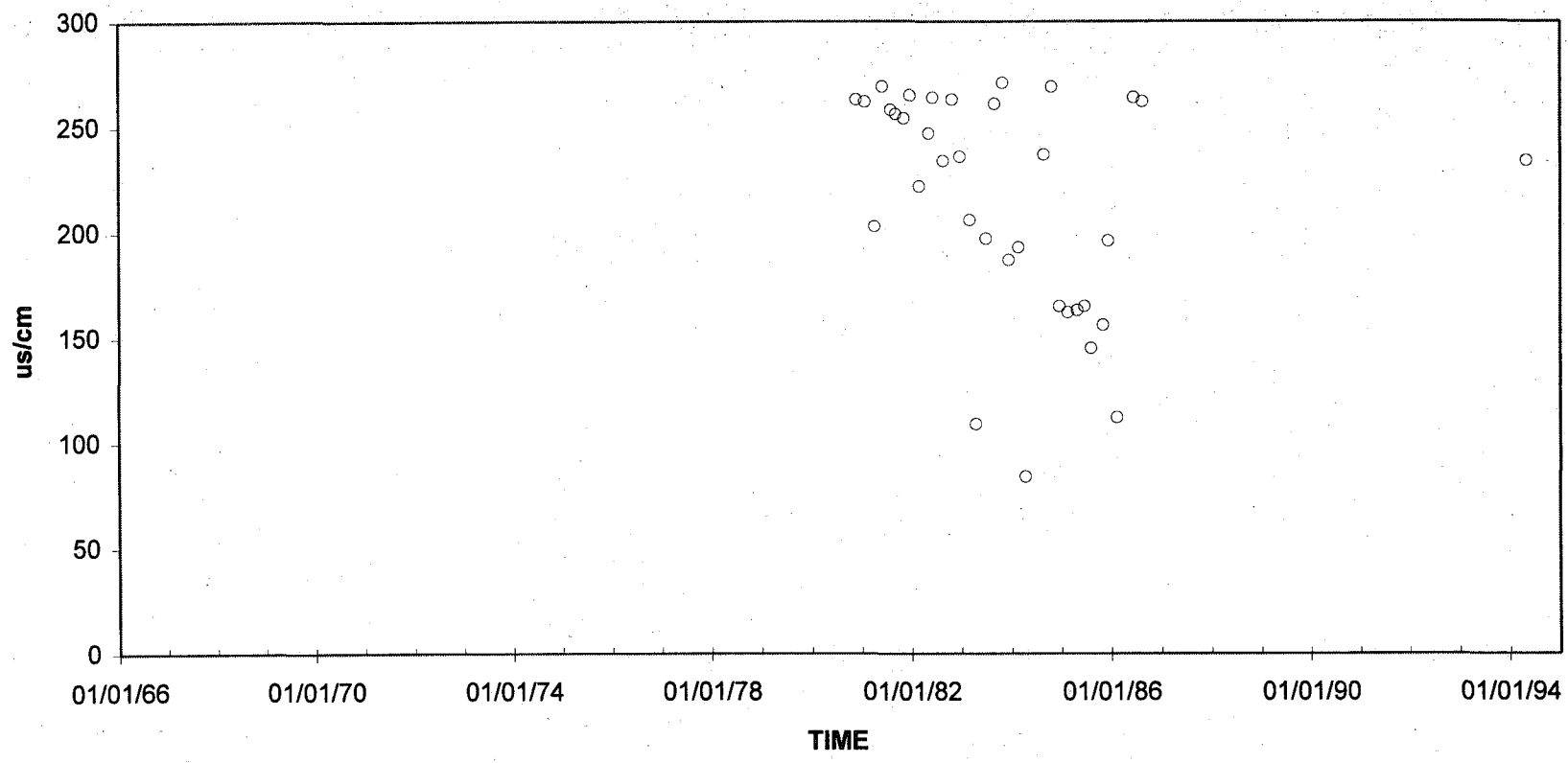
Figure
10.5.4–165



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SPECIFIC CONDUCTANCE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

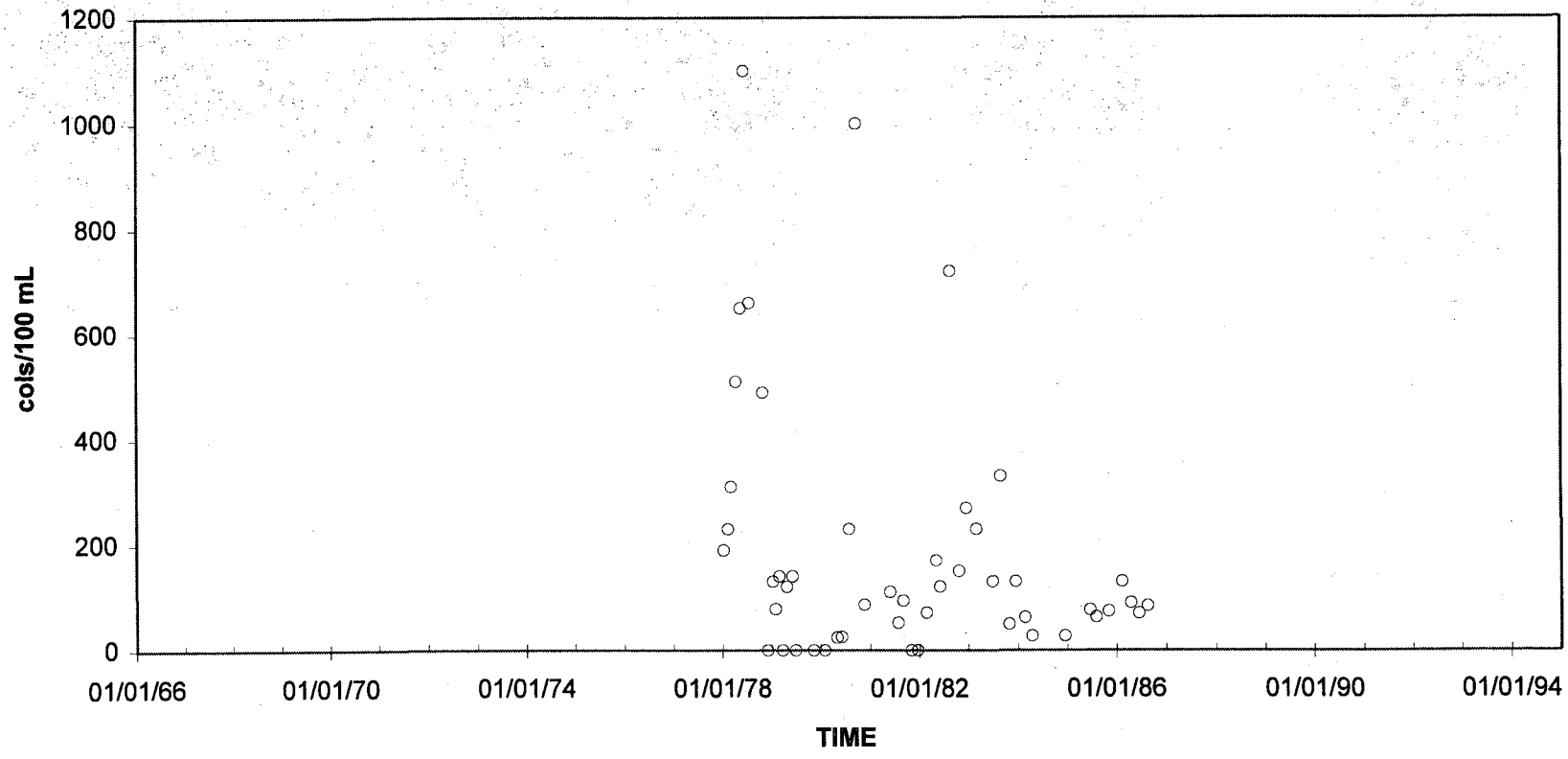
Figure
10.5.4–166



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SPECIFIC CONDUCTANCE, LAB
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

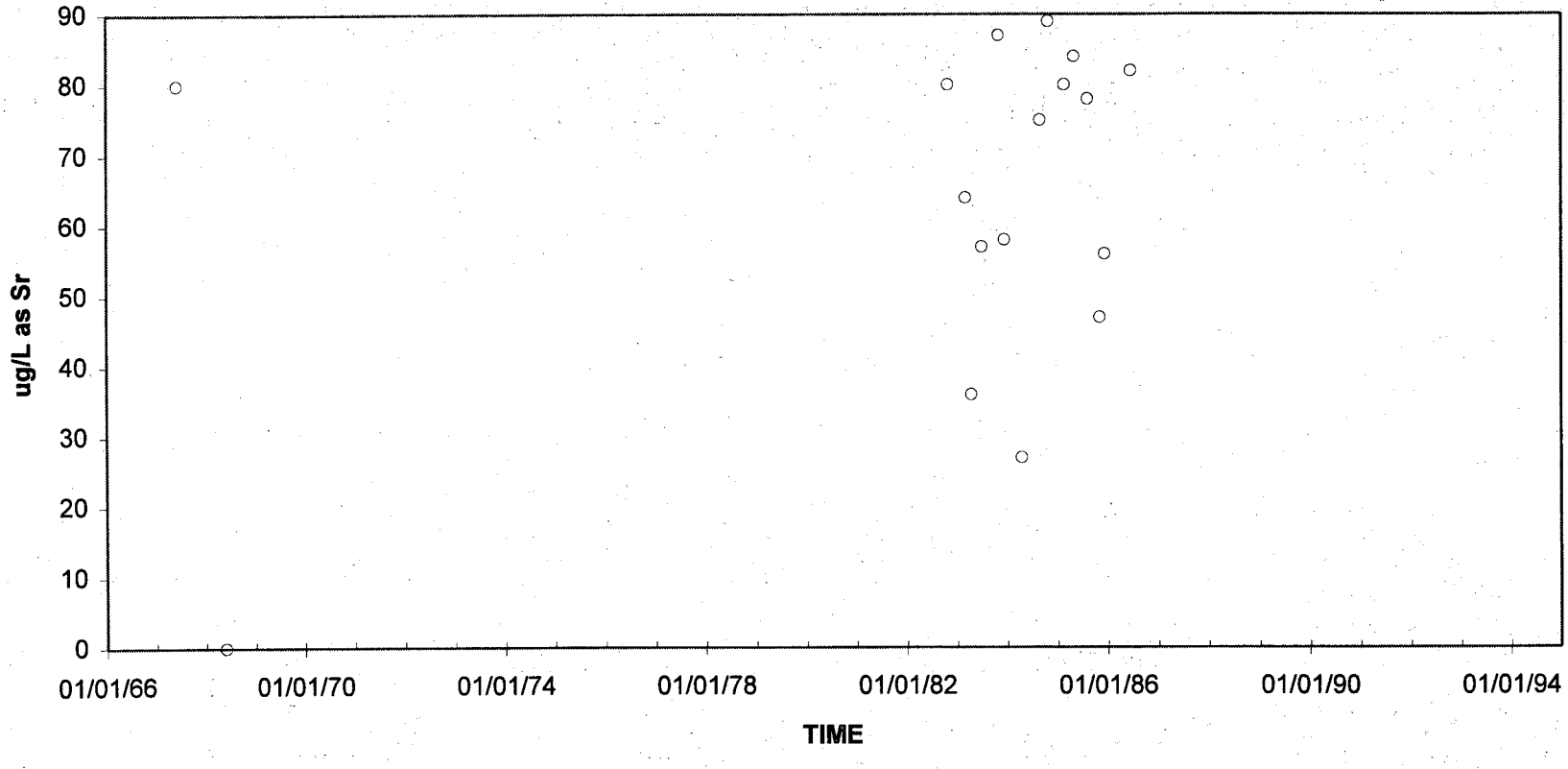
Figure
10.5.4-167



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
STREPTOCOCCI, FECAL KF AGAR
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

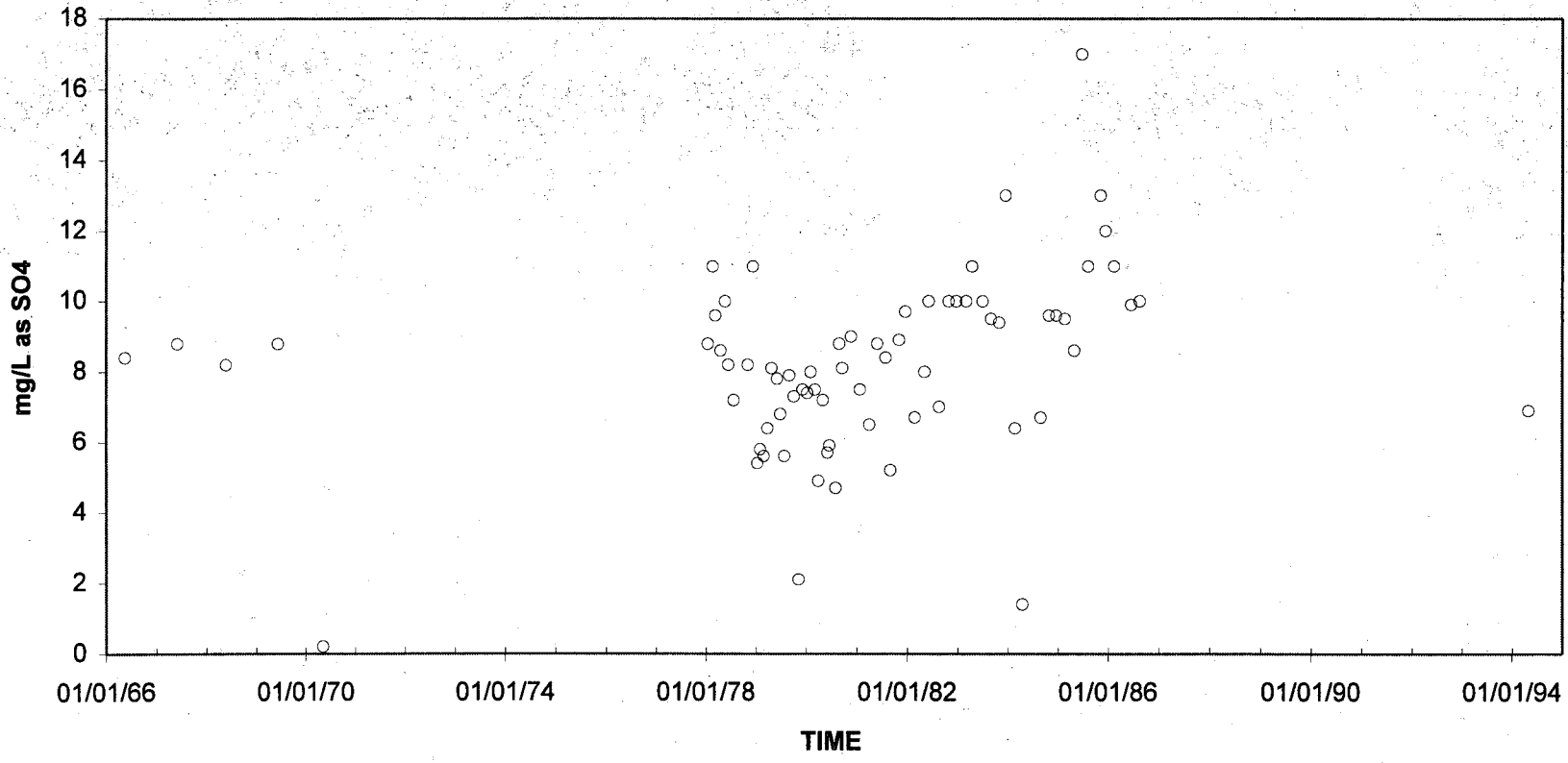
Figure
10.5.4-168



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
STRONTIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

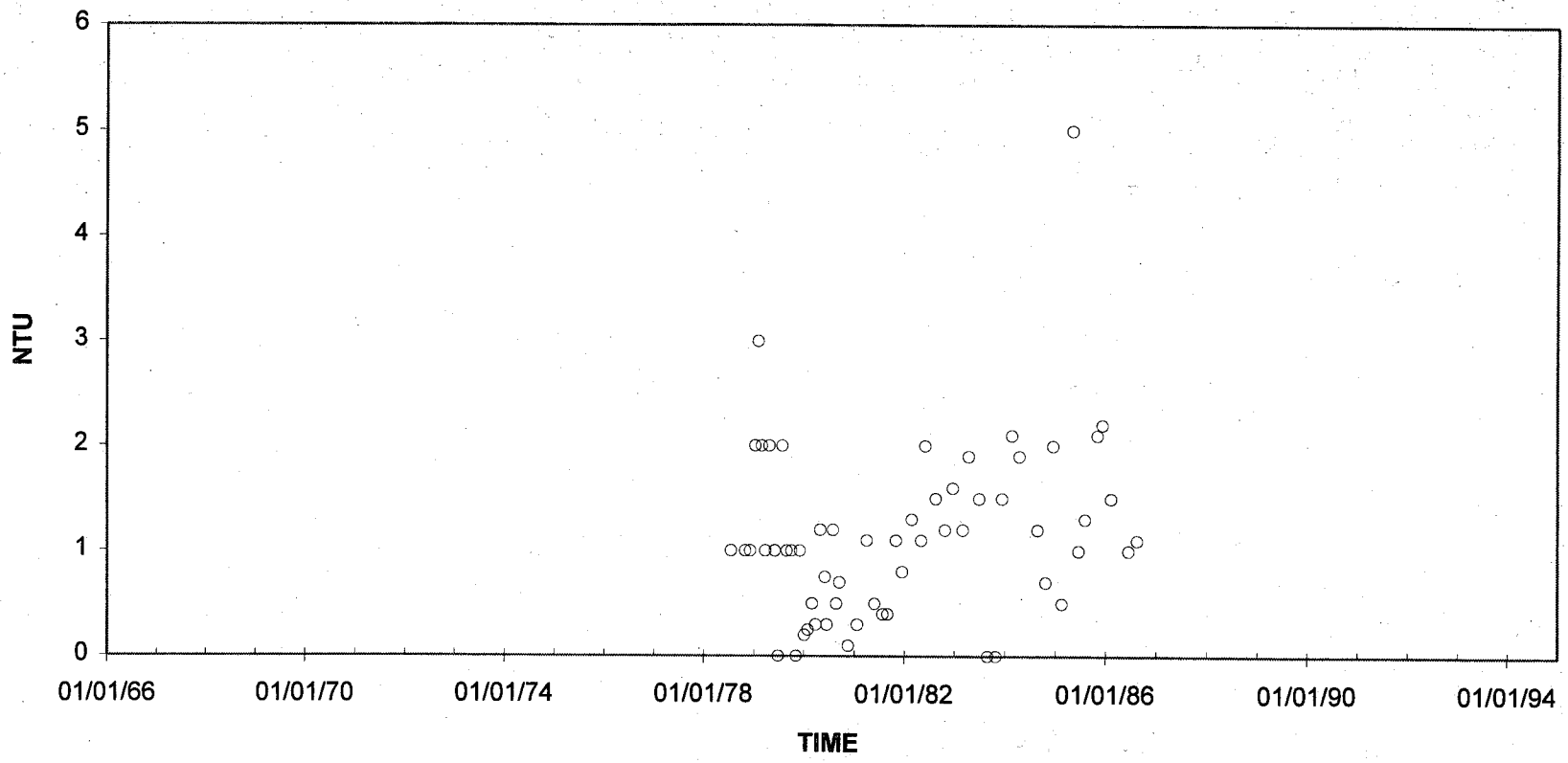
Figure
10.5.4–169



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
SULFATE, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

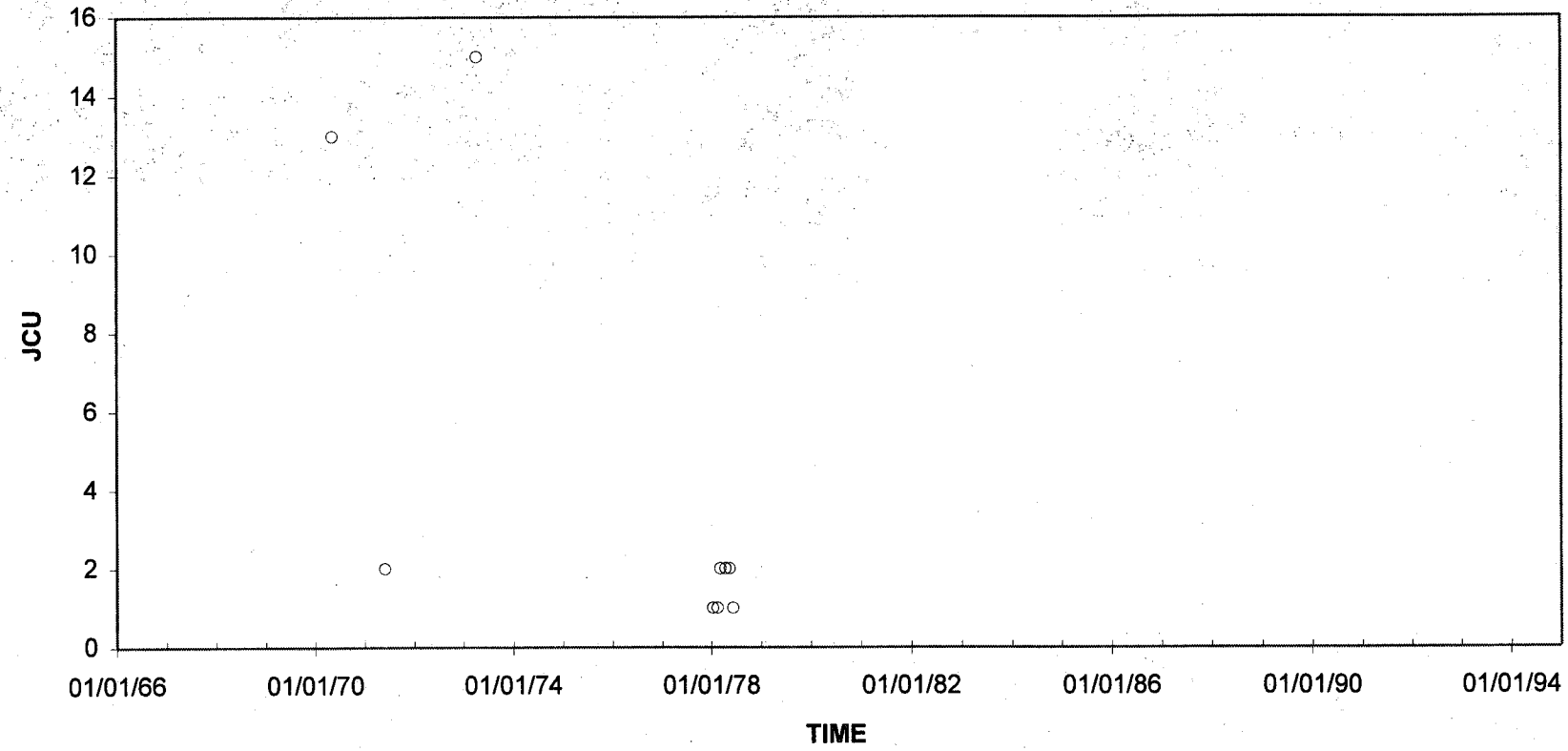
Figure
10.5.4–170



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
TURBIDITY
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

Figure
10.5.4–171



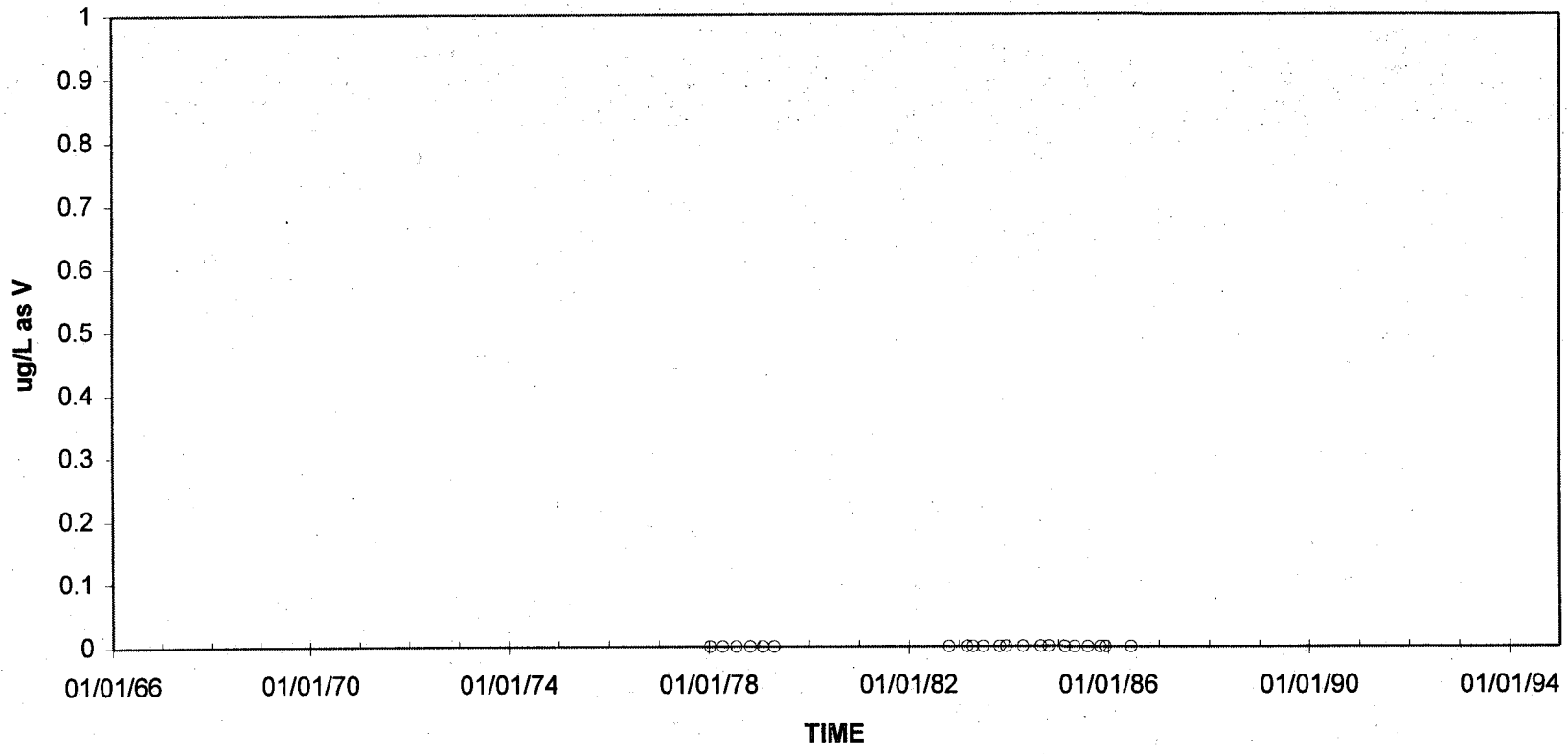
CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
TURBIDITY
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

Figure
10.5.4–172

IMAGE QUALITY

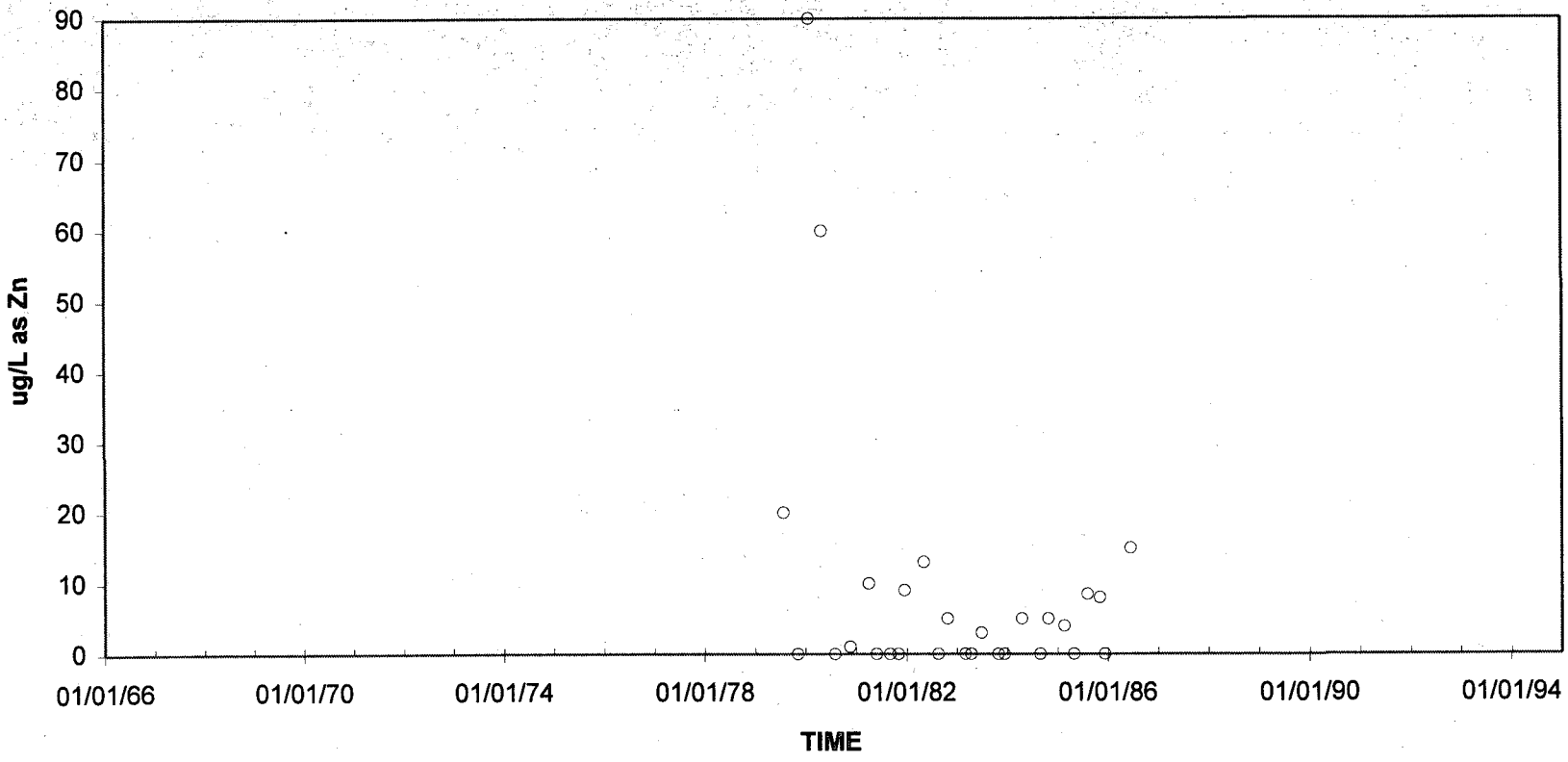
AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
VANADIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

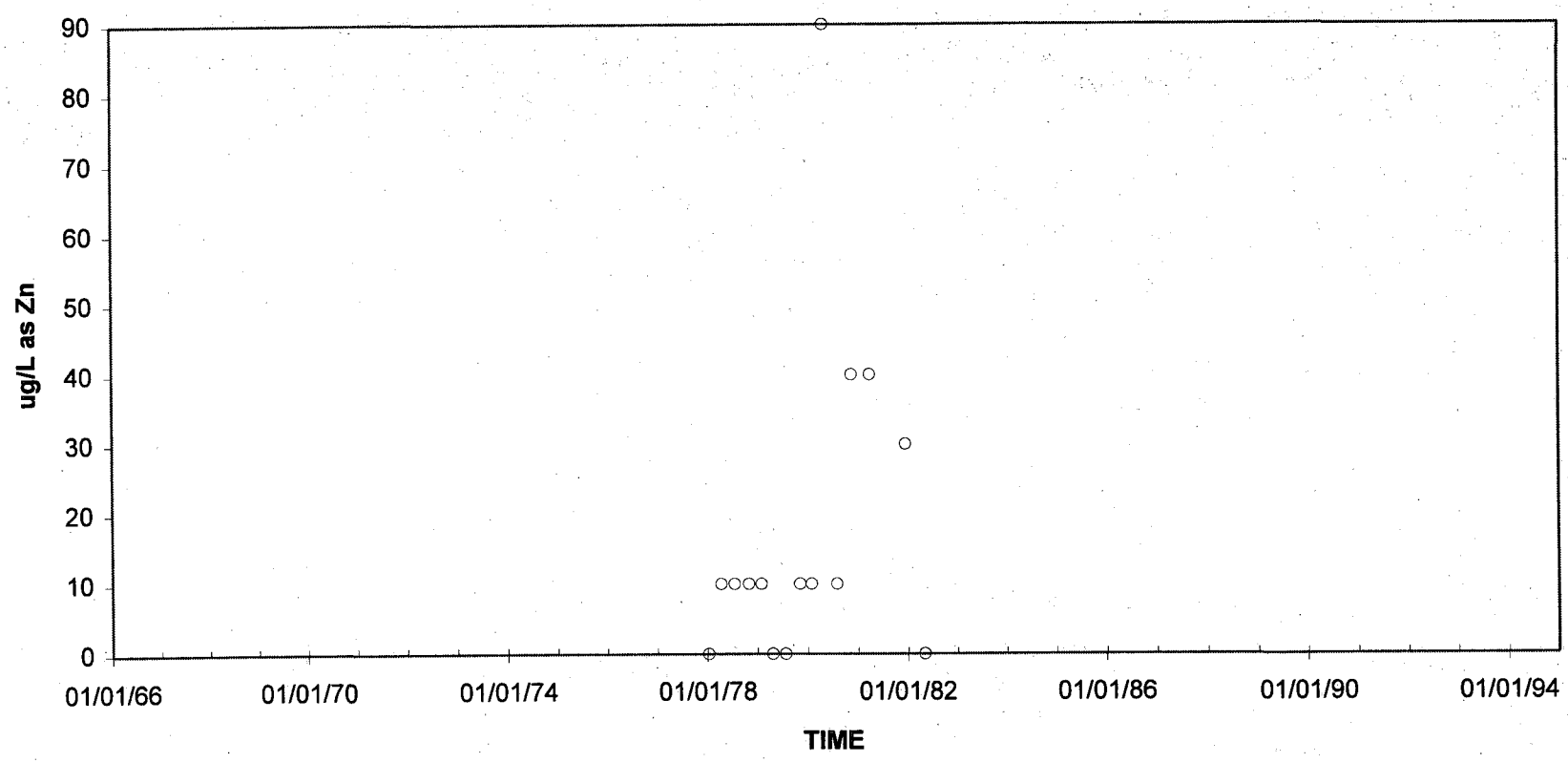
Figure
10.5.4-173



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ZINC, DISSOLVED
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

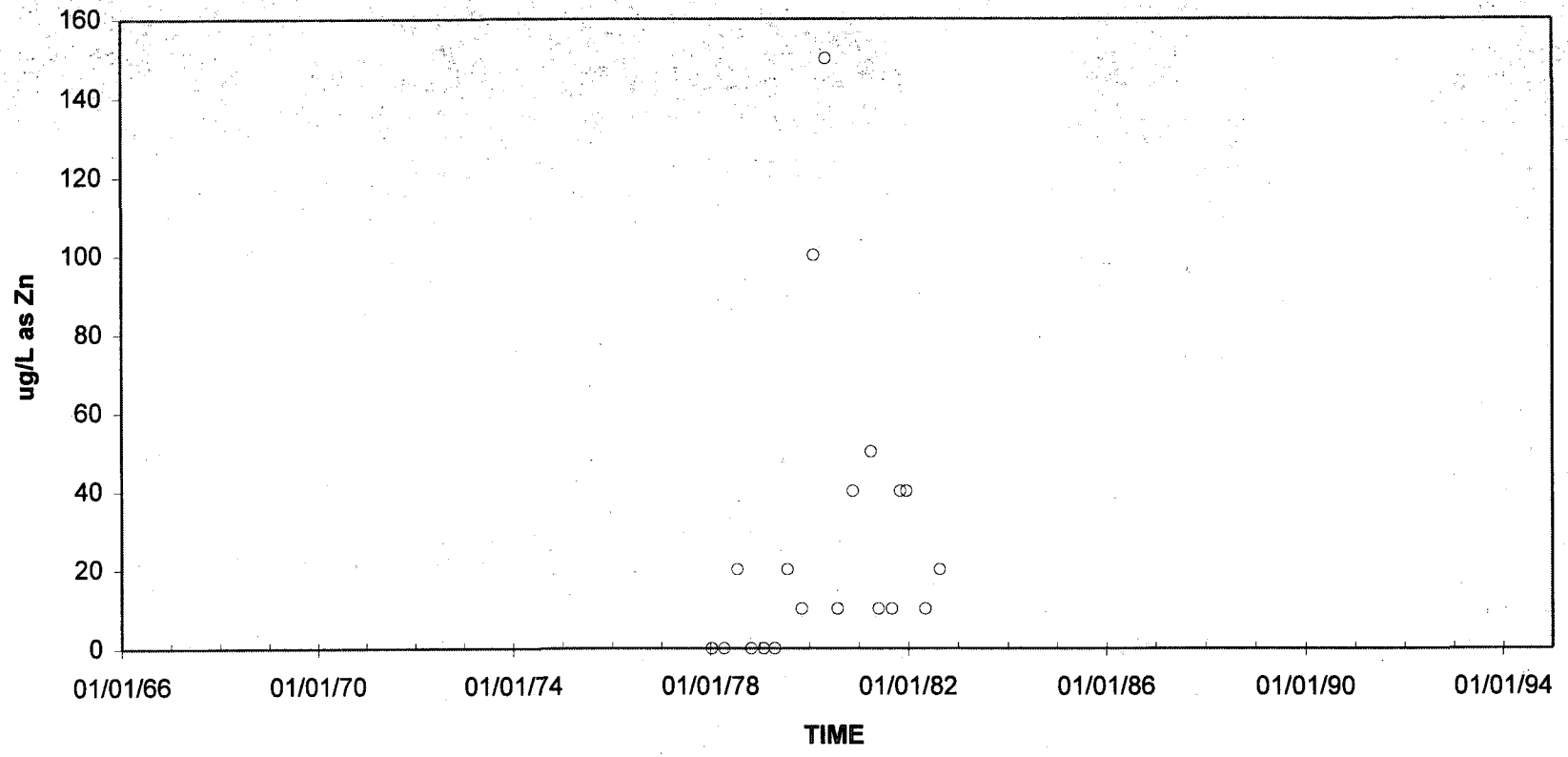
Figure
10.5.4-174



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ZINC, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

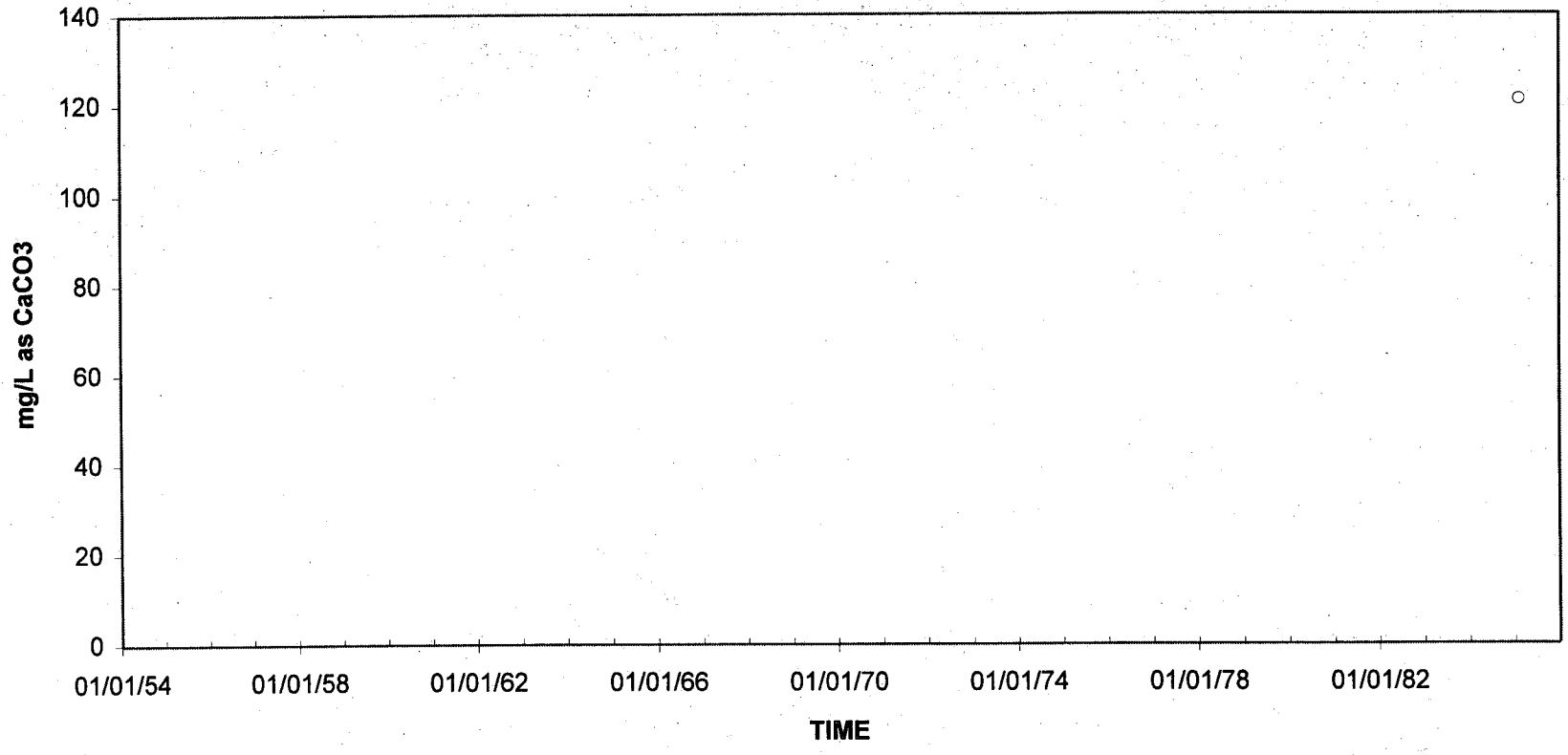
Figure
10.5.4–175



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR NEWPORT, FLORIDA
USGS STATION NUMBER 02326900
ZINC, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

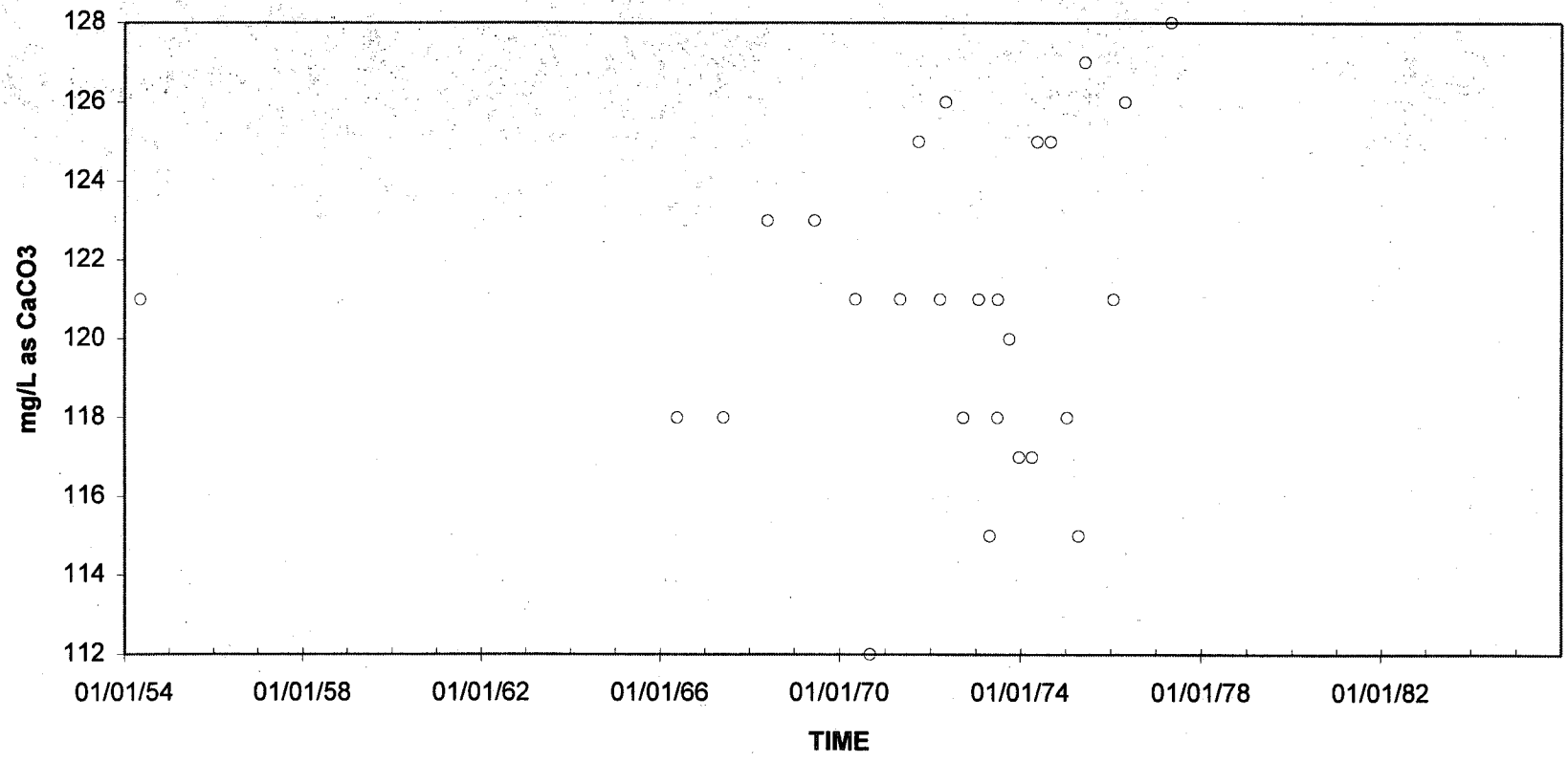
Figure
10.5.4-176



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
ALKALINITY, LAB
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

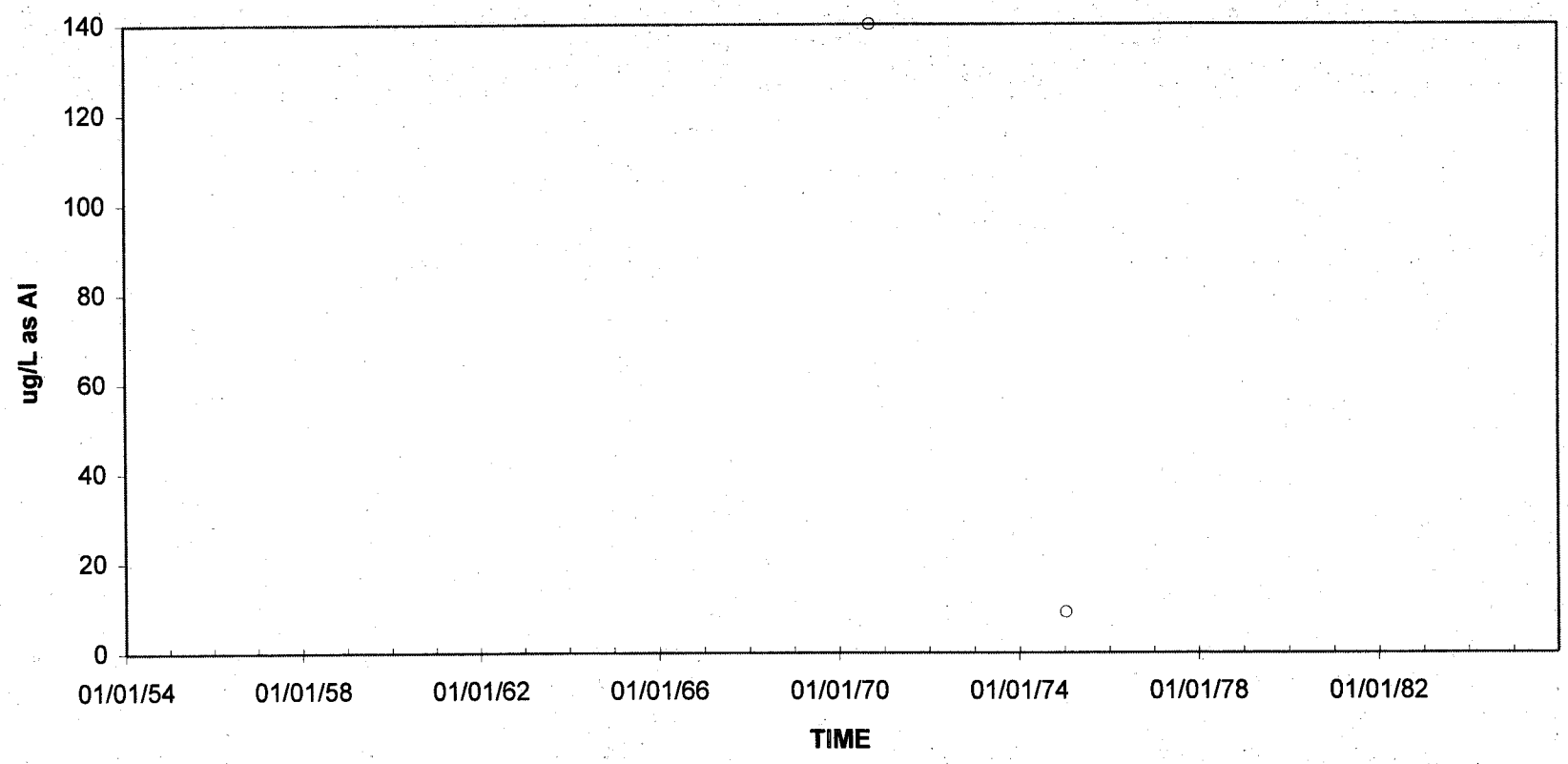
Figure
10.5.4-177



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
ALKALINITY WAT WH TOT FET FIELD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

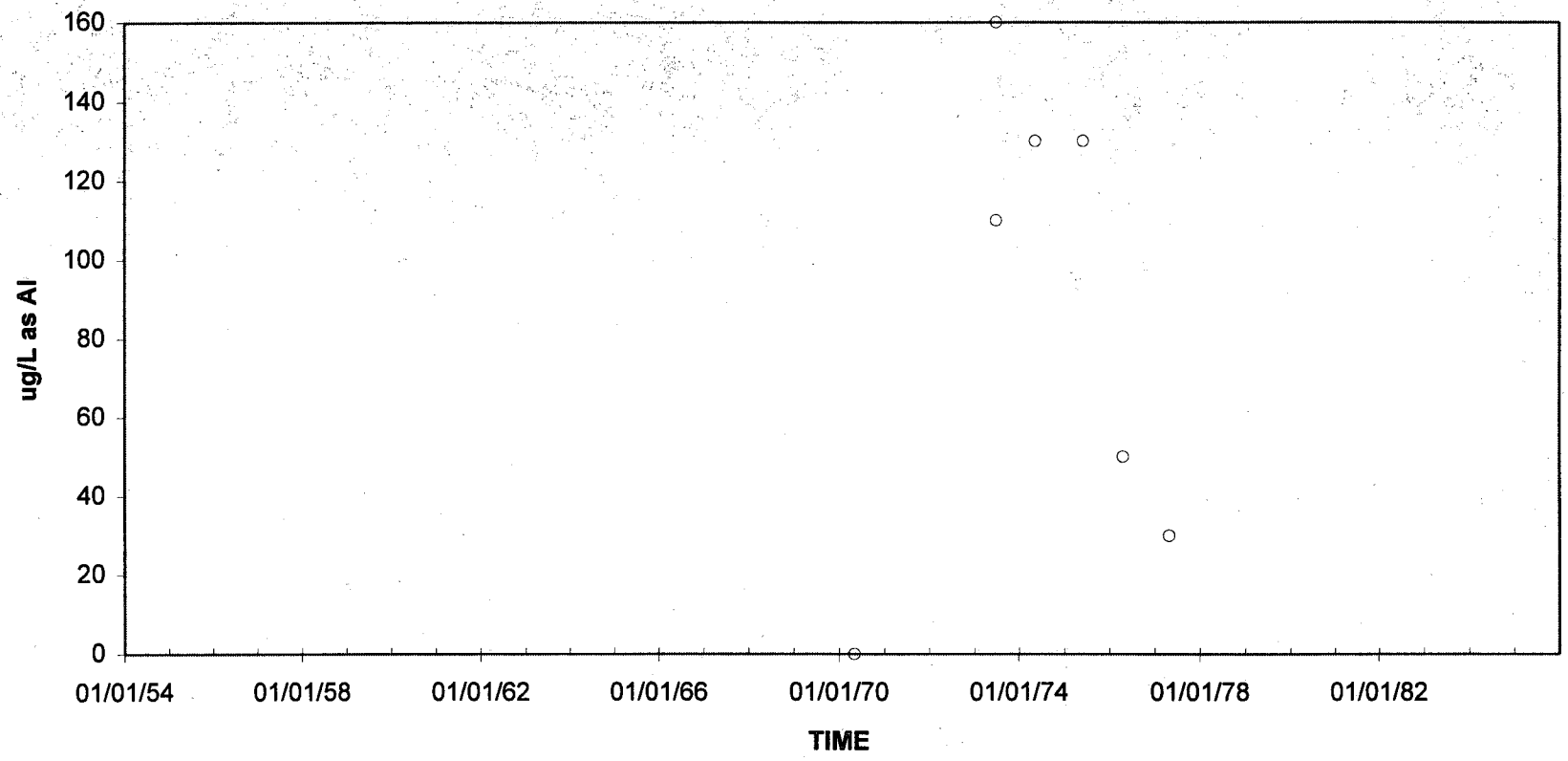
Figure
10.5.4–178



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
ALUMINUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

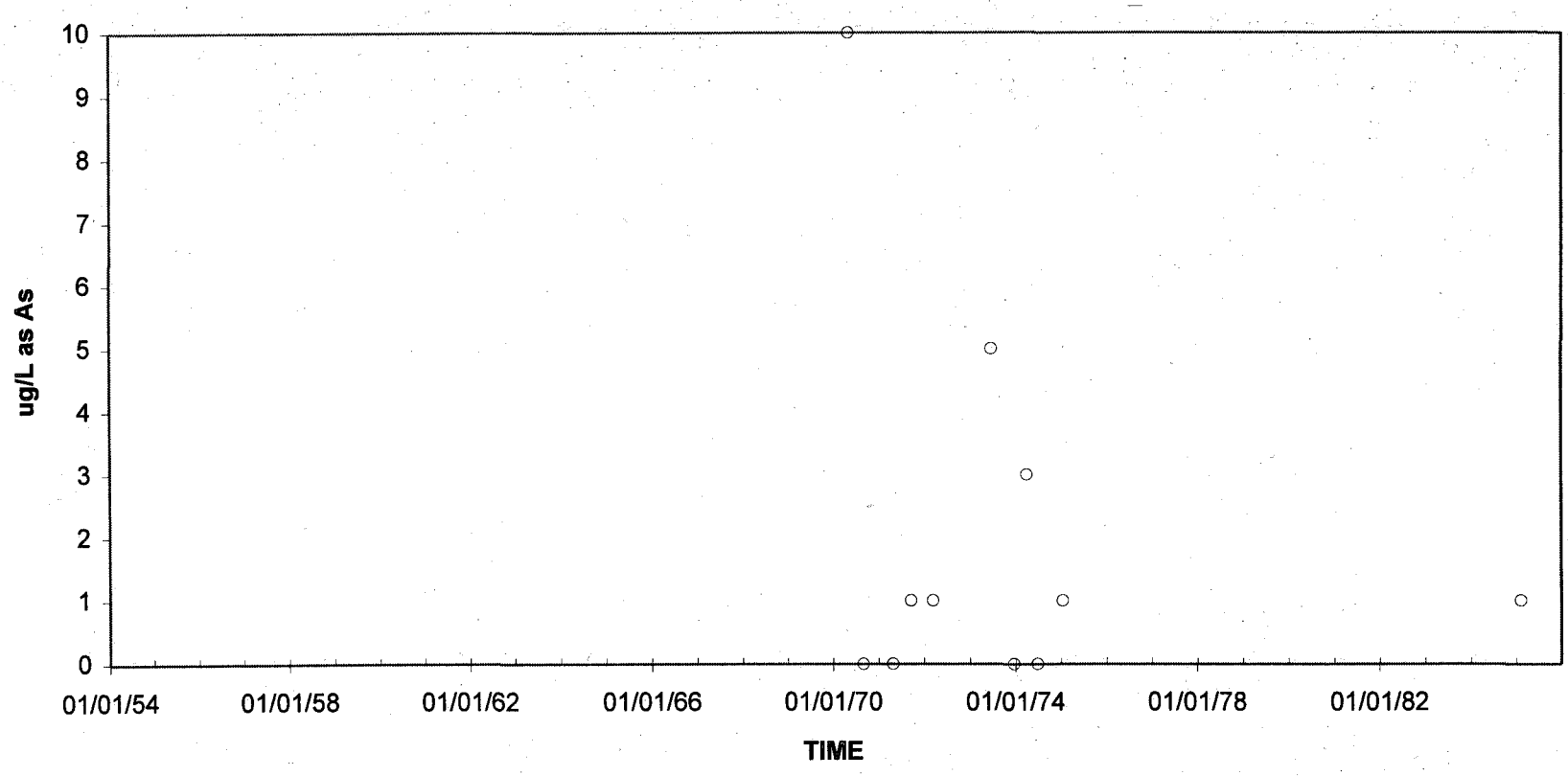
Figure
10.5.4–179



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
ALUMINUM, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

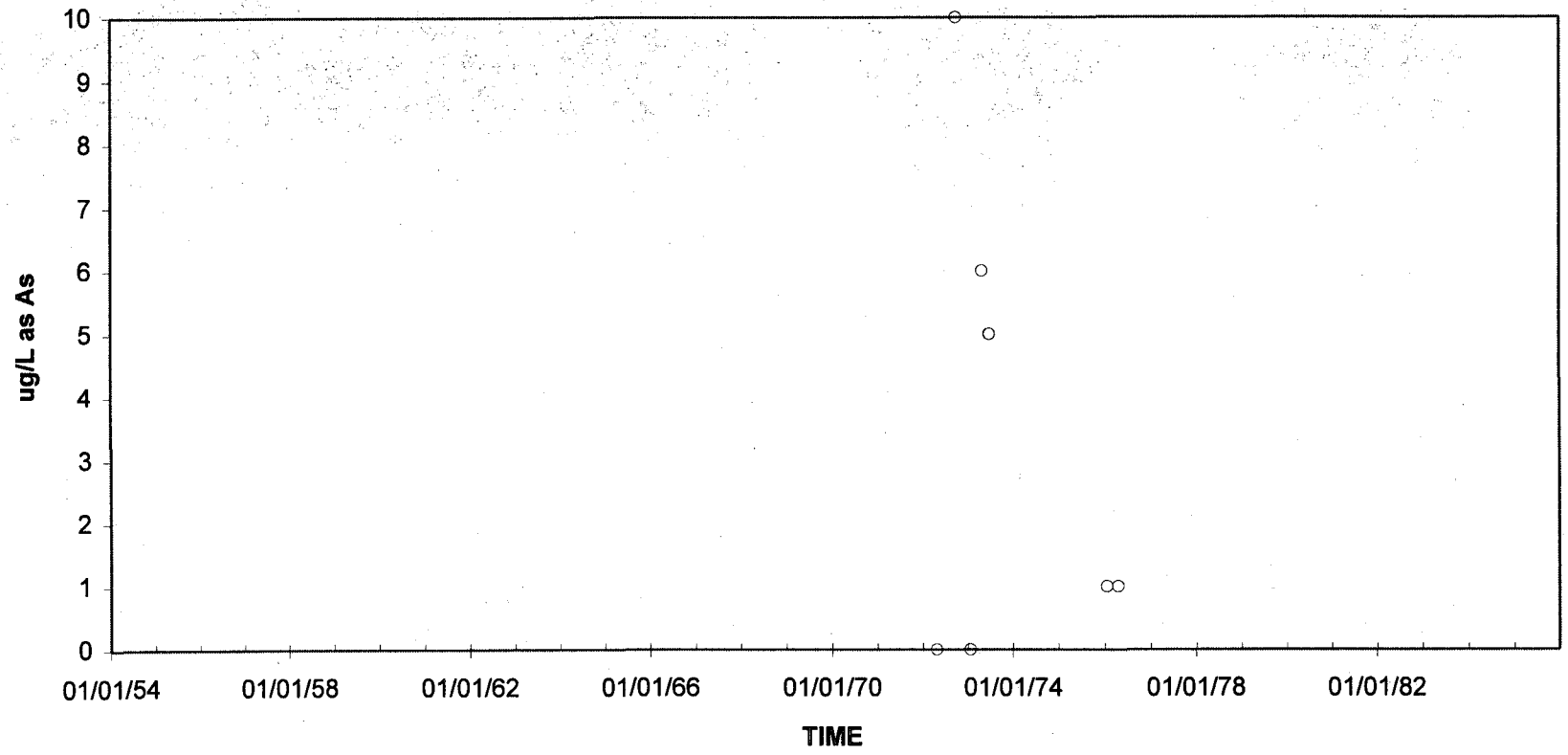
Figure
10.5.4–180



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
ARSENIC, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

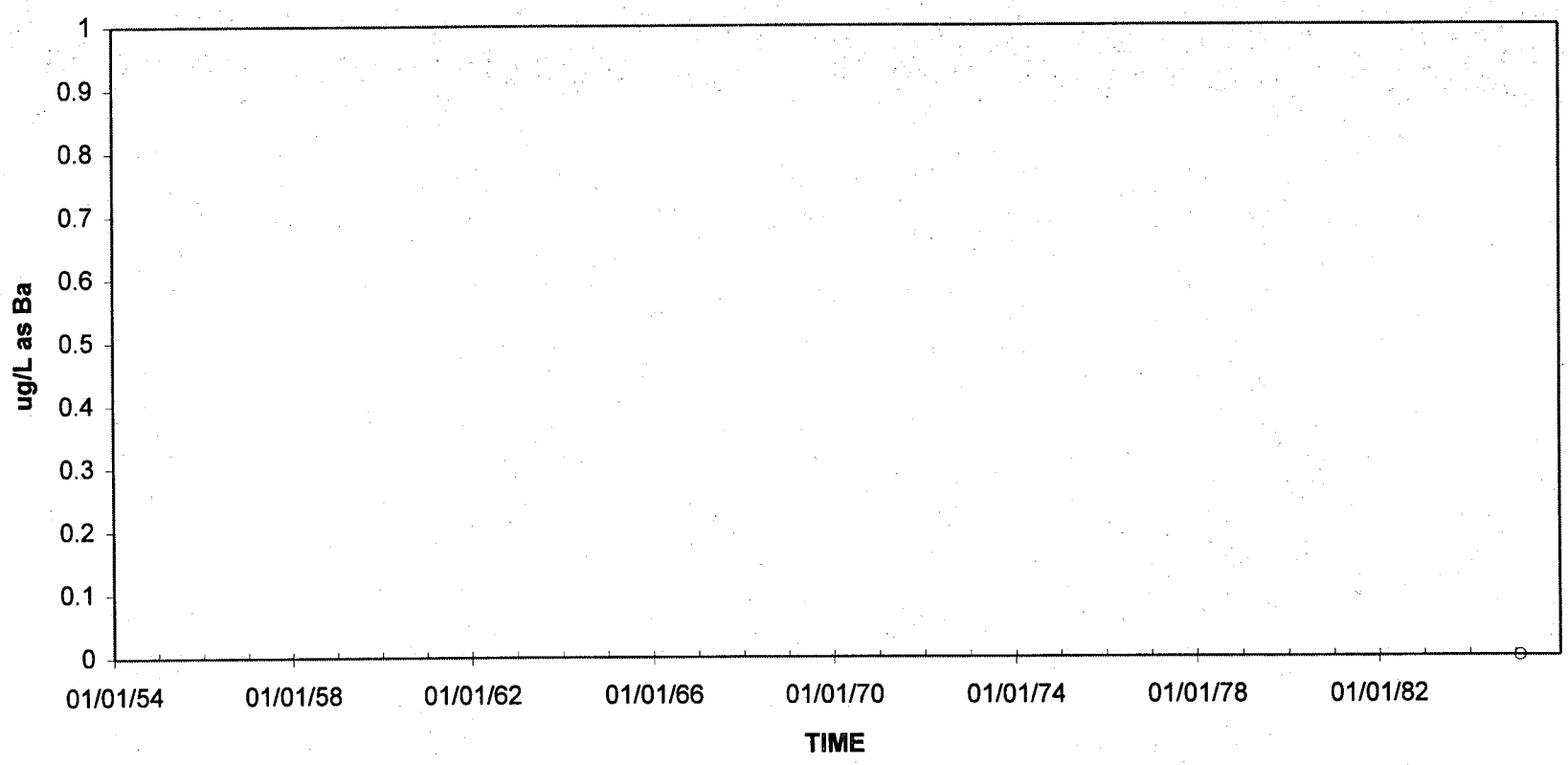
Figure
10.5.4-181



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
ARSENIC, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

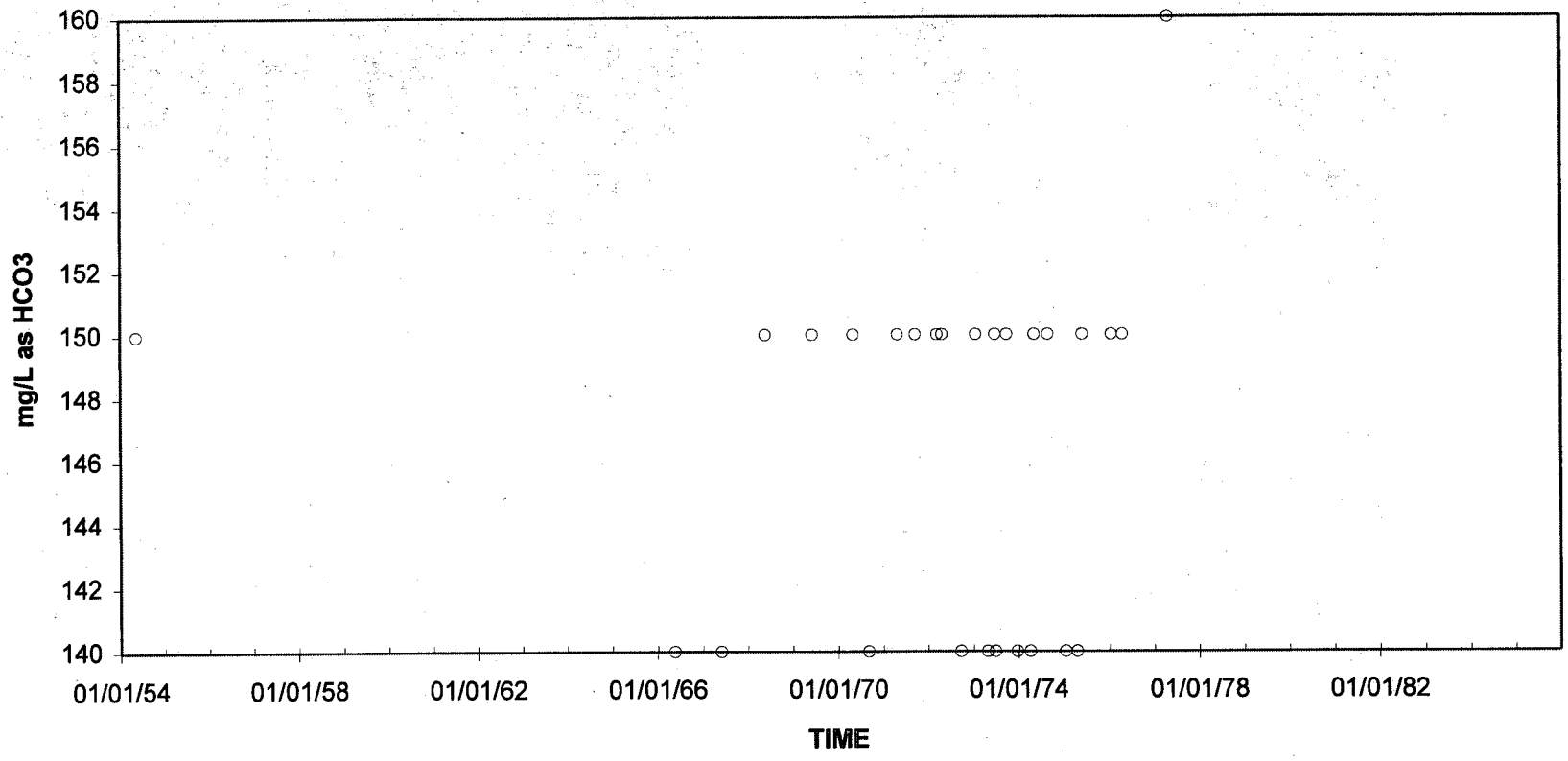
Figure
10.5.4–182



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
BARIUM, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

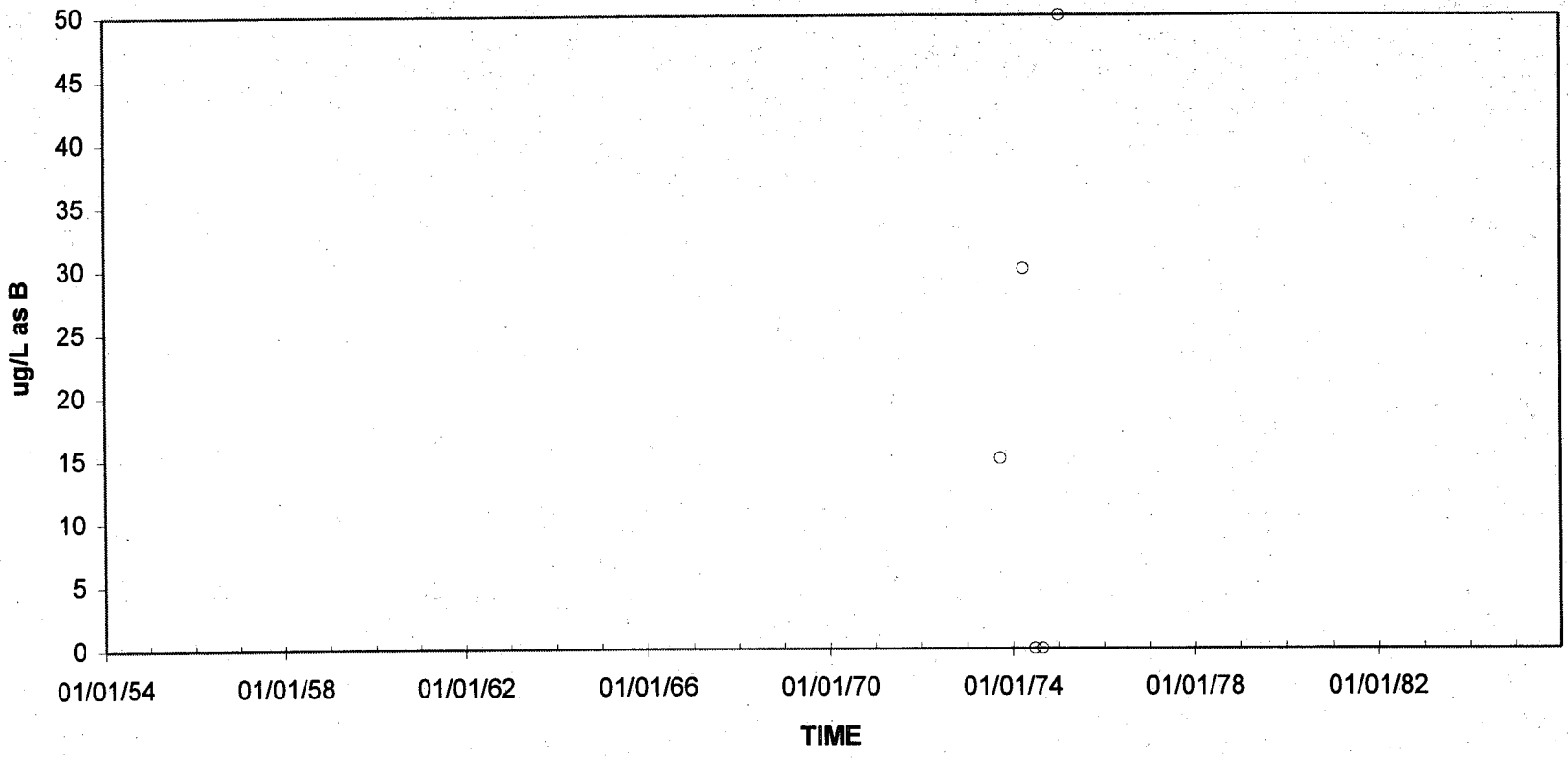
Figure
10.5.4–183



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
BICARBONATE WAT WH TOT FET FIELD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

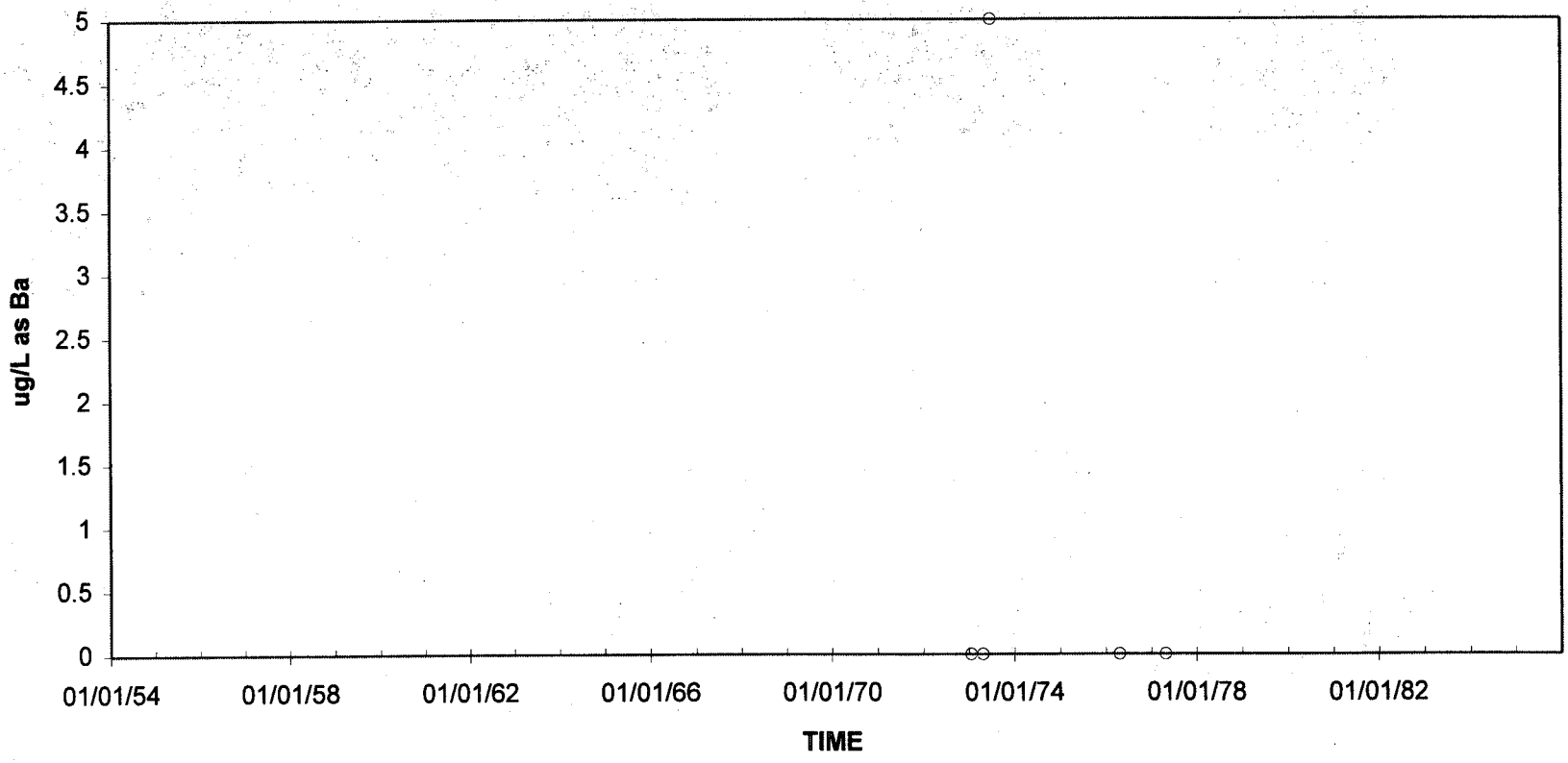
Figure
10.5.4-184



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
BORON, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

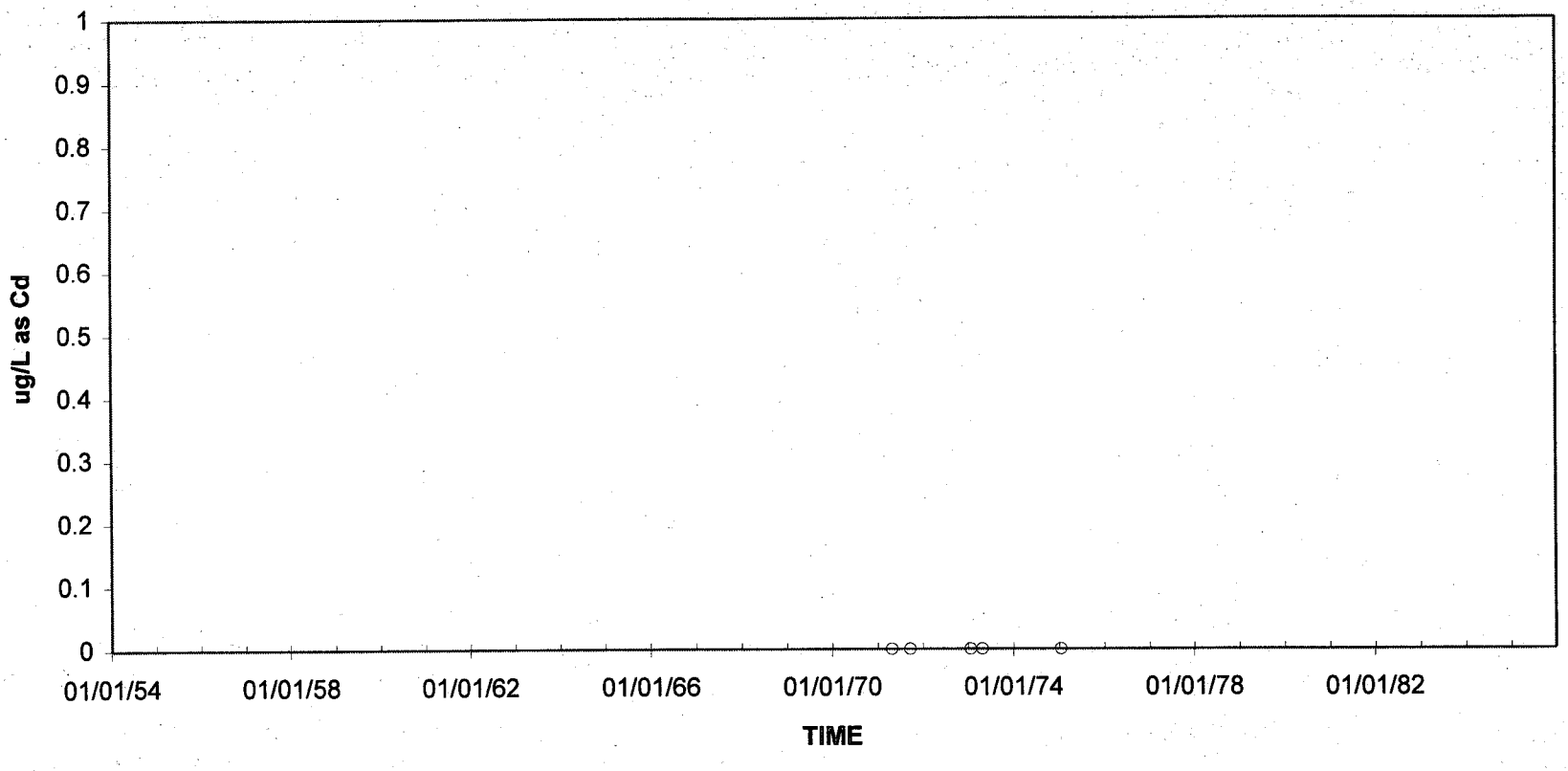
Figure
10.5.4–185



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
BORON, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

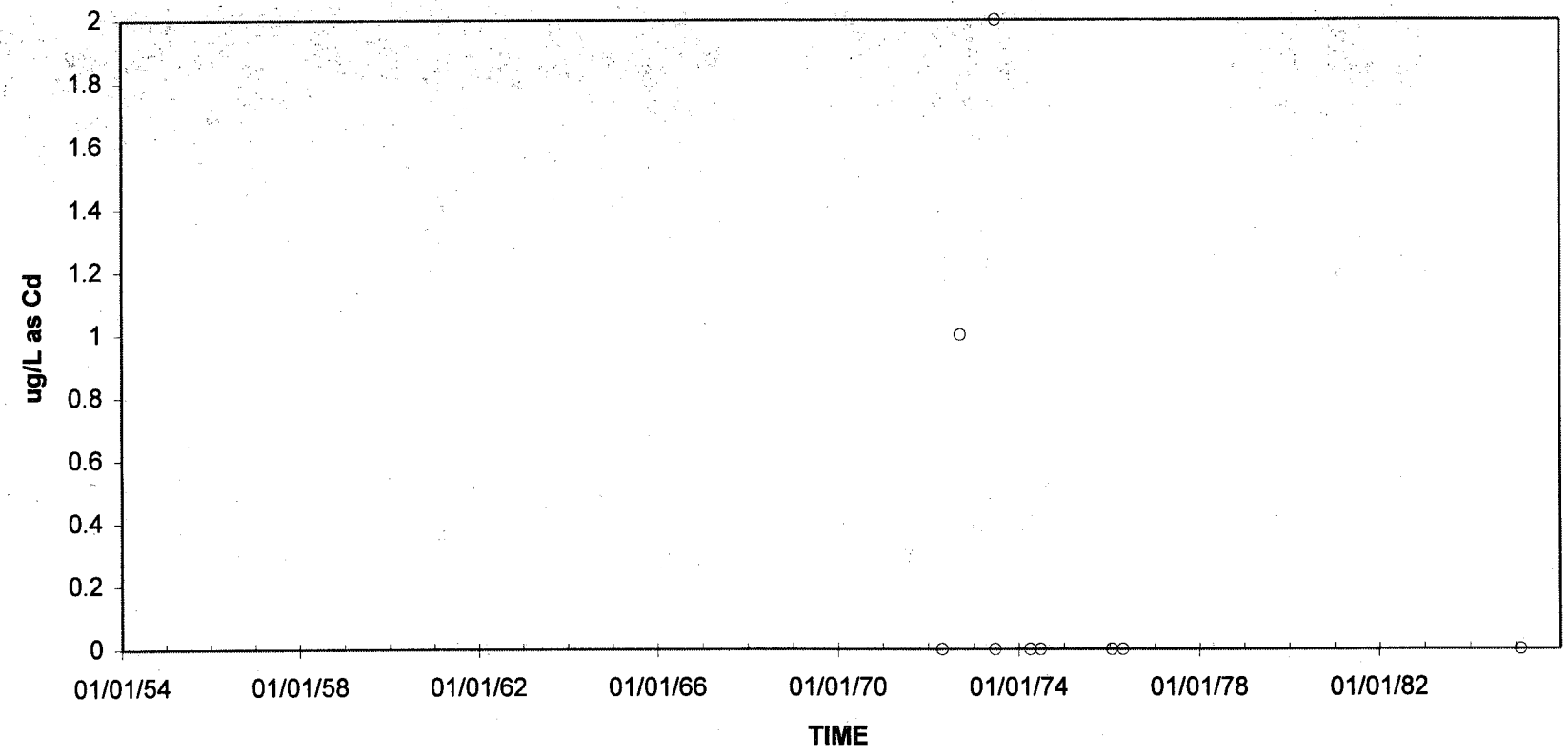
Figure
10.5.4–186



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CADMIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

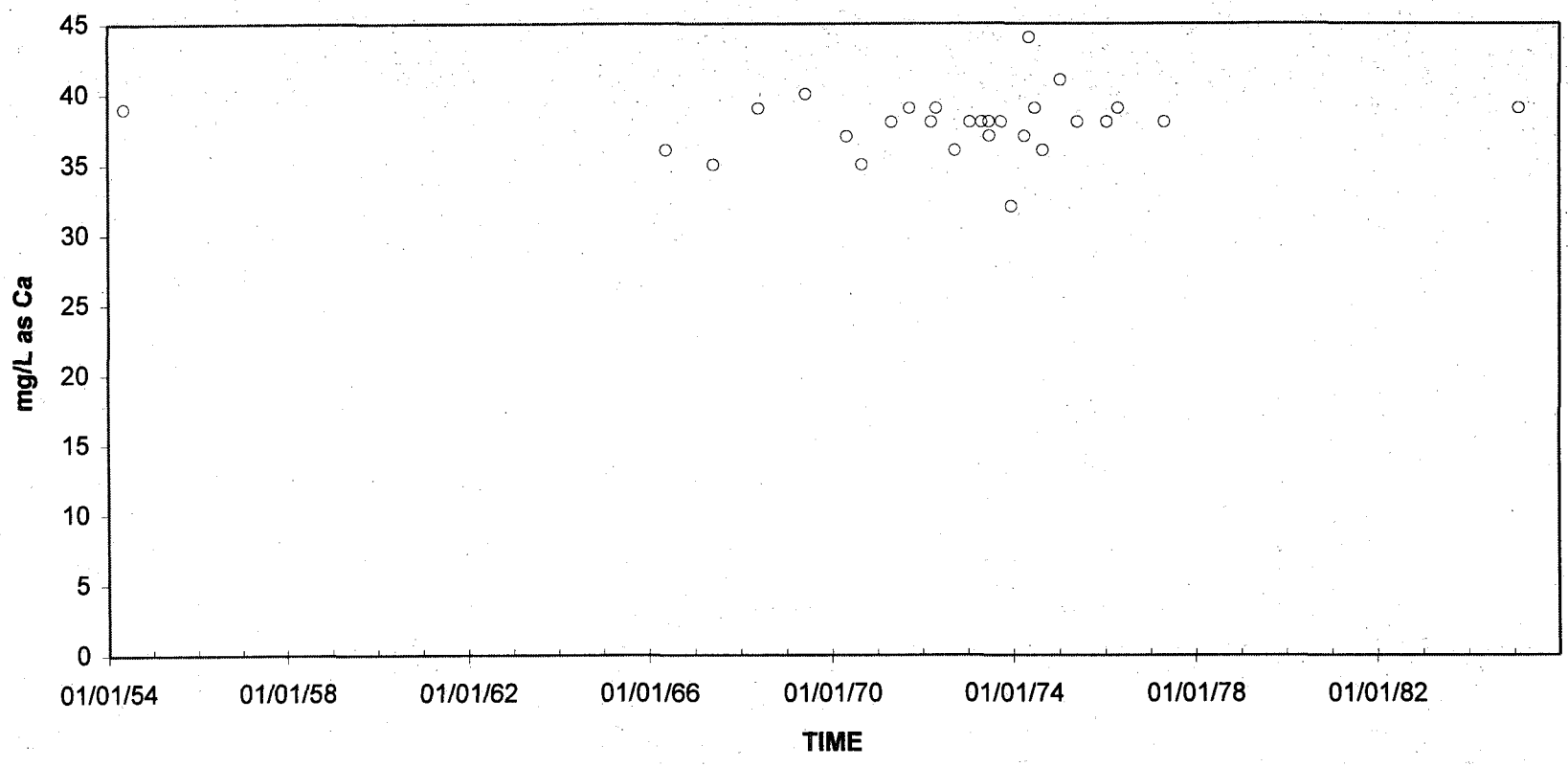
Figure
10.5.4-187



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CADMIUM, WATER UNFLTRD TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

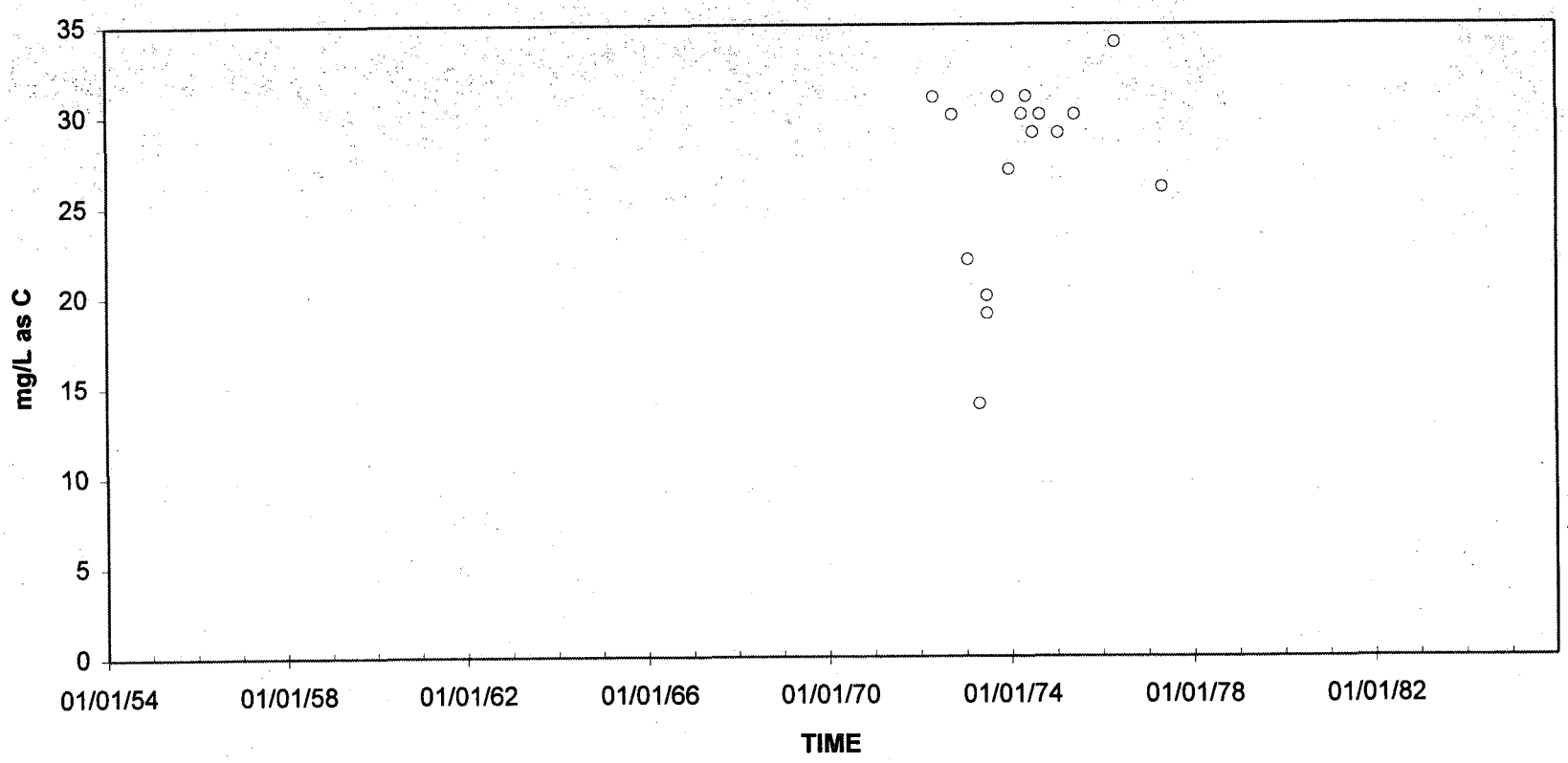
Figure
10.5.4–188



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CALCIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

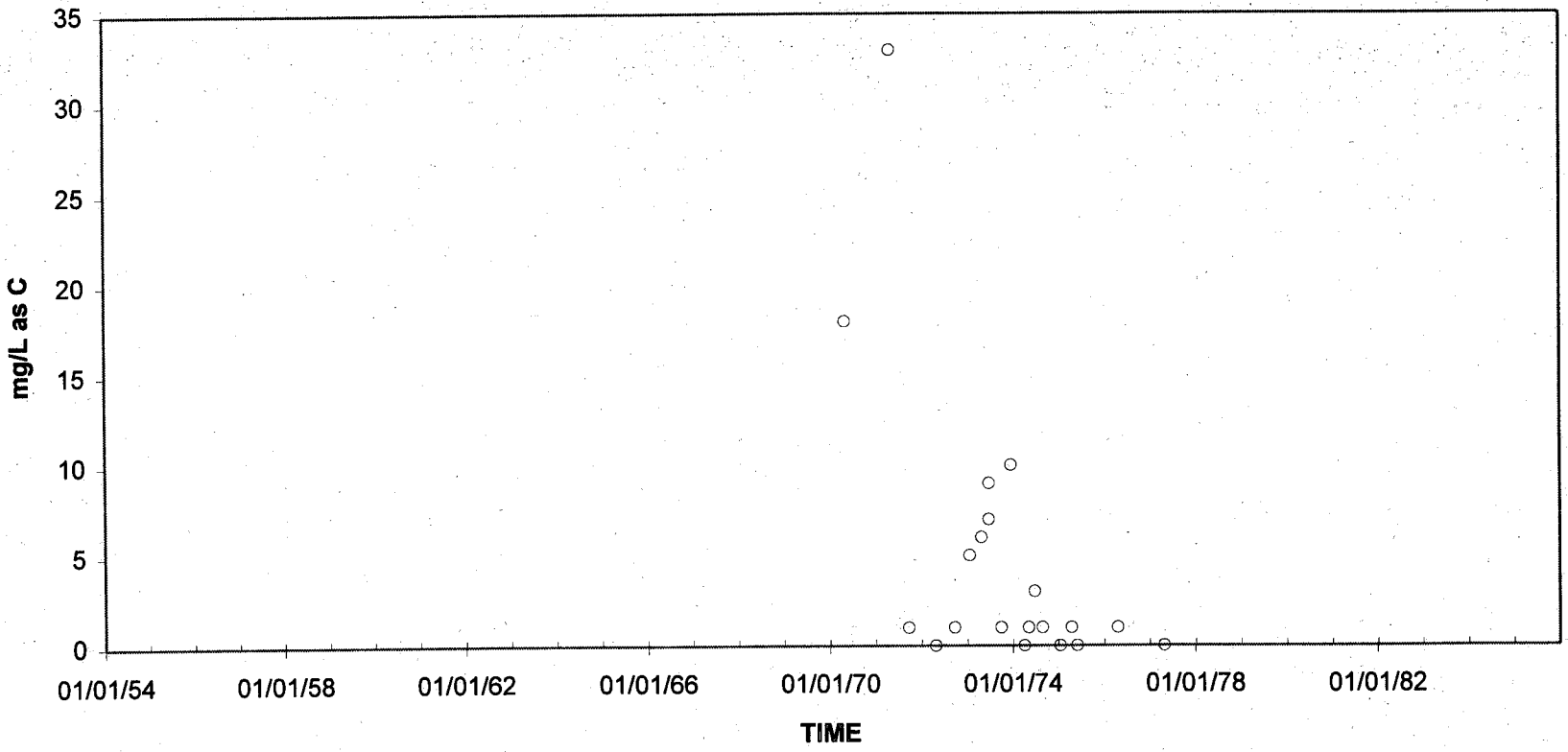
Figure
10.5.4–189



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CARBON, INORGANIC TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

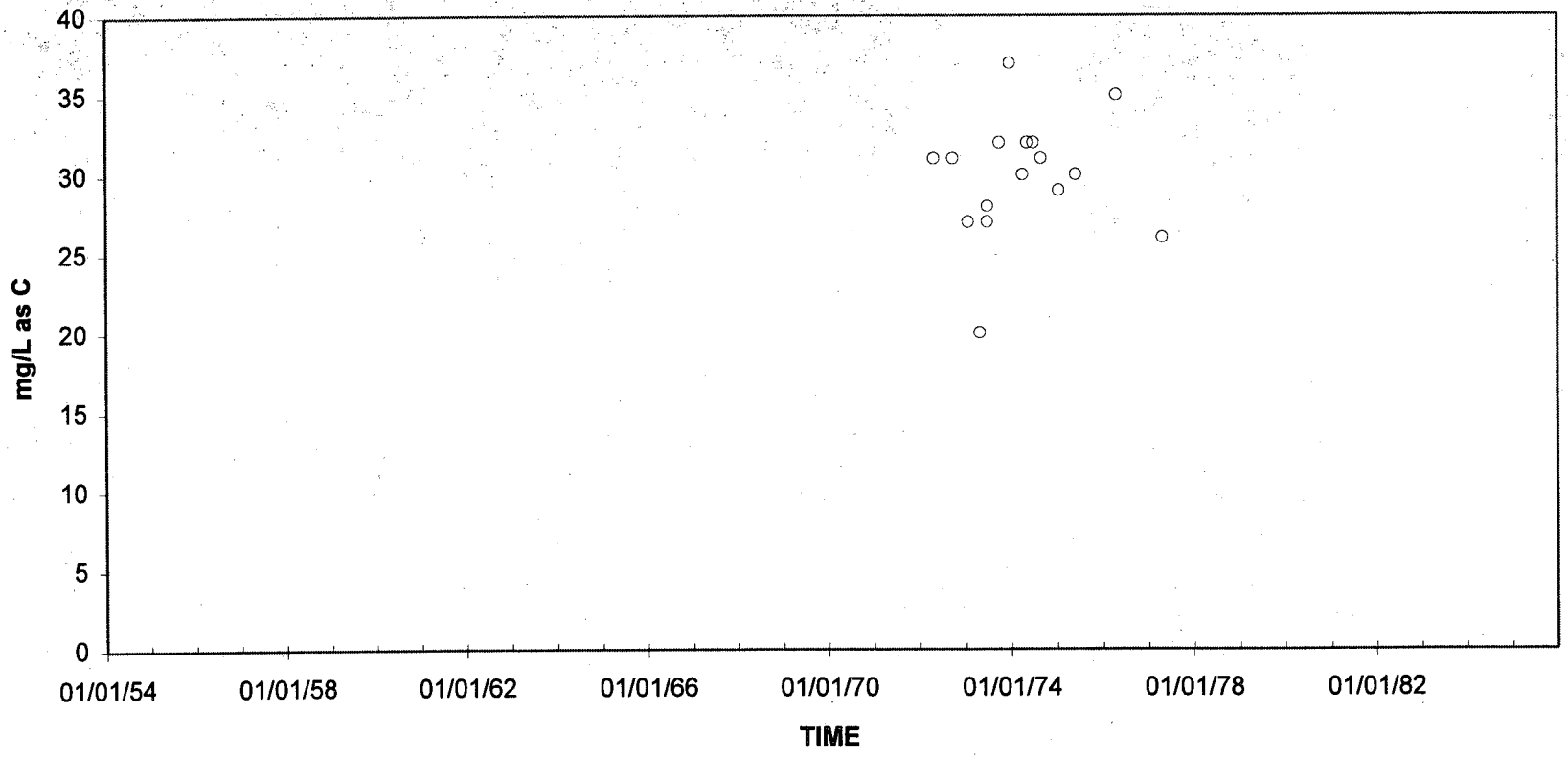
Figure
10.5.4-190



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CARBON, ORGANIC TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

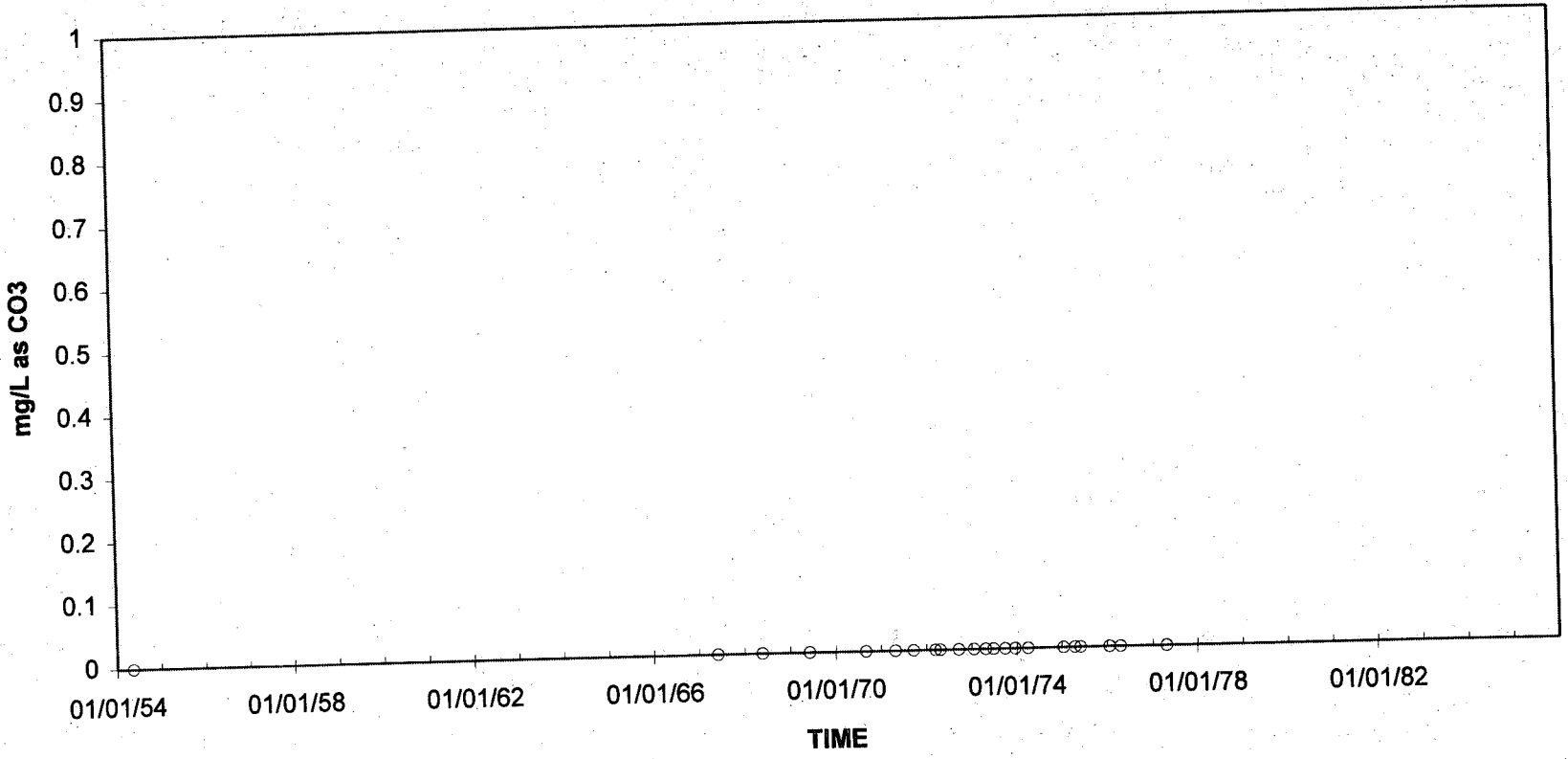
Figure
10.5.4–191



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CARBONM, TOTAL (INORG + ORG)
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

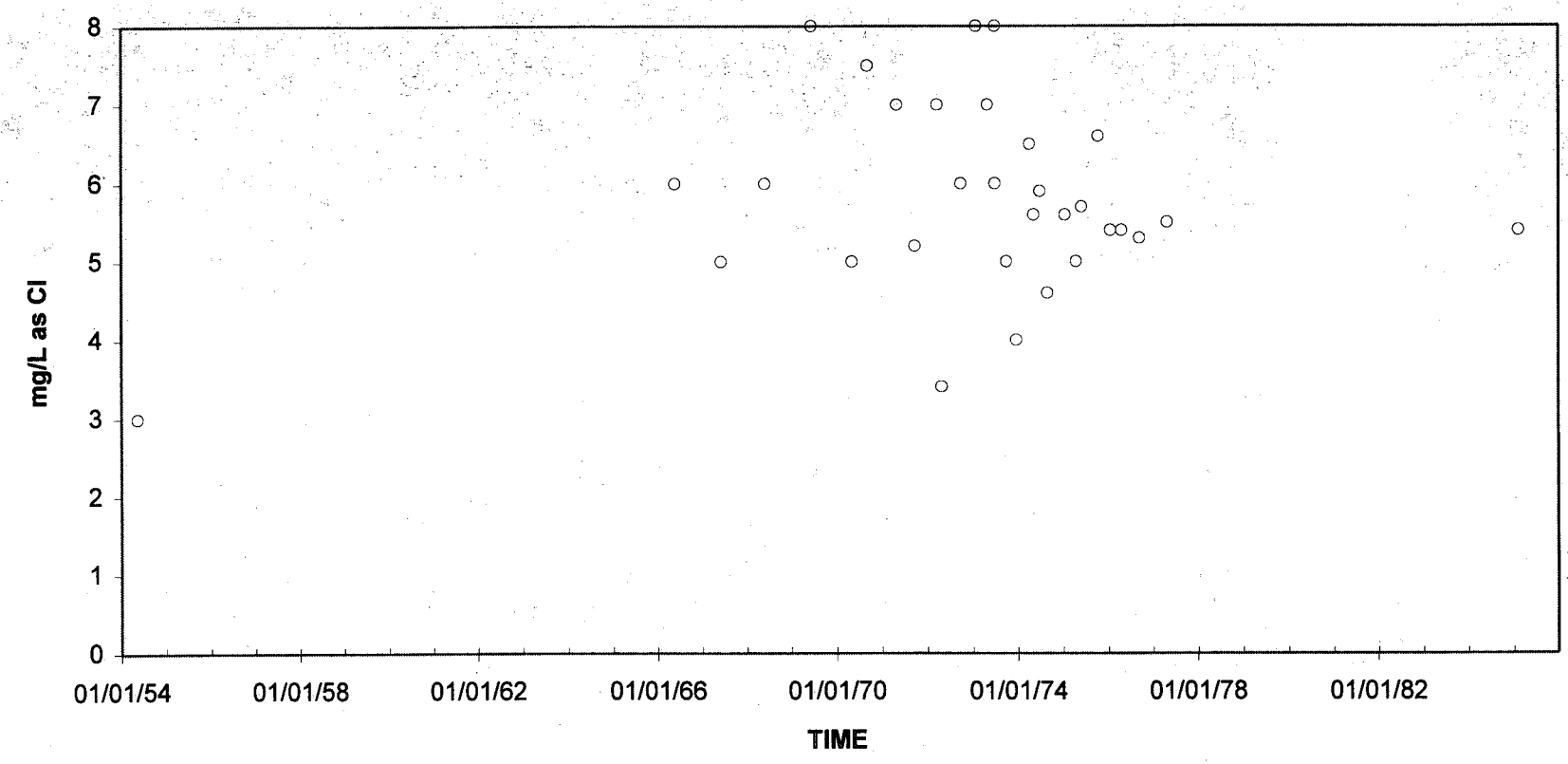
Figure
10.5.4–192



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CARBONATE WAT WH TOT FET FIELD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

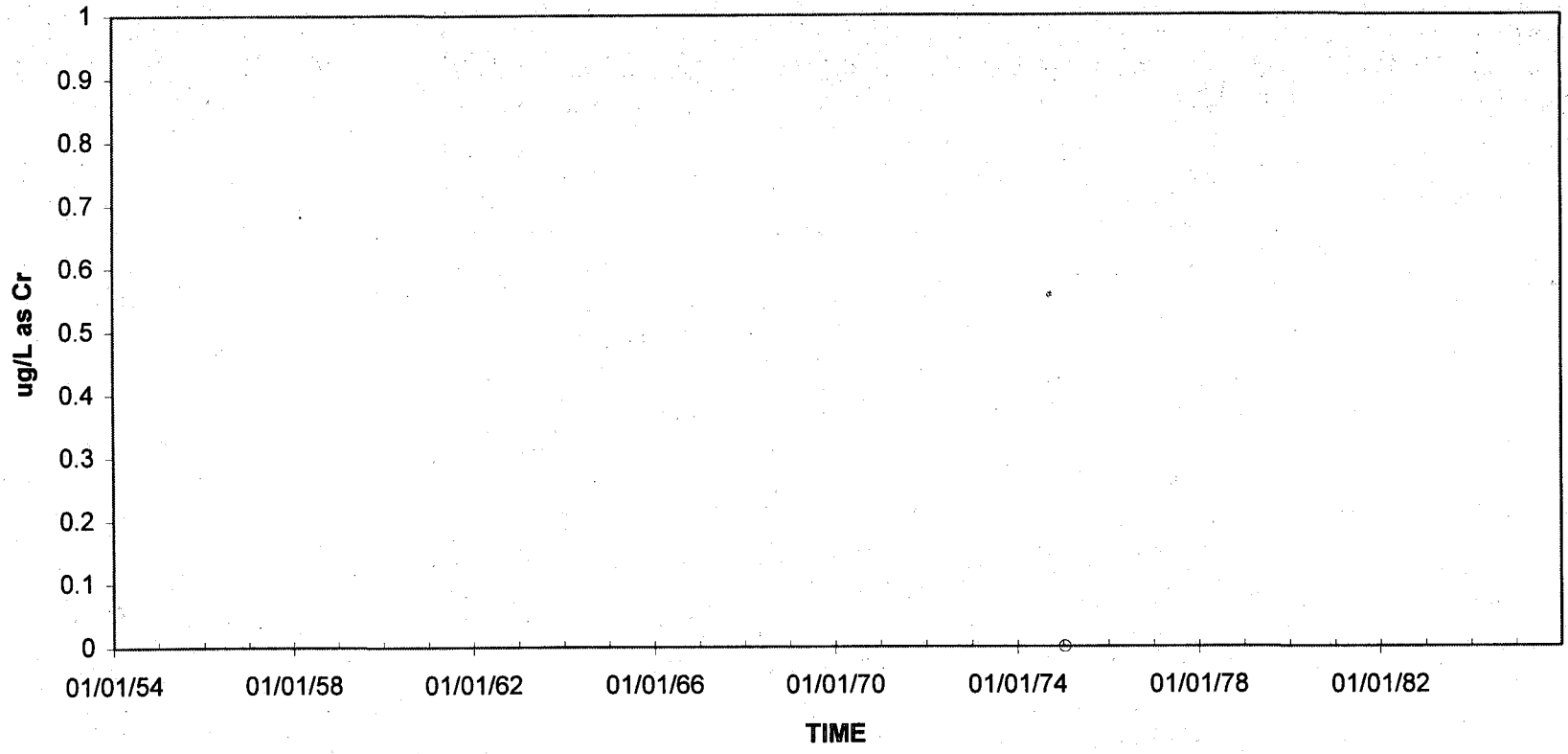
Figure
10.5.4–193



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CHLORIDE, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

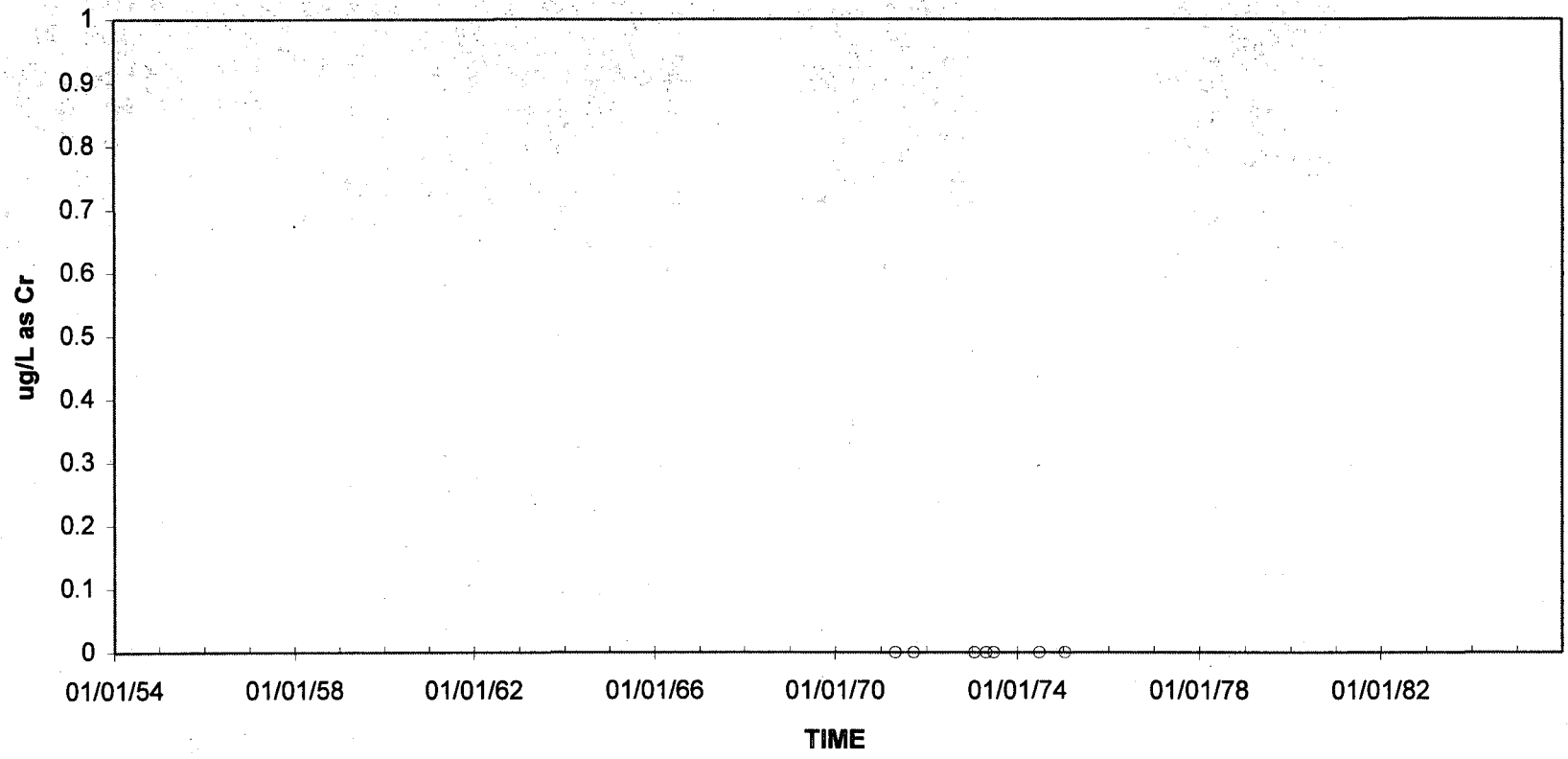
Figure
10.5.4–194



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CHROMIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

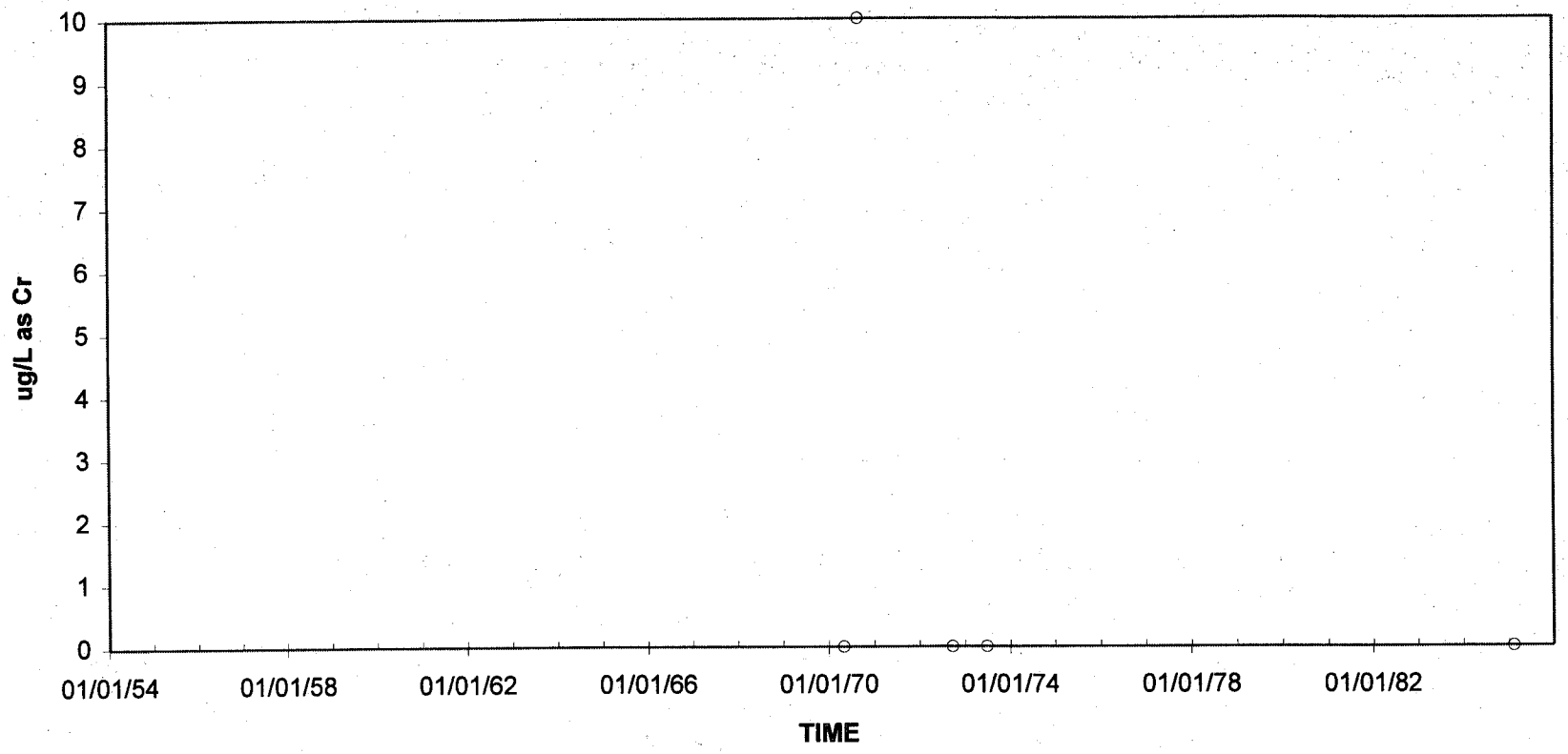
Figure
10.5.4–195



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CHROMIUM, HEXAVALENT DIS.
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

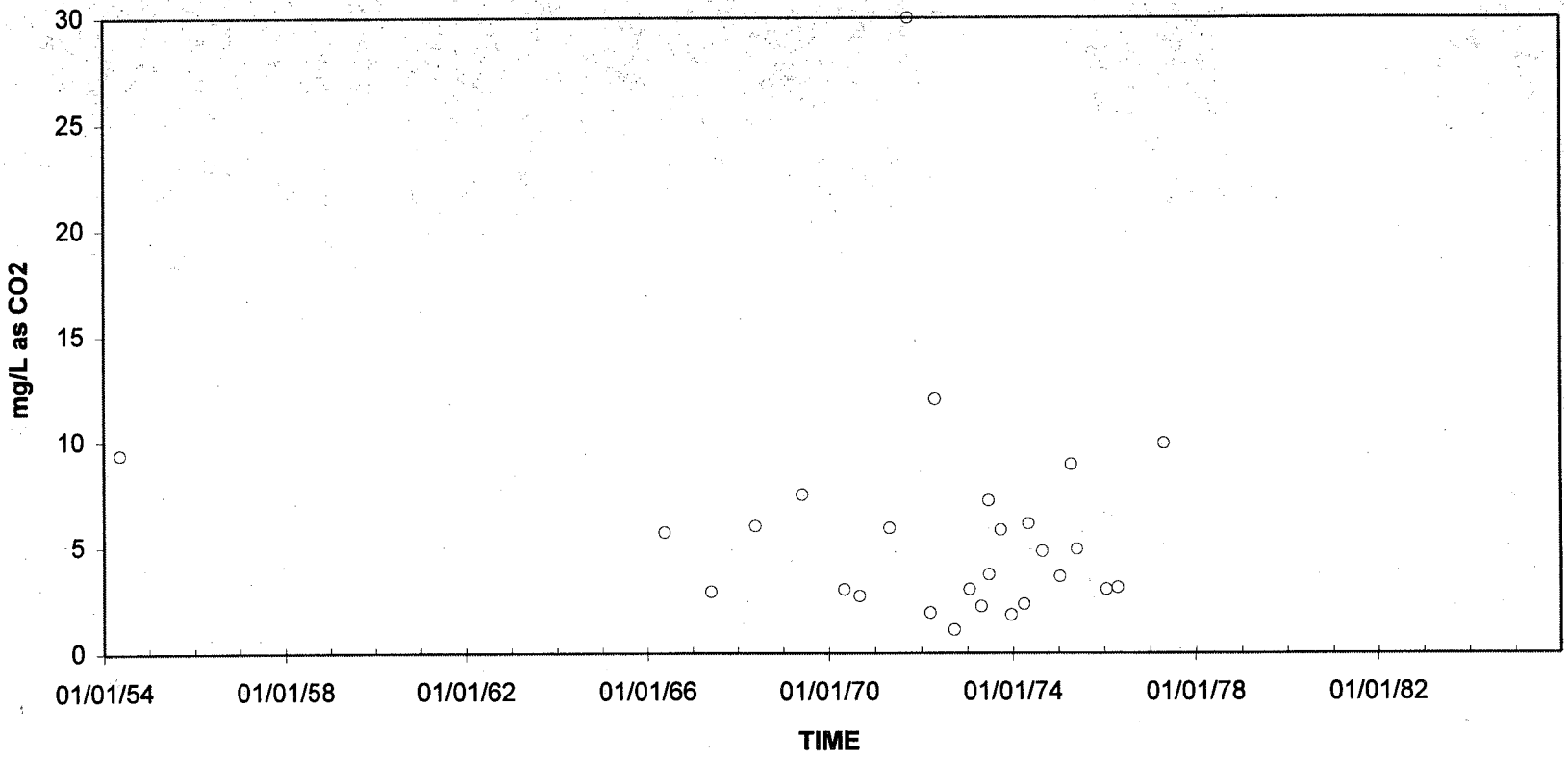
Figure
10.5.4–196



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CHROMIUM, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

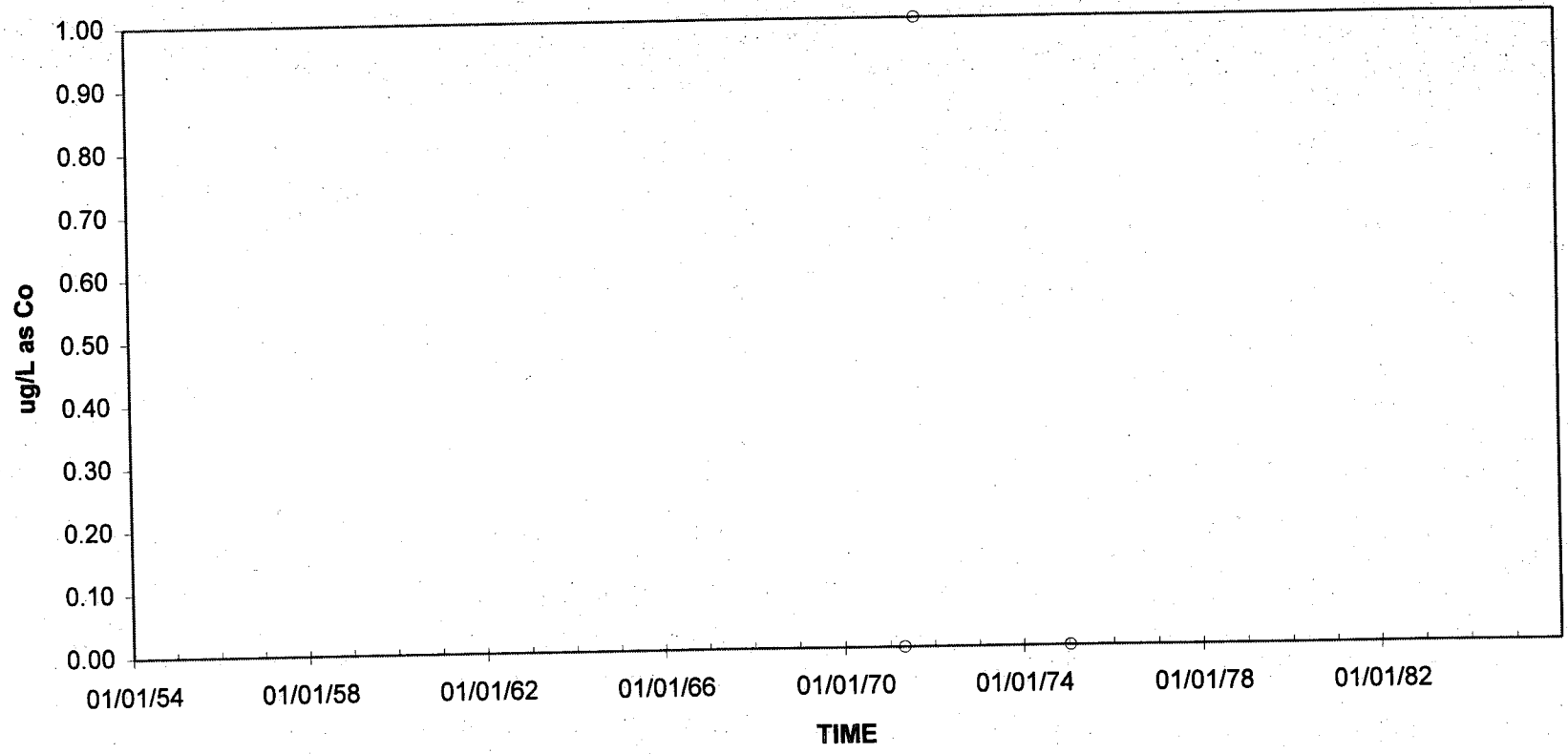
Figure
10.5.4–197



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
CO2 DISS
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

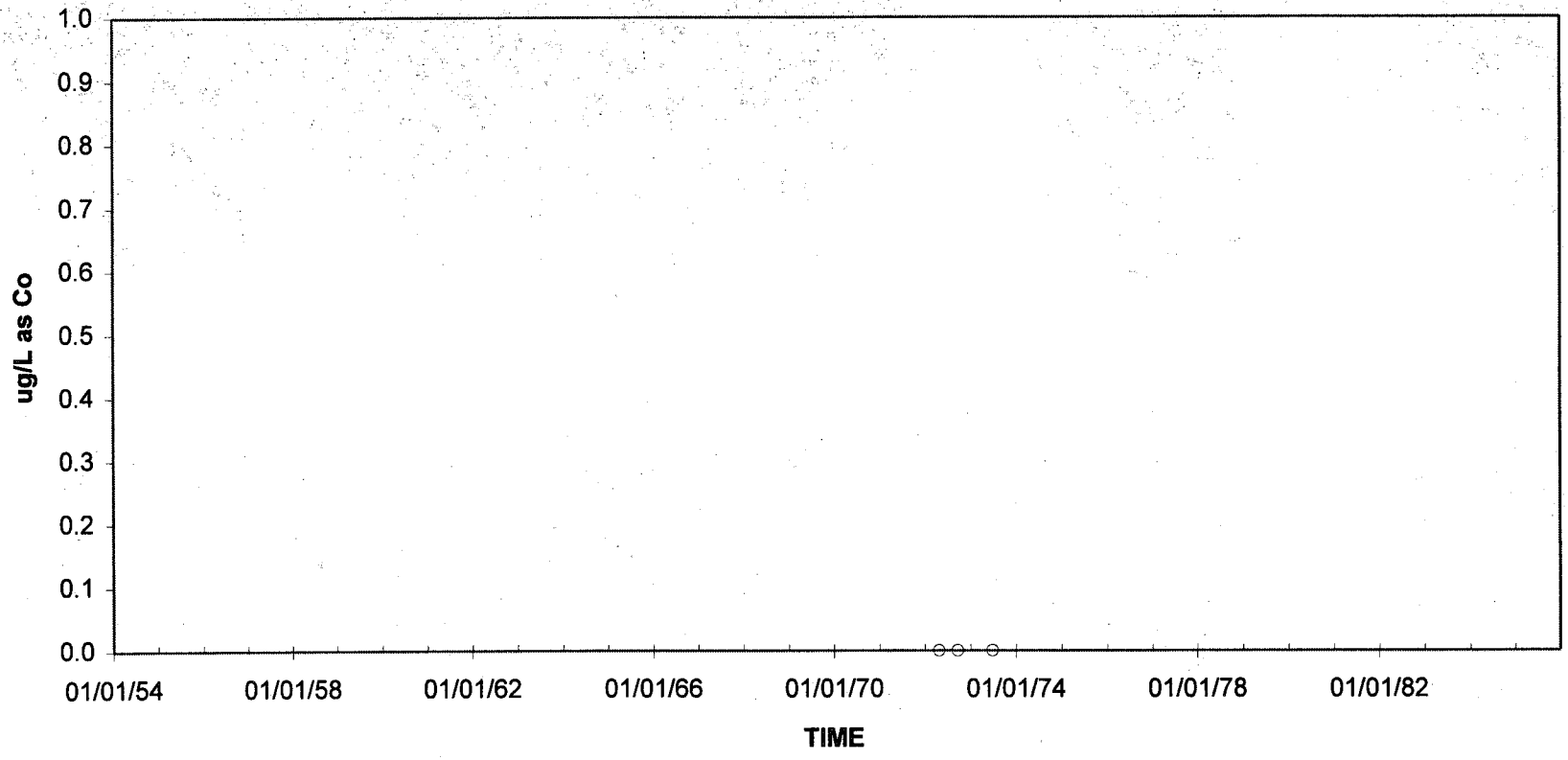
Figure
10.5.4–198



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
COBALT, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

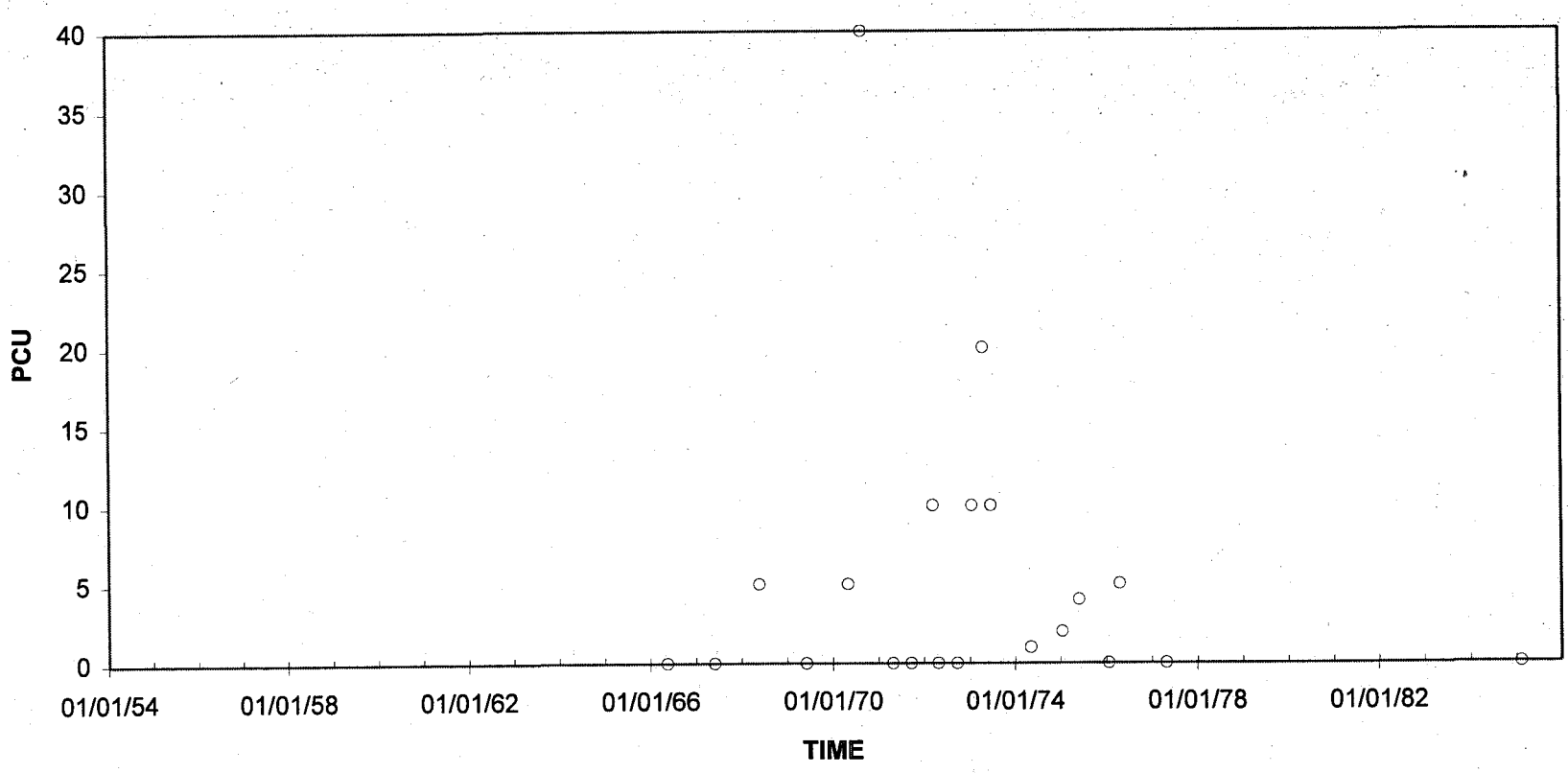
Figure
10.5.4–199



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
COBALT, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

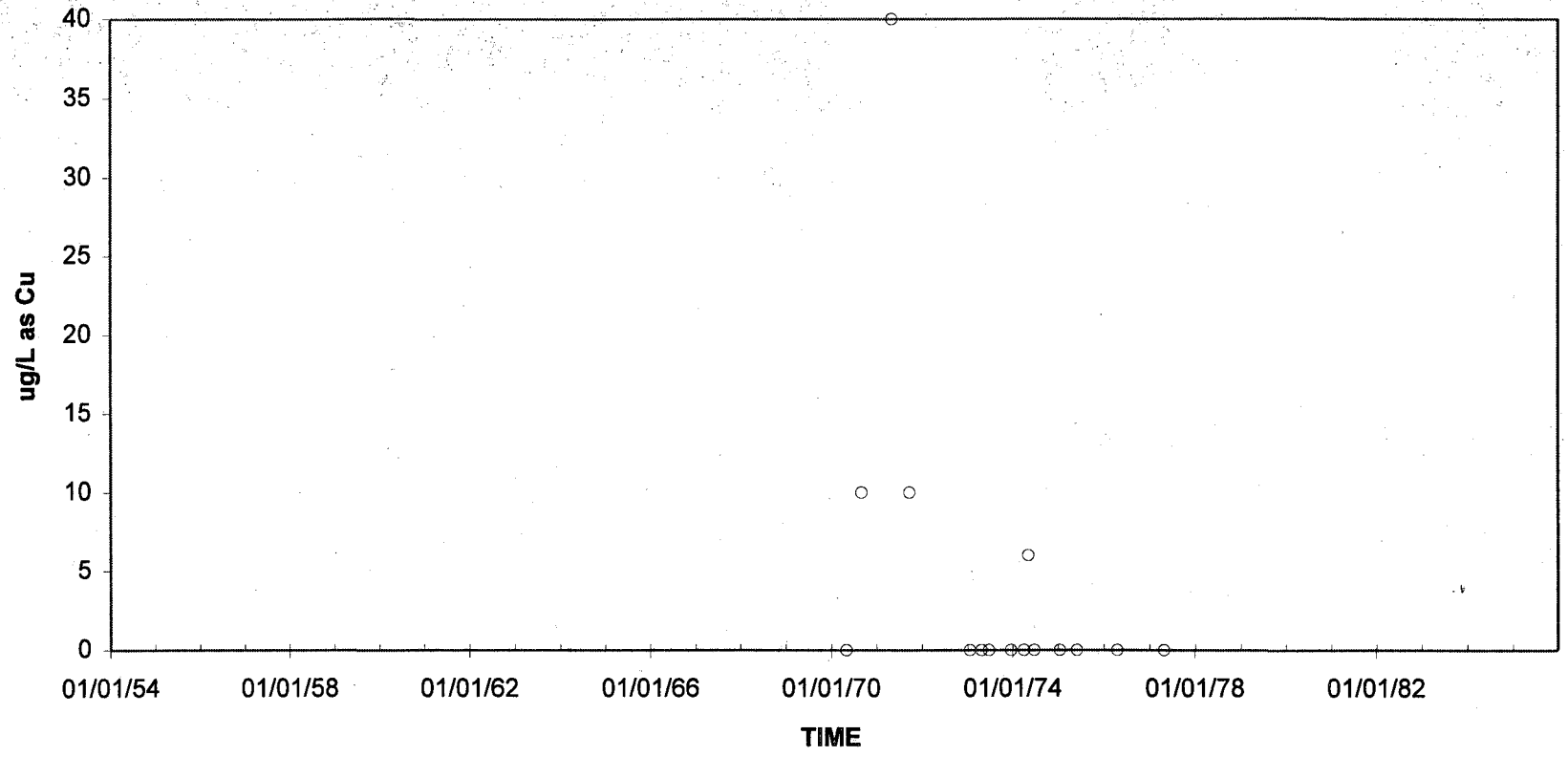
Figure
10.5.4–200



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
COLOR
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

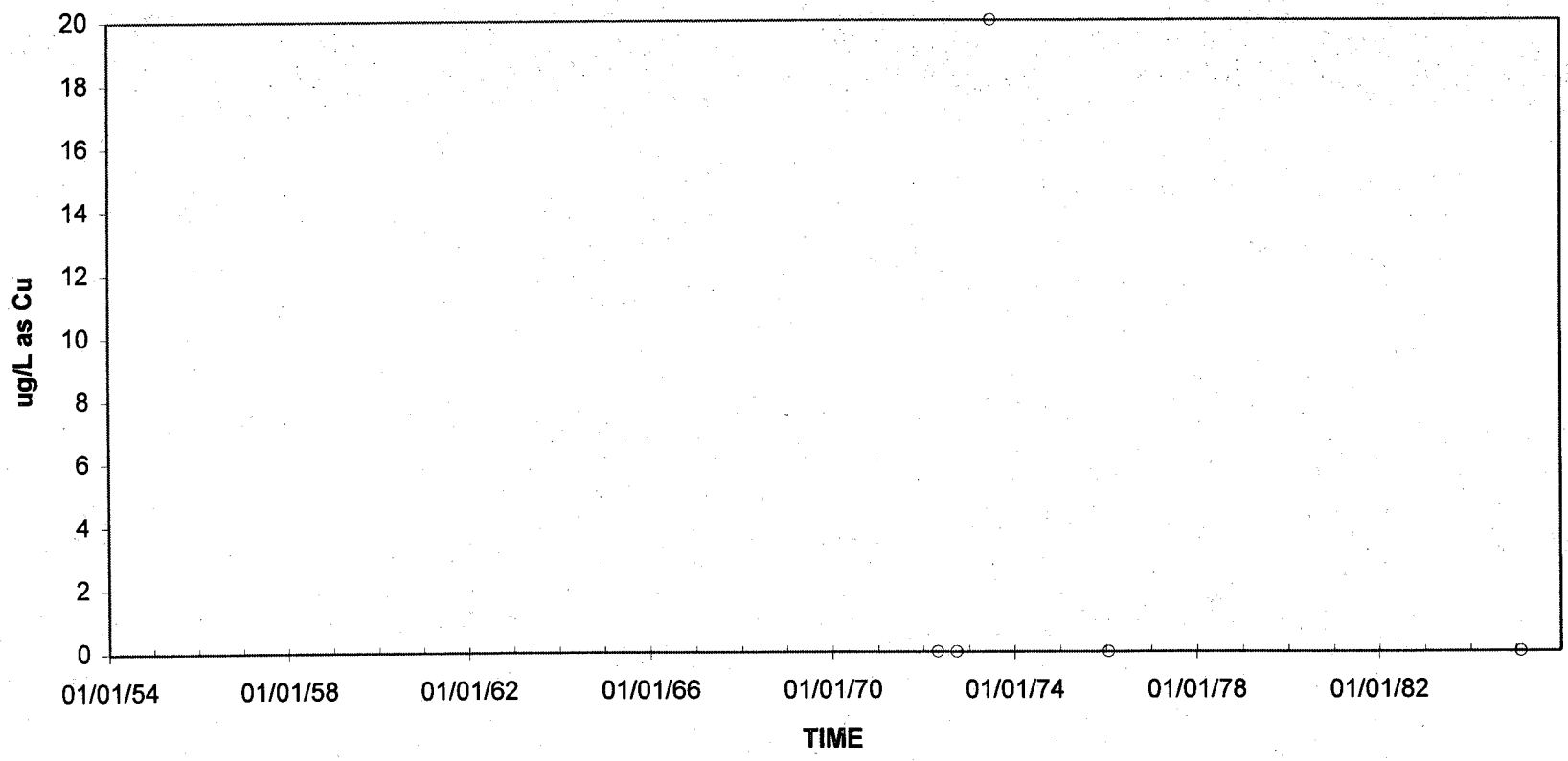
Figure
10.5.4–201



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
COPPER, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

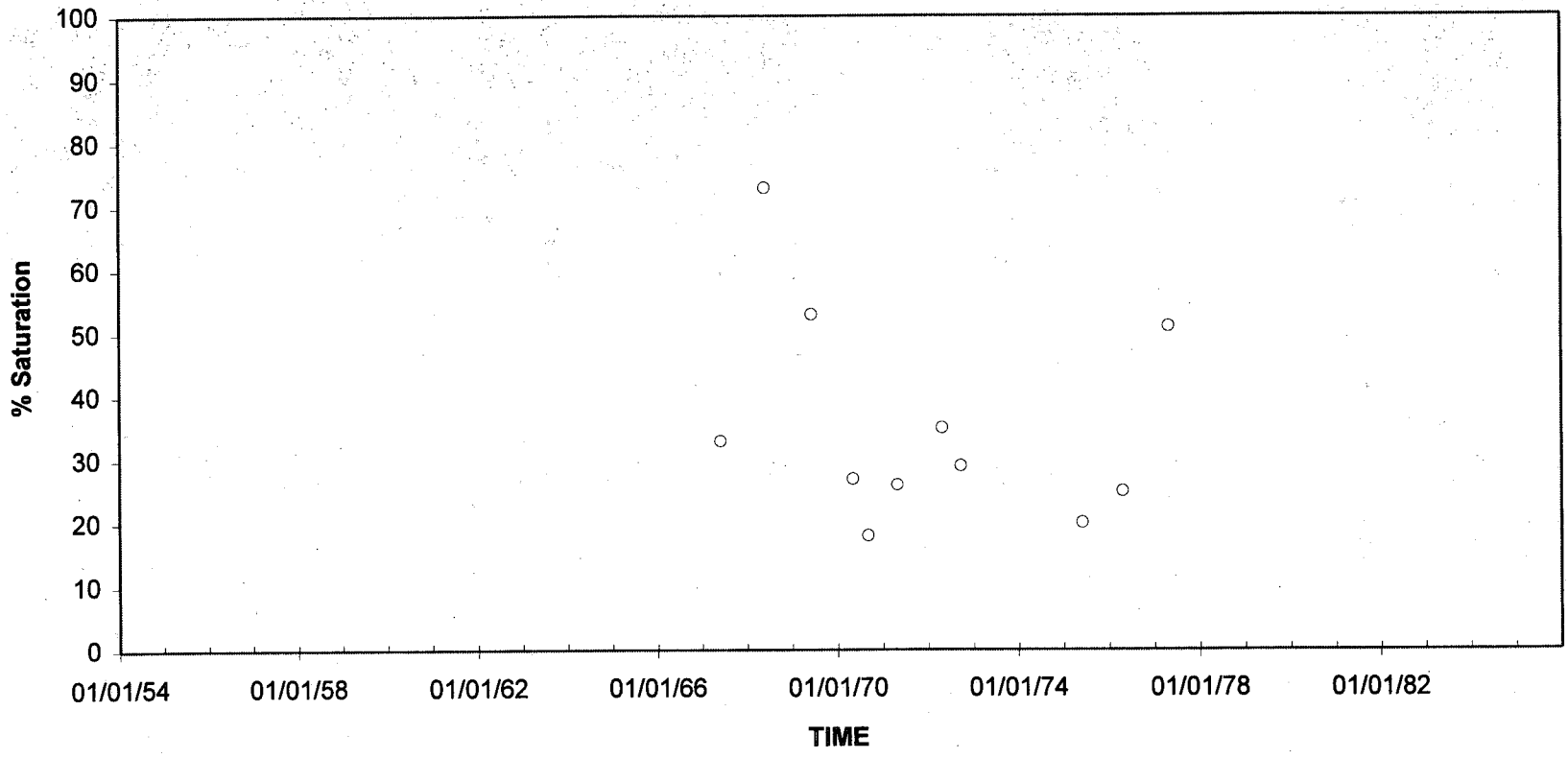
Figure
10.5.4-202



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
COPPER, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

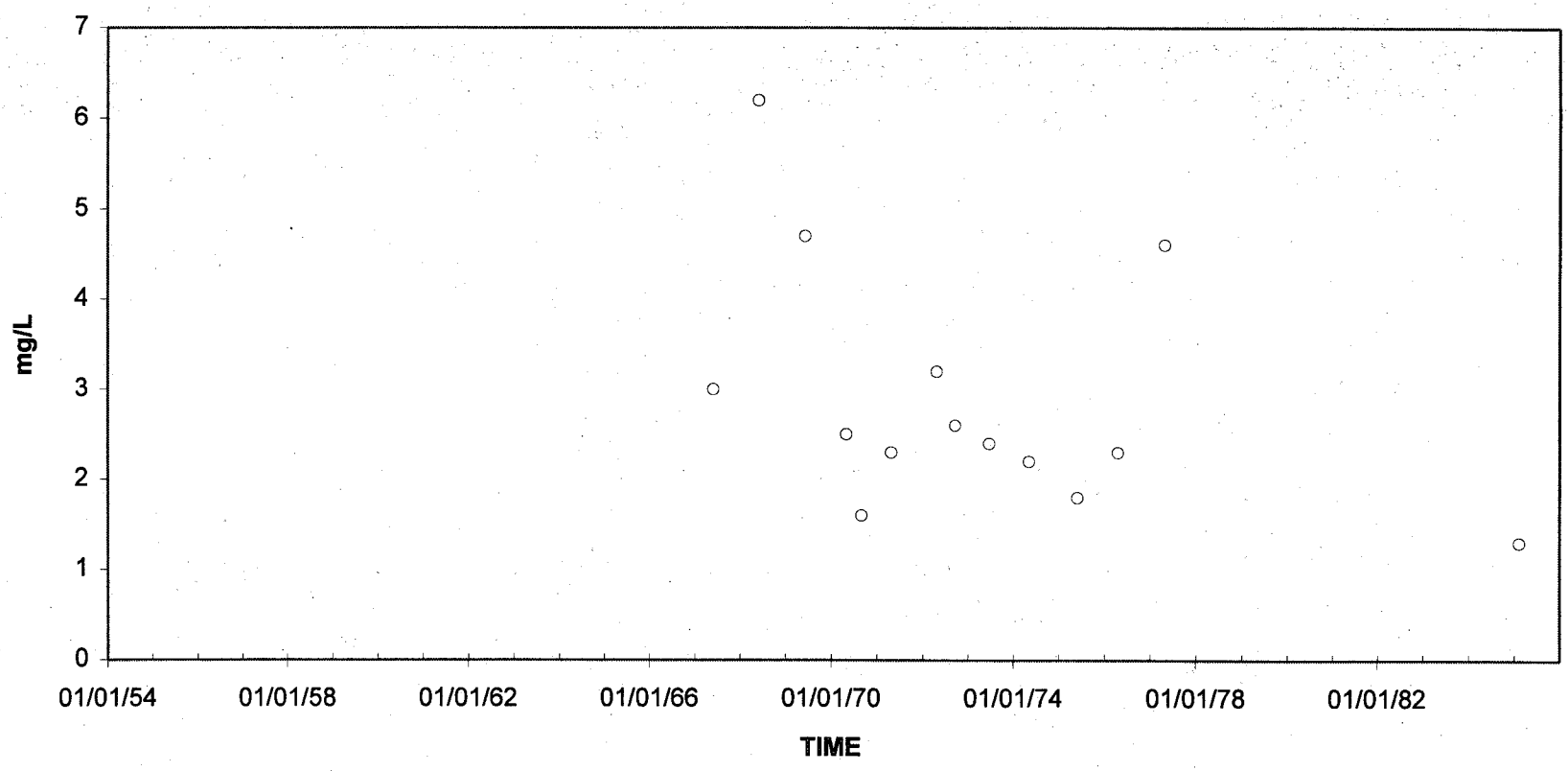
Figure
10.5.4-203



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
DISSOLVED OXYGEN
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

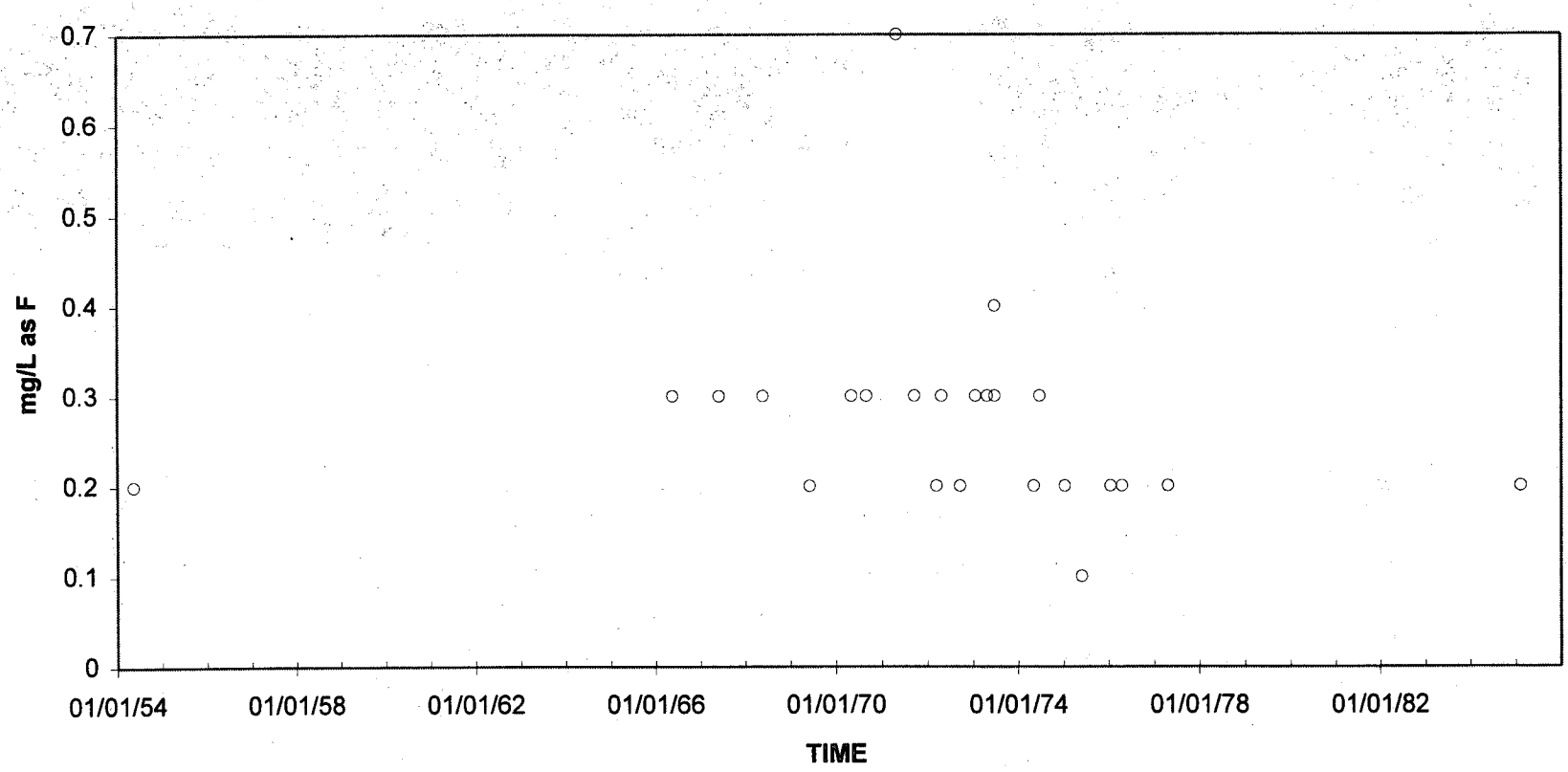
Figure
10.5.4–204



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
DISSOLVED OXYGEN
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

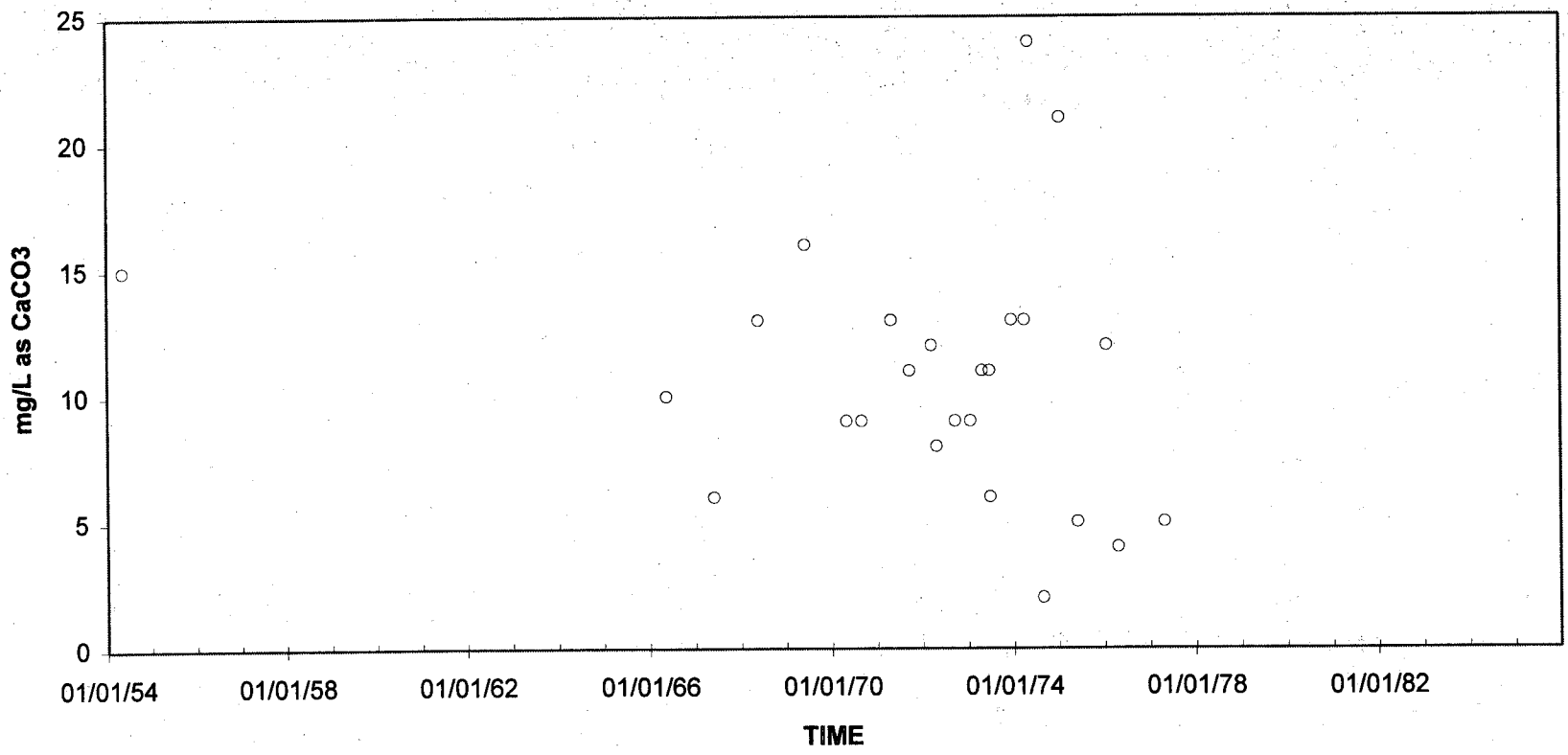
Figure
10.5.4-205



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
FLUORIDE, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

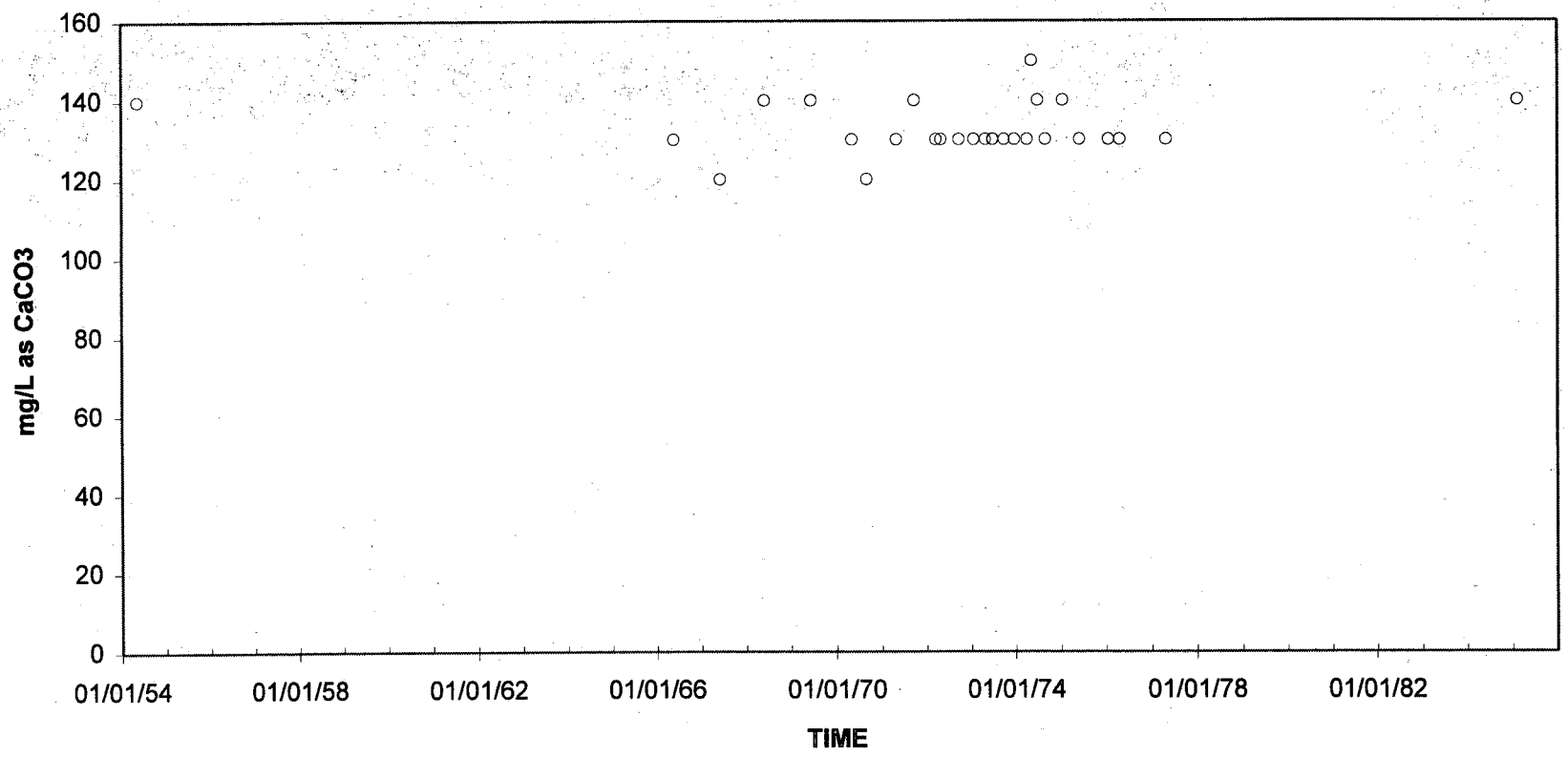
Figure
10.5.4–206



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
HARDNESS, NONCARB WH WAT TOT FLD
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

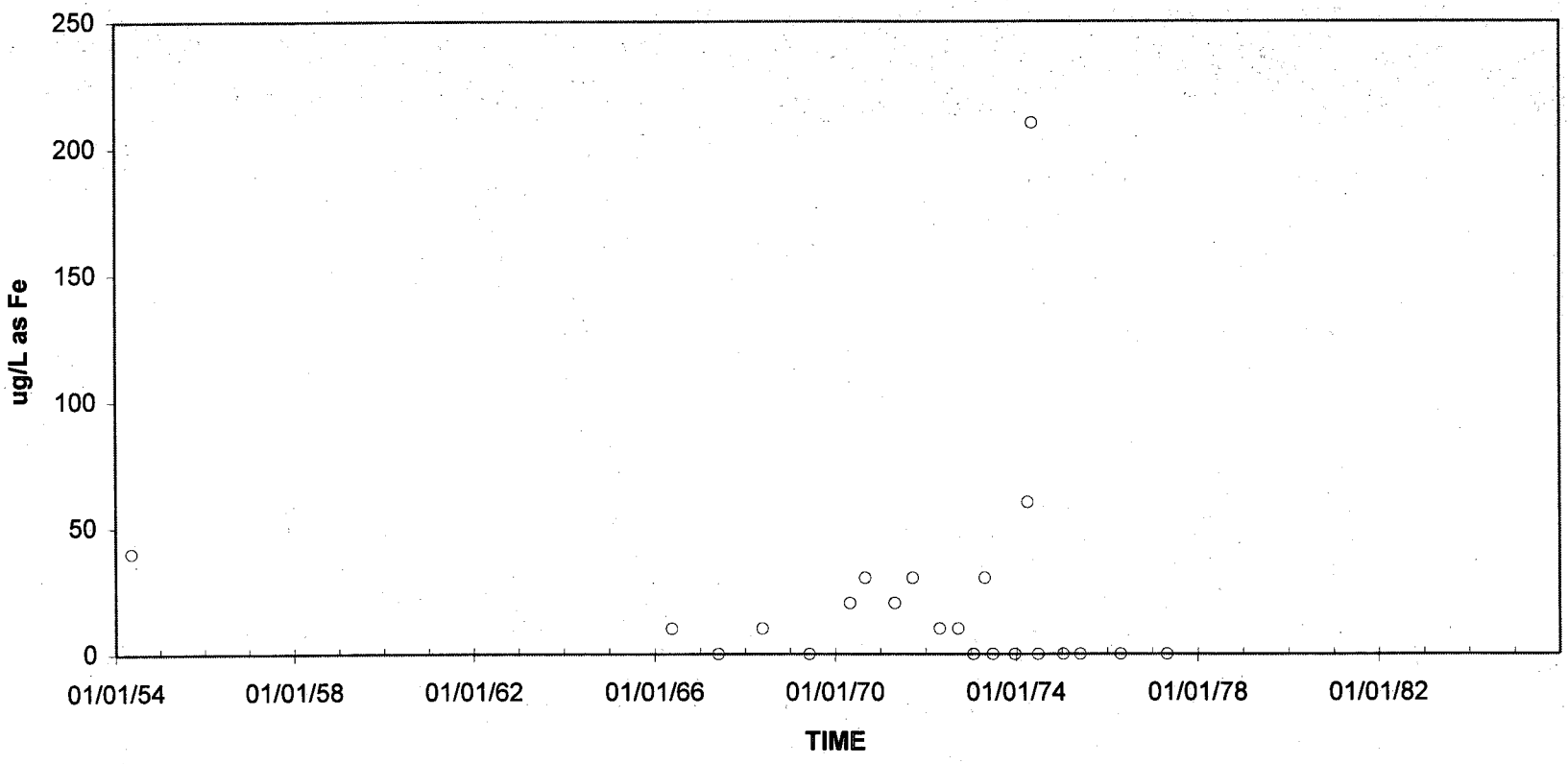
Figure
10.5.4-207



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
HARDNESS, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

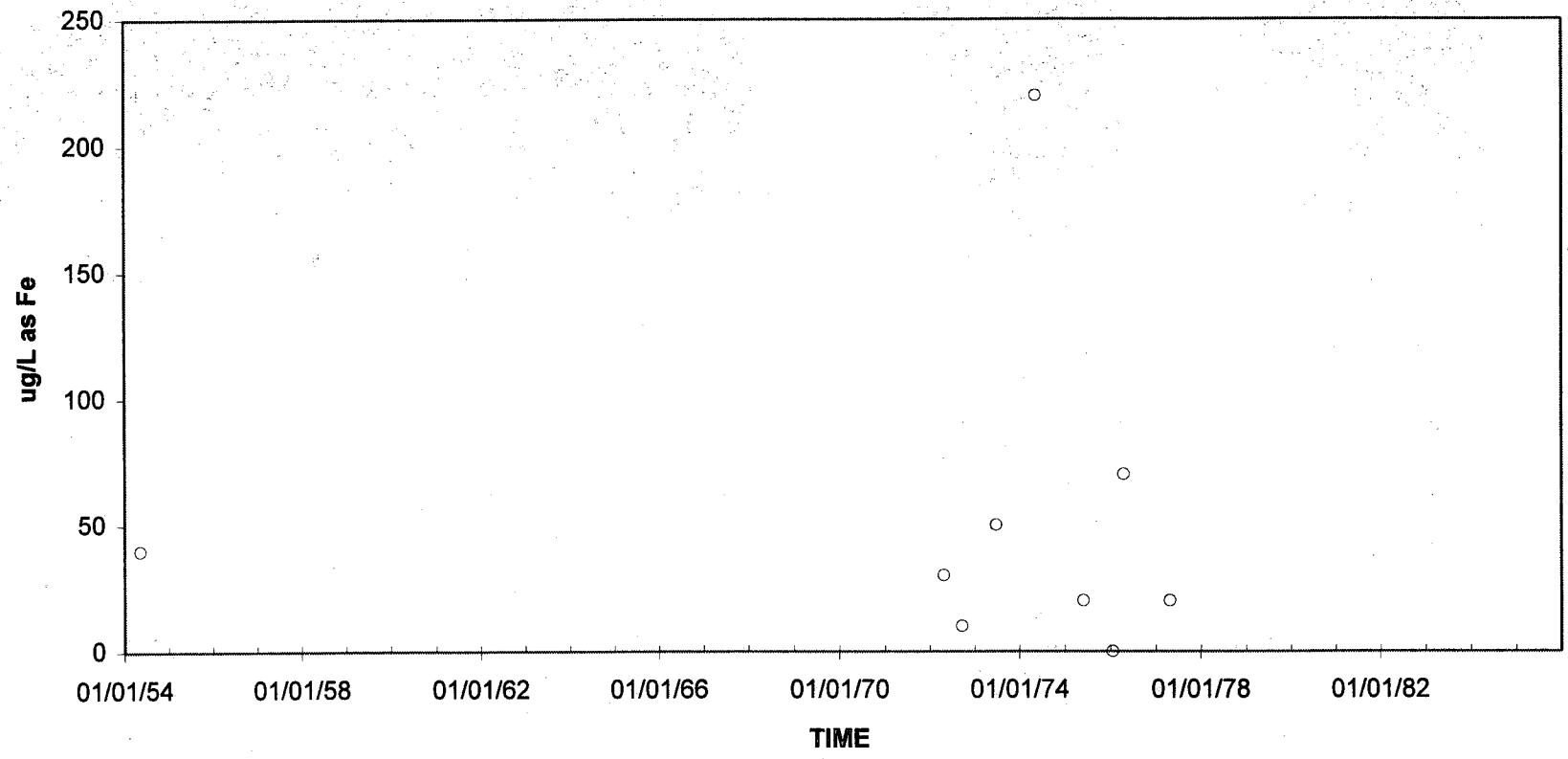
Figure
10.5.4–208



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
IRON, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

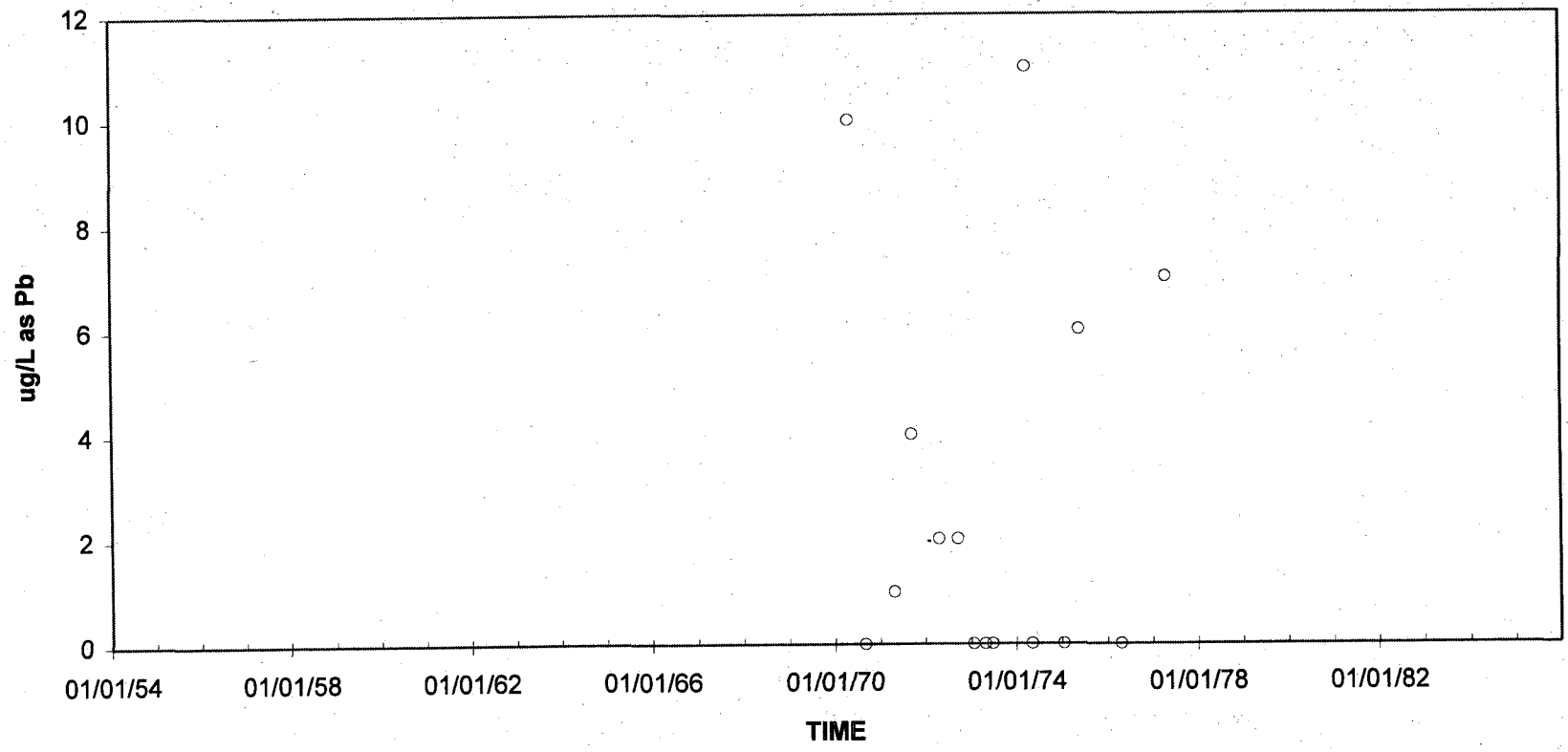
Figure
10.5.4-209



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
IRON, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

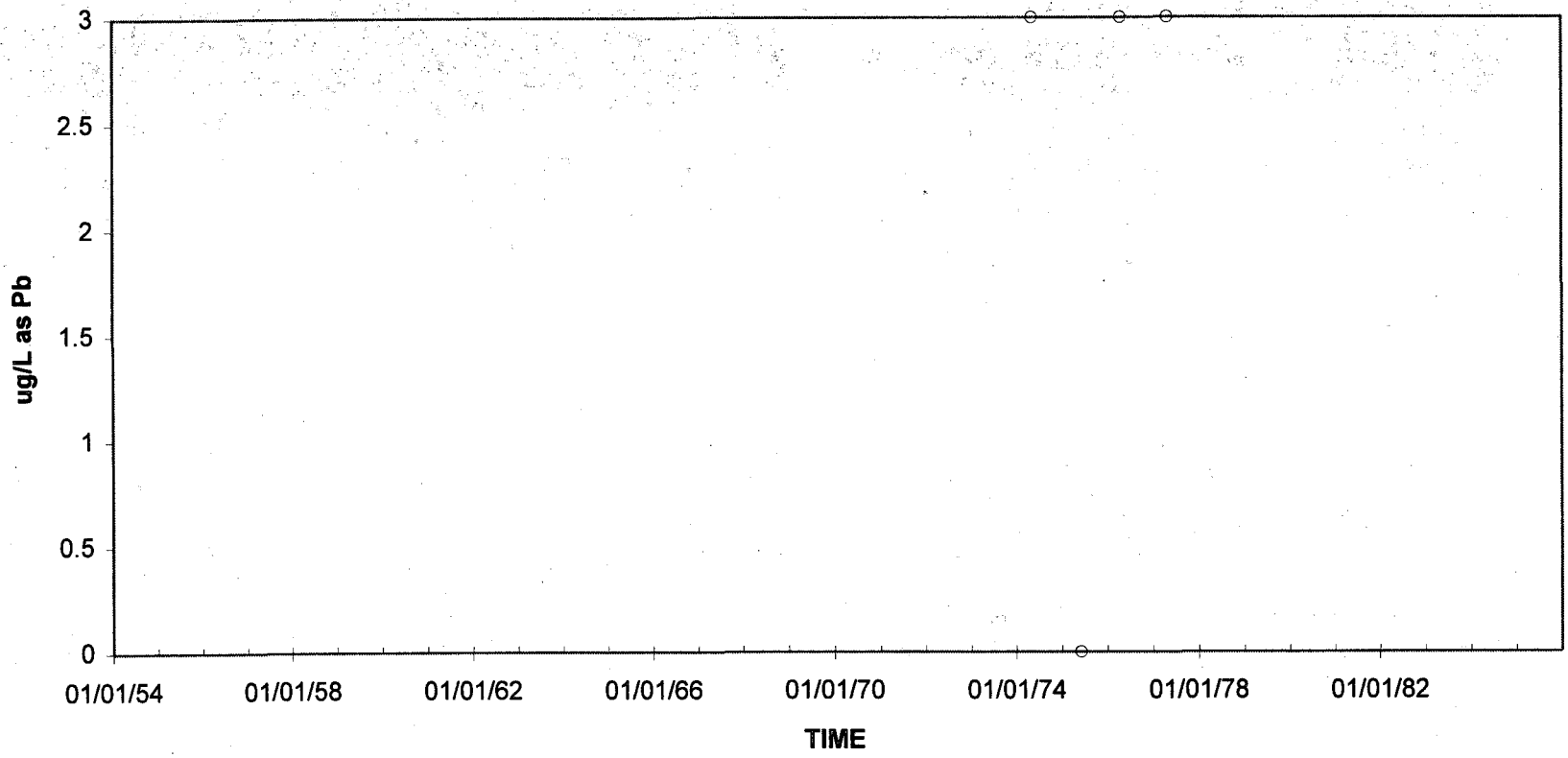
Figure
10.5.4-210



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
LEAD, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

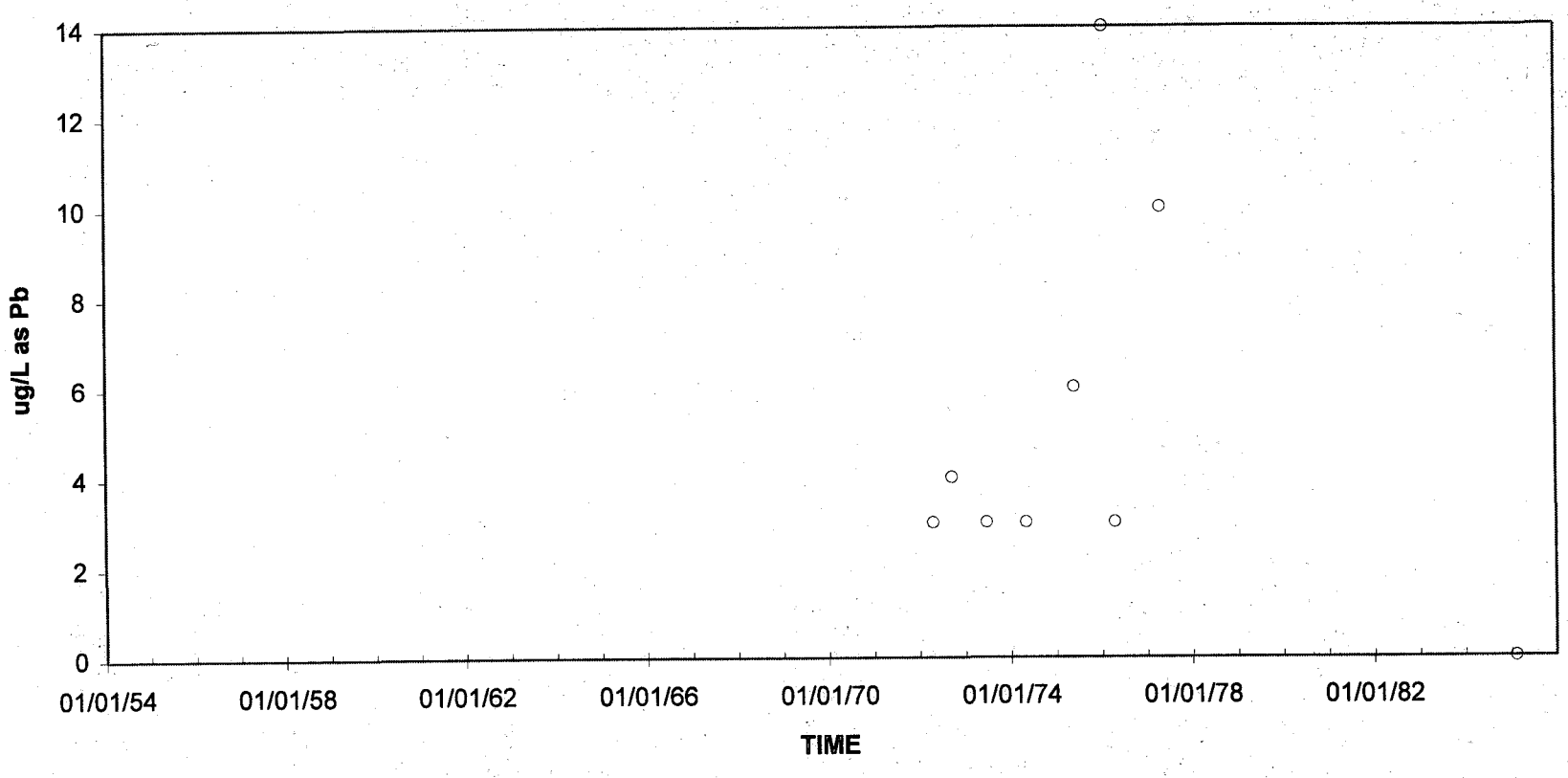
Figure
10.5.4-211



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
LEAD, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

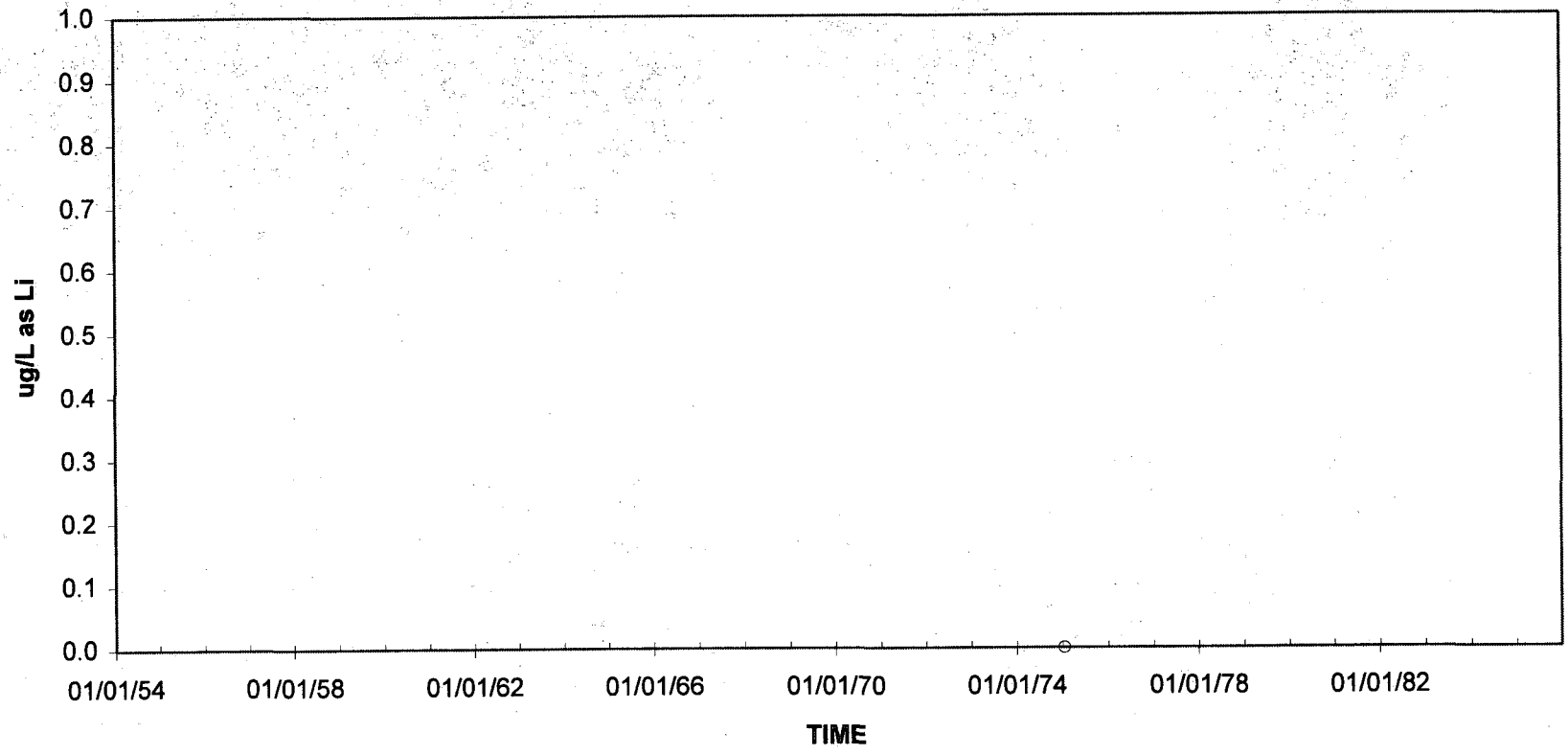
Figure
10.5.4-212



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
LEAD, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

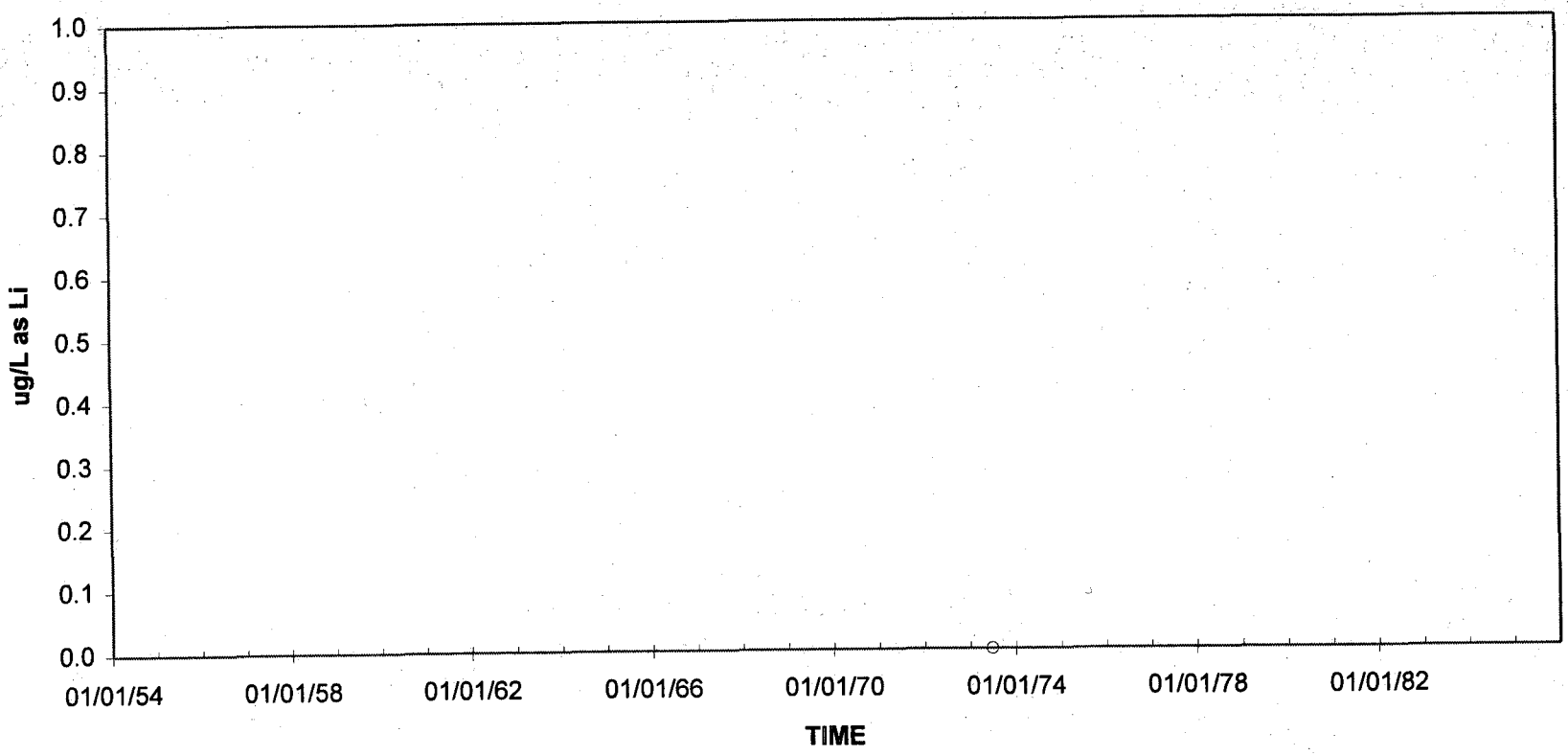
Figure
10.5.4-213



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
LITHIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

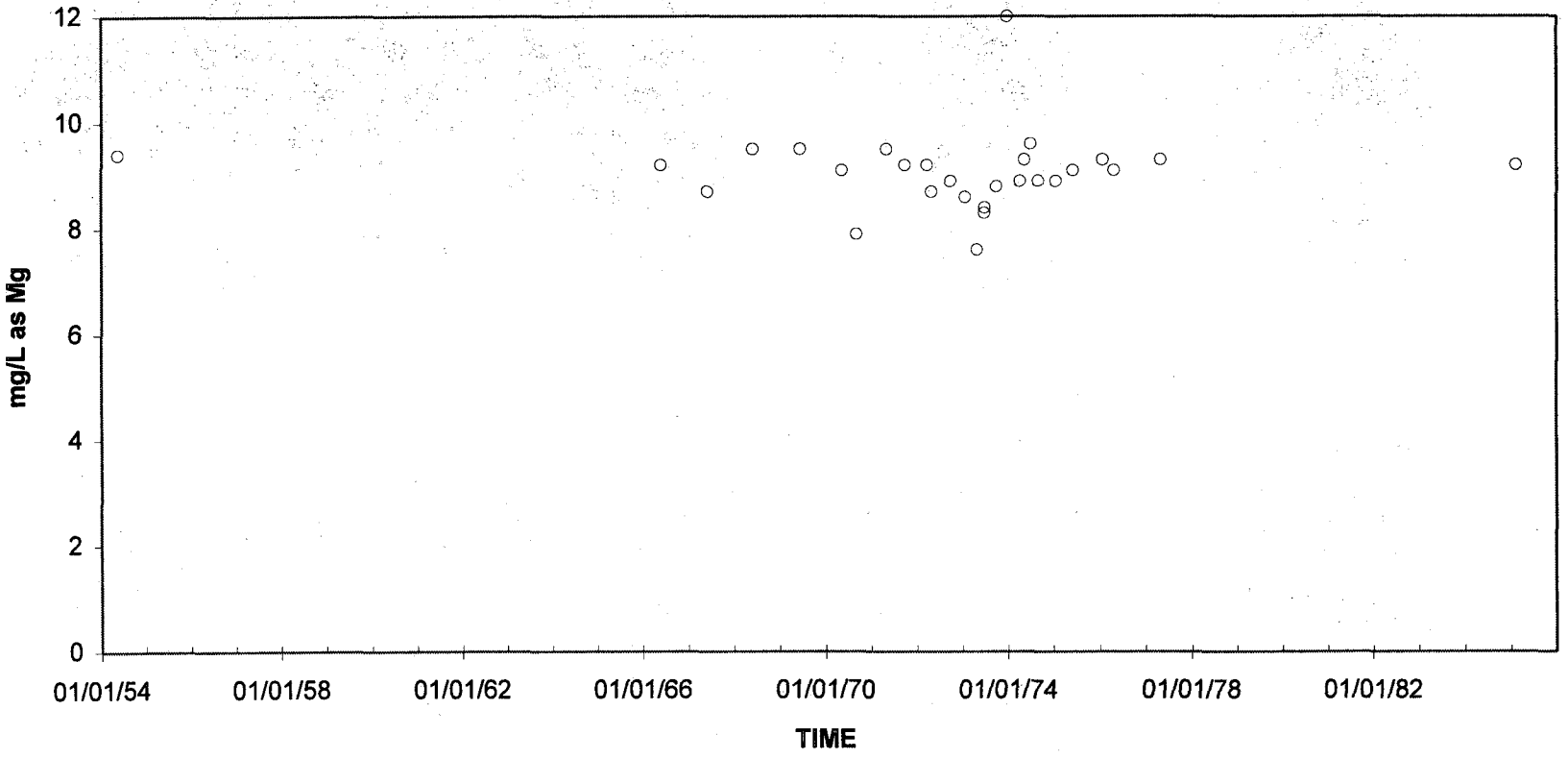
Figure
10.5.4-214



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
LITHIUM, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

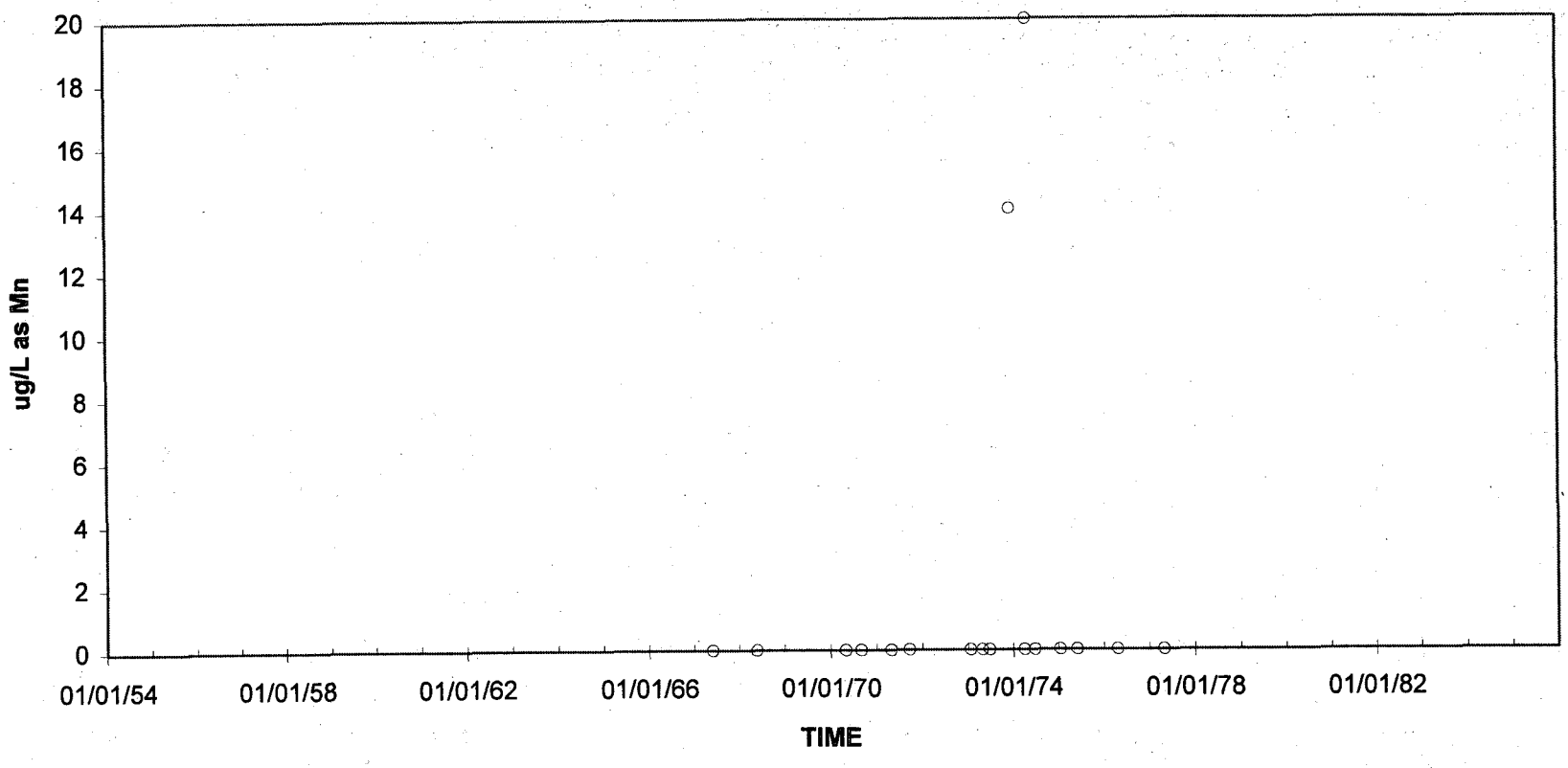
Figure
10.5.4–215



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
MAGNESIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

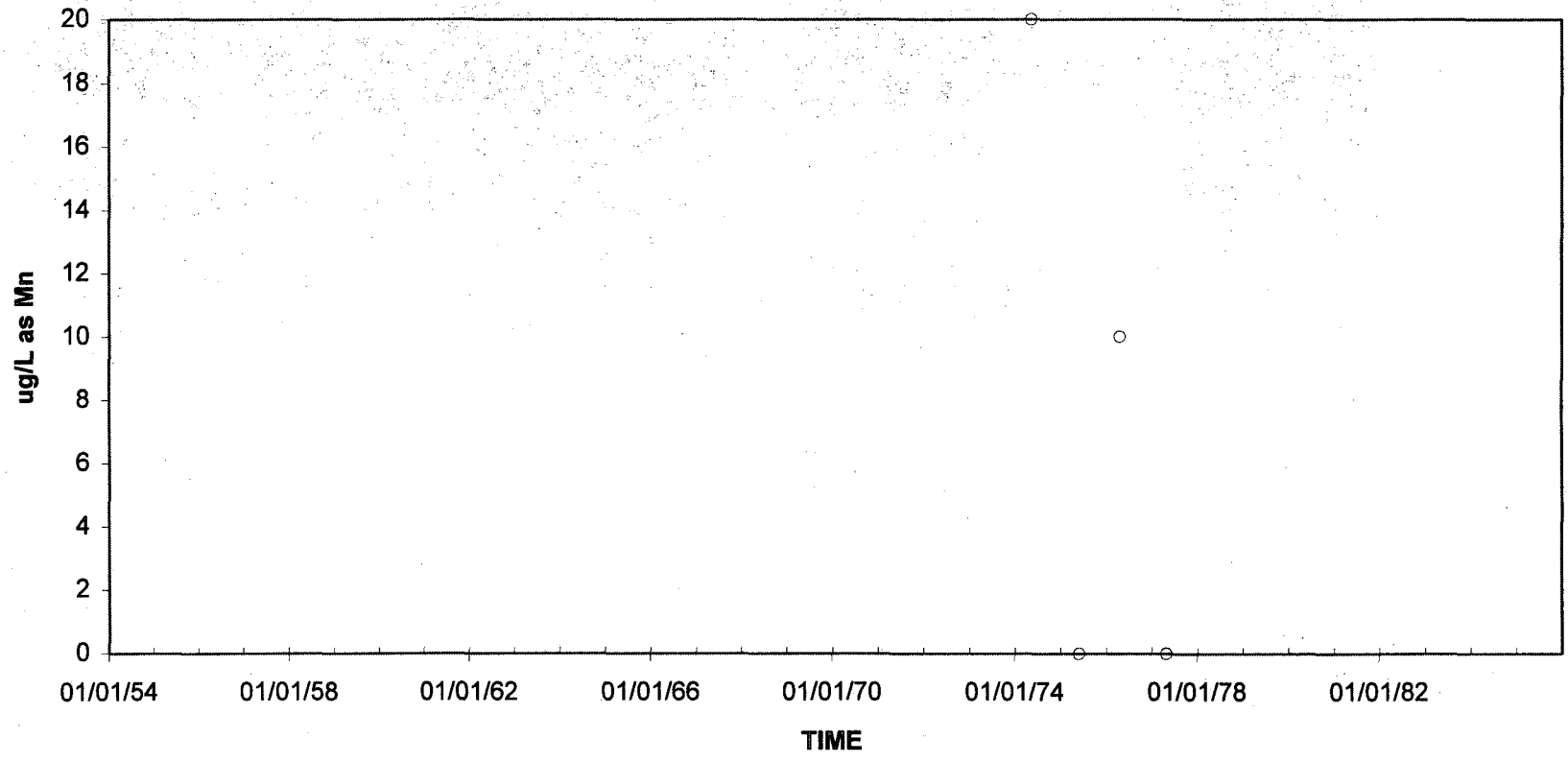
Figure
10.5.4-216



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
MANGANESE, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

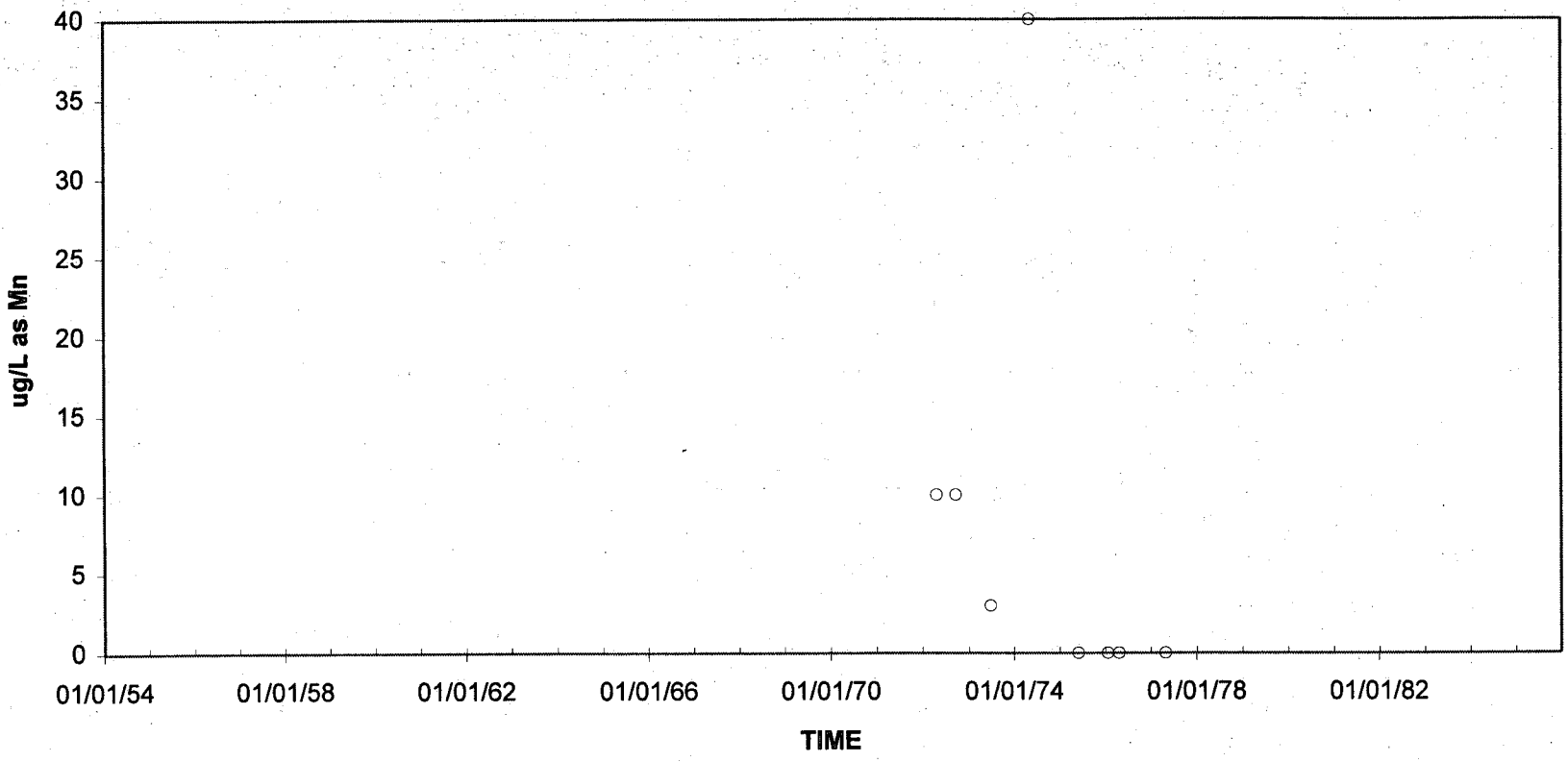
Figure
10.5.4-217



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
MANGANESE, SUSPENDED RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

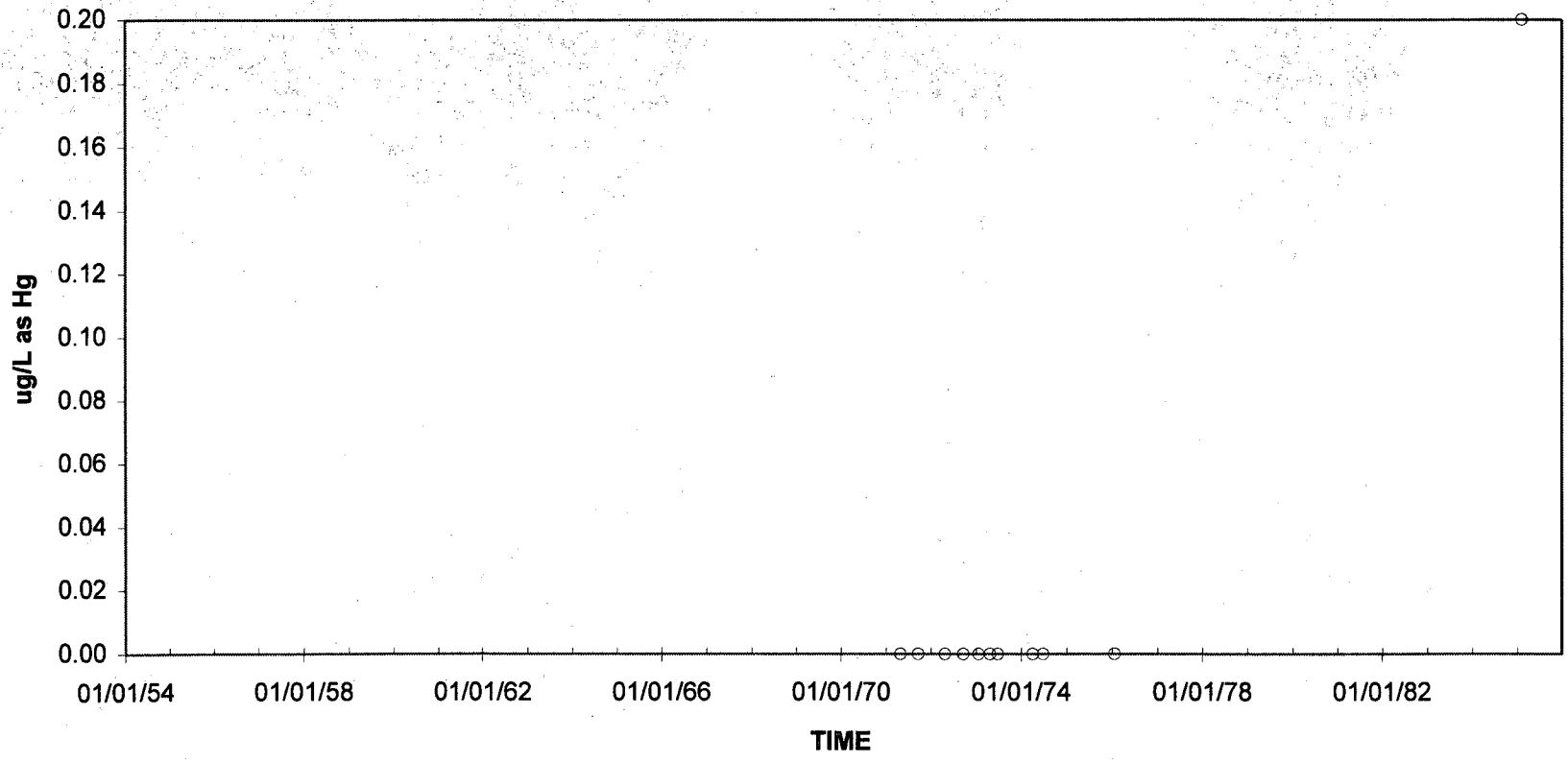
Figure
10.5.4–218



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
MANGANESE, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

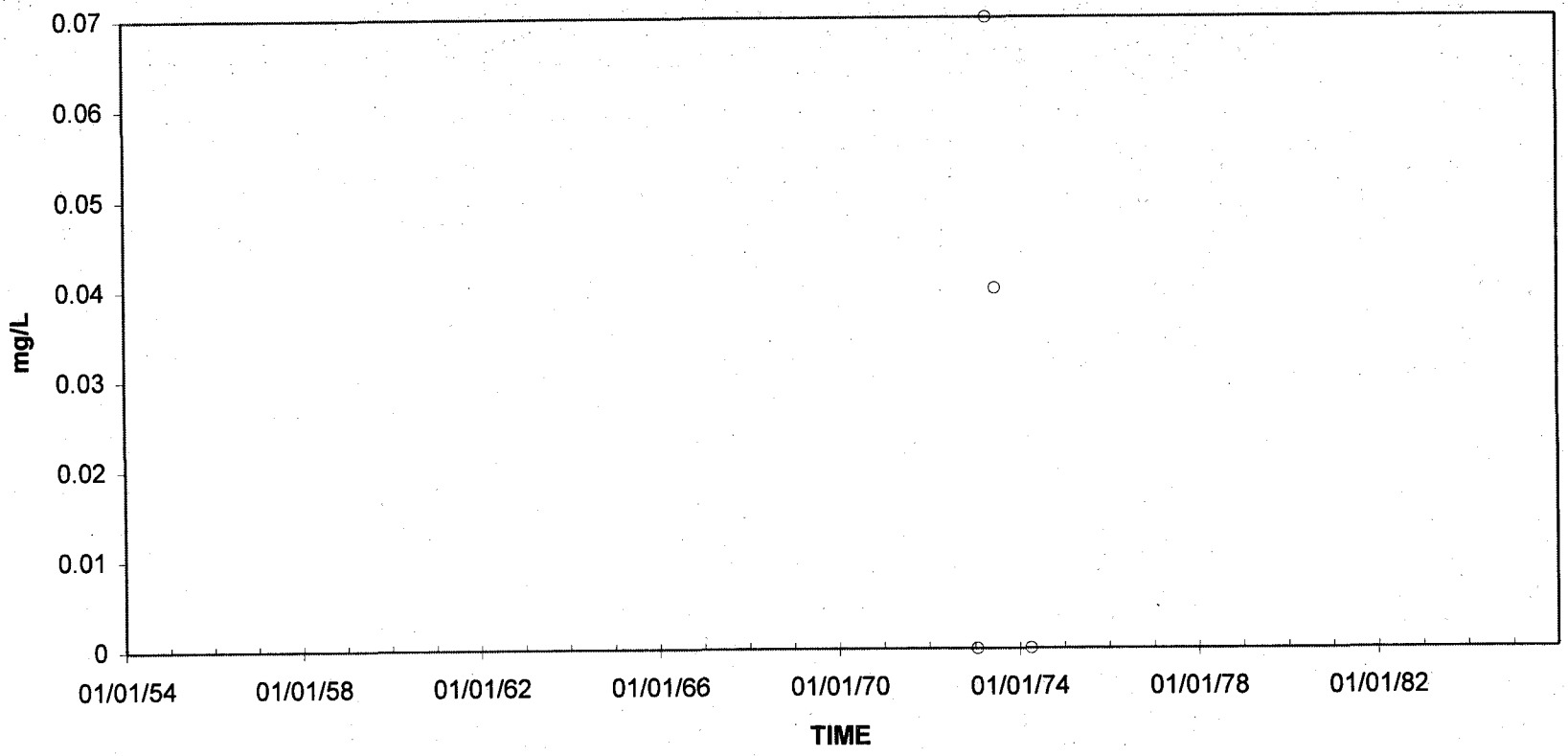
Figure
10.5.4-219



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
MERCURY, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

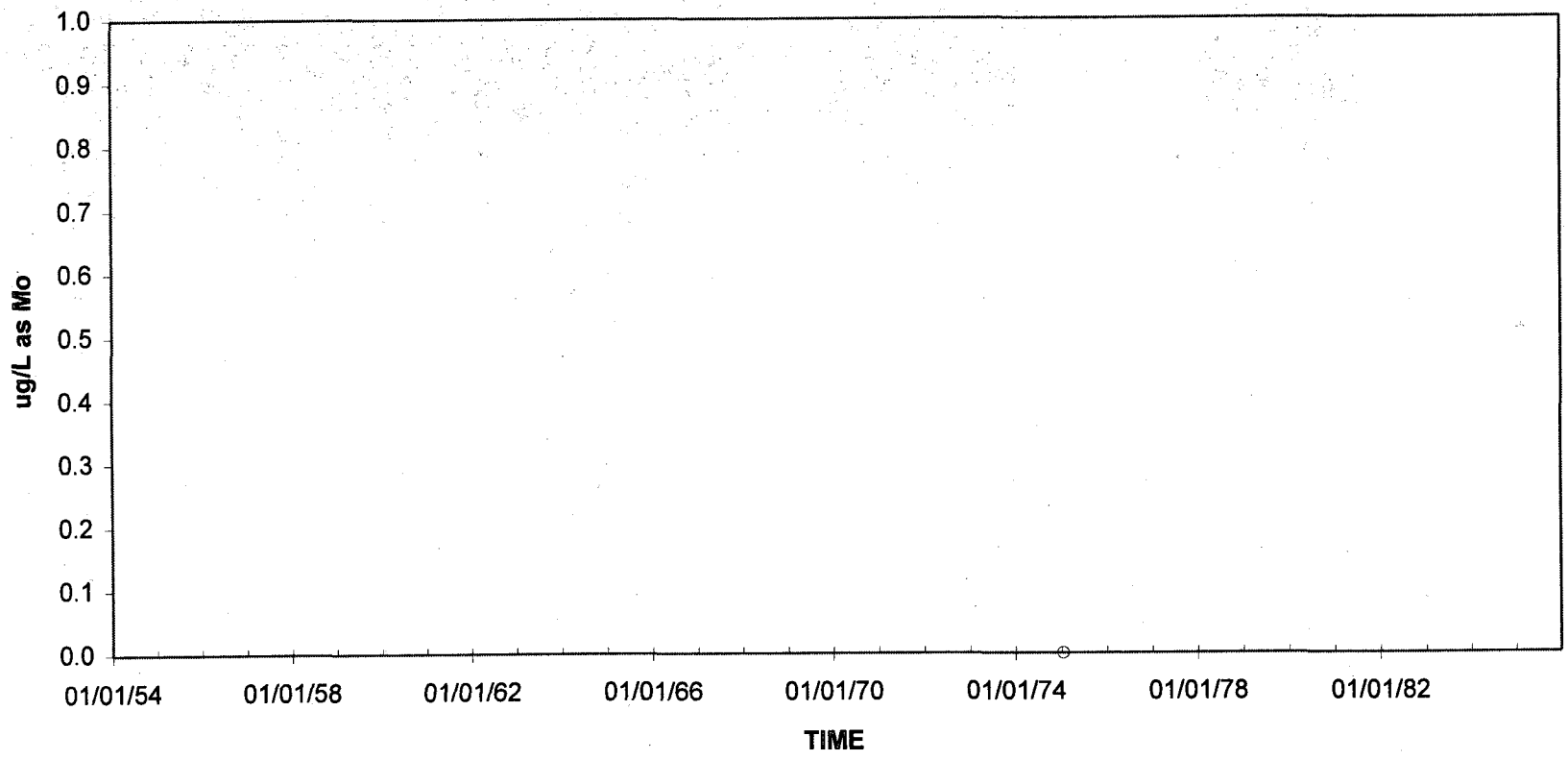
Figure
10.5.4–220



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
METHYLENE BLUE ACTIVE SUBSTANCE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

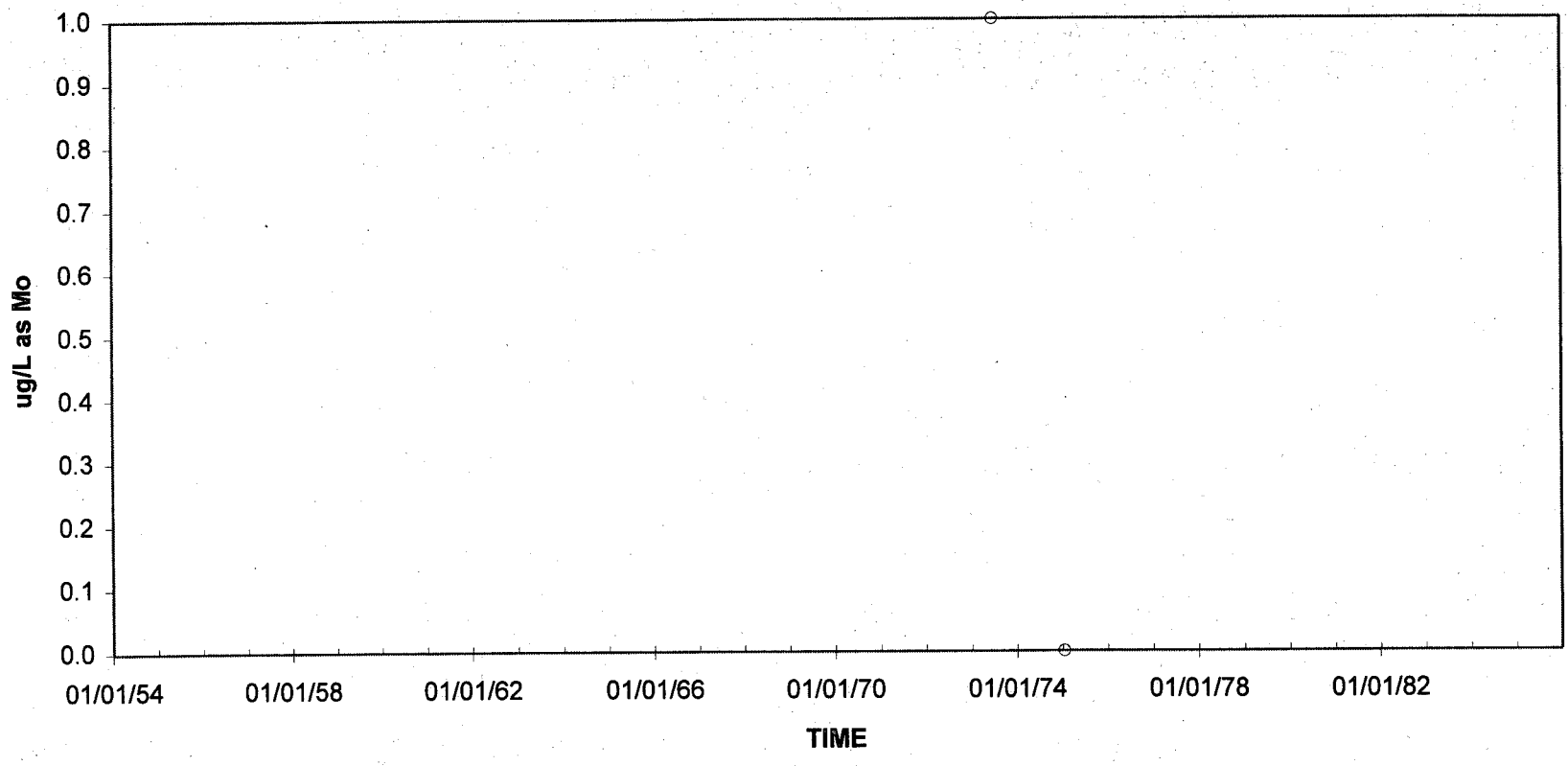
Figure
10.5.4-221



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
MOLYBDENUM, DISSOLVED
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

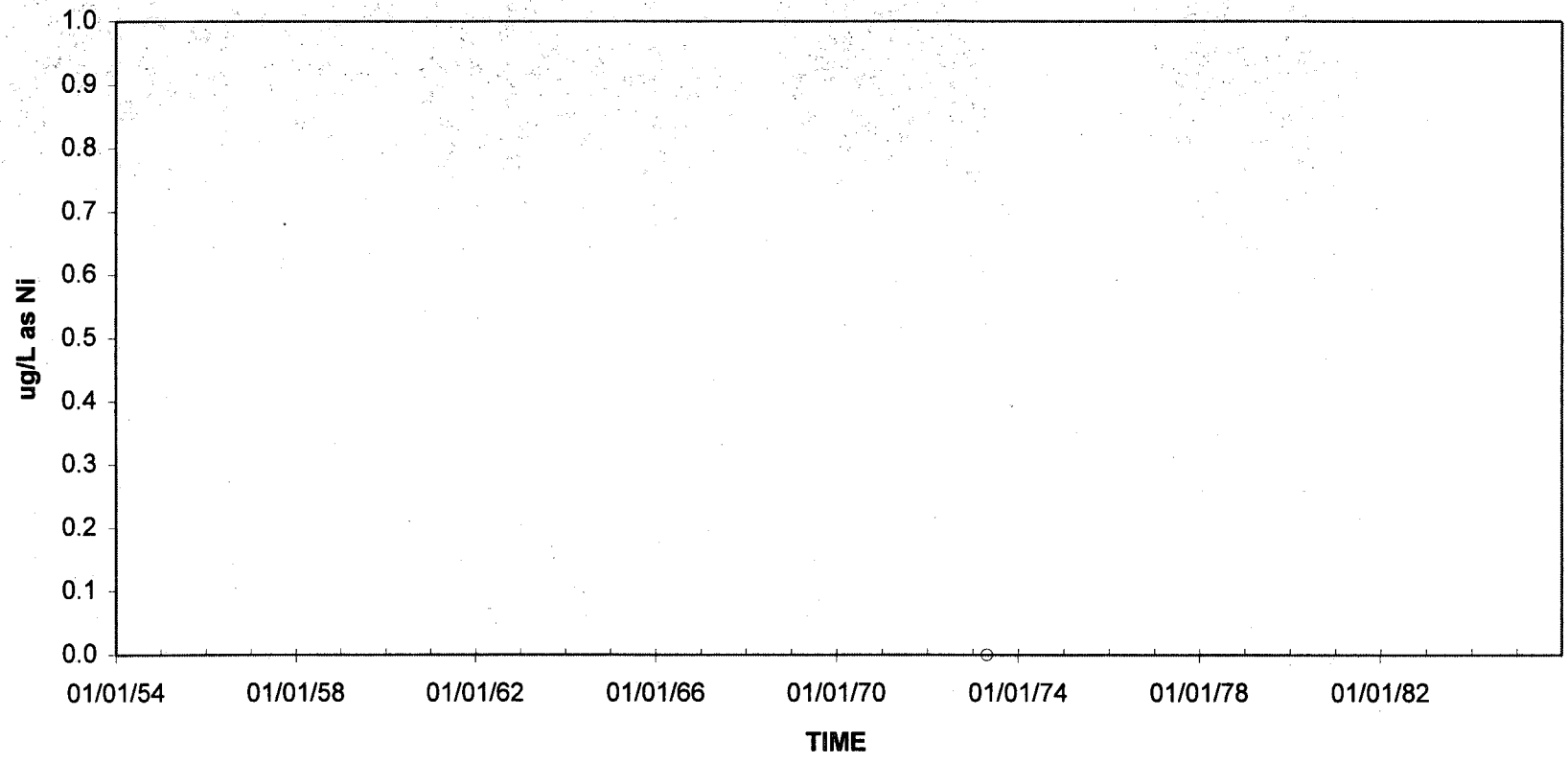
Figure
10.5.4-222



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
MOLYBDENUM, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

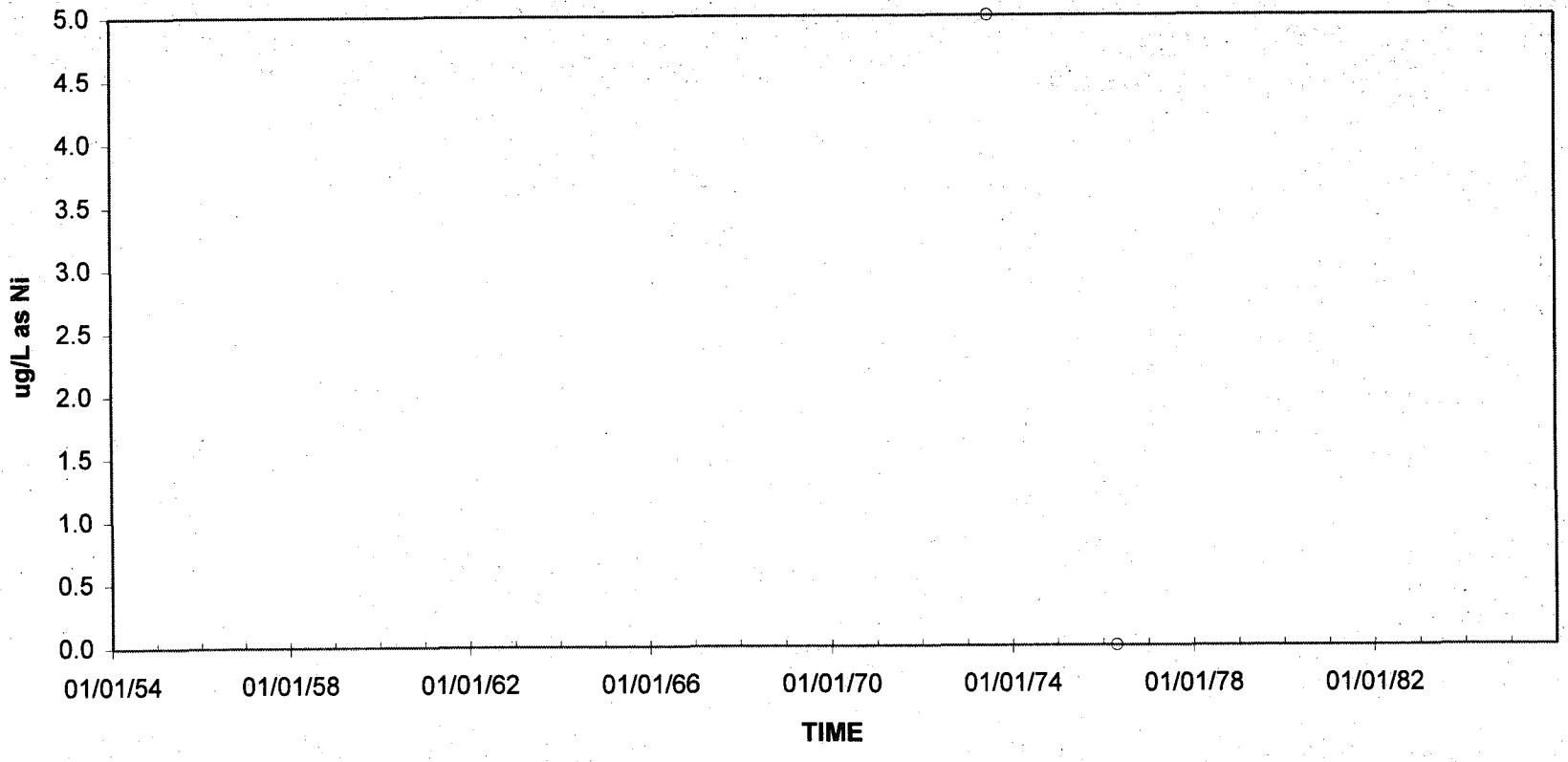
Figure
10.5.4-223



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NICKEL, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

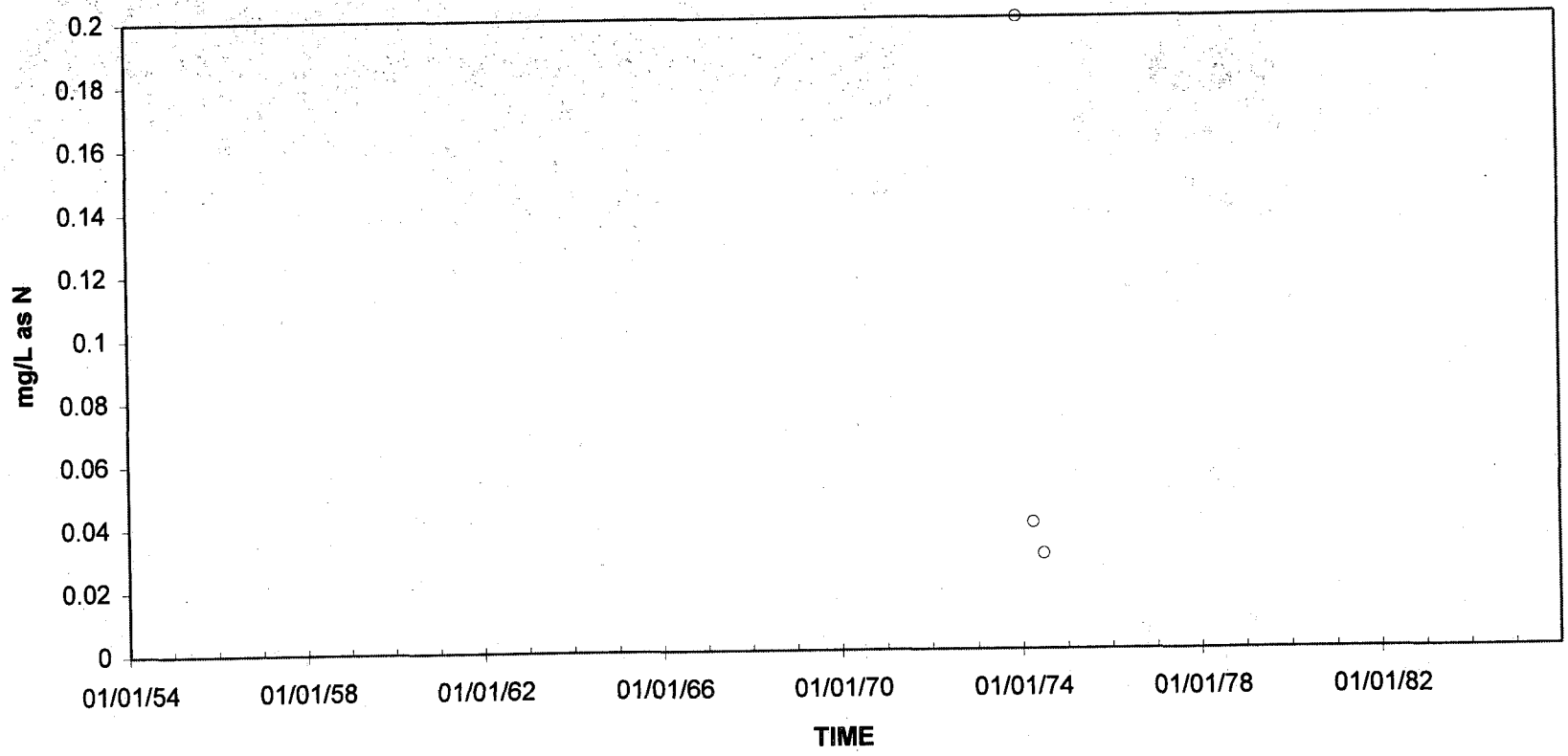
Figure
10.5.4-224



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NICKEL, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

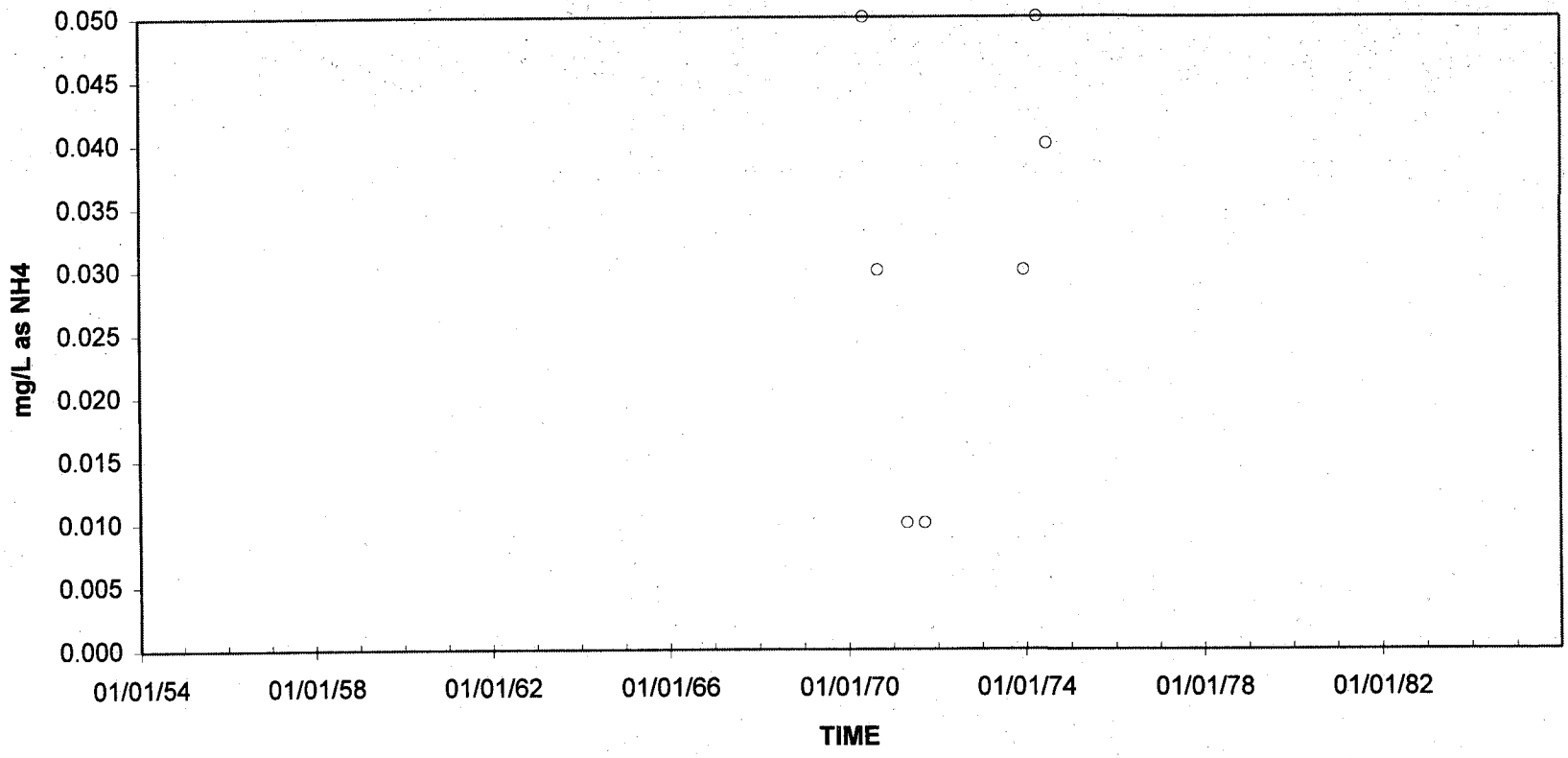
Figure
10.5.4-225



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, AMMONIA DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

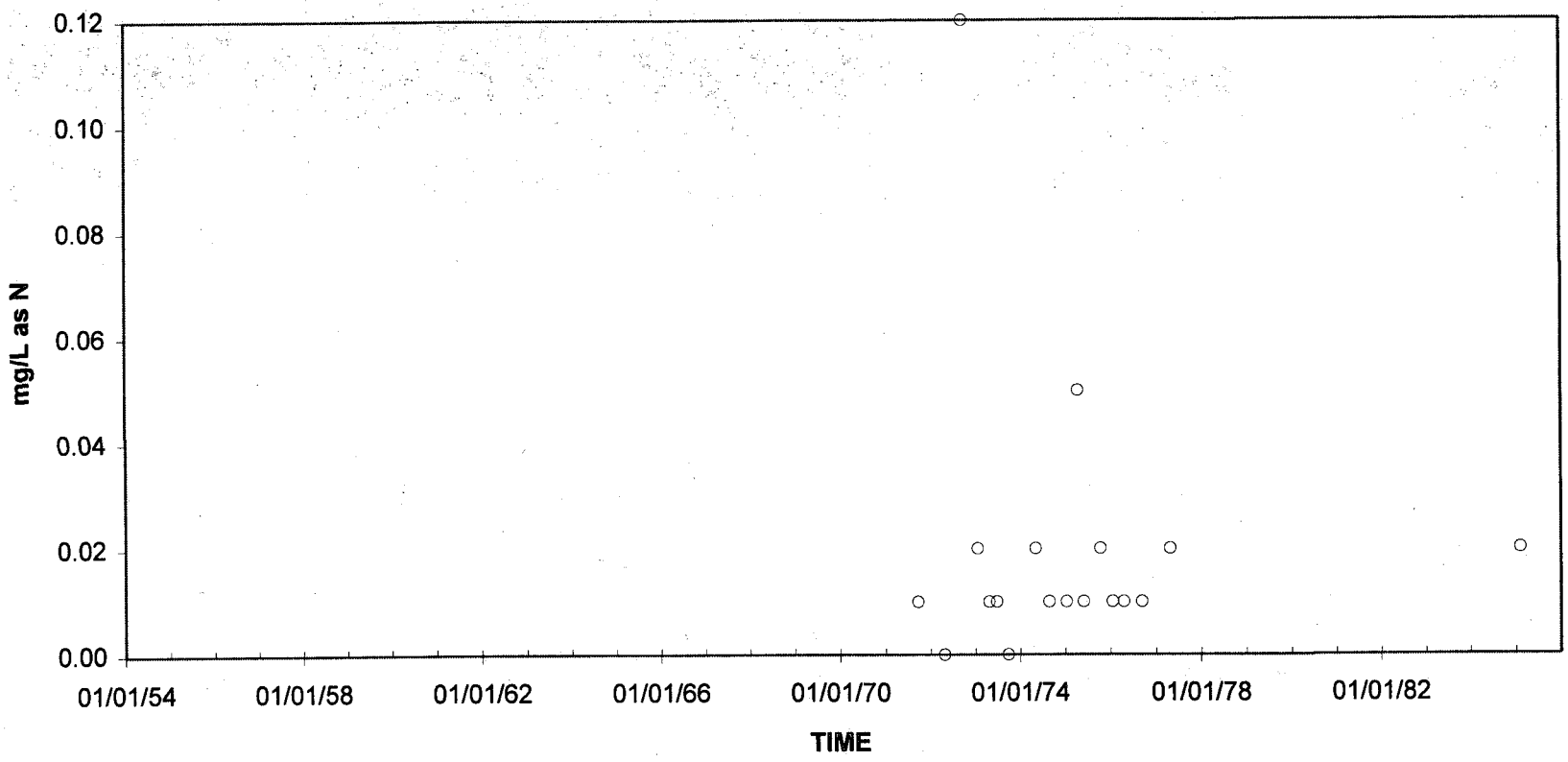
Figure
10.5.4–226



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, AMMONIA DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

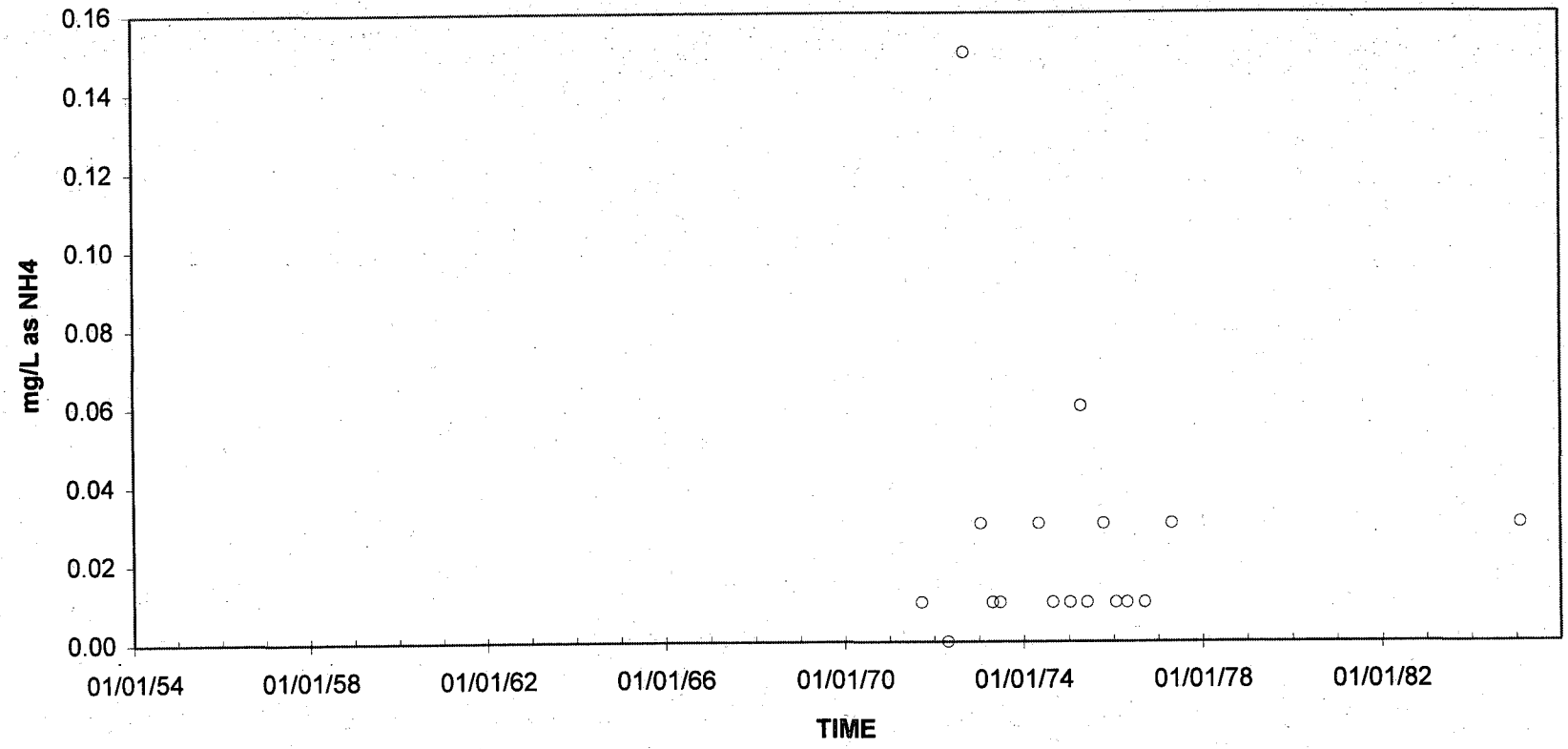
Figure
10.5.4-227



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, AMMONIA TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

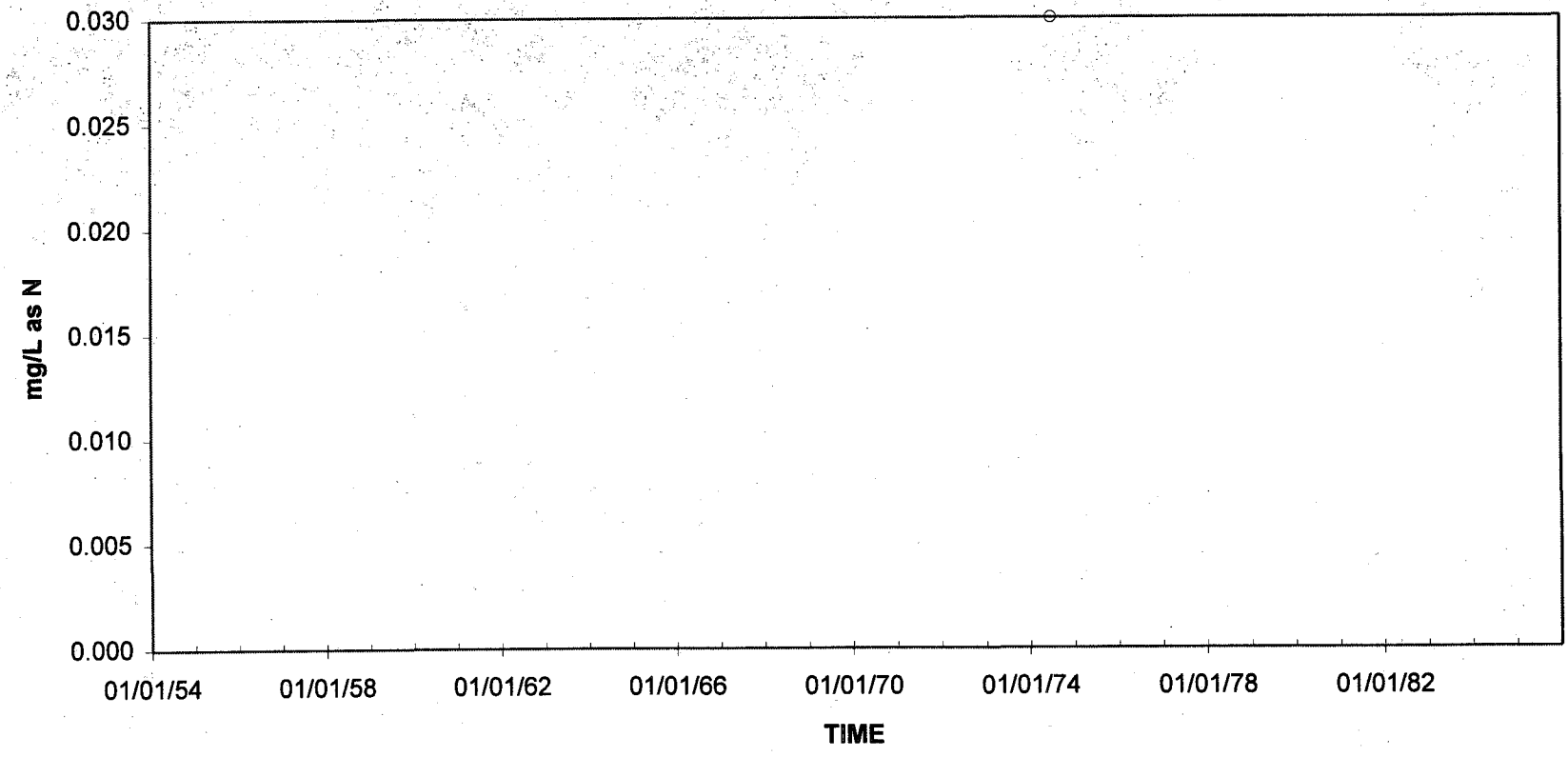
Figure
10.5.4-228



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, AMMONIA TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

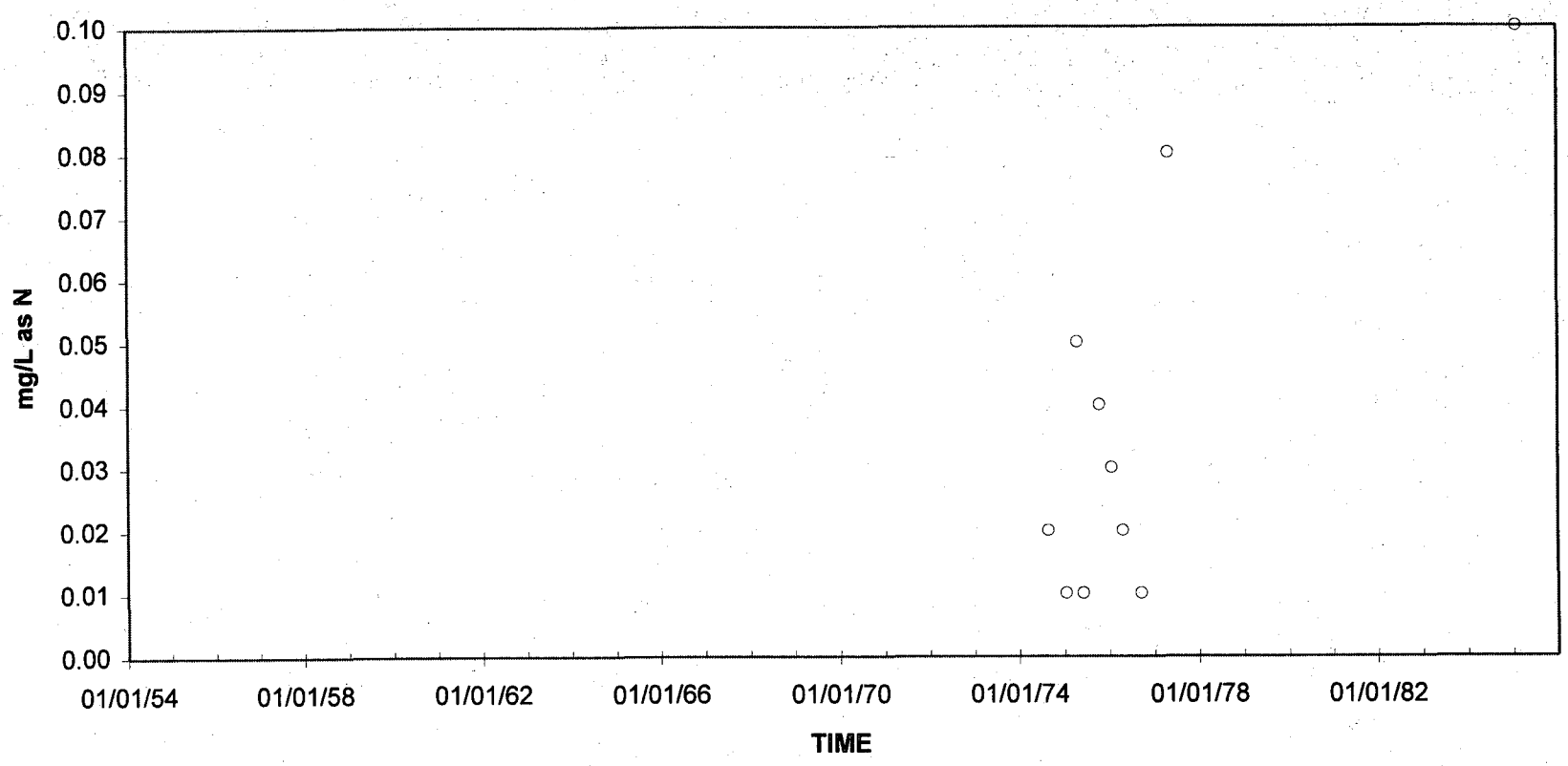
Figure
10.5.4-229



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, AMMONIA + ORGANIC DIS
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

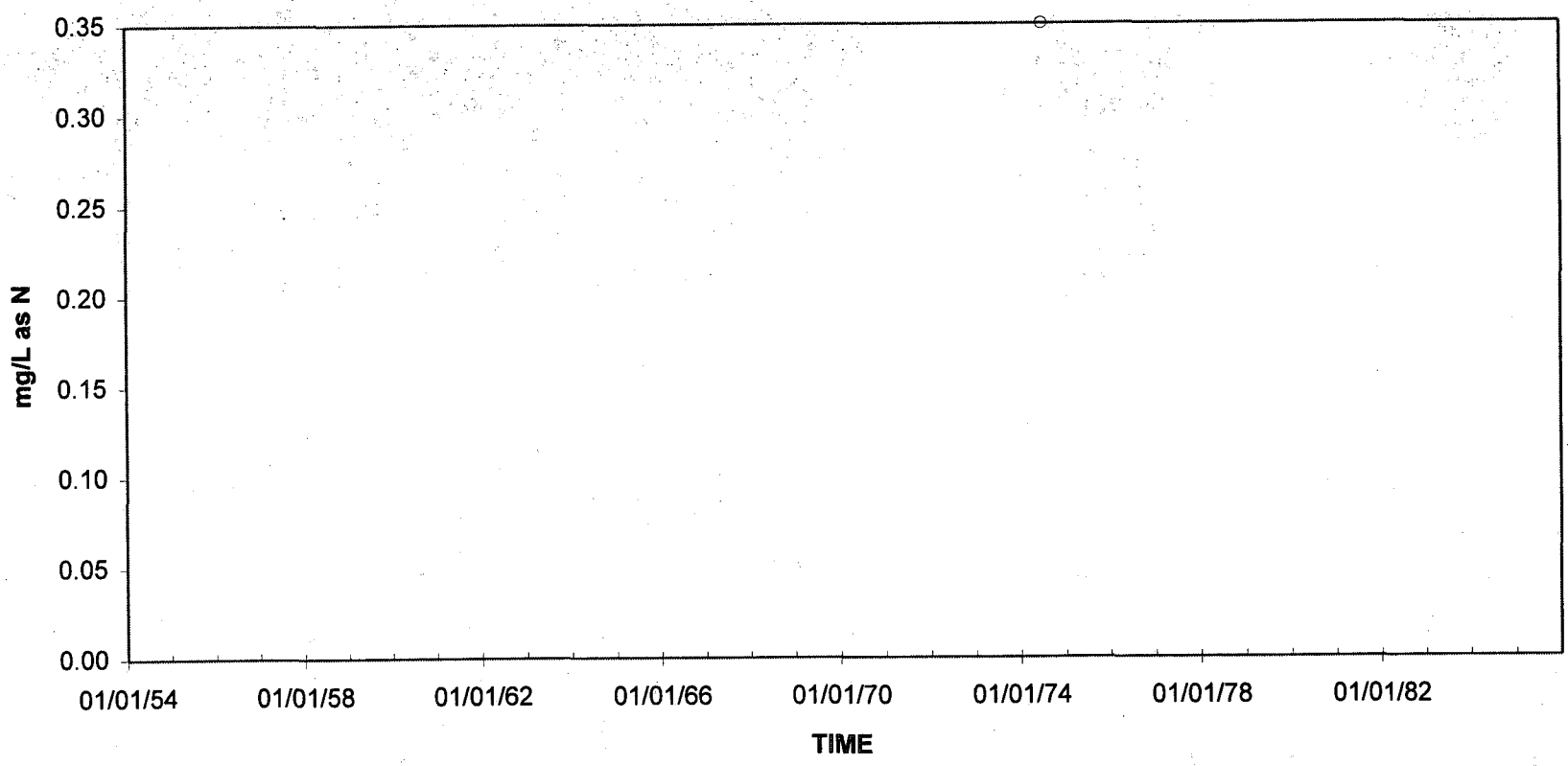
Figure
10.5.4–230



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, AMMONIA + ORGANIC TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

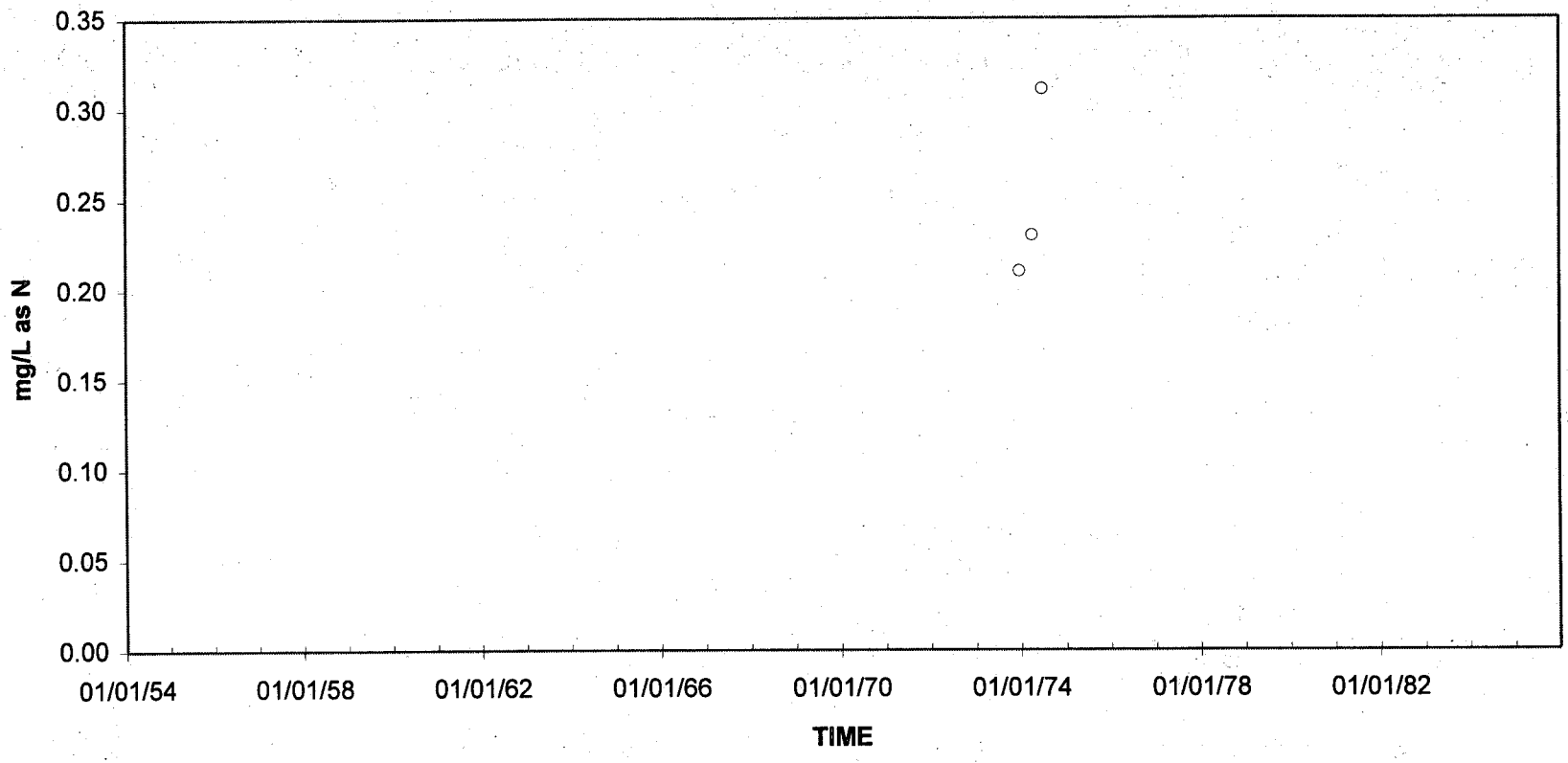
Figure
10.5.4-231



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

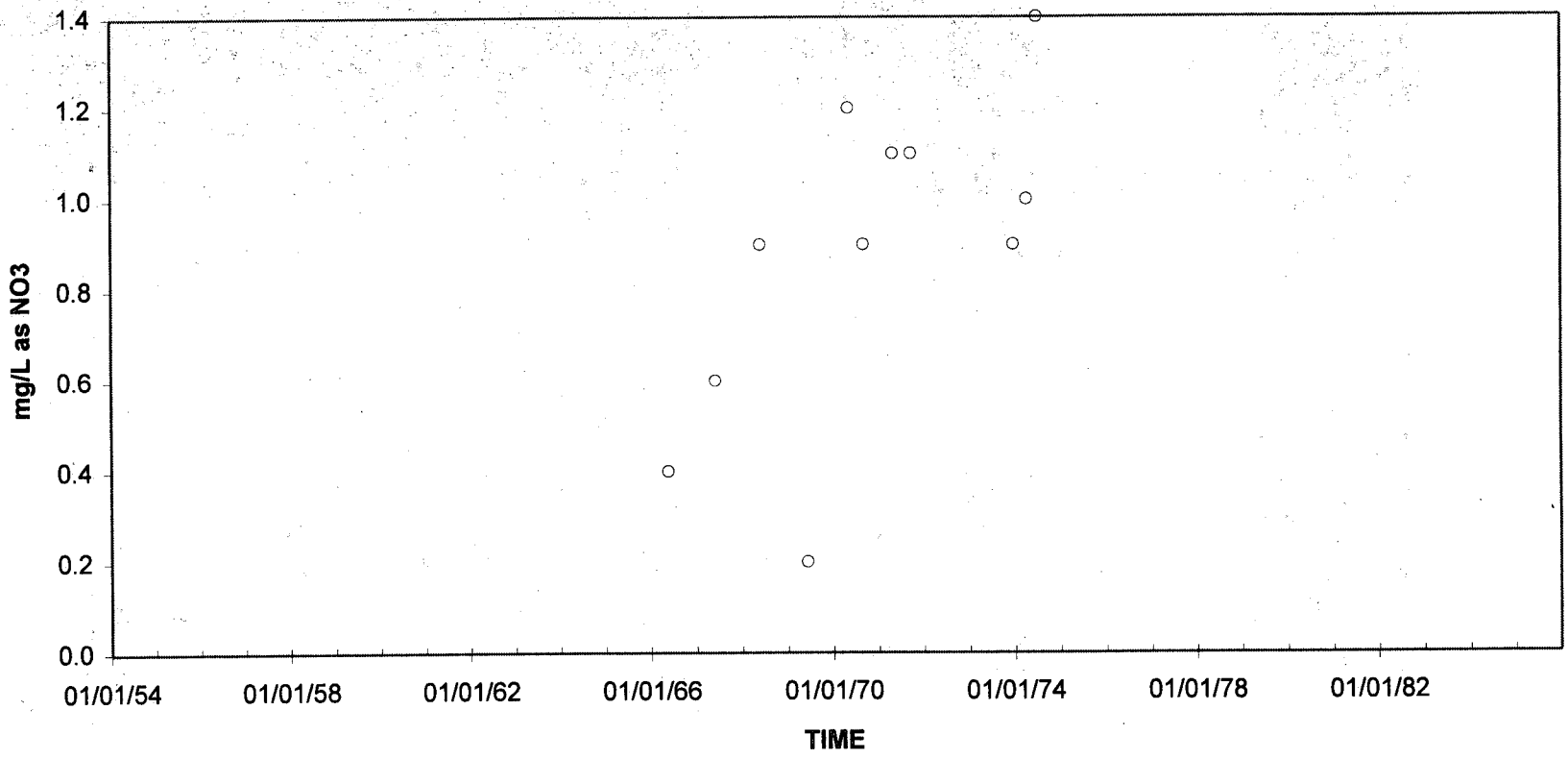
Figure
10.5.4-232



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, NITRATE DISSOLVED
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

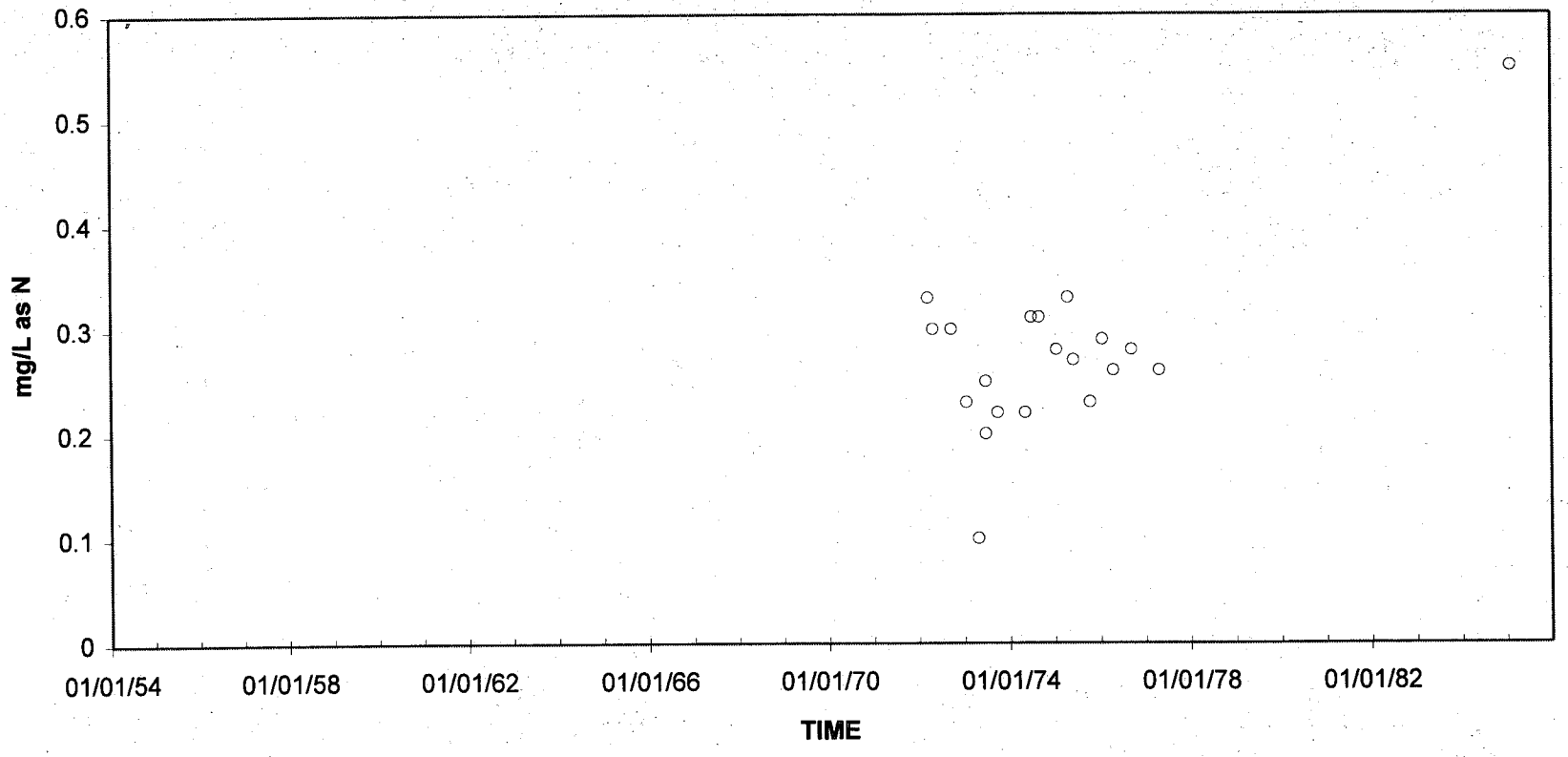
Figure
10.5.4-233



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, NITRATE DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

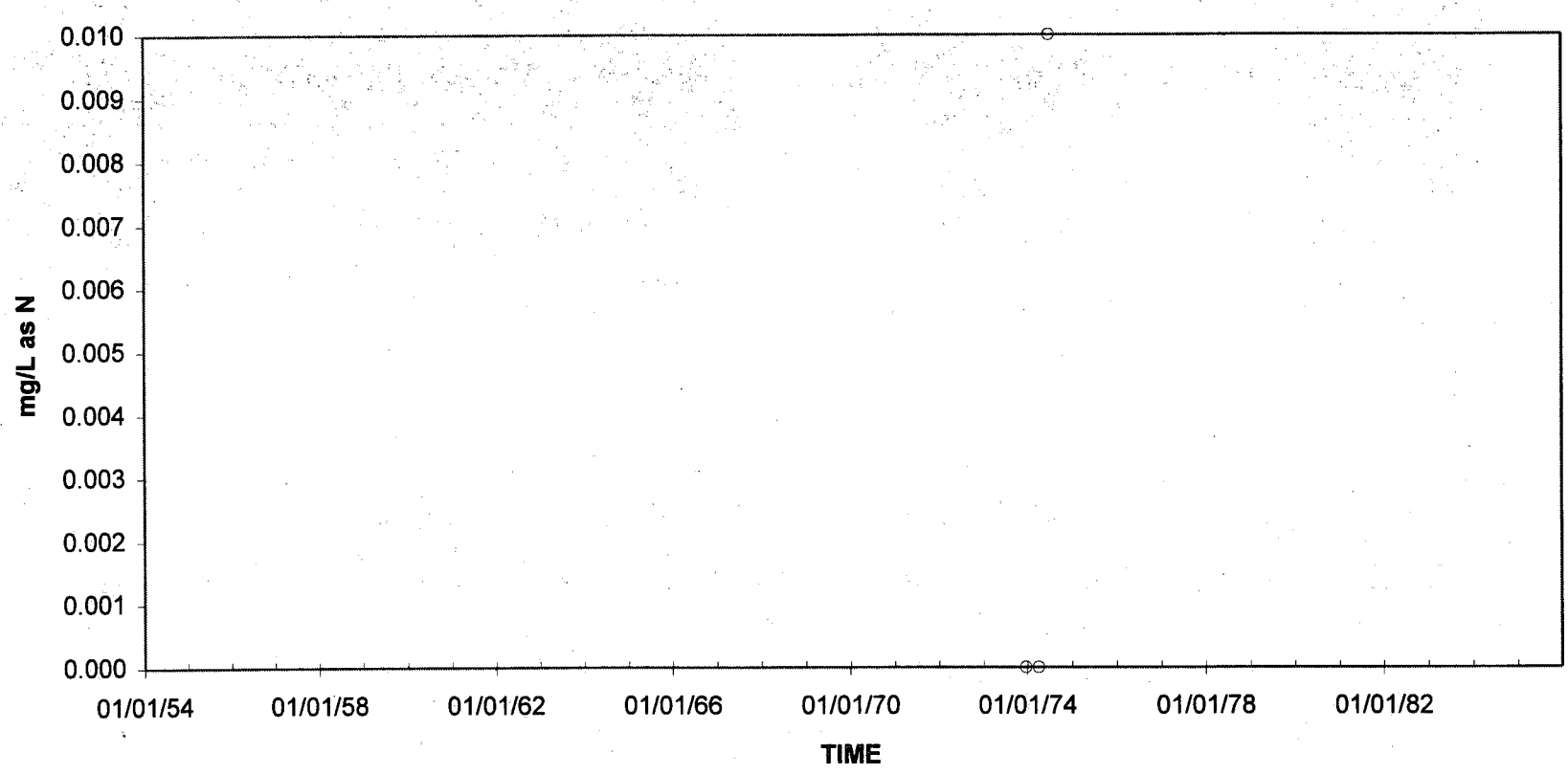
Figure
10.5.4-234



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, NITRATE TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

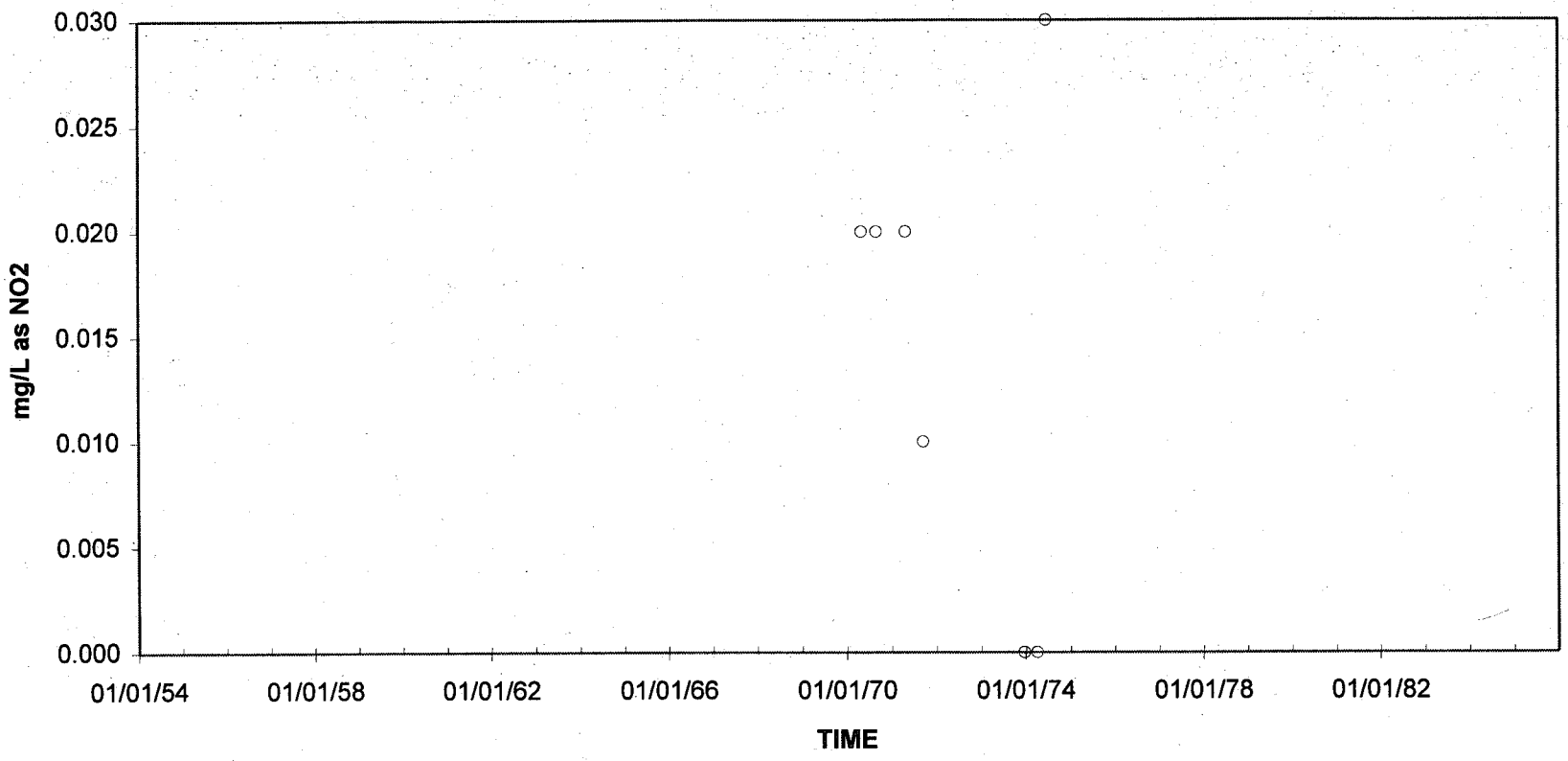
Figure
10.5.4-235



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, NITRITE DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

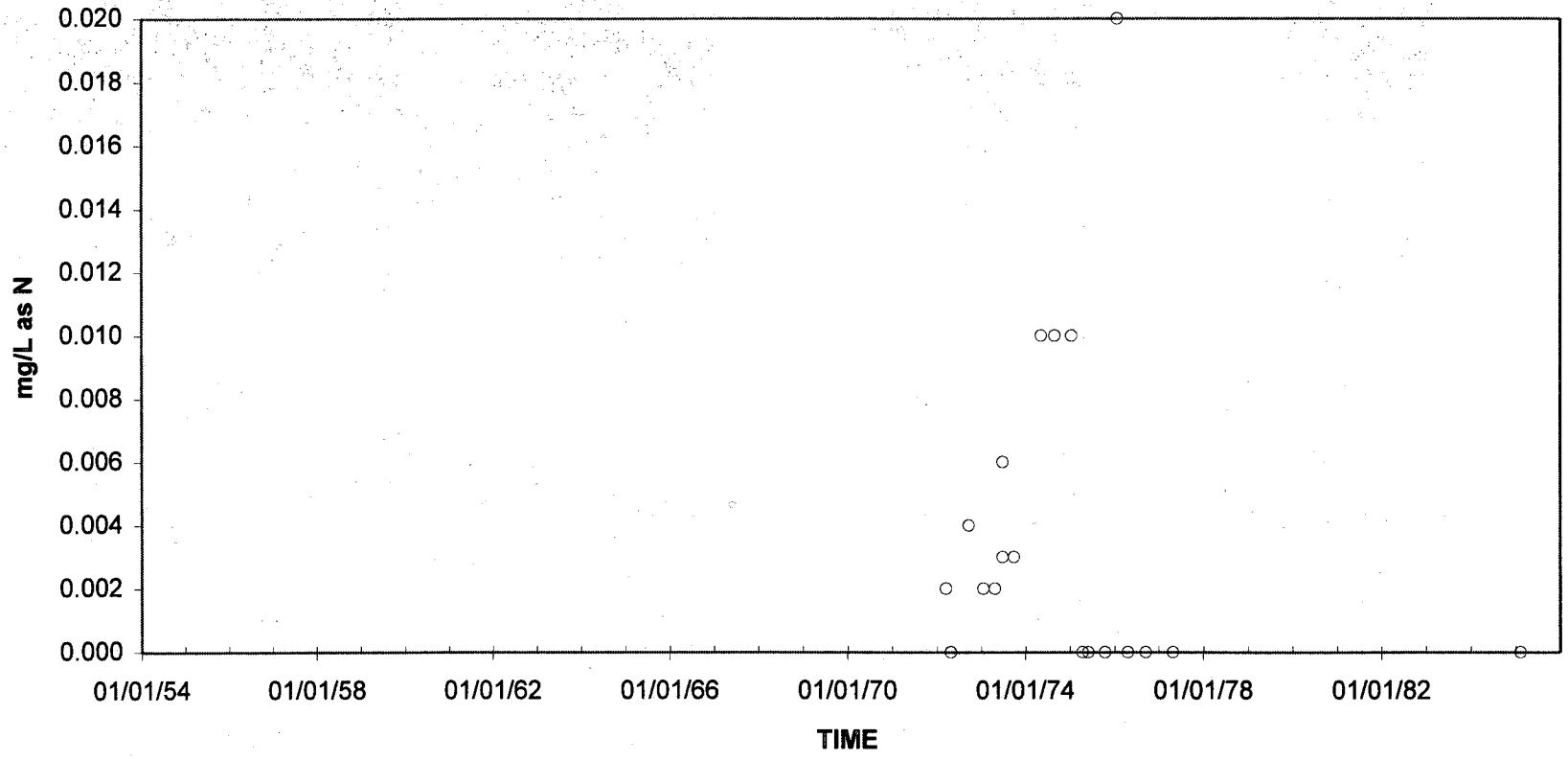
Figure
10.5.4–236



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, NITRITE DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

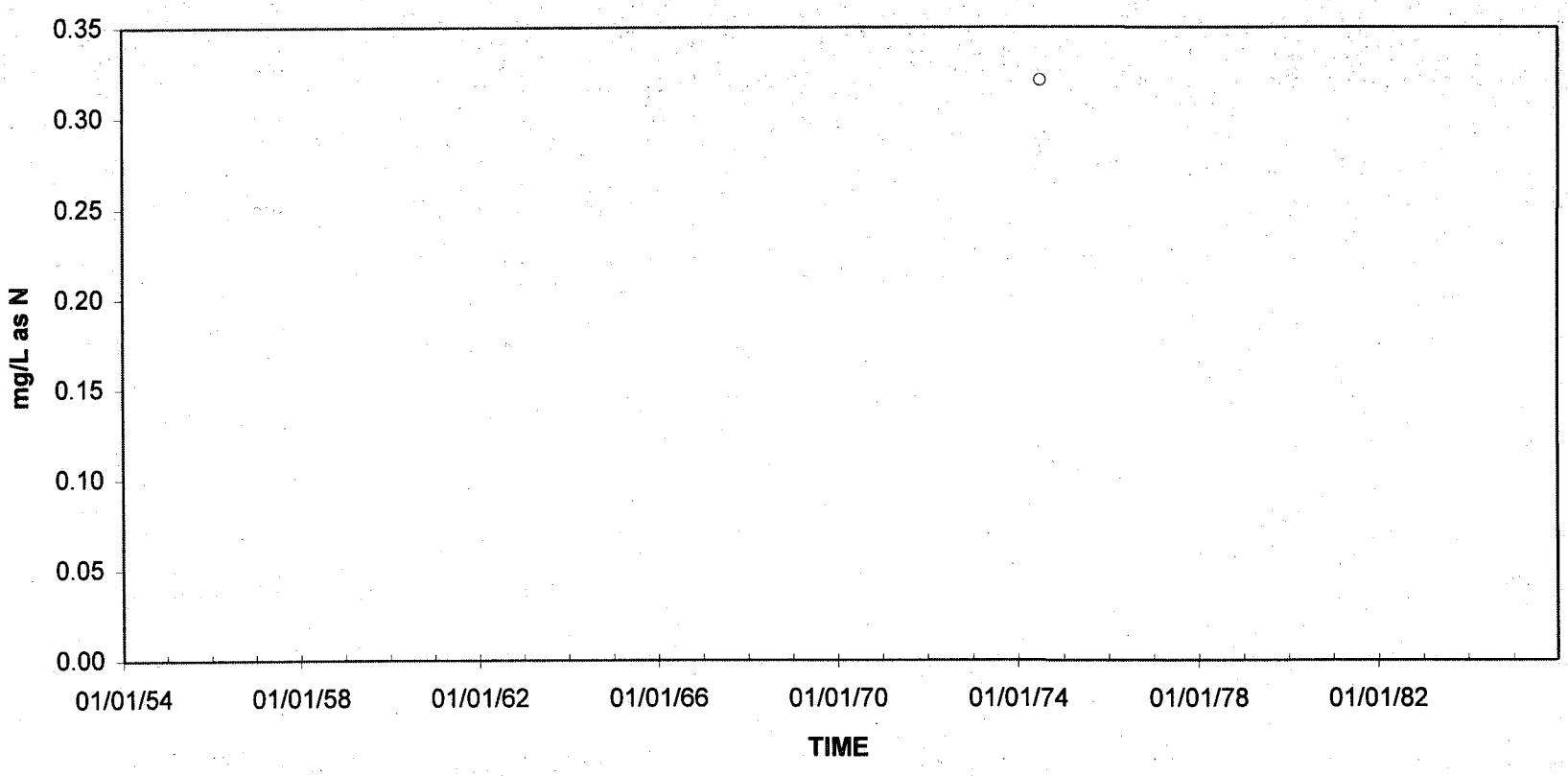
Figure
10.5.4–237



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, NITRITE TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

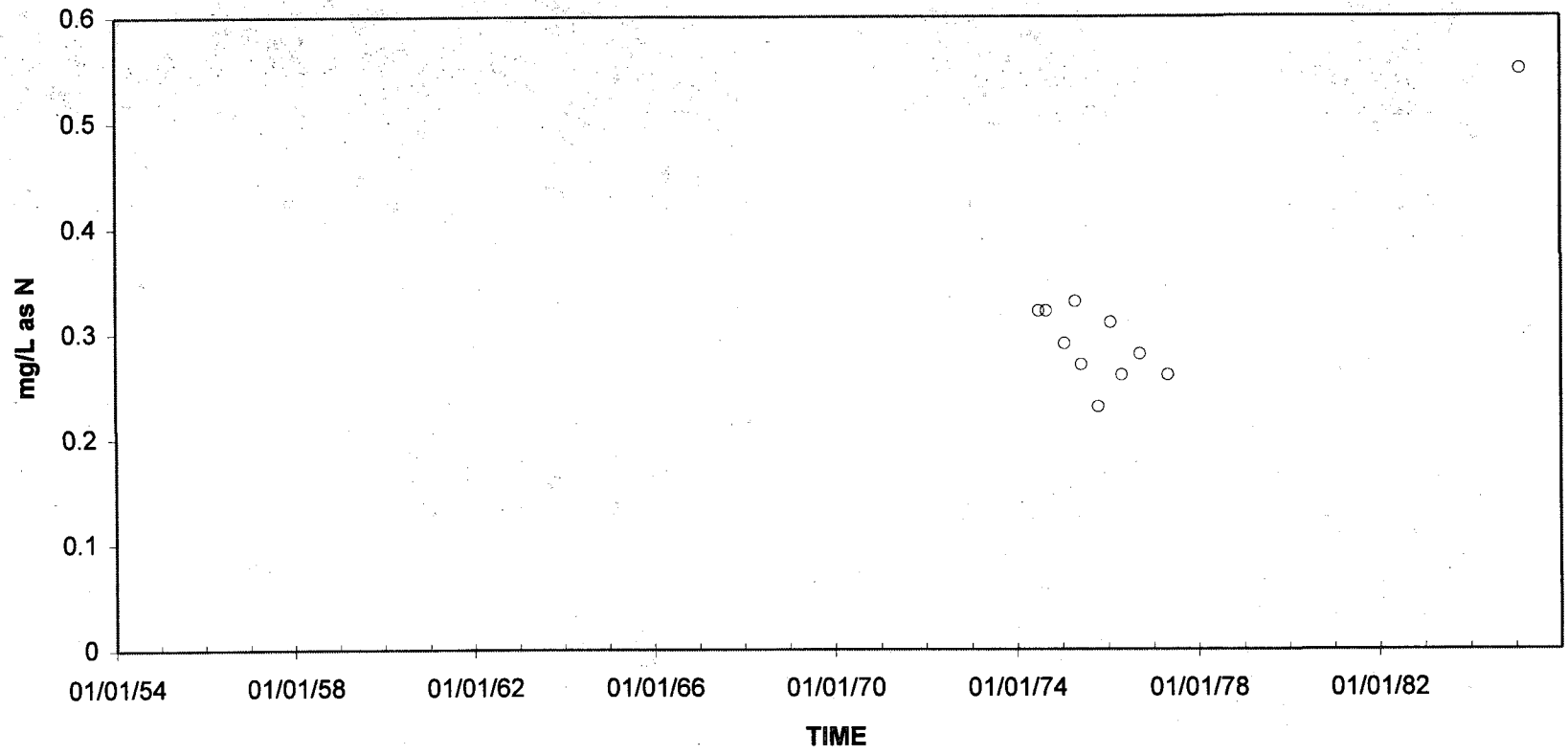
Figure
10.5.4–238



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, NITRITE + NITRATE DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

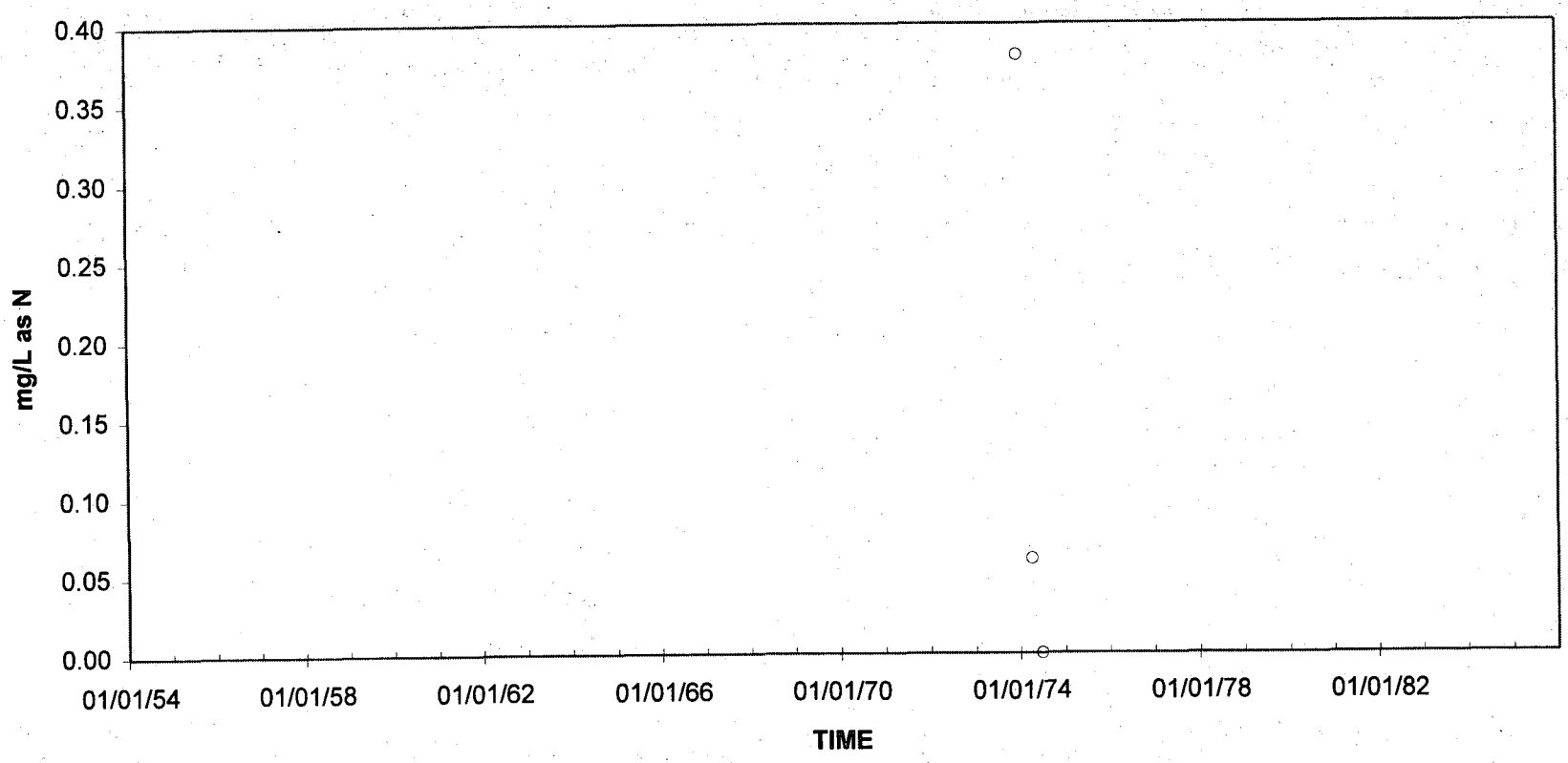
Figure
10.5.4–239



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, NITRITE + NITRATE TOTAL
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

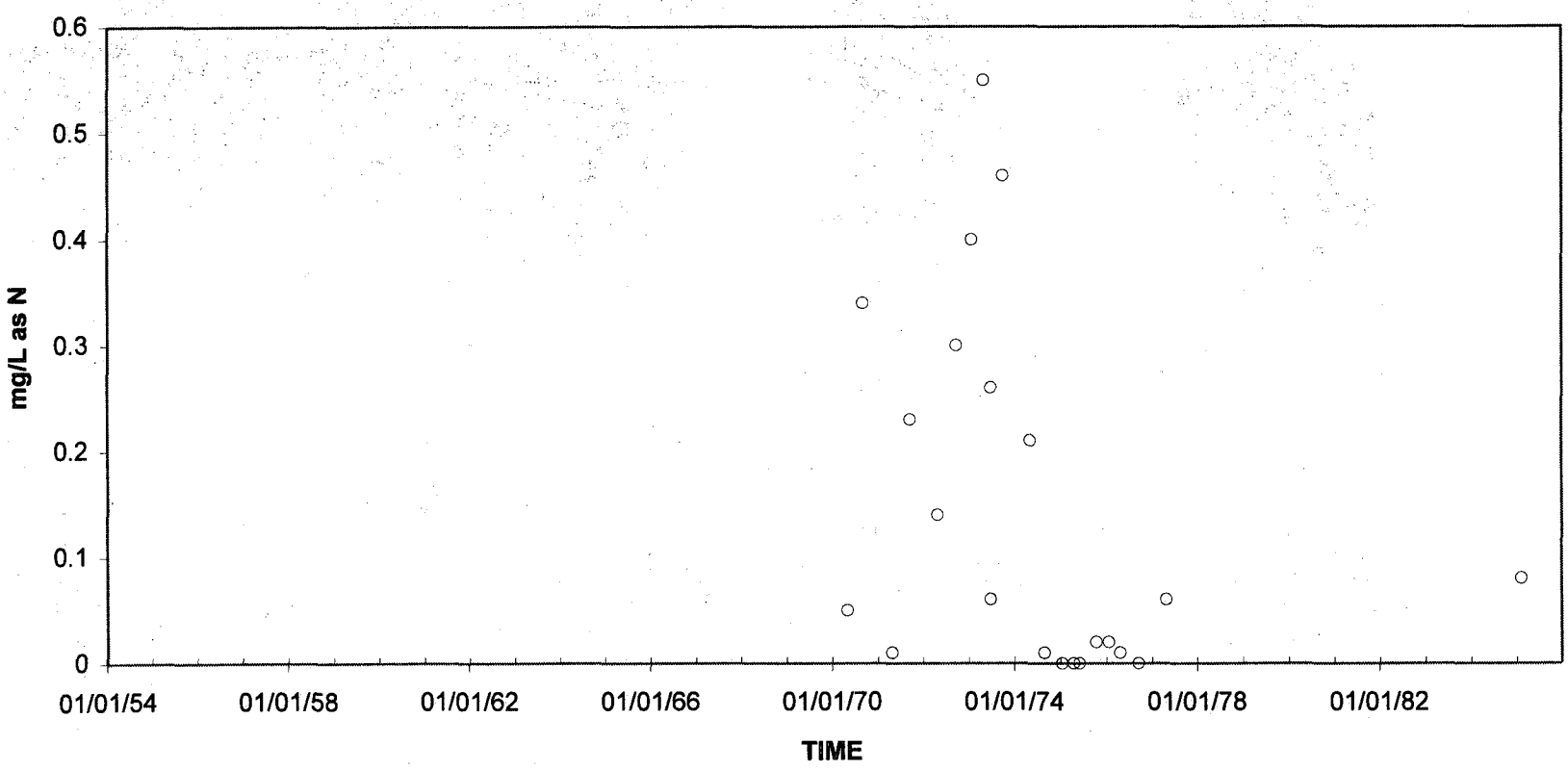
Figure
10.5.4-240



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, ORGANIC DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

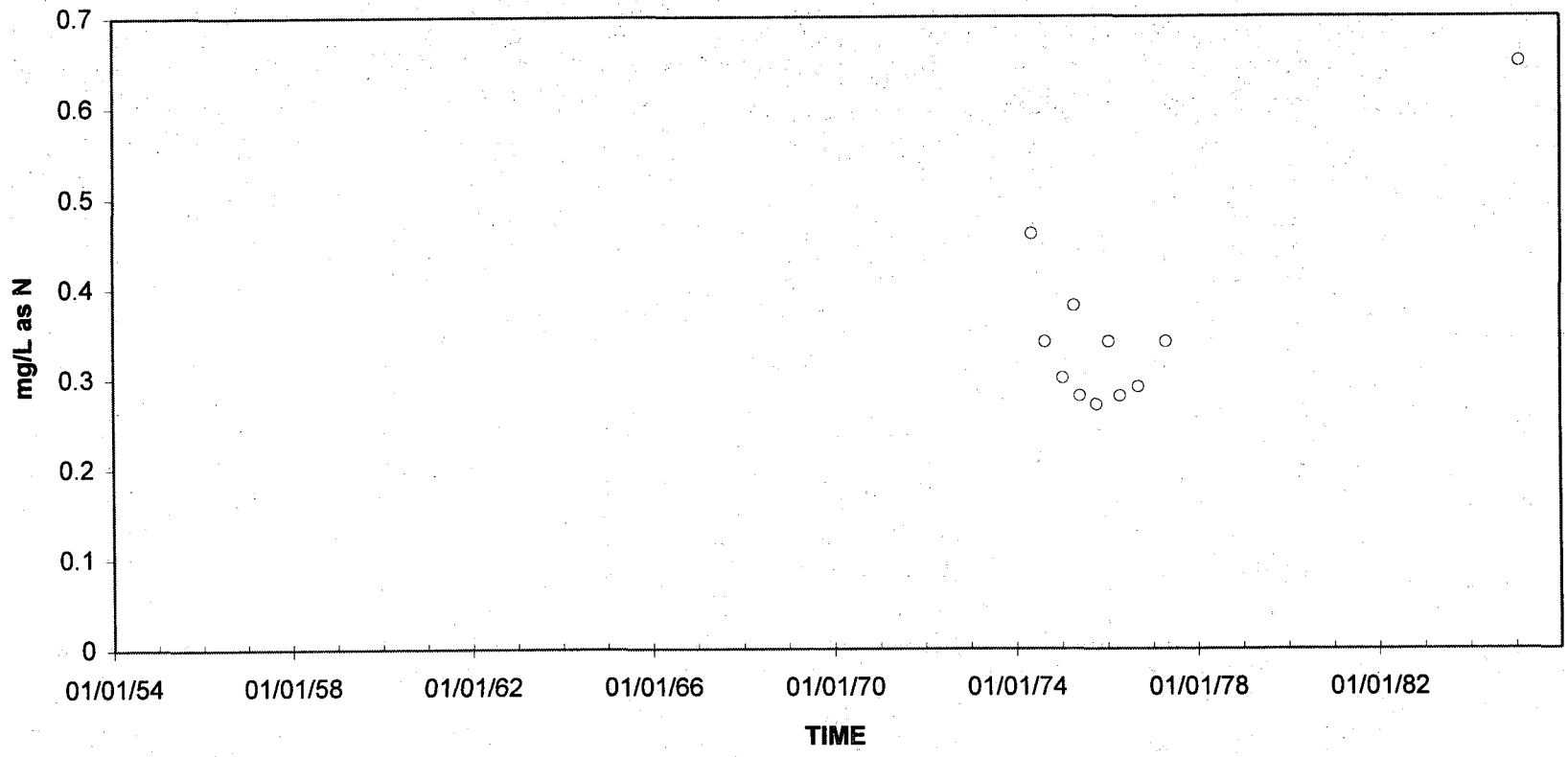
Figure
10.5.4-241



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, ORGANIC TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

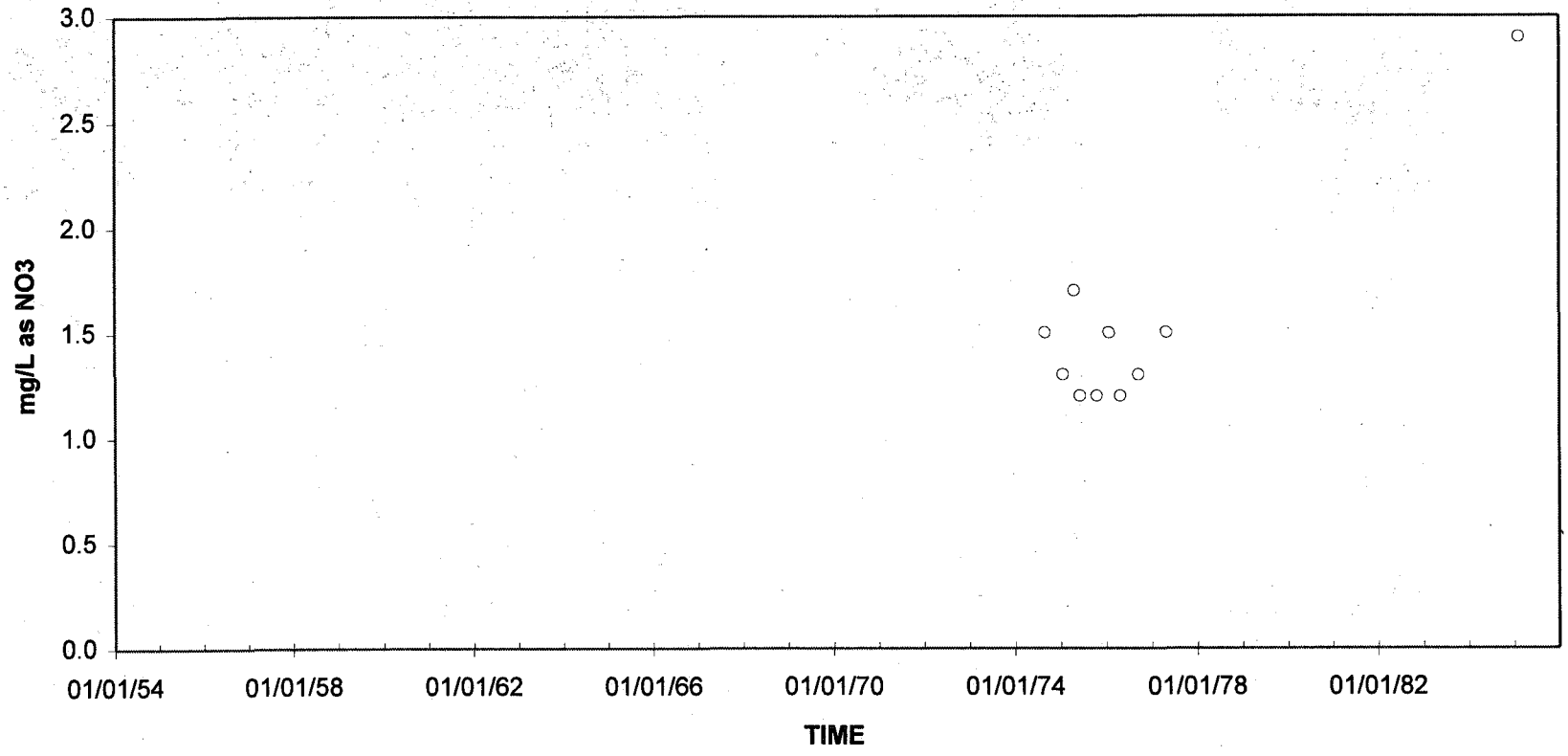
Figure
10.5.4–242



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

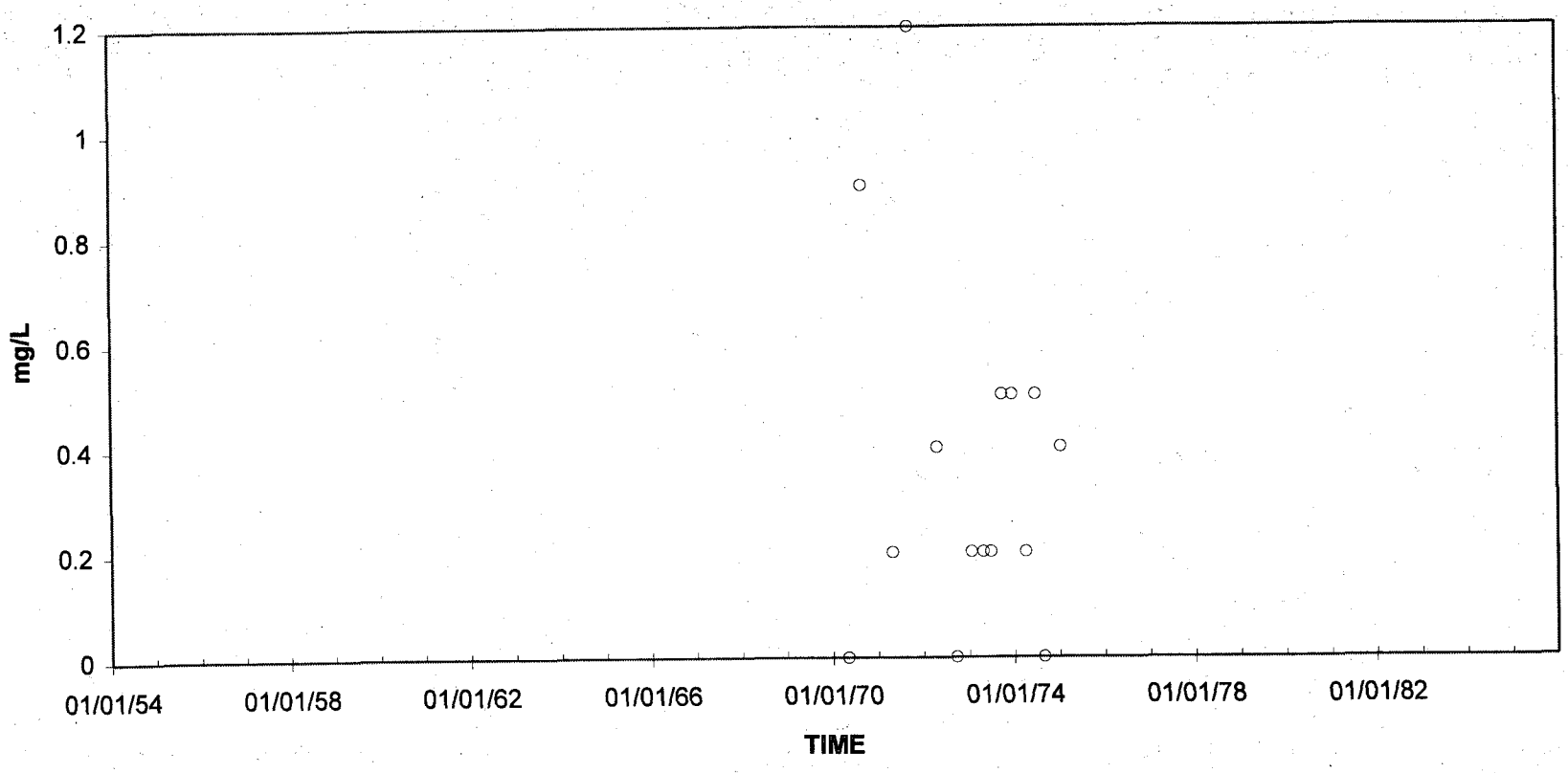
Figure
10.5.4-243



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
NITROGEN, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

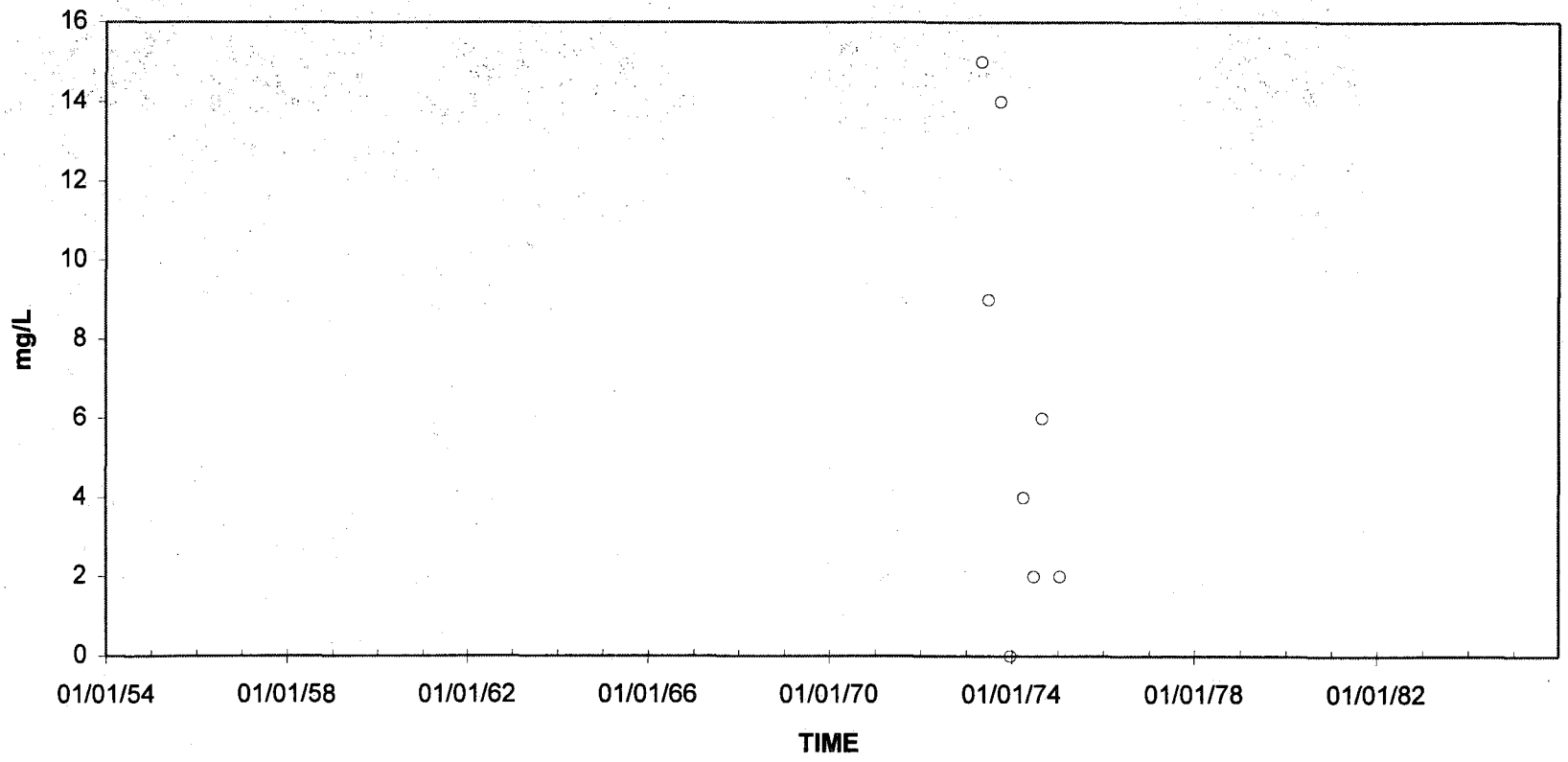
Figure
10.5.4–244



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
OXYGEN DEMAND, BIOCHEMICAL 5 DAY
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

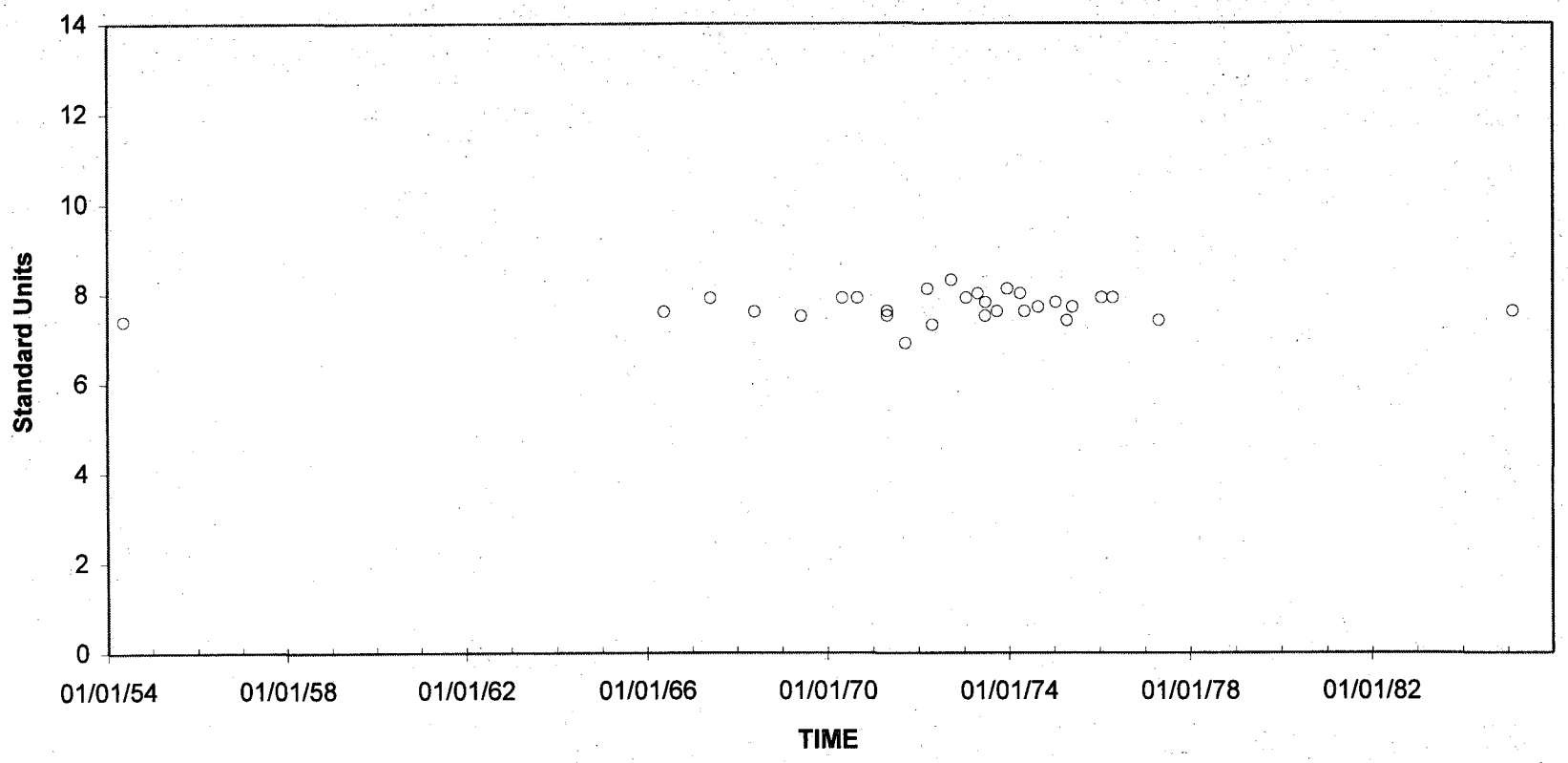
Figure
10.5.4–245



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
OXYGEN DEMAND, CHEMICAL HIGH LEVEL
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

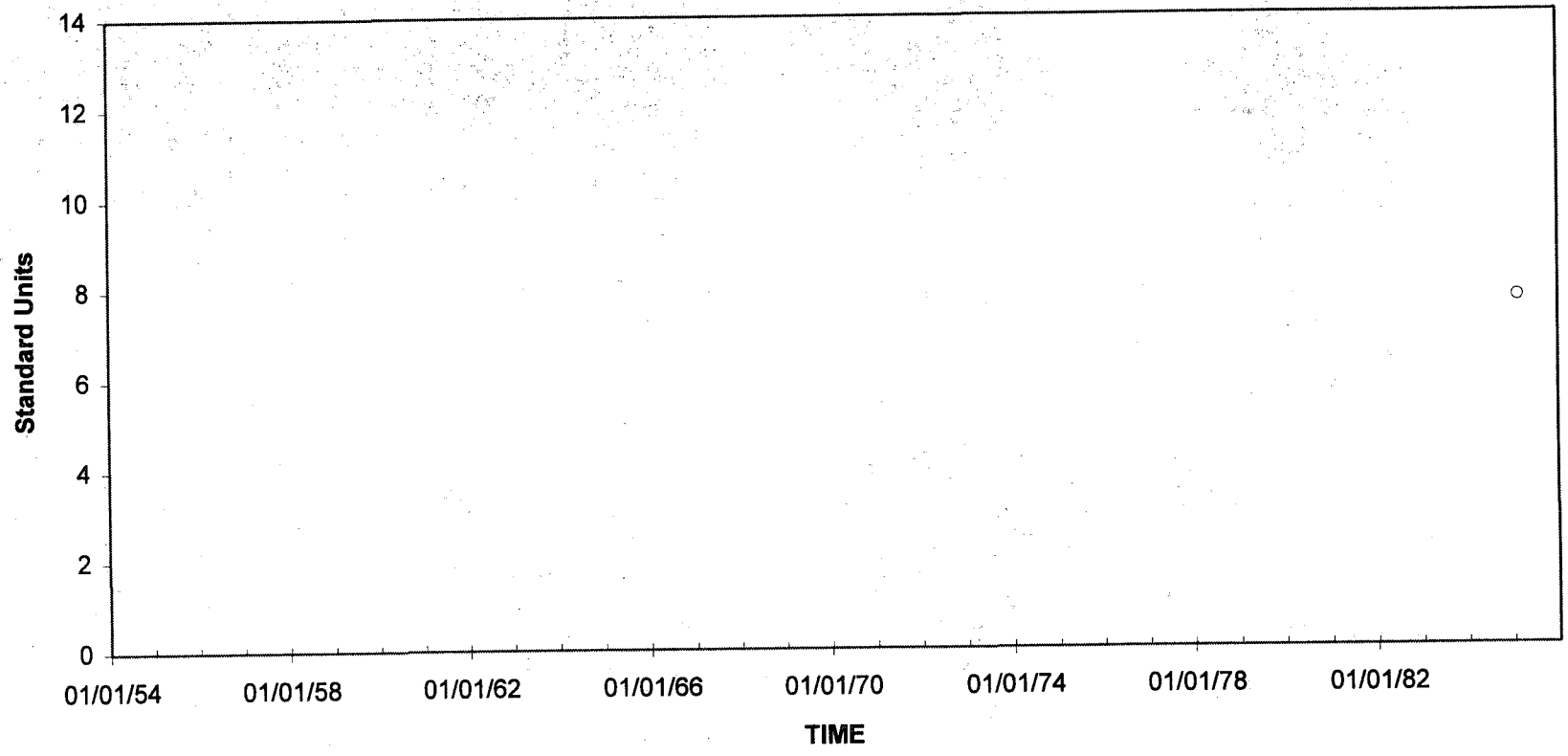
Figure
10.5.4-246



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
pH WATER WHOLE FIELD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

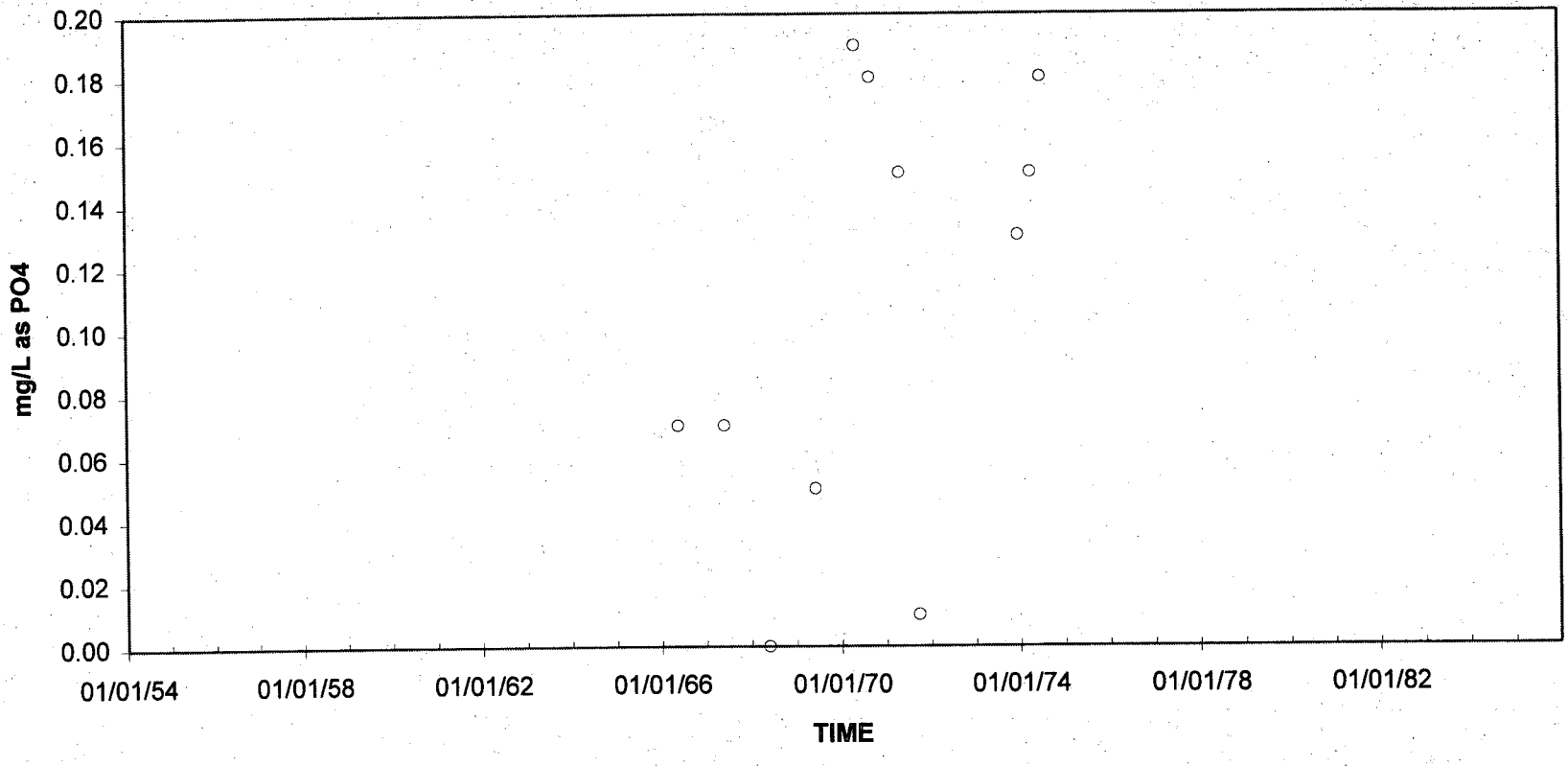
Figure
10.5.4–247



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
pH WATER WHOLE LAB
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

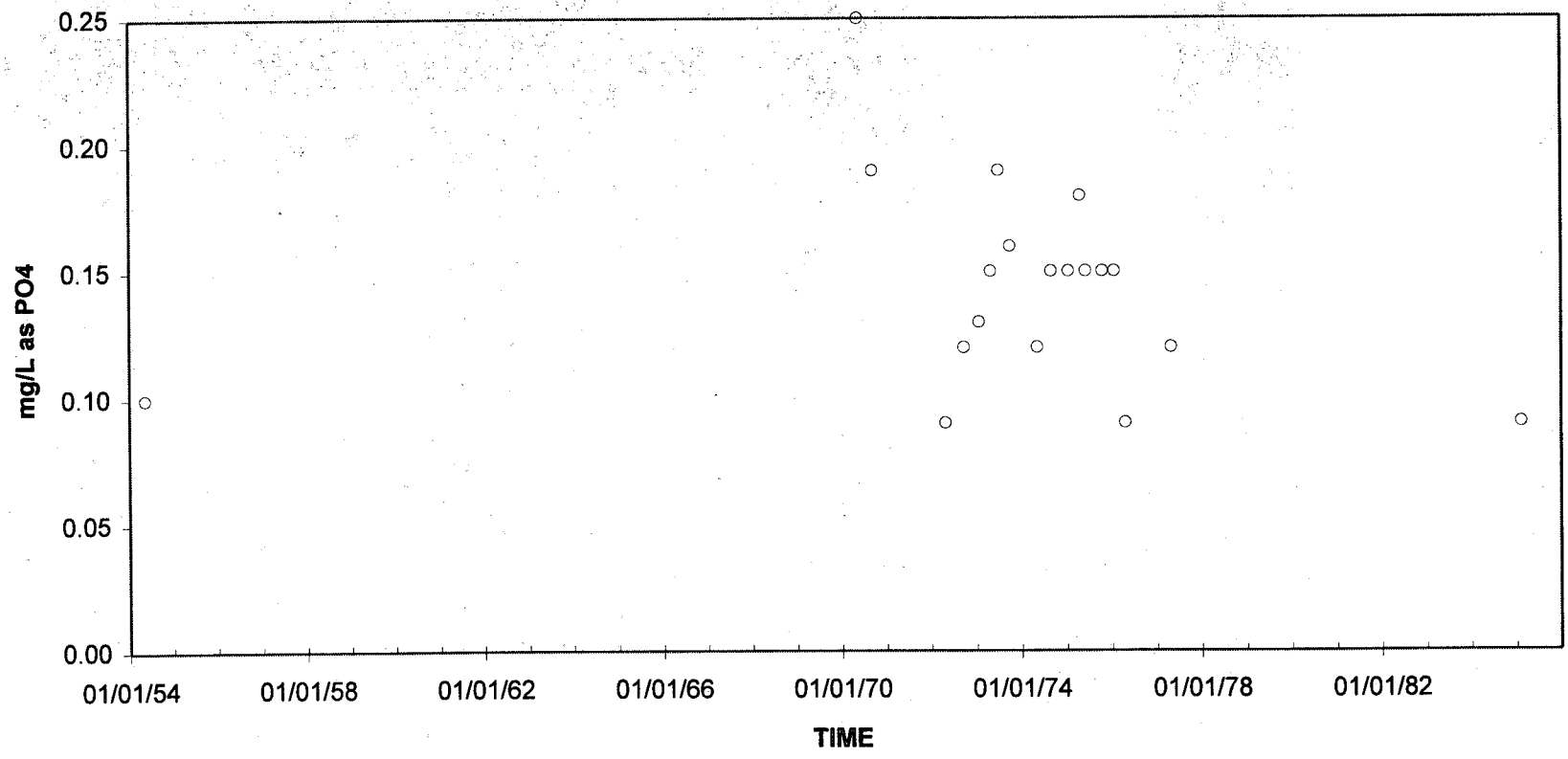
Figure
10.5.4–248



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
PHOSPHATE, ORTHO DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

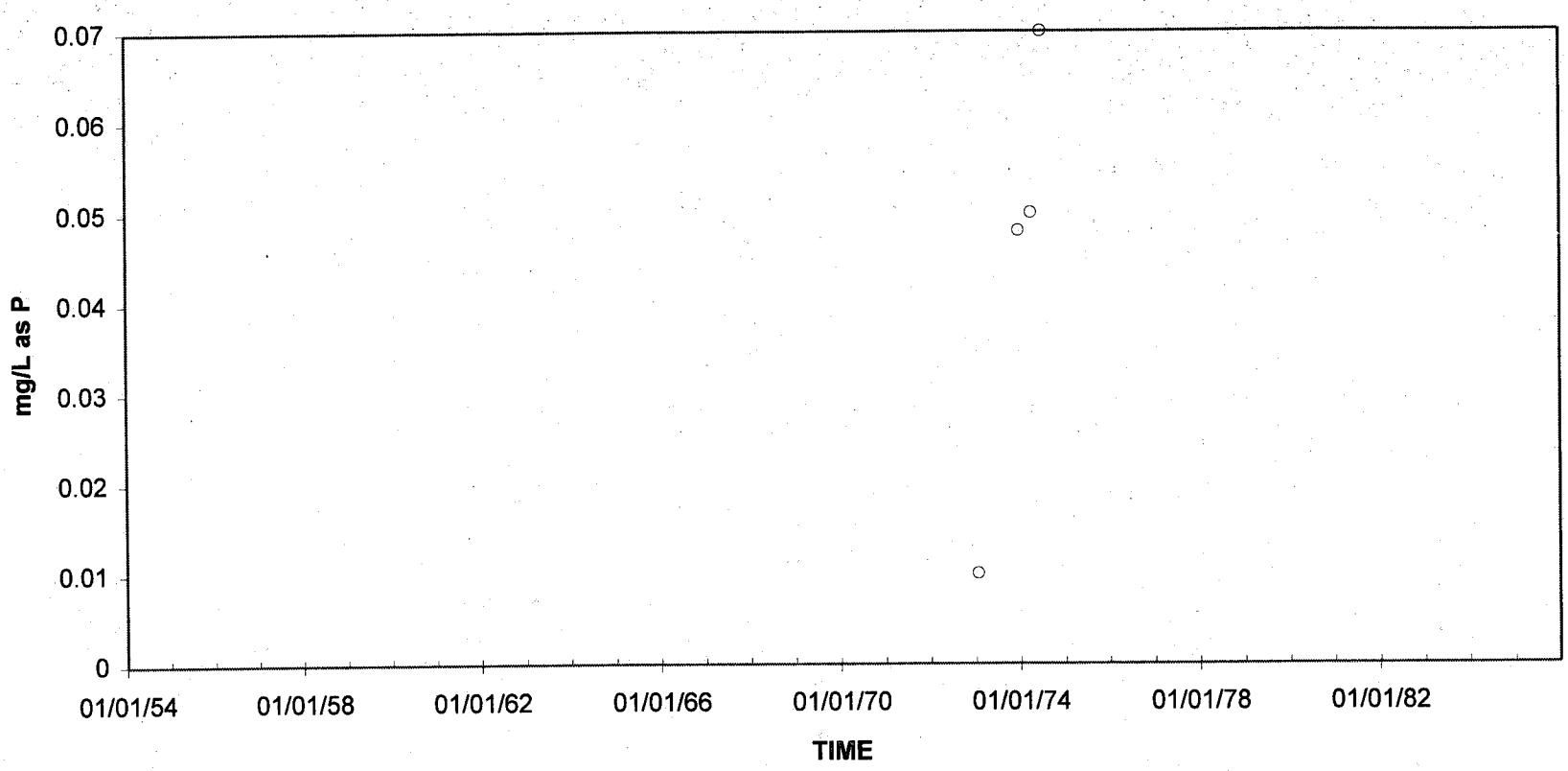
Figure
10.5.4-249



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
PHOSPHATE, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

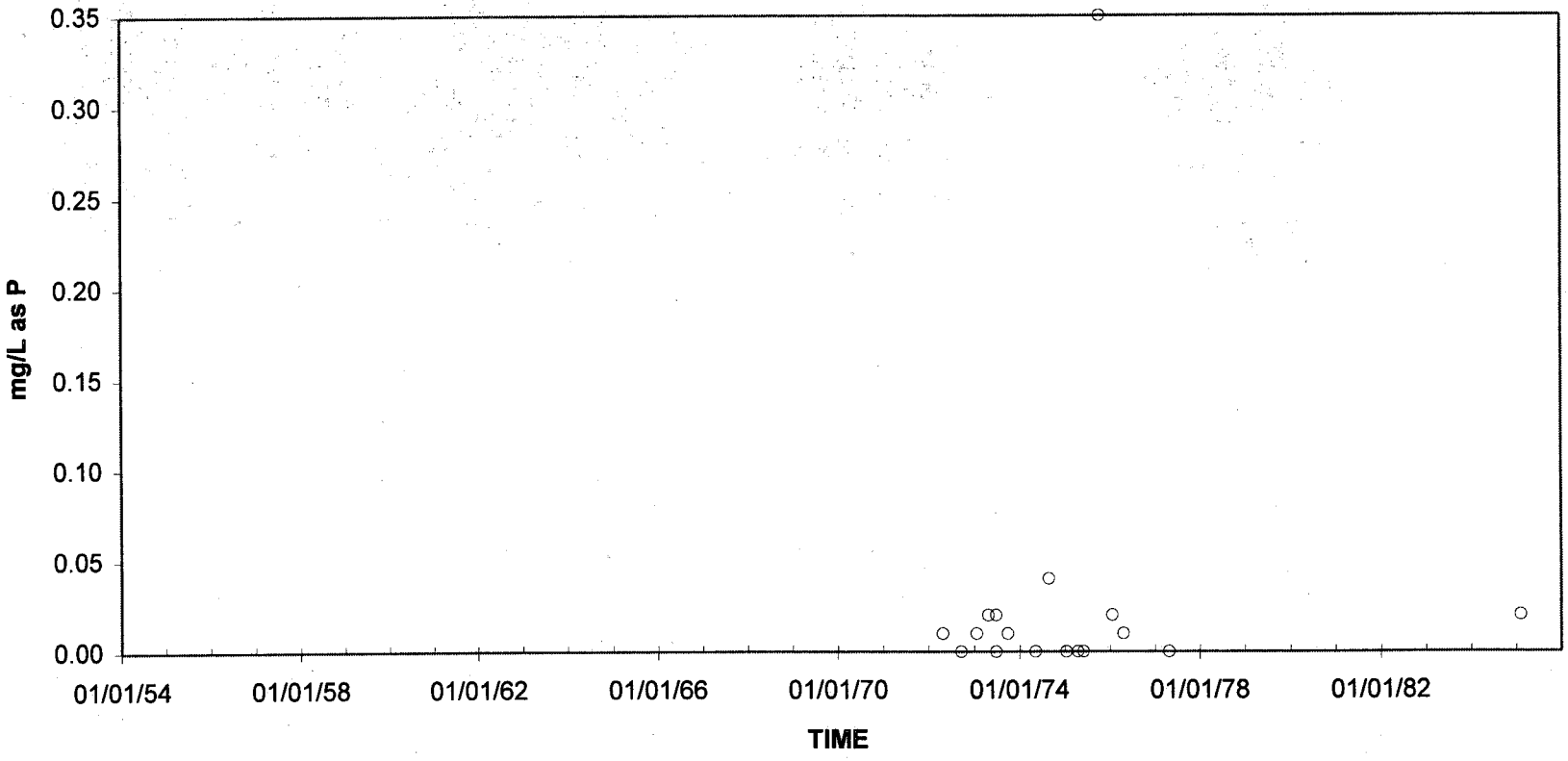
Figure
10.5.4-250



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
PHOSPHORUS, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

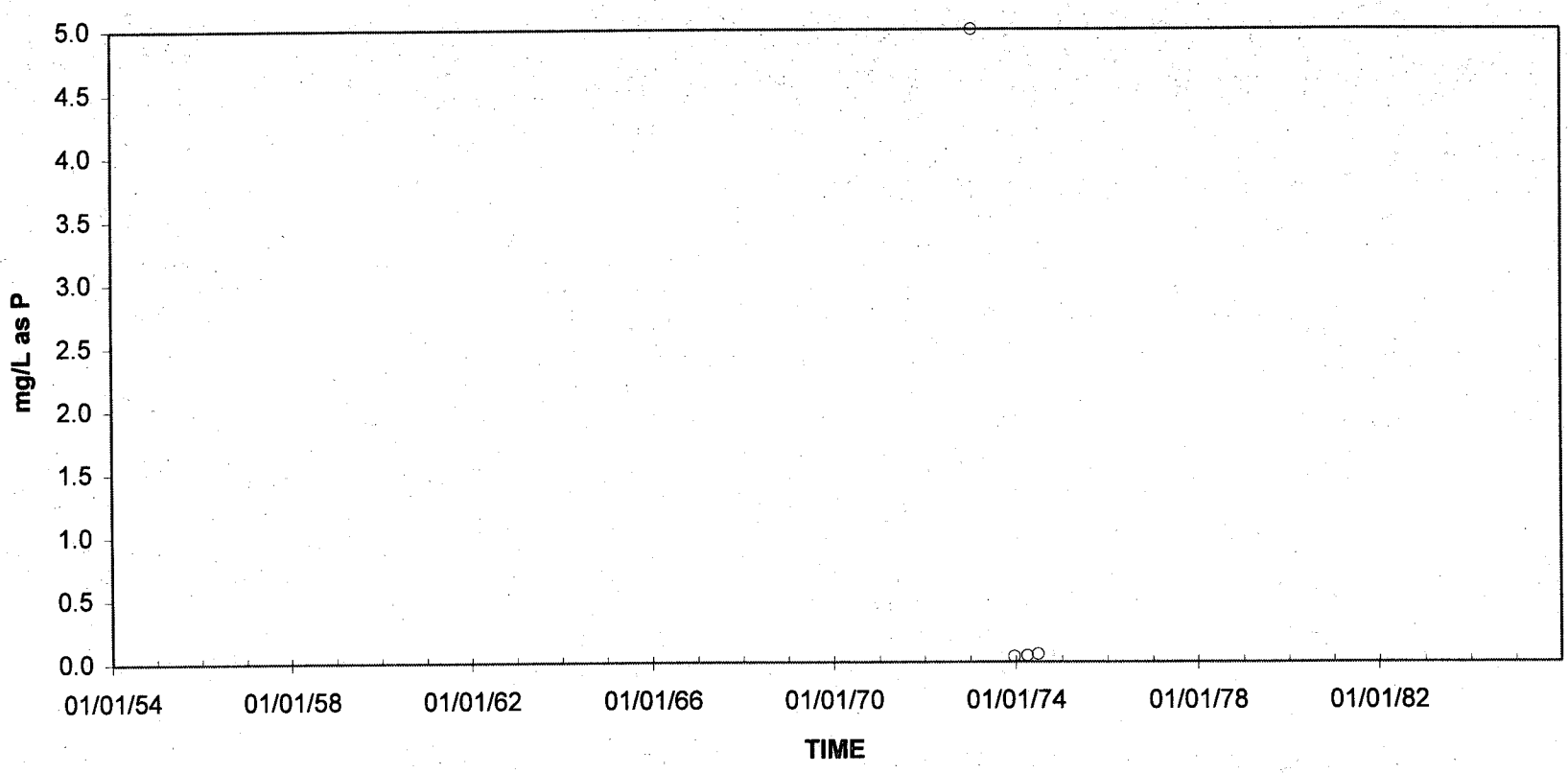
Figure
10.5.4-251



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
PHOSPHORUS, ORGANIC TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

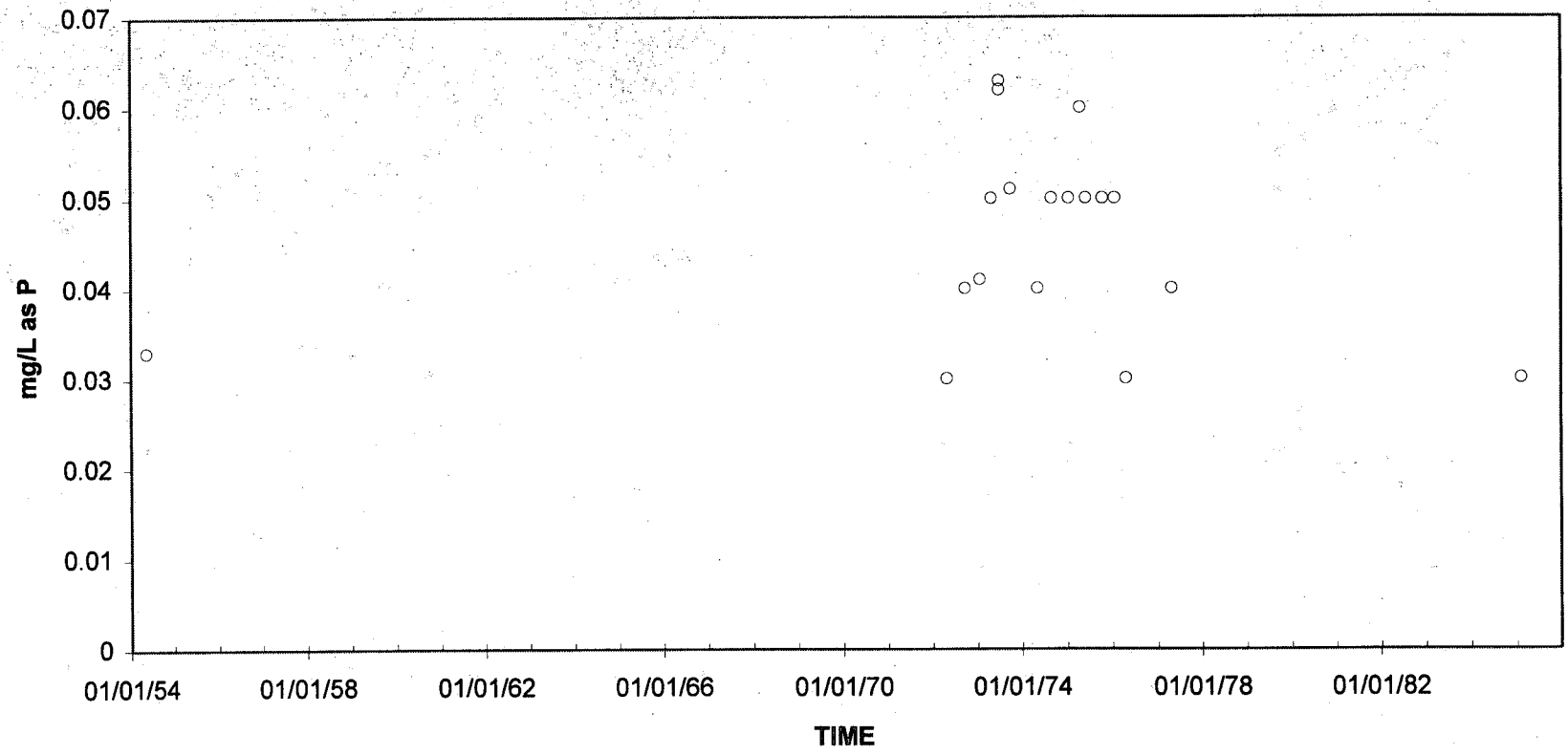
Figure
10.5.4–252



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
PHOSPHORUS, ORTHO DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

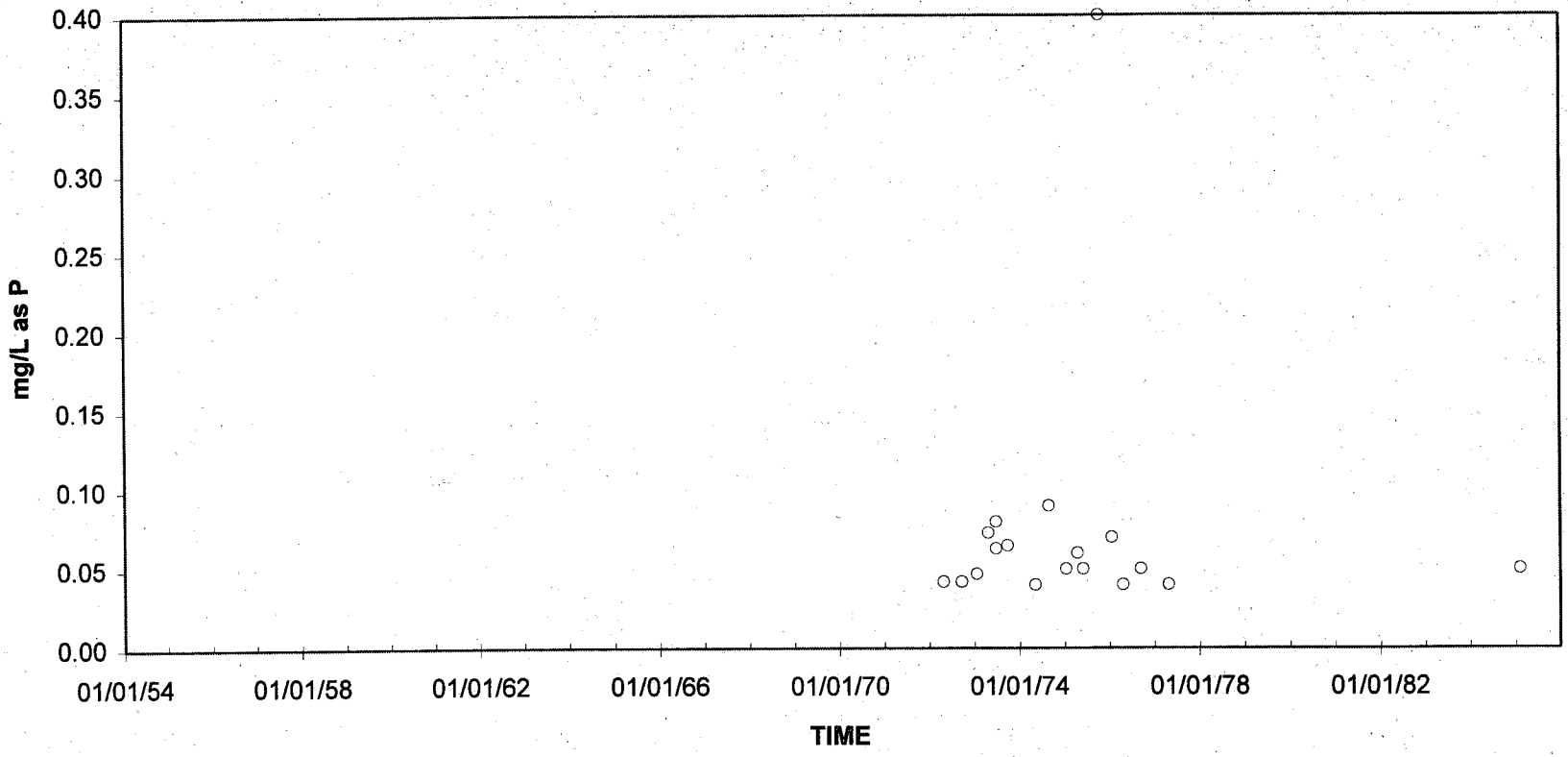
Figure
10.5.4-253



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
PHOSPHORUS, ORTHO TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

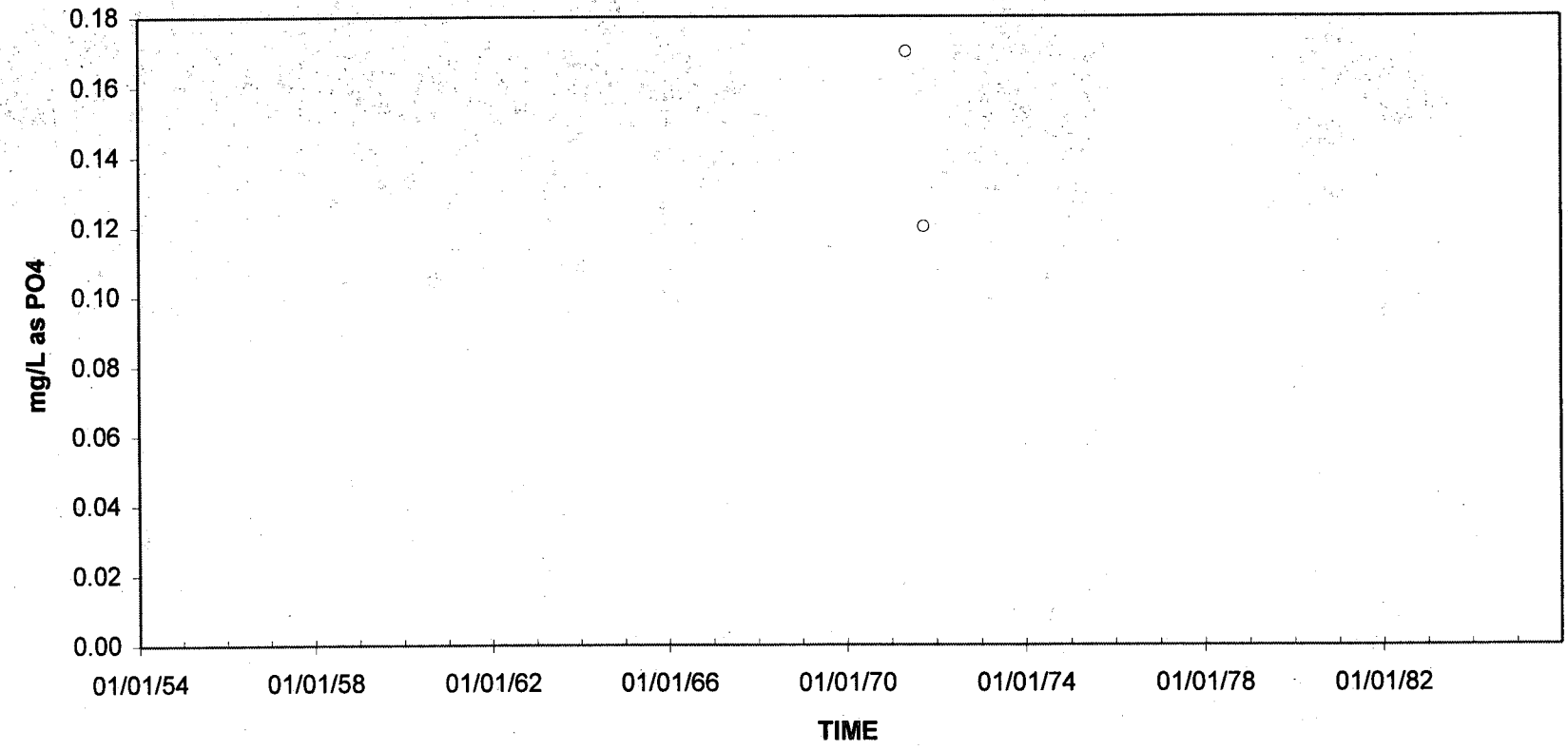
Figure
10.5.4–254



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
PHOSPHORUS, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

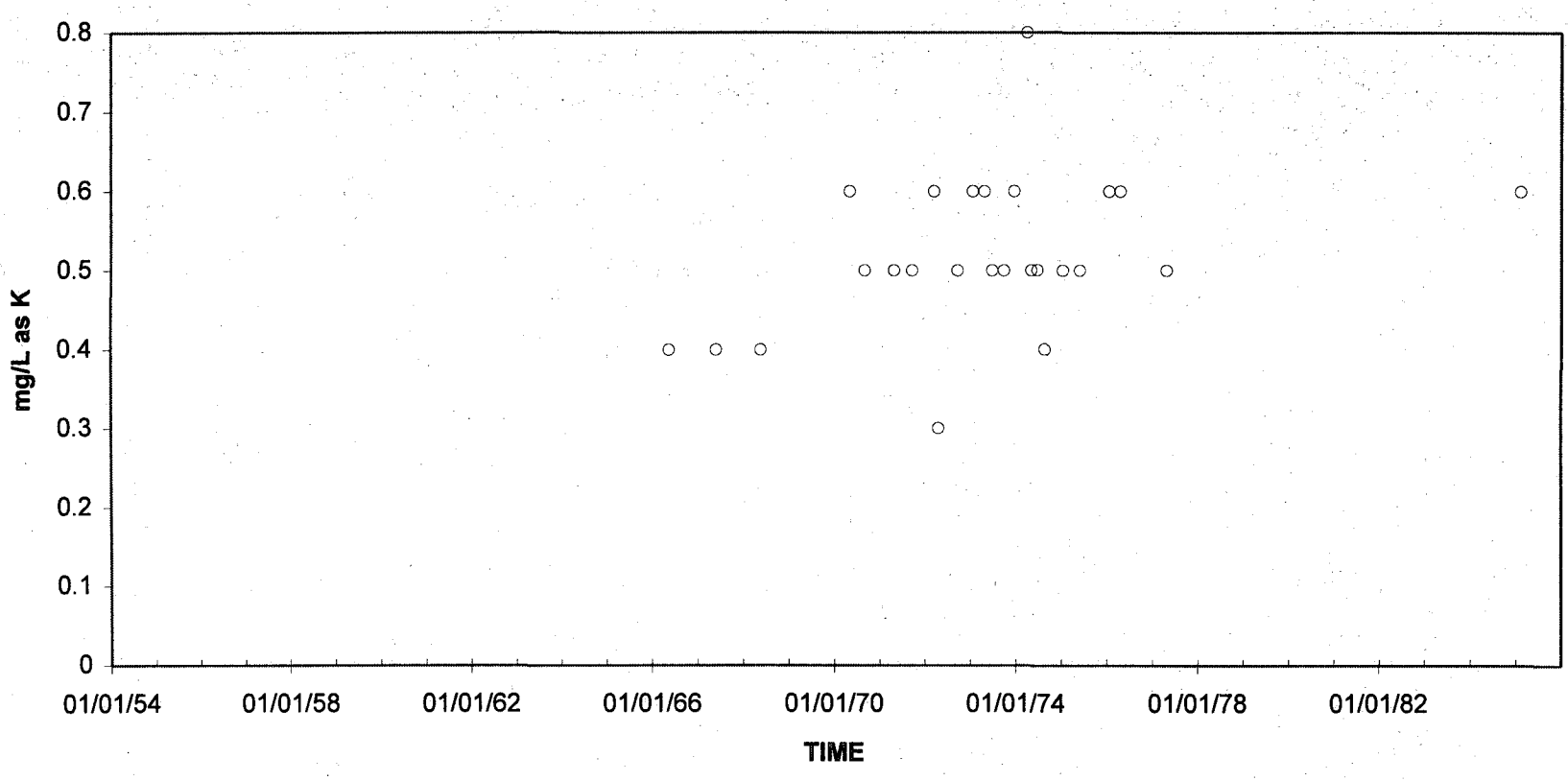
Figure
10.5.4–255



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
PHOSPHORUS, TOTAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

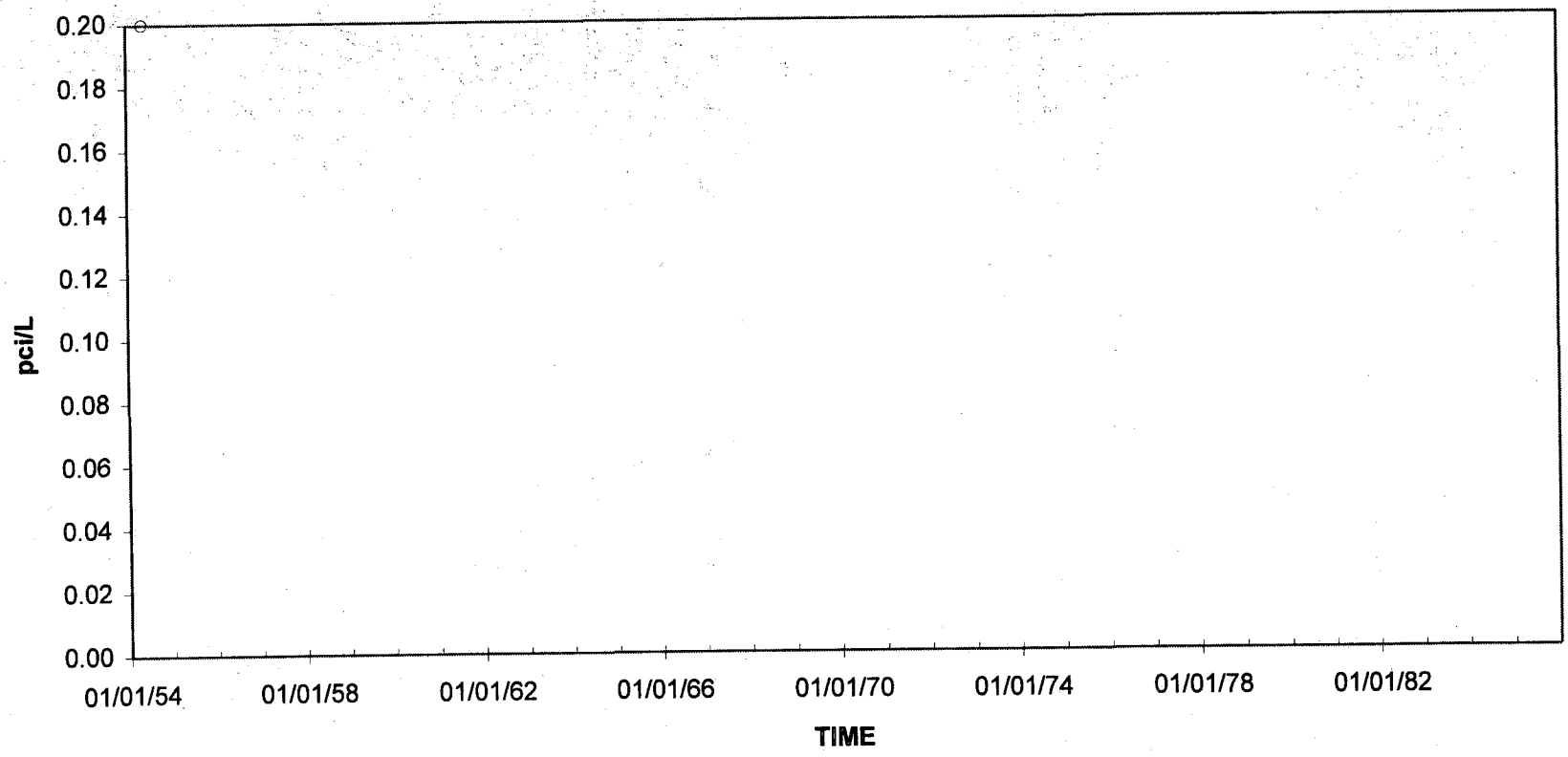
Figure
10.5.4–256



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
POTASSIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

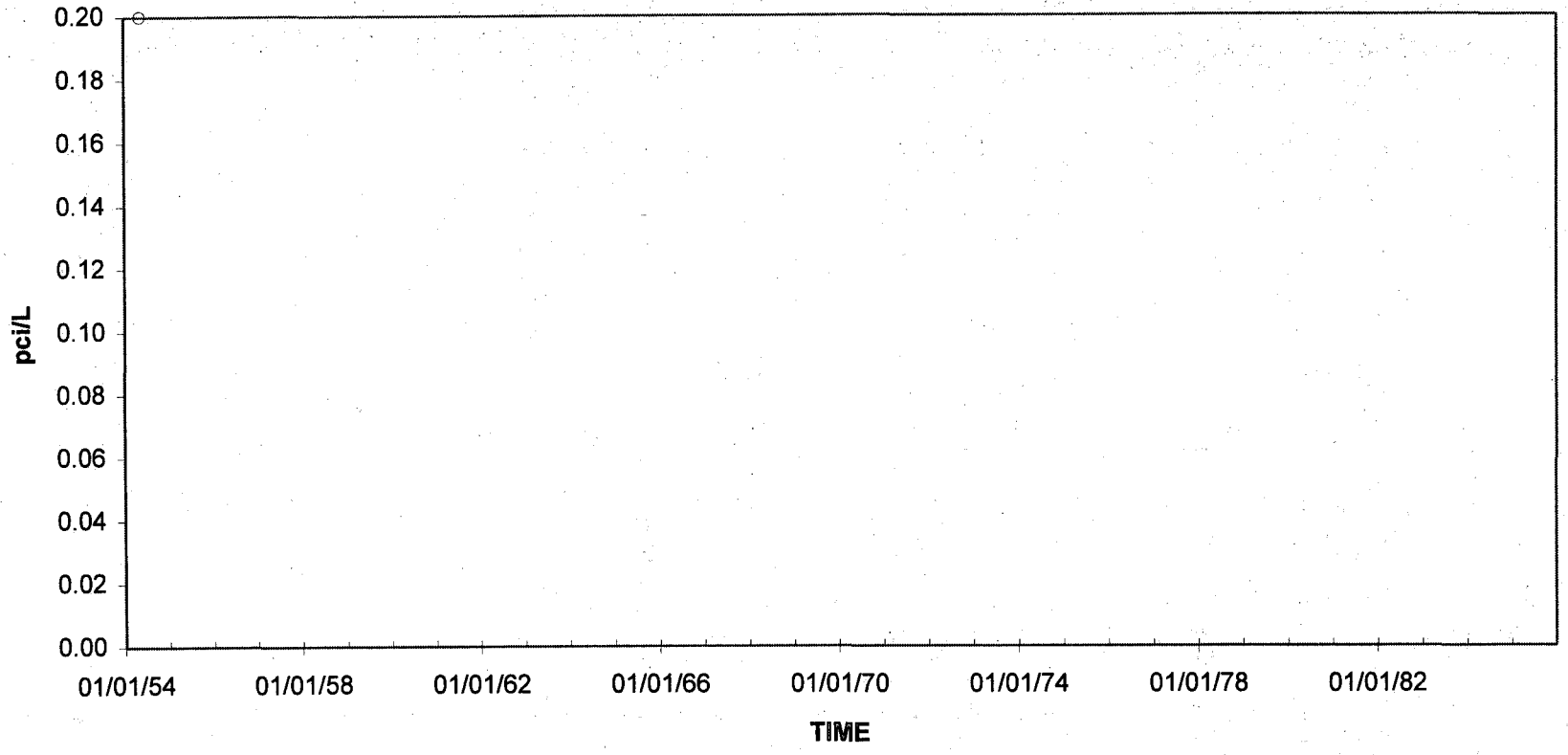
Figure
10.5.4–257



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
RADIUM 226, DISSOLVED PLANCHET COUT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

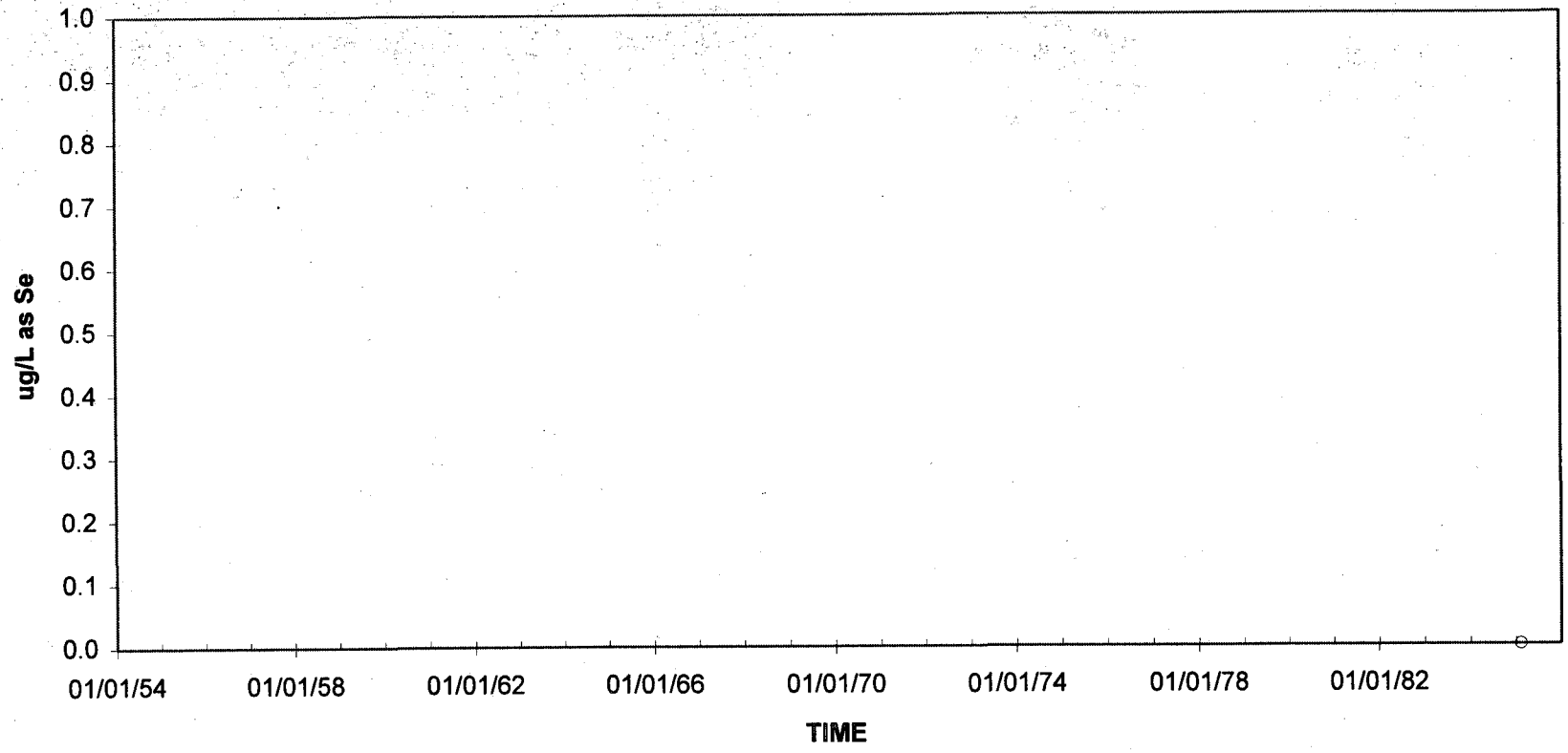
Figure
10.5.4–258



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
RADIUM 226, DISSOLVED RADON METHOD
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

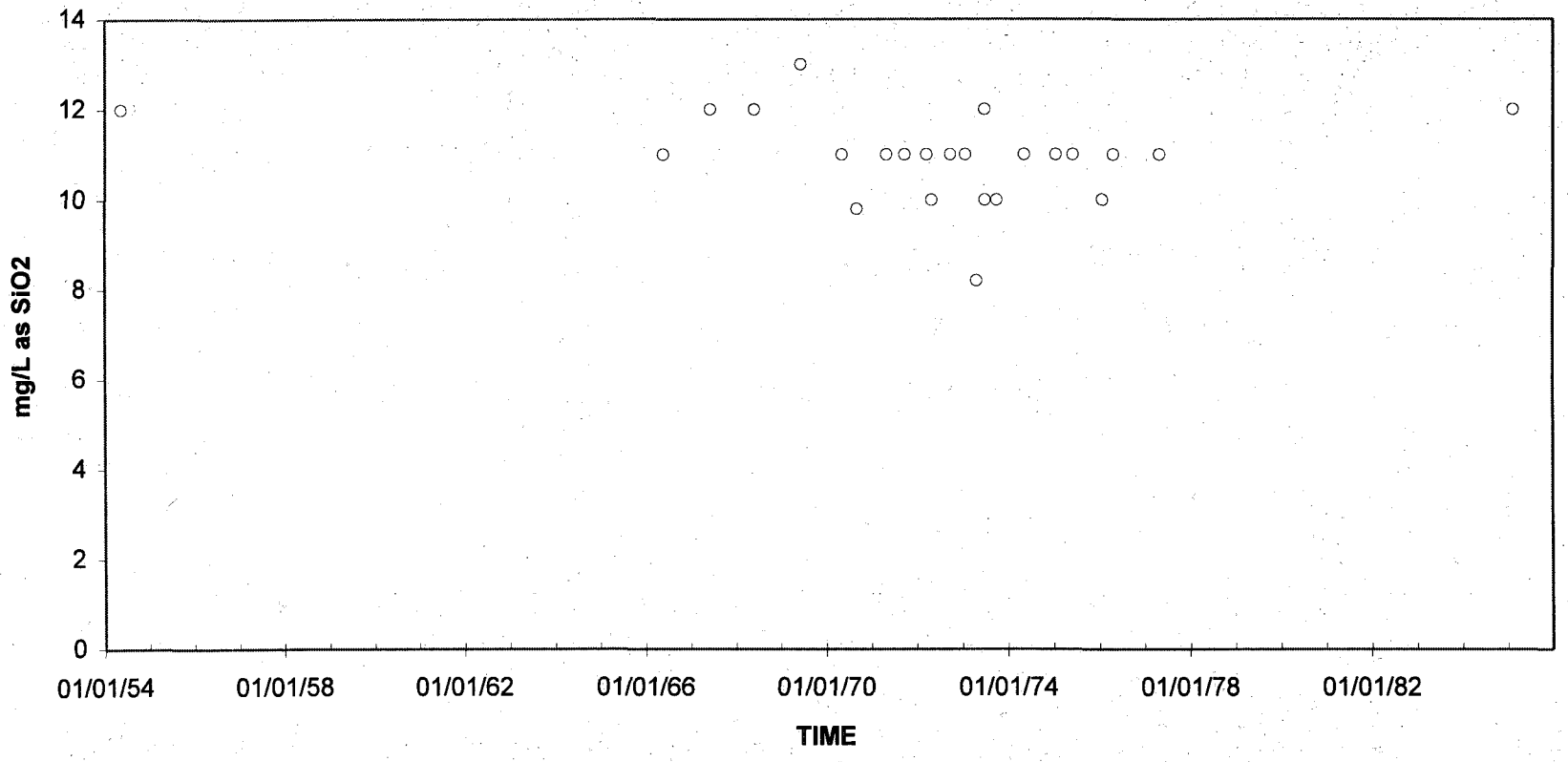
Figure
10.5.4-259



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SELENIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

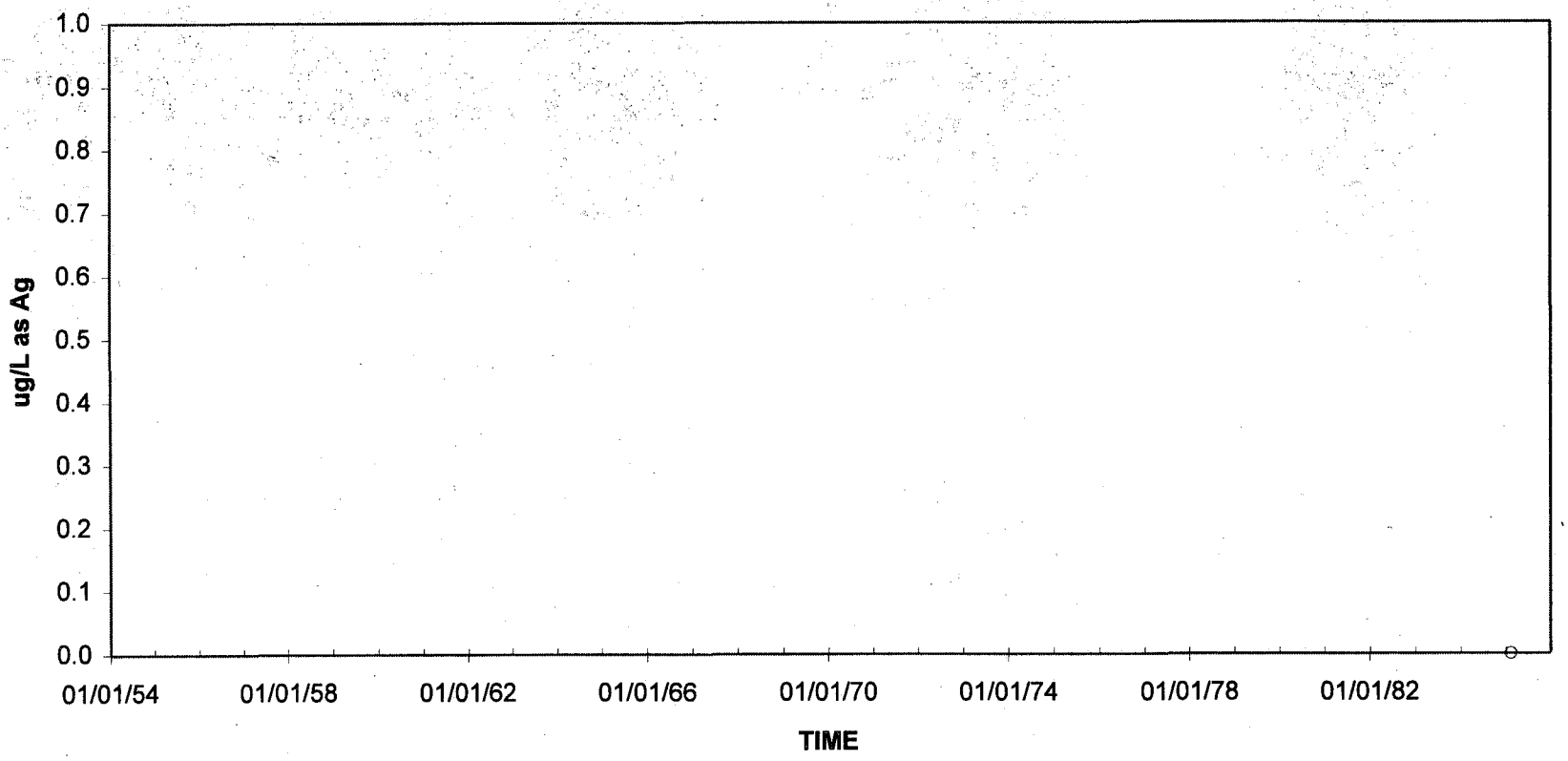
Figure
10.5.4–260



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SILICA, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

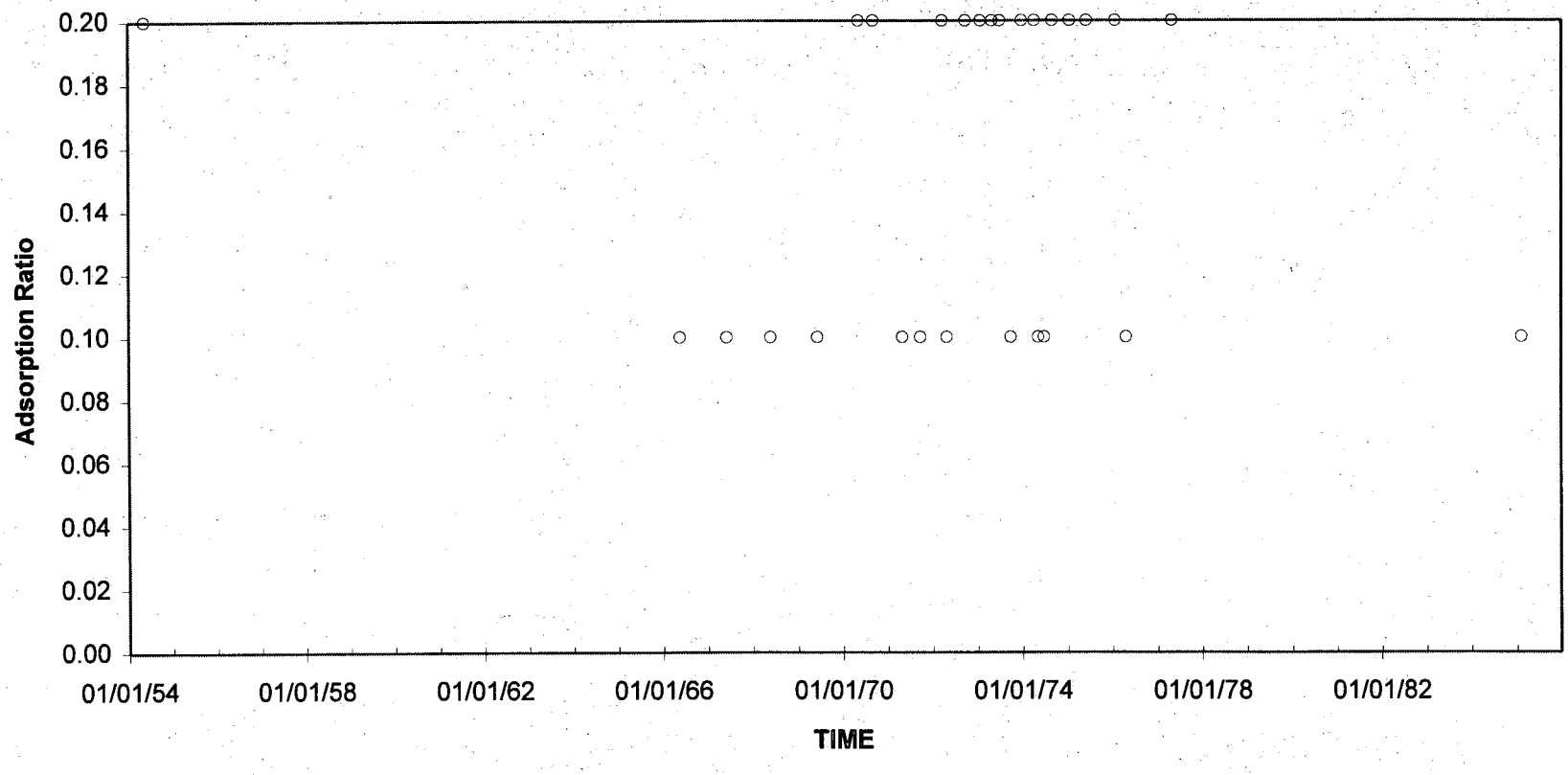
Figure
10.5.4-261



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SILVER, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

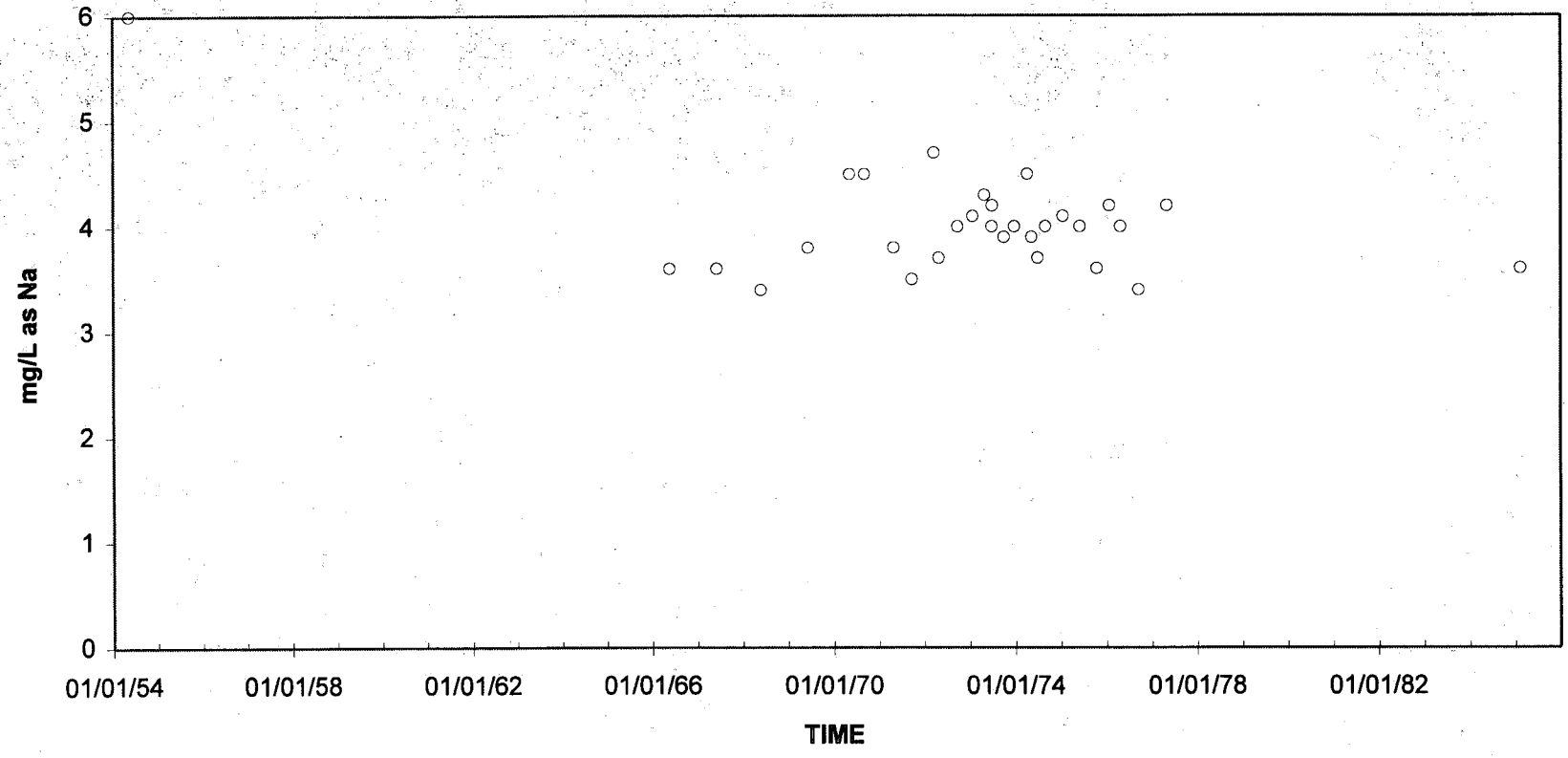
Figure
10.5.4–262



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SODIUM, ADSORPTION RATIO
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

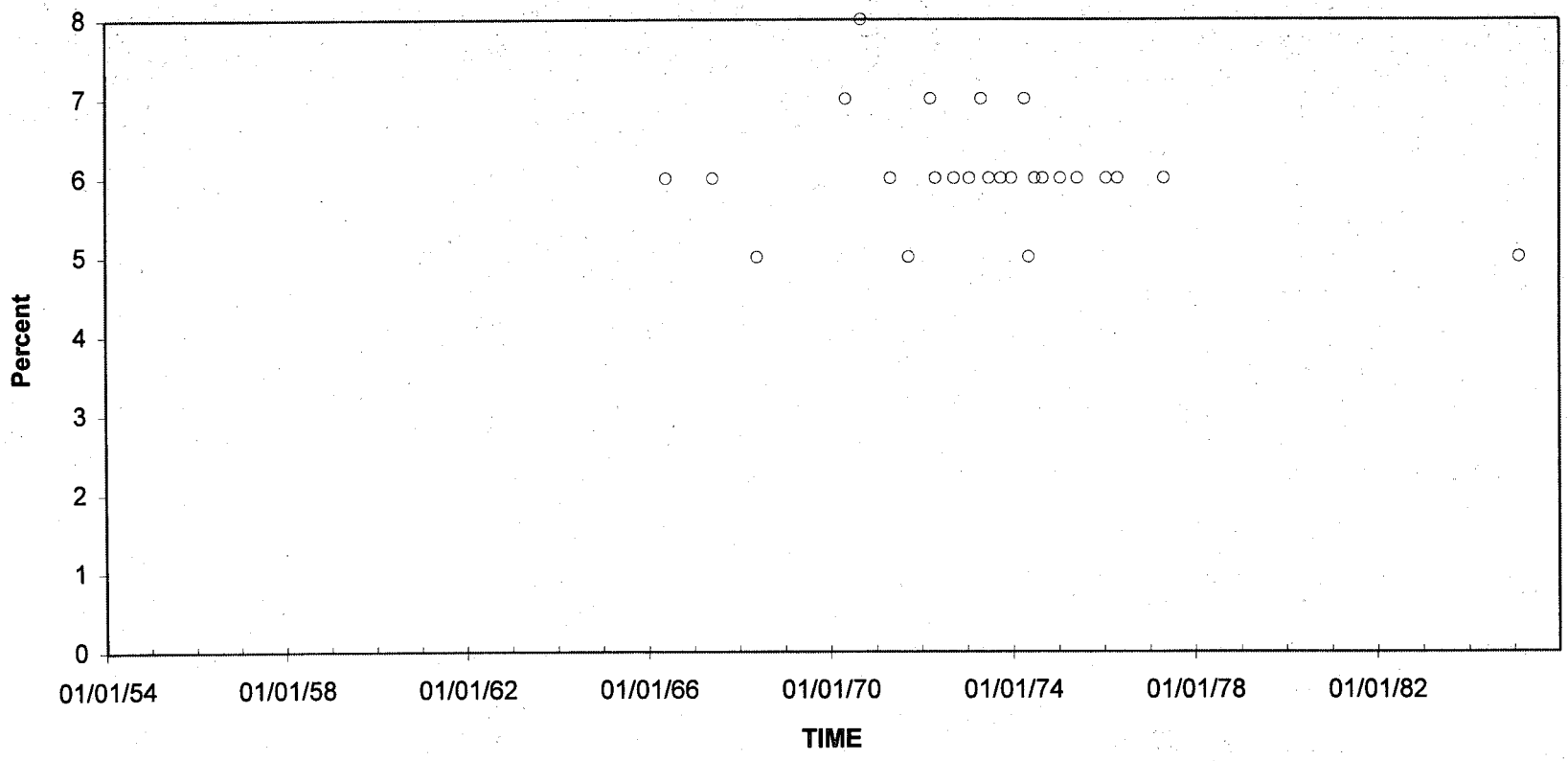
Figure
10.5.4–263



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SODIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

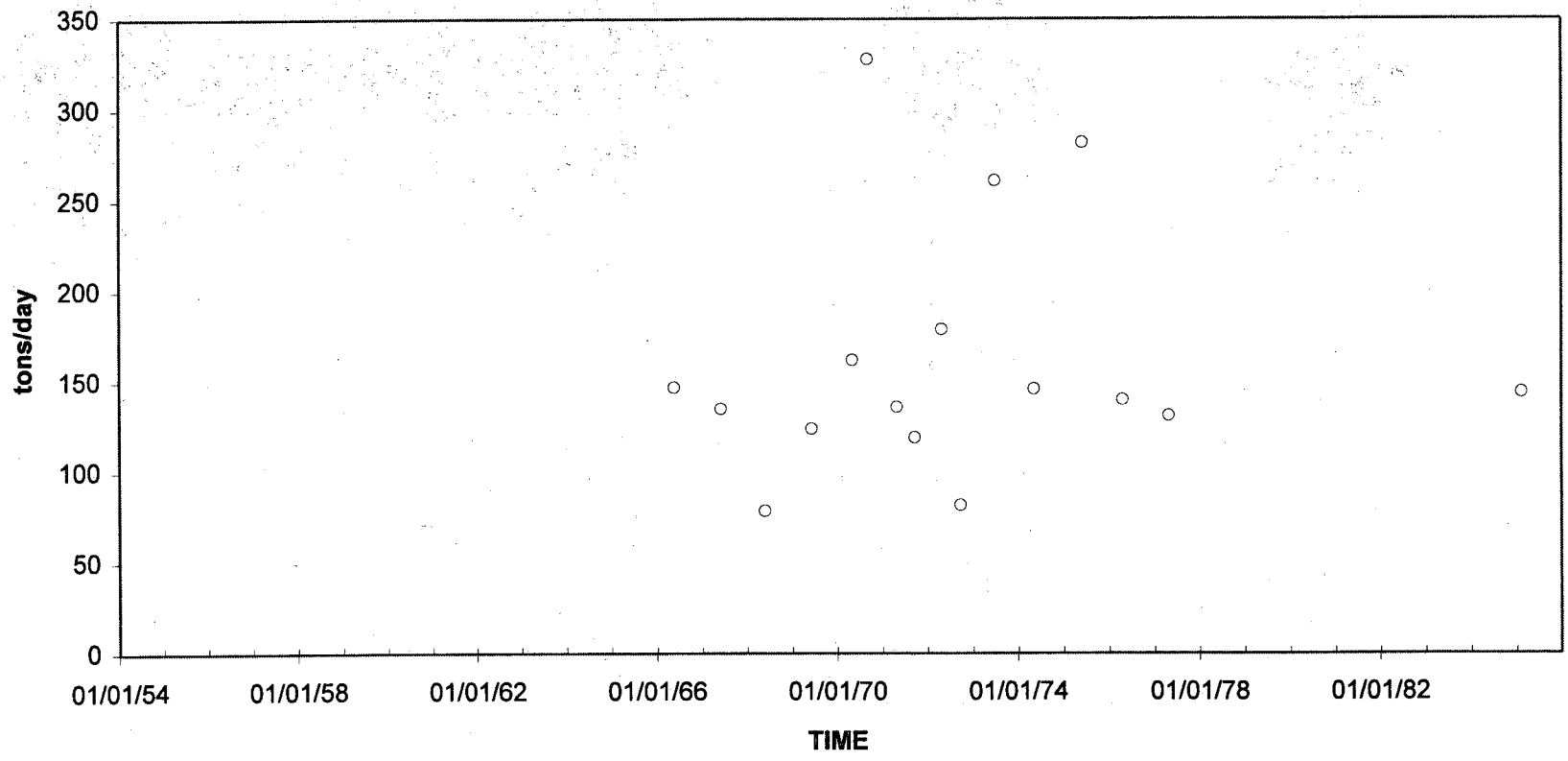
Figure
10.5.4-264



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SODIUM, PERCENT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

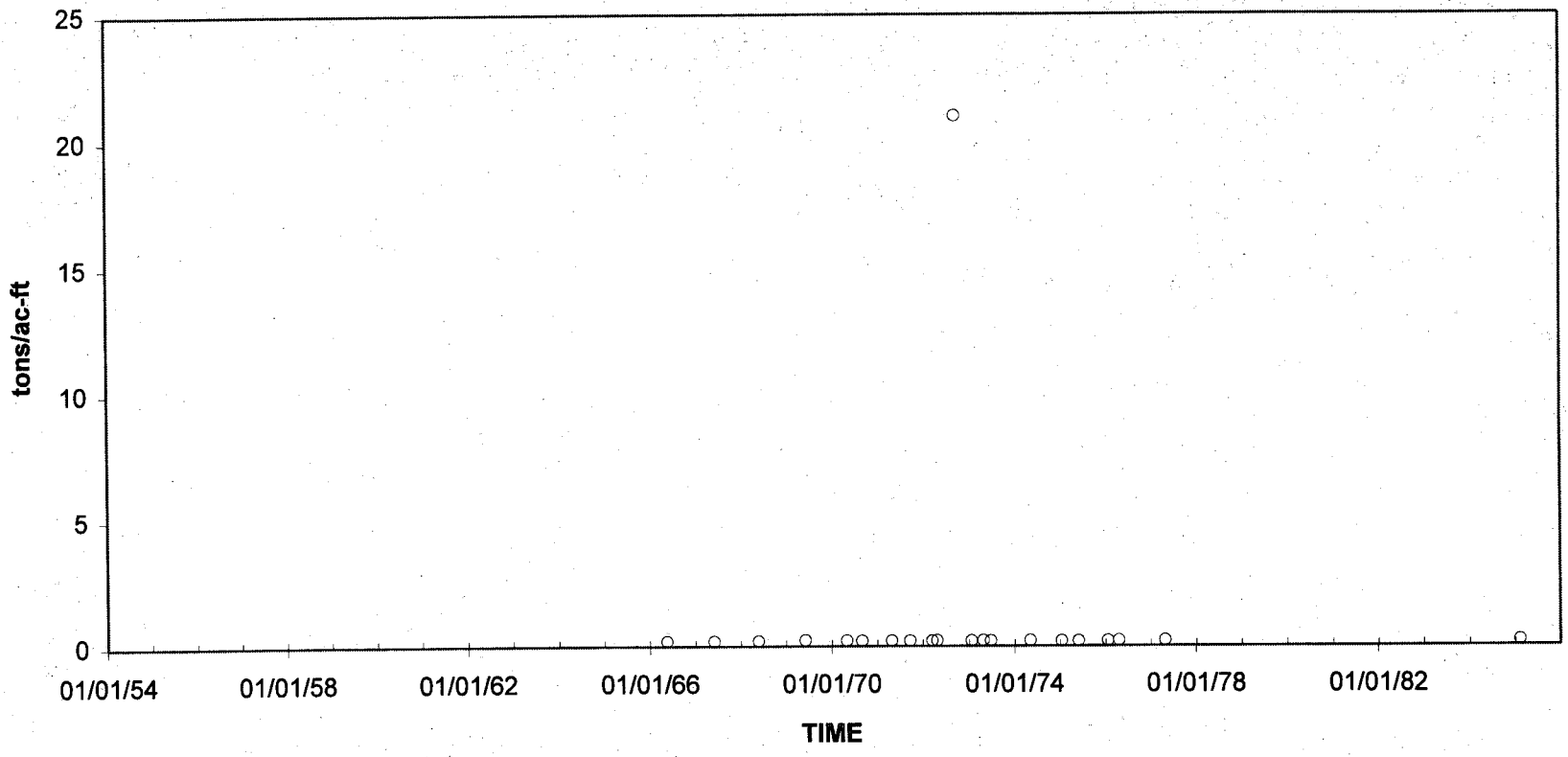
Figure
10.5.4–265



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SOLIDS, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

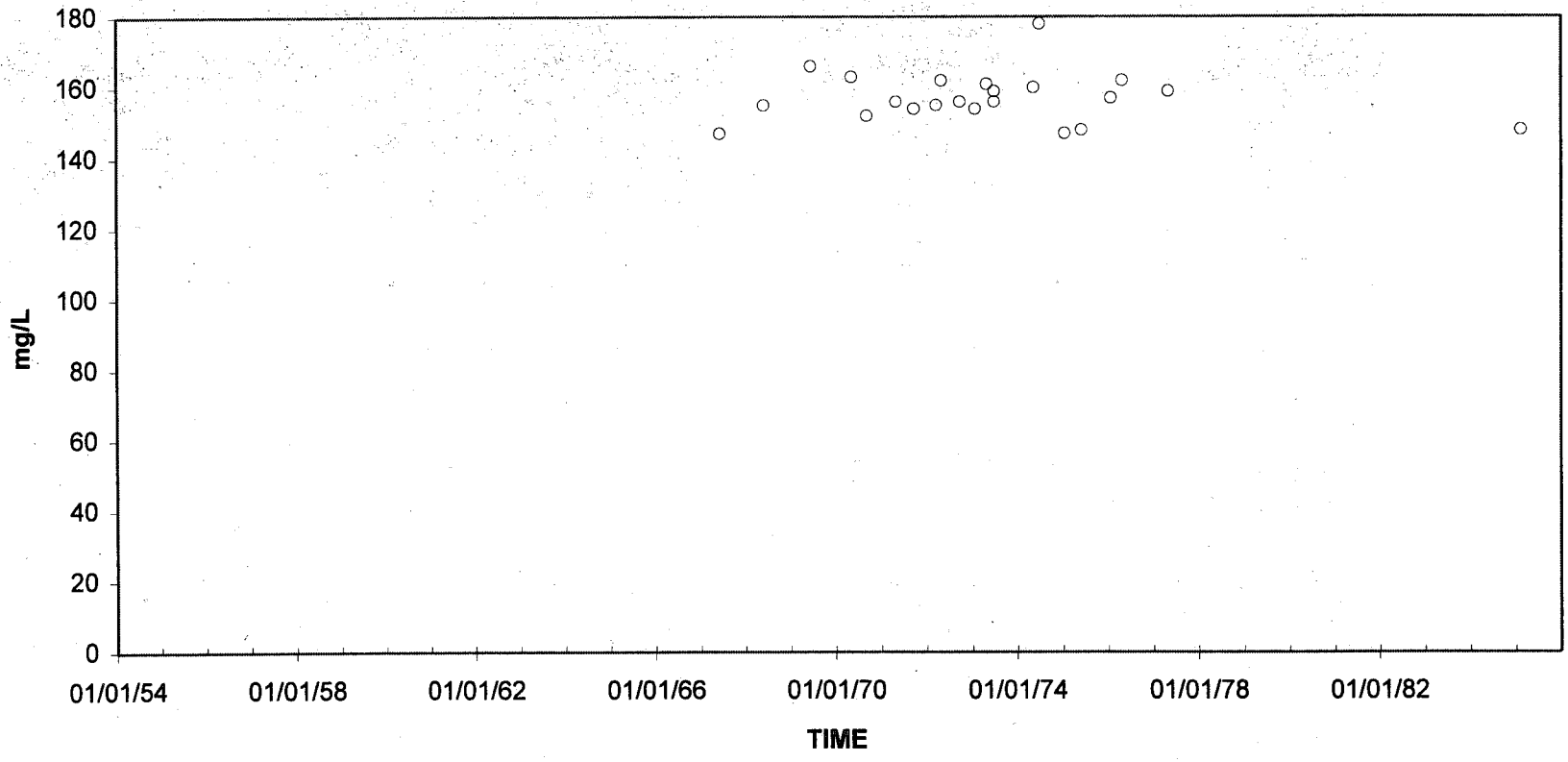
Figure
10.5.4–266



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SOLIDS, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

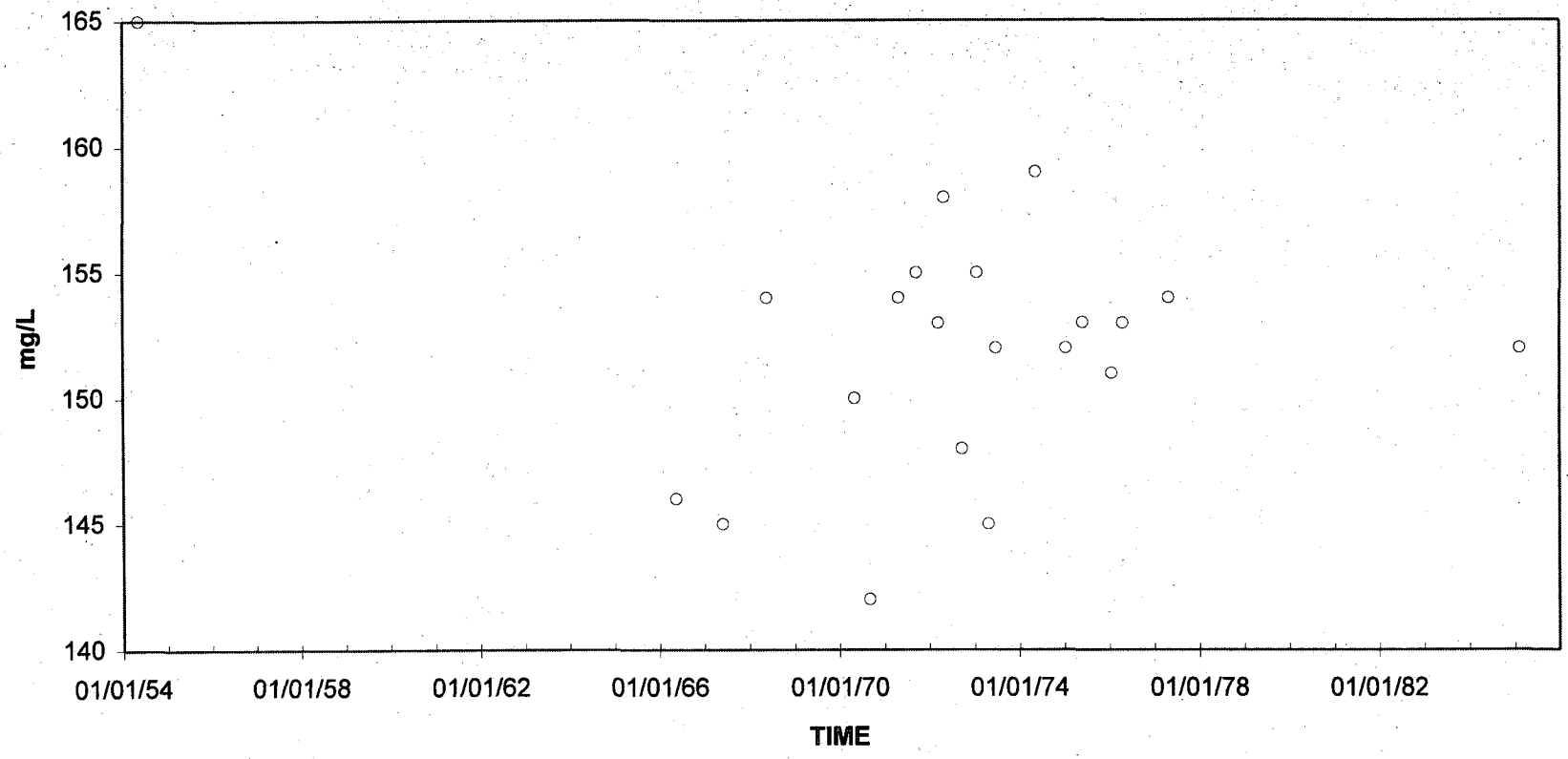
Figure
10.5.4-267



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SOLIDS, RESIDUE AT 180 DEG C DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

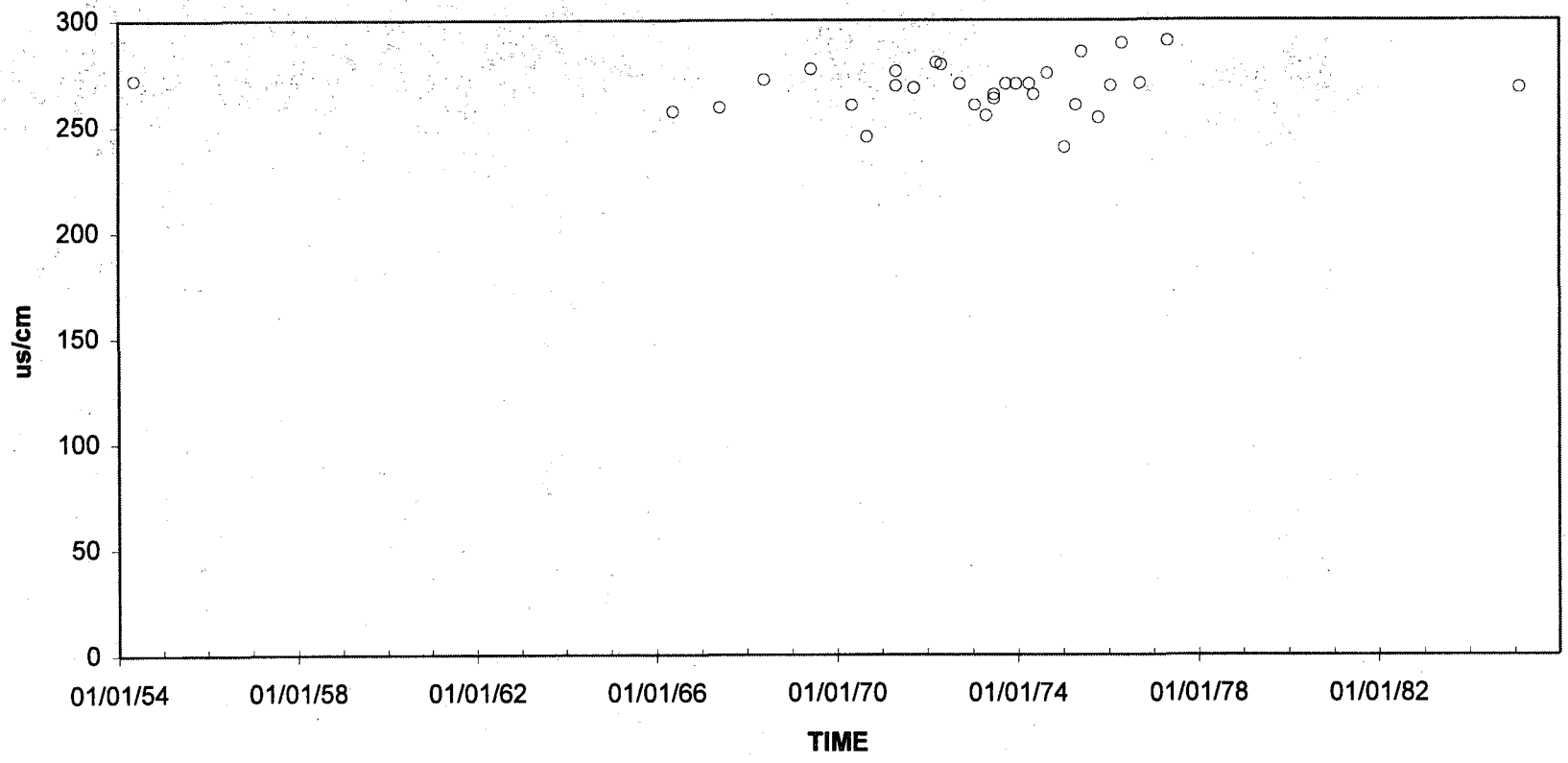
Figure
10.5.4–268



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SOLIDS, SUM OF CONSTITUENTS DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

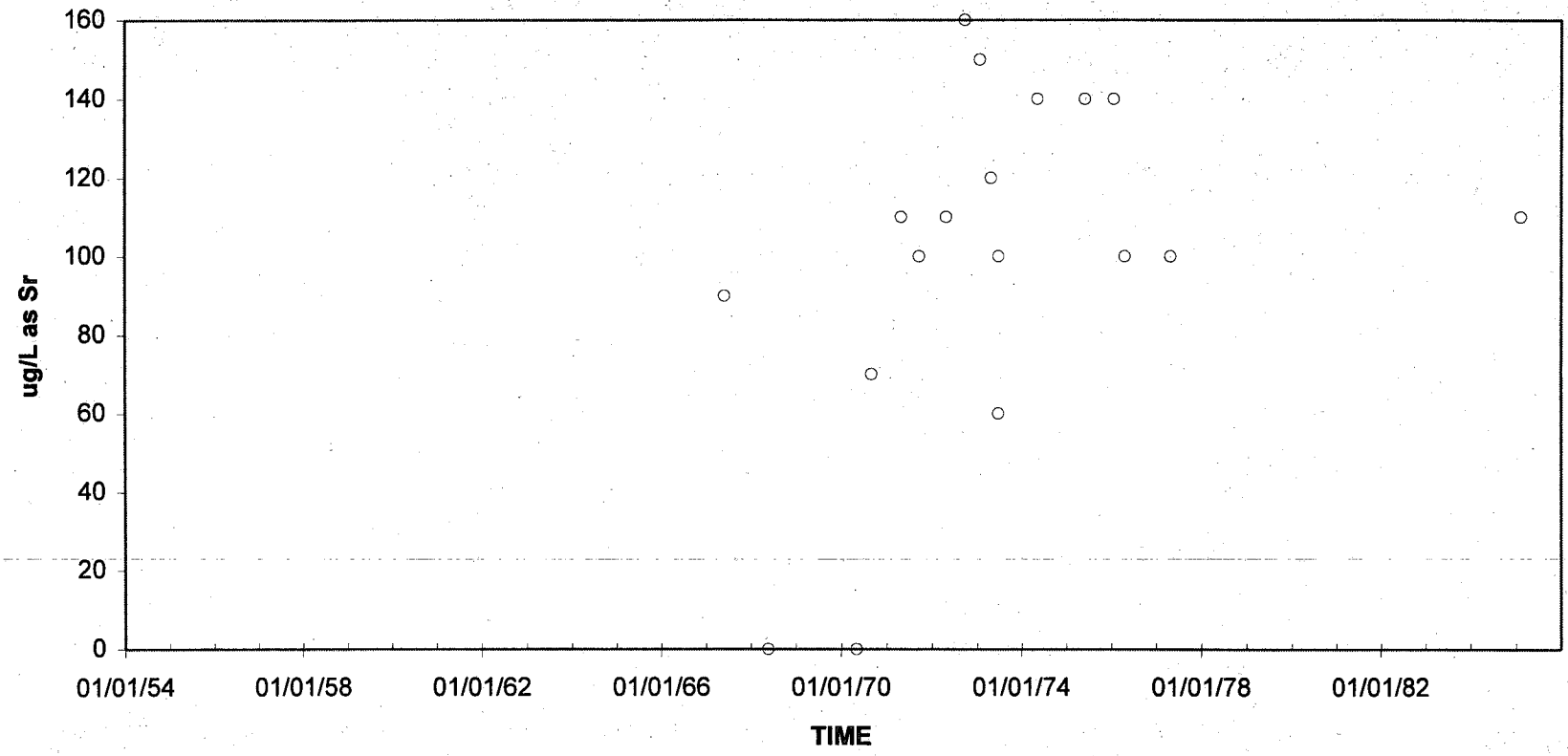
Figure
10.5.4–269



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SPECIFIC CONDUCTANCE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

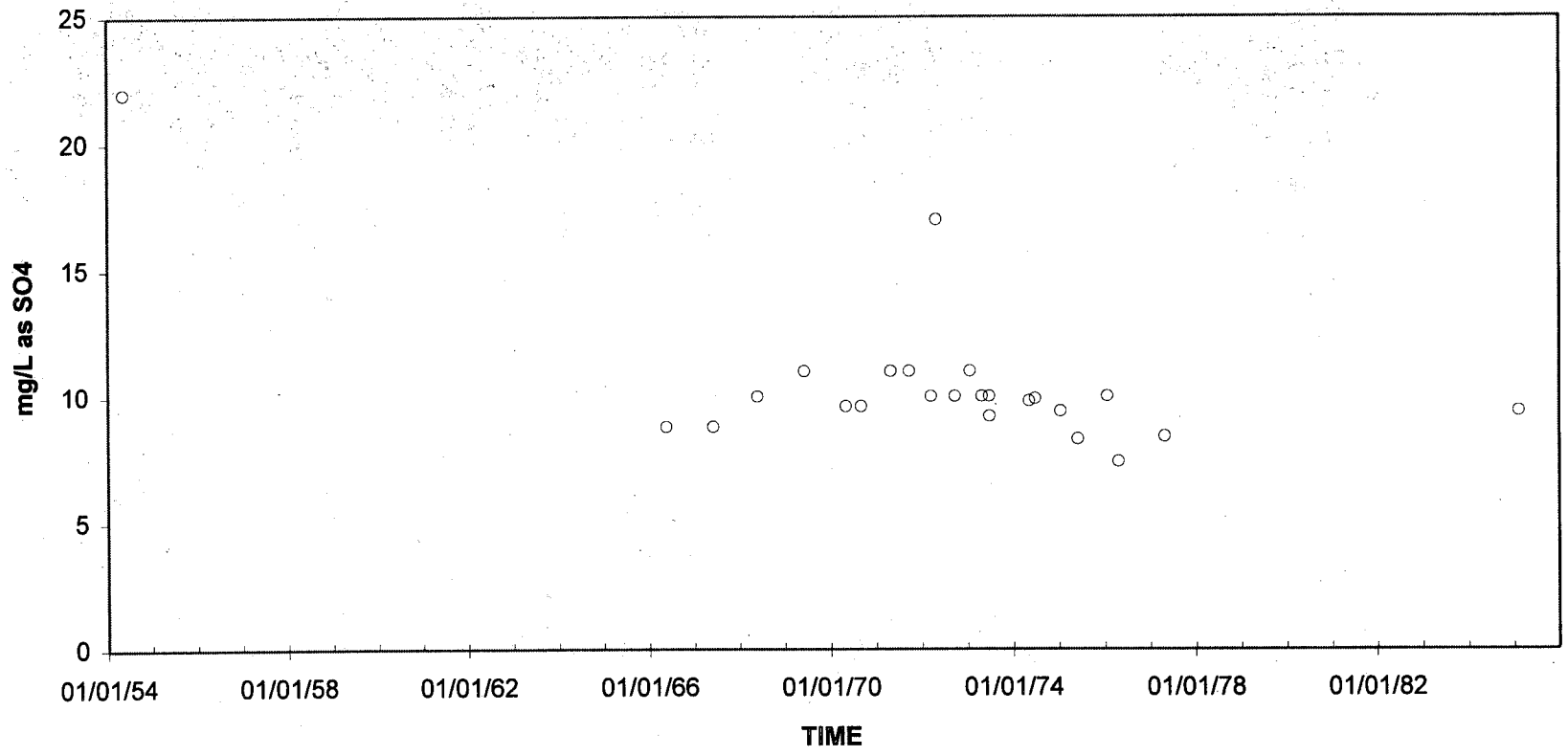
Figure
10.5.4-270



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
STRONTIUM, DISSOLVED
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

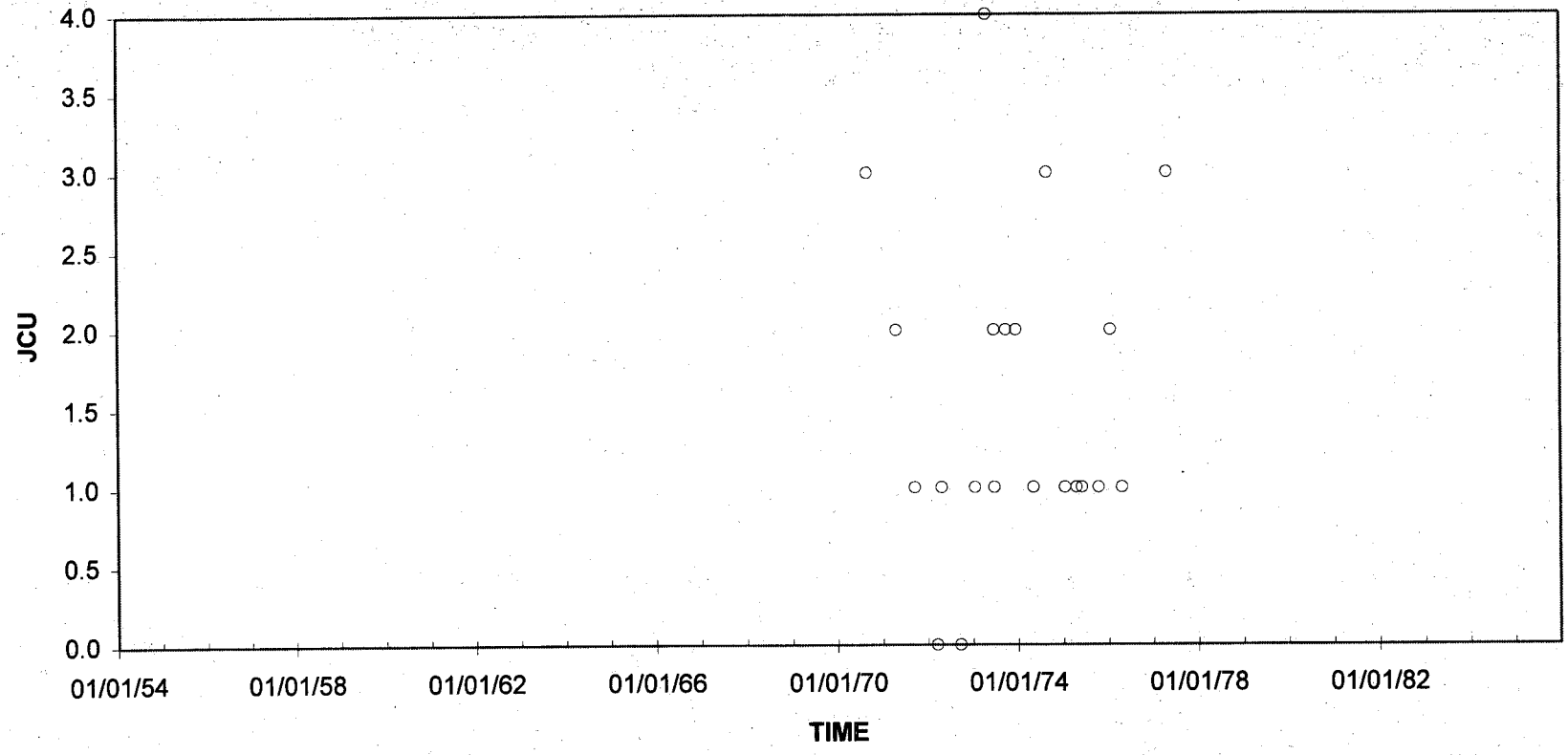
Figure
10.5.4-271



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
SULFATE, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

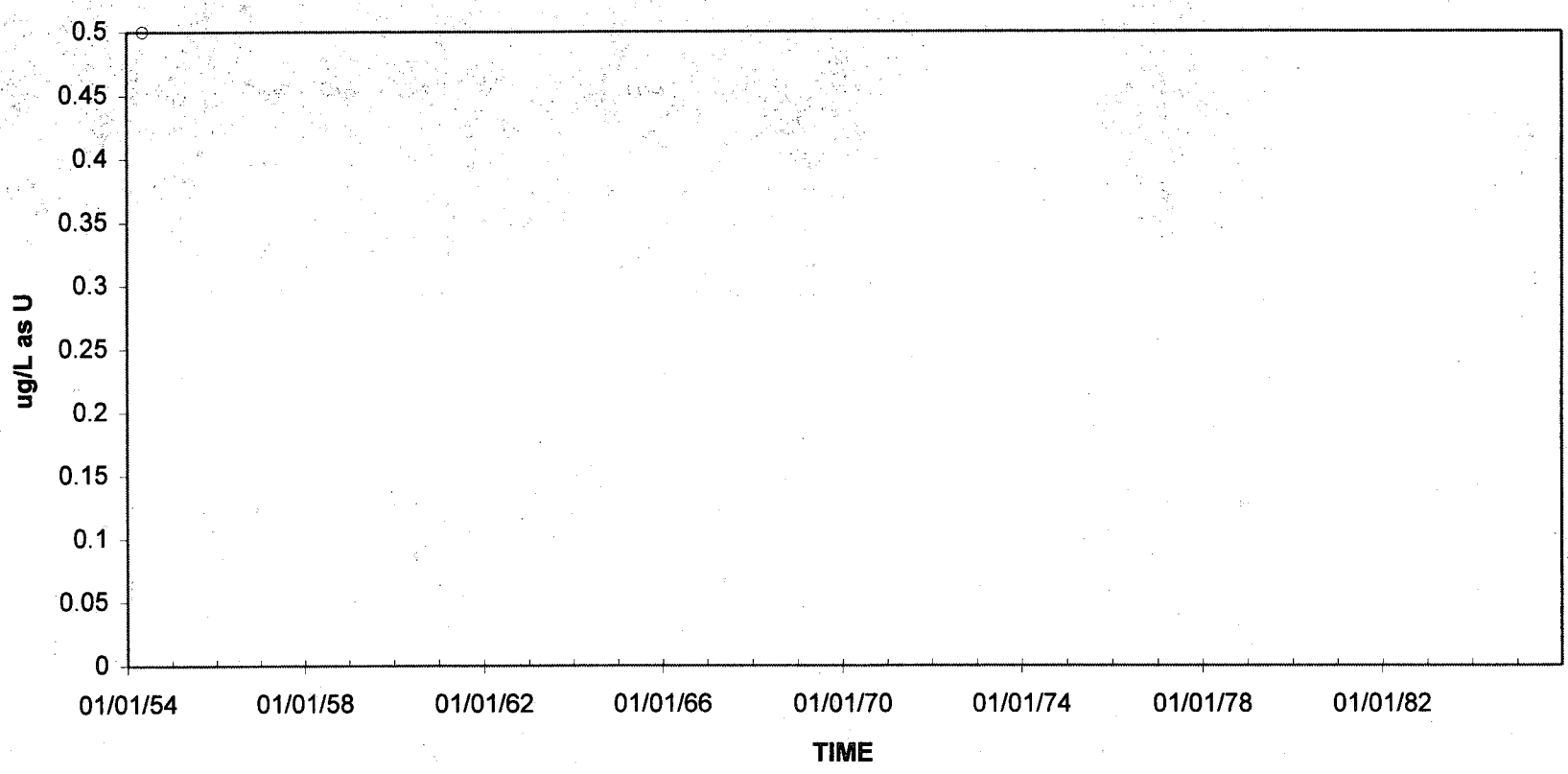
Figure
10.5.4-272



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
TURBIDITY
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

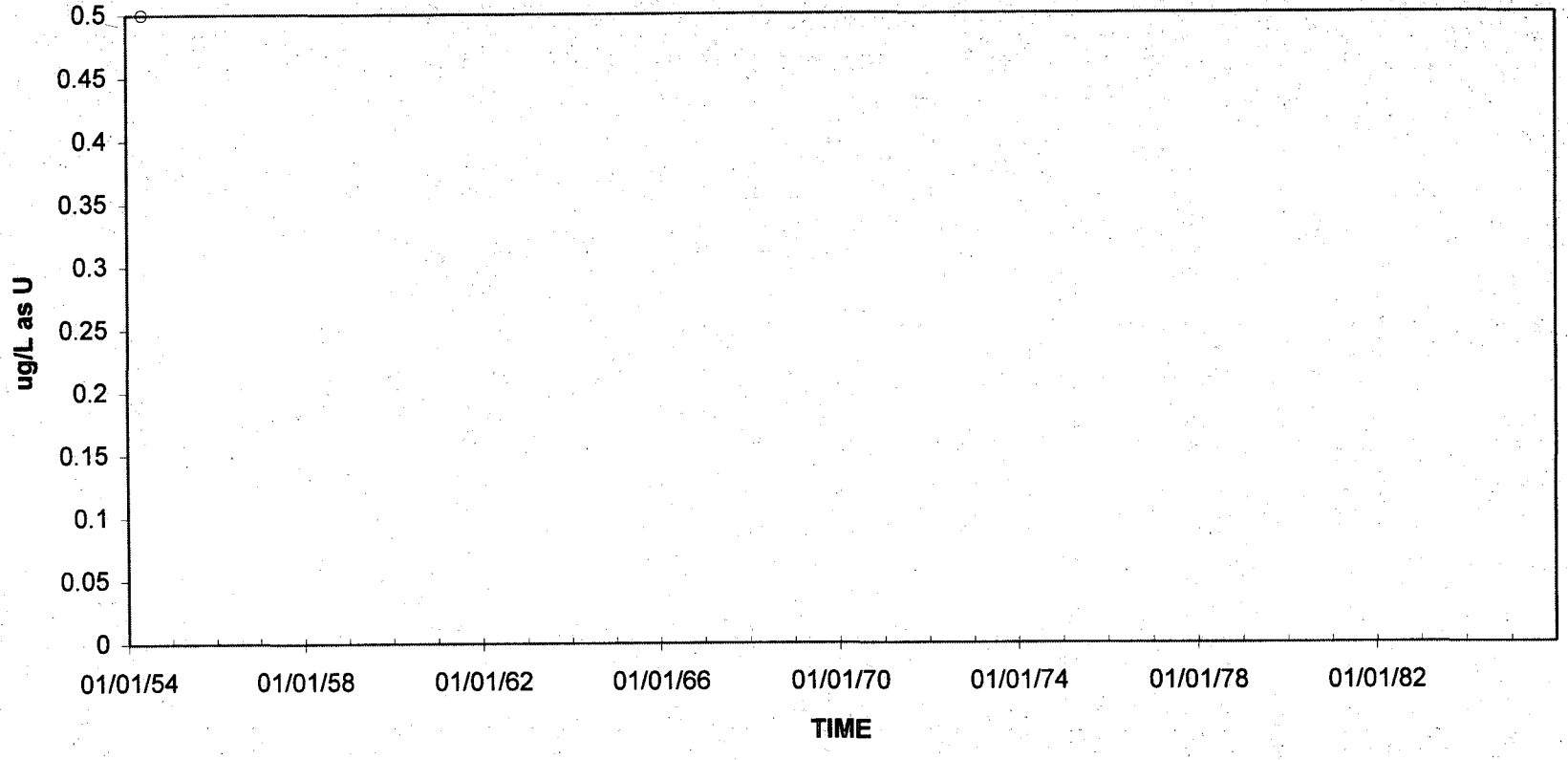
Figure
10.5.4–273



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
URANIUM, DISSOLVED EXTRACTION
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

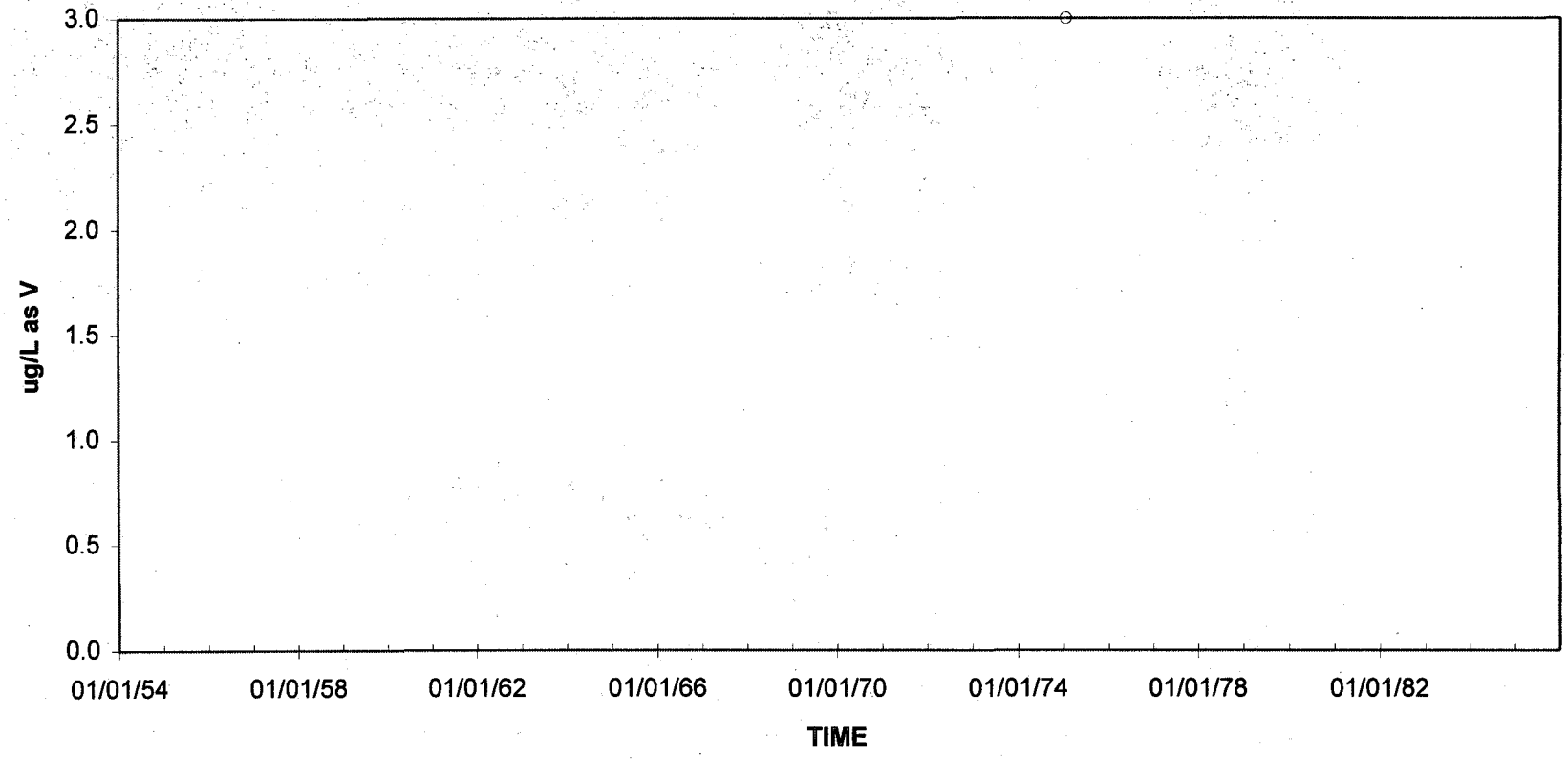
Figure
10.5.4-274



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
URANIUM, NATURAL DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

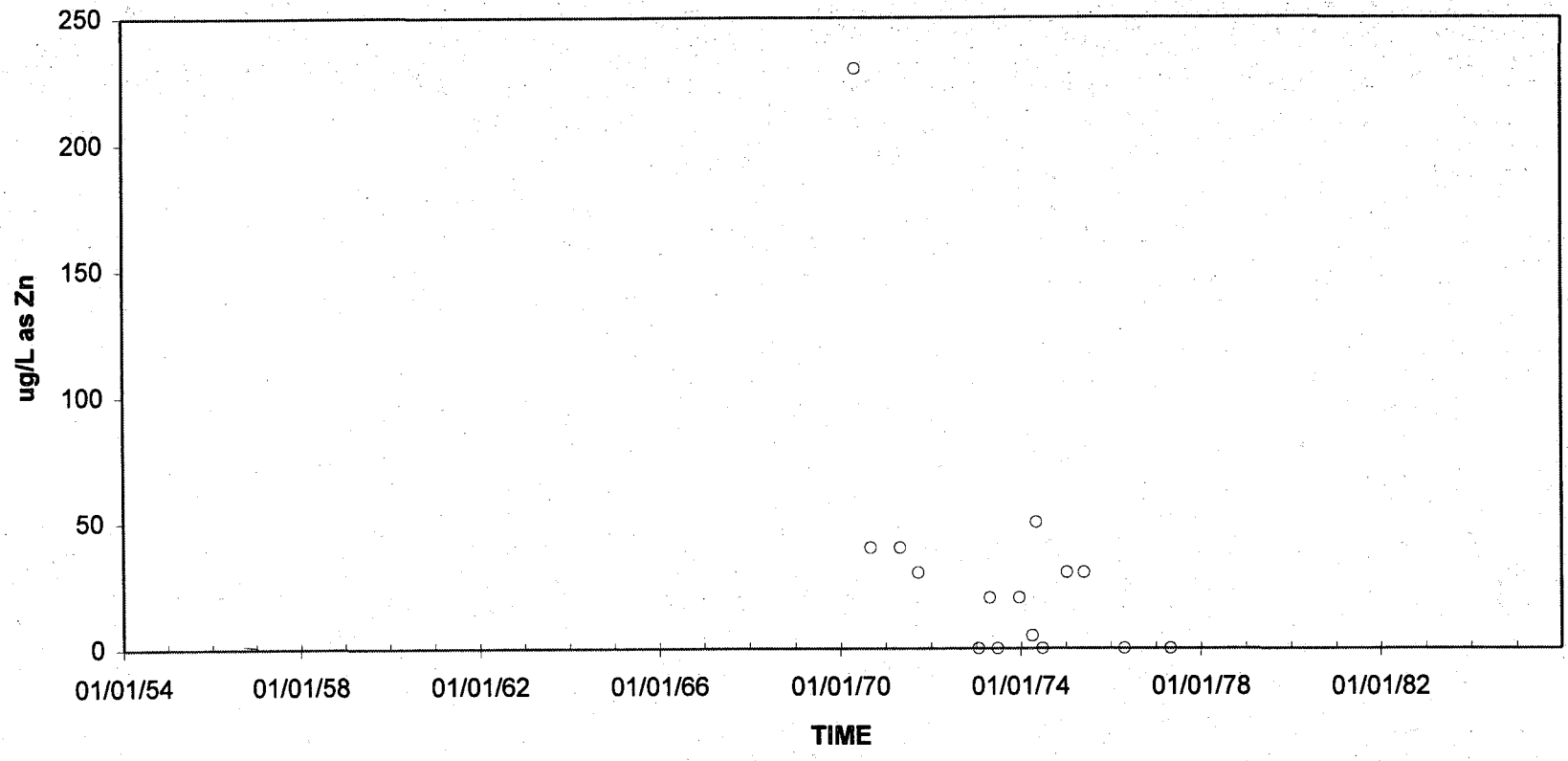
Figure
10.5.4–275



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
VANADIUM, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

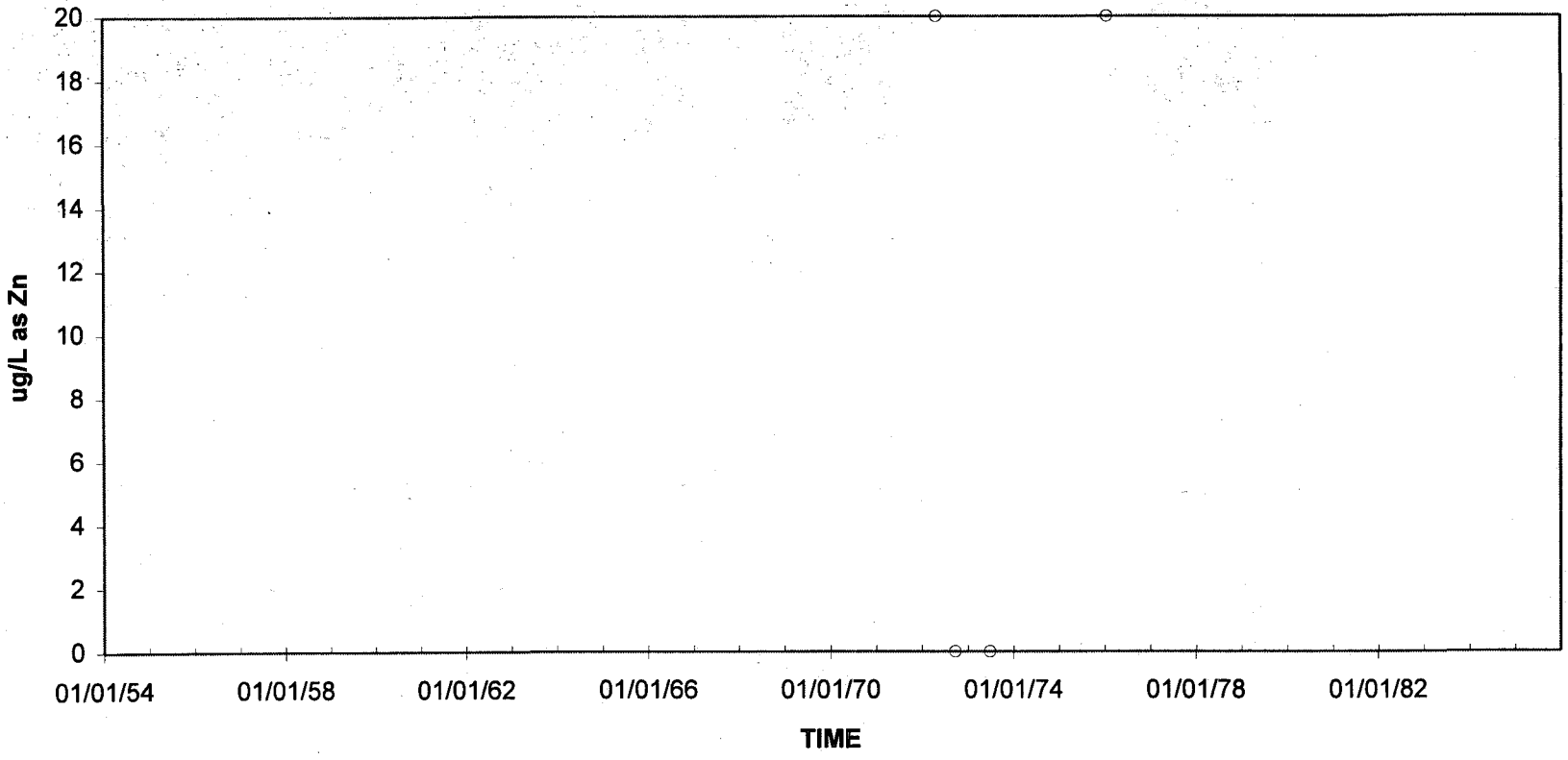
Figure
10.5.4–276



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
ZINC, DISSOLVED
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

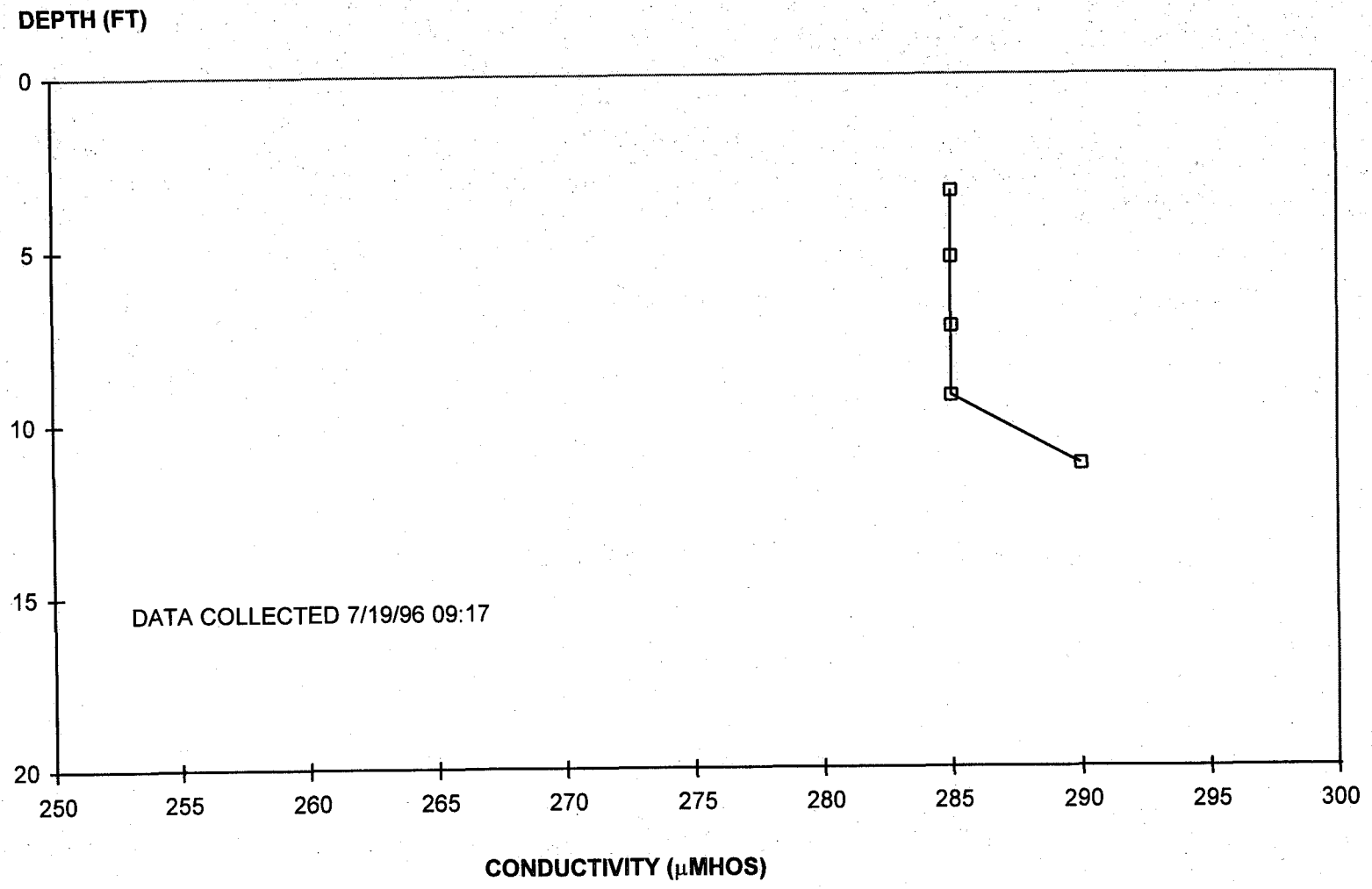
Figure
10.5.4–277



CITY OF TALLAHASSEE

ST. MARKS RIVER NEAR CRAWFORDVILLE, FLORIDA
USGS STATION NUMBER 02327000
ZINC, TOTAL RECOVERABLE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

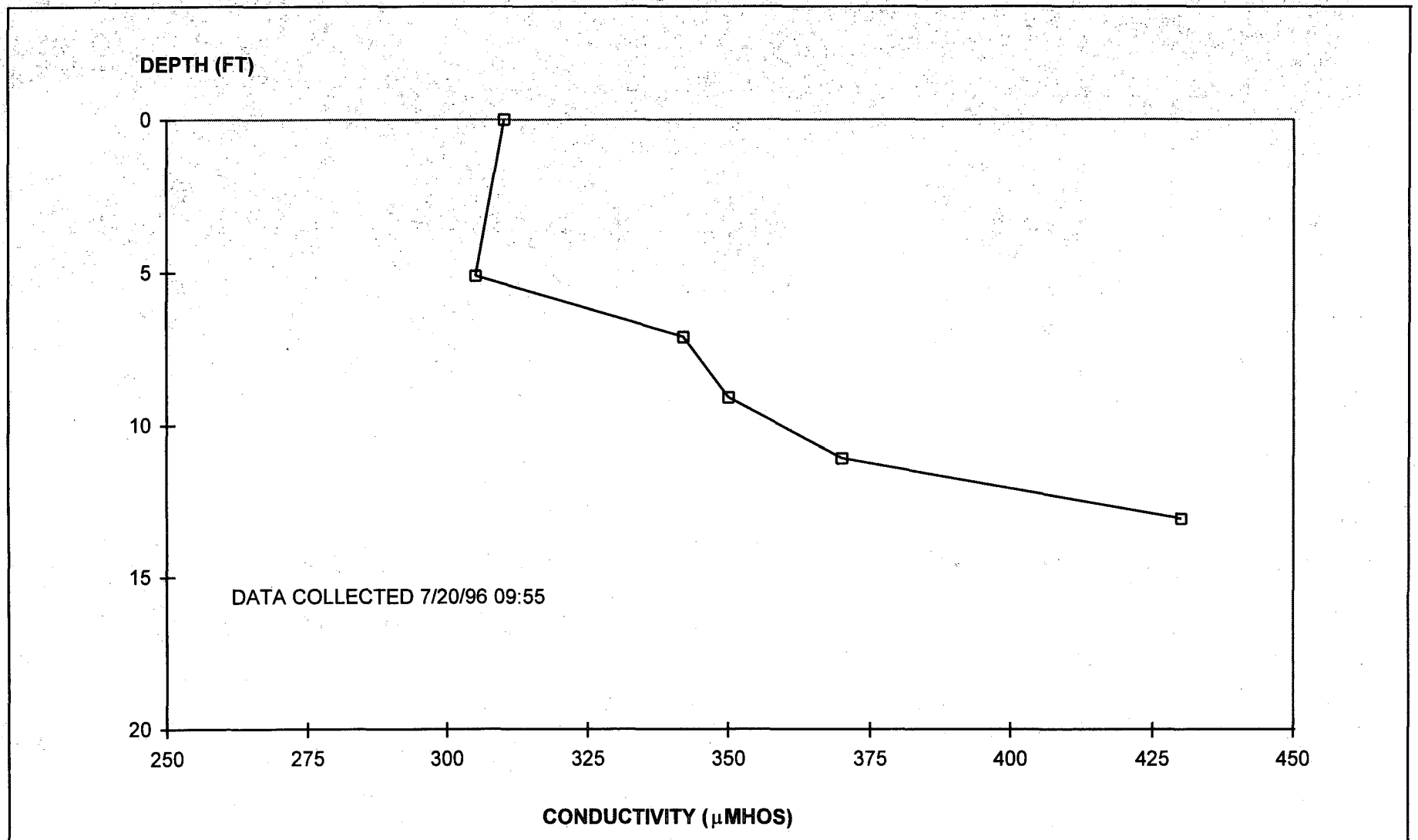
Figure
10.5.4–278



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

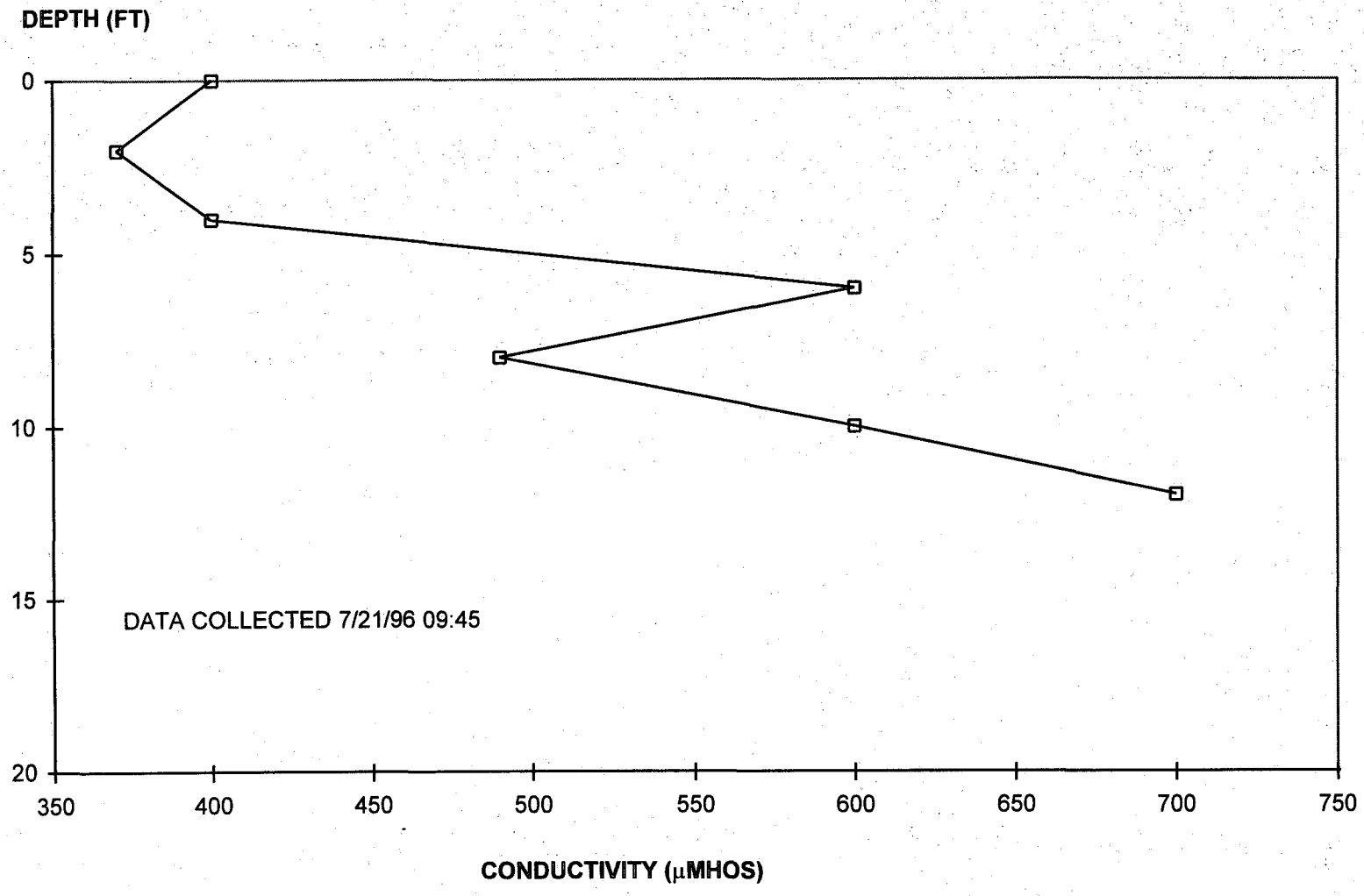
Figure
10.5.4-279



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

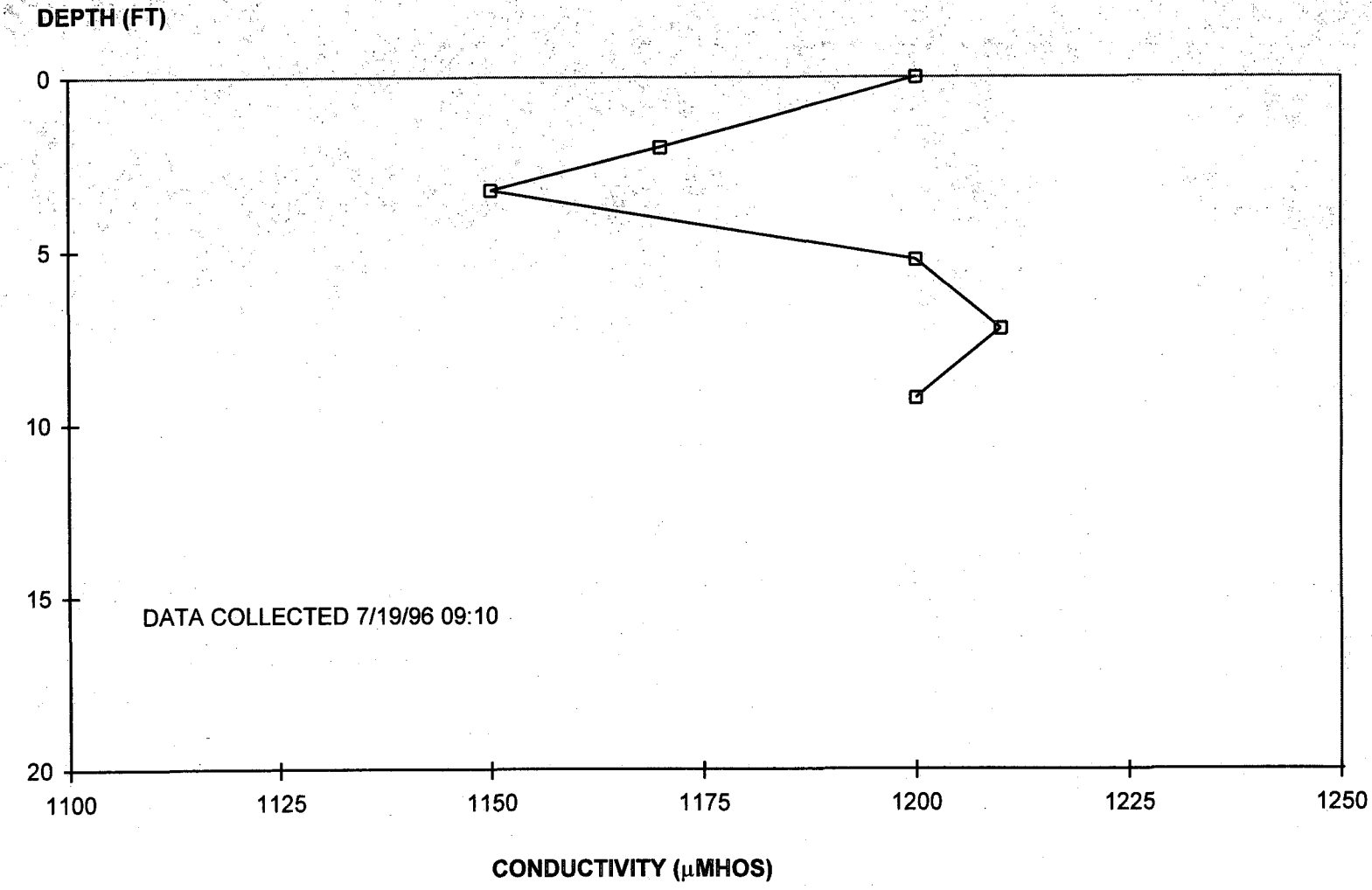
Figure
10.5.4-280



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

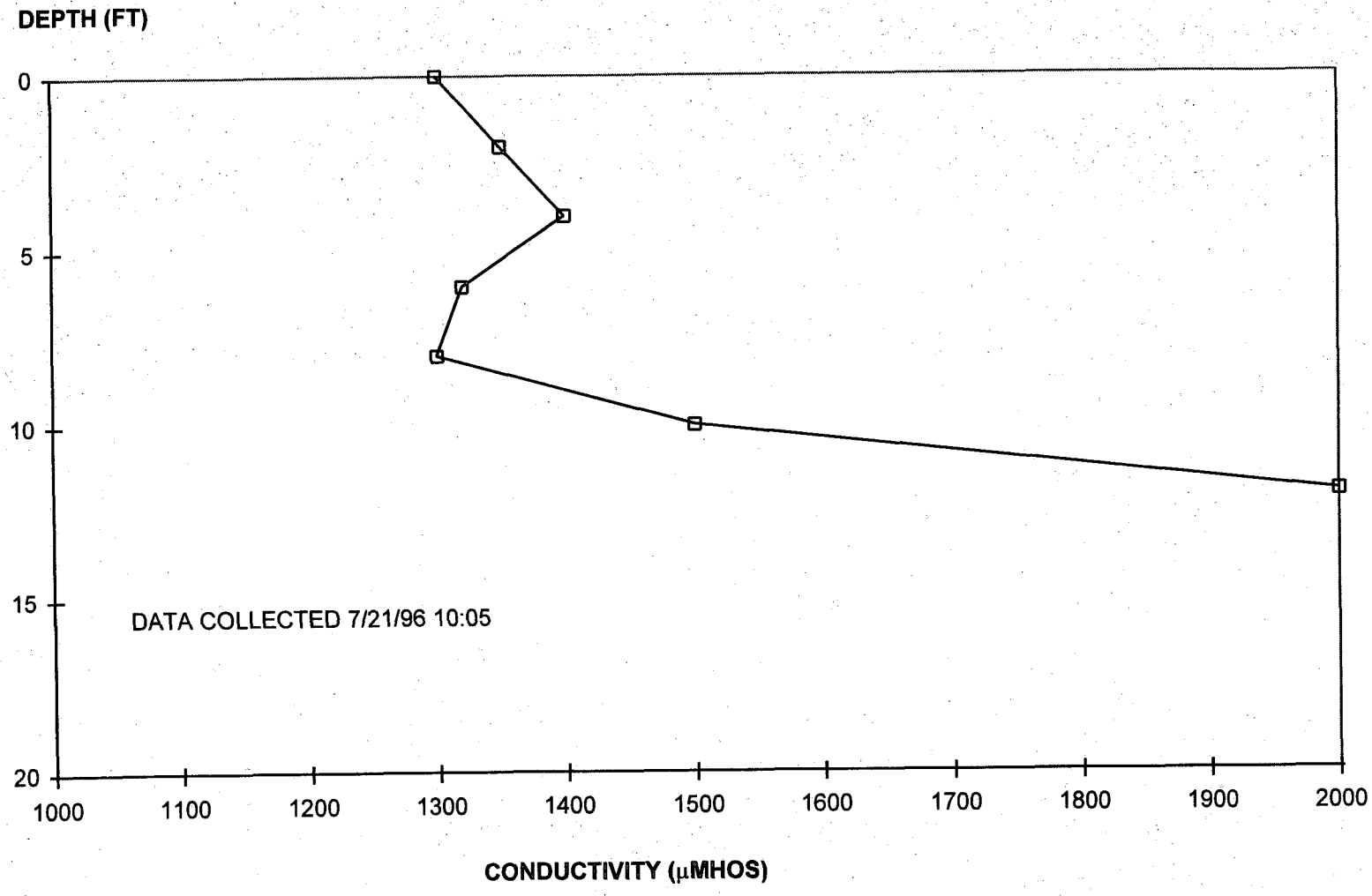
Figure
10.5.4-281



CITY OF TALLAHASSEE

LOCATION 2
WATER COLUMN CONDUCTIVITY PROFILE
AT UNIT 7 INTAKE STRUCTURE
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

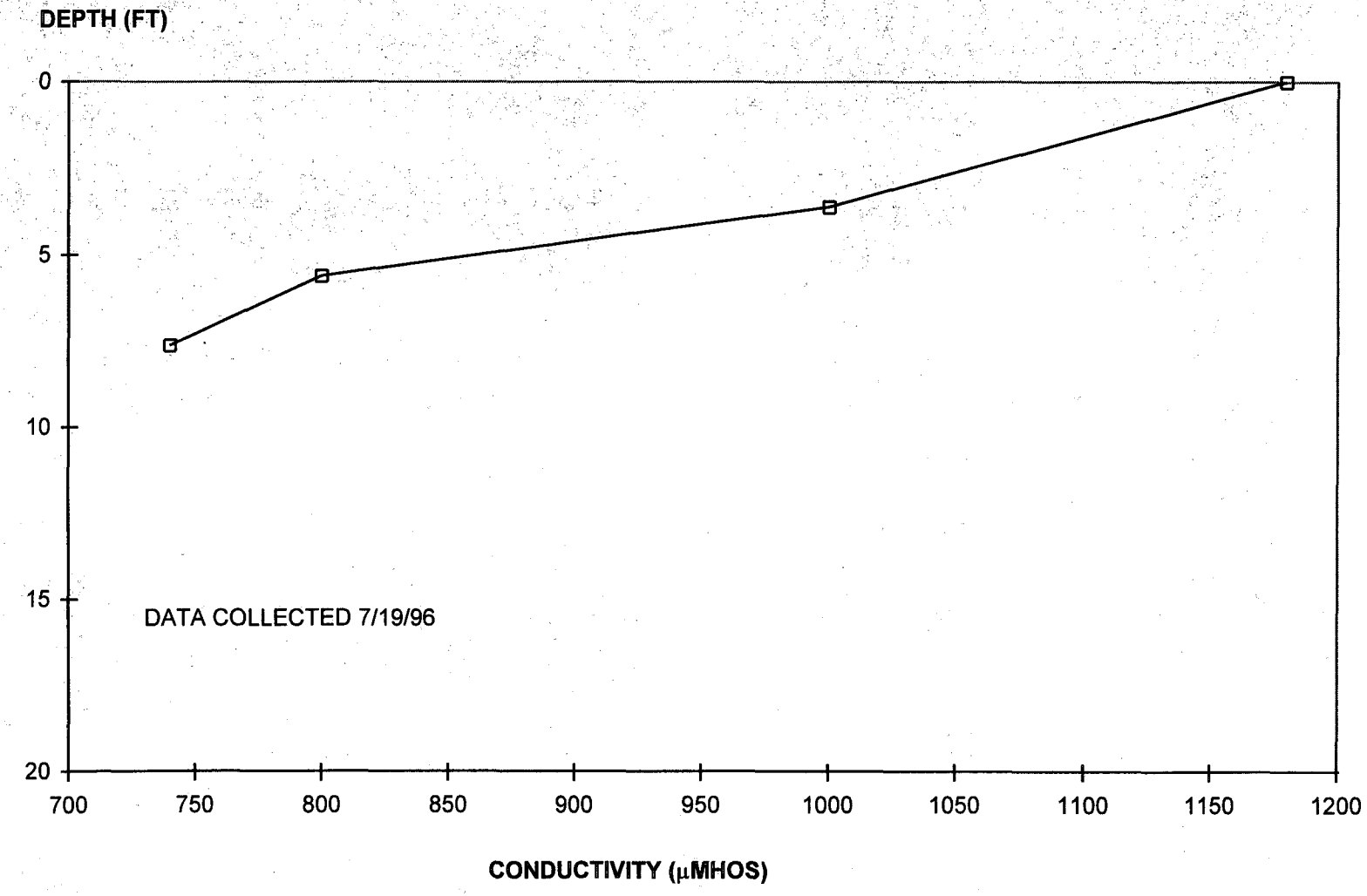
Figure
10.5.4-282



CITY OF TALLAHASSEE

LOCATION 2
WATER COLUMN CONDUCTIVITY PROFILE
AT UNIT 7 INTAKE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

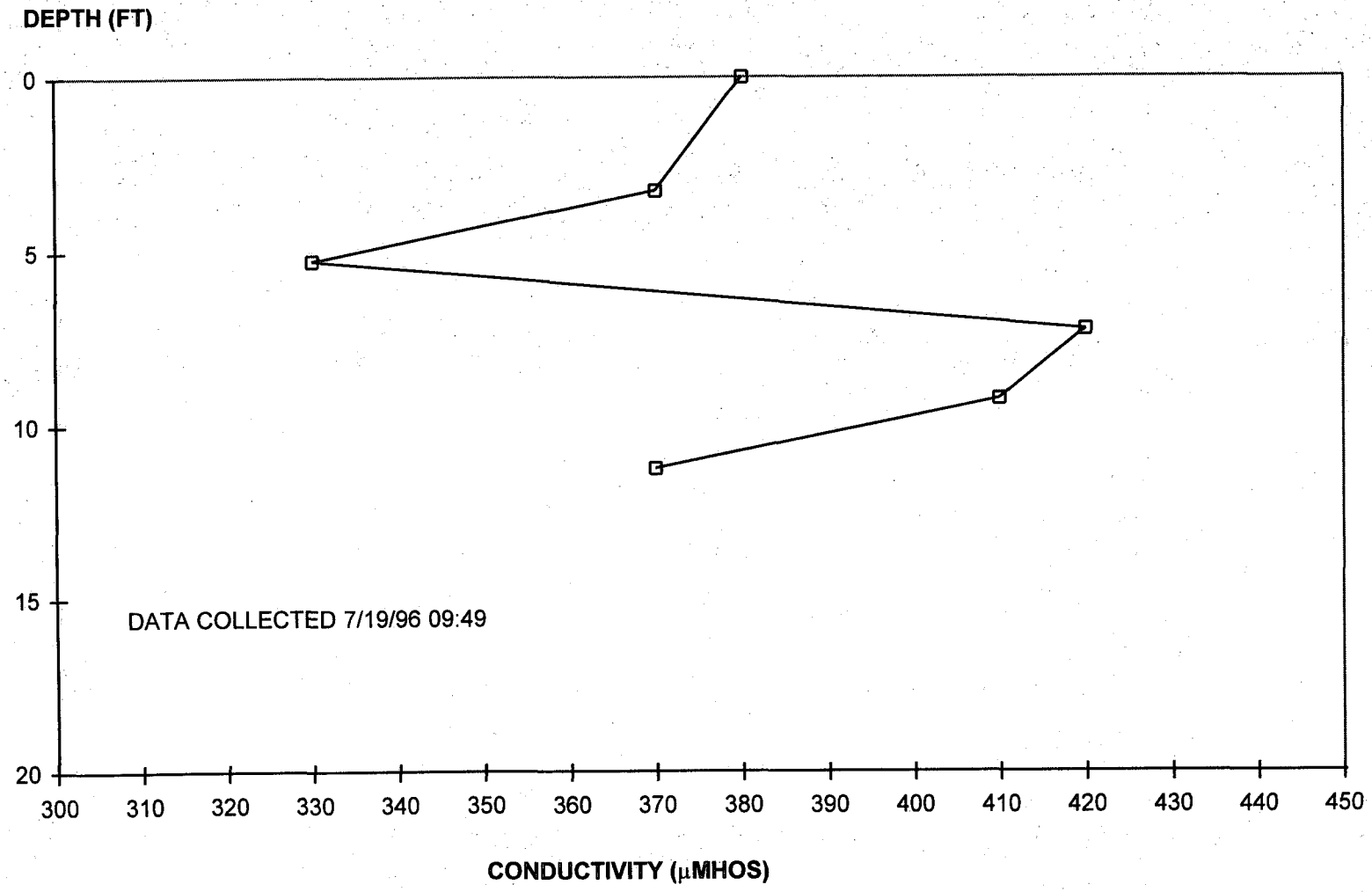
Figure
10.5.4-283



CITY OF TALLAHASSEE

LOCATION 3
WATER COLUMN CONDUCTIVITY PROFILE
AT OPENING OF INTAKE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

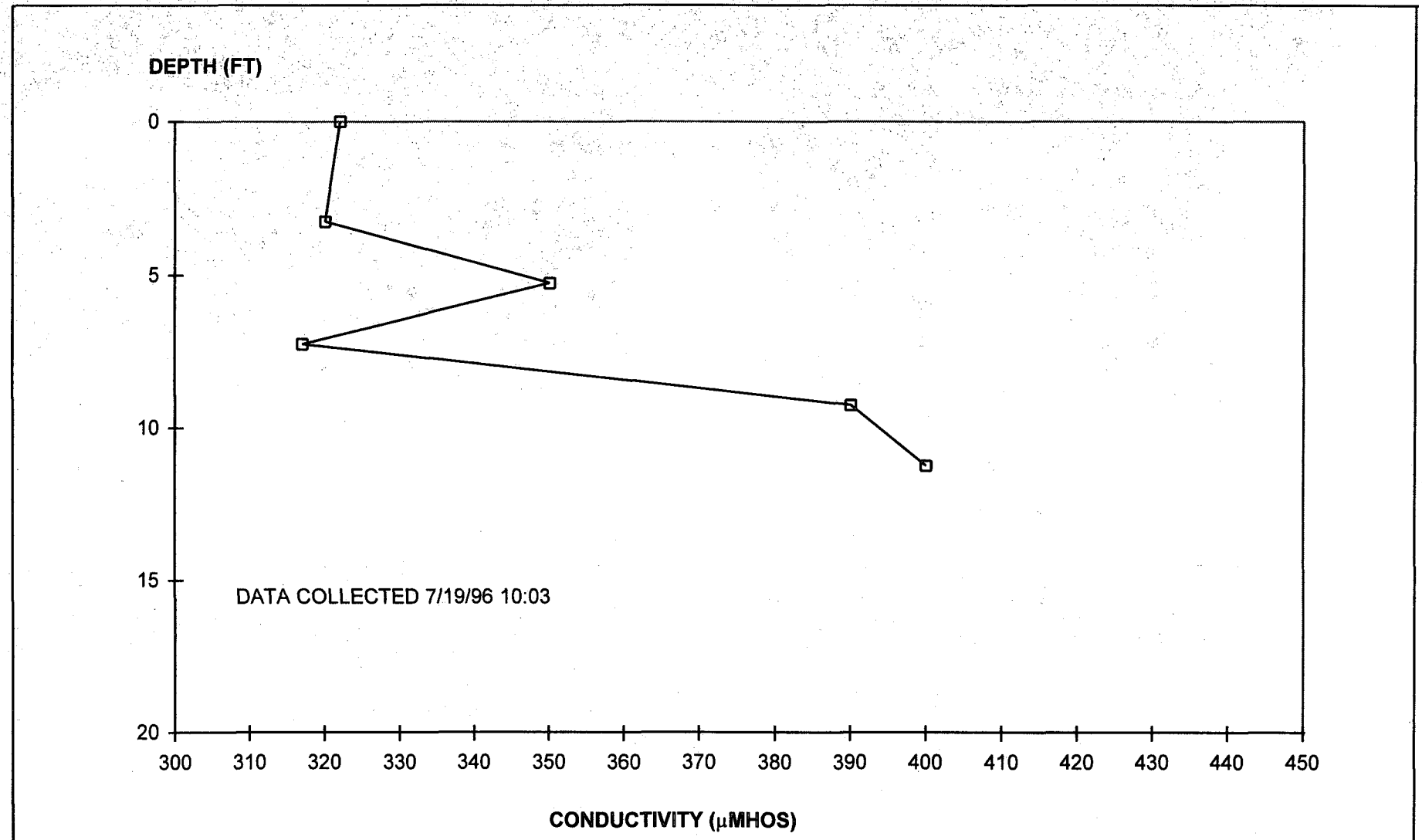
Figure
10.5.4-284



CITY OF TALLAHASSEE

LOCATION 4
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, AT UNIT 5 INTAKE STRUCTURE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

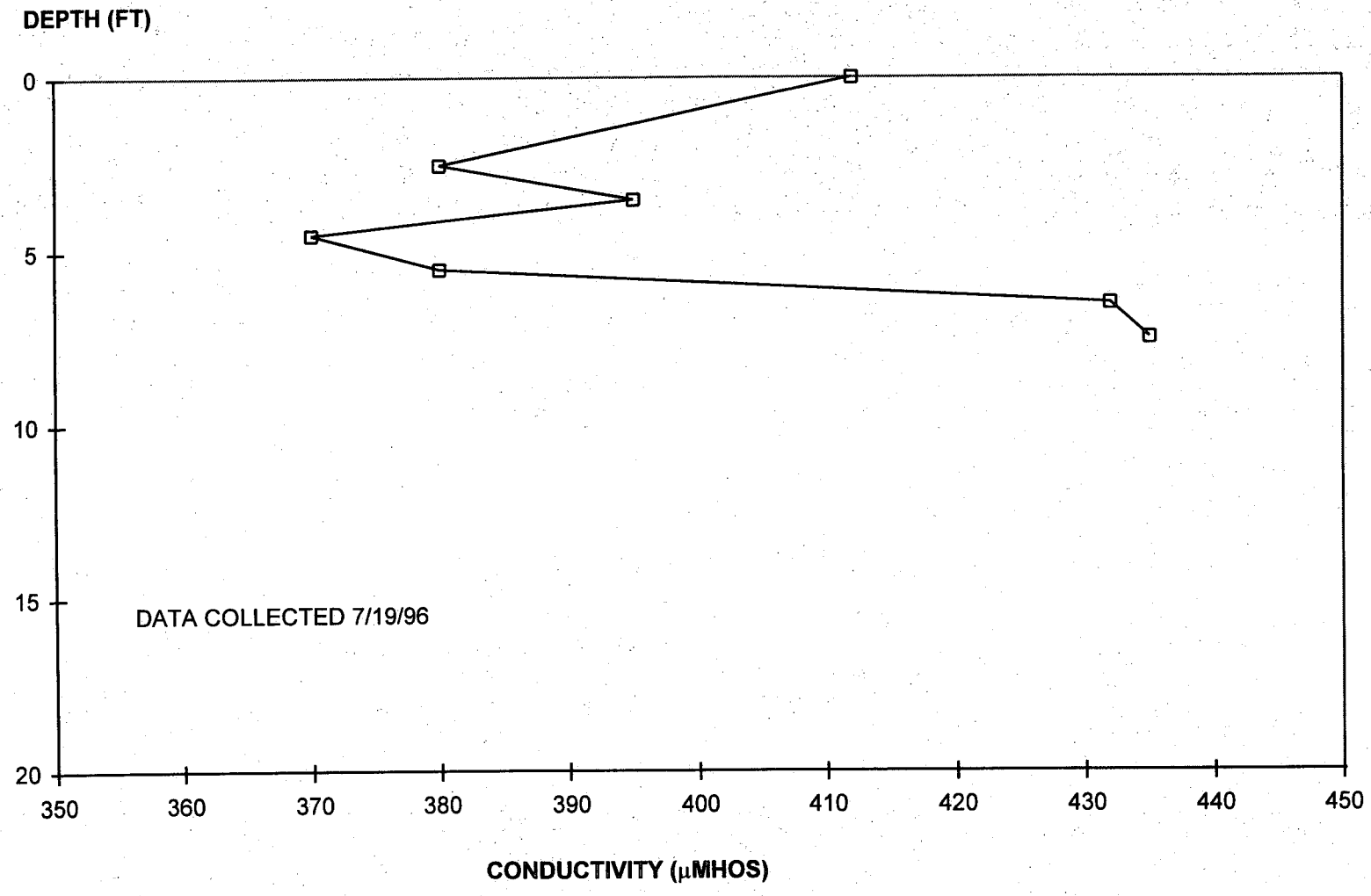
Figure
10.5.4–285



CITY OF TALLAHASSEE

LOCATION 5
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, BELOW INTAKE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

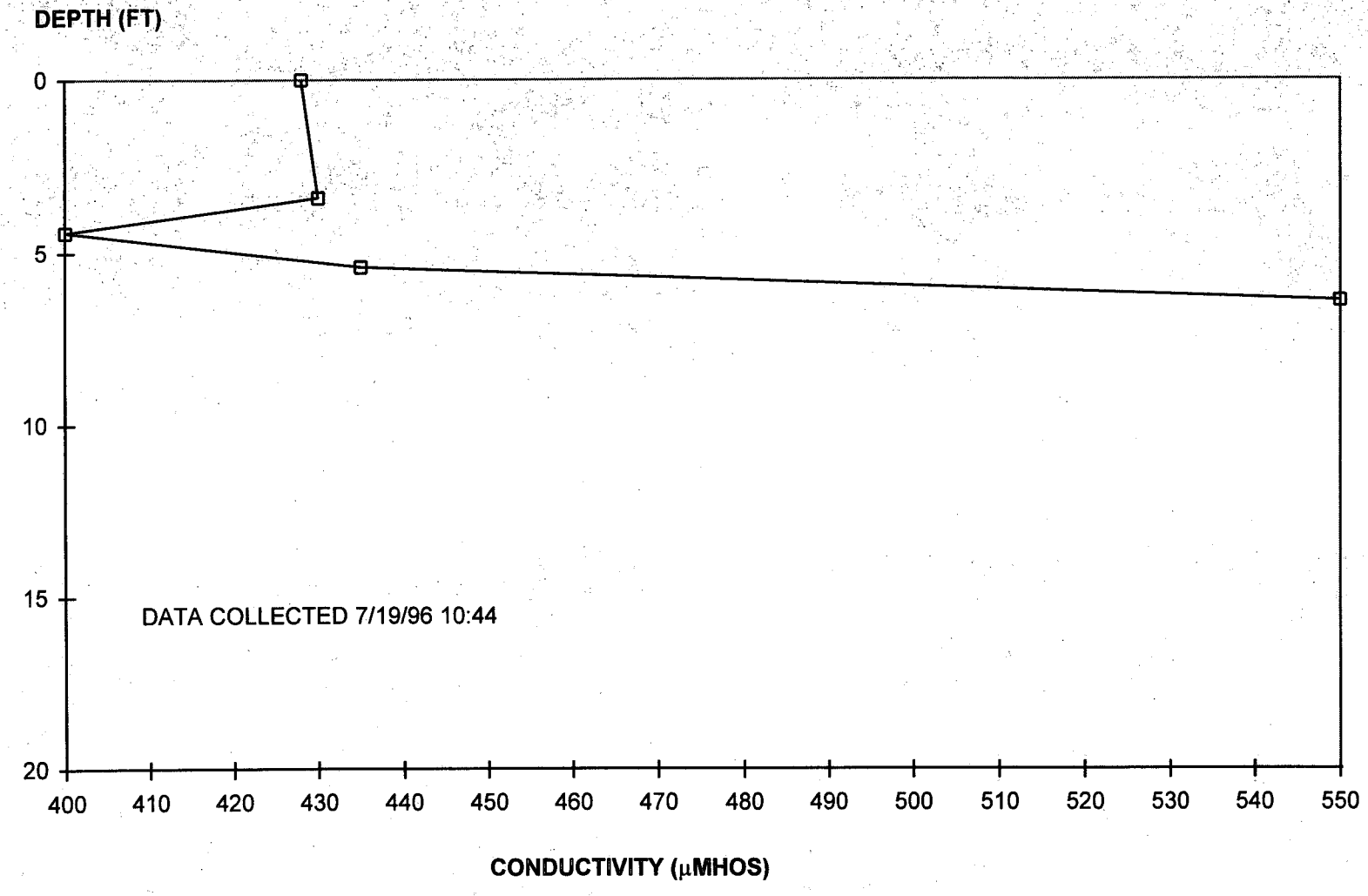
Figure
10.5.4–286



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN CONDUCTIVITY PROFILE
AT UNIT 5 DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

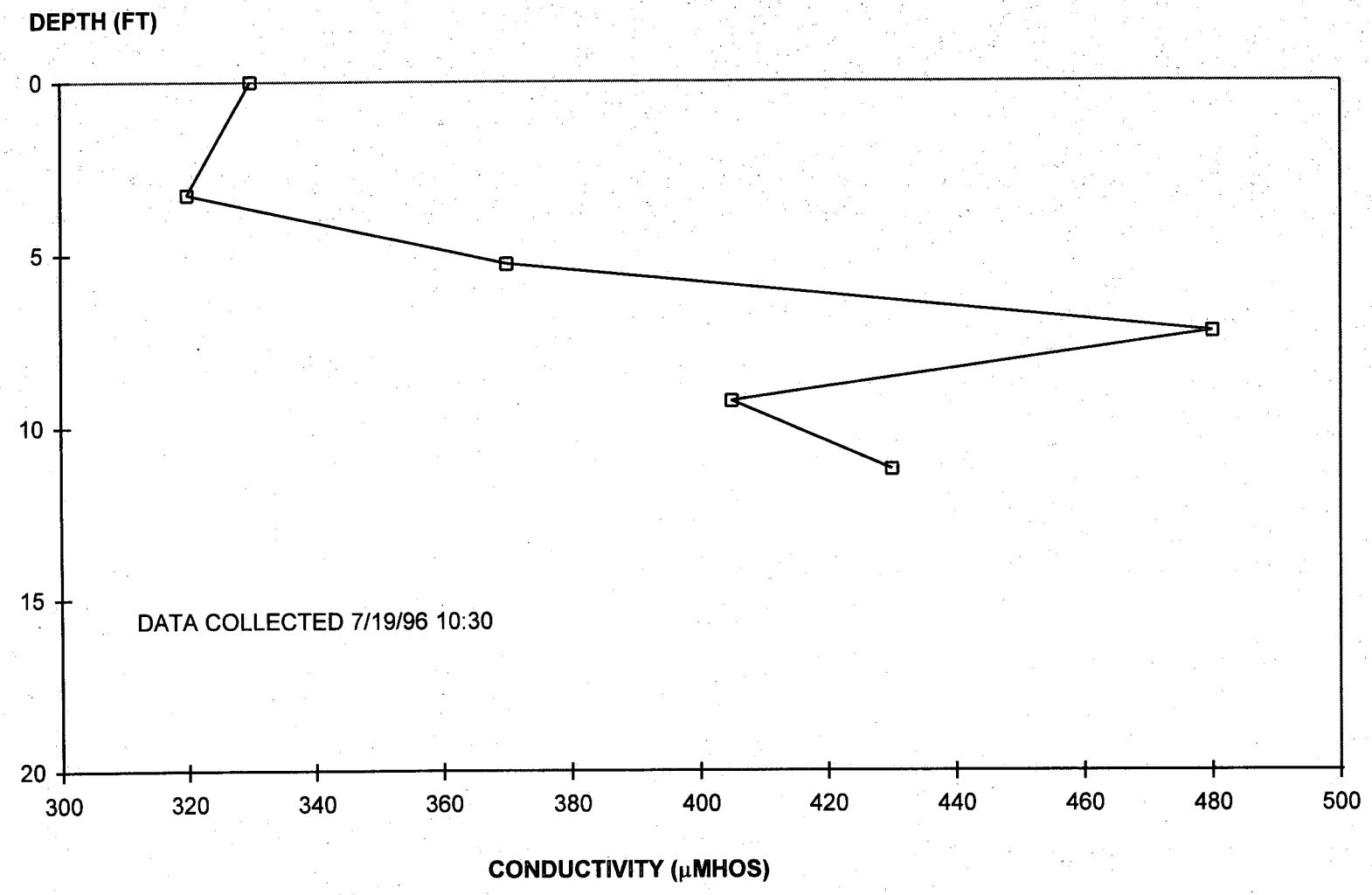
Figure
10.5.4–287



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, AT UNIT 5 DISCHARGE, BETWEEN DISCHARGE/MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

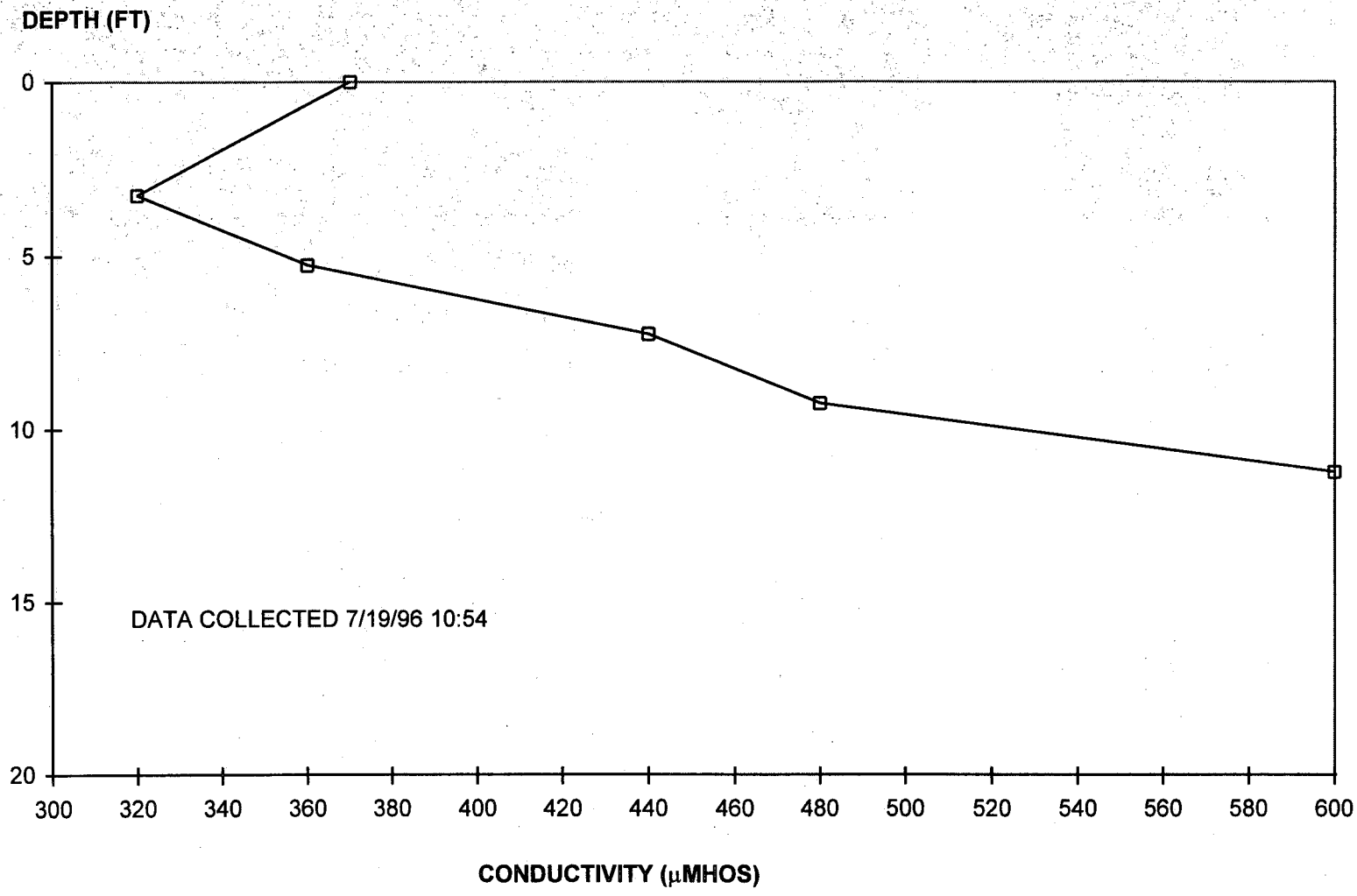
Figure
10.5.4-288



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, AT UNIT 5 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

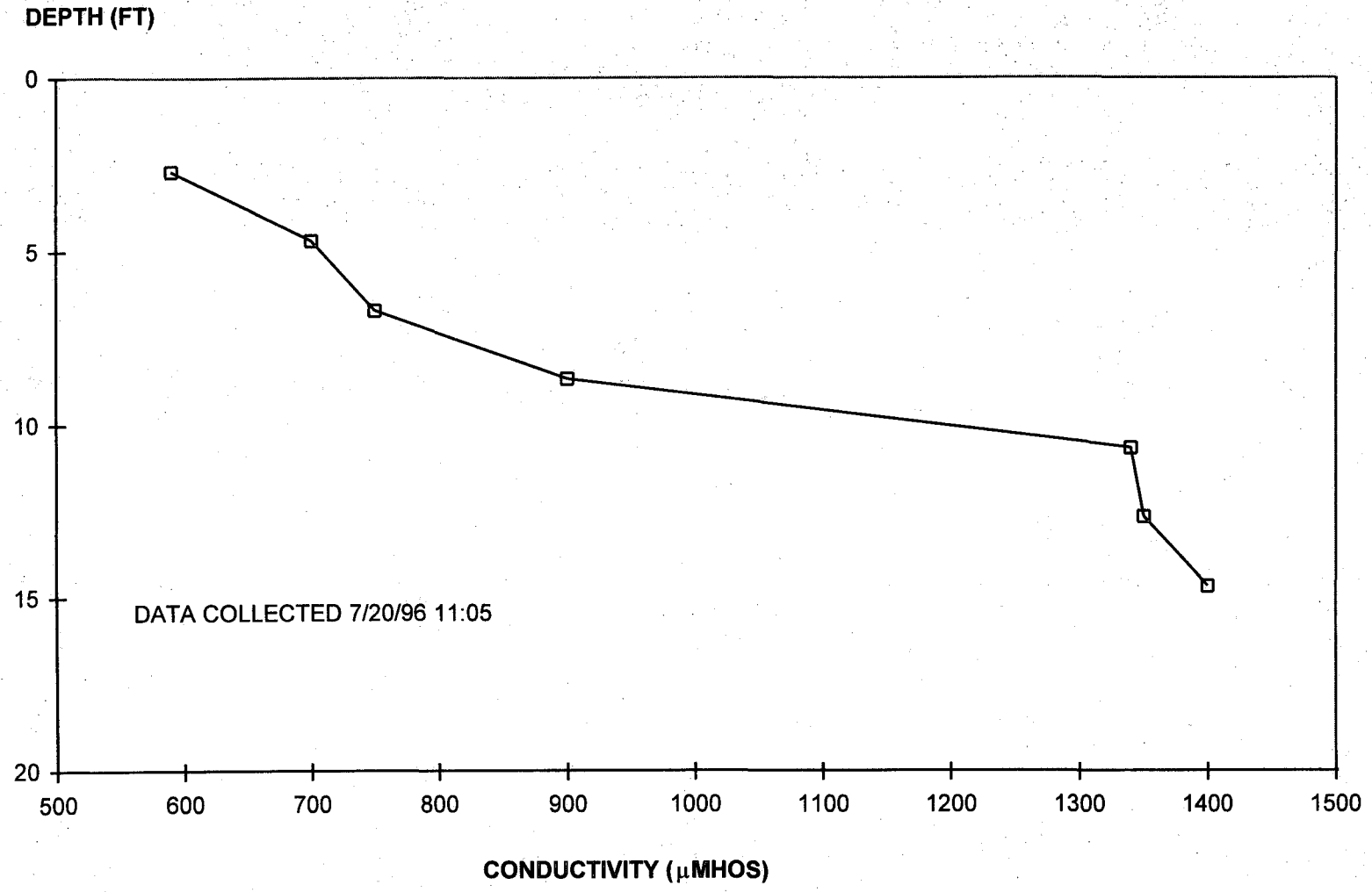
Figure
10.5.4-289



CITY OF TALLAHASSEE

LOCATION 7
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 5 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

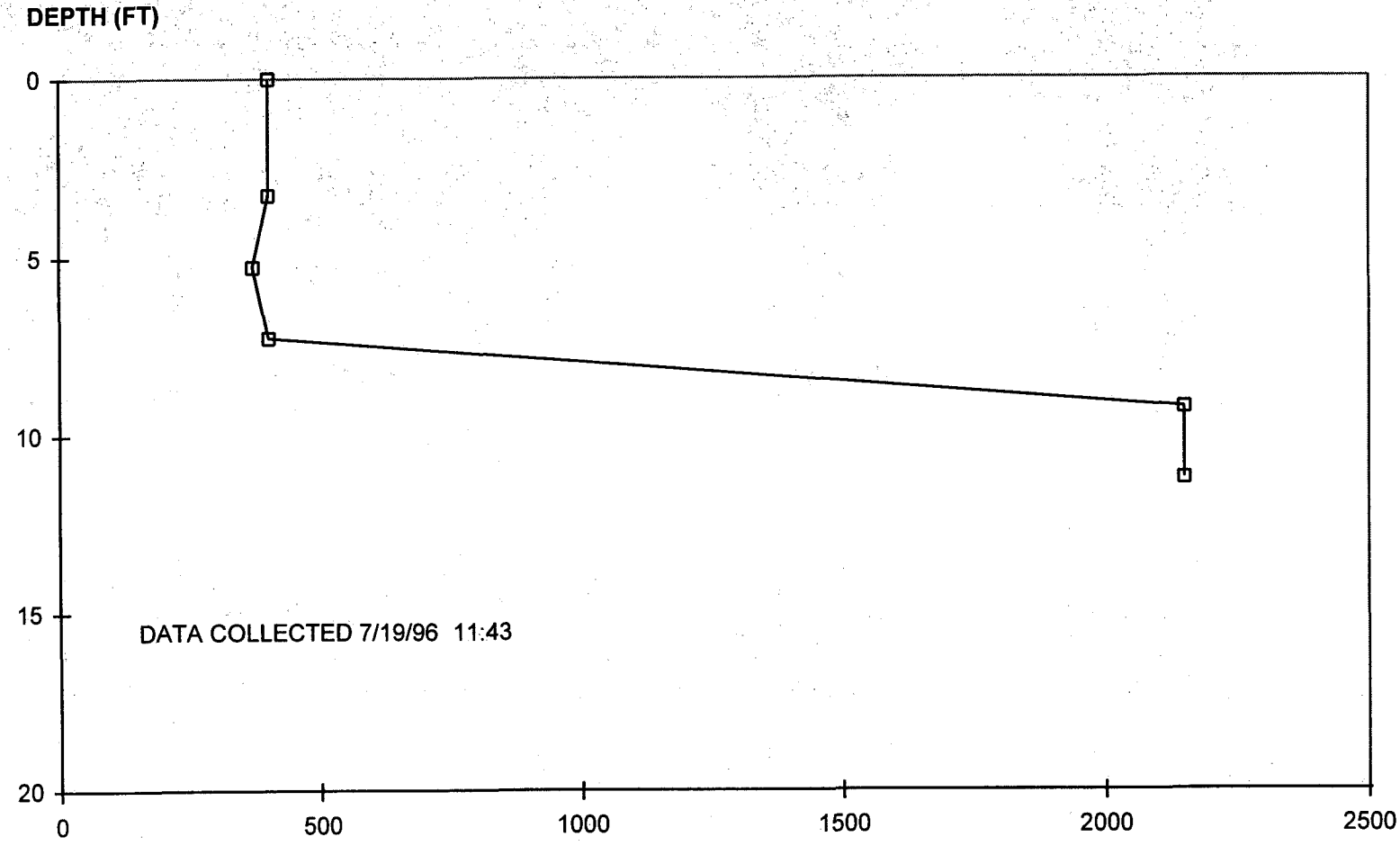
Figure
10.5.4-290



CITY OF TALLAHASSEE

LOCATION 7
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 5 DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

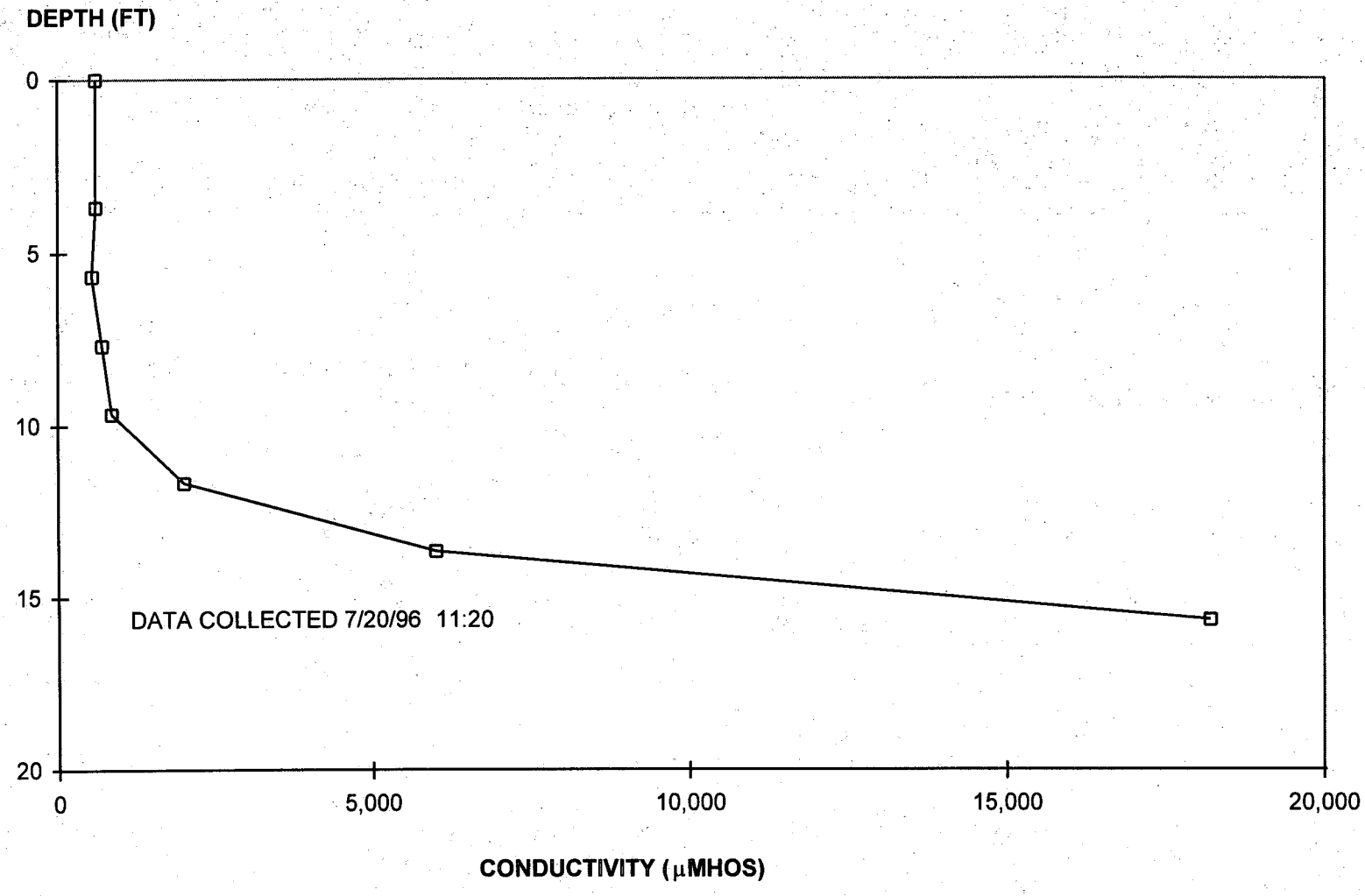
Figure
10.5.4–291



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

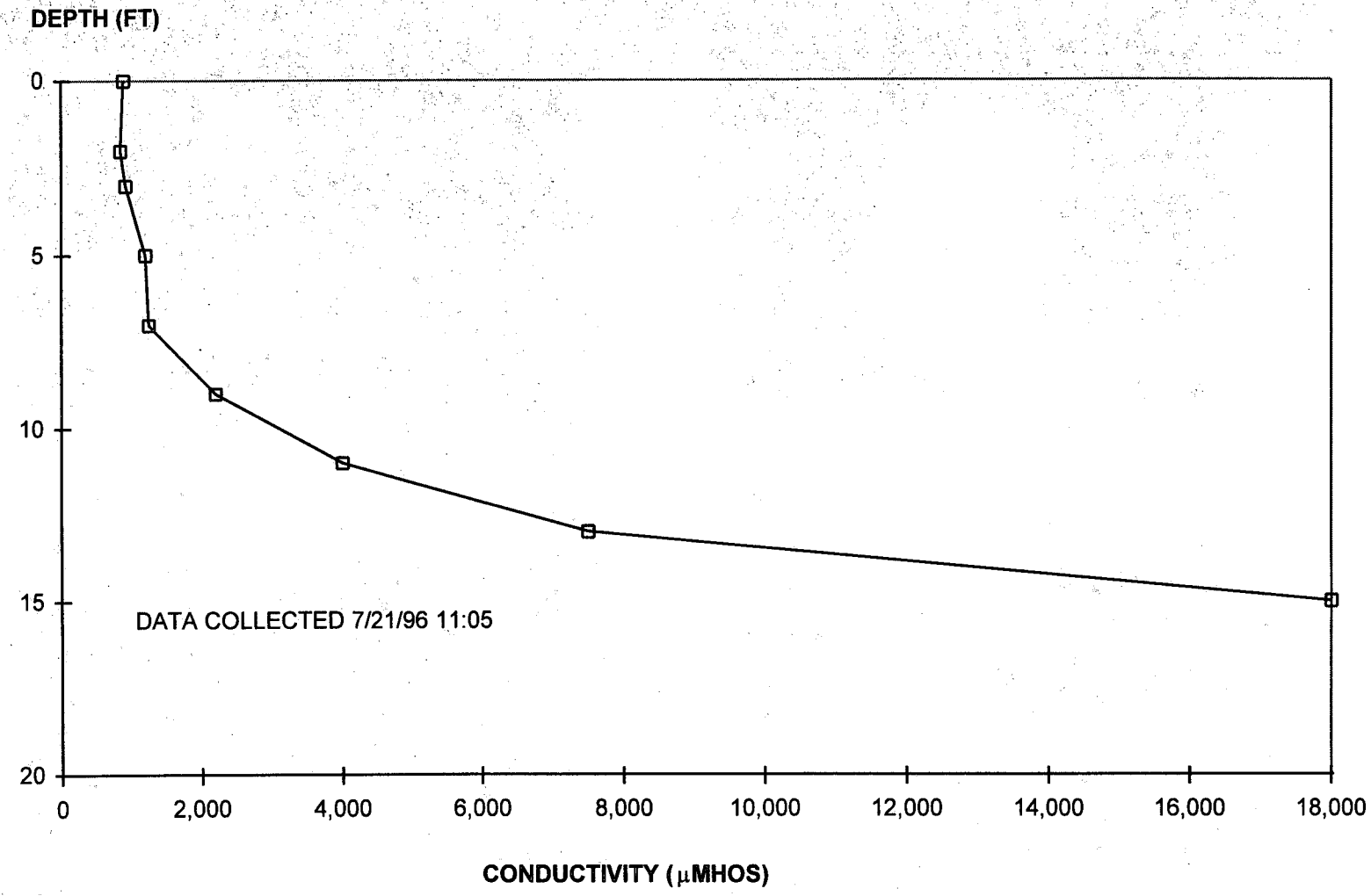
Figure
10.5.4-292



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

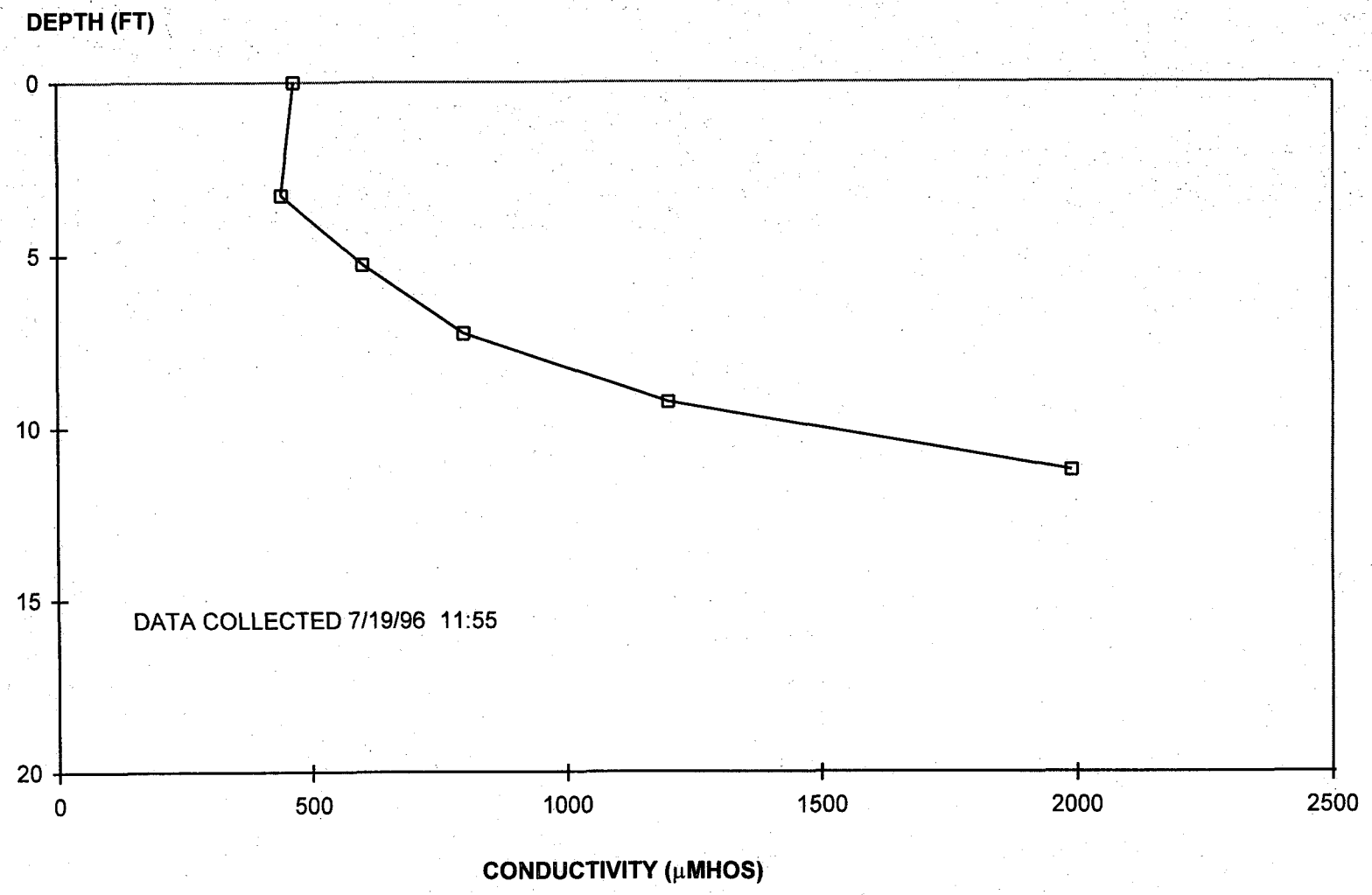
Figure
10.5.4-293



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

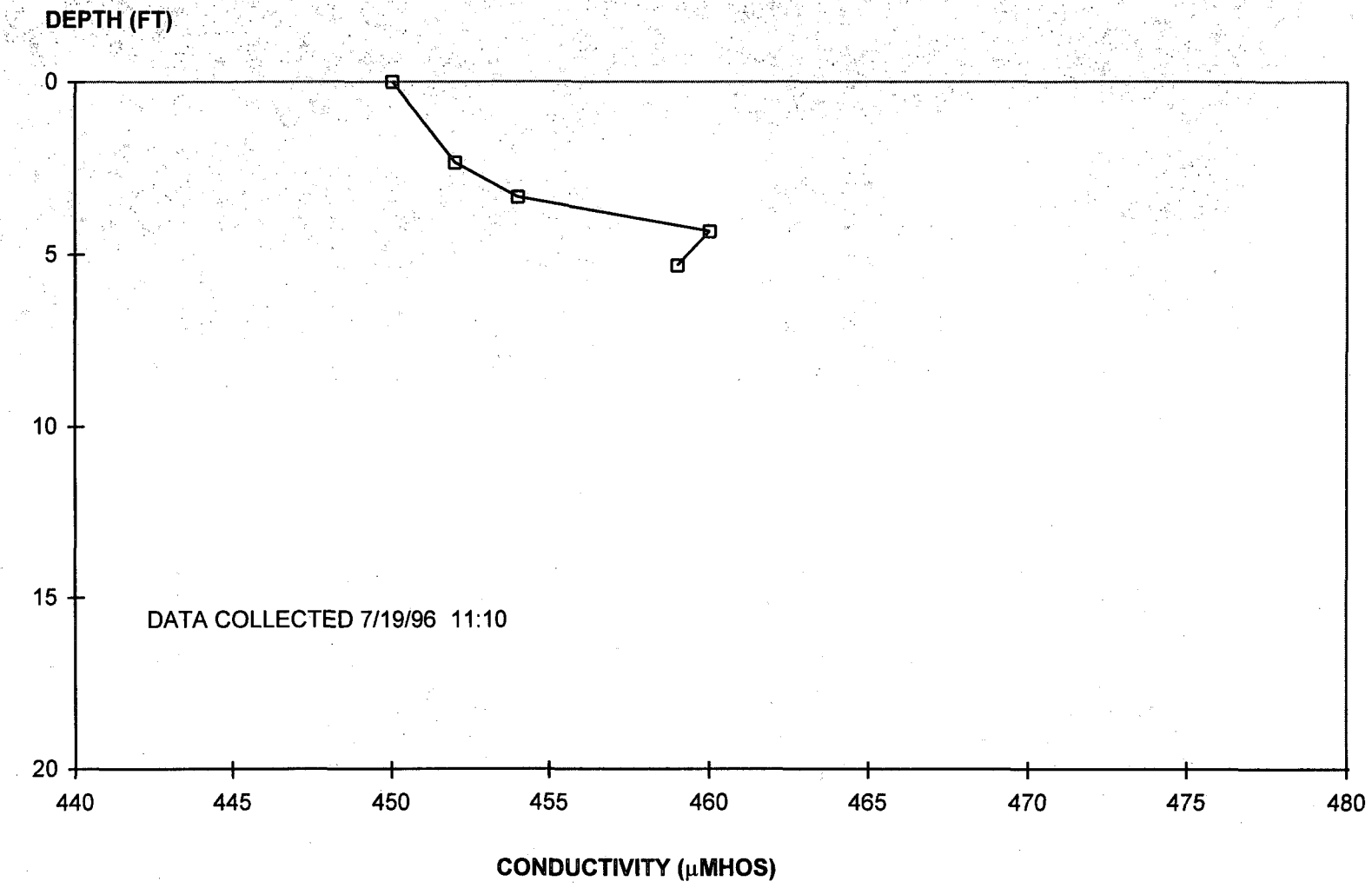
Figure
10.5.4-294



CITY OF TALLAHASSEE

LOCATION 9
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, SHIELD'S MARINA, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

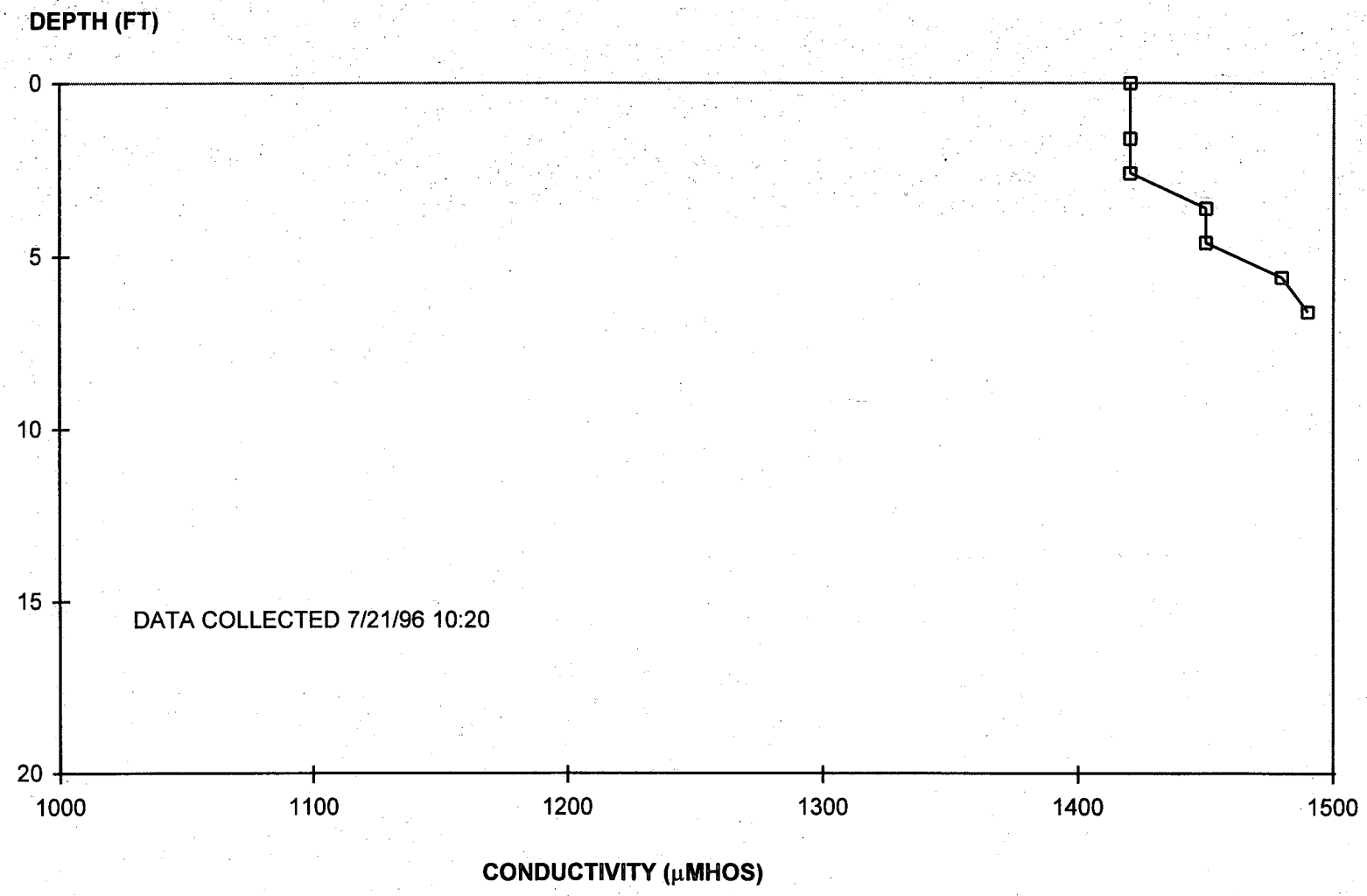
Figure
10.5.4-295



CITY OF TALLAHASSEE

LOCATION 10
WATER COLUMN CONDUCTIVITY PROFILE
AT UNITS 6/7 DISCHARGE, IMMEDIATELY DOWNSTREAM OF DISCHARGE POINT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

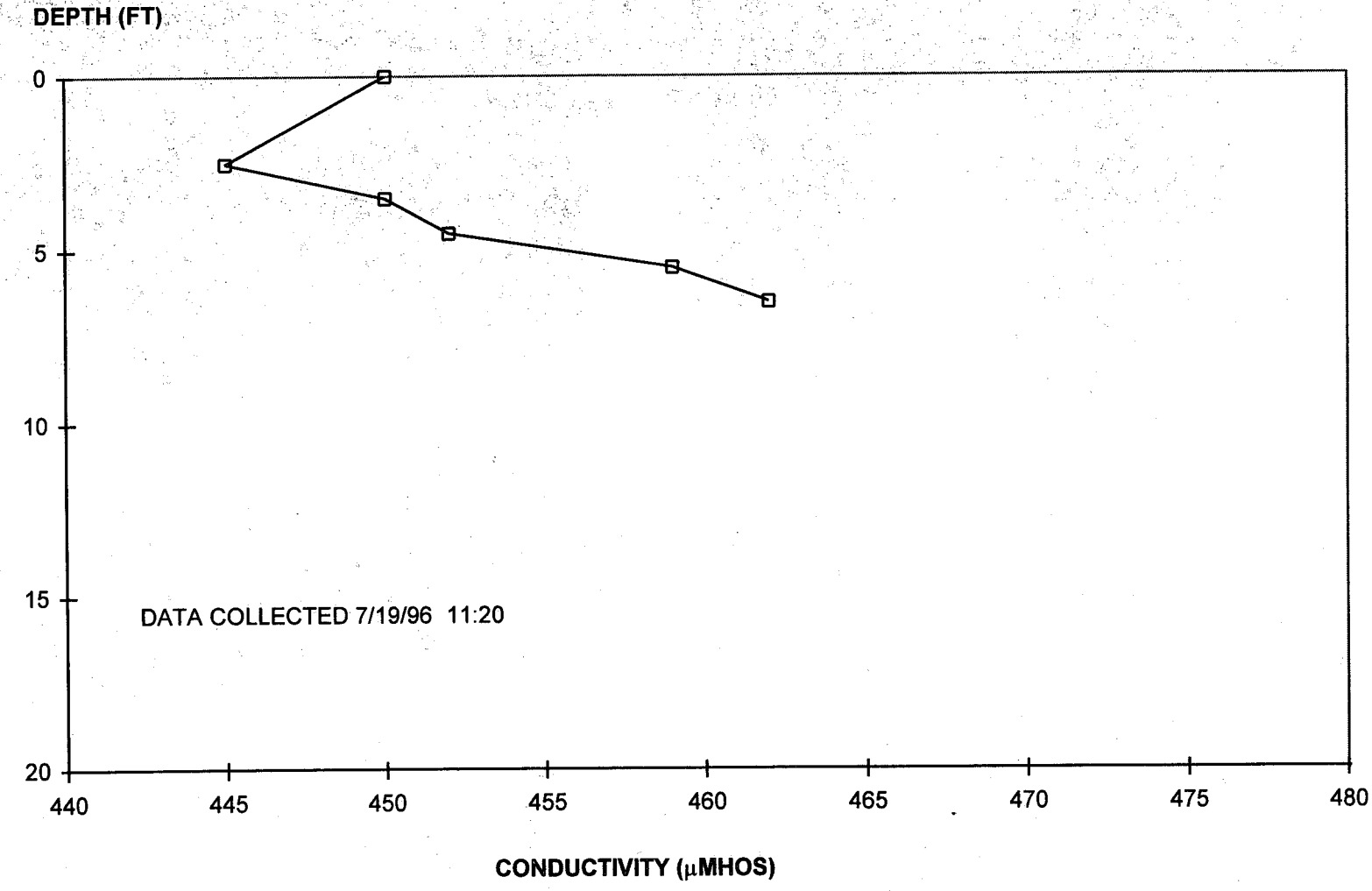
Figure
10.5.4–296



CITY OF TALLAHASSEE

LOCATION 10
WATER COLUMN CONDUCTIVITY PROFILE
AT UNITS 6/7 DISCHARGE, IMMEDIATELY DOWNSTREAM OF DISCHARGE POINT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

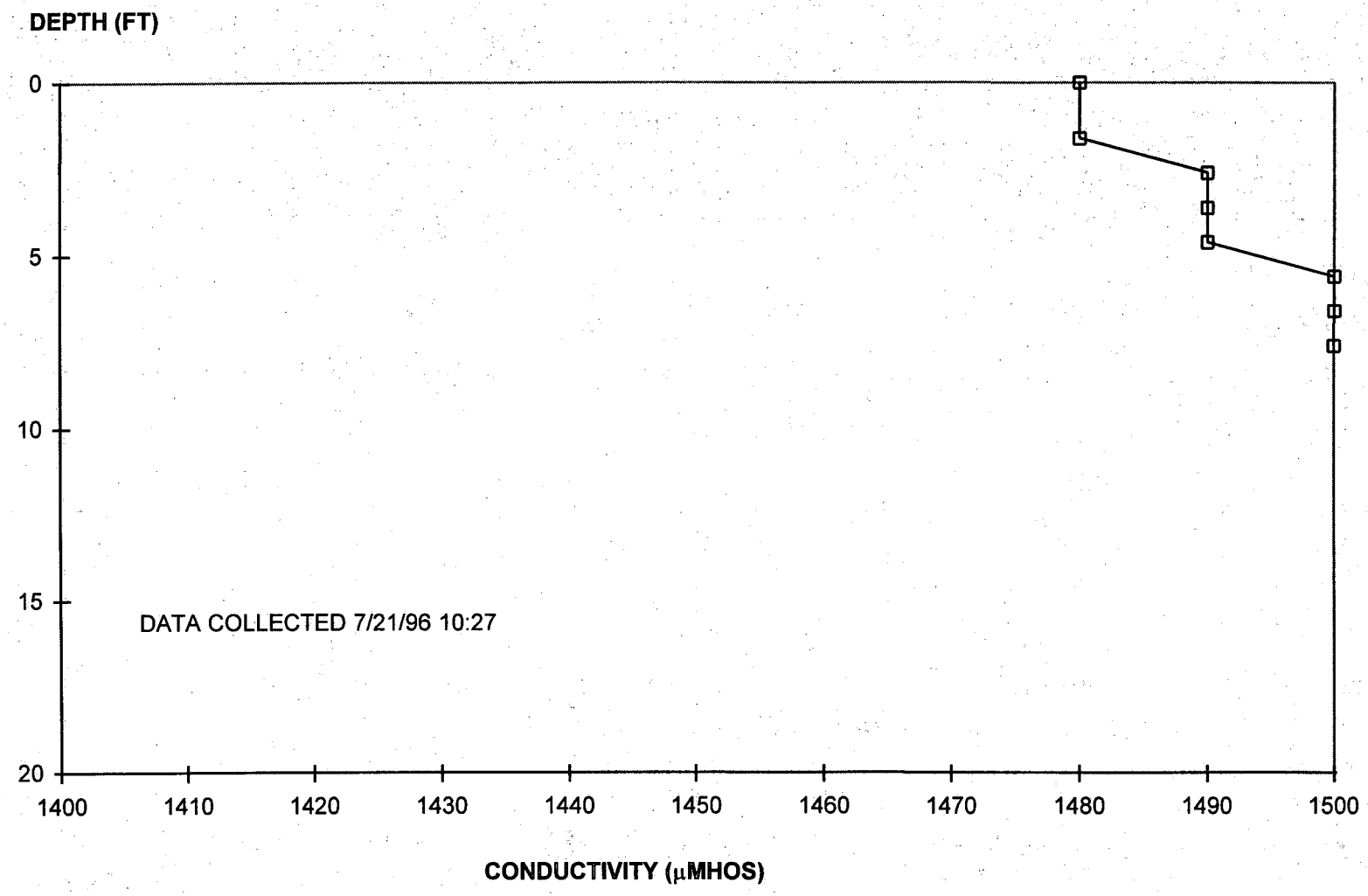
Figure
10.5.4–297



CITY OF TALLAHASSEE

LOCATION 11
WATER COLUMN CONDUCTIVITY PROFILE
AT UNITS 6/7 DISCHARGE, PRIOR TO BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

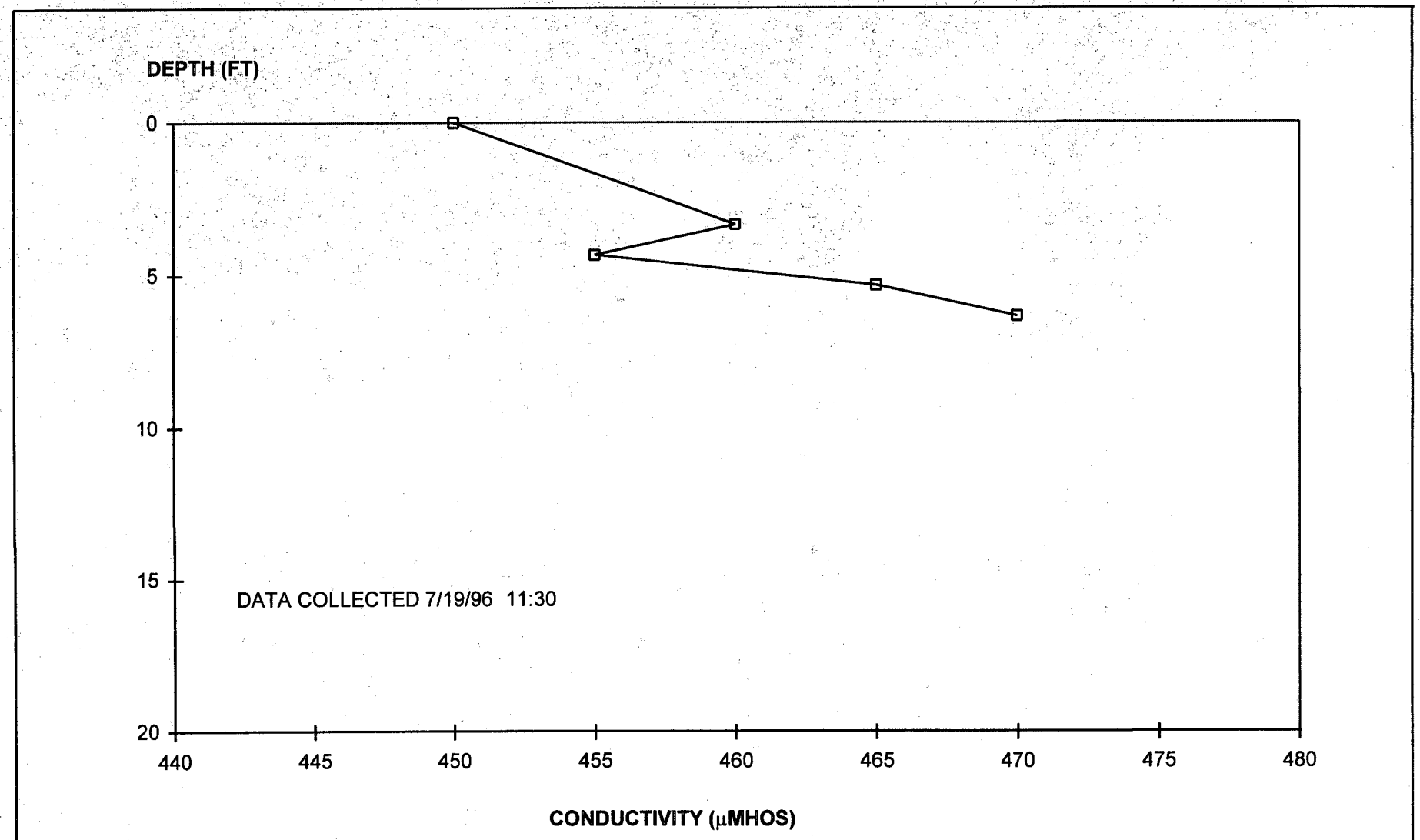
Figure
10.5.4–298



CITY OF TALLAHASSEE

LOCATION 11
WATER COLUMN CONDUCTIVITY PROFILE
AT UNITS 6/7 DISCHARGE, PRIOR TO BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

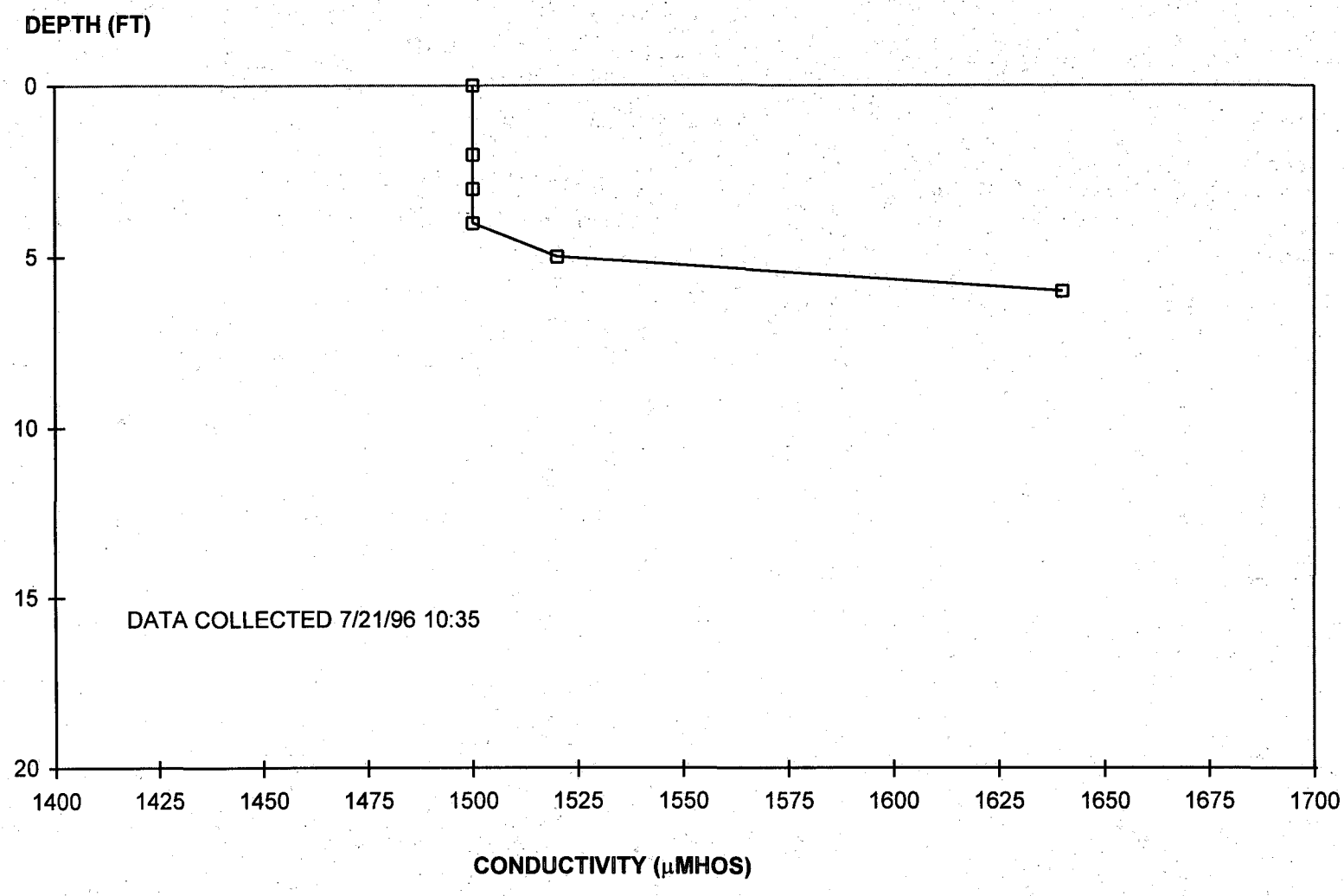
Figure
10.5.4–299



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN CONDUCTIVITY PROFILE
AT UNITS 6/7 DISCHARGE, OUTLET OF DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

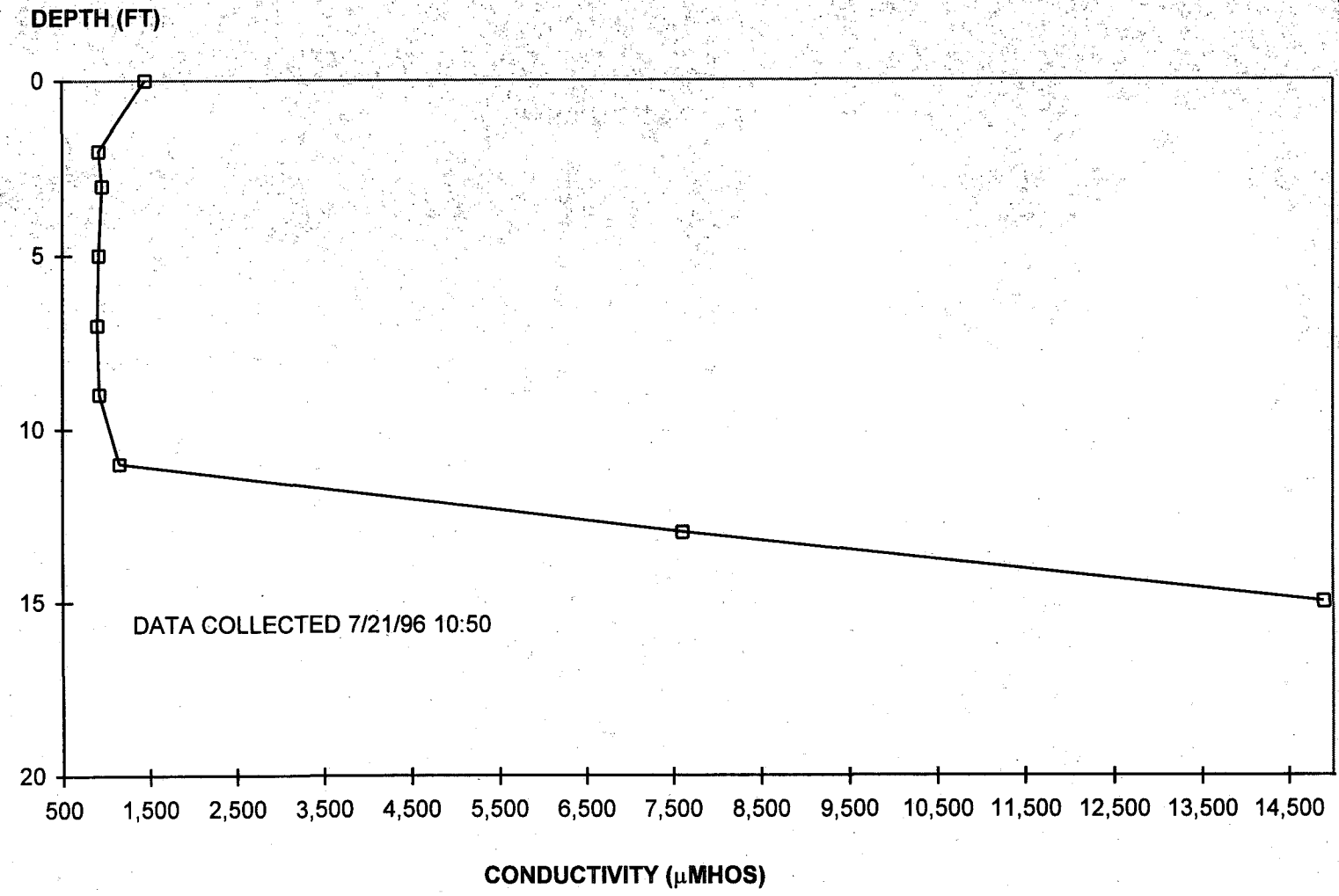
Figure
10.5.4–300



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN CONDUCTIVITY PROFILE
AT UNITS 6/7 DISCHARGE, OUTLET OF DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

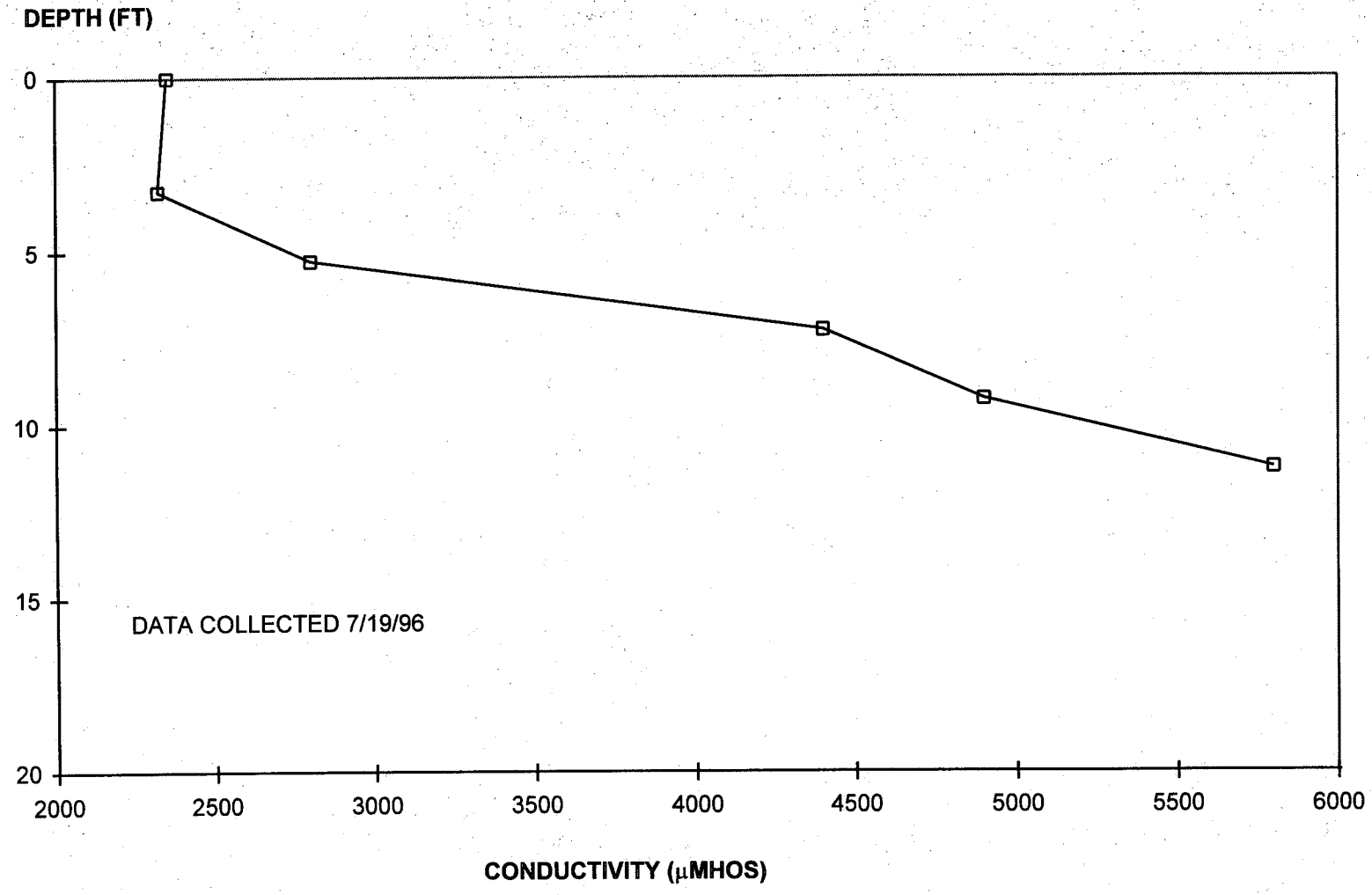
Figure
10.5.4–301



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN CONDUCTIVITY PROFILE
AT UNITS 6/7 DISCHARGE, EAST OF DISCHARGE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

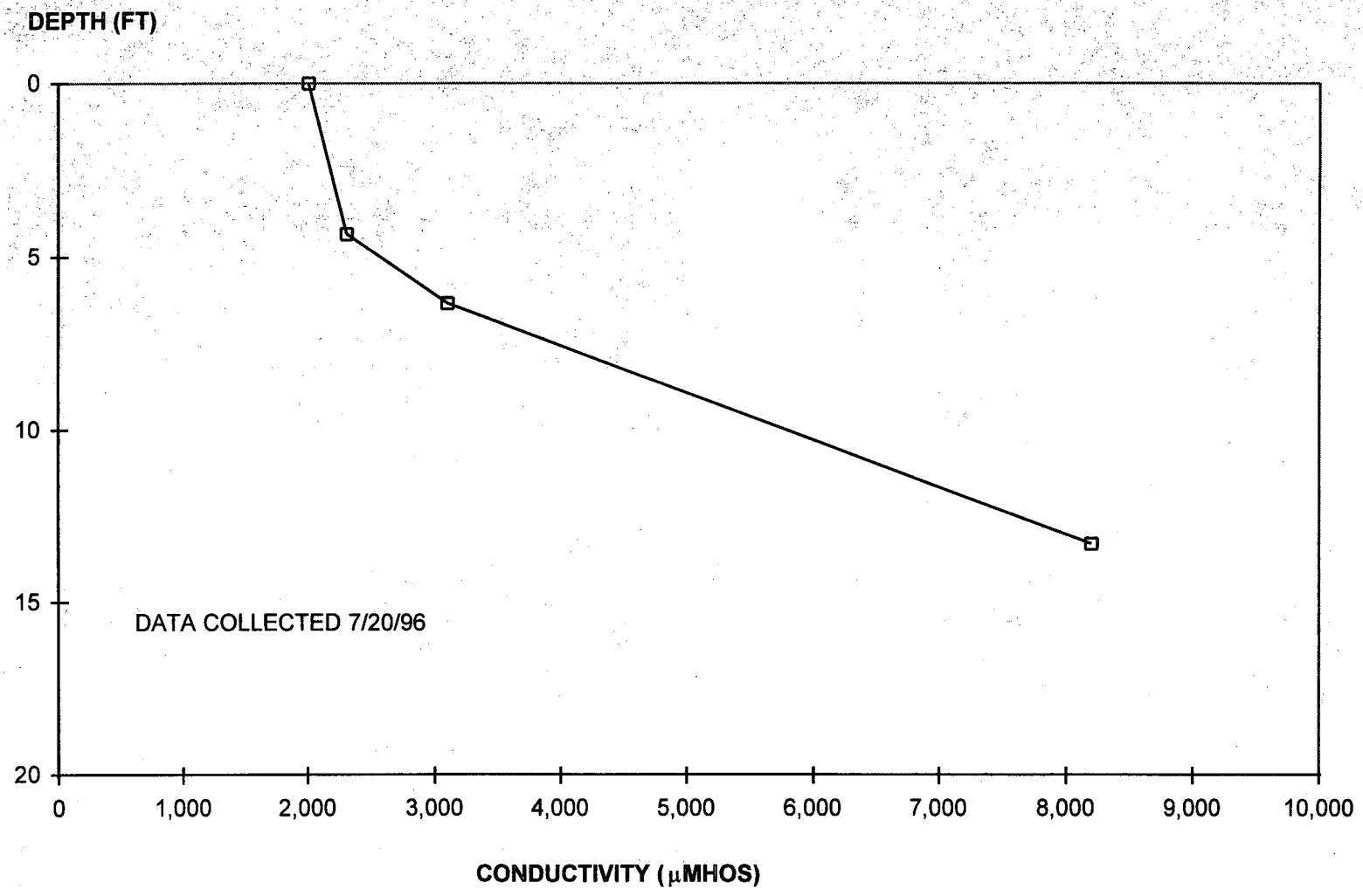
Figure
10.5.4-302



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

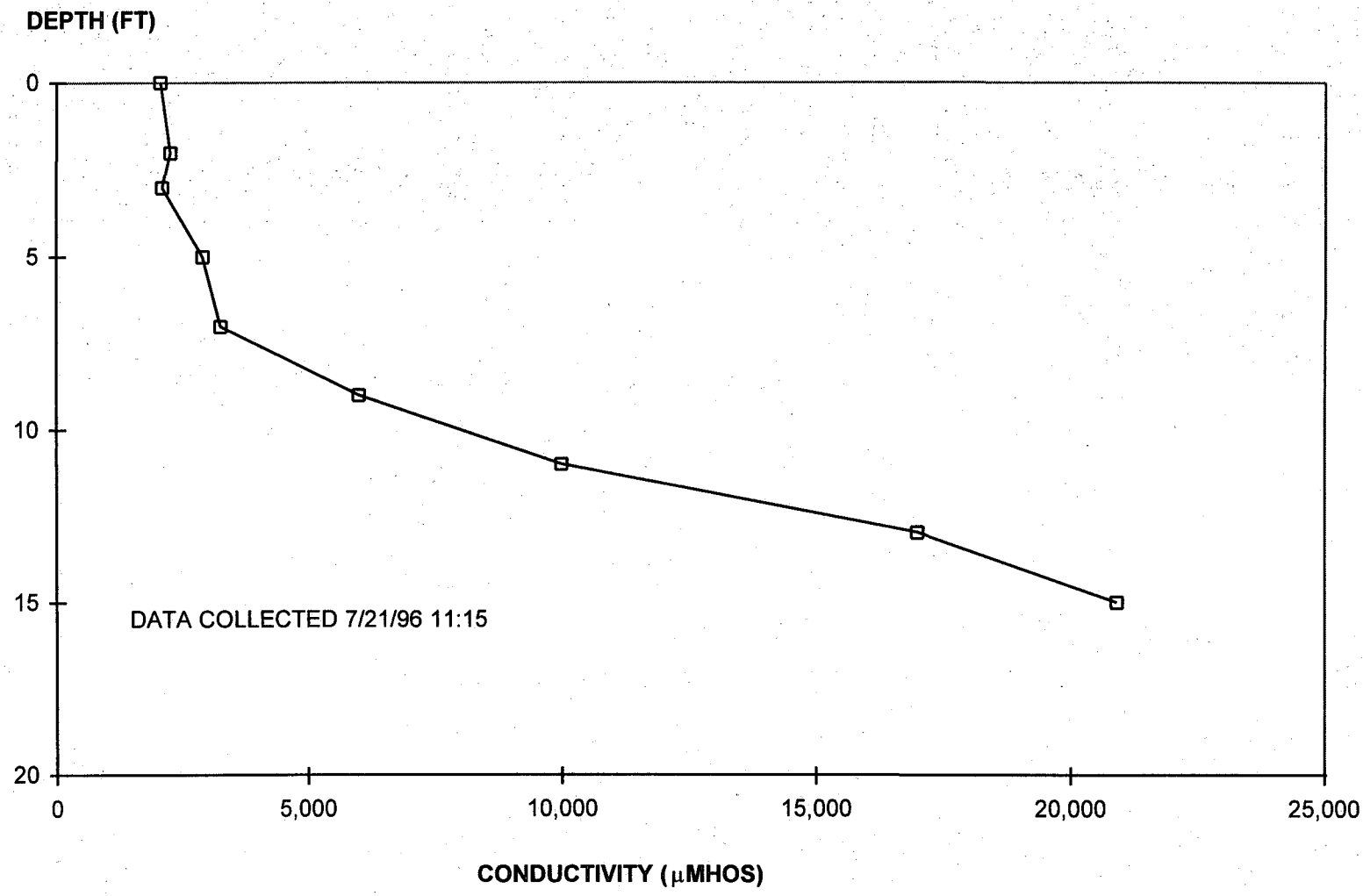
Figure
10.5.4-303



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE TRTMNT FACILITY DISCHARGE
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

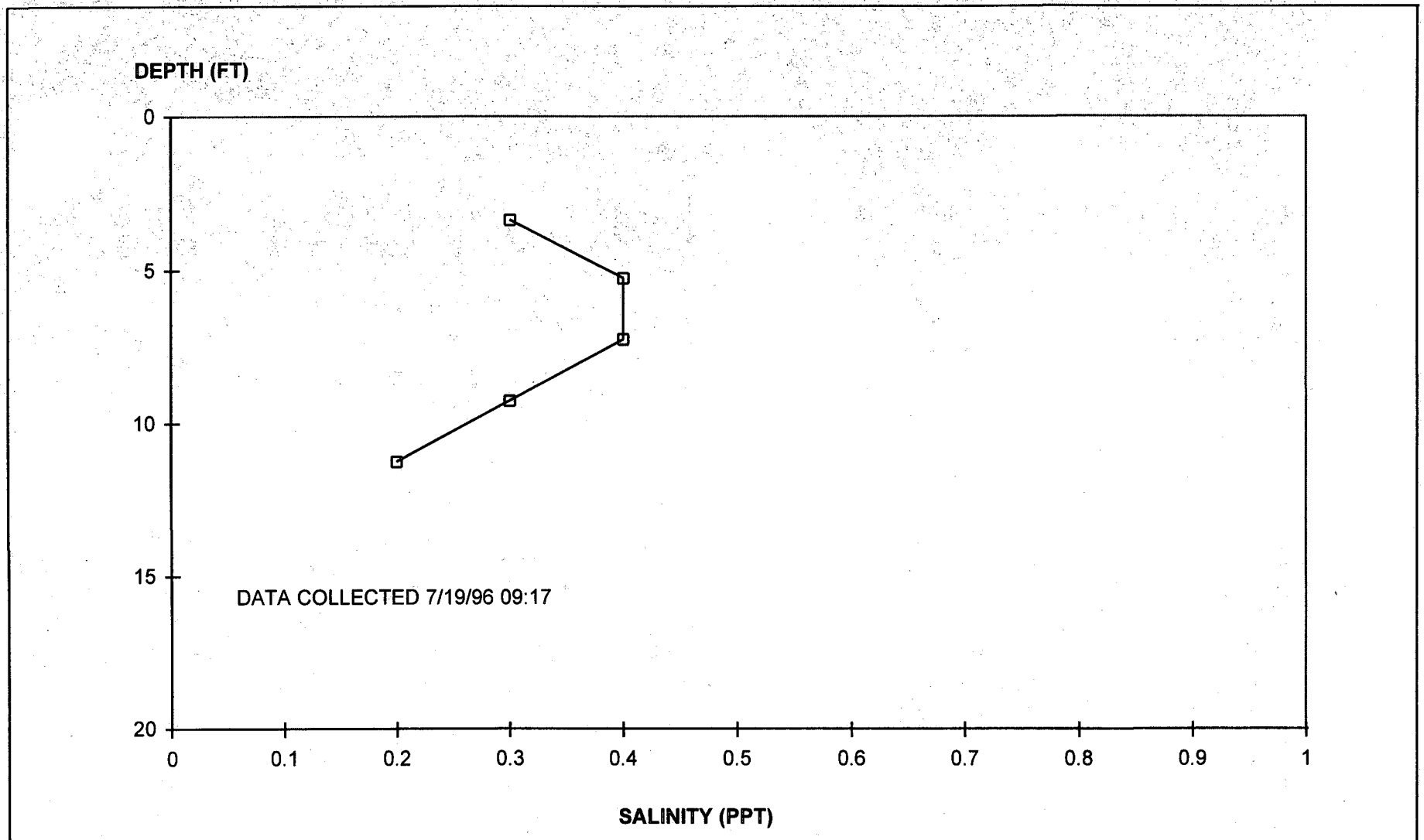
Figure
10.5.4-304



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN CONDUCTIVITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

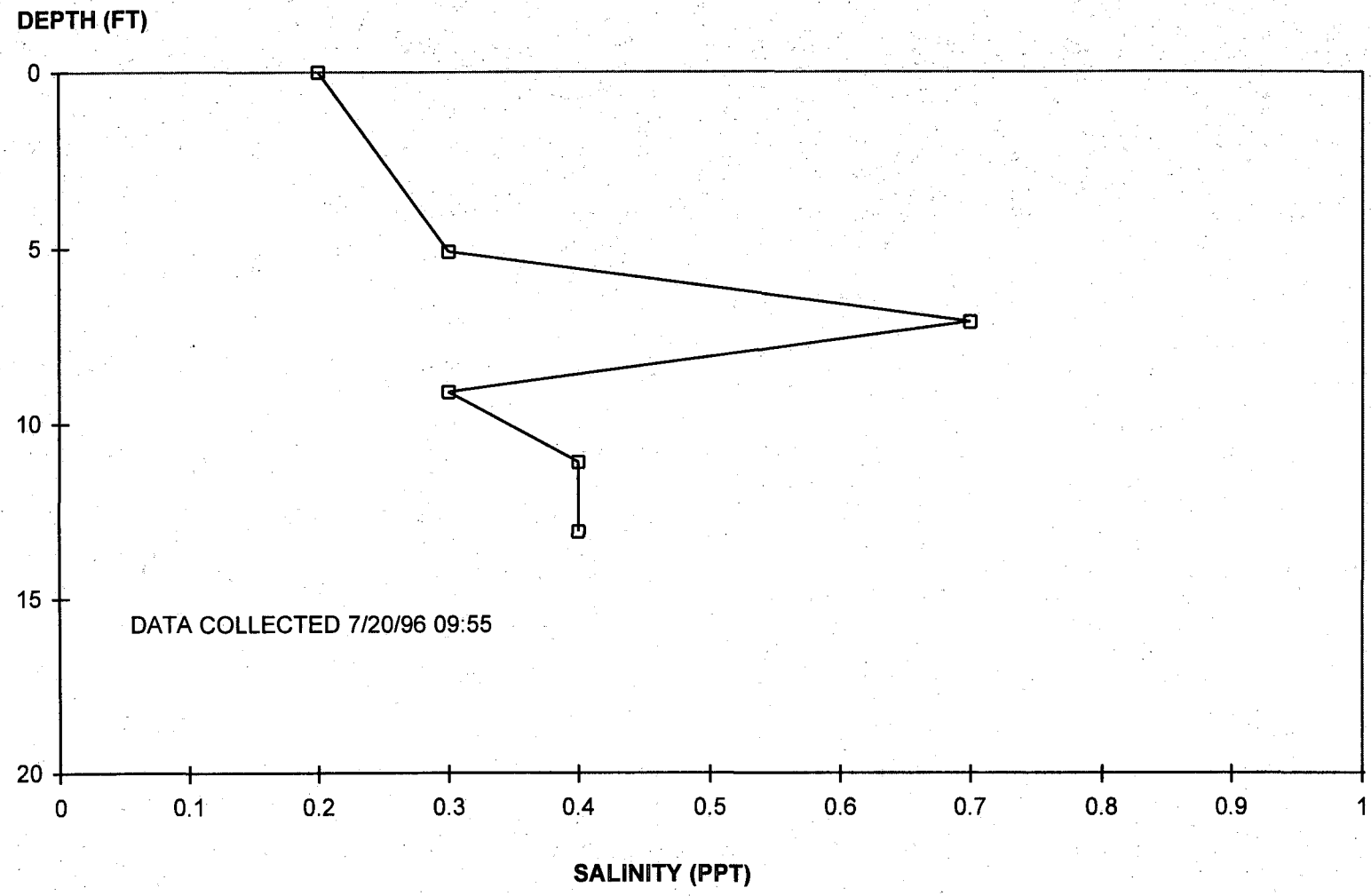
Figure
10.5.4-305



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

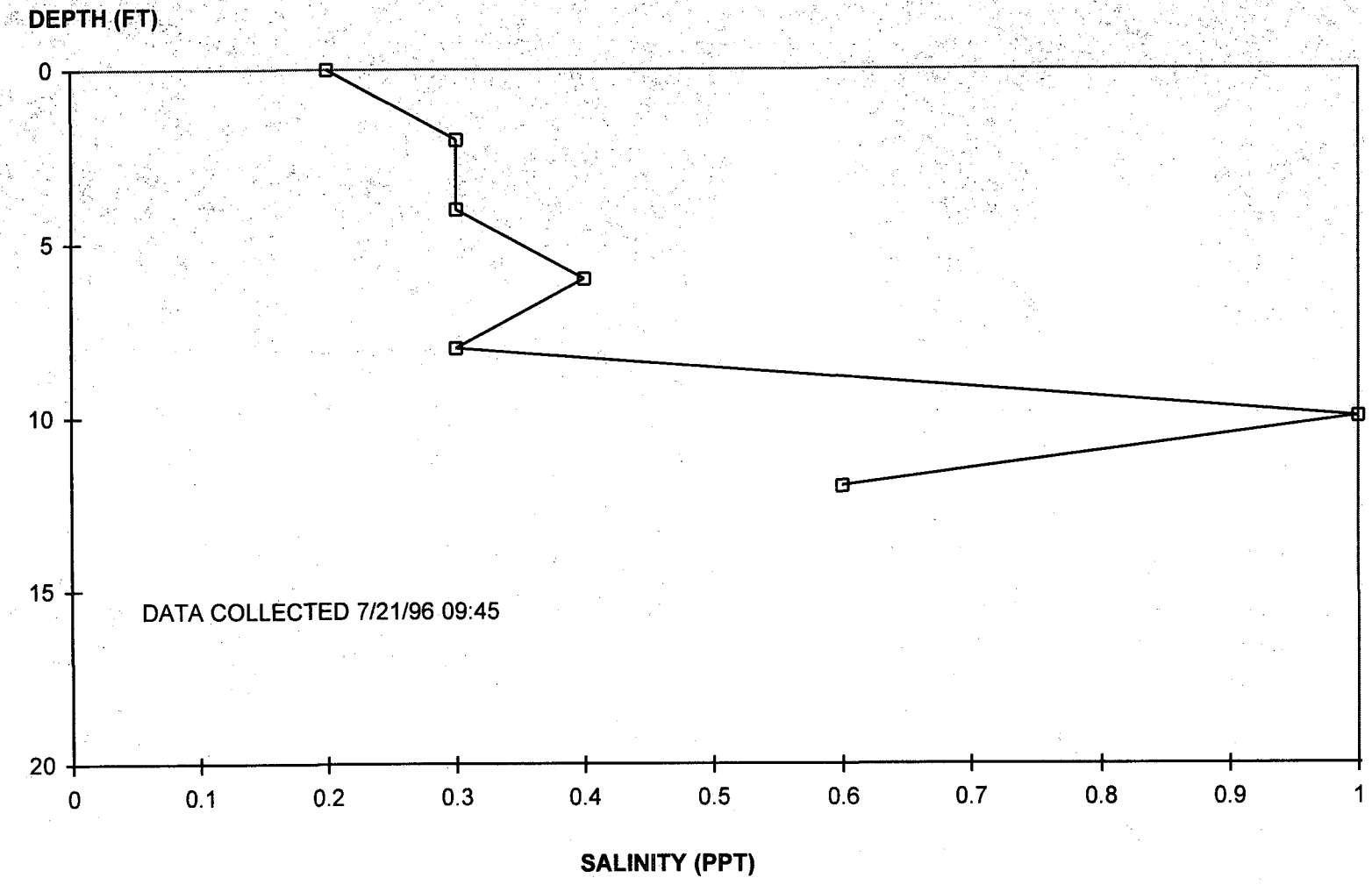
Figure
10.5.4-306



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

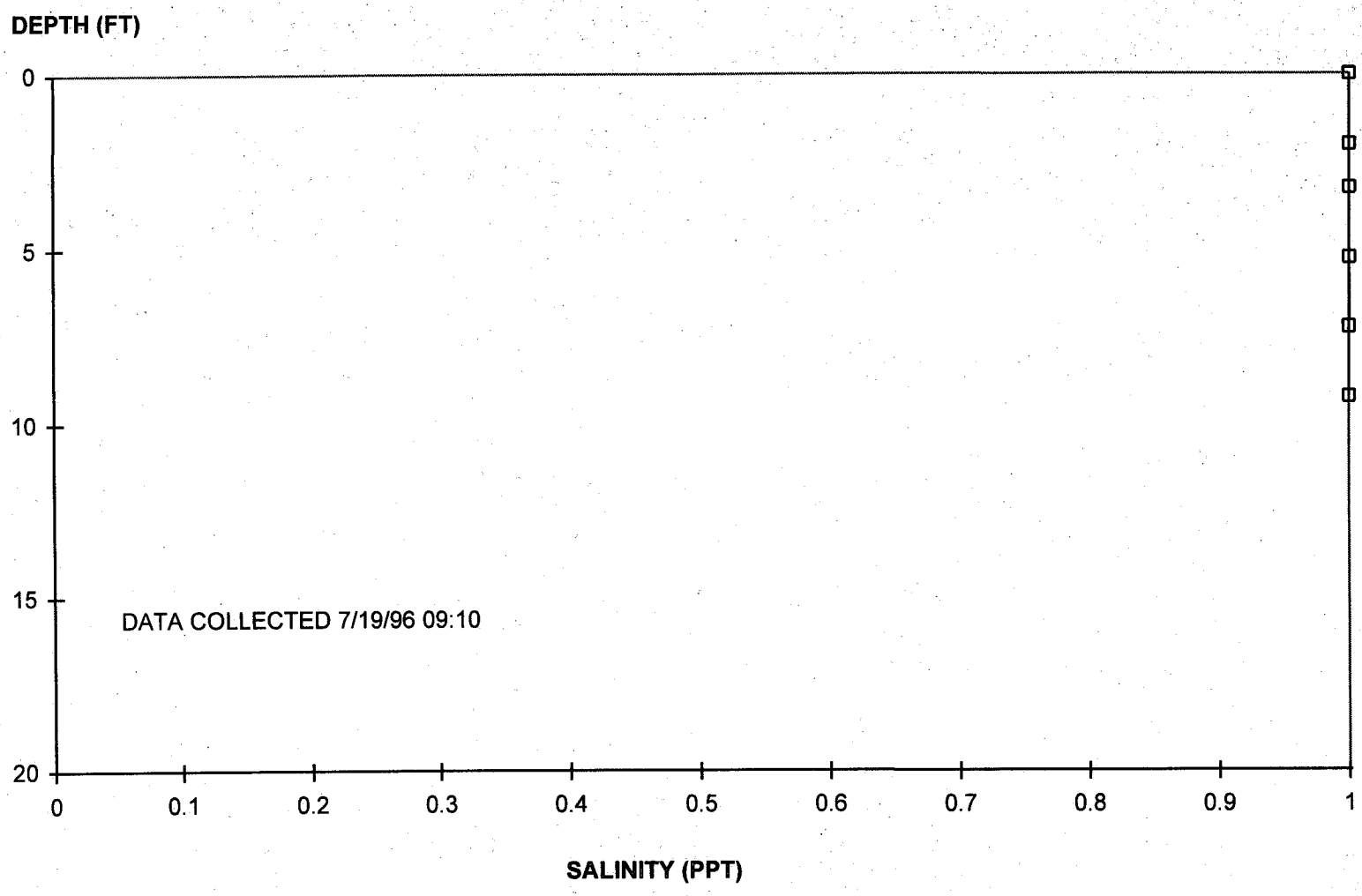
Figure
10.5.4-307



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

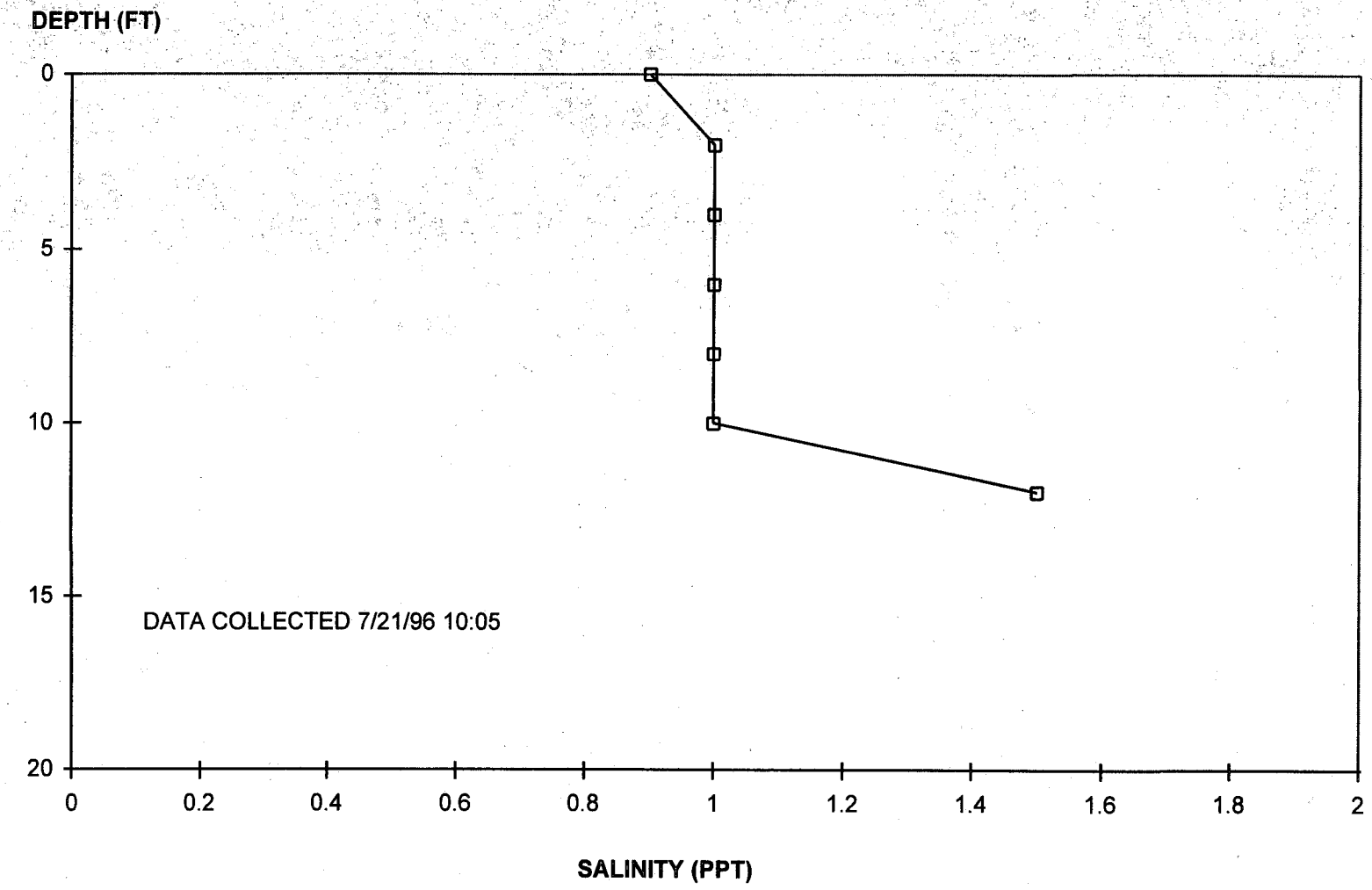
Figure
10.5.4–308



CITY OF TALLAHASSEE

LOCATION 2
WATER COLUMN SALINITY PROFILE
AT UNIT 7 INTAKE STRUCTURE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

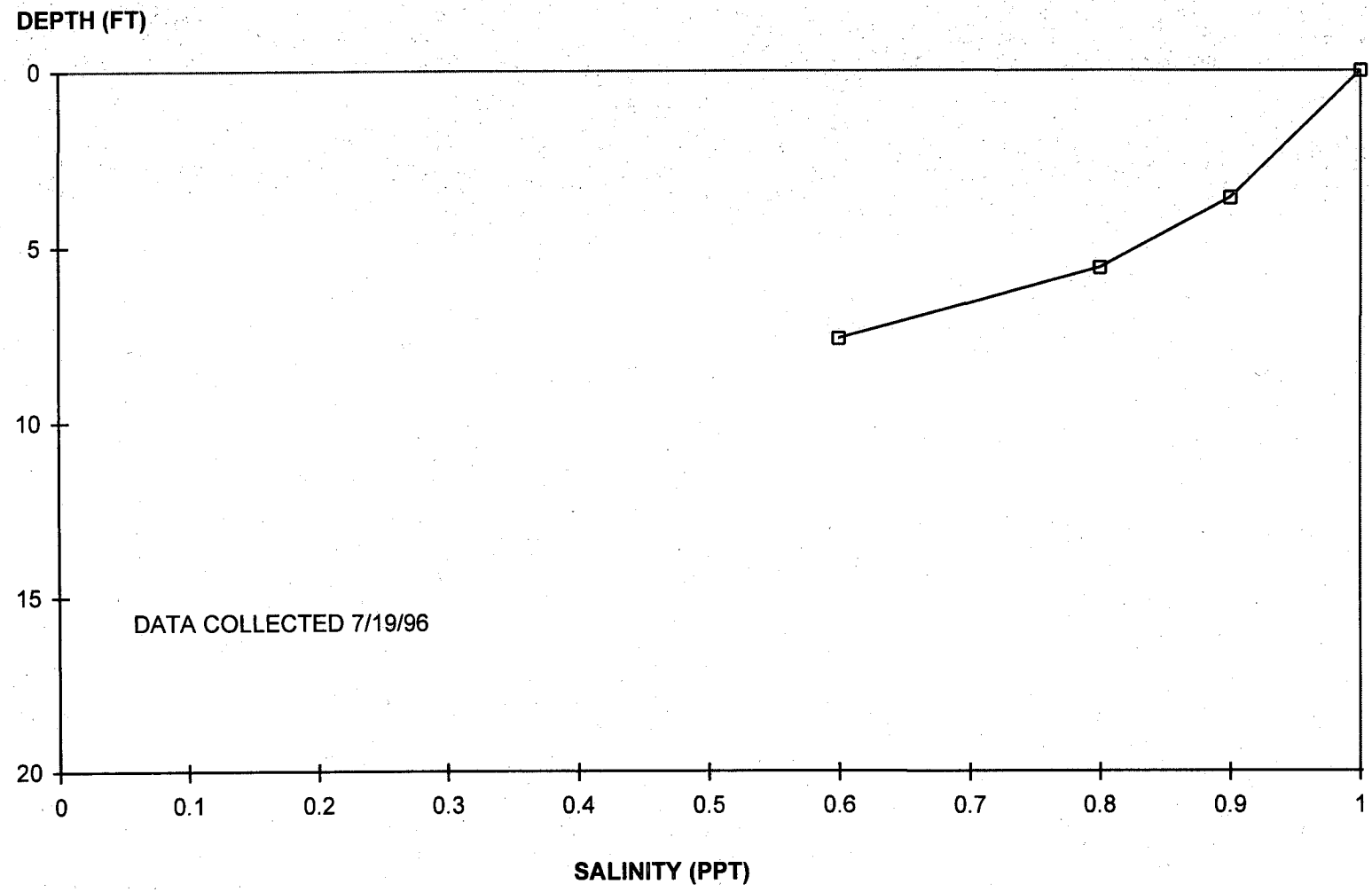
Figure
10.5.4–309



CITY OF TALLAHASSEE

LOCATION 2
WATER COLUMN SALINITY PROFILE
AT UNIT 7 INTAKE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

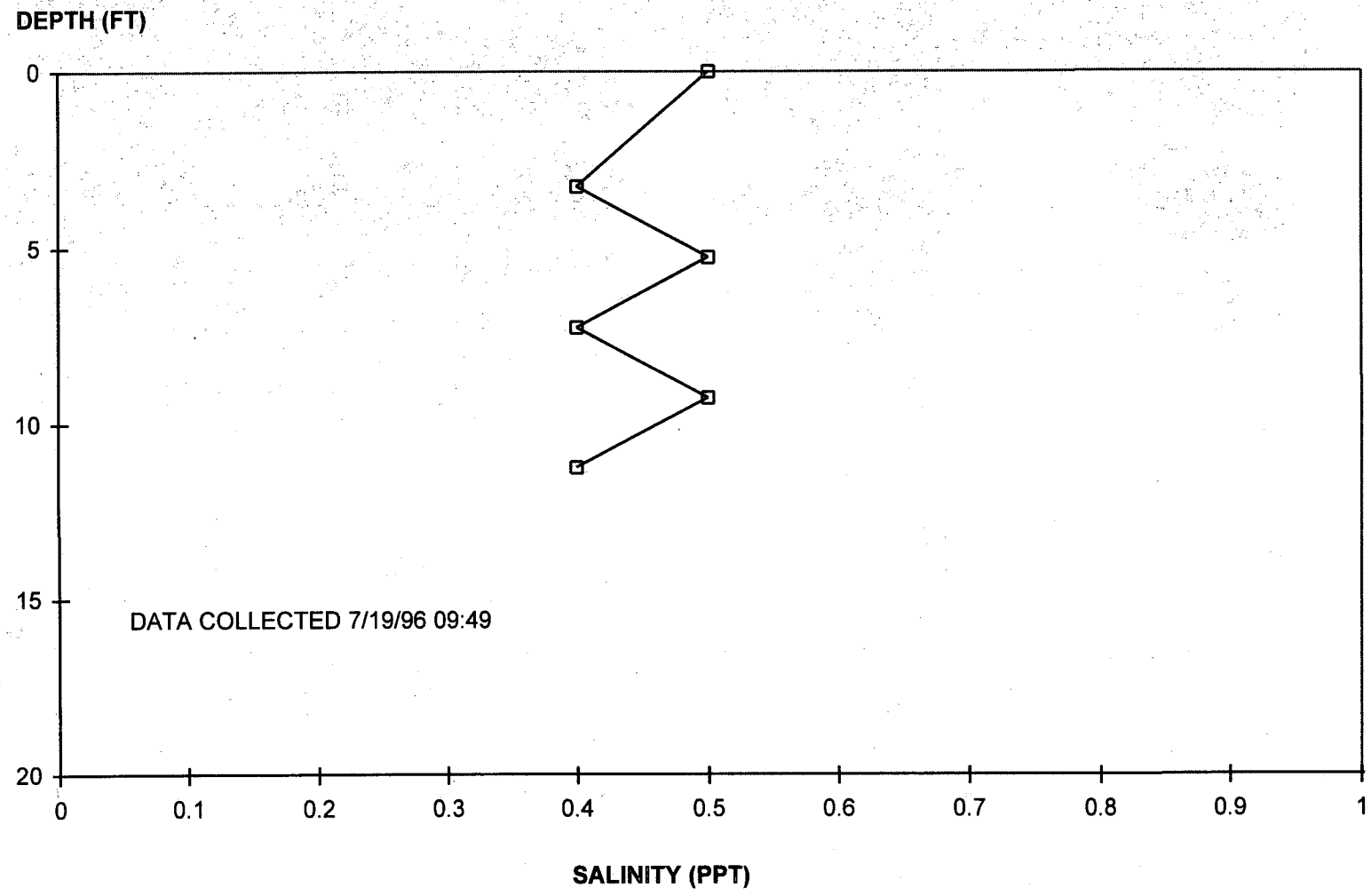
Figure
10.5.4-310



CITY OF TALLAHASSEE

LOCATION 3
WATER COLUMN SALINITY PROFILE
AT OPENING OF INTAKE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

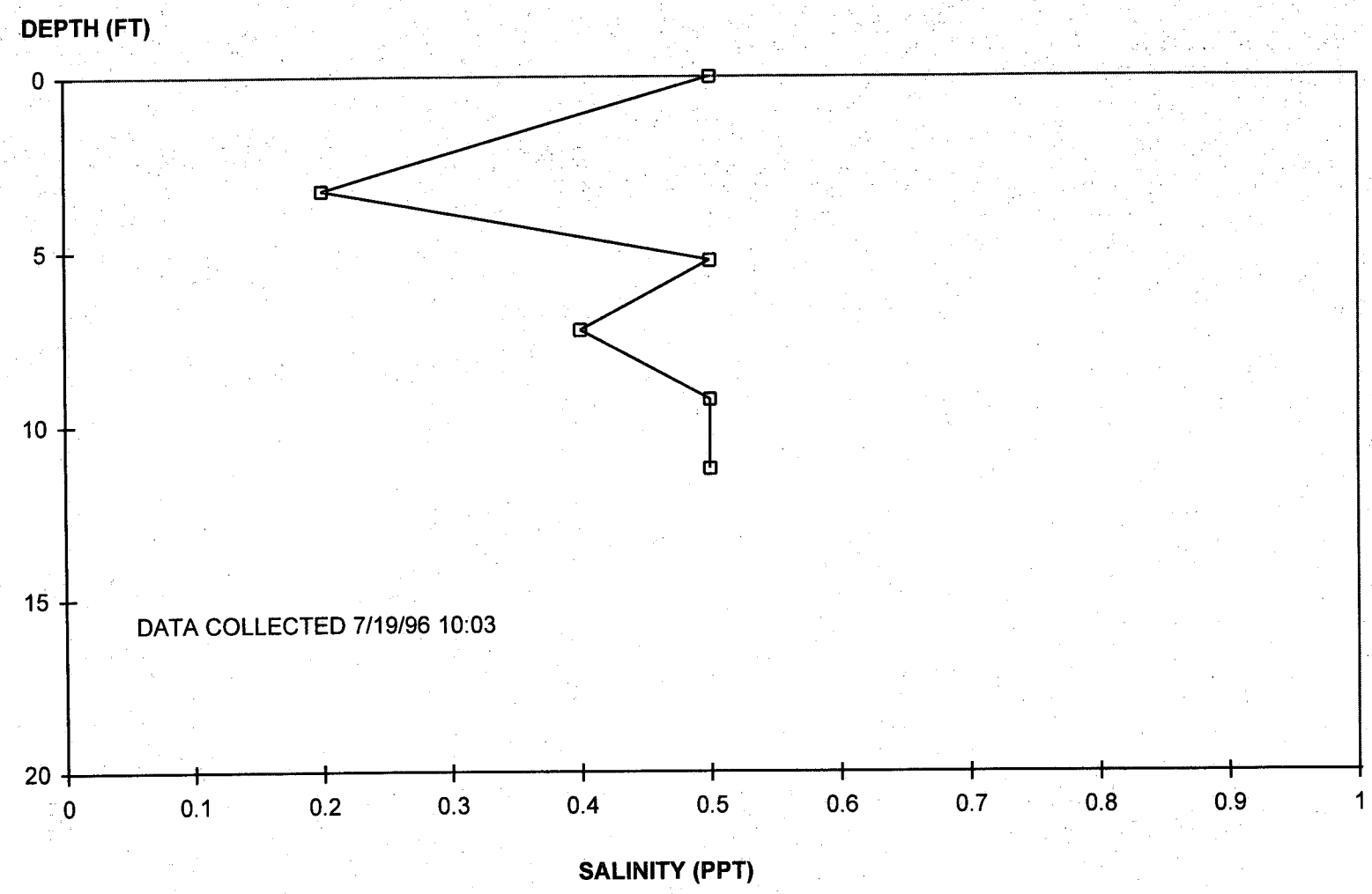
Figure
10.5.4–311



CITY OF TALLAHASSEE

LOCATION 4
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, AT UNIT 5 INTAKE STRUCTURE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

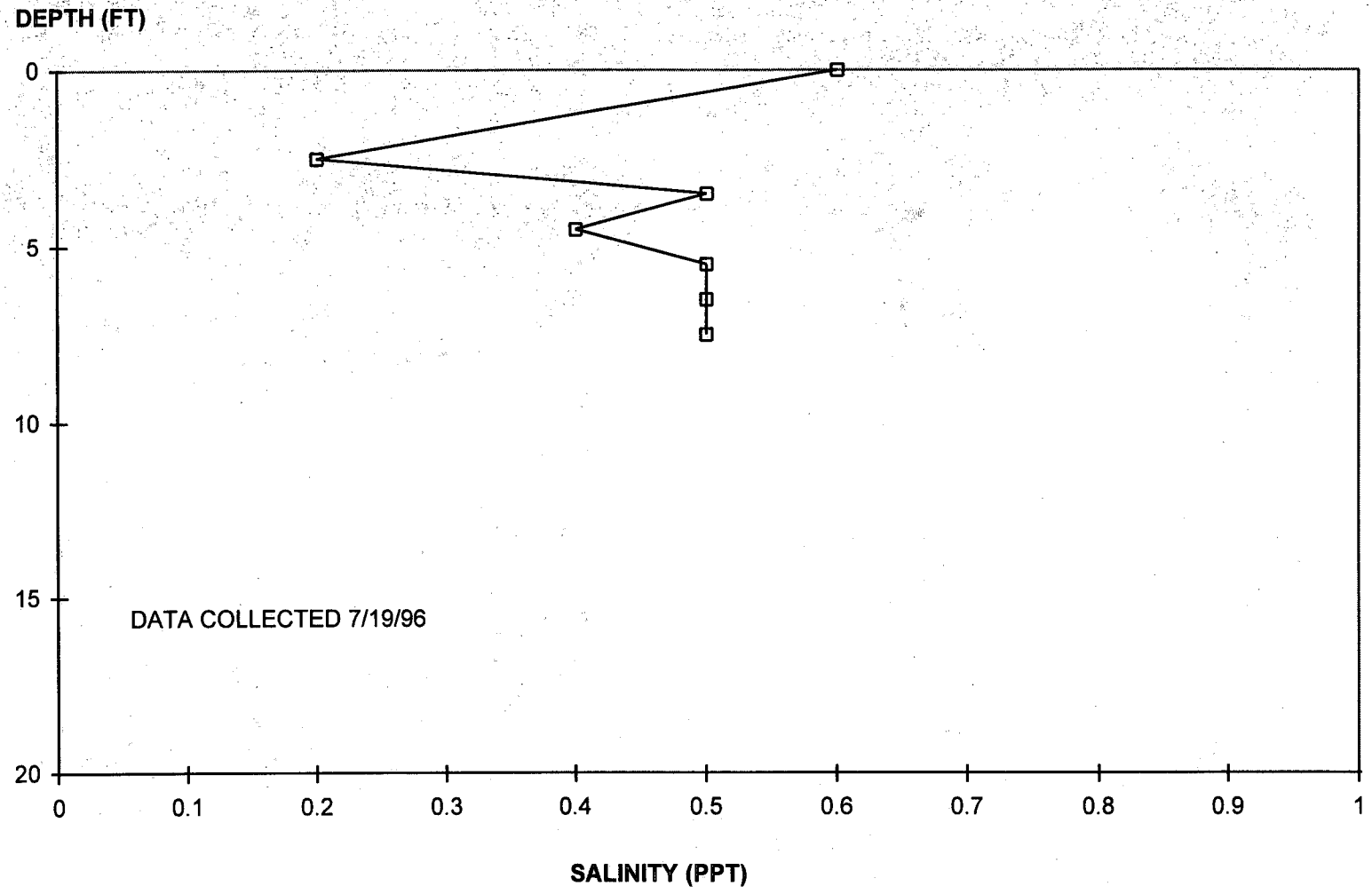
Figure
10.5.4–312



CITY OF TALLAHASSEE

LOCATION 5
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, BELOW INTAKE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

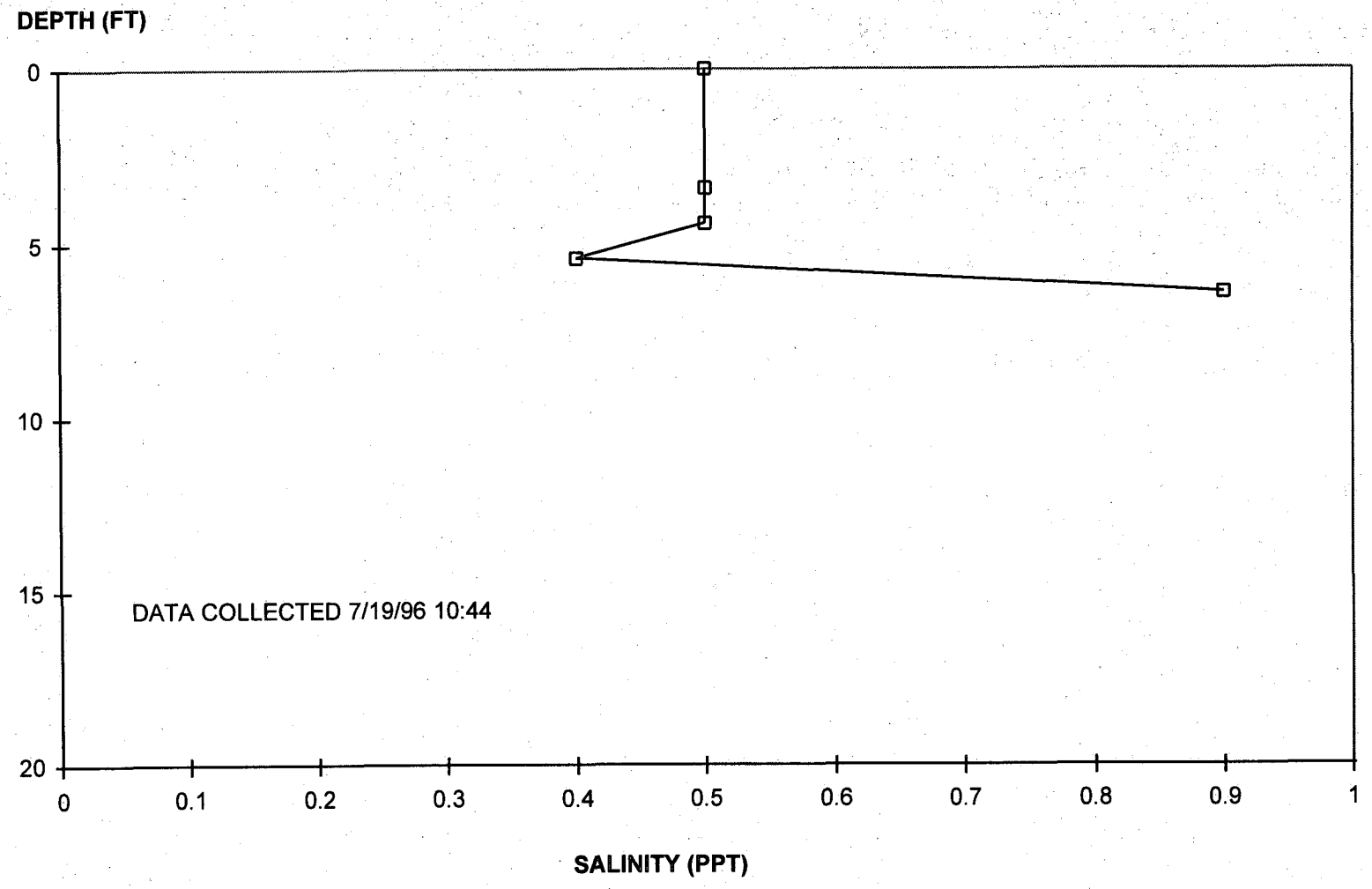
Figure
10.5.4-313



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN SALINITY PROFILE
AT UNIT 5 DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

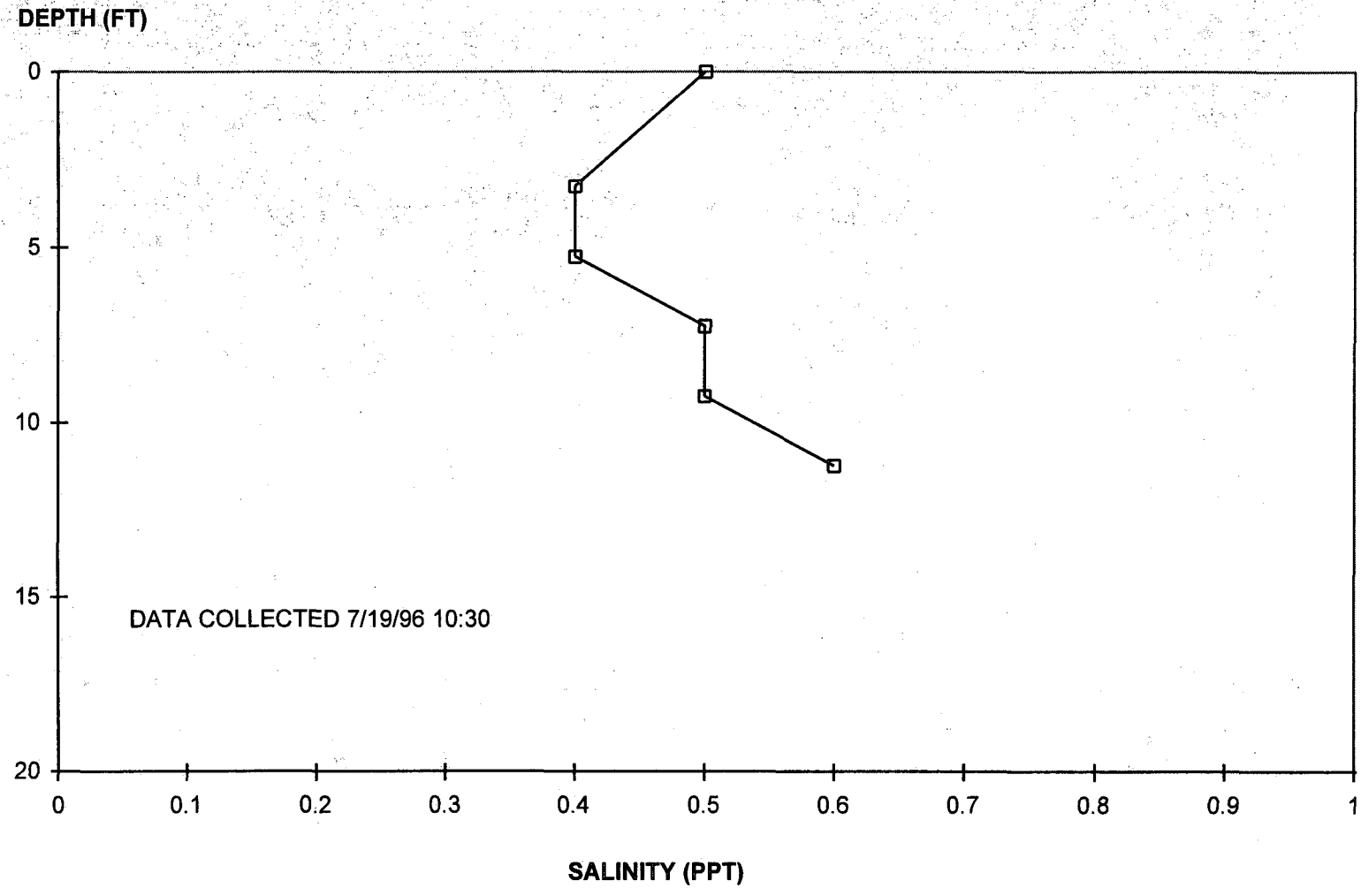
Figure
10.5.4–314



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, AT UNIT 5 DISCHARGE, BETWEEN DISCHARGE/MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

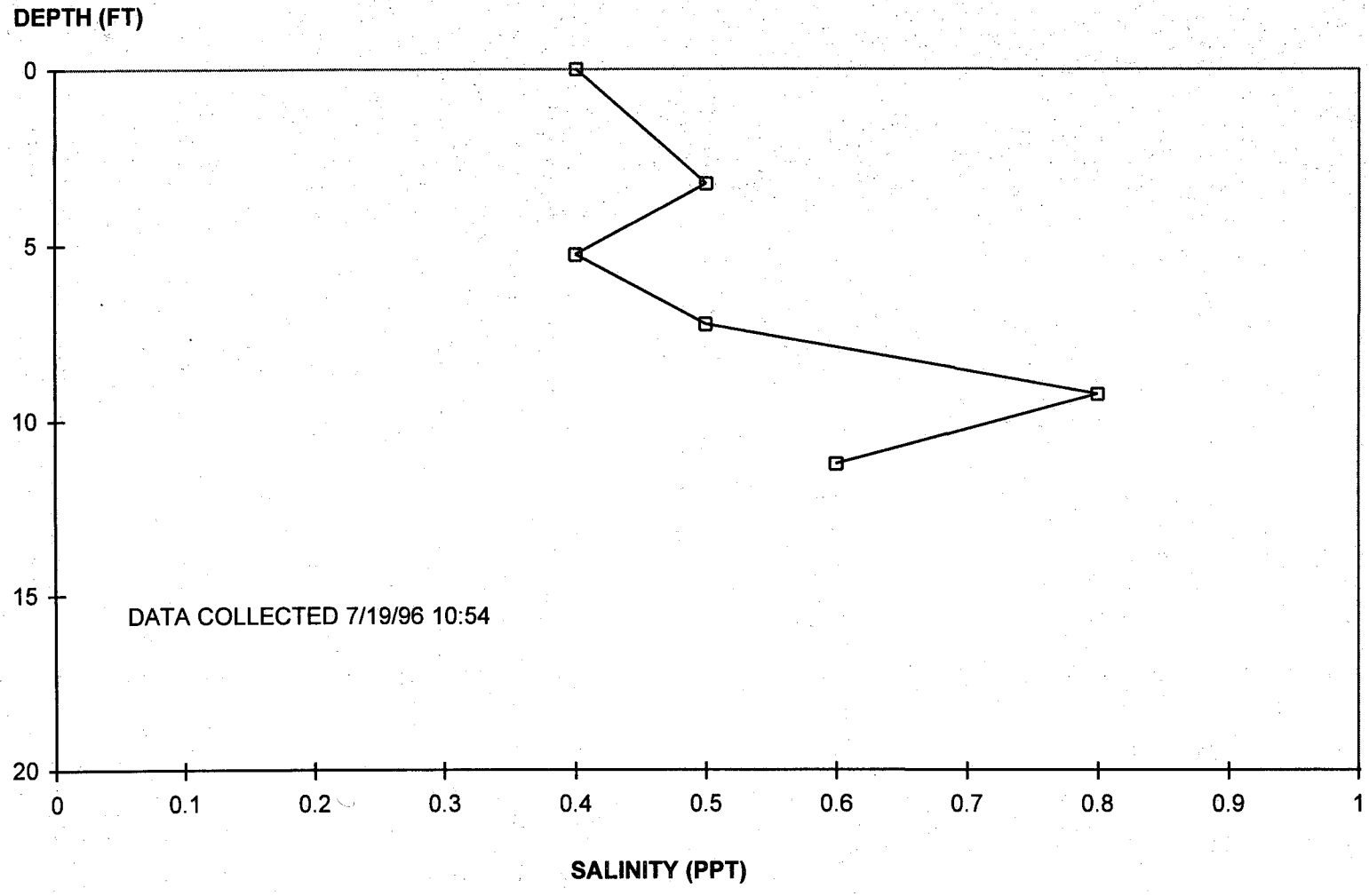
Figure
10.5.4-315



CITY OF TALLAHASSEE

LOCATION 6
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, AT UNIT 5 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

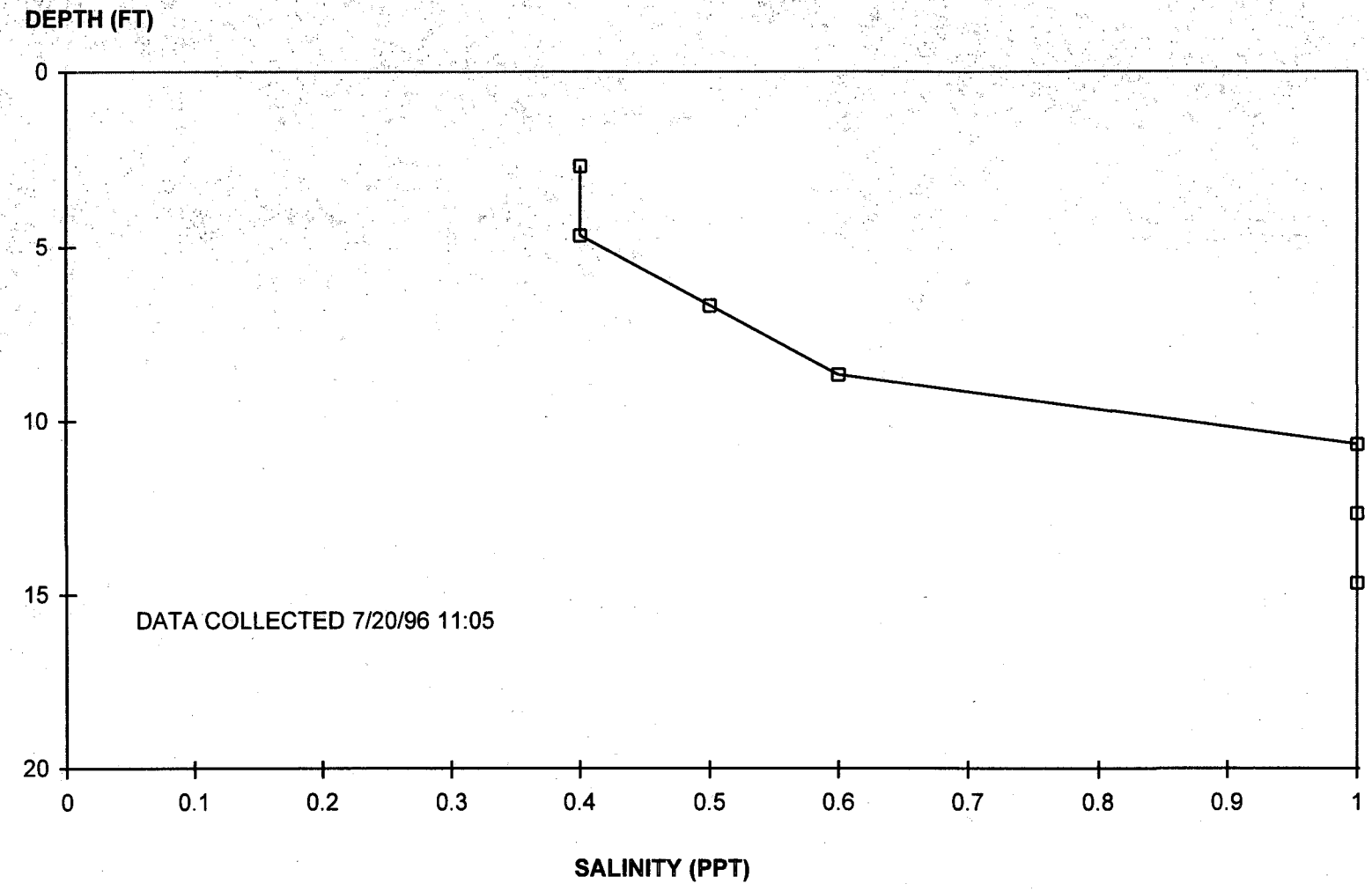
Figure
10.5.4-316



CITY OF TALLAHASSEE

LOCATION 7
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 5 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

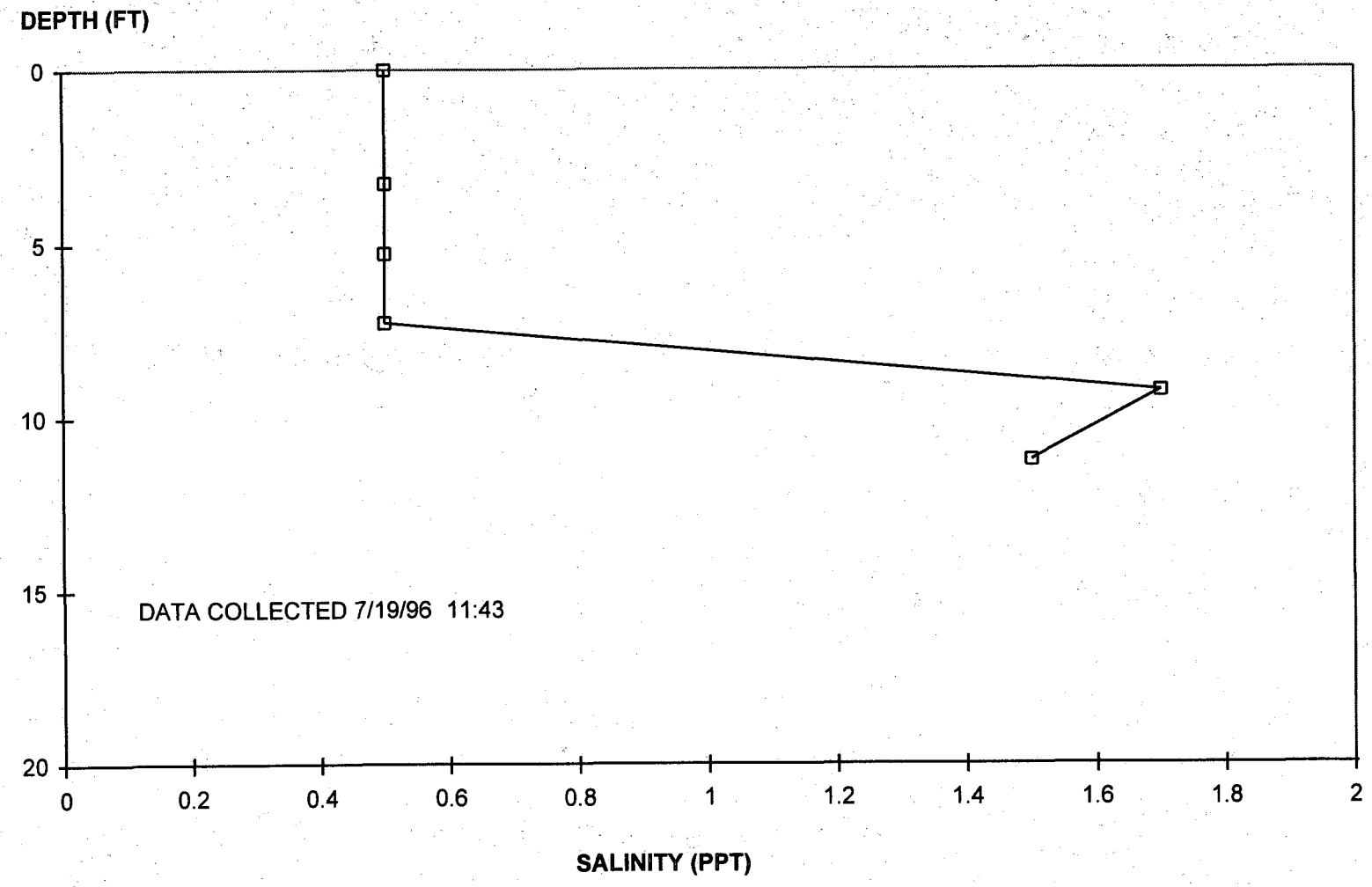
Figure
10.5.4-317



CITY OF TALLAHASSEE

LOCATION 7
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 5 DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

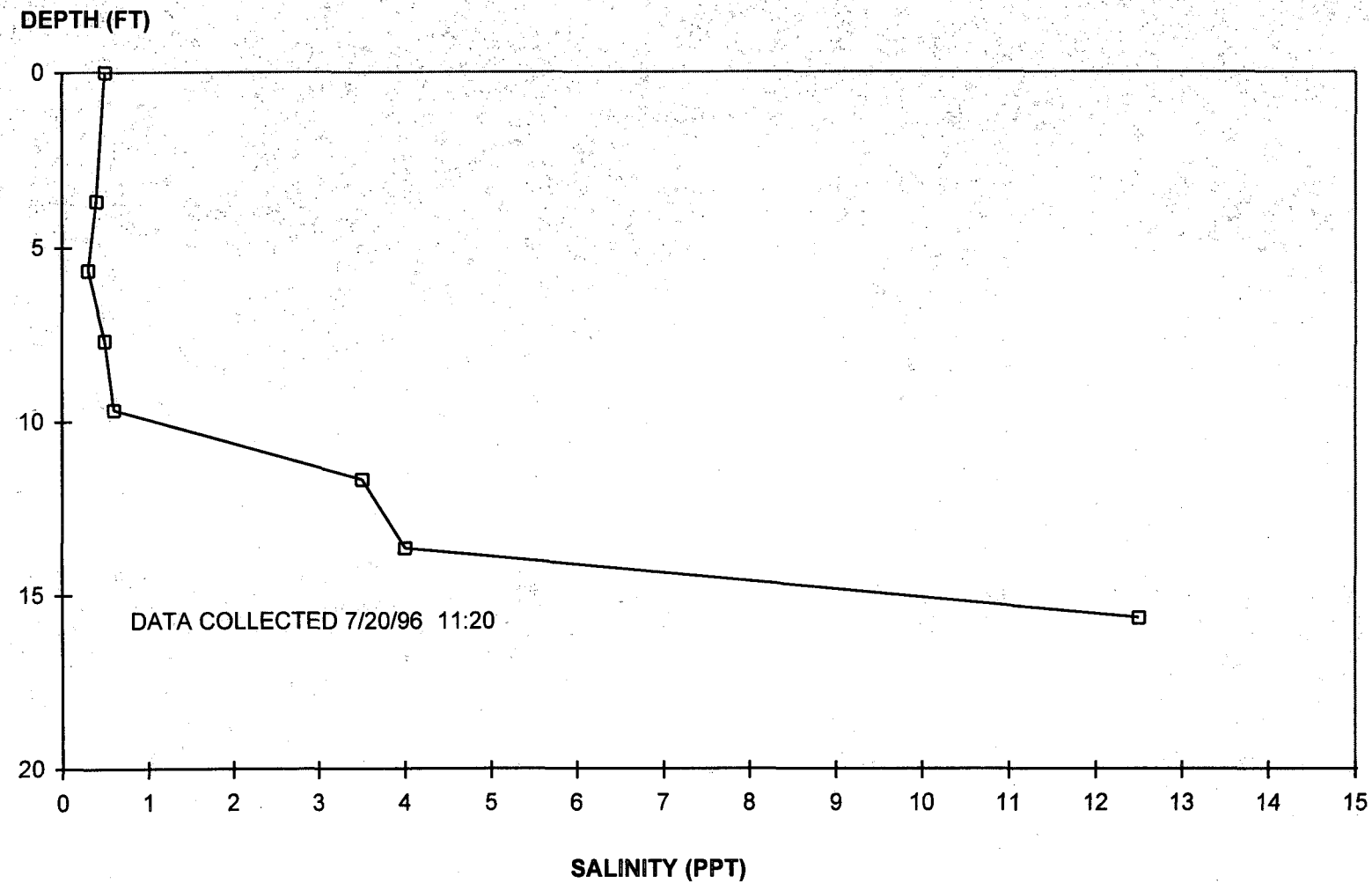
Figure
10.5.4–318



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

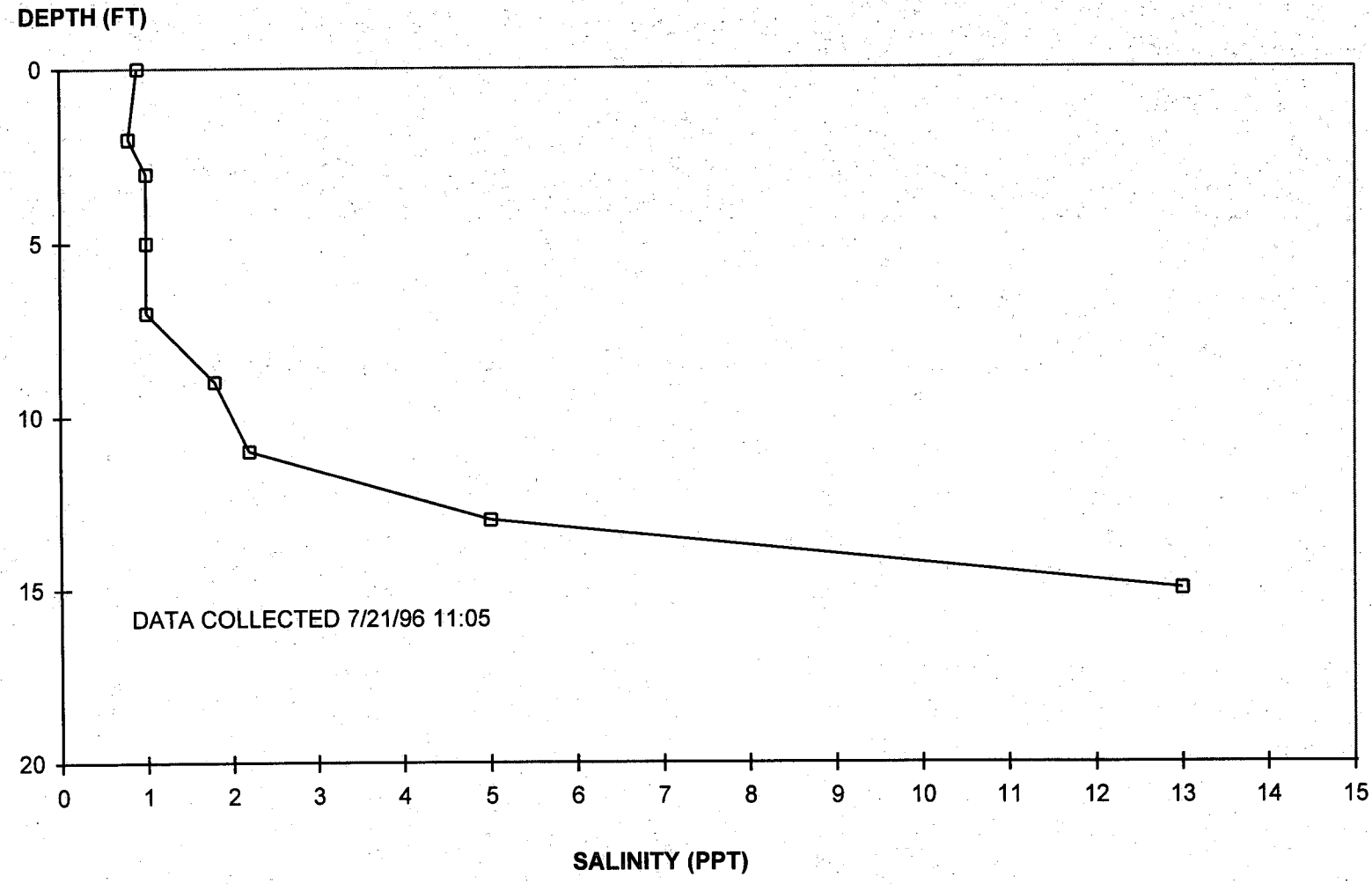
Figure
10.5.4-319



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

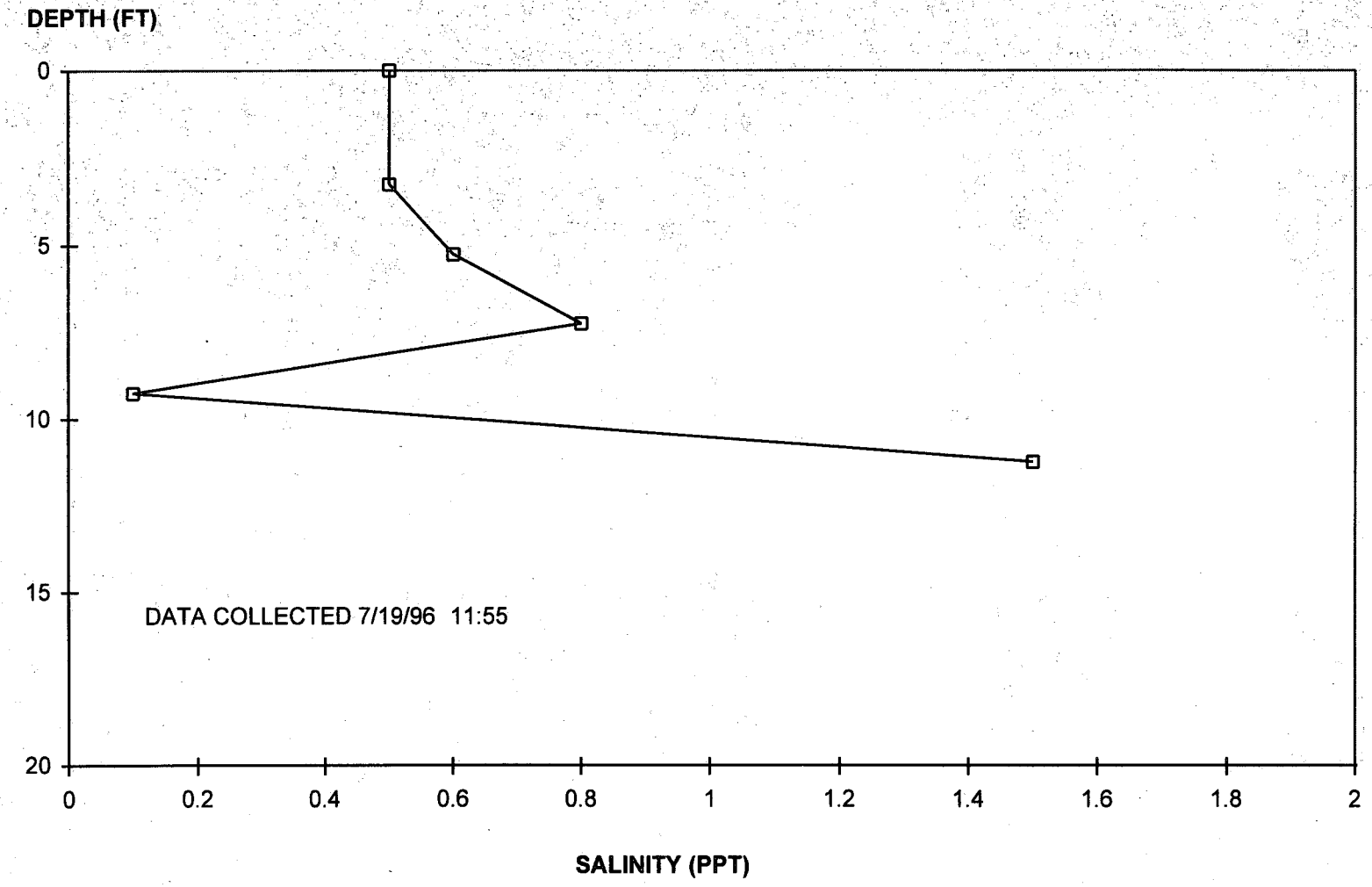
Figure
10.5.4-320



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

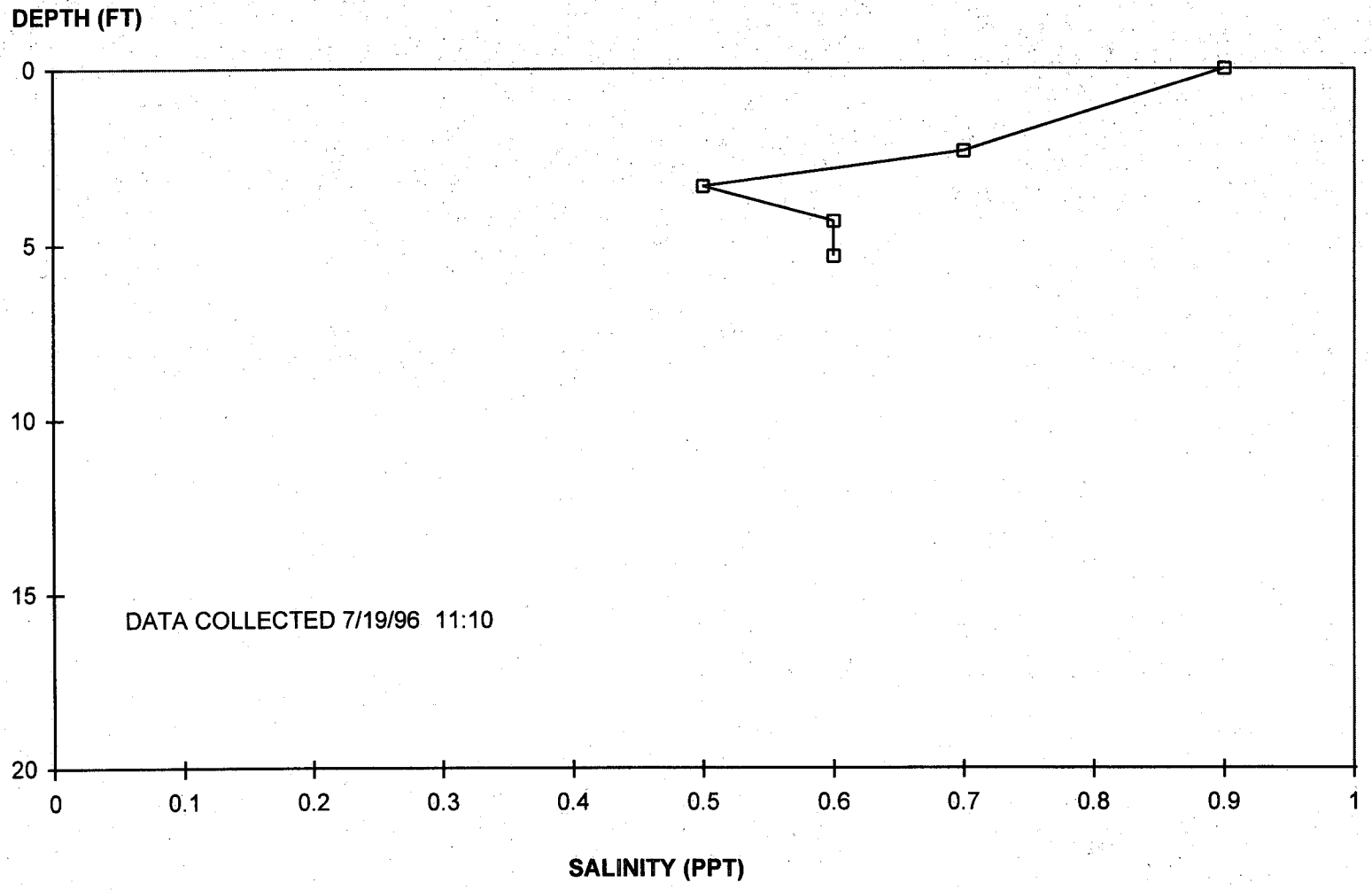
Figure
10.5.4-321



CITY OF TALLAHASSEE

LOCATION 9
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, SHIELD'S MARINA, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

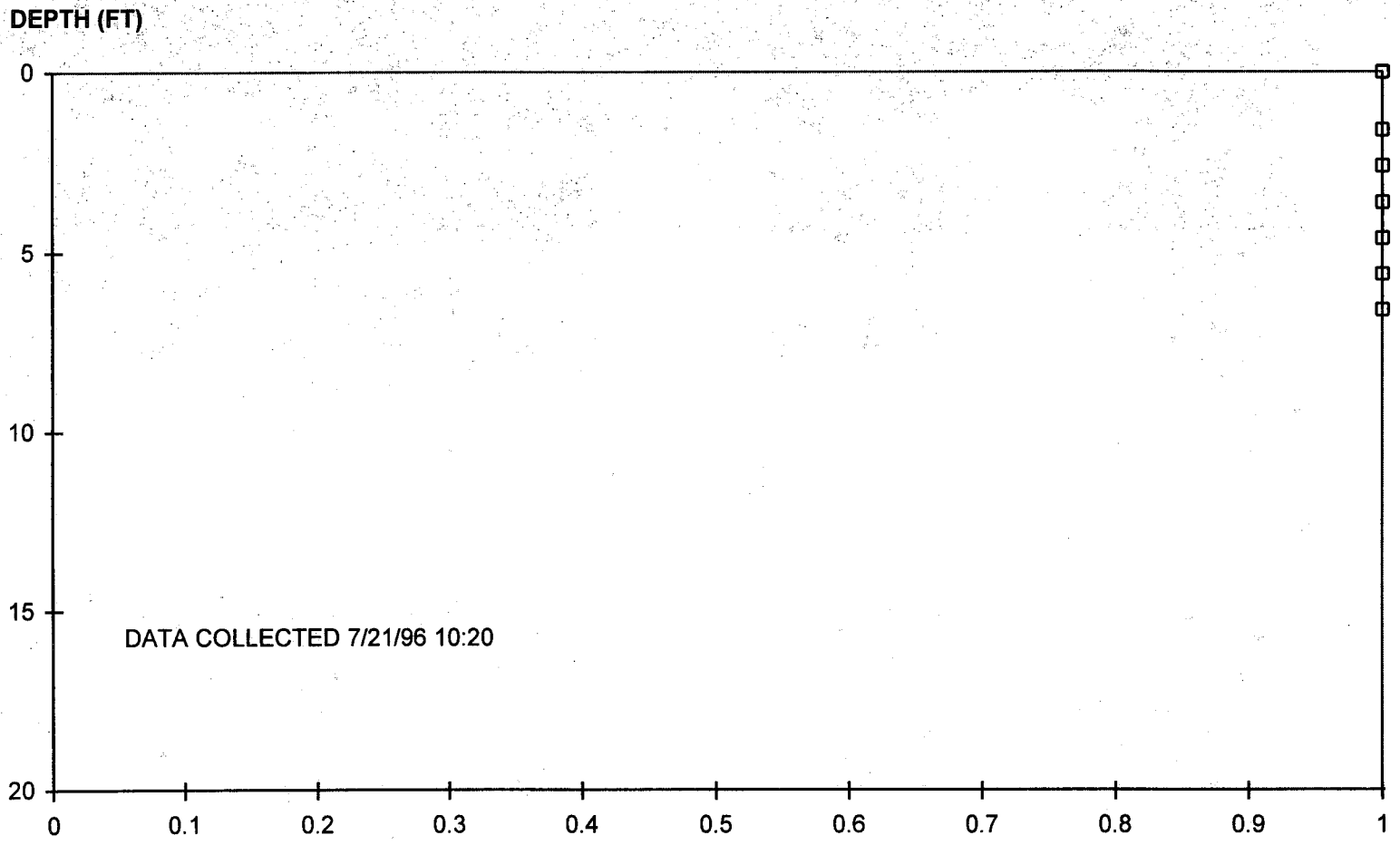
Figure
10.5.4-322



CITY OF TALLAHASSEE

LOCATION 10
WATER COLUMN SALINITY PROFILE
AT UNITS 6/7 DISCHARGE, IMMEDIATELY DOWNSTREAM OF DISCHARGE POINT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

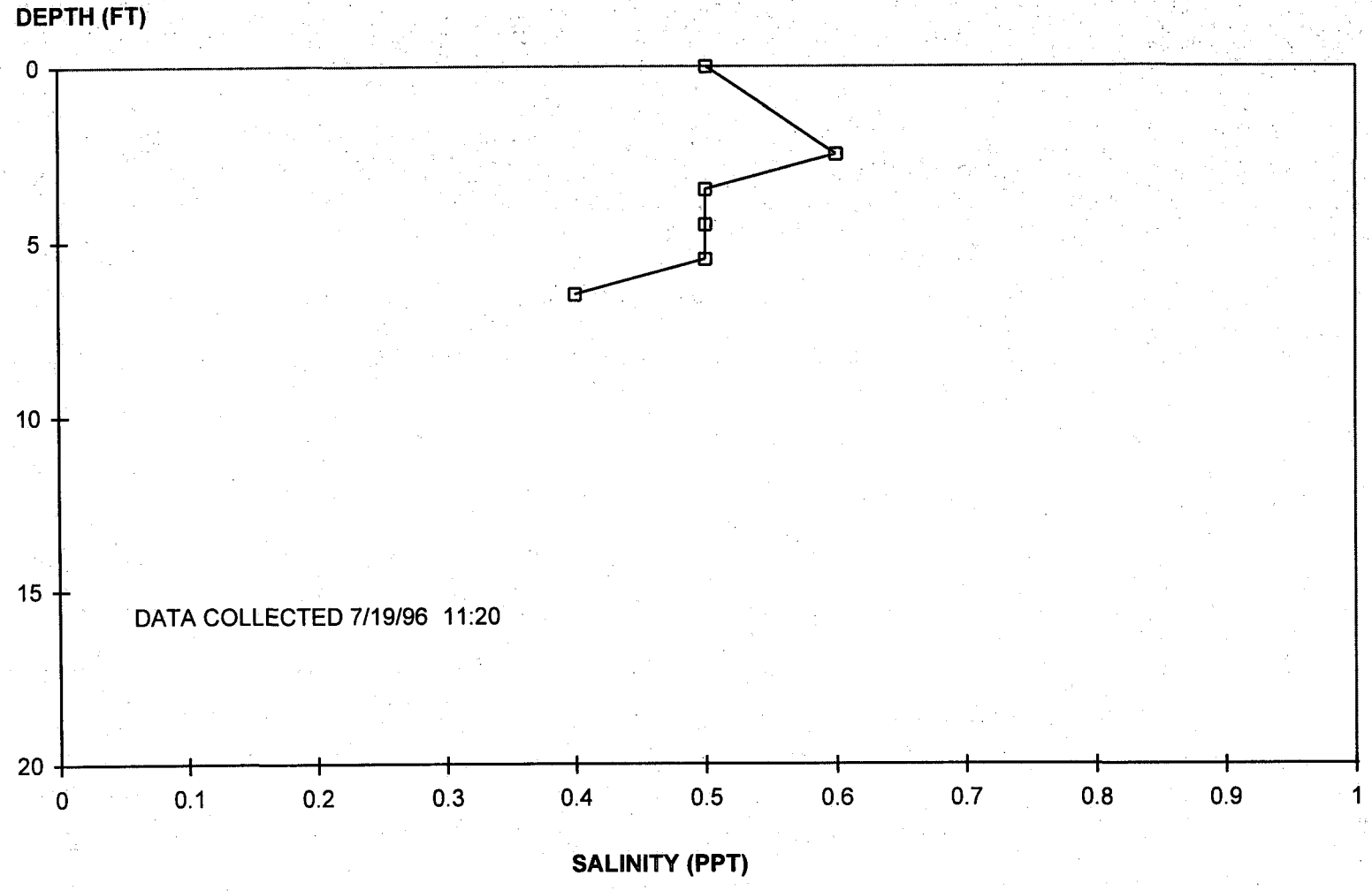
Figure
10.5.4-323



CITY OF TALLAHASSEE

LOCATION 10
WATER COLUMN SALINITY PROFILE
AT UNITS 6/7 DISCHARGE, IMMEDIATELY DOWNSTREAM OF DISCHARGE POINT
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

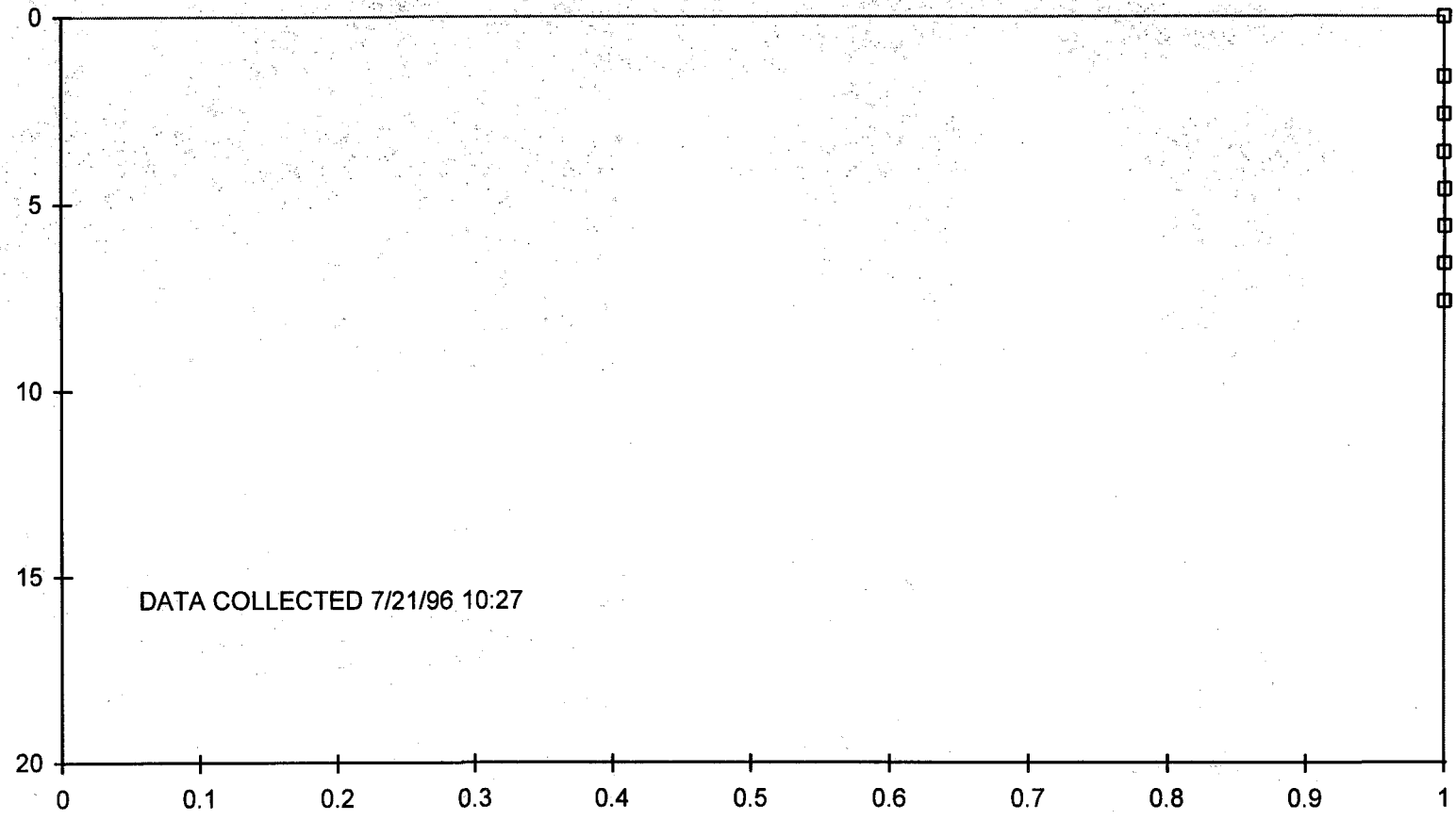
Figure
10.5.4–324



CITY OF TALLAHASSEE

LOCATION 11
WATER COLUMN SALINITY PROFILE
AT UNITS 6/7 DISCHARGE, PRIOR TO BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

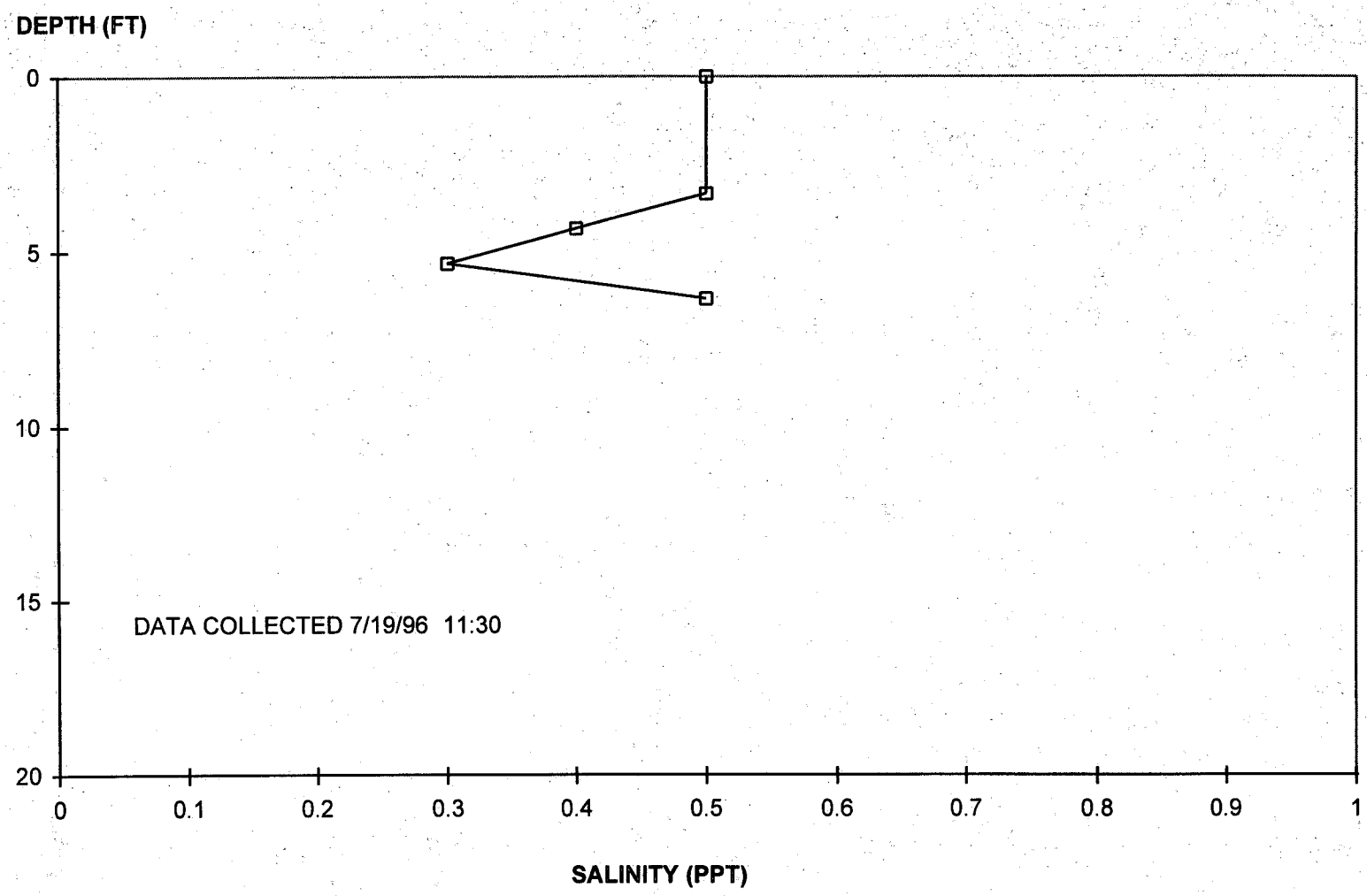
Figure
10.5.4–325



CITY OF TALLAHASSEE

LOCATION 11
WATER COLUMN SALINITY PROFILE
AT UNITS 6/7 DISCHARGE, PRIOR TO BEND IN DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

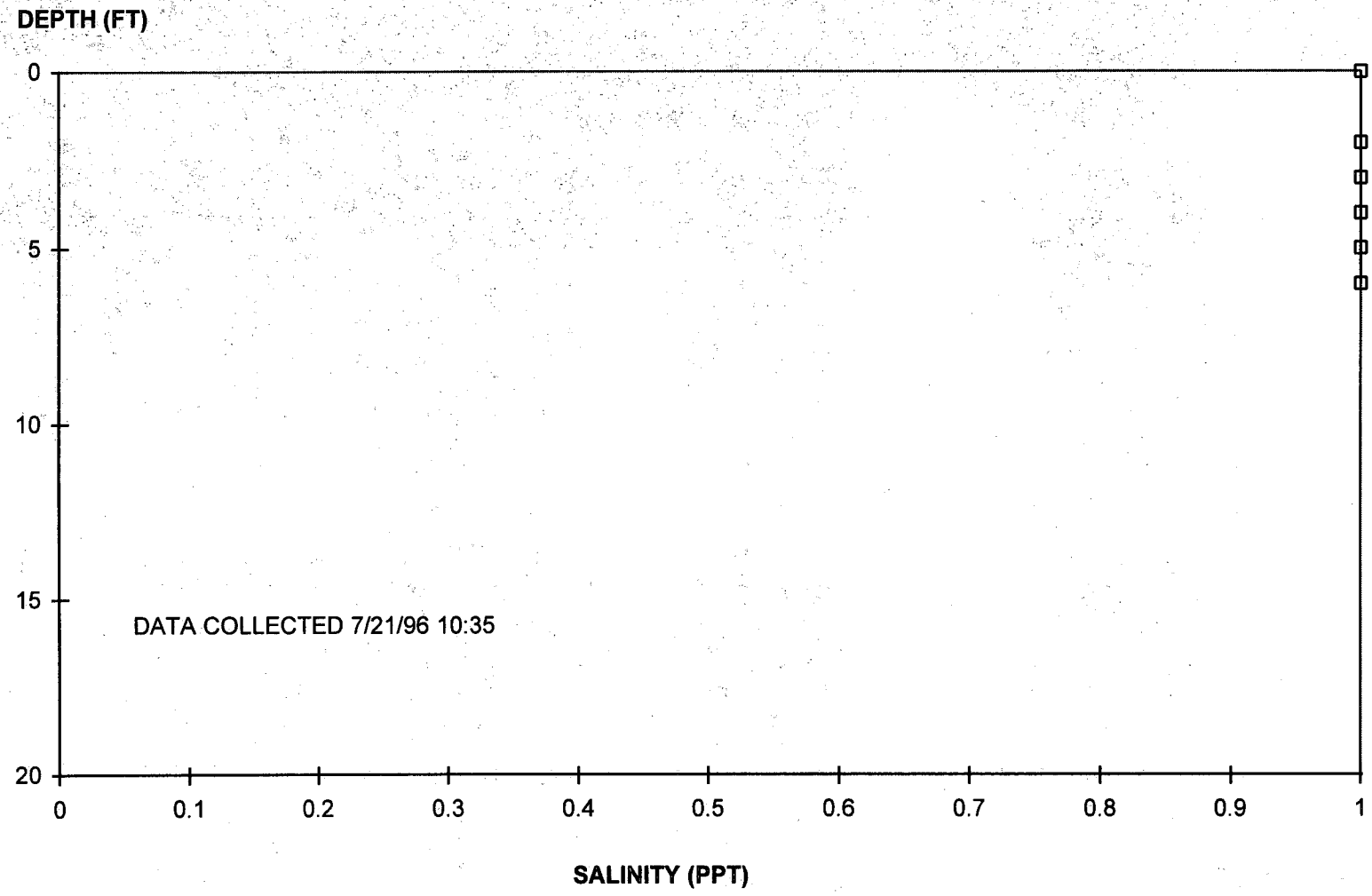
Figure
10.5.4–326



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN SALINITY PROFILE
AT UNITS 6/7 DISCHARGE, OUTLET OF DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

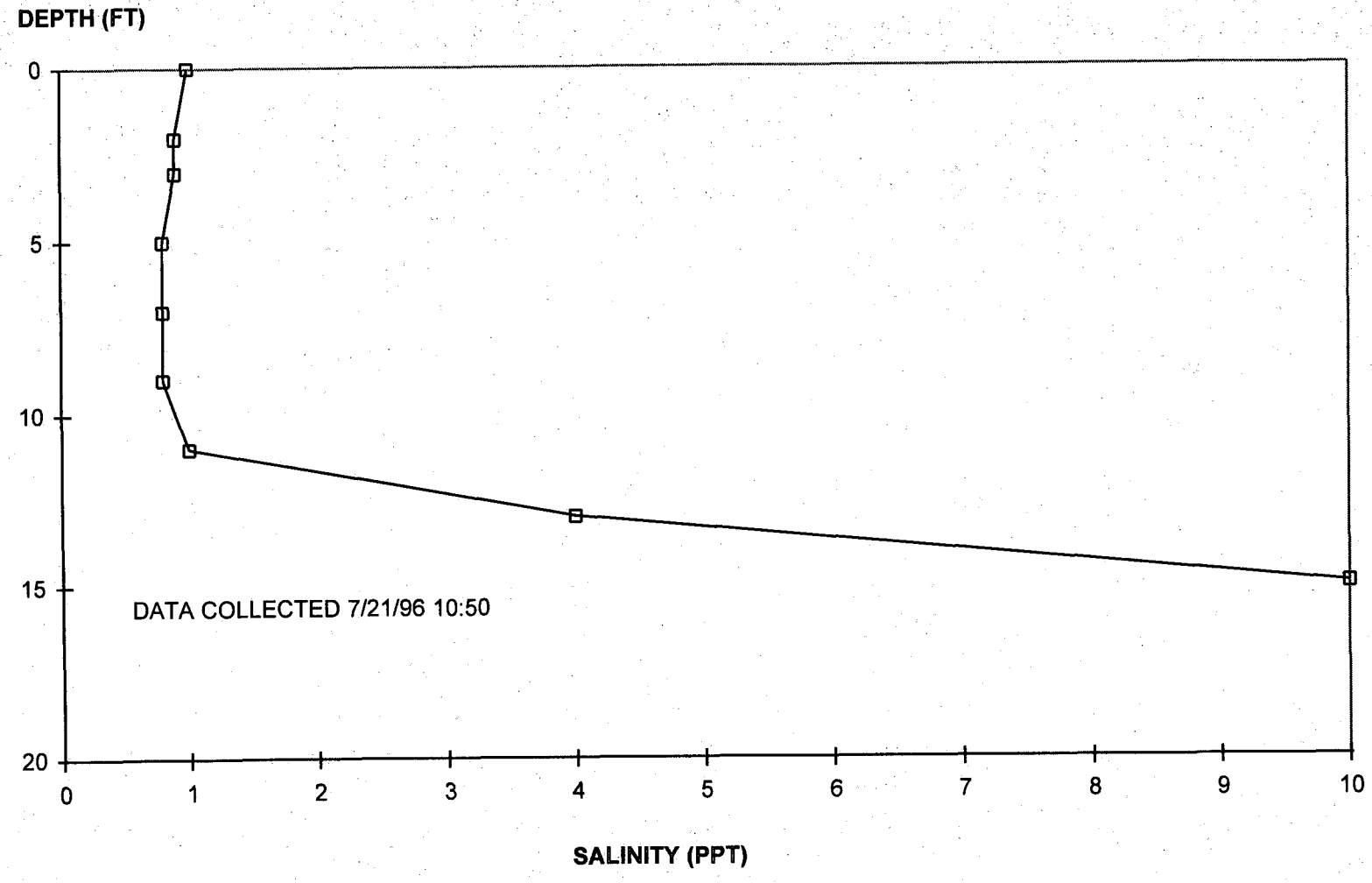
Figure
10.5.4–327



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN SALINITY PROFILE
AT UNITS 6/7 DISCHARGE, OUTLET OF DISCHARGE CANAL
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

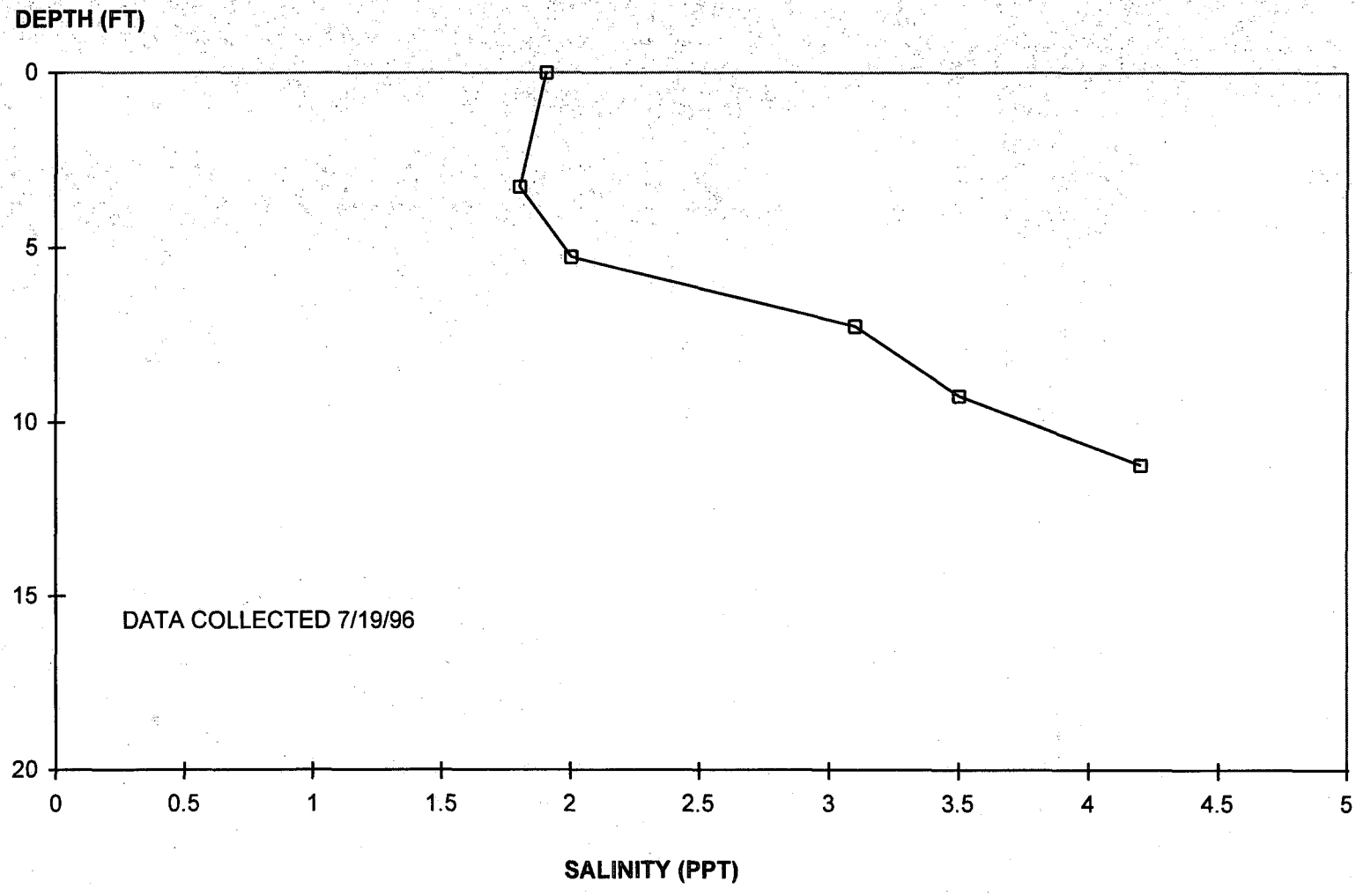
Figure
10.5.4-328



CITY OF TALLAHASSEE

LOCATION 12
WATER COLUMN SALINITY PROFILE
AT UNITS 6/7 DISCHARGE, EAST OF DISCHARGE CANAL, MID-RIVER
PURDOM UNIT 8 PROJECT - St MARKS, FLORIDA

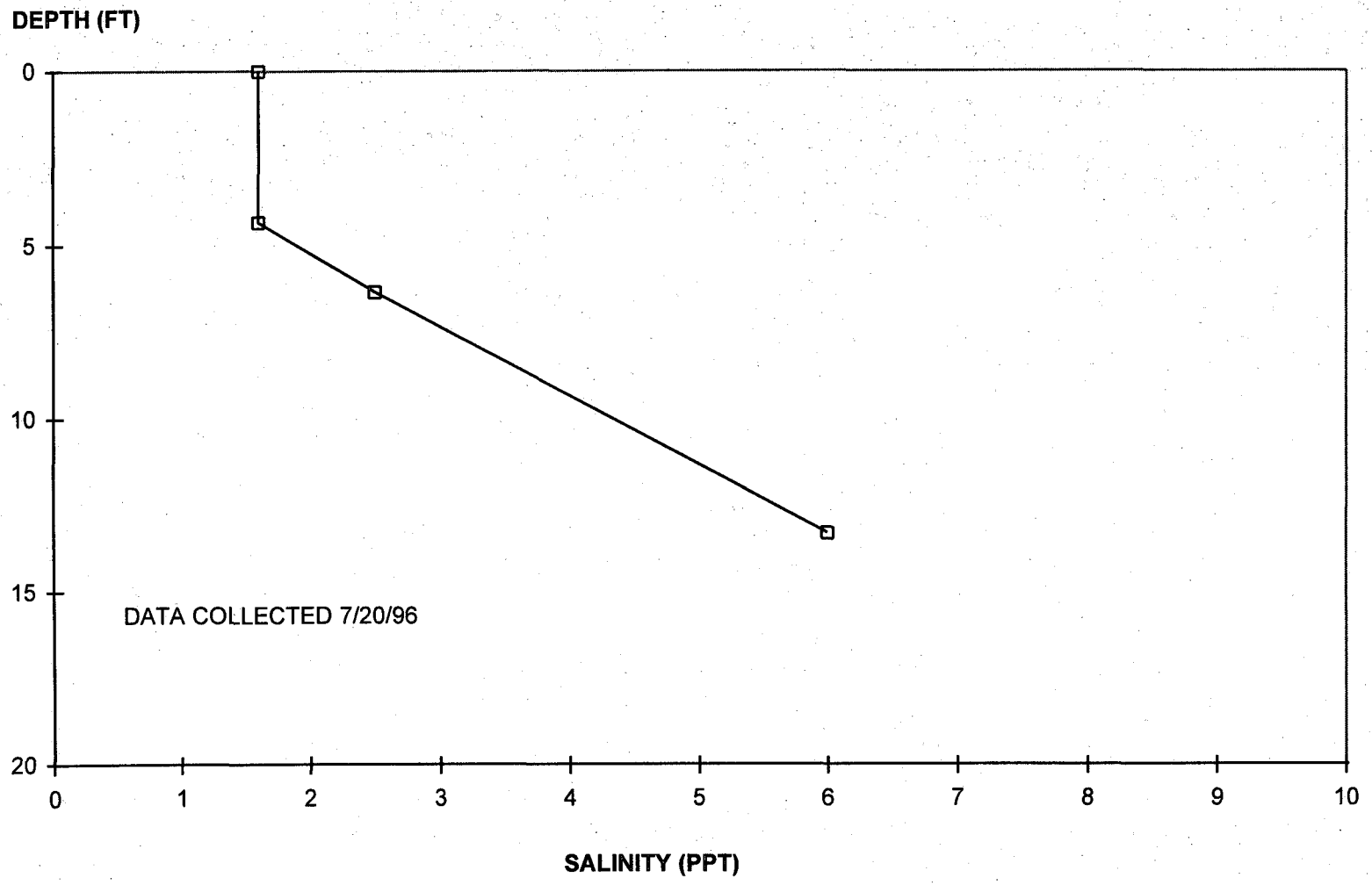
Figure
10.5.4-329



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

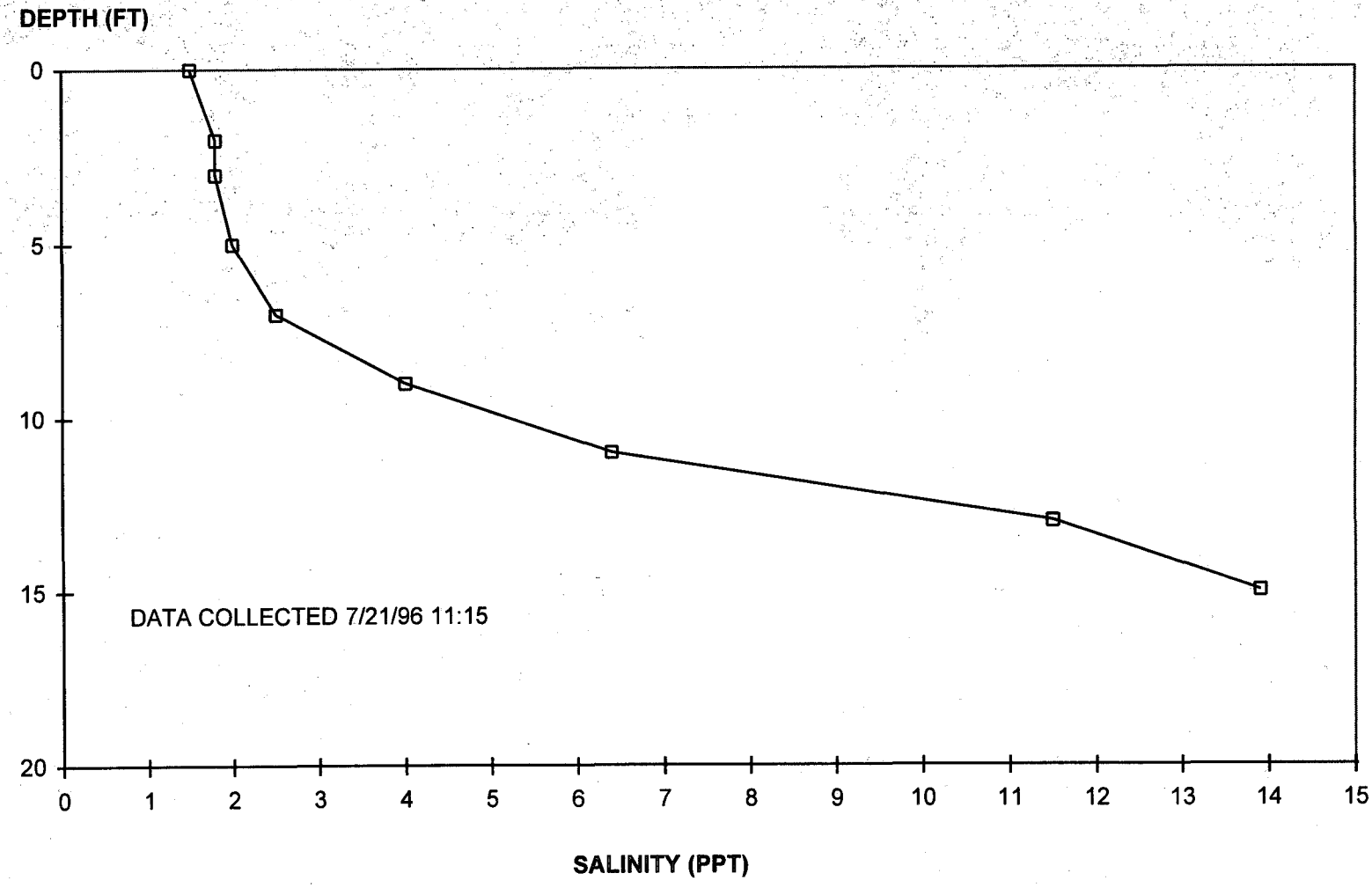
Figure
10.5.4-330



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE TRTMNT FACILITY DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

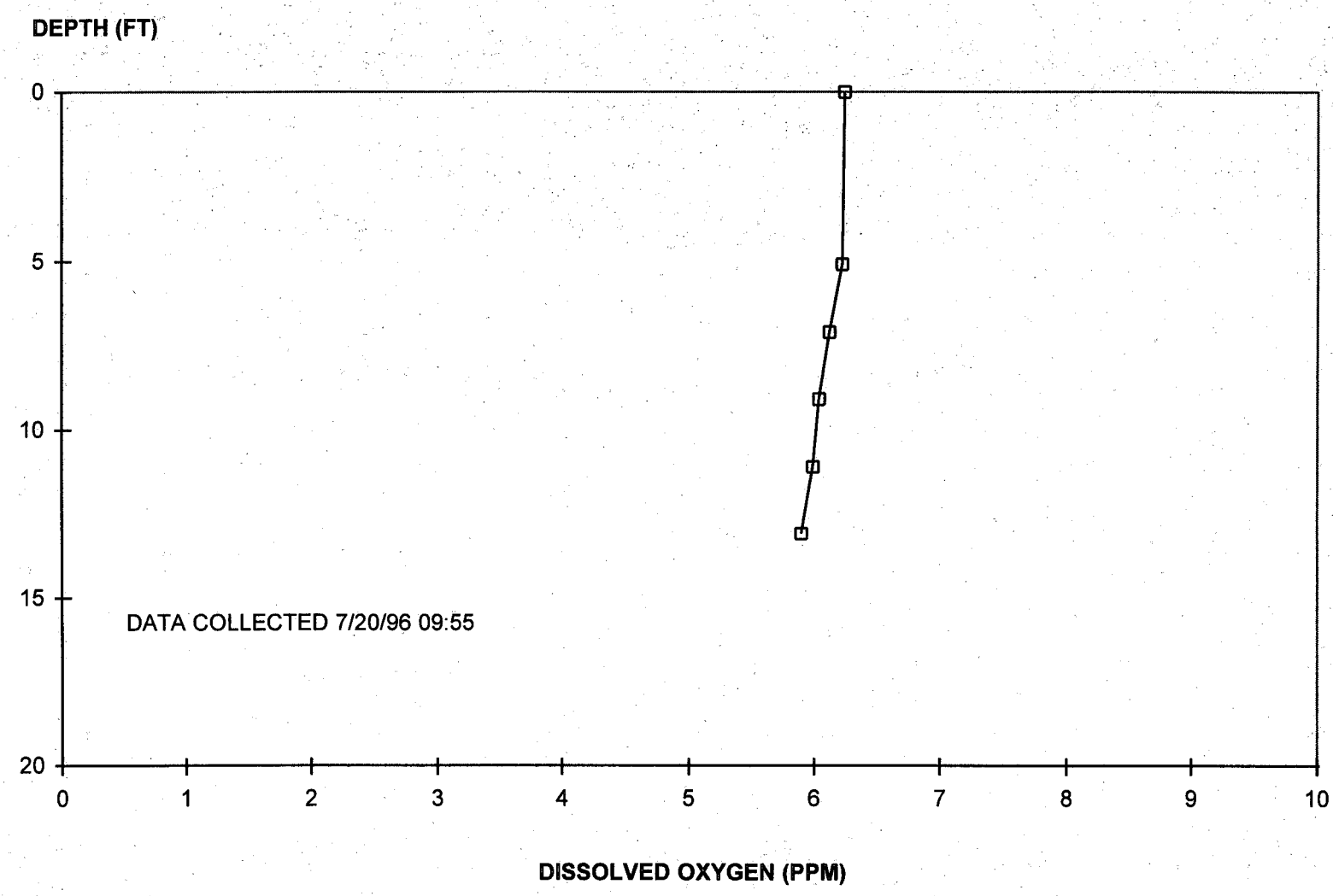
Figure
10.5.4–331



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN SALINITY PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE DISCHARGE, MID-RIVER
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

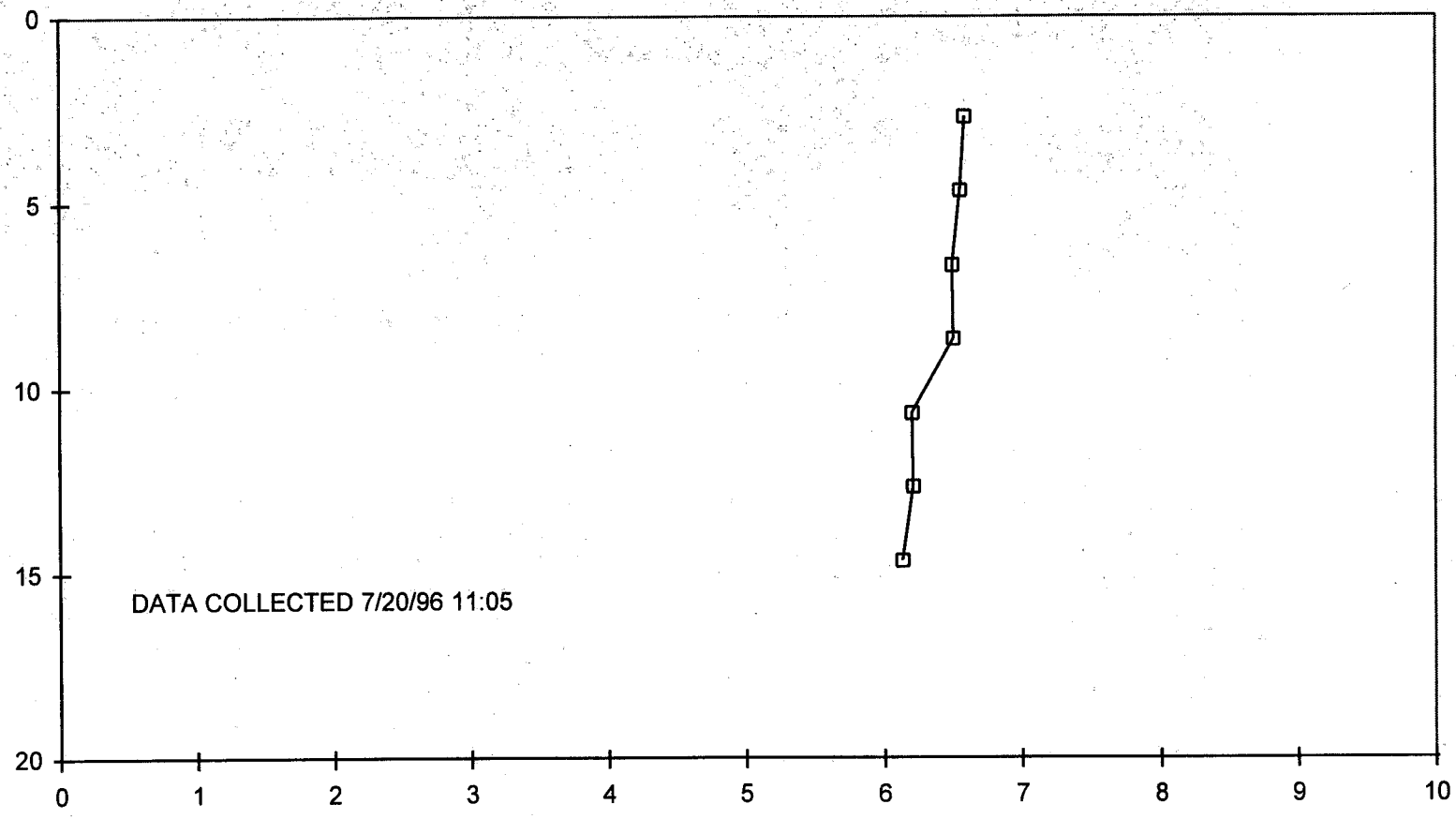
Figure
10.5.4–332



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN DO PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

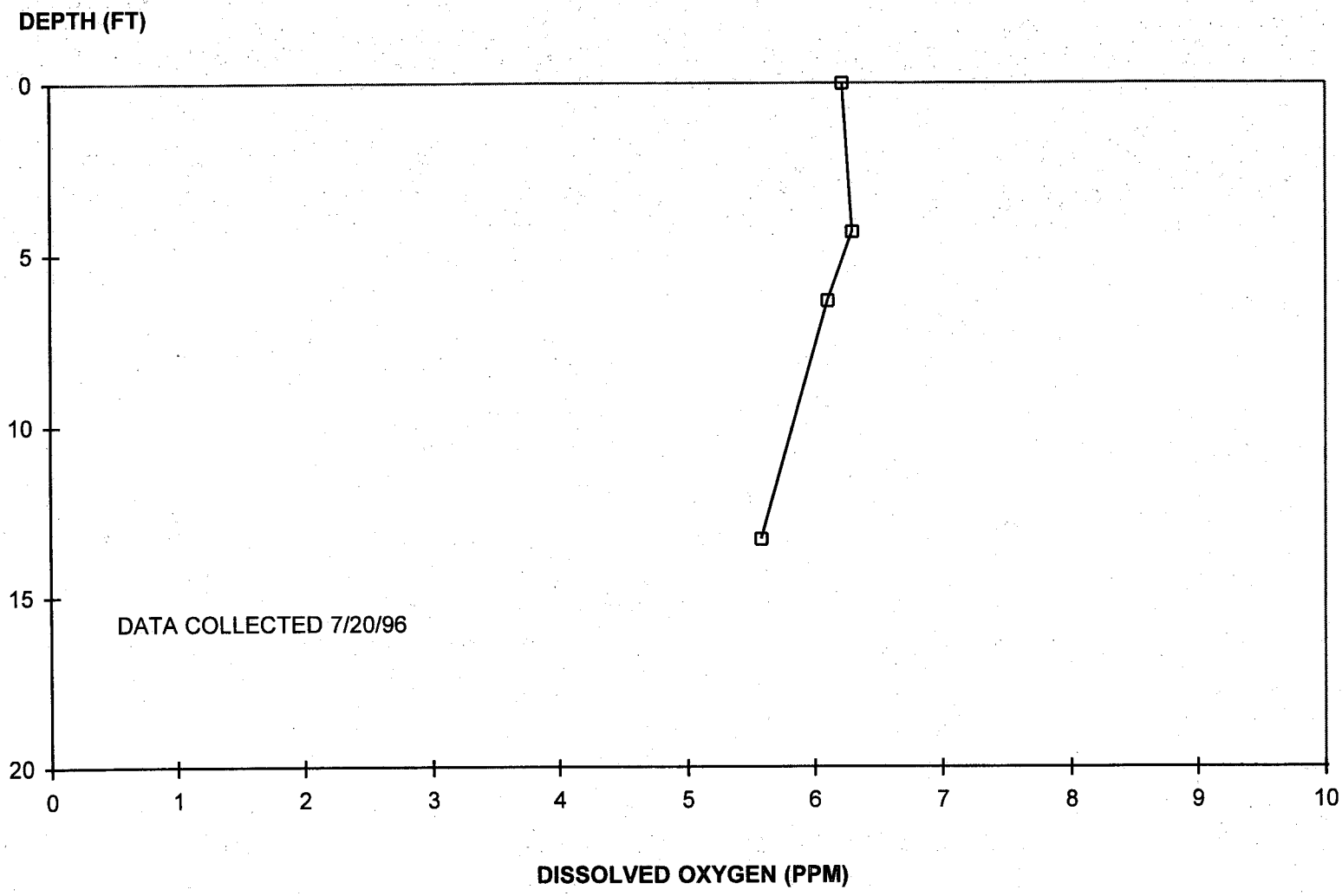
Figure
10.5.4–333



CITY OF TALLAHASSEE

LOCATION 7
WATER COLUMN DO PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 5 DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

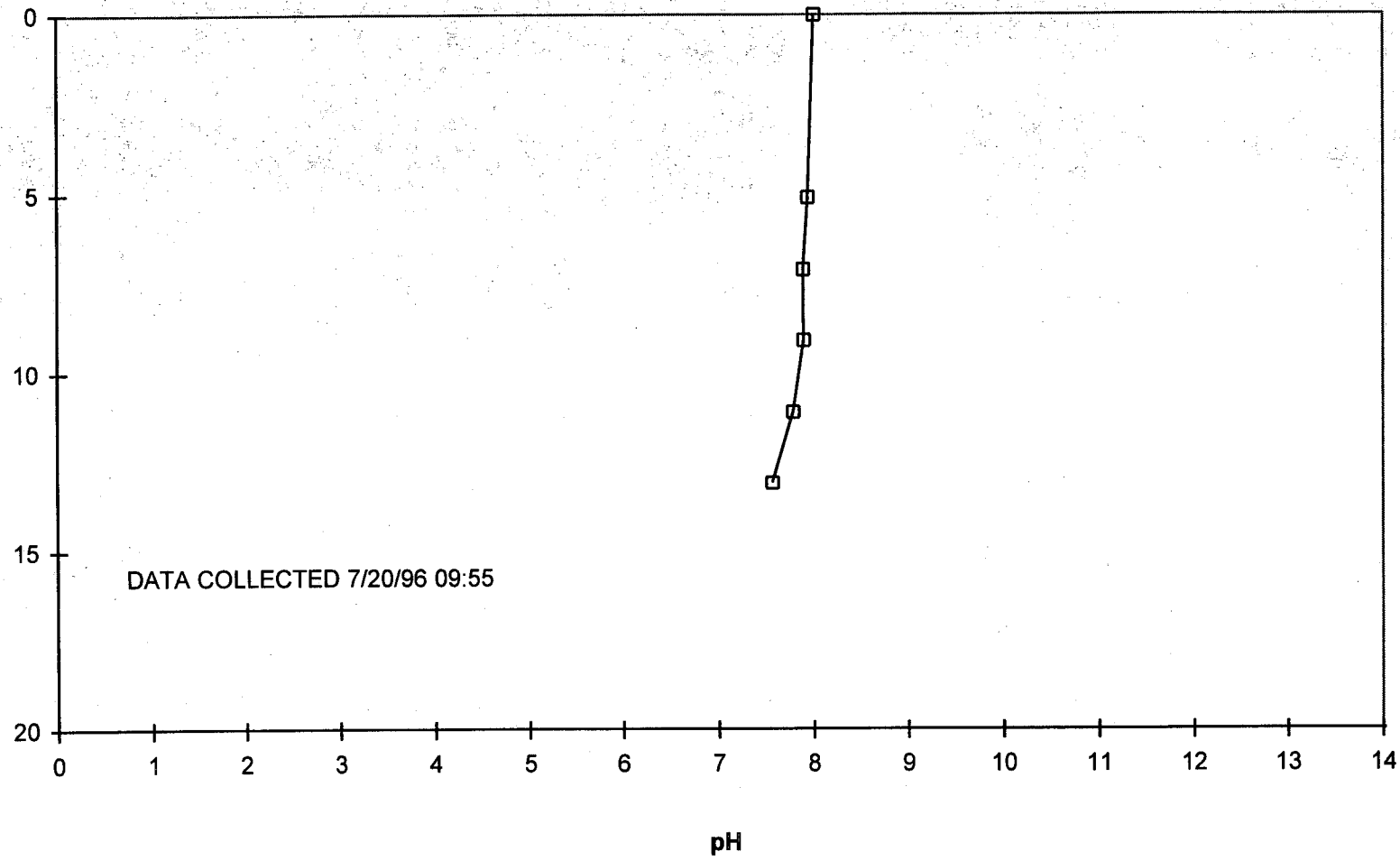
Figure
10.5.4–334



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN DO PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE TRTMNT FACILITY DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

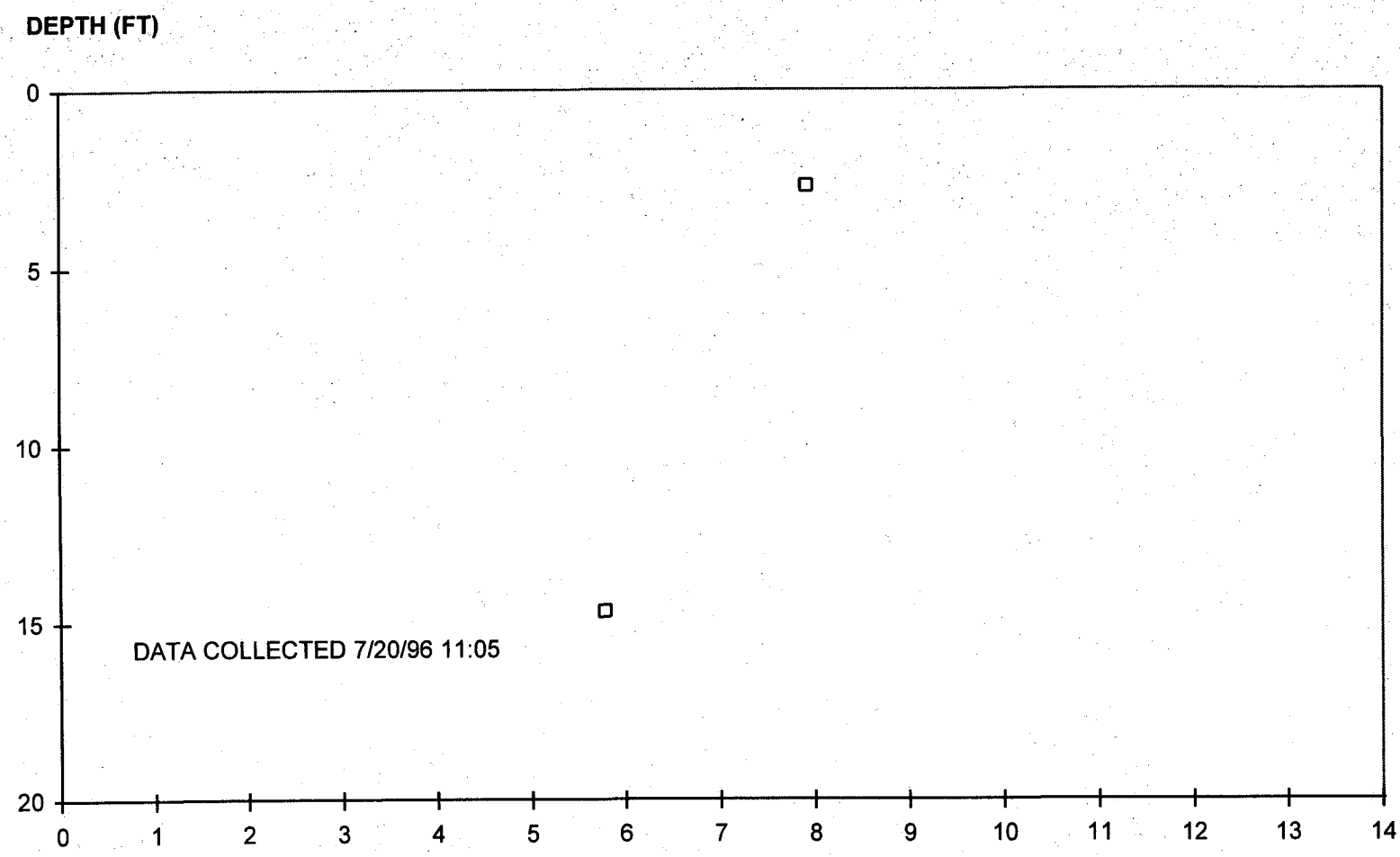
Figure
10.5.4-335



CITY OF TALLAHASSEE

LOCATION 1
WATER COLUMN pH PROFILE
AT ST. MARKS RIVER, UPSTREAM OF PLANT INFLUENCES
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

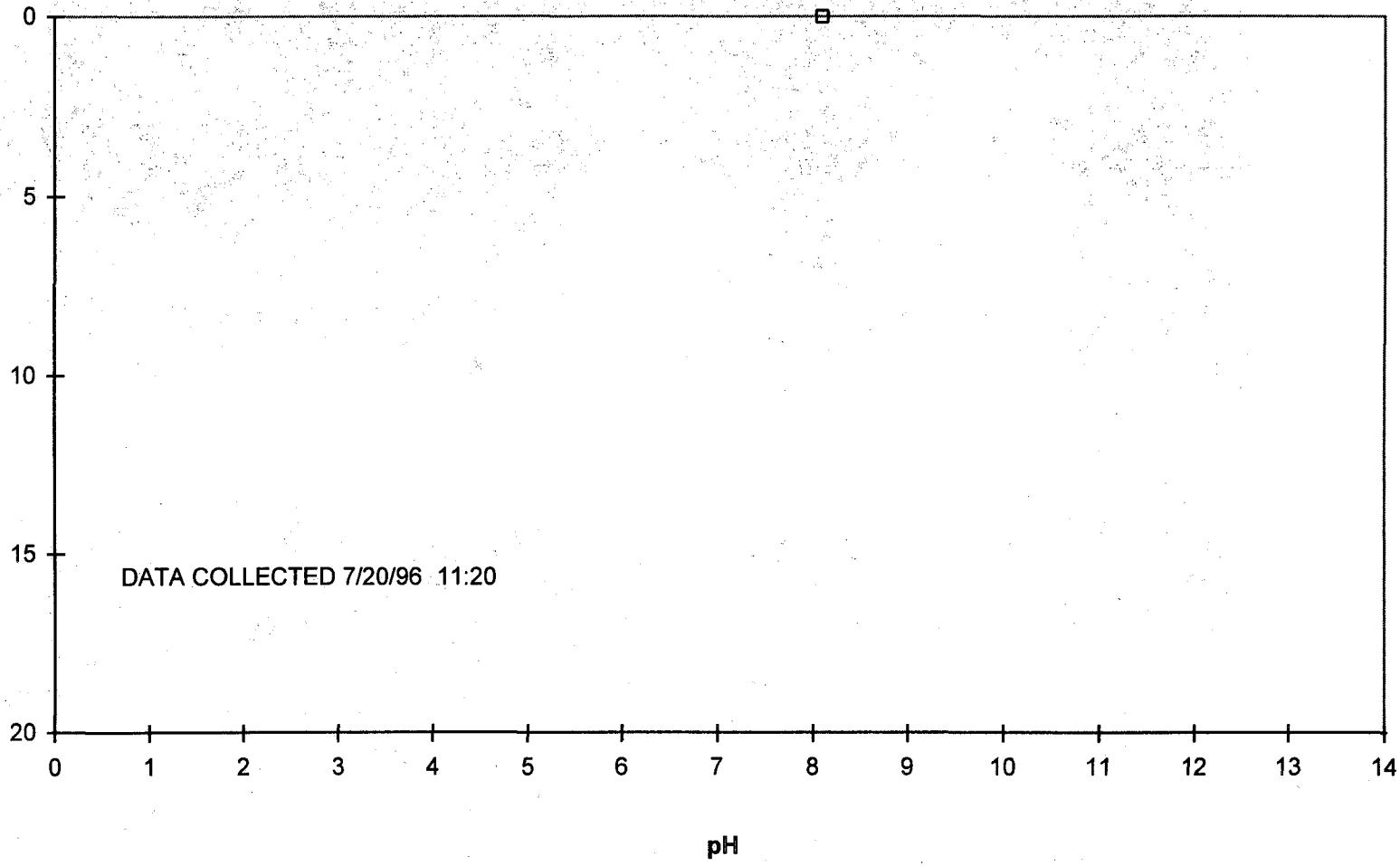
Figure
10.5.4–336



CITY OF TALLAHASSEE

LOCATION 7
WATER COLUMN pH PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 5 DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

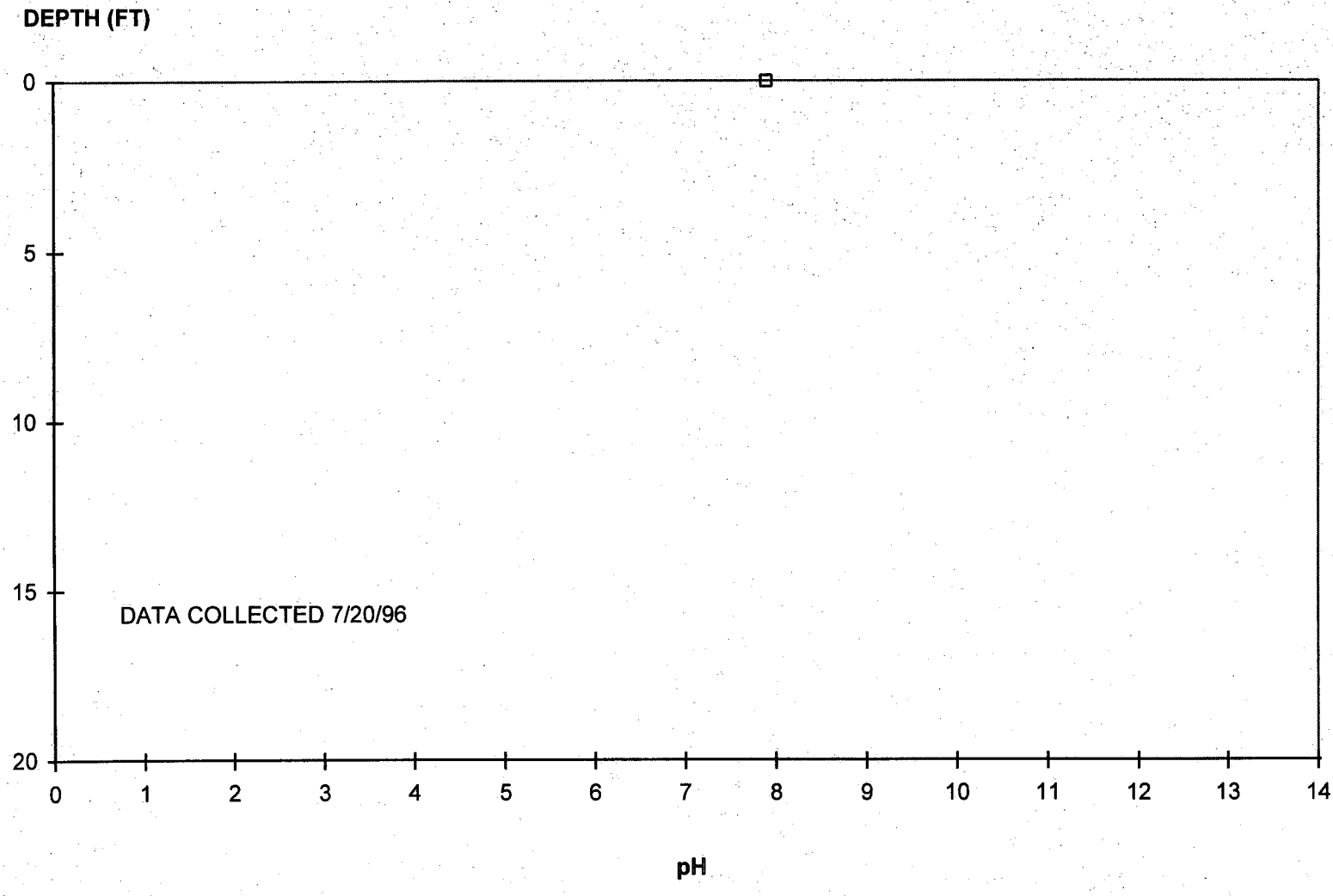
Figure
10.5.4–337



CITY OF TALLAHASSEE

LOCATION 8
WATER COLUMN pH PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF UNIT 6/7 DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

Figure
10.5.4–338



CITY OF TALLAHASSEE

LOCATION 13
WATER COLUMN pH PROFILE
AT ST. MARKS RIVER, DOWNSTREAM OF ST. MARKS SEWAGE TRTMNT FACILITY DISCHARGE
PURDOM UNIT 8 PROJECT – St MARKS, FLORIDA

Figure
10.5.4-339

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	STATION NUMBER	DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	LENGTH OF EXPOSURE (DAYS) (00022)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	DISCHARGE, IN CUBIC FEET PER SECOND (00060)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	TURBIDITY (JCU) (00070)
AUG 1959											
06...	02326900	590806	1230	--	--	1028	1028	--	724	5.51	--
MAY 1966											
19...	02326900	660519	--	--	--	--	--	6.2	--	--	--
JUN 1967											
01...	02326900	670601	--	20.5	--	--	--	396	--	--	--
MAY 1968											
21...	02326900	680521	1600	25.0	--	--	--	360	--	4.83	--
JUN 1969											
05...	02326900	690605	1015	22.0	--	--	--	382	--	4.50	--
MAY 1970											
08...	02326900	700508	1600	27.0	--	--	--	447	--	5.32	13
MAY 1971											
31...	02326900	710531	1020	20.0	--	--	--	406	--	5.12	--
31...	02326900	710531	1020	20.0	--	--	--	406	--	5.12	2
APR 1973											
05...	02326900	730405	1300	--	--	--	--	--	4650	11.74	--
05...	02326900	730405	1300	--	--	--	--	--	4650	11.74	15
NOV											
15...	02326900	731115	1205	19.0	--	--	--	--	--	--	--
JAN 1974											
11...	02326900	740111	0935	19.0	--	--	--	--	--	--	--
FEB											
25...	02326900	740225	1305	16.0	--	--	--	--	--	--	--
MAY											
09...	02326900	740509	1305	22.0	--	--	--	--	--	--	--
JUN											
28...	02326900	740628	1140	21.0	--	--	--	--	--	--	--
SEP											
11...	02326900	740911	1052	22.5	--	--	--	--	--	--	--
JAN 1978											
11...	02326900	780111	1145	15.0	--	--	--	--	667	5.16	1
FEB											
14...	02326900	780214	1050	12.0	--	--	--	--	690	5.27	1
MAR											
07...	02326900	780307	1100	--	--	1028	1028	--	--	--	--
07...	02326900	780307	1100	17.0	--	--	--	--	845	5.63	2
APR											
14...	02326900	780414	1342	22.5	--	--	--	--	655	5.34	2
MAY											
15...	02326900	780515	1500	--	--	1028	1028	--	--	--	--
15...	02326900	780515	1500	23.0	--	--	--	--	670	5.50	2
JUN											
08...	02326900	780608	1130	--	--	1028	1028	--	--	--	--
08...	02326900	780608	1130	24.0	--	--	--	--	680	5.60	1
JUL											
20...	02326900	780720	1220	--	--	1028	1028	--	--	--	--
20...	02326900	780720	1220	23.0	--	--	80010	--	675	5.70	--
OCT											
31...	02326900	781031	1400	--	--	1028	1028	--	--	--	--
31...	02326900	781031	1400	22.0	--	--	80010	--	583	5.25	--
DEC											
06...	02326900	781206	1355	19.0	--	--	80010	--	520	5.10	--
JAN 1979											
10...	02326900	790110	1400	15.5	--	--	80010	--	660	5.41	--
31...	02326900	790131	1345	--	--	1028	1028	--	--	--	--
31...	02326900	790131	1345	15.0	21	--	80010	--	961	6.00	--
FEB											
27...	02326900	790227	1405	17.5	--	--	80010	--	896	5.88	--
MAR											
26...	02326900	790326	1445	19.5	--	--	80010	--	710	5.51	--
APR											
23...	02326900	790423	1345	16.0	--	--	80010	--	820	5.73	--
MAY											
12...	02326900	790512	1300	--	--	1028	1028	--	--	--	--
JUN											
04...	02326900	790604	1535	--	--	1028	1028	--	--	--	--
04...	02326900	790604	1535	23.5	--	--	80010	--	855	5.80	--
28...	02326900	790628	1600	--	--	1028	1028	--	--	--	--
28...	02326900	790628	1600	22.0	--	--	80010	--	755	5.60	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	TURBIDITY (NTU) (00076)	COLOR (PLATINUM-COBALT UNITS) (00080)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2) (00405)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	BICARBONATE WATER WH FET FIELD MG/L AS HCO3 (00440)	CARBONATE WATER WH FET FIELD MG/L AS CO3 (00445)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
AUG 1959												
06...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 1966												
19...	--	5	235	--	--	7.4	8.5	110	130	--	--	--
JUN 1967												
01...	--	10	252	4.8	53	7.8	3.6	118	140	0	--	--
MAY 1968												
21...	--	5	271	6.5	77	7.7	5.1	131	160	0	--	--
JUN 1969												
05...	--	0	275	8.2	93	7.3	13	131	160	0	--	--
MAY 1970												
08...	--	10	268	8.1	100	8.0	2.4	125	150	0	--	--
MAY 1971												
31...	--	--	--	6.3	68	--	--	--	--	--	--	--
31...	--	--	270	6.3	68	--	--	--	--	--	--	--
APR 1973												
05...	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
15...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1974												
11...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
09...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
11...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1978												
11...	--	--	250	8.0	79	7.6	2.2	45	55	--	--	--
FEB												
14...	--	--	240	9.0	83	7.4	7.6	98	120	--	--	--
MAR												
07...	--	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	220	7.9	81	7.6	4.0	82	100	--	--	--
APR												
14...	--	--	260	8.3	95	8.0	2.2	110	140	--	--	--
MAY												
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	242	7.9	91	7.6	5.6	110	140	--	--	--
JUN												
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	235	5.6	66	7.6	5.6	110	140	--	--	--
JUL												
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	1.0	--	258	6.0	69	7.8	--	120	--	--	--	--
OCT												
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	1.0	--	285	8.7	--	8.2	--	120	--	--	--	--
DEC												
06...	1.0	--	275	8.8	--	8.1	--	120	--	--	--	--
JAN 1979												
10...	2.0	--	200	9.0	--	7.3	--	89	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	3.0	--	155	8.8	--	7.2	--	63	--	--	0.080	0.160
FEB												
27...	2.0	--	205	8.4	--	7.6	--	81	--	--	--	--
MAR												
26...	1.0	--	232	12.8	--	8.4	--	100	--	--	--	--
APR												
23...	2.0	--	205	7.0	--	7.7	--	94	--	--	0.470	0.630
MAY												
12...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	1.0	--	220	7.3	--	8.0	2.1	110	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	0.0	--	270	8.6	--	7.8	--	120	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOS-PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)
AUG 1959												
06...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 1966												
19...	--	--	--	--	--	--	--	--	--	--	0.09	--
JUN 1967												
01...	--	--	--	--	--	--	--	--	--	--	0.10	--
MAY 1968												
21...	--	--	--	--	--	--	--	--	--	0.03	--	--
JUN 1969												
05...	--	--	--	--	--	--	--	--	--	0.09	--	--
MAY 1970												
08...	--	0.14	--	--	--	--	--	--	--	0.15	0.10	--
MAY 1971												
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	--	0.16	--	--	--	--	--	--	--	--	0.10	--
APR 1973												
05...	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	0.73	0.040	0.012	0.00	--	--	--	--	0.12	--	0.042
NOV												
15...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1974												
11...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
09...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
11...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1978												
11...	--	--	<0.010	--	0.090	0.09	--	--	0.090	--	--	0.040
FEB												
14...	0.39	0.31	<0.010	--	0.080	0.09	0.22	0.31	0.080	--	--	0.030
MAR												
07...	--	--	--	--	--	--	--	--	--	--	--	--
07...	0.42	0.35	0.010	--	0.060	0.29	0.07	0.36	0.060	--	--	0.030
APR												
14...	0.31	0.22	0.010	--	0.080	0.21	0.02	0.23	0.080	--	--	0.030
MAY												
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	0.35	0.27	<0.010	--	0.080	0.18	0.09	0.27	0.080	--	--	0.040
JUN												
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	0.40	0.32	<0.010	--	0.080	0.17	0.15	0.32	0.080	--	--	0.040
JUL												
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	0.30	0.16	0.020	--	0.120	--	0.0	0.18	0.120	--	--	0.040
OCT												
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	0.10	0.08	0.010	--	0.010	0.18	0.0	0.09	0.010	--	--	0.050
DEC												
06...	0.18	0.08	0.010	--	0.090	0.06	0.03	0.09	0.090	--	--	0.050
JAN 1979												
10...	0.31	0.24	<0.010	--	0.070	0.29	0.0	0.24	0.070	--	--	0.040
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	0.24	0.19	0.010	--	0.040	0.25	0.0	0.20	0.040	--	--	0.030
FEB												
27...	0.22	0.19	<0.010	--	0.030	0.20	0.0	0.19	0.030	--	--	0.030
MAR												
26...	0.33	0.32	<0.010	--	0.010	0.22	0.10	0.32	0.010	--	--	0.030
APR												
23...	0.06	0.0	<0.010	--	0.060	0.37	0.0	<0.10	0.060	0.12	--	0.040
MAY												
12...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	0.22	0.17	<0.010	--	0.050	0.11	0.06	0.17	0.050	0.12	--	0.040
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	0.17	0.07	0.010	--	0.090	0.03	0.05	0.08	0.090	0.12	--	0.040

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORGANIC TOTAL (MG/L AS P) (00670)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)
AUG 1959											
06...	--	--	--	--	--	--	--	--	--	--	--
MAY 1966											
19...	--	--	--	--	--	120	8	36	6.9	3.4	0.1
JUN 1967											
01...	--	--	--	--	--	110	6	32	7.2	3.4	0.1
MAY 1968											
21...	--	--	--	--	--	140	5	41	8.1	3.5	0.1
JUN 1969											
05...	--	--	--	--	--	140	10	43	8.1	3.5	0.1
MAY 1970											
08...	--	--	--	--	--	140	11	42	7.4	4.9	0.2
MAY 1971											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
APR 1973											
05...	--	--	--	--	--	--	--	--	--	--	--
05...	--	0.00	--	--	--	--	--	--	--	--	--
NOV											
15...	--	--	--	--	--	--	--	--	--	--	--
JAN 1974											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB											
25...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
JUN											
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
11...	--	--	--	--	--	--	--	--	--	--	--
JAN 1978											
11...	0.040	--	--	9.0	--	120	79	38	7.0	3.5	0.1
FEB											
14...	0.030	--	2.4	--	--	120	20	37	6.3	3.5	0.1
MAR											
07...	--	--	--	--	--	--	--	--	--	--	--
07...	0.020	--	10	--	--	95	13	29	5.5	3.1	0.1
APR											
14...	0.020	--	--	3.1	0.20	120	6	37	6.8	3.3	0.1
MAY											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	0.020	--	10	--	--	150	30	35	14	3.4	0.1
JUN											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	0.020	--	8.5	--	--	130	14	39	7.6	3.5	0.1
JUL											
20...	--	--	--	--	--	--	--	--	--	--	--
20...	0.030	--	--	2.7	0.20	130	7	38	7.7	3.4	0.1
OCT											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	0.040	--	--	15	0.40	140	21	42	8.7	3.3	0.1
DEC											
06...	0.040	--	3.2	--	--	130	14	41	7.6	3.5	0.1
JAN 1979											
10...	0.030	--	8.8	--	--	110	19	33	6.2	3.2	0.1
31...	--	--	--	--	--	--	--	--	--	--	--
31...	0.020	--	--	18	0.20	75	12	23	4.3	2.8	0.1
FEB											
27...	0.020	--	9.8	--	--	90	9	28	4.9	3.0	0.1
MAR											
26...	0.030	--	4.5	--	--	110	10	34	6.0	3.1	0.1
APR											
23...	0.030	--	--	7.0	0.0	100	6	31	5.5	3.1	0.1
MAY											
12...	--	--	--	--	--	--	--	--	--	--	--
JUN											
04...	--	--	--	--	--	--	--	--	--	--	--
04...	0.030	--	22	--	--	110	3	35	6.3	3.2	0.1
28...	--	--	--	--	--	--	--	--	--	--	--
28...	0.040	--	8.3	--	--	130	12	40	7.8	3.5	0.1

DATE	SODIUM PERCENT (00932)	SODIUM+ POTASSIUM DISSOLVED (MG/L AS NA) (00933)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	ARSENIC SUSPENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DISSOLVED (UG/L AS BA) (01005)
AUG 1959											
06...	--	--	--	--	--	--	--	--	--	--	--
MAY 1966											
19...	6	--	0.40	5.0	8.4	0.30	11	--	--	--	--
JUN 1967											
01...	6	--	0.50	6.0	8.8	0.30	11	--	--	--	--
MAY 1968											
21...	5	--	0.40	5.0	8.2	0.20	13	--	--	--	--
JUN 1969											
05...	5	--	0.60	6.0	8.8	0.20	13	--	--	--	--
MAY 1970											
08...	7	--	0.50	5.0	0.20	0.30	11	--	--	--	--
MAY 1971											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	12	--	--	--	--
APR 1973											
05...	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	2.6	--	--	--	--
NOV											
15...	--	--	--	--	--	--	--	--	--	--	--
JAN 1974											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB											
25...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
JUN											
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
11...	--	--	--	--	--	--	--	--	--	--	--
JAN 1978											
11...	6	--	0.60	5.5	8.8	0.10	12	1	<1	1	<100
FEB											
14...	6	--	0.50	8.0	11	0.10	9.8	--	--	--	--
MAR											
07...	--	--	--	--	--	--	--	--	--	--	--
07...	7	--	0.40	5.3	9.6	0.10	9.2	--	--	--	--
APR											
14...	6	--	0.60	5.2	8.6	0.10	11	<1	<1	<1	<100
MAY											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	5	--	0.60	5.3	10	0.20	11	--	--	--	--
JUN											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	6	--	0.50	5.1	8.2	0.20	12	--	--	--	--
JUL											
20...	--	--	--	--	--	--	--	--	--	--	--
20...	5	--	0.60	5.2	7.2	0.10	12	1	<1	1	<100
OCT											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	5	--	0.60	5.2	8.2	0.10	13	<1	--	1	<100
DEC											
06...	5	--	0.50	5.4	11	0.10	13	--	--	--	--
JAN 1979											
10...	6	--	0.40	5.5	5.4	0.10	11	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	7	--	0.40	5.1	5.8	<0.10	8.1	1	--	1	<100
FEB											
27...	7	--	0.40	5.0	5.6	0.10	7.7	--	--	--	--
MAR											
26...	6	--	0.50	5.3	6.4	0.10	8.0	--	--	--	--
APR											
23...	6	--	0.50	5.5	8.1	0.10	8.9	1	--	3	<100
MAY											
12...	--	--	--	--	--	--	--	--	--	--	--
JUN											
04...	--	--	--	--	--	--	--	--	--	--	--
04...	6	3.6	0.40	5.2	7.8	0.10	10	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	5	--	0.40	5.1	6.8	0.10	12	--	--	--	--

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DATE	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO) (01036)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
AUG 1959											
06...	--	--	--	--	--	--	--	--	--	--	--
MAY 1966											
19...	--	--	--	--	--	--	--	--	--	--	--
JUN 1967											
01...	--	--	--	--	--	--	--	--	--	--	--
MAY 1968											
21...	--	--	--	--	--	--	--	--	--	--	--
JUN 1969											
05...	--	--	--	--	--	--	--	--	--	--	--
MAY 1970											
08...	--	--	--	--	--	--	--	--	--	--	--
MAY 1971											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
APR 1973											
05...	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--
NOV											
15...	--	--	--	--	--	--	--	--	--	--	--
JAN 1974											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB											
25...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
JUN											
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
11...	--	--	--	--	--	--	--	--	--	--	--
JAN 1978											
11...	0.0	<100	<2.0	0	ND	ND	<10	<20	ND	0	ND
FEB											
14...	--	--	--	--	--	--	--	--	--	--	--
MAR											
07...	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--
APR											
14...	0.0	<100	--	--	--	2.0	<8	<20	ND	0	ND
MAY											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
JUL											
20...	--	--	--	--	--	--	--	--	--	--	--
20...	0.0	<100	--	--	--	ND	10	<20	ND	0	ND
OCT											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	0.0	<100	ND	1	<2	ND	10	<20	ND	0	ND
DEC											
06...	--	--	--	--	--	--	--	--	--	--	--
JAN 1979											
10...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	0.0	<100	<2.0	0	<2	<20	10	20	ND	0	ND
FEB											
27...	--	--	--	--	--	--	--	--	--	--	--
MAR											
26...	--	--	--	--	--	--	--	--	--	--	--
APR											
23...	0.0	<100	ND	0	ND	<20	10	20	ND	0	ND
MAY											
12...	--	--	--	--	--	--	--	--	--	--	--
JUN											
04...	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--

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DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
AUG 1959											
06...	--	--	--	--	--	--	--	--	--	--	--
MAY 1966											
19...	--	--	--	--	--	20	--	--	--	--	--
JUN 1967											
01...	--	--	--	--	--	30	--	--	--	--	--
MAY 1968											
21...	--	--	--	--	--	10	--	--	--	--	--
JUN 1969											
05...	--	--	--	--	--	0	--	--	--	--	--
MAY 1970											
08...	--	--	--	--	--	--	--	--	--	--	--
MAY 1971											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
APR 1973											
05...	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--
NOV											
15...	--	--	--	--	--	--	--	--	--	--	--
JAN 1974											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB											
25...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
JUN											
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
11...	--	--	--	--	--	--	--	--	--	--	--
JAN 1978											
11...	ND	2	2	--	110	50	14	0	10	0	<10
FEB											
14...	--	--	--	--	--	--	--	--	--	--	--
MAR											
07...	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--
APR											
14...	<2.0	2	3	--	110	40	--	--	--	0	<10
MAY											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
JUL											
20...	--	--	--	--	--	--	--	--	--	--	--
20...	ND	1	<2	110	160	50	--	--	--	0	<10
OCT											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	<2.0	0	<2	110	110	<10	2.0	1	3	30	30
DEC											
06...	--	--	--	--	--	--	--	--	--	--	--
JAN 1979											
10...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	ND	0	ND	80	200	120	--	--	--	6	<10
FEB											
27...	--	--	--	--	--	--	--	--	--	--	--
MAR											
26...	--	--	--	--	--	--	--	--	--	--	--
APR											
23...	<2.0	0	ND	200	350	150	ND	4	4	0	<10
MAY											
12...	--	--	--	--	--	--	--	--	--	--	--
JUN											
04...	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--

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DATE	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	SILVER, DISSOLVED (UG/L AS AG) (01075)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG) (01076)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN) (01091)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE) (01146)	SELENIUM, TOTAL (UG/L AS SE) (01147)
AUG 1959											
06...	--	--	--	--	--	--	--	--	--	--	--
MAY 1966											
19...	--	--	--	--	--	--	--	--	--	--	--
JUN 1967											
01...	0	--	--	--	80	--	--	--	--	--	--
MAY 1968											
21...	0	--	--	--	0	--	--	--	--	--	--
JUN 1969											
05...	--	--	--	--	--	--	--	--	--	--	--
MAY 1970											
08...	--	--	--	--	--	--	--	--	--	--	--
MAY 1971											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
APR 1973											
05...	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--
NOV											
15...	--	--	--	--	--	--	--	--	--	--	--
JAN 1974											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB											
25...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
JUN											
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
11...	--	--	--	--	--	--	--	--	--	--	--
JAN 1978											
11...	<10	ND	0	ND	--	<20	0	<20	<1	0	<1
FEB											
14...	--	--	--	--	--	--	--	--	--	--	--
MAR											
07...	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--
APR											
14...	<10	ND	0	ND	--	ND	10	<20	<1	0	<1
MAY											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
JUL											
20...	--	--	--	--	--	--	--	--	--	--	--
20...	<10	ND	0	ND	--	<20	10	20	<1	0	<1
OCT											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	<10	ND	0	ND	--	ND	10	<20	<1	0	<1
DEC											
06...	--	--	--	--	--	--	--	--	--	--	--
JAN 1979											
10...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	4.0	ND	0	ND	--	ND	10	<20	<1	0	<1
FEB											
27...	--	--	--	--	--	--	--	--	--	--	--
MAR											
26...	--	--	--	--	--	--	--	--	--	--	--
APR											
23...	<10	ND	0	ND	--	ND	0	ND	<1	0	<1
MAY											
12...	--	--	--	--	--	--	--	--	--	--	--
JUN											
04...	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--

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DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	PHYTO-PLANK-TON, TOTAL (CELLS PER ML) (60050)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P) (70507)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS) (70950)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70958)
AUG 1959											
06...	--	--	--	--	--	--	--	--	--	--	--
MAY 1966											
19...	--	--	--	--	137	2.30	0.19	--	--	--	--
JUN 1967											
01...	--	--	--	154	140	165	0.21	--	--	--	--
MAY 1968											
21...	--	--	--	154	158	150	0.21	--	--	--	--
JUN 1969											
05...	--	--	--	165	162	170	0.22	--	--	--	--
MAY 1970											
08...	--	--	--	160	146	193	0.22	--	--	--	--
MAY 1971											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
APR 1973											
05...	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	0.038	--	--	--
NOV											
15...	--	--	--	--	--	--	--	--	--	--	--
JAN 1974											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB											
25...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
JUN											
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
11...	--	--	--	--	--	--	--	--	--	--	--
JAN 1978											
11...	80	190	--	149	103	268	0.20	--	--	--	--
FEB											
14...	130	230	--	136	135	253	0.18	--	--	--	--
MAR											
07...	--	--	--	--	--	--	--	--	--	--	--
07...	130	310	250	132	111	301	0.18	--	--	--	--
APR											
14...	K17	510	--	150	141	265	0.20	--	--	--	--
MAY											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	K18	650	340	148	148	268	0.20	--	--	--	--
JUN											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	K35	1100	0	157	145	288	0.21	--	--	--	--
JUL											
20...	--	--	--	--	--	--	--	--	--	--	--
20...	58	660	290	165	146	301	0.22	--	--	--	--
OCT											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	120	490	110	154	153	242	0.21	--	--	--	--
DEC											
06...	30	<2	--	158	154	222	0.21	--	--	--	--
JAN 1979											
10...	K53	130	--	143	118	255	0.19	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
31...	88	78	160	115	87	298	0.16	--	11.6	6.92	0.00
FEB											
27...	93	140	--	109	103	264	0.15	--	--	--	--
MAR											
26...	K15	>200	--	130	123	249	0.18	--	--	--	--
APR											
23...	<1	120	--	128	119	283	0.17	--	17.6	9.07	0.750
MAY											
12...	--	--	--	--	--	--	--	--	--	--	--
JUN											
04...	--	--	--	--	--	--	--	--	--	--	--
04...	54	140	860	133	134	307	0.18	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	K8	>200	0	155	148	316	0.21	--	--	--	--

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DATE	NITROGEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, NITRATE DISSOLVED (MG/L AS NO3) (71851)	NITROGEN, NITRITE DISSOLVED (MG/L AS NO2) (71856)	PHOSPHORUS TOTAL (MG/L AS PO4) (71886)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	MERCURY DISSOLVED (UG/L AS HG) (71890)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG) (71895)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	SEDIMENT, SUSPENDED (MG/L) (80154)
AUG 1959											
06...	--	--	--	--	--	--	--	--	--	3.5	--
MAY 1966											
19...	--	--	1.1	--	--	--	--	--	--	3.5	--
JUN 1967											
01...	--	--	0.60	--	--	--	--	--	--	3.5	--
MAY 1968											
21...	--	--	0.60	--	--	--	--	--	--	3.5	--
JUN 1969											
05...	--	--	0.0	--	--	--	--	--	--	3.5	--
MAY 1970											
08...	--	0.01	0.20	0.01	--	--	--	--	--	3.5	--
MAY 1971											
31...	--	--	--	--	--	--	--	--	--	3.5	--
31...	--	0.04	0.30	0.01	0.13	--	--	--	--	3.5	--
APR 1973											
05...	--	--	--	--	--	--	--	--	--	3.5	--
05...	0.05	--	--	--	--	--	--	--	--	3.5	--
NOV											
15...	--	--	--	--	--	--	--	--	--	3.5	--
JAN 1974											
11...	--	--	--	--	--	--	--	--	--	3.5	--
FEB											
25...	--	--	--	--	--	--	--	--	--	3.5	--
MAY											
09...	--	--	--	--	--	--	--	--	--	3.5	--
JUN											
28...	--	--	--	--	--	--	--	--	--	3.5	--
SEP											
11...	--	--	--	--	--	--	--	--	--	3.5	--
JAN 1978											
11...	--	--	--	--	--	--	<0.5	0	<0.50	3.5	2
FEB											
14...	--	--	--	--	--	1.7	--	--	--	3.5	2
MAR											
07...	--	--	--	--	--	--	--	--	--	3.5	--
07...	0.01	--	--	--	--	1.9	--	--	--	3.5	--
APR											
14...	0.01	--	--	--	--	1.4	<0.5	0	<0.50	3.5	6
MAY											
15...	--	--	--	--	--	--	--	--	--	3.5	--
15...	--	--	--	--	--	1.5	--	--	--	3.5	3
JUN											
08...	--	--	--	--	--	--	--	--	--	3.5	--
08...	--	--	--	--	--	1.8	--	--	--	3.5	4
JUL											
20...	--	--	--	--	--	--	--	--	--	3.5	--
20...	0.03	--	--	--	--	1.3	0.5	0	0.50	3.5	4
OCT											
31...	--	--	--	--	--	--	--	--	--	3.5	--
31...	0.01	--	--	--	--	0.44	<0.5	0	<0.50	3.5	3
DEC											
06...	0.01	--	--	--	--	0.80	--	--	--	3.5	2
JAN 1979											
10...	--	--	--	--	--	1.4	--	--	--	3.5	1
31...	--	--	--	--	--	--	--	--	--	3.5	--
31...	0.01	--	--	--	--	1.1	<0.5	0	<0.50	3.5	5
FEB											
27...	--	--	--	--	--	0.97	--	--	--	3.5	1
MAR											
26...	--	--	--	--	--	1.5	--	--	--	3.5	4
APR											
23...	0.0	--	--	--	0.12	0.27	0.5	0	0.50	3.5	3
MAY											
12...	--	--	--	--	--	--	--	--	--	3.5	--
JUN											
04...	--	--	--	--	--	--	--	--	--	3.5	--
04...	0.0	--	--	--	0.12	0.97	--	--	--	3.5	1
28...	--	--	--	--	--	--	--	--	--	3.5	--
28...	0.01	--	--	--	0.12	0.75	--	--	--	3.5	1

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DATE	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	DRAINAGE AREA (SQ. MI.) (81024)	SAMPLING METHOD, CODES (82398)	CONVERSION FACTOR (95100)	TOTAL COUNT (CELLS/ML) (95200)	CHLAMY DOMONAS (96014)	KIRCHNERIELLA (96215)	EUGLENA (96387)	CYCLOTELLA (96706)	MELOSIRA (96707)	SKELETONEMA (96709)
AUG 1959											
06...	--	535	--	--	--	--	--	--	--	--	--
MAY 1966											
19...	--	535	--	--	--	--	--	--	--	--	--
JUN 1967											
01...	--	535	--	--	--	--	--	--	--	--	--
MAY 1968											
21...	--	535	--	--	--	--	--	--	--	--	--
JUN 1969											
05...	--	535	--	--	--	--	--	--	--	--	--
MAY 1970											
08...	--	535	--	--	--	--	--	--	--	--	--
MAY 1971											
31...	--	535	--	--	--	--	--	--	--	--	--
31...	--	535	--	--	--	--	--	--	--	--	--
APR 1973											
05...	--	535	--	--	--	--	--	--	--	--	--
05...	--	535	--	--	--	--	--	--	--	--	--
NOV											
15...	--	535	--	--	--	--	--	--	--	--	--
JAN 1974											
11...	--	535	--	--	--	--	--	--	--	--	--
FEB											
25...	--	535	--	--	--	--	--	--	--	--	--
MAY											
09...	--	535	--	--	--	--	--	--	--	--	--
JUN											
28...	--	535	--	--	--	--	--	--	--	--	--
SEP											
11...	--	535	--	--	--	--	--	--	--	--	--
JAN 1978											
11...	3.6	535	--	--	--	--	--	--	--	--	--
FEB											
14...	3.7	535	--	--	--	--	--	--	--	--	--
MAR											
07...	--	535	8010	4.6	250	5	--	D46	--	--	--
07...	--	535	--	--	--	--	--	--	--	--	--
APR											
14...	11	535	--	--	--	--	--	--	--	--	--
MAY											
15...	--	535	8010	13.6	340	--	--	--	--	--	--
15...	5.4	535	--	--	--	--	--	--	--	--	--
JUN											
08...	--	535	8010	22.3	0	--	--	--	--	--	--
08...	7.3	535	--	--	--	--	--	--	--	--	--
JUL											
20...	--	535	8010	22.2	290	--	22	--	--	--	--
20...	7.3	535	--	--	--	--	--	--	--	--	--
OCT											
31...	--	535	8010	14.4	110	--	--	--	14	D29	--
31...	4.7	535	--	--	--	--	--	--	--	--	--
DEC											
06...	2.8	535	--	--	--	--	--	--	--	--	--
JAN 1979											
10...	1.8	535	--	--	--	--	--	--	--	--	--
31...	--	535	8010	5.0	160	--	--	--	D120	10	--
31...	13	535	--	--	--	--	--	--	--	--	--
FEB											
27...	2.4	535	--	--	--	--	--	--	--	--	--
MAR											
26...	7.7	535	--	--	--	--	--	--	--	--	--
APR											
23...	6.6	535	--	--	--	--	--	--	--	--	--
MAY											
12...	--	535	8010	1.2	52	--	--	--	--	--	1
JUN											
04...	--	535	8010	12.9	860	--	--	--	13	--	--
04...	2.3	535	--	--	--	--	--	--	--	--	--
28...	--	535	8010	12.9	0	--	--	--	--	--	--
28...	2.0	535	--	--	--	--	--	--	--	--	--

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DATE	FRAGILARIA (96764)	SYNEDRA (96765)	COCCONEIS (96778)	RHOCOSPHENIA (96779)	NAVICULA (96791)	GOMPHONEMA (96802)	AMPHORA (96805)	NITZSCHIA (96812)	SURIRELLA (96817)	ANACYSTIS (98082)	OSCILLATORIA (98136)
AUG 1959											
06...	--	--	--	--	--	--	--	--	--	--	--
MAY 1966											
19...	--	--	--	--	--	--	--	--	--	--	--
JUN 1967											
01...	--	--	--	--	--	--	--	--	--	--	--
MAY 1968											
21...	--	--	--	--	--	--	--	--	--	--	--
JUN 1969											
05...	--	--	--	--	--	--	--	--	--	--	--
MAY 1970											
08...	--	--	--	--	--	--	--	--	--	--	--
MAY 1971											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
APR 1973											
05...	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--
NOV											
15...	--	--	--	--	--	--	--	--	--	--	--
JAN 1974											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB											
25...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
JUN											
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
11...	--	--	--	--	--	--	--	--	--	--	--
JAN 1978											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB											
14...	--	--	--	--	--	--	--	--	--	--	--
MAR											
07...	--	19	D93	5	28	23	5	23	9	--	--
07...	--	--	--	--	--	--	--	--	--	--	--
APR											
14...	--	--	--	--	--	--	--	--	--	--	--
MAY											
15...	27	--	D310	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
JUL											
20...	--	--	D240	--	22	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
OCT											
31...	--	--	D43	--	--	--	--	--	--	D29	--
31...	--	--	--	--	--	--	--	--	--	--	--
DEC											
06...	--	--	--	--	--	--	--	--	--	--	--
JAN 1979											
10...	--	--	--	--	--	--	--	--	--	--	--
31...	5	--	D25	--	5	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
FEB											
27...	--	--	--	--	--	--	--	--	--	--	--
MAR											
26...	--	--	--	--	--	--	--	--	--	--	--
APR											
23...	--	--	--	--	--	--	--	--	--	--	--
MAY											
12...	--	--	D41	--	5	--	--	5	--	--	--
JUN											
04...	--	39	39	--	--	--	--	--	--	--	D770
04...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--

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02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	STATION NUMBER	DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	LENGTH OF EXPOSURE (DAYS) (00022)	BAROMETRIC PRESSURE (MM OF HG) (00025)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	TURBIDITY (NTU) (00076)
JUL 1979											
27...	02326900	790727	1400	--	--	--	1028	1028	--	--	--
27...	02326900	790727	1400	22.5	29	--	--	80010	912	5.91	2.0
AUG											
30...	02326900	790830	0815	--	--	--	1028	1028	--	--	--
30...	02326900	790830	0815	21.5	--	--	--	80010	917	5.92	1.0
OCT											
03...	02326900	791003	0930	--	--	--	1028	1028	--	--	--
03...	02326900	791003	0930	21.0	--	--	--	80010	1160	6.35	1.0
NOV											
08...	02326900	791108	1110	20.0	36	--	--	80010	720	5.53	0.0
DEC											
05...	02326900	791205	1300	18.0	--	--	--	80010	588	5.26	1.0
JAN 1980											
06...	02326900	800106	1100	15.5	--	--	--	80010	592	5.27	0.20
31...	02326900	800131	0915	17.0	27	--	--	80010	695	5.48	0.25
MAR											
04...	02326900	800304	1330	18.0	--	--	--	80010	610	5.30	0.50
27...	02326900	800327	1130	--	--	--	1028	1028	--	--	--
27...	02326900	800327	1130	19.0	--	--	--	80010	820	5.73	0.30
APR											
30...	02326900	800430	1510	22.0	34	--	--	80010	875	5.84	1.2
JUN											
04...	02326900	800604	0930	--	--	--	1028	1028	--	--	--
04...	02326900	800604	0930	21.0	--	--	--	80010	790	5.67	0.75
17...	02326900	800617	1315	--	--	--	1028	1028	--	--	--
17...	02326900	800617	1315	22.5	--	--	--	80010	765	5.62	0.30
AUG											
01...	02326900	800801	1045	--	--	--	1028	1028	--	--	--
01...	02326900	800801	1045	22.0	--	--	--	80010	1220	6.47	1.2
26...	02326900	800826	1350	--	--	--	1028	1028	--	--	--
26...	02326900	800826	1350	22.0	--	--	--	80010	855	5.80	0.50
SEP											
18...	02326900	800918	1315	--	--	--	1028	1028	--	--	--
18...	02326900	800918	1315	22.0	--	--	--	80010	865	5.82	0.70
NOV											
19...	02326900	801119	0930	--	--	--	1028	1028	--	--	--
19...	02326900	801119	0930	17.0	--	--	--	80010	528	5.29	0.10
JAN 1981											
22...	02326900	810122	1230	16.0	--	--	--	80010	480	5.08	0.30
APR											
02...	02326900	810402	1300	--	--	--	1028	1028	--	--	--
02...	02326900	810402	1300	20.5	--	--	--	80010	696	5.64	1.1
MAY											
28...	02326900	810528	1245	--	--	--	1028	1028	--	--	--
28...	02326900	810528	1245	22.0	--	--	--	80010	434	5.15	0.50
JUL											
28...	02326900	810728	1430	--	--	--	1028	1028	--	--	--
28...	02326900	810728	1430	24.0	--	--	--	80010	450	5.05	0.40
SEP											
02...	02326900	810902	0945	--	--	--	1028	1028	--	--	--
02...	02326900	810902	0945	20.0	--	--	--	80010	520	5.21	0.40
NOV											
03...	02326900	811103	1750	22.5	--	--	80010	80010	561	5.20	1.1
DEC											
18...	02326900	811218	1400	19.0	--	--	80010	80010	492	5.03	0.80
FEB 1982											
24...	02326900	820224	1210	19.5	--	--	80010	80010	620	5.22	1.3
MAY											
05...	02326900	820505	1245	22.0	--	--	81312	81312	500	5.24	1.1
JUN											
03...	02326900	820603	1300	22.5	--	--	80010	80010	503	5.18	2.0
AUG											
20...	02326900	820820	1330	23.5	--	--	80010	80010	845	5.65	1.5
OCT											
25...	02326900	821025	1400	24.5	--	765	1028	80010	524	5.11	1.2
DEC											
21...	02326900	821221	1330	19.0	--	767	1028	81213	426	4.86	1.6
MAR 1983											
03...	02326900	830303	1330	19.5	--	770	1028	80010	690	5.37	1.2

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DATE	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2) (00405)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN DISSOLVED (MG/L AS N) (00602)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)
JUL 1979												
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	215	6.7	--	7.5	--	5.6	91	--	--	0.57	--	0.49
AUG												
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	240	6.0	--	7.4	--	8.5	110	--	--	0.28	--	0.23
OCT												
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	200	7.0	--	7.1	--	12	78	--	--	0.53	0.37	0.39
NOV												
08...	269	8.0	--	8.0	--	--	120	0.550	0.630	0.36	--	0.24
DEC												
05...	228	--	--	7.7	--	--	120	--	--	0.19	0.17	0.03
JAN 1980												
06...	260	10.2	--	7.4	--	--	110	--	--	0.26	0.23	0.18
31...	195	8.0	--	7.4	--	--	97	0.160	0.240	0.20	0.16	0.12
MAR												
04...	242	12.4	--	7.8	--	--	100	--	--	0.43	0.38	0.34
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	220	5.3	--	6.2	--	--	80	--	--	0.34	0.37	0.27
APR												
30...	205	--	--	7.4	--	--	85	0.315	0.709	0.43	0.39	0.32
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	235	6.1	--	7.2	--	--	98	--	--	0.28	0.23	0.21
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	240	9.0	--	7.7	--	--	110	--	--	0.12	0.10	0.09
AUG												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	223	--	--	6.7	--	--	100	--	--	--	0.18	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
26...	270	8.5	--	7.3	--	--	120	--	--	--	0.08	--
SEP												
18...	--	--	--	--	--	--	--	--	--	--	--	--
18...	250	6.2	--	7.7	--	--	110	--	--	0.20	0.21	0.06
NOV												
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	270	9.5	--	7.7	7.9	--	--	--	--	--	0.19	--
JAN 1981												
22...	260	10.2	--	8.1	8.2	--	--	--	--	--	0.17	--
APR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	215	8.4	--	7.8	7.9	--	--	--	--	0.34	0.38	0.26
MAY												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	272	9.9	--	7.9	8.1	--	--	--	--	0.47	0.41	0.34
JUL												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	272	10.6	--	8.1	8.2	--	--	--	--	0.30	0.25	0.08
SEP												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	270	6.3	--	7.6	8.3	--	--	--	--	0.28	0.35	0.15
NOV												
03...	281	7.7	--	6.8	8.1	--	--	--	--	0.38	--	0.22
DEC												
18...	275	9.3	--	8.0	8.0	--	--	--	--	0.44	--	0.19
FEB 1982												
24...	--	7.4	--	8.0	8.0	--	--	--	--	0.32	--	0.14
MAY												
05...	264	10.7	--	8.4	8.2	--	--	--	--	--	--	--
JUN												
03...	270	7.0	--	8.0	8.1	--	--	--	--	0.51	--	0.36
AUG												
20...	248	5.1	--	8.0	7.7	--	--	--	--	0.40	--	0.37
OCT												
25...	320	6.9	83	8.2	8.0	--	--	--	--	0.43	--	0.26
DEC												
21...	200	7.2	77	8.2	8.1	--	--	--	--	0.24	--	0.04
MAR 1983												
03...	220	7.2	78	8.0	7.7	--	--	--	--	0.33	--	0.02

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02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N) (00607)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)
JUL 1979												
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	<0.010	0.080	0.21	0.28	0.49	0.080	--	--	0.050	0.030
AUG												
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	<0.010	0.050	0.20	0.03	0.23	0.050	--	--	0.050	0.050
OCT												
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	0.26	0.010	0.040	0.100	0.27	0.16	0.43	0.100	0.100	--	0.040	0.030
NOV												
08...	0.0	0.010	0.020	0.100	0.01	0.25	0.26	0.100	--	--	0.030	0.030
DEC												
05...	0.04	0.00	0.030	0.130	0.04	0.02	0.06	0.130	0.130	--	0.040	0.040
JAN 1980												
06...	0.19	0.00	0.00	0.080	0.19	0.0	0.18	0.040	0.040	--	0.040	0.040
31...	0.09	0.00	0.020	0.060	0.09	0.05	0.14	0.070	0.070	--	0.040	0.040
MAR												
04...	0.28	0.00	0.010	0.080	0.28	0.07	0.35	0.100	0.100	--	0.020	0.030
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	0.30	0.020	0.00	0.050	0.32	0.0	0.29	0.050	0.050	--	0.050	0.040
APR												
30...	0.35	0.00	0.090	0.020	0.35	0.06	0.41	0.040	0.040	--	0.050	0.040
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	0.11	0.080	0.010	0.060	0.19	0.03	0.22	0.040	0.040	--	0.050	0.040
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	0.09	0.00	0.010	0.020	0.09	0.01	0.10	0.010	0.010	--	0.040	0.040
AUG												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	0.10	0.00	--	0.090	0.10	--	--	0.080	0.080	--	0.080	0.040
26...	--	--	--	--	--	--	--	--	--	--	--	--
26...	0.03	0.010	--	0.040	0.04	--	--	0.040	0.040	--	0.050	0.050
SEP												
18...	--	--	--	--	--	--	--	--	--	--	--	--
18...	0.01	0.020	0.010	0.130	0.03	0.04	0.07	0.180	0.180	--	0.050	0.040
NOV												
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	0.06	0.00	--	0.130	0.06	--	--	0.130	0.130	--	0.040	0.040
JAN 1981												
22...	--	<0.010	<0.010	0.070	0.10	--	<0.10	0.070	0.070	--	0.040	0.030
APR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	0.28	0.050	0.040	0.040	0.33	0.0	0.30	0.050	0.050	--	0.050	0.030
MAY												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	0.29	0.010	0.020	0.110	0.30	0.06	0.36	0.110	0.110	--	0.040	0.040
JUL												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	0.10	0.030	0.110	0.110	0.13	0.06	0.19	0.120	0.120	--	0.050	0.050
SEP												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	<0.010	0.010	0.120	0.22	0.0	0.16	0.130	0.130	--	0.050	0.050
NOV												
03...	--	0.020	--	0.140	--	--	0.24	0.140	0.140	0.12	0.050	0.050
DEC												
18...	--	0.070	--	0.180	--	--	0.26	0.180	0.180	0.15	0.050	0.040
FEB 1982												
24...	--	0.050	--	0.130	--	--	0.19	0.130	0.130	0.12	0.080	0.050
MAY												
05...	--	0.050	--	--	--	--	<0.10	--	<0.100	0.09	0.050	0.040
JUN												
03...	--	0.040	--	0.110	--	--	0.40	0.110	0.110	0.09	0.060	0.040
AUG												
20...	--	0.030	--	--	--	--	0.40	--	<0.100	0.09	0.050	0.040
OCT												
25...	--	0.040	--	0.130	--	--	0.30	0.130	0.130	0.09	0.030	0.050
DEC												
21...	--	0.060	--	0.140	--	--	0.10	0.140	0.140	0.15	0.050	0.040
MAR 1983												
03...	--	0.080	--	0.230	--	--	0.10	0.230	0.230	0.09	0.050	0.040

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DATE	PHOSPHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM PERCENT (00932)	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA) (00933)
JUL 1979												
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	5.7	0.40	110	16	33	6.0	3.1	0.1	6	3.5
AUG												
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	8.1	--	--	110	3	35	6.3	3.0	0.1	5	3.4
OCT												
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	12	--	--	93	15	29	5.0	2.8	0.1	6	3.2
NOV												
08...	--	--	7.1	--	130	8	39	7.4	3.6	0.1	6	4.1
DEC												
05...	--	4.4	--	--	130	7	39	7.2	3.6	0.1	6	4.0
JAN 1980												
06...	--	3.3	--	--	120	14	38	7.1	3.6	0.1	6	4.0
31...	--	--	6.2	--	100	8	32	6.0	3.3	0.1	6	3.7
MAR												
04...	--	2.9	--	--	120	20	37	6.6	3.2	0.1	5	3.5
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	7.8	--	--	87	7	27	4.7	3.1	0.1	7	--
APR												
30...	--	--	7.4	0.30	93	8	29	4.9	2.7	0.1	6	--
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	2.8	--	--	110	12	34	6.2	3.4	0.1	6	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	1.0	--	--	120	8	36	6.8	3.3	0.1	6	--
AUG												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	8.2	--	110	10	34	6.1	2.9	0.1	5	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
26...	--	11	--	--	130	15	41	7.8	3.2	0.1	5	--
SEP												
18...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	6.3	--	--	130	16	38	7.5	3.1	0.1	5	--
NOV												
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	1.9	0.30	120	3	37	7.5	3.4	0.1	6	--
JAN 1981												
22...	--	1.2	--	--	120	5	38	7.2	3.1	0.1	5	--
APR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	4.1	--	95	--	30	4.9	3.1	0.1	7	--
MAY												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	0.50	--	130	--	40	7.6	3.4	0.1	5	--
JUL												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	1.9	--	--	130	--	39	7.9	3.5	0.1	6	--
SEP												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	1.8	--	120	--	38	7.3	3.2	0.1	5	--
NOV												
03...	0.040	--	--	--	130	--	39	7.7	3.5	0.1	6	--
DEC												
18...	0.050	--	--	--	130	--	39	7.7	3.5	0.1	6	--
FEB 1982												
24...	0.040	--	--	--	110	--	35	6.3	3.6	0.1	6	--
MAY												
05...	0.030	--	--	--	130	--	41	7.1	3.8	0.1	6	--
JUN												
03...	0.030	--	--	--	130	--	38	7.8	3.6	0.1	6	--
AUG												
20...	0.030	--	--	--	110	--	35	6.2	2.9	0.1	5	--
OCT												
25...	0.030	--	--	--	140	--	42	7.4	3.2	0.1	--	--
DEC												
21...	0.050	--	--	--	120	--	35	7.1	3.5	0.1	6	--
MAR 1983												
03...	0.030	--	--	--	100	--	31	5.8	3.2	0.1	6	--

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DATE	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	ARSENIC SUSPENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA) (01006)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)
JUL 1979												
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	0.40	5.0	5.6	0.10	11	<1	--	3	10	0.0	<100	--
AUG												
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	0.40	4.8	7.9	0.10	11	--	--	--	--	--	--	--
OCT												
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	0.40	5.2	7.3	0.10	9.9	--	--	--	--	--	--	--
NOV												
08...	0.50	2.1	2.1	0.20	12	2	0	2	20	80	100	--
DEC												
05...	0.40	5.3	7.5	0.10	13	--	--	--	--	--	--	--
JAN 1980												
06...	0.40	5.0	7.4	0.20	12	--	--	--	--	--	--	--
31...	0.40	5.4	8.0	0.20	11	2	0	0	30	70	100	--
MAR												
04...	0.30	5.2	7.5	0.10	10	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	0.50	4.8	4.9	0.10	7.0	--	--	--	--	--	--	--
APR												
30...	0.10	5.1	7.2	0.10	7.8	0	0	0	10	--	<50	--
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	0.40	5.0	5.7	0.20	9.5	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	0.40	5.1	5.9	0.20	9.2	--	--	--	--	--	--	--
AUG												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	0.50	4.9	4.7	0.10	11	1	0	1	30	--	<50	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
26...	0.70	5.1	8.8	0.20	13	--	--	--	--	--	--	--
SEP												
18...	--	--	--	--	--	--	--	--	--	--	--	--
18...	0.60	5.0	8.1	0.20	13	--	--	--	--	--	--	--
NOV												
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	0.50	5.6	9.0	0.20	12	1	0	1	10	90	100	--
JAN 1981												
22...	0.40	5.1	7.5	0.20	12	--	--	--	--	--	--	--
APR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	0.40	5.5	6.5	0.20	10	0	0	0	--	--	--	--
MAY												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	0.40	5.2	8.8	0.20	12	2	0	1	10	90	100	--
JUL												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	0.40	5.4	8.4	0.20	13	--	--	--	--	--	--	--
SEP												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	0.40	5.6	5.2	0.20	12	1	0	1	<50	--	<50	--
NOV												
03...	0.20	5.3	8.9	0.20	13	0	1	1	10	90	100	--
DEC												
18...	0.40	5.5	9.7	0.20	12	0	1	1	12	--	<100	--
FEB 1982												
24...	0.40	5.5	6.7	0.20	11	--	--	--	--	--	--	--
MAY												
05...	0.40	5.4	8.0	0.20	11	1	1	2	27	--	<100	--
JUN												
03...	0.20	5.4	10	0.10	13	--	--	--	--	--	--	--
AUG												
20...	0.30	5.5	7.0	0.20	12	1	0	1	10	--	<100	--
OCT												
25...	<0.10	5.6	10	0.20	12	1	--	--	15	--	--	<1.0
DEC												
21...	0.20	5.4	10	0.20	13	--	--	--	--	--	--	--
MAR 1983												
03...	0.40	5.4	10	0.20	9.2	1	--	--	14	--	--	<1.0

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DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO) (01036)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)
JUL 1979												
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	2.0	0	<2	<20	<0	<20	ND	1	<2	ND	3	3
AUG												
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--
OCT												
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
08...	0	0	0	20	0	20	0	0	0	1.0	0	1
DEC												
05...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1980												
06...	--	--	--	--	--	--	--	--	--	--	--	--
31...	3.0	0	0	10	0	10	1.0	2	3	1.0	0	1
MAR												
04...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
30...	0	0	0	<10	--	<10	0	0	0	0	1	1
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	3.0	0	0	<10	--	20	0	0	0	2.0	0	0
26...	--	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
18...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	0	0	0	10	10	20	3.0	0	3	0	2	2
JAN 1981												
22...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	0	0	0	<10	--	<10	0	0	0	0	1	1
MAY												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	<1.0	--	1	<10	--	10	2.0	0	1	1.0	1	2
JUL												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	<1.0	--	<1	10	0	10	<1.0	--	<1	1.0	--	--
NOV												
03...	<1.0	--	<1	10	0	10	1.0	0	1	<1.0	--	5
DEC												
18...	<1.0	--	<1	10	10	20	1.0	--	<1	2.0	4	6
FEB 1982												
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
05...	<1.0	--	<1	<10	--	20	<1.0	--	<1	2.0	6	8
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
20...	2.0	0	2	10	0	10	1.0	1	2	1.0	4	5
OCT												
25...	<1.0	--	--	<1.0	--	--	<3.0	--	--	1.0	--	--
DEC												
21...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 1983												
03...	<1.0	--	--	<1.0	--	--	<3.0	--	--	1.0	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)
JUL 1979												
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	150	270	120	2.0	0	2	10	20	<10	--	--	--
AUG												
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--
OCT												
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
08...	80	90	10	0	0	0	7	10	3.0	--	1.0	1
DEC												
05...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1980												
06...	--	--	--	--	--	--	--	--	--	--	--	--
31...	60	130	70	0	5	5	7	10	3.0	--	0	5
MAR												
04...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
30...	110	240	130	0	0	0	10	20	6.0	--	0	4
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	90	190	100	0	0	0	10	20	10	--	1.0	0
26...	--	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
18...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	60	70	10	1.0	2	3	7	10	3.0	--	0	4
JAN 1981												
22...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	130	190	60	0	10	10	0	10	10	--	0	2
MAY												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	70	<10	0	1	1	5	10	5.0	--	0	3
JUL												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	270	290	20	3.0	1	4	--	<10	10	--	3.0	0
NOV												
03...	80	90	13	<1.0	--	2	--	<10	3.0	--	<1.0	--
DEC												
18...	100	110	7.0	<1.0	--	<1	20	20	3.0	--	<1.0	--
FEB 1982												
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
05...	20	70	51	1.0	4	5	20	20	3.0	--	4.0	0
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
20...	90	270	180	1.0	3	4	1	10	9.0	--	2.0	5
OCT												
25...	--	--	23	3.0	--	--	--	--	5.0	<10	<1.0	--
DEC												
21...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 1983												
03...	--	--	77	2.0	--	--	--	--	5.0	<10	1.0	--

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DATE	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG) (01076)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)
JUL 1979												
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	ND	0	ND	--	--	20	0	20	--	--	<1
AUG												
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--
OCT												
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
08...	2	0	0	0	--	--	0	10	10	--	--	0
DEC												
05...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1980												
06...	--	--	--	0	--	--	--	--	--	--	--	--
31...	5	0	0	0	--	--	90	10	100	--	--	0
MAR												
04...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	0	--	--	--	--	--	--	--	--
APR												
30...	4	0	0	0	--	--	60	90	150	--	--	0
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	0	--	--	--	--	--	--	--	--
AUG												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	1	0	0	0	--	--	0	10	10	--	--	0
26...	--	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
18...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	0	--	--	--	--	--	--	--	--
NOV												
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	4	0	0	0	--	--	1.0	40	40	--	--	0
JAN 1981												
22...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	2	0	0	0	--	--	10	40	50	--	--	0
MAY												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	3	0	0	0	--	--	<4.0	--	10	--	--	0
JUL												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	1	<1.0	--	<1	--	--	<10	--	10	--	--	<1
NOV												
03...	3	<1.0	--	<1	--	--	<4.0	--	40	--	--	<1
DEC												
18...	<1	<1.0	--	<1	--	--	9.0	30	40	--	--	<1
FEB 1982												
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
05...	4	<1.0	--	<1	--	--	13	0	10	--	--	<1
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
20...	7	<1.0	--	<1	--	--	<4.0	--	20	--	--	<1
OCT												
25...	--	<1.0	--	--	80	<6	5.0	--	--	20	<4	<1
DEC												
21...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 1983												
03...	--	<1.0	--	--	64	<6	<3.0	--	--	40	<4	<1

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DATE	SELENIUM, SUSPENDED TOTAL (UG/L AS SE) (01146)	SELENIUM, TOTAL (UG/L AS SE) (01147)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	PHYTOPLANKTON, TOTAL (CELLS PER ML) (60050)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	BIOMASS CHLOROPHYLL RATIO PERIPHYTON (UNITS) (70950)
JUL 1979											
27...	--	--	--	--	--	--	--	--	--	--	--
27...	0	<1	K26	K24	380	143	119	352	0.19	--	--
AUG											
30...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	K40	K30	470	149	134	369	0.20	--	--
OCT											
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	110	K20	52	135	107	423	0.18	--	--
NOV											
08...	0	0	36	<1	--	285	139	554	0.39	--	4.08
DEC											
05...	--	--	42	K16	52	158	149	251	0.21	--	--
JAN 1980											
06...	--	--	49	K15	--	144	140	230	0.20	--	--
31...	0	0	25	>100	--	138	125	259	0.19	--	16.9
MAR											
04...	--	--	35	K2	--	134	130	221	0.18	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	35	K23	130	126	100	279	0.17	--	--
APR											
30...	0	0	K14	24	--	245	108	579	0.33	--	34.3
JUN											
04...	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	K19	25	26	126	123	269	0.17	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	K9	--	340	163	133	337	0.22	--	--
AUG											
01...	--	--	--	--	--	--	--	--	--	--	--
01...	0	0	K40	230	90	128	125	422	0.17	--	--
26...	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	280	158	152	365	0.21	--	--
SEP											
18...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	360	1000	--	140	142	327	0.19	--	--
NOV											
19...	--	--	--	--	--	--	--	--	--	--	--
19...	0	0	K67	86	160	154	148	220	0.21	--	--
JAN 1981											
22...	--	--	73	--	--	157	146	203	0.21	--	--
APR											
02...	--	--	--	--	--	--	--	--	--	--	--
02...	0	0	K12	K31	90	135	120	254	0.18	--	--
MAY											
28...	--	--	--	--	--	--	--	--	--	--	--
28...	0	0	150	110	77	168	150	197	0.23	100	--
JUL											
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	K16	52	100	165	150	200	0.22	33	--
SEP											
02...	--	--	--	--	--	--	--	--	--	--	--
02...	--	<1	K32	94	42	161	144	226	0.22	33	--
NOV											
03...	--	<1	28	>200	--	146	151	221	0.20	50	--
DEC											
18...	--	<1	K8	>20	--	161	157	214	0.22	40	--
FEB 1982											
24...	--	--	K11	71	--	153	129	256	0.21	75	--
MAY											
05...	--	<1	40	170	--	139	149	188	0.19	60	--
JUN											
03...	--	--	20	120	--	157	152	213	0.21	50	--
AUG											
20...	--	<1	13	720	--	148	130	338	0.20	50	--
OCT											
25...	--	--	K7	150	--	170	155	241	0.23	40	--
DEC											
21...	--	--	55	270	--	144	144	166	0.20	67	--
MAR 1983											
03...	--	--	15	230	--	136	124	253	0.18	50	--

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DATE	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70958)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY SUS-MPENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	SEDI-MENT, SUS-PENDED (MG/L) (80154)
JUL 1979											
27...	--	--	--	--	--	--	--	--	--	3.5	--
27...	--	--	0.0	--	0.15	2.5	<0.5	<0	<0.50	3.5	6
AUG											
30...	--	--	--	--	--	--	--	--	--	3.5	--
30...	--	--	0.0	--	0.15	1.2	--	--	--	3.5	4
OCT											
03...	--	--	--	--	--	--	--	--	--	3.5	--
03...	--	--	0.05	0.01	0.12	2.3	--	--	--	3.5	5
NOV											
08...	19.6	0.00	0.03	0.01	0.09	1.6	<0.1	<0	<0.10	3.5	3
DEC											
05...	--	--	0.04	0.0	0.12	0.84	--	--	--	3.5	2
JAN 1980											
06...	--	--	0.0	0.0	0.12	1.2	--	--	--	3.5	2
31...	4.74	0.700	0.03	0.0	0.12	0.89	0.1	0	0.10	3.5	2
MAR											
04...	--	--	0.01	0.0	0.06	1.9	--	--	--	3.5	3
27...	--	--	--	--	--	--	--	--	--	3.5	--
27...	--	--	0.0	0.03	0.15	1.5	--	--	--	3.5	3
APR											
30...	11.5	1.11	0.12	0.0	0.15	1.9	0.1	0	0.10	3.5	3
JUN											
04...	--	--	--	--	--	--	--	--	--	3.5	--
04...	--	--	0.01	0.10	0.15	1.2	--	--	--	3.5	5
17...	--	--	--	--	--	--	--	--	--	3.5	--
17...	--	--	0.01	0.0	0.12	0.53	--	--	--	3.5	3
AUG											
01...	--	--	--	--	--	--	--	--	--	3.5	--
01...	--	--	--	0.0	0.25	--	<0.1	--	0.10	3.5	7
26...	--	--	--	--	--	--	--	--	--	3.5	--
26...	--	--	--	0.01	0.15	--	--	--	--	3.5	3
SEP											
18...	--	--	--	--	--	--	--	--	--	3.5	--
18...	--	--	0.01	0.03	0.15	0.89	--	--	--	3.5	5
NOV											
19...	--	--	--	--	--	--	--	--	--	3.5	--
19...	--	--	--	0.0	0.12	--	<0.1	--	<0.10	3.5	3
JAN 1981											
22...	--	--	<0.01	<0.01	0.12	--	--	--	--	3.5	1
APR											
02...	--	--	--	--	--	--	--	--	--	3.5	--
02...	--	--	0.05	0.06	0.15	1.5	<0.1	--	0.10	3.5	4
MAY											
28...	--	--	--	--	--	--	--	--	--	3.5	--
28...	--	--	0.03	0.01	0.12	2.1	<0.1	--	<0.10	3.5	2
JUL											
28...	--	--	--	--	--	--	--	--	--	3.5	--
28...	--	--	0.14	0.04	0.15	1.3	--	--	--	3.5	3
SEP											
02...	--	--	--	--	--	--	--	--	--	3.5	--
02...	--	--	0.01	0.01	0.15	1.2	<0.1	--	<0.10	3.5	3
NOV											
03...	--	--	--	0.03	0.15	--	<0.1	--	<0.10	3.5	4
DEC											
18...	--	--	--	0.09	0.15	--	<0.1	--	<0.10	3.5	5
FEB 1982											
24...	--	--	--	0.06	0.25	--	--	--	--	3.5	4
MAY											
05...	--	--	--	0.06	0.15	--	<0.1	--	<0.10	3.5	5
JUN											
03...	--	--	--	0.05	0.18	--	--	--	--	3.5	4
AUG											
20...	--	--	--	0.04	0.15	--	0.2	0.1	0.30	3.5	4
OCT											
25...	--	--	--	0.05	0.09	--	<0.1	--	--	3.5	5
DEC											
21...	--	--	--	0.08	0.15	--	--	--	--	3.5	3
MAR 1983											
03...	--	--	--	0.10	0.15	--	<0.1	--	--	3.5	4

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WATER-QUALITY DATA

DATE	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	DRAINAGE AREA (SQ. MI.) (81024)	POTASSIUM 40 DISSOLVED (PCI/L AS K40) (82068)	SAMPLING METHOD, CODES (82398)	SPECIFIC CONDUCTANCE LAB (US/CM) (90095)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CONVERSION FACTOR (95100)	TOTAL COUNT (CELLS/ML) (95200)	HARDNESS NONCARB WH WAT TOT LAB MG/L AS CACO3 (95902)	CHLAMYDOMONAS (96014)	ANKISTRODESMUS (96202)
JUL 1979											
27...	--	535	--	8010	--	--	5.1	380	--	--	--
27...	15	535	--	--	--	--	--	--	--	--	--
AUG											
30...	--	535	--	8010	--	--	5.0	470	--	--	--
30...	9.9	535	--	--	--	--	--	--	--	--	--
OCT											
03...	--	535	--	8010	--	--	12.9	52	--	--	--
03...	16	535	--	--	--	--	--	--	--	--	--
NOV											
08...	5.8	535	--	--	--	--	--	--	--	--	--
DEC											
05...	3.2	535	--	--	--	--	--	--	--	--	--
JAN 1980											
06...	3.2	535	--	--	--	--	--	--	--	--	--
31...	3.8	535	--	--	--	--	--	--	--	--	--
MAR											
04...	4.9	535	--	--	--	--	--	--	--	--	--
27...	--	535	--	8010	--	--	5.0	130	--	--	--
27...	6.6	535	--	--	--	--	--	--	--	--	--
APR											
30...	7.1	535	--	--	--	--	--	--	--	--	--
JUN											
04...	--	535	--	8010	--	--	12.9	26	--	--	--
04...	11	535	--	--	--	--	--	--	--	--	--
17...	--	535	--	8010	--	--	12.9	340	--	26	13
17...	6.2	535	--	--	--	--	--	--	--	--	--
AUG											
01...	--	535	--	8010	--	--	12.9	90	--	--	--
01...	23	535	--	--	--	--	--	--	--	--	--
26...	--	535	--	8010	--	--	12.9	280	--	13	--
26...	6.9	535	--	--	--	--	--	--	--	--	--
SEP											
18...	--	535	--	8010	--	--	12.9	220	--	--	--
18...	12	535	--	--	--	--	--	--	--	--	--
NOV											
19...	--	535	--	8010	--	--	13.7	160	--	D55	--
19...	4.3	535	0.40	--	263	120	--	--	--	--	--
JAN 1981											
22...	1.3	535	0.30	--	262	120	--	--	--	--	--
APR											
02...	--	535	--	8010	--	--	12.9	90	--	--	--
02...	7.5	535	0.30	--	203	98	--	--	0	--	--
MAY											
28...	--	535	--	8010	--	--	12.9	77	--	D13	--
28...	2.3	535	0.30	--	269	120	--	--	11	--	--
JUL											
28...	--	535	--	8010	--	--	12.9	100	--	13	--
28...	3.6	535	0.30	--	258	120	--	--	10	--	--
SEP											
02...	--	535	--	8010	--	--	13.9	42	--	--	--
02...	4.2	535	0.30	--	256	120	--	--	5	--	--
NOV											
03...	6.1	535	--	--	254	120	--	--	9	--	--
DEC											
18...	6.6	535	--	--	265	130	--	--	0	--	--
FEB 1982											
24...	6.7	535	--	--	222	100	--	--	13	--	--
MAY											
05...	6.8	535	--	--	247	120	--	--	12	--	--
JUN											
03...	5.4	535	--	--	264	123	--	--	4	--	--
AUG											
20...	9.1	535	--	--	234	101	--	--	12	--	--
OCT											
25...	7.1	535	--	--	263	124	--	--	12	--	--
DEC											
21...	3.5	535	--	--	236	115	--	--	2	--	--
MAR 1983											
03...	7.5	535	--	--	206	96	--	--	6	--	--

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DATE	CHLOREL LA (96205)	SCENE DESMUS (96243)	MICRACT INIUM (96254)	CRYPTO MONAS (96430)	GLENO DINIUM (96484)	CYCLO TELLA (96706)	MELO SIRA (96707)	DIATOMA (96759)	FRAGILA RIA (96764)	SYNE DRA (96765)	ACHNAN THES (96777)
JUL 1979											
27...	15	--	--	--	--	--	31	--	10	5	D82
27...	--	--	--	--	--	--	--	--	--	--	--
AUG											
30...	--	--	--	20	--	5	35	--	--	5	D96
30...	--	--	--	--	--	--	--	--	--	--	--
OCT											
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
NOV											
08...	--	--	--	--	--	--	--	--	--	--	--
DEC											
05...	--	--	--	--	--	--	--	--	--	--	--
JAN 1980											
06...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
MAR											
04...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	--	--	--	--	--	--	--	--	--	--	--
JUN											
04...	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
AUG											
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	26	--	--	--	13	--
26...	--	--	--	--	--	--	--	--	--	--	--
SEP											
18...	--	--	13	--	--	13	--	13	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
NOV											
19...	--	--	--	--	--	14	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
JAN 1981											
22...	--	--	--	--	--	--	--	--	--	--	--
APR											
02...	--	D26	--	13	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
MAY											
28...	--	--	--	D13	--	--	--	--	--	--	D13
28...	--	--	--	--	--	--	--	--	--	--	--
JUL											
28...	--	--	--	--	13	13	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
02...	--	--	--	--	--	--	--	--	--	D14	--
02...	--	--	--	--	--	--	--	--	--	--	--
NOV											
03...	--	--	--	--	--	--	--	--	--	--	--
DEC											
18...	--	--	--	--	--	--	--	--	--	--	--
FEB 1982											
24...	--	--	--	--	--	--	--	--	--	--	--
MAY											
05...	--	--	--	--	--	--	--	--	--	--	--
JUN											
03...	--	--	--	--	--	--	--	--	--	--	--
AUG											
20...	--	--	--	--	--	--	--	--	--	--	--
OCT											
25...	--	--	--	--	--	--	--	--	--	--	--
DEC											
21...	--	--	--	--	--	--	--	--	--	--	--
MAR 1983											
03...	--	--	--	--	--	--	--	--	--	--	--

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DATE	COCCO NEIS (96778)	RHOCO SPHENIA (96779)	NAVI CULA (96791)	GOMPHO NEMA (96802)	CYMBEL LA (96806)	NITZ SCHIA (96812)	SURI RELLA (96817)	ANA CYSTIS (98082)	OSCIL LATORIA (98136)	SCHIZO THRIX (98150)	ANABAE NA (98165)
JUL 1979											
27...	D110	--	51	10	--	5	5	--	--	--	56
27...	--	--	--	--	--	--	--	--	--	--	--
AUG											
30...	D110	--	D100	20	5	D71	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
OCT											
03...	D13	--	D39	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
NOV											
08...	--	--	--	--	--	--	--	--	--	--	--
DEC											
05...	--	--	--	--	--	--	--	--	--	--	--
JAN 1980											
06...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
MAR											
04...	--	--	--	--	--	--	--	--	--	--	--
27...	D25	--	5	5	--	5	--	--	--	D86	--
27...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	--	--	--	--	--	--	--	--	--	--	--
JUN											
04...	D13	--	D13	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	13	13	--	13	--	26	D230	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
AUG											
01...	D52	--	--	--	--	D39	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	26	--	--	D210	--	--
26...	--	--	--	--	--	--	--	--	--	--	--
SEP											
18...	26	--	26	--	--	--	--	--	--	--	D130
18...	--	--	--	--	--	--	--	--	--	--	--
NOV											
19...	D41	--	14	--	--	--	--	D41	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
JAN 1981											
22...	--	--	--	--	--	--	--	--	--	--	--
APR											
02...	D26	13	--	13	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
MAY											
28...	D13	--	--	--	--	D26	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
JUL											
28...	D51	--	--	--	--	13	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
02...	--	--	D14	--	--	D14	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
NOV											
03...	--	--	--	--	--	--	--	--	--	--	--
DEC											
18...	--	--	--	--	--	--	--	--	--	--	--
FEB 1982											
24...	--	--	--	--	--	--	--	--	--	--	--
MAY											
05...	--	--	--	--	--	--	--	--	--	--	--
JUN											
03...	--	--	--	--	--	--	--	--	--	--	--
AUG											
20...	--	--	--	--	--	--	--	--	--	--	--
OCT											
25...	--	--	--	--	--	--	--	--	--	--	--
DEC											
21...	--	--	--	--	--	--	--	--	--	--	--
MAR 1983											
03...	--	--	--	--	--	--	--	--	--	--	--

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DATE	STATION NUMBER	DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	TURBIDITY (NTU) (00076)
APR 1983											
15...	02326900	830415	1800	19.0	--	--	1028	80010	2060	7.49	1.9
JUN											
29...	02326900	830629	1415	22.0	--	762	81213	80010	1060	6.17	1.5
AUG											
30...	02326900	830830	1515	23.0	--	759	1028	80010	795	5.68	<1.0
OCT											
28...	02326900	831028	1630	19.5	--	770	1028	80010	695	5.48	<1.0
DEC											
14...	02326900	831214	1715	17.0	--	754	1028	81213	860	5.89	1.5
FEB 1984											
24...	02326900	840224	1245	17.5	--	760	1028	80010	593	5.61	2.1
APR											
17...	02326900	840417	1355	17.0	--	756	1028	80010	2290	8.24	1.9
AUG											
27...	02326900	840827	1130	21.5	23.0	764	1028	80010	735	5.56	1.2
OCT											
24...	02326900	841024	1630	21.5	--	762	1028	80010	560	5.11	0.70
DEC											
18...	02326900	841218	1115	20.0	--	765	1028	80010	438	4.75	2.0
FEB 1985											
19...	02326900	850219	1530	20.0	--	765	1028	80010	383	4.58	0.50
APR											
30...	02326900	850430	1400	23.0	--	760	1028	80010	395	4.62	5.0
JUN											
20...	02326900	850620	1745	21.5	--	760	1028	80010	465	4.83	1.0
AUG											
06...	02326900	850806	1230	22.0	--	760	1028	80010	724	5.51	1.3
NOV											
04...	02326900	851104	1630	19.0	--	755	1028	80020	1370	6.83	2.1
DEC											
11...	02326900	851211	1415	19.0	--	762	1028	80020	905	5.92	2.2
FEB 1986											
11...	02326900	860211	1200	17.0	--	754	1028	80020	2300	8.28	1.5
APR											
18...	02326900	860418	1130	20.0	--	760	1028	80020	758	5.59	--
AUG											
19...	02326900	860819	1645	21.0	--	--	1028	80020	638	5.30	1.1
JUN											
16...	02326900	860616	1415	22.0	--	752	1028	80020	650	5.33	1.0
MAY 1994											
02...	02326900	940502	1330	205.0	--	762	1028	80020	--	6.02	--
JUN											
30...	02326900	940630	1300	24.0	--	763	1028	80020	--	--	--
30...	02326900	940630	1301	--	--	--	1028	80020	--	--	--

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DATE	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2) (00405)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)
APR 1983												
15...	117	5.2	--	7.7	7.3	--	--	--	0.30	0.24	--	0.060
JUN												
29...	195	4.4	50	7.9	7.5	--	--	--	0.42	0.27	--	0.030
AUG												
30...	272	6.8	80	8.0	7.5	--	--	--	0.94	0.73	--	0.070
OCT												
28...	247	8.6	93	8.1	7.8	--	--	--	0.50	0.37	--	0.030
DEC												
14...	188	4.7	49	7.6	7.3	--	--	--	0.49	0.22	--	0.080
FEB 1984												
24...	189	7.2	76	7.9	7.6	--	--	--	0.30	0.23	--	0.070
APR												
17...	90	5.7	59	7.4	7.0	--	--	--	1.0	0.93	--	0.070
AUG												
27...	260	6.7	76	7.6	7.6	--	--	--	0.30	0.27	--	0.030
OCT												
24...	275	7.2	82	8.2	8.4	--	130	--	--	--	--	--
DEC												
18...	272	6.5	71	8.3	8.2	--	129	--	0.40	0.19	--	0.040
FEB 1985												
19...	268	9.3	102	8.4	8.2	--	121	--	0.65	0.44	--	0.060
APR												
30...	270	10.3	121	8.6	8.3	--	128	--	--	--	--	0.040
JUN												
20...	272	6.8	77	8.1	7.8	--	118	--	0.35	0.13	--	0.070
AUG												
06...	258	6.2	71	8.0	7.8	--	116	--	0.43	0.24	--	0.060
NOV												
04...	148	5.0	54	7.6	7.7	3.0	62	--	0.60	0.58	--	0.040
DEC												
11...	190	5.7	61	7.8	8.0	2.5	83	--	0.40	0.36	--	0.040
FEB 1986												
11...	110	6.1	64	7.3	7.5	3.5	37	--	0.60	0.57	--	0.030
APR												
18...	215	8.0	88	8.2	--	1.2	102	--	0.20	0.19	--	0.010
AUG												
19...	--	5.7	--	--	8.1	--	--	--	--	--	--	0.010
JUN												
16...	260	7.5	87	8.3	8.2	1.1	120	--	0.33	0.18	--	0.020
MAY 1994												
02...	233	4.8	--	7.7	7.6	--	--	2	--	--	--	0.020
JUN												
30...	192	4.5	53	7.5	--	--	--	110	0.40	0.39	0.29	0.010
30...	--	--	--	--	--	--	--	--	--	--	--	--

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APR 1983												
15...	--	--	--	--	0.30	--	<0.100	0.06	0.050	0.030	0.020	--
JUN												
29...	--	--	0.120	--	0.30	0.120	0.120	0.09	0.050	0.040	0.030	--
AUG												
30...	--	--	0.140	--	0.80	0.140	0.140	0.09	<0.010	<0.010	0.030	--
OCT												
28...	--	--	0.100	--	0.40	0.100	0.100	0.18	0.190	0.100	0.060	--
DEC												
14...	--	--	0.190	--	0.30	0.190	0.190	--	0.060	0.040	<0.010	--
FEB 1984												
24...	--	--	--	--	0.30	--	<0.100	0.09	0.030	0.030	0.030	--
APR												
17...	--	--	--	--	1.0	--	<0.100	0.06	0.050	0.030	0.020	--
AUG												
27...	--	--	--	--	0.30	--	<0.100	0.09	0.040	0.030	0.030	--
OCT												
24...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
18...	--	--	0.170	--	0.23	0.170	0.170	--	<0.010	<0.010	<0.030	--
FEB 1985												
19...	--	--	0.150	--	0.50	0.150	0.150	0.18	0.060	<0.010	0.060	--
APR												
30...	--	--	--	--	--	--	<0.100	0.03	<0.010	0.030	0.010	--
JUN												
20...	--	--	0.150	--	0.20	0.150	0.150	0.18	<0.010	0.060	0.060	--
AUG												
06...	--	--	0.130	--	0.30	0.130	0.130	0.12	0.060	0.050	0.040	--
NOV												
04...	0.020	<0.010	--	--	0.60	--	<0.100	0.06	0.040	0.030	0.020	--
DEC												
11...	0.040	<0.010	--	--	0.40	--	<0.100	0.09	0.040	0.030	0.030	--
FEB 1986												
11...	0.030	<0.010	--	--	0.60	--	<0.100	0.06	0.030	0.020	0.020	--
APR												
18...	<0.010	<0.010	--	--	0.20	--	<0.100	0.09	0.040	0.030	0.030	--
AUG												
19...	0.020	<0.010	0.140	--	<0.20	0.140	0.140	0.09	0.040	0.040	0.030	--
JUN												
16...	<0.010	<0.010	0.130	--	0.20	0.130	0.130	0.09	0.050	0.040	0.030	--
MAY 1994												
02...	--	<0.010	0.054	<0.20	<0.20	0.054	0.054	0.09	0.050	0.040	0.030	4.8
JUN												
30...	--	0.010	--	0.30	0.40	--	<0.050	0.06	0.030	0.030	0.020	12
30...	--	--	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	HARD-NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM PERCENT (00932)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
APR 1983												
15...	--	54	--	17	2.9	2.5	0.1	9	0.50	4.6	11	<0.10
JUN												
29...	--	90	--	28	4.9	2.8	0.1	6	0.40	4.9	10	0.20
AUG												
30...	--	130	--	40	7.7	3.6	0.1	6	0.40	5.4	9.5	0.20
OCT												
28...	--	140	--	42	8.1	3.8	0.1	6	0.40	5.5	9.4	0.20
DEC												
14...	--	97	--	30	5.3	3.0	0.1	6	0.40	5.5	13	<0.10
FEB 1984												
24...	--	94	--	29	5.3	3.3	0.1	7	0.40	5.6	6.4	0.10
APR												
17...	--	42	--	13	2.2	1.9	0.1	9	0.50	5.1	1.4	<0.10
AUG												
27...	--	110	--	35	6.5	3.0	0.1	5	0.40	5.1	6.7	0.20
OCT												
24...	--	130	--	40	8.3	3.7	0.1	6	0.40	5.6	9.6	0.20
DEC												
18...	--	130	--	40	8.0	3.7	0.1	6	0.40	5.9	9.6	0.20
FEB 1985												
19...	--	130	--	39	7.7	3.9	0.1	6	0.50	5.7	9.5	0.20
APR												
30...	--	140	--	41	8.3	3.6	0.1	5	0.40	5.6	8.6	0.20
JUN												
20...	--	130	--	40	7.8	3.8	0.1	6	0.40	5.9	17	0.10
AUG												
06...	--	130	--	38	7.3	3.5	0.1	6	0.50	5.2	11	0.10
NOV												
04...	--	73	--	22	4.3	2.9	0.1	8	0.40	5.7	13	<0.10
DEC												
11...	--	96	--	30	5.1	3.1	0.1	7	0.60	6.1	12	0.10
FEB 1986												
11...	--	52	--	16	3.0	2.4	0.1	9	0.50	4.5	11	<0.10
APR												
18...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
19...	--	130	--	40	7.7	3.5	0.1	5	0.50	5.4	10	0.20
JUN												
16...	--	130	--	39	7.8	3.6	0.1	6	0.60	5.1	9.9	0.20
MAY 1994												
02...	0.10	120	120	37	6.4	3.1	0.1	5	0.50	5.1	6.9	0.10
JUN												
30...	0.40	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)
APR 1983												
15...	5.5	1	36	<0.50	<1.0	<1.0	<3.0	1.0	300	3.0	9.0	<10
JUN												
29...	8.6	1	28	<0.50	<1.0	<1.0	<3.0	1.0	140	3.0	9.0	<10
AUG												
30...	12	--	--	--	--	--	--	--	--	--	--	--
OCT												
28...	13	1	25	<0.50	<1.0	2.0	<3.0	3.0	16	1.0	11	<10
DEC												
14...	9.6	1	16	<0.50	<1.0	<1.0	<3.0	1.0	150	2.0	11	<10
FEB 1984												
24...	7.2	--	--	--	--	--	--	--	--	--	--	--
APR												
17...	4.1	1	9.0	<0.50	<1.0	<1.0	<3.0	1.0	300	2.0	12	<10
AUG												
27...	10	1	14	<0	<1.0	<1.0	<3.0	1.0	52	1.0	10	<10
OCT												
24...	12	<1	13	<0	<1.0	<1.0	<3.0	--	9.0	4.0	8.0	<10
DEC												
18...	12	--	--	--	--	--	--	--	--	--	--	--
FEB 1985												
19...	12	<1	10	0.50	<1.0	<1.0	<3.0	<1.0	10	1.0	7.0	<10
APR												
30...	13	<1	11	<0.50	<1.0	<1.0	<3.0	1.0	8.0	2.0	5.0	<10
JUN												
20...	12	--	--	--	--	--	--	--	--	--	--	--
AUG												
06...	12	<1	13	0.90	<1.0	1.0	<3.0	5.0	89	<1.0	6.0	<10
NOV												
04...	9.2	<1	10	<0.50	<1.0	<1.0	<3.0	<1.0	230	<1.0	10	<10
DEC												
11...	10	<1	15	<0.50	<1.0	<1.0	<3.0	<1.0	190	<1.0	15	<10
FEB 1986												
11...	5.4	--	--	--	--	--	--	--	--	--	--	--
APR												
18...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
19...	13	--	--	--	--	--	--	--	--	--	--	--
JUN												
16...	12	<1	12	<0.50	<1.0	<1.0	<3.0	2.0	12	<5.0	5.0	<10
MAY 1994												
02...	10	--	--	--	--	--	--	--	150	--	8.0	--
JUN												
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	PROP-CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)	BRO-MACIL, WATER, DISS, REC (UG/L) (04029)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)
APR 1983												
15...	2.0	<1.0	36	<6	<3.0	110	<4	<1	--	--	--	--
JUN												
29...	<1.0	1.0	57	<6	3.0	30	<4	<1	--	--	--	--
AUG												
30...	--	--	--	--	--	--	--	--	--	--	--	--
OCT												
28...	7.0	<1.0	87	<6	<3.0	10	<4	<1	--	--	--	--
DEC												
14...	<1.0	<1.0	58	<6	<3.0	30	<4	<1	--	--	--	--
FEB 1984												
24...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
17...	2.0	<1.0	27	<6	5.0	60	<4	<1	--	--	--	--
AUG												
27...	1.0	<1.0	75	<6	<3.0	30	<4	<1	--	--	--	--
OCT												
24...	<1.0	<1.0	89	<6	5.0	<10	6	<1	--	--	--	--
DEC												
18...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1985												
19...	<1.0	<1.0	80	<6	4.0	50	5	<1	--	--	--	--
APR												
30...	2.0	<1.0	84	<6	<3.0	30	14	<1	--	--	--	--
JUN												
20...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
06...	<1.0	<1.0	78	<6	8.5	30	<4	<1	--	--	--	--
NOV												
04...	<1.0	<1.0	47	<6	8.0	130	4	<1	--	--	--	--
DEC												
11...	2.0	<1.0	56	<6	<3.0	60	<4	<1	--	--	--	--
FEB 1986												
11...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
18...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
19...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
16...	2.0	<1.0	82	<7	15	<10	6	<1	--	--	--	--
MAY 1994												
02...	--	--	--	--	--	--	--	--	<0.015	<0.008	<0.050	<0.008
JUN												
30...	--	--	--	--	--	--	--	--	<0.015	<0.008	<0.050	0.003
30...	--	--	--	--	--	--	--	--	0.130	0.120	--	0.110

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02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	PRO-METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	P,P' DDE DISSOLV (UG/L) (34653)	DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442)	LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)
APR 1983											
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
29...	--	--	--	--	K40	130	--	--	--	--	--
AUG											
30...	--	--	--	--	>400	330	--	--	--	--	--
OCT											
28...	--	--	--	--	50	49	--	--	--	--	--
DEC											
14...	--	--	--	--	47	130	--	--	--	--	--
FEB 1984											
24...	--	--	--	--	K21	62	--	--	--	--	--
APR											
17...	--	--	--	--	42	27	--	--	--	--	--
AUG											
27...	--	--	--	--	K10	K200	--	--	--	--	--
OCT											
24...	--	--	--	--	K10	K7	--	--	--	--	--
DEC											
18...	--	--	--	--	19	27	--	--	--	--	--
FEB 1985											
19...	--	--	--	--	K4	K1	--	--	--	--	--
APR											
30...	--	--	--	--	K100	K16	--	--	--	--	--
JUN											
20...	--	--	--	--	K9	76	--	--	--	--	--
AUG											
06...	--	--	--	--	K9	63	--	--	--	--	--
NOV											
04...	--	--	--	--	33	74	--	--	--	--	--
DEC											
11...	--	--	--	--	K24	K15	--	--	--	--	--
FEB 1986											
11...	--	--	--	--	62	130	--	--	--	--	--
APR											
18...	--	--	--	--	K8	90	--	--	--	--	--
AUG											
19...	--	--	--	--	52	84	--	--	--	--	--
JUN											
16...	--	--	--	--	57	70	--	--	--	--	--
MAY 1994											
02...	<0.008	<0.005	<0.013	<0.008	--	--	<0.007	<0.010	<0.050	<0.050	<0.050
JUN											
30...	<0.008	<0.005	<0.013	<0.008	--	--	<0.007	<0.010	<0.050	<0.050	<0.050
30...	0.110	0.046	0.120	0.120	--	--	0.130	0.094	--	--	--

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02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)	BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711)	2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746)	FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866)	CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	LINDANE DIS-SOLVED (UG/L) (39341)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)
APR 1983 15...	--	--	--	--	--	--	--	--	--	--	--
JUN 29...	--	--	--	--	--	--	--	--	--	--	--
AUG 30...	--	--	--	--	--	--	--	--	--	--	--
OCT 28...	--	--	--	--	--	--	--	--	--	--	--
DEC 14...	--	--	--	--	--	--	--	--	--	--	--
FEB 1984 24...	--	--	--	--	--	--	--	--	--	--	--
APR 17...	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	--	--	--	--	--	--	--	--	--	--	--
OCT 24...	--	--	--	--	--	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--	--	--	--	--	--
FEB 1985 19...	--	--	--	--	--	--	--	--	--	--	--
APR 30...	--	--	--	--	--	--	--	--	--	--	--
JUN 20...	--	--	--	--	--	--	--	--	--	--	--
AUG 06...	--	--	--	--	--	--	--	--	--	--	--
NOV 04...	--	--	--	--	--	--	--	--	--	--	--
DEC 11...	--	--	--	--	--	--	--	--	--	--	--
FEB 1986 11...	--	--	--	--	--	--	--	--	--	--	--
APR 18...	--	--	--	--	--	--	--	--	--	--	--
AUG 19...	--	--	--	--	--	--	--	--	--	--	--
JUN 16...	--	--	--	--	--	--	--	--	--	--	--
MAY 1994 02...	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.008	2	<0.011	<0.008
JUN 30...	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.008	90	<0.011	<0.008
30...	--	--	--	--	--	--	--	0.150	--	0.140	0.140

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02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	MALA-THION, DIS-SOLVED (UG/L) (39532)	PARA-THION, DIS-SOLVED (UG/L) (39542)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	2,4-D, DIS-SOLVED (UG/L) (39732)	2,4,5-T DIS-SOLVED (UG/L) (39742)	SILVEX, DIS-SOLVED (UG/L) (39762)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)
APR 1983											
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
29...	--	--	--	--	--	--	--	--	--	--	--
AUG											
30...	--	--	--	--	--	--	--	--	--	--	--
OCT											
28...	--	--	--	--	--	--	--	--	--	--	--
DEC											
14...	--	--	--	--	--	--	--	--	--	--	--
FEB 1984											
24...	--	--	--	--	--	--	--	--	--	--	--
APR											
17...	--	--	--	--	--	--	--	--	--	--	--
AUG											
27...	--	--	--	--	--	--	--	--	--	--	--
OCT											
24...	--	--	--	--	--	--	--	--	--	--	--
DEC											
18...	--	--	--	--	--	--	--	--	--	--	--
FEB 1985											
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	--	--	--	--	--	--	--	--	--	--	--
JUN											
20...	--	--	--	--	--	--	--	--	--	--	--
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
NOV											
04...	--	--	--	--	--	--	--	--	--	--	--
DEC											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB 1986											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
18...	--	--	--	--	--	--	--	--	--	--	--
AUG											
19...	--	--	--	--	--	--	--	--	--	--	--
JUN											
16...	--	--	--	--	--	--	--	--	--	--	--
MAY 1994											
02...	<0.009	<0.014	<0.022	<0.008	<0.017	<0.050	<0.050	<0.050	<0.009	<0.050	<0.050
JUN											
30...	<0.009	<0.014	<0.022	<0.008	0.005	<0.050	<0.050	<0.050	<0.009	<0.050	<0.050
30...	0.130	0.150	0.180	0.096	0.120	--	--	--	0.130	--	--

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02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	PIC-LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291)	ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	NEB-URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	1-NAPH THOL, WATER, FLTRD, GF 0.7U REC (UG/L) (49295)	METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	FEN-URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)	ESFEN-VAL-ERATE, WAT,FLT GF 0.7U REC (UG/L) (49298)	DNOC WAT,FLT GF 0.7U REC (UG/L) (49299)	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)
APR 1983											
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
29...	--	--	--	--	--	--	--	--	--	--	--
AUG											
30...	--	--	--	--	--	--	--	--	--	--	--
OCT											
28...	--	--	--	--	--	--	--	--	--	--	--
DEC											
14...	--	--	--	--	--	--	--	--	--	--	--
FEB 1984											
24...	--	--	--	--	--	--	--	--	--	--	--
APR											
17...	--	--	--	--	--	--	--	--	--	--	--
AUG											
27...	--	--	--	--	--	--	--	--	--	--	--
OCT											
24...	--	--	--	--	--	--	--	--	--	--	--
DEC											
18...	--	--	--	--	--	--	--	--	--	--	--
FEB 1985											
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	--	--	--	--	--	--	--	--	--	--	--
JUN											
20...	--	--	--	--	--	--	--	--	--	--	--
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
NOV											
04...	--	--	--	--	--	--	--	--	--	--	--
DEC											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB 1986											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
18...	--	--	--	--	--	--	--	--	--	--	--
AUG											
19...	--	--	--	--	--	--	--	--	--	--	--
JUN											
16...	--	--	--	--	--	--	--	--	--	--	--
MAY 1994											
02...	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
JUN											
30...	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
30...	--	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	DICHLORPROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DICHLOBENIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49303)	DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304)	CLOPYRALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305)	CHLOROTHALONIL, WAT,FLT GF 0.7U REC (UG/L) (49306)	CHLORAMBEN, WATER, FLTRD, GF 0.7U REC (UG/L) (49307)	3HYDRXY CARBOFURAN WAT,FLT GF 0.7U REC (UG/L) (49308)	CARBOFURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309)	CARBARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310)	BROMOXYNIL WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	ALDICARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)
APR 1983											
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
29...	--	--	--	--	--	--	--	--	--	--	--
AUG											
30...	--	--	--	--	--	--	--	--	--	--	--
OCT											
28...	--	--	--	--	--	--	--	--	--	--	--
DEC											
14...	--	--	--	--	--	--	--	--	--	--	--
FEB 1984											
24...	--	--	--	--	--	--	--	--	--	--	--
APR											
17...	--	--	--	--	--	--	--	--	--	--	--
AUG											
27...	--	--	--	--	--	--	--	--	--	--	--
OCT											
24...	--	--	--	--	--	--	--	--	--	--	--
DEC											
18...	--	--	--	--	--	--	--	--	--	--	--
FEB 1985											
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	--	--	--	--	--	--	--	--	--	--	--
JUN											
20...	--	--	--	--	--	--	--	--	--	--	--
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
NOV											
04...	--	--	--	--	--	--	--	--	--	--	--
DEC											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB 1986											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
18...	--	--	--	--	--	--	--	--	--	--	--
AUG											
19...	--	--	--	--	--	--	--	--	--	--	--
JUN											
16...	--	--	--	--	--	--	--	--	--	--	--
MAY 1994											
02...	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
JUN											
30...	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
30...	--	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	ALDICARB SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313)	ALDICARB SULFOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314)	ACIFLUORFEN WATER, FLTRD, GF 0.7U REC (UG/L) (49315)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, NITRITE DISSOLVED (MG/L AS NO2) (71856)
APR 1983											
15...	--	--	--	104	75	578	0.14	56	--	0.08	--
JUN											
29...	--	--	--	136	114	389	0.18	50	--	0.04	--
AUG											
30...	--	--	--	146	153	313	0.20	49	--	0.09	--
OCT											
28...	--	--	--	166	159	311	0.23	33	--	0.04	--
DEC											
14...	--	--	--	127	120	295	0.17	60	--	0.10	--
FEB 1984											
24...	--	--	--	107	109	171	0.15	33	--	0.09	--
APR											
17...	--	--	--	68	51	420	0.09	29	--	0.09	--
AUG											
27...	--	--	--	145	131	288	0.20	50	--	0.04	--
OCT											
24...	--	--	--	159	158	240	0.22	47	--	--	--
DEC											
18...	--	--	--	153	158	181	0.21	52	--	0.05	--
FEB 1985											
19...	--	--	--	157	152	162	0.21	<1	--	0.08	--
APR											
30...	--	--	--	170	158	181	0.23	83	--	0.05	--
JUN											
20...	--	--	--	171	159	215	0.23	50	--	0.09	--
AUG											
06...	--	--	--	160	148	313	0.22	67	--	0.08	--
NOV											
04...	--	--	--	113	94	418	0.15	57	0.03	0.05	--
DEC											
11...	--	--	--	131	117	320	0.18	43	0.05	0.05	--
FEB 1986											
11...	--	--	--	76	65	472	0.10	--	0.04	0.04	--
APR											
18...	--	--	--	--	--	--	--	50	--	0.01	--
AUG											
19...	--	--	--	145	154	250	0.20	79	0.03	0.01	--
JUN											
16...	--	--	--	151	150	265	0.21	67	--	0.03	--
MAY 1994											
02...	<0.050	<0.050	<0.050	141	71	--	0.19	--	--	0.03	--
JUN											
30...	<0.050	<0.050	<0.050	--	--	--	--	--	--	0.01	0.03
30...	--	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SAMPLE PURPOSE CODE (71999)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	DRAIN-AGE AREA (SQ. MI.) (81024)	SAM-PLING METHOD, CODES (82398)	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
APR 1983											
15...	0.15	0.2	--	3.5	7	39	535	--	--	--	--
JUN											
29...	0.15	0.1	--	3.5	4	11	535	--	--	--	--
AUG											
30...	--	--	--	3.5	2	4.3	535	--	--	--	--
OCT											
28...	0.58	0.3	--	3.5	6	11	535	--	--	--	--
DEC											
14...	0.18	<0.1	--	3.5	5	12	535	--	--	--	--
FEB 1984											
24...	0.09	--	--	3.5	3	4.8	535	--	--	--	--
APR											
17...	0.15	<0.1	--	3.5	14	87	535	--	--	--	--
AUG											
27...	--	<0.1	--	3.5	4	7.9	535	--	--	--	--
OCT											
24...	--	<0.1	--	3.5	2	3.0	535	20	--	--	--
DEC											
18...	--	--	--	3.5	3	3.5	535	20	--	--	--
FEB 1985											
19...	--	<0.1	--	3.5	1	1.0	535	20	--	--	--
APR											
30...	--	<0.1	--	3.5	--	--	535	20	--	--	--
JUN											
20...	--	--	--	3.5	4	5.0	535	20	--	--	--
AUG											
06...	0.18	<0.1	--	3.5	3	5.9	535	20	--	--	--
NOV											
04...	0.12	<0.1	--	3.5	7	26	535	20	--	--	--
DEC											
11...	0.12	<0.1	--	3.5	7	17	535	20	--	--	--
FEB 1986											
11...	0.09	--	--	3.5	5	31	535	20	--	--	--
APR											
18...	0.12	--	--	3.5	2	4.1	535	--	--	--	--
AUG											
19...	0.12	--	--	3.5	7	12	535	20	--	--	--
JUN											
16...	0.15	<0.1	--	3.5	3	5.3	535	--	--	--	--
MAY 1994											
02...	--	--	15.00	3.5	--	--	535	40	<0.012	<0.006	<0.012
JUN											
30...	--	--	15.00	3.5	--	--	535	40	<0.012	<0.006	<0.012
30...	--	--	--	3.5	--	--	535	--	0.140	0.099	0.130

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	DIMETH-OATE WATER FLTRD 0.7 U GG, REC (UG/L) (82662)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)
APR 1983											
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
29...	--	--	--	--	--	--	--	--	--	--	--
AUG											
30...	--	--	--	--	--	--	--	--	--	--	--
OCT											
28...	--	--	--	--	--	--	--	--	--	--	--
DEC											
14...	--	--	--	--	--	--	--	--	--	--	--
FEB 1984											
24...	--	--	--	--	--	--	--	--	--	--	--
APR											
17...	--	--	--	--	--	--	--	--	--	--	--
AUG											
27...	--	--	--	--	--	--	--	--	--	--	--
OCT											
24...	--	--	--	--	--	--	--	--	--	--	--
DEC											
18...	--	--	--	--	--	--	--	--	--	--	--
FEB 1985											
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	--	--	--	--	--	--	--	--	--	--	--
JUN											
20...	--	--	--	--	--	--	--	--	--	--	--
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
NOV											
04...	--	--	--	--	--	--	--	--	--	--	--
DEC											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB 1986											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
18...	--	--	--	--	--	--	--	--	--	--	--
AUG											
19...	--	--	--	--	--	--	--	--	--	--	--
JUN											
16...	--	--	--	--	--	--	--	--	--	--	--
MAY 1994											
02...	<0.02	<0.013	<0.011	<0.030	<0.039	<0.035	<0.005	<0.009	<0.015	<0.007	<0.012
JUN											
30...	<0.02	<0.013	0.009	<0.030	<0.039	<0.035	<0.005	<0.009	<0.015	<0.007	<0.012
30...	0.03	0.160	0.130	0.120	0.057	0.170	0.120	0.120	0.100	0.130	0.140

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)
APR 1983											
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
29...	--	--	--	--	--	--	--	--	--	--	--
AUG											
30...	--	--	--	--	--	--	--	--	--	--	--
OCT											
28...	--	--	--	--	--	--	--	--	--	--	--
DEC											
14...	--	--	--	--	--	--	--	--	--	--	--
FEB 1984											
24...	--	--	--	--	--	--	--	--	--	--	--
APR											
17...	--	--	--	--	--	--	--	--	--	--	--
AUG											
27...	--	--	--	--	--	--	--	--	--	--	--
OCT											
24...	--	--	--	--	--	--	--	--	--	--	--
DEC											
18...	--	--	--	--	--	--	--	--	--	--	--
FEB 1985											
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	--	--	--	--	--	--	--	--	--	--	--
JUN											
20...	--	--	--	--	--	--	--	--	--	--	--
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
NOV											
04...	--	--	--	--	--	--	--	--	--	--	--
DEC											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB 1986											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
18...	--	--	--	--	--	--	--	--	--	--	--
AUG											
19...	--	--	--	--	--	--	--	--	--	--	--
JUN											
16...	--	--	--	--	--	--	--	--	--	--	--
MAY 1994											
02...	<0.013	<0.013	<0.012	<0.009	<0.060	<0.008	<0.016	<0.046	<0.008	<0.004	<0.018
JUN											
30...	<0.013	<0.013	<0.012	<0.009	<0.060	<0.008	<0.016	<0.046	<0.008	<0.004	<0.018
30...	0.120	0.130	0.160	0.130	0.190	0.120	0.130	0.150	0.140	0.160	0.170

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02326900 - ST. MARKS RIVER NEAR NEWPORT, FLA. WATER-QUALITY DATA

DATE	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	SAMPLER TYPE (CODE) (84164)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	DIAZ-INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	TERBUTH YLAZINE SURROGT WAT FLT 0.7 U GF, REC PERCENT (91064)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	REF-ERENCE MA-TERIAL/ SPIKE SOURCE (CODE) (99104)
APR 1983											
15...	--	--	--	--	--	109	50	--	--	--	--
JUN											
29...	--	--	--	--	--	197	89	--	--	--	--
AUG											
30...	--	--	--	--	--	261	122	--	--	--	--
OCT											
28...	--	--	--	--	--	271	127	--	--	--	--
DEC											
14...	--	--	--	--	--	187	87	--	--	--	--
FEB 1984											
24...	--	--	--	--	--	193	86	--	--	--	--
APR											
17...	--	--	--	--	--	84	37	--	--	--	--
AUG											
27...	--	--	--	--	--	237	107	--	--	--	--
OCT											
24...	--	--	--	--	--	269	124	--	--	--	--
DEC											
18...	--	--	--	--	--	265	123	--	--	--	--
FEB 1985											
19...	--	--	--	--	--	262	120	--	--	--	--
APR											
30...	--	--	--	--	--	263	123	--	--	--	--
JUN											
20...	--	--	--	--	--	265	116	--	--	--	--
AUG											
06...	--	--	--	--	--	245	112	--	--	--	--
NOV											
04...	--	--	--	--	--	156	58	--	--	--	--
DEC											
11...	--	--	--	--	--	196	83	--	--	--	--
FEB 1986											
11...	--	--	--	--	--	112	42	--	--	--	--
APR											
18...	--	--	--	--	--	--	--	--	--	--	--
AUG											
19...	--	--	--	--	--	262	121	--	--	--	--
JUN											
16...	--	--	--	--	--	264	121	--	--	--	--
MAY 1994											
02...	<0.010	<0.008	<0.050	<0.016	3060	234	107	100	110	90.0	--
JUN											
30...	<0.010	<0.008	<0.050	<0.016	3060	--	--	100	107	90.0	--
30...	0.140	0.140	0.150	0.021	--	--	--	90.0	122	100	39362

WATER-QUALITY DATA

DATE	SPIKE TYPE (CODE) (99106)	SPIKE SOURCE (CODE) (99107)	SPIKE VOLUME (ML) (99108)	QUALITY ASSURANCE DATA INDICATOR CODE (99111)	ALKALINITY, CARBONATE IT-FLD (MG/L - CACO3) (99430)	BICARBONATE IT-FLD (MG/L AS HCO3) (99440)	SET NUMBER SCHEDULE 2001 (NO.) (99818)	SET NUMBER SCHEDULE 2051 (NO.) (99821)	BDMC, SURROG, WATER, UNFLTRD REC PERCENT (99835)	SAMPLE VOLUME, SCHEDULE 2051 (ML) (99847)	SAMPLE VOLUME SCHEDULE 2010 (ML) (99857)
APR 1983											
15...	--	--	--	--	--	--	--	--	--	--	--
JUN											
29...	--	--	--	--	--	--	--	--	--	--	--
AUG											
30...	--	--	--	--	--	--	--	--	--	--	--
OCT											
28...	--	--	--	--	--	--	--	--	--	--	--
DEC											
14...	--	--	--	--	--	--	--	--	--	--	--
FEB 1984											
24...	--	--	--	--	--	--	--	--	--	--	--
APR											
17...	--	--	--	--	--	--	--	--	--	--	--
AUG											
27...	--	--	--	--	--	--	--	--	--	--	--
OCT											
24...	--	--	--	--	--	--	--	--	--	--	--
DEC											
18...	--	--	--	--	--	--	--	--	--	--	--
FEB 1985											
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	--	--	--	--	--	--	--	--	--	--	--
JUN											
20...	--	--	--	--	--	--	--	--	--	--	--
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
NOV											
04...	--	--	--	--	60	74	--	--	--	--	--
DEC											
11...	--	--	--	--	82	100	--	--	--	--	--
FEB 1986											
11...	--	--	--	--	36	44	--	--	--	--	--
APR											
18...	--	--	--	--	100	122	--	--	--	--	--
AUG											
19...	--	--	--	--	--	--	--	--	--	--	--
JUN											
16...	--	--	--	--	118	144	--	--	--	--	--
MAY 1994											
02...	--	--	--	--	--	--	--	<0.0	54.0	881	879
JUN											
30...	--	--	--	40	--	--	--	<0.0	42.0	921	894
30...	10.00	10.00	0.100	--	--	--	<0.0	--	--	--	913

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	STATION NUMBER	DATE	TEMPERATURE WATER (DEG C) (00010)	DISCHARGE, IN CUBIC FEET PER SECOND (00060)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2) (00405)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)
DEC 1951										
05...	02327000	511205	--	--	587	2.80	--	--	--	--
JAN 1952										
18...	02327000	520118	--	--	264	2.02	--	--	--	--
FEB										
29...	02327000	520229	--	--	539	2.70	--	--	--	--
APR										
11...	02327000	520411	--	--	375	2.12	--	--	--	--
MAY										
22...	02327000	520522	--	--	257	2.02	--	--	--	--
JUL										
01...	02327000	520701	--	--	194	1.42	--	--	--	--
AUG										
12...	02327000	520812	--	--	212	1.44	--	--	--	--
SEP										
25...	02327000	520925	--	--	577	--	--	--	--	--
NOV										
06...	02327000	521106	--	--	404	1.91	--	--	--	--
DEC										
18...	02327000	521218	--	--	456	1.96	--	--	--	--
JAN 1953										
27...	02327000	530127	--	--	275	1.26	--	--	--	--
MAR										
12...	02327000	530312	--	--	551	1.93	--	--	--	--
APR										
23...	02327000	530423	--	--	689	2.37	--	--	--	--
JUN										
04...	02327000	530604	--	--	290	1.68	--	--	--	--
JUL										
16...	02327000	530716	--	--	514	1.88	--	--	--	--
AUG										
26...	02327000	530826	--	--	584	1.96	--	--	--	--
SEP										
29...	02327000	530929	--	--	596	2.46	--	--	--	--
NOV										
17...	02327000	531117	--	--	513	2.18	--	--	--	--
JAN 1954										
05...	02327000	540105	--	--	512	2.28	--	--	--	--
FEB										
11...	02327000	540211	--	--	284	1.66	--	--	--	--
MAR										
25...	02327000	540325	--	--	323	1.39	--	--	--	--
MAY										
04...	02327000	540504	--	--	217	1.46	--	--	--	--
12...	02327000	540512	22.0	282	--	--	272	7.4	9.4	121
JUN										
14...	02327000	540614	--	--	215	1.76	--	--	--	--
JUL										
26...	02327000	540726	--	--	232	1.89	--	--	--	--
SEP										
07...	02327000	540907	--	--	201	1.46	--	--	--	--
OCT										
18...	02327000	541018	--	--	216	1.28	--	--	--	--
DEC										
06...	02327000	541206	--	--	475	2.25	--	--	--	--
JAN 1955										
10...	02327000	550110	--	--	314	1.90	--	--	--	--
FEB										
21...	02327000	550221	--	--	182	1.59	--	--	--	--
APR										
04...	02327000	550404	--	--	243	1.86	--	--	--	--
MAY										
16...	02327000	550516	--	--	96	1.22	--	--	--	--
JUN										
27...	02327000	550627	--	--	551	2.50	--	--	--	--
AUG										
09...	02327000	550809	--	--	202	1.85	--	--	--	--
SEP										
22...	02327000	550922	--	--	224	2.27	--	--	--	--

WAKULLA

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	BICARBONATE WATER WH FET FIELD MG/L AS HCO3 (00440)	CARBONATE WATER WH FET FIELD MG/L AS CO3 (00445)	PHOSPHATE, TOTAL (MG/L AS PO4) (00650)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	HARDNESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)
DEC 1951 05...	--	--	--	--	--	--	--	--	--	--	--
JAN 1952 18...	--	--	--	--	--	--	--	--	--	--	--
FEB 29...	--	--	--	--	--	--	--	--	--	--	--
APR 11...	--	--	--	--	--	--	--	--	--	--	--
MAY 22...	--	--	--	--	--	--	--	--	--	--	--
JUL 01...	--	--	--	--	--	--	--	--	--	--	--
AUG 12...	--	--	--	--	--	--	--	--	--	--	--
SEP 25...	--	--	--	--	--	--	--	--	--	--	--
NOV 06...	--	--	--	--	--	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--	--	--	--	--	--
JAN 1953 27...	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--	--	--	--	--
APR 23...	--	--	--	--	--	--	--	--	--	--	--
JUN 04...	--	--	--	--	--	--	--	--	--	--	--
JUL 16...	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	--	--	--	--	--	--	--	--	--	--	--
SEP 29...	--	--	--	--	--	--	--	--	--	--	--
NOV 17...	--	--	--	--	--	--	--	--	--	--	--
JAN 1954 05...	--	--	--	--	--	--	--	--	--	--	--
FEB 11...	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	--	--	--	--	--	--	--	--	--	--	--
MAY 04...	--	--	--	--	--	--	--	--	--	--	--
12...	150	0	0.10	140	15	39	9.4	6.0	0.2	3.0	22
JUN 14...	--	--	--	--	--	--	--	--	--	--	--
JUL 26...	--	--	--	--	--	--	--	--	--	--	--
SEP 07...	--	--	--	--	--	--	--	--	--	--	--
OCT 18...	--	--	--	--	--	--	--	--	--	--	--
DEC 06...	--	--	--	--	--	--	--	--	--	--	--
JAN 1955 10...	--	--	--	--	--	--	--	--	--	--	--
FEB 21...	--	--	--	--	--	--	--	--	--	--	--
APR 04...	--	--	--	--	--	--	--	--	--	--	--
MAY 16...	--	--	--	--	--	--	--	--	--	--	--
JUN 27...	--	--	--	--	--	--	--	--	--	--	--
AUG 09...	--	--	--	--	--	--	--	--	--	--	--
SEP 22...	--	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	RA-226, DISSOLVED, PLANCHET COUNT (PCI/L) (09510)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L) (09511)	URANIUM NATURAL DISSOLVED (UG/L AS U) (22703)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	PHOSPHORUS ORTHO TOTAL (MG/L AS P) (70507)	URANIUM DISSOLVED, EXTRACTION (UG/L) (80020)
DEC 1951 05...	--	--	--	--	--	--	--	--	--	--
JAN 1952 18...	--	--	--	--	--	--	--	--	--	--
FEB 29...	--	--	--	--	--	--	--	--	--	--
APR 11...	--	--	--	--	--	--	--	--	--	--
MAY 22...	--	--	--	--	--	--	--	--	--	--
JUL 01...	--	--	--	--	--	--	--	--	--	--
AUG 12...	--	--	--	--	--	--	--	--	--	--
SEP 25...	--	--	--	--	--	--	--	--	--	--
NOV 06...	--	--	--	--	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--	--	--	--	--
JAN 1953 27...	--	--	--	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--	--	--	--
APR 23...	--	--	--	--	--	--	--	--	--	--
JUN 04...	--	--	--	--	--	--	--	--	--	--
JUL 16...	--	--	--	--	--	--	--	--	--	--
AUG 26...	--	--	--	--	--	--	--	--	--	--
SEP 29...	--	--	--	--	--	--	--	--	--	--
NOV 17...	--	--	--	--	--	--	--	--	--	--
JAN 1954 05...	--	--	--	--	--	--	--	--	--	--
FEB 11...	--	--	--	--	--	--	--	--	--	--
MAR 25...	--	--	--	--	--	--	--	--	--	--
MAY 04...	--	--	--	--	--	--	--	--	--	--
12...	0.20	12	40	40	0.2	0.20	0.50	165	0.033	0.50
JUN 14...	--	--	--	--	--	--	--	--	--	--
JUL 26...	--	--	--	--	--	--	--	--	--	--
SEP 07...	--	--	--	--	--	--	--	--	--	--
OCT 18...	--	--	--	--	--	--	--	--	--	--
DEC 06...	--	--	--	--	--	--	--	--	--	--
JAN 1955 10...	--	--	--	--	--	--	--	--	--	--
FEB 21...	--	--	--	--	--	--	--	--	--	--
APR 04...	--	--	--	--	--	--	--	--	--	--
MAY 16...	--	--	--	--	--	--	--	--	--	--
JUN 27...	--	--	--	--	--	--	--	--	--	--
AUG 09...	--	--	--	--	--	--	--	--	--	--
SEP 22...	--	--	--	--	--	--	--	--	--	--

DATE	STATION NUMBER	DATE	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)
NOV 1955				
01...	02327000	551101	236	2.12
DEC				
15...	02327000	551215	278	2.17
JAN 1956				
27...	02327000	560127	562	2.82
MAR				
06...	02327000	560306	257	1.96
APR				
27...	02327000	560427	226	1.60
MAY				
31...	02327000	560531	109	1.49
JUL				
12...	02327000	560712	379	2.30
AUG				
24...	02327000	560824	262	1.86
OCT				
04...	02327000	561004	403	2.23
NOV				
15...	02327000	561115	525	2.53
DEC				
20...	02327000	561220	283	1.86
FEB 1957				
14...	02327000	570214	249	1.42
APR				
11...	02327000	570411	549	2.25
JUN				
06...	02327000	570606	447	2.09
JUL				
18...	02327000	570718	430	2.39
AUG				
29...	02327000	570829	470	2.52
OCT				
08...	02327000	571008	1730	5.32
NOV				
28...	02327000	571128	508	2.92
JAN 1958				
20...	02327000	580120	466	2.48
MAR				
20...	02327000	580320	743	3.28
MAY				
12...	02327000	580512	450	2.76
JUL				
07...	02327000	580707	622	3.58
AUG				
25...	02327000	580825	343	--
OCT				
26...	02327000	581026	319	2.59
DEC				
08...	02327000	581208	159	2.10
FEB 1959				
02...	02327000	590202	277	1.94
MAR				
30...	02327000	590330	855	3.59
MAY				
25...	02327000	590525	1010	4.40
JUL				
20...	02327000	590720	624	3.74
SEP				
15...	02327000	590915	735	3.92
NOV				
09...	02327000	591109	461	3.73
JAN 1960				
04...	02327000	600104	174	2.84
FEB				
22...	02327000	600222	536	3.38
APR				
18...	02327000	600418	685	3.78
JUN				
13...	02327000	600613	118	2.36

DISTRICT CODE 12

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY — PROCESS DATE 9-24-96
02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA — WATER-QUALITY DATA

DATE	STATION NUMBER	DATE	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)
AUG 1960				
08...	02327000	600808	447	2.96
OCT				
03...	02327000	601003	1120	4.40
NOV				
28...	02327000	601128	333	2.54
JAN 1961				
16...	02327000	610116	350	2.21
MAR				
13...	02327000	610313	405	3.47
MAY				
08...	02327000	610508	285	2.07
JUN				
26...	02327000	610626	530	2.64
AUG				
30...	02327000	610830	517	2.22
OCT				
16...	02327000	611016	345	2.00
DEC				
04...	02327000	611204	553	2.48
JAN 1962				
29...	02327000	620129	310	1.81
MAR				
21...	02327000	620321	468	2.14
MAY				
16...	02327000	620516	315	1.78
JUL				
11...	02327000	620711	244	1.70
AUG				
29...	02327000	620829	341	1.81
OCT				
17...	02327000	621017	430	1.74
DEC				
11...	02327000	621211	395	1.83
JAN 1963				
29...	02327000	630129	369	2.11
MAR				
27...	02327000	630327	397	2.10
MAY				
14...	02327000	630514	231	1.53
JUN				
25...	02327000	630625	345	1.91
AUG				
13...	02327000	630813	402	2.22
SEP				
26...	02327000	630926	137	1.78
OCT				
30...	02327000	631030	340	2.36
DEC				
17...	02327000	631217	141	1.50
FEB 1964				
12...	02327000	640212	350	2.37
APR				
08...	02327000	640408	348	2.74
JUN				
02...	02327000	640602	287	2.31
JUL				
29...	02327000	640729	1000	4.07
SEP				
14...	02327000	640914	890	4.11
NOV				
04...	02327000	641104	394	2.83
DEC				
03...	02327000	641203	323	2.78
06...	02327000	641206	1490	5.18
JAN 1965				
21...	02327000	650121	342	2.95
MAR				
03...	02327000	650303	1050	4.64

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	STATION NUMBER	DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	DISCHARGE, IN CUBIC FEET PER SECOND (00060)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	COLOR (PLATINUM-COBALT UNITS) (00080)	SPECIFIC CONDUCTANCE (US/CM) (00095)
APR 1965									
22...	02327000	650422	--	--	--	439	2.86	--	--
JUN									
08...	02327000	650608	--	--	--	311	2.37	--	--
JUL									
27...	02327000	650727	--	--	--	657	3.19	--	--
AUG									
31...	02327000	650831	--	--	--	387	3.04	--	--
OCT									
19...	02327000	651019	--	--	--	373	2.85	--	--
DEC									
01...	02327000	651201	--	--	--	239	2.18	--	--
MAR 1966									
11...	02327000	660311	--	--	--	1160	4.30	--	--
APR									
22...	02327000	660422	--	--	--	381	2.58	--	--
MAY									
19...	02327000	660519	--	--	380	373	2.36	0	257
JUL									
06...	02327000	660706	--	--	--	416	2.34	--	--
AUG									
24...	02327000	660824	--	--	--	557	2.76	--	--
OCT									
03...	02327000	661003	--	--	--	570	2.71	--	--
NOV									
04...	02327000	661104	--	--	--	273	2.02	--	--
DEC									
19...	02327000	661219	--	--	--	407	2.33	--	--
JAN 1967									
27...	02327000	670127	--	--	--	537	2.36	--	--
MAR									
10...	02327000	670310	--	--	--	257	2.04	--	--
APR									
17...	02327000	670417	--	--	--	250	1.75	--	--
JUN									
01...	02327000	670601	--	21.0	331	340	2.01	0	259
JUL									
14...	02327000	670714	--	--	--	521	2.70	--	--
AUG									
25...	02327000	670825	--	--	--	1160	4.12	--	--
OCT									
06...	02327000	671006	--	--	--	267	2.14	--	--
NOV									
17...	02327000	671117	--	--	--	344	2.15	--	--
DEC									
19...	02327000	671219	--	--	--	349	2.06	--	--
FEB 1968									
08...	02327000	680208	--	--	--	192	1.60	--	--
MAR									
29...	02327000	680329	--	--	--	200	1.44	--	--
MAY									
24...	02327000	680524	--	--	--	188	1.30	--	--
24...	02327000	680524	0950	24.0	188	--	--	5	272
JUL									
19...	02327000	680719	--	--	--	190	1.67	--	--
SEP									
13...	02327000	680913	--	--	--	361	1.94	--	--
OCT									
30...	02327000	681030	--	--	--	295	1.63	--	--
DEC									
20...	02327000	681220	--	--	--	314	1.60	--	--
FEB 1969									
14...	02327000	690214	--	--	--	253	1.53	--	--
APR									
11...	02327000	690411	--	--	--	312	1.68	--	--
JUN									
06...	02327000	690606	--	--	--	276	1.38	--	--
06...	02327000	690606	1330	22.0	276	--	1.38	0	277
AUG									
06...	02327000	690806	--	--	--	948	2.72	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2) (00405)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	BICARBONATE WATER WH FET FIELD MG/L AS HCO3 (00440)	CARBONATE WATER WH FET FIELD MG/L AS CO3 (00445)	PHOSPHATE, TOTAL (MG/L AS PO4) (00650)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)	HARDNESS TOTAL (MG/L AS CACO3) (00900)
APR 1965										
22...	--	--	--	--	--	--	--	--	--	--
JUN										
08...	--	--	--	--	--	--	--	--	--	--
JUL										
27...	--	--	--	--	--	--	--	--	--	--
AUG										
31...	--	--	--	--	--	--	--	--	--	--
OCT										
19...	--	--	--	--	--	--	--	--	--	--
DEC										
01...	--	--	--	--	--	--	--	--	--	--
MAR 1966										
11...	--	--	--	--	--	--	--	--	--	--
APR										
22...	--	--	--	--	--	--	--	--	--	--
MAY										
19...	--	--	7.6	5.7	118	140	--	--	0.07	130
JUL										
06...	--	--	--	--	--	--	--	--	--	--
AUG										
24...	--	--	--	--	--	--	--	--	--	--
OCT										
03...	--	--	--	--	--	--	--	--	--	--
NOV										
04...	--	--	--	--	--	--	--	--	--	--
DEC										
19...	--	--	--	--	--	--	--	--	--	--
JAN 1967										
27...	--	--	--	--	--	--	--	--	--	--
MAR										
10...	--	--	--	--	--	--	--	--	--	--
APR										
17...	--	--	--	--	--	--	--	--	--	--
JUN										
01...	3.0	33	7.9	2.9	118	140	0	--	0.07	120
JUL										
14...	--	--	--	--	--	--	--	--	--	--
AUG										
25...	--	--	--	--	--	--	--	--	--	--
OCT										
06...	--	--	--	--	--	--	--	--	--	--
NOV										
17...	--	--	--	--	--	--	--	--	--	--
DEC										
19...	--	--	--	--	--	--	--	--	--	--
FEB 1968										
08...	--	--	--	--	--	--	--	--	--	--
MAR										
29...	--	--	--	--	--	--	--	--	--	--
MAY										
24...	--	--	--	--	--	--	--	--	--	--
24...	6.2	73	7.6	6.0	123	150	0	0.0	--	140
JUL										
19...	--	--	--	--	--	--	--	--	--	--
SEP										
13...	--	--	--	--	--	--	--	--	--	--
OCT										
30...	--	--	--	--	--	--	--	--	--	--
DEC										
20...	--	--	--	--	--	--	--	--	--	--
FEB 1969										
14...	--	--	--	--	--	--	--	--	--	--
APR										
11...	--	--	--	--	--	--	--	--	--	--
JUN										
06...	--	--	--	--	--	--	--	--	--	--
06...	4.7	53	7.5	7.5	123	150	0	0.05	--	140
AUG										
06...	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	HARDNESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	SODIUM PERCENT (00932)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)
APR 1965										
22...	--	--	--	--	--	--	--	--	--	--
JUN										
08...	--	--	--	--	--	--	--	--	--	--
JUL										
27...	--	--	--	--	--	--	--	--	--	--
AUG										
31...	--	--	--	--	--	--	--	--	--	--
OCT										
19...	--	--	--	--	--	--	--	--	--	--
DEC										
01...	--	--	--	--	--	--	--	--	--	--
MAR 1966										
11...	--	--	--	--	--	--	--	--	--	--
APR										
22...	--	--	--	--	--	--	--	--	--	--
MAY										
19...	10	36	9.2	3.6	0.1	6	0.40	6.0	8.8	0.30
JUL										
06...	--	--	--	--	--	--	--	--	--	--
AUG										
24...	--	--	--	--	--	--	--	--	--	--
OCT										
03...	--	--	--	--	--	--	--	--	--	--
NOV										
04...	--	--	--	--	--	--	--	--	--	--
DEC										
19...	--	--	--	--	--	--	--	--	--	--
JAN 1967										
27...	--	--	--	--	--	--	--	--	--	--
MAR										
10...	--	--	--	--	--	--	--	--	--	--
APR										
17...	--	--	--	--	--	--	--	--	--	--
JUN										
01...	6	35	8.7	3.6	0.1	6	0.40	5.0	8.8	0.30
JUL										
14...	--	--	--	--	--	--	--	--	--	--
AUG										
25...	--	--	--	--	--	--	--	--	--	--
OCT										
06...	--	--	--	--	--	--	--	--	--	--
NOV										
17...	--	--	--	--	--	--	--	--	--	--
DEC										
19...	--	--	--	--	--	--	--	--	--	--
FEB 1968										
08...	--	--	--	--	--	--	--	--	--	--
MAR										
29...	--	--	--	--	--	--	--	--	--	--
MAY										
24...	--	--	--	--	--	--	--	--	--	--
24...	13	39	9.5	3.4	0.1	5	0.40	6.0	10	0.30
JUL										
19...	--	--	--	--	--	--	--	--	--	--
SEP										
13...	--	--	--	--	--	--	--	--	--	--
OCT										
30...	--	--	--	--	--	--	--	--	--	--
DEC										
20...	--	--	--	--	--	--	--	--	--	--
FEB 1969										
14...	--	--	--	--	--	--	--	--	--	--
APR										
11...	--	--	--	--	--	--	--	--	--	--
JUN										
06...	--	--	--	--	--	--	--	--	--	--
06...	16	40	9.5	3.8	0.1	--	--	8.0	11	0.20
AUG										
06...	--	--	--	--	--	--	--	--	--	--

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02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS NO3) (71851)
APR 1965									
22...	--	--	--	--	--	--	--	--	--
JUN									
08...	--	--	--	--	--	--	--	--	--
JUL									
27...	--	--	--	--	--	--	--	--	--
AUG									
31...	--	--	--	--	--	--	--	--	--
OCT									
19...	--	--	--	--	--	--	--	--	--
DEC									
01...	--	--	--	--	--	--	--	--	--
MAR 1966									
11...	--	--	--	--	--	--	--	--	--
APR									
22...	--	--	--	--	--	--	--	--	--
MAY									
19...	11	10	--	--	--	146	147	0.20	0.40
JUL									
06...	--	--	--	--	--	--	--	--	--
AUG									
24...	--	--	--	--	--	--	--	--	--
OCT									
03...	--	--	--	--	--	--	--	--	--
NOV									
04...	--	--	--	--	--	--	--	--	--
DEC									
19...	--	--	--	--	--	--	--	--	--
JAN 1967									
27...	--	--	--	--	--	--	--	--	--
MAR									
10...	--	--	--	--	--	--	--	--	--
APR									
17...	--	--	--	--	--	--	--	--	--
JUN									
01...	12	0	0	90	147	145	135	0.20	0.60
JUL									
14...	--	--	--	--	--	--	--	--	--
AUG									
25...	--	--	--	--	--	--	--	--	--
OCT									
06...	--	--	--	--	--	--	--	--	--
NOV									
17...	--	--	--	--	--	--	--	--	--
DEC									
19...	--	--	--	--	--	--	--	--	--
FEB 1968									
08...	--	--	--	--	--	--	--	--	--
MAR									
29...	--	--	--	--	--	--	--	--	--
MAY									
24...	--	--	--	--	--	--	--	--	--
24...	12	10	0	0	155	154	78.7	0.21	0.90
JUL									
19...	--	--	--	--	--	--	--	--	--
SEP									
13...	--	--	--	--	--	--	--	--	--
OCT									
30...	--	--	--	--	--	--	--	--	--
DEC									
20...	--	--	--	--	--	--	--	--	--
FEB 1969									
14...	--	--	--	--	--	--	--	--	--
APR									
11...	--	--	--	--	--	--	--	--	--
JUN									
06...	--	--	--	--	--	--	--	--	--
06...	13	0	--	--	166	--	124	0.23	0.20
AUG									
06...	--	--	--	--	--	--	--	--	--

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02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	STATION NUMBER	DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	DISCHARGE, IN CUBIC FEET PER SECOND (00060)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	TURBIDITY (JCU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	SPECIFIC CONDUCTANCE (US/CM) (00095)
SEP 1969											
26...	02327000	690926	--	--	--	--	1870	4.64	--	--	--
NOV											
21...	02327000	691121	--	--	--	--	342	1.20	--	--	--
JAN 1970											
30...	02327000	700130	--	--	--	--	557	1.67	--	--	--
MAR											
25...	02327000	700325	--	--	--	--	588	1.96	--	--	--
MAY											
04...	02327000	700504	--	--	--	--	367	1.56	--	--	--
04...	02327000	700504	0945	--	20.0	367	--	1.56	--	5	260
JUL											
03...	02327000	700703	--	--	--	--	280	1.23	--	--	--
AUG											
24...	02327000	700824	--	--	--	--	654	2.54	--	--	--
SEP											
02...	02327000	700902	1425	--	21.5	800	--	2.92	3	40	245
OCT											
20...	02327000	701020	--	--	--	--	487	2.10	--	--	--
DEC											
17...	02327000	701217	--	--	--	--	507	2.10	--	--	--
FEB 1971											
11...	02327000	710211	--	--	--	--	459	1.80	--	--	--
APR											
06...	02327000	710406	--	--	--	--	357	1.58	--	--	--
28...	02327000	710428	--	--	--	--	322	1.58	--	--	--
28...	02327000	710428	0930	--	21.0	322	--	1.58	--	--	276
28...	02327000	710428	0930	--	21.0	322	--	1.58	2	0	269
MAY											
31...	02327000	710531	--	--	--	--	216	1.31	--	--	--
JUL											
30...	02327000	710730	--	--	--	--	416	2.02	--	--	--
SEP											
21...	02327000	710921	--	--	--	--	307	1.72	--	--	--
21...	02327000	710921	1340	--	21.5	285	--	1.72	1	0	268
NOV											
12...	02327000	711112	--	--	--	--	406	2.07	--	--	--
JAN 1972											
17...	02327000	720117	--	--	--	--	302	1.79	--	--	--
MAR											
02...	02327000	720302	--	--	--	--	514	2.48	--	--	--
16...	02327000	720316	1530	40.0	21.0	--	--	--	0	10	280
APR											
25...	02327000	720425	--	--	--	--	409	2.13	--	--	--
25...	02327000	720425	0930	14.0	20.5	409	--	2.13	1	0	279
JUN											
26...	02327000	720626	--	--	--	--	405	2.36	--	--	--
AUG											
09...	02327000	720809	--	--	--	--	243	1.63	--	--	--
SEP											
21...	02327000	720921	--	--	--	--	194	2.01	--	--	--
21...	02327000	720921	1500	--	21.0	194	--	2.01	0	0	270
NOV											
30...	02327000	721130	--	--	--	--	779	2.96	--	--	--
JAN 1973											
21...	02327000	730121	0900	--	--	--	--	--	1	10	260
FEB											
02...	02327000	730202	--	--	--	--	776	2.58	--	--	--
APR											
11...	02327000	730411	--	--	--	--	1910	5.07	--	--	--
25...	02327000	730425	0900	--	21.0	--	--	--	4	20	255
JUN											
25...	02327000	730625	--	--	--	--	624	2.80	--	--	--
25...	02327000	730625	1500	--	22.0	--	620	2.80	2	10	263
27...	02327000	730627	1400	--	--	--	--	--	1	10	265
AUG											
03...	02327000	730803	--	--	--	--	764	3.32	--	--	--
SEP											
28...	02327000	730928	1300	--	22.0	--	--	--	2	--	270

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DATE	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	BICAR-BONATE WATER WH FET FIELD MG/L AS HCO3 (00440)	CAR-BONATE WATER WH FET FIELD MG/L AS CO3 (00445)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)
SEP 1969												
26...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
21...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1970												
30...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	2.5	27	0	--	7.9	3.0	121	150	--	0.05	--	--
JUL												
03...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
24...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
02...	1.6	18	0.9	--	7.9	2.7	112	140	0	0.34	--	--
OCT												
20...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
17...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1971												
11...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
06...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	2.3	26	--	--	7.5	--	--	--	--	--	--	--
28...	2.3	26	0.2	--	7.6	5.9	121	150	0	0.01	--	--
MAY												
31...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
30...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	1.2	--	6.9	30	125	150	0	0.23	0.010	--
NOV												
12...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1972												
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	8.1	1.9	121	150	0	--	--	0.002
APR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	3.2	35	0.4	--	7.3	12	126	150	0	0.14	0.00	0.00
JUN												
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
09...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	2.6	29	0	--	8.3	1.1	118	140	0	0.30	0.120	0.004
NOV												
30...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1973												
21...	--	--	0.2	--	7.9	3.0	121	150	0	0.40	0.020	0.002
FEB												
02...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	0.2	15	8.0	2.2	115	140	0	0.55	0.010	0.002
JUN												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	2.4	--	0.2	--	7.5	7.2	118	140	0	0.06	0.010	0.003
27...	--	--	--	9	7.8	3.7	121	150	0	0.26	0.010	0.006
AUG												
03...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
28...	--	--	0.5	14	7.6	5.8	120	150	0	0.46	<0.010	0.003

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DATE	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	PHOSPHATE, TOTAL (MG/L AS PO4) (00650)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS ORGANIC TOTAL (MG/L AS P) (00670)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, INORGANIC, TOTAL (MG/L AS C) (00685)	CARBON, TOTAL (INORG + ORG) (MG/L AS C) (00690)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	HARDNESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)
SEP 1969												
26...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
21...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1970												
30...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	0.25	0.19	--	--	18	--	--	130	9	37	9.1
JUL												
03...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
24...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
02...	--	0.19	0.18	--	--	--	--	--	120	9	35	7.9
OCT												
20...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
17...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1971												
11...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
06...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	0.15	--	--	33	--	--	130	13	38	9.5
MAY												
31...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
30...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	0.01	--	--	1.0	--	--	140	11	39	9.2
NOV												
12...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1972												
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
16...	0.330	--	--	--	--	--	--	--	130	12	38	9.2
APR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	0.300	0.09	--	0.042	0.01	0.0	31	31	130	8	39	8.7
JUN												
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
09...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	0.300	0.12	--	0.042	0.00	1.0	30	31	130	9	36	8.9
NOV												
30...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1973												
21...	0.230	0.13	--	0.047	0.01	5.0	22	27	130	9	38	8.6
FEB												
02...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
25...	0.100	0.15	--	0.073	0.02	6.0	14	20	130	11	38	7.6
JUN												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	0.200	0.19	--	0.063	0.0	7.0	20	27	130	11	38	8.3
27...	0.250	0.19	--	0.080	0.02	9.0	19	28	130	6	37	8.4
AUG												
03...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
28...	0.220	0.16	--	0.065	0.01	1.0	31	32	130	--	38	8.8

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	SODIUM PERCENT (00932)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BORON, DISSOLVED (UG/L AS B) (01020)	BORON, TOTAL RECOVERABLE (UG/L AS B) (01022)
SEP 1969												
26...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
21...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1970												
30...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	4.5	0.2	7	0.60	5.0	9.6	0.30	11	10	--	--	--
JUL												
03...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
24...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
02...	4.5	0.2	8	0.50	7.5	9.6	0.30	9.8	0	--	--	--
OCT												
20...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
17...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1971												
11...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
06...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	3.8	0.1	6	0.50	7.0	11	0.70	11	0	--	--	--
MAY												
31...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
30...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	3.5	0.1	5	0.50	5.2	11	0.30	11	1	--	--	--
NOV												
12...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1972												
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
16...	4.7	0.2	7	0.60	7.0	10	0.20	11	--	--	--	--
APR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	3.7	0.1	6	0.30	3.4	17	0.30	10	--	0	--	--
JUN												
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
09...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	4.0	0.2	6	0.50	6.0	10	0.20	11	--	10	--	--
NOV												
30...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1973												
21...	4.1	0.2	6	0.60	8.0	11	0.30	11	--	<1	--	<20
FEB												
02...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
25...	4.3	0.2	7	0.60	7.0	10	0.30	8.2	--	6	--	<20
JUN												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	4.0	0.2	6	0.50	8.0	10	0.40	12	--	5	--	--
27...	4.2	0.2	--	--	6.0	9.2	0.30	10	5	5	--	5
AUG												
03...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
28...	3.9	0.1	6	0.50	5.0	--	--	10	--	--	15	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, HEXA-VALENT, DIS. (UG/L AS CR) (01032)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
SEP 1969												
26...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
21...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1970												
30...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	0	--	--	0	--	--	20	10	--
JUL												
03...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
24...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
02...	--	--	--	10	--	--	10	--	--	30	0	--
OCT												
20...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
17...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1971												
11...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
06...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	0	--	0	--	0	--	40	--	--	20	1.0	--
MAY												
31...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
30...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	0	--	0	--	1.0	--	10	--	--	30	4.0	--
NOV												
12...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1972												
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	0	--	--	--	0	--	0	30	10	2.0	3
JUN												
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
09...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	1	--	0	--	0	--	0	10	10	2.0	4
NOV												
30...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1973												
21...	ND	--	0	--	--	--	ND	--	--	<10	<2.0	--
FEB												
02...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
25...	ND	--	0	--	--	--	ND	--	--	30	<2.0	--
JUN												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	<2	--	--	--	--	ND	--	50	<10	ND	--
27...	--	2	0	2	--	ND	--	20	50	--	--	3
AUG												
03...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
28...	--	--	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI) (01132)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L) (38260)
SEP 1969												
26...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
21...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1970												
30...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	0	--	--	--	0	230	--	0	--	--	--
JUL												
03...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
24...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
02...	--	0	--	--	--	70	40	--	--	140	--	--
OCT												
20...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
17...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1971												
11...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
06...	--	--	--	--	--	--	--	--	--	--	--	--
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28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	0	--	--	--	110	40	--	--	--	--	--
MAY												
31...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
30...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	0	--	--	--	100	30	--	--	--	--	--
NOV												
12...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1972												
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
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16...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	10	--	--	--	--	110	--	20	--	--	--	--
JUN												
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
09...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	10	--	--	--	--	160	--	0	--	--	--	--
NOV												
30...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1973												
21...	--	<10	--	--	--	150	<20	--	--	--	--	0.0
FEB												
02...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	<10	--	ND	--	120	20	--	--	--	--	0.07
JUN												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	<10	--	--	--	60	<20	--	160	--	--	--
27...	3	--	1	--	5	100	--	<20	110	--	<10	0.04
AUG												
03...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
28...	--	--	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLORDANE, TECHNICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DIELDRIN TOTAL (UG/L) (39380)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOXAPHENE, TOTAL (UG/L) (39400)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)
SEP 1969												
26...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
21...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1970												
30...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
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MAY												
04...	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
03...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
24...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
02...	--	--	--	--	--	--	--	--	--	--	--	--
OCT												
20...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
17...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1971												
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APR												
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28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
31...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
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SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
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NOV												
12...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1972												
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
02...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUN												
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
09...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
30...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1973												
21...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
02...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
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SEP												
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DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96
02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	PCB, TOTAL (UG/L) (39516)	MALA-THION, TOTAL (UG/L) (39530)	PARA-THION, TOTAL (UG/L) (39540)	DI-AZINON, TOTAL (UG/L) (39570)	METHYL PARA-THION, TOTAL (UG/L) (39600)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRI-THION (UG/L) (39786)	METHYL TRI-THION, TOTAL (UG/L) (39790)	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L) (70299)
SEP 1969											
26...	--	--	--	--	--	--	--	--	--	--	--
NOV											
21...	--	--	--	--	--	--	--	--	--	--	--
JAN 1970											
30...	--	--	--	--	--	--	--	--	--	--	--
MAR											
25...	--	--	--	--	--	--	--	--	--	--	--
MAY											
04...	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--
JUL											
03...	--	--	--	--	--	--	--	--	--	--	--
AUG											
24...	--	--	--	--	--	--	--	--	--	--	--
SEP											
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OCT											
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DEC											
17...	--	--	--	--	--	--	--	--	--	--	--
FEB 1971											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
06...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
MAY											
31...	--	--	--	--	--	--	--	--	--	--	--
JUL											
30...	--	--	--	--	--	--	--	--	--	--	--
SEP											
21...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
NOV											
12...	--	--	--	--	--	--	--	--	--	--	--
JAN 1972											
17...	--	--	--	--	--	--	--	--	--	--	--
MAR											
02...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
APR											
25...	--	--	--	--	--	--	--	--	--	--	--
25...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	--
JUN											
26...	--	--	--	--	--	--	--	--	--	--	--
AUG											
09...	--	--	--	--	--	--	--	--	--	--	--
SEP											
21...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
NOV											
30...	--	--	--	--	--	--	--	--	--	--	--
JAN 1973											
21...	--	--	--	--	--	--	--	--	--	--	--
FEB											
02...	--	--	--	--	--	--	--	--	--	--	--
APR											
11...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
JUN											
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	0
27...	--	--	--	--	--	--	--	--	--	--	--
AUG											
03...	--	--	--	--	--	--	--	--	--	--	--
SEP											
28...	--	--	--	--	--	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P) (70507)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS NO3) (71851)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS NO2) (71856)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)
SEP 1969											
26...	--	--	--	--	--	--	--	--	--	--	--
NOV											
21...	--	--	--	--	--	--	--	--	--	--	--
JAN 1970											
30...	--	--	--	--	--	--	--	--	--	--	--
MAR											
25...	--	--	--	--	--	--	--	--	--	--	--
MAY											
04...	--	--	--	--	--	--	--	--	--	--	--
04...	163	150	162	0.22	--	--	0.05	1.2	0.02	--	--
JUL											
03...	--	--	--	--	--	--	--	--	--	--	--
AUG											
24...	--	--	--	--	--	--	--	--	--	--	--
SEP											
02...	152	142	328	0.21	--	--	0.03	0.90	0.02	--	--
OCT											
20...	--	--	--	--	--	--	--	--	--	--	--
DEC											
17...	--	--	--	--	--	--	--	--	--	--	--
FEB 1971											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
06...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	156	154	136	0.21	--	--	0.01	1.1	0.02	0.17	0.0
MAY											
31...	--	--	--	--	--	--	--	--	--	--	--
JUL											
30...	--	--	--	--	--	--	--	--	--	--	--
SEP											
21...	--	--	--	--	--	--	--	--	--	--	--
21...	154	155	119	0.21	--	0.01	0.01	1.1	0.01	0.12	0.0
NOV											
12...	--	--	--	--	--	--	--	--	--	--	--
JAN 1972											
17...	--	--	--	--	--	--	--	--	--	--	--
MAR											
02...	--	--	--	--	--	--	--	--	--	--	--
16...	155	153	--	0.21	--	--	--	--	--	--	--
APR											
25...	--	--	--	--	--	--	--	--	--	--	--
25...	162	158	179	0.22	0.030	0.0	--	--	--	--	0.0
JUN											
26...	--	--	--	--	--	--	--	--	--	--	--
AUG											
09...	--	--	--	--	--	--	--	--	--	--	--
SEP											
21...	--	--	--	--	--	--	--	--	--	--	--
21...	156	148	81.7	0.21	0.040	0.15	--	--	--	--	<0.50
NOV											
30...	--	--	--	--	--	--	--	--	--	--	--
JAN 1973											
21...	154	155	--	0.21	0.041	0.03	--	--	--	--	<0.50
FEB											
02...	--	--	--	--	--	--	--	--	--	--	--
APR											
11...	--	--	--	--	--	--	--	--	--	--	--
25...	161	145	--	0.22	0.050	0.01	--	--	--	--	<0.50
JUN											
25...	--	--	--	--	--	--	--	--	--	--	--
25...	156	152	261	0.21	0.063	0.01	--	--	--	--	--
27...	159	--	--	--	0.062	0.01	--	--	--	--	<0.50
AUG											
03...	--	--	--	--	--	--	--	--	--	--	--
SEP											
28...	--	--	--	--	0.051	--	--	--	--	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA WATER-QUALITY DATA

DATE	STATION NUMBER	DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	TURBIDITY (JCU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	SPECIFIC CONDUCTANCE (US/CM) (00095)
NOV 1973											
15...	02327000	731115	--	--	--	--	589	2.54	--	--	--
15...	02327000	731115	1525	20.5	--	--	--	--	--	--	--
DEC											
21...	02327000	731221	1230	21.0	--	--	--	--	2	--	270
FEB 1974											
25...	02327000	740225	--	--	--	--	404	2.00	--	--	--
25...	02327000	740225	1650	19.5	--	--	--	--	--	--	--
APR											
04...	02327000	740404	1030	21.0	--	--	--	--	--	--	270
MAY											
09...	02327000	740509	--	--	--	--	337	1.76	--	--	--
09...	02327000	740509	1015	21.0	--	--	337	1.76	1	1	265
JUN											
26...	02327000	740626	1300	21.0	--	--	--	--	--	--	--
JUL											
01...	02327000	740701	--	--	--	--	268	1.62	--	--	--
01...	02327000	740701	1040	21.0	--	--	--	--	--	--	--
AUG											
28...	02327000	740828	1000	21.5	--	--	--	--	3	--	275
SEP											
09...	02327000	740909	--	--	--	--	1520	4.50	--	--	--
09...	02327000	740909	1700	21.0	--	--	--	--	--	--	--
JAN 1975											
16...	02327000	750116	1100	21.0	--	--	--	--	1	2	240
APR											
18...	02327000	750418	1240	21.5	--	--	--	--	1	--	260
JUN											
02...	02327000	750602	1330	20.5	--	--	705	2.90	1	4	285
OCT											
16...	02327000	751016	1130	22.0	--	--	--	--	1	--	254
JAN 1976											
22...	02327000	760122	1330	21.0	--	--	--	--	2	0	269
APR											
22...	02327000	760422	1415	21.0	--	--	320	1.83	1	5	289
SEP											
15...	02327000	760915	1200	21.0	--	--	--	--	--	--	270
APR 1977											
28...	02327000	770428	1145	21.0	--	--	304	2.16	3	0	290
FEB 1985											
11...	02327000	850211	1030	18.5	1028	80010	360	--	--	<5	268

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02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA

WATER-QUALITY DATA

DATE	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2) (00405)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	BICARBONATE WATER WH FET FIELD MG/L AS HCO3 (00440)	CARBONATE WATER WH FET FIELD MG/L AS CO3 (00445)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN DISSOLVED (MG/L AS N) (00602)
NOV 1973												
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
21...	--	--	0.5	0	8.1	--	1.8	117	140	0	--	--
FEB 1974												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	--	--	0.2	4	8.0	--	2.3	117	140	0	--	--
MAY												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	2.2	--	--	--	7.6	--	6.1	125	150	--	0.46	--
JUN												
26...	--	--	0.5	2	--	--	--	--	--	--	--	0.35
JUL												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
28...	--	--	0	6	7.7	--	4.8	125	150	--	0.34	--
SEP												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1975												
16...	--	--	0.4	2	7.8	--	3.6	118	140	0	0.30	--
APR												
18...	--	--	--	--	7.4	--	8.9	115	140	0	0.38	--
JUN												
02...	1.8	20	--	--	7.7	--	4.9	127	150	0	0.28	--
OCT												
16...	--	--	--	--	--	--	--	--	--	--	0.27	--
JAN 1976												
22...	--	--	--	--	7.9	--	3.0	121	150	0	0.34	--
APR												
22...	2.3	25	--	--	7.9	--	3.1	126	150	0	0.28	--
SEP												
15...	--	--	--	--	--	--	--	--	--	--	0.29	--
APR 1977												
28...	4.6	51	--	--	7.4	--	9.9	128	160	0	0.34	--
FEB 1985												
11...	1.3	--	--	--	7.6	7.7	--	--	--	--	0.65	--

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WATER-QUALITY DATA

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)
NOV 1973												
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
21...	--	0.38	0.020	--	<0.010	--	0.210	--	--	--	--	--
FEB 1974												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	--	0.06	0.040	--	<0.010	--	0.230	--	--	--	--	--
MAY												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	0.21	--	--	0.020	--	0.010	--	0.220	--	--	--	--
JUN												
26...	--	0.0	0.030	--	0.010	--	0.311	0.311	0.03	--	0.321	0.321
JUL												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
28...	0.01	--	--	0.010	--	0.010	--	0.311	--	0.02	0.321	--
SEP												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1975												
16...	0.0	--	--	0.010	--	0.010	--	0.280	--	0.01	0.290	--
APR												
18...	0.0	--	--	0.050	--	<0.010	--	0.330	--	0.05	0.330	--
JUN												
02...	0.0	--	--	0.010	--	<0.010	--	0.270	--	0.01	0.270	--
OCT												
16...	0.02	--	--	0.020	--	<0.010	--	0.230	--	0.04	0.230	--
JAN 1976												
22...	0.02	--	--	0.010	--	0.020	--	0.290	--	0.03	0.310	--
APR												
22...	0.01	--	--	0.010	--	<0.010	--	0.260	--	0.02	0.260	--
SEP												
15...	0.0	--	--	0.010	--	<0.010	--	0.280	--	0.01	0.280	--
APR 1977												
28...	0.06	--	--	0.020	--	<0.010	--	0.260	--	0.08	0.260	--
FEB 1985												
11...	0.08	--	--	0.020	--	<0.010	--	0.550	--	0.10	0.550	--

WATER-QUALITY DATA

DATE	PHOSPHATE, TOTAL (MG/L AS PO4) (00650)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS ORGANIC TOTAL (MG/L AS P) (00670)	PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, INORGANIC, TOTAL (MG/L AS C) (00685)	CARBON, TOTAL (INORG + ORG) (MG/L AS C) (00690)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	HARDNESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)
NOV 1973												
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
21...	--	0.13	--	0.048	--	0.042	10	27	37	130	13	32
FEB 1974												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	--	0.15	--	0.050	--	0.050	0.0	30	30	130	13	37
MAY												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	0.12	--	0.040	--	0.0	--	1.0	31	32	150	24	44
JUN												
26...	--	0.18	--	0.070	--	0.060	3.0	29	32	140	--	39
JUL												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
28...	0.15	--	0.090	--	0.04	--	1.0	30	31	130	2	36
SEP												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1975												
16...	0.15	--	0.050	--	0.0	--	0.0	29	29	140	21	41
APR												
18...	0.18	--	0.060	--	0.0	--	1.0	--	--	--	--	--
JUN												
02...	0.15	--	0.050	--	0.0	--	0.0	30	30	130	5	38
OCT												
16...	0.15	--	0.400	--	0.35	--	--	--	--	--	--	--
JAN 1976												
22...	0.15	--	0.070	--	0.02	--	--	--	--	130	12	38
APR												
22...	0.09	--	0.040	--	0.01	--	1.0	34	35	130	4	39
SEP												
15...	--	--	0.050	--	--	--	--	--	--	--	--	--
APR 1977												
28...	0.12	--	0.040	--	0.0	--	0.0	26	26	130	5	38
FEB 1985												
11...	0.09	--	0.050	--	0.02	--	--	--	--	140	--	39

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WATER-QUALITY DATA

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	SODIUM PERCENT (00932)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)
NOV 1973												
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
21...	12	4.0	0.2	6	0.60	4.0	--	--	--	<1	--	--
FEB 1974												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	8.9	4.5	0.2	7	0.80	6.5	--	--	--	3	--	--
MAY												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	9.3	3.9	0.1	5	0.50	5.6	9.8	0.20	11	--	--	--
JUN												
26...	9.6	3.7	0.1	6	0.50	5.9	9.9	0.30	--	<1	--	--
JUL												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
28...	8.9	4.0	0.2	6	0.40	4.6	--	--	--	--	--	--
SEP												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1975												
16...	8.9	4.1	0.2	6	0.50	5.6	9.4	0.20	11	1	--	--
APR												
18...	--	--	--	--	--	5.0	--	--	--	--	--	--
JUN												
02...	9.1	4.0	0.2	6	0.50	5.7	8.3	0.10	11	--	--	--
OCT												
16...	--	3.6	--	--	--	6.6	--	--	--	--	--	--
JAN 1976												
22...	9.3	4.2	0.2	6	0.60	5.4	10	0.20	10	--	1	--
APR												
22...	9.1	4.0	0.1	6	0.60	5.4	7.4	0.20	11	--	1	--
SEP												
15...	--	3.4	--	--	--	5.3	--	--	--	--	--	--
APR 1977												
28...	9.3	4.2	0.2	6	0.50	5.5	8.4	0.20	11	--	--	--
FEB 1985												
11...	9.2	3.6	0.1	5	0.60	5.4	9.4	0.20	12	1	--	<100

WATER-QUALITY DATA

DATE	BORON, DIS-SOLVED (UG/L AS B) (01020)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, HEXA-VALENT, DIS. (UG/L AS CR) (01032)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV 1973												
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
21...	--	--	--	--	--	--	--	--	<2.0	--	--	<10
FEB 1974												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	30	--	--	ND	--	--	--	--	<2.0	--	--	60
MAY												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	6.0	--	220	210
JUN												
26...	<20	--	--	ND	--	0	--	--	ND	--	--	<10
JUL												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
28...	<20	--	--	--	--	--	--	--	--	--	--	--
SEP												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1975												
16...	50	--	ND	--	ND	0	--	ND	ND	--	--	<10
APR												
18...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
02...	--	--	--	--	--	--	--	--	ND	--	20	<10
OCT												
16...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1976												
22...	--	--	--	<2	--	--	--	--	--	<2	<10	--
APR												
22...	--	<20	--	ND	--	--	--	--	ND	--	70	<10
SEP												
15...	--	--	--	--	--	--	--	--	--	--	--	--
APR 1977												
28...	--	<20	--	--	--	--	--	--	ND	--	20	<10
FEB 1985												
11...	--	--	--	<1	--	--	<1	--	--	<1	--	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96
02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA

WATER-QUALITY DATA

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)
NOV 1973												
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
21...	--	--	--	--	--	14	--	--	--	--	--	--
FEB 1974												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	11	--	--	--	--	<10	--	--	--	--	--	--
MAY												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	ND	3	3	20	40	20	--	--	--	--	140	--
JUN												
26...	ND	--	--	--	--	<10	--	--	--	--	--	--
JUL												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1975												
16...	<2.0	--	--	--	--	<10	<1.0	ND	--	--	--	3
APR												
18...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
02...	6.0	0	6	0	<10	<10	--	--	--	--	140	--
OCT												
16...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1976												
22...	--	--	14	--	<10	--	--	--	--	--	140	--
APR												
22...	ND	3	3	10	<10	<10	--	--	ND	--	100	--
SEP												
15...	--	--	--	--	--	--	--	--	--	--	--	--
APR 1977												
28...	7.0	3	10	0	<10	<10	--	--	--	--	100	--
FEB 1985												
11...	--	--	<1	--	--	--	--	--	--	<1	110	--

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96
02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA

WATER-QUALITY DATA

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	DI-CHLORO-BROMO-METHANE TOTAL (UG/L) (32101)	CARBON-TETRA-CHLO-RIDE TOTAL (UG/L) (32102)	1,2-DI-CHLORO-ETHANE TOTAL (UG/L) (32103)	BROMO-FORM TOTAL (UG/L) (32104)	CHLORO-DI-BROMO-METHANE TOTAL (UG/L) (32105)	CHLORO-FORM TOTAL (UG/L) (32106)
NOV 1973												
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
21...	20	--	--	--	--	--	--	--	--	--	--	--
FEB 1974												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	5.0	--	--	--	--	--	--	--	--	--	--	--
MAY												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	50	--	130	--	--	--	--	--	--	--	--	--
JUN												
26...	ND	--	--	--	--	--	--	--	--	--	--	--
JUL												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1975												
16...	30	--	--	9.0	<10	--	--	--	--	--	--	--
APR												
18...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
02...	30	--	130	--	--	--	--	--	--	--	--	--
OCT												
16...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1976												
22...	--	20	--	--	--	--	--	--	--	--	--	--
APR												
22...	ND	--	50	--	--	--	--	--	--	--	--	--
SEP												
15...	--	--	--	--	--	--	--	--	--	--	--	--
APR 1977												
28...	ND	--	30	--	--	--	--	--	--	--	--	--
FEB 1985												
11...	--	--	--	--	--	<1	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96
02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA

WATER-QUALITY DATA

DATE	TOLUENE TOTAL (UG/L) (34010)	BENZENE TOTAL (UG/L) (34030)	CHLORO-BENZENE TOTAL (UG/L) (34301)	CHLORO-ETHANE TOTAL (UG/L) (34311)	ETHYL-BENZENE TOTAL (UG/L) (34371)	METHYL-BROMIDE TOTAL (UG/L) (34413)	METHYL-ENE CHLO-RIDE TOTAL (UG/L) (34423)	TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L) (34475)	TRI-CHLORO-FLUORO-METHANE TOTAL (UG/L) (34488)	1,1-DI-CHLORO-ETHANE TOTAL (UG/L) (34496)	1,1-DI-CHLORO-ETHYL-ENE TOTAL (UG/L) (34501)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L) (34506)
NOV 1973												
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
21...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1974												
25...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
26...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
01...	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1975												
16...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
18...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
02...	--	--	--	--	--	--	--	--	--	--	--	--
OCT												
16...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1976												
22...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
22...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
15...	--	--	--	--	--	--	--	--	--	--	--	--
APR 1977												
28...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1985												
11...	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00

02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA

WATER-QUALITY DATA

DATE	1,1,2-TRICHLOROETHANE TOTAL (UG/L) (34511)	ETHANE, 1,1,2,2 TETRACHLORO- WAT UNF REC (UG/L) (34516)	1,2-DICHLOROPROPANE TOTAL (UG/L) (34541)	1,2-TRANSDICHLOROETHENE TOTAL (UG/L) (34546)	1,3-DICHLOROPROPENE TOTAL (UG/L) (34561)	2-CHLOROETHYLVINYLETHER TOTAL (UG/L) (34576)	DICHLORODIFLUOROMETHANE TOTAL (UG/L) (34668)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L) (38260)	PERTHANE TOTAL (UG/L) (39034)	VINYL CHLORIDE TOTAL (UG/L) (39175)	TRICHLOROETHYLENE TOTAL (UG/L) (39180)
NOV 1973											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
DEC											
21...	--	--	--	--	--	--	--	--	--	--	--
FEB 1974											
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
APR											
04...	--	--	--	--	--	--	--	0.0	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
JUN											
26...	--	--	--	--	--	--	--	--	--	--	--
JUL											
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
AUG											
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
JAN 1975											
16...	--	--	--	--	--	--	--	--	--	--	--
APR											
18...	--	--	--	--	--	--	--	--	--	--	--
JUN											
02...	--	--	--	--	--	--	--	--	--	--	--
OCT											
16...	--	--	--	--	--	--	--	--	--	--	--
JAN 1976											
22...	--	--	--	--	--	--	--	--	--	--	--
APR											
22...	--	--	--	--	--	--	--	--	--	--	--
SEP											
15...	--	--	--	--	--	--	--	--	--	--	--
APR 1977											
28...	--	--	--	--	--	--	--	--	--	--	--
FEB 1985											
11...	<3.00	<3.00	<3.00	<3.00	<3.0	<3.00	<3.00	--	<0.100	<3.00	<3.00

DISTRICT CODE 12 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 9-24-96
02327000 - WAKULLA SPRING NR CRAWFORDVILLE FLA

WATER-QUALITY DATA

DATE	PCNS UNFILT RECOVER (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLORDANE, TECHNICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN, I TOTAL (UG/L) (39388)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	TOXAPHENE, TOTAL (UG/L) (39400)
NOV 1973											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
DEC											
21...	--	--	--	--	--	--	--	--	--	--	--
FEB 1974											
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
APR											
04...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
JUN											
26...	--	--	--	--	--	--	--	--	--	--	--
JUL											
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
AUG											
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
JAN 1975											
16...	--	--	--	--	--	--	--	--	--	--	--
APR											
18...	--	--	--	--	--	--	--	--	--	--	--
JUN											
02...	--	--	--	--	--	--	--	--	--	--	--
OCT											
16...	--	--	--	--	--	--	--	--	--	--	--
JAN 1976											
22...	--	--	--	--	--	--	--	--	--	--	--
APR											
22...	--	--	--	--	--	--	--	--	--	--	--
SEP											
15...	--	--	--	--	--	--	--	--	--	--	--
APR 1977											
28...	--	--	--	--	--	--	--	--	--	--	--
FEB 1985											
11...	<0.100	<0.010	<0.010	<0.100	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<1.00

WATER-QUALITY DATA

DATE	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	METHOXYCHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)
NOV 1973											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
DEC											
21...	--	--	--	--	--	--	--	--	--	--	--
FEB 1974											
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
APR											
04...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	160	159	146
JUN											
26...	--	--	--	--	--	--	--	--	178	--	--
JUL											
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
AUG											
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
JAN 1975											
16...	--	--	--	--	--	--	--	--	147	152	--
APR											
18...	--	--	--	--	--	--	--	--	--	--	--
JUN											
02...	--	--	--	--	--	--	--	--	148	153	282
OCT											
16...	--	--	--	--	--	--	--	--	--	--	--
JAN 1976											
22...	--	--	--	--	--	--	--	--	157	151	--
APR											
22...	--	--	--	--	--	--	--	--	162	153	140
SEP											
15...	--	--	--	--	--	--	--	--	--	--	--
APR 1977											
28...	--	--	--	--	--	--	--	--	159	154	131
FEB 1985											
11...	<0.010	<0.010	<0.010	<0.100	<0.010	<0.010	<0.010	<0.010	148	152	144

WATER-QUALITY DATA

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P) (70507)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS NO3) (71851)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS NO2) (71856)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	2, 4-DP TOTAL (UG/L) (82183)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
NOV 1973											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
DEC											
21...	--	--	--	0.03	0.90	0.0	--	--	--	--	--
FEB 1974											
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
APR											
04...	--	--	--	0.05	1.0	0.0	--	--	<0.50	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	0.22	0.040	0.03	--	--	--	--	--	--	--	--
JUN											
26...	--	--	--	0.04	1.4	0.03	--	--	<0.50	--	--
JUL											
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
AUG											
28...	--	0.050	0.01	--	--	--	1.5	--	--	--	--
SEP											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
JAN 1975											
16...	0.20	0.050	0.01	--	--	--	1.3	<0.5	--	--	--
APR											
18...	--	0.060	0.06	--	--	--	1.7	--	--	--	--
JUN											
02...	0.20	0.050	0.01	--	--	--	1.2	--	--	--	--
OCT											
16...	--	0.050	0.03	--	--	--	1.2	--	--	--	--
JAN 1976											
22...	0.21	0.050	0.01	--	--	--	1.5	--	<0.50	--	--
APR											
22...	0.22	0.030	0.01	--	--	--	1.2	--	--	--	--
SEP											
15...	--	--	0.01	--	--	--	1.3	--	--	--	--
APR 1977											
28...	0.22	0.040	0.03	--	--	--	1.5	--	--	--	--
FEB 1985											
11...	0.20	0.030	0.03	--	--	--	2.9	--	0.20	<0.010	121

Laboratory Report

for

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee , FL 32302

Attention: Phil Bucci

JAM

Report#: 15696

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

Electric Production & Env.Affairs COT290101 S.O.Purdom Generating Station
Electric Department
City of Tallahassee Sampled by : fondo

Tallahassee ,FL 32302
ATTN. Buddy Revells

Sample # 96-11312 Sample ID ST.MARKS RIVER-PURDOM PLANT
Group # 15696 Sample Site
Sample Type WATER Sampled 10/17/96 09:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Silver, Total	(EPA 272.2)	ug/L	<0.00				0.9500			10/30/96	mike
Aluminum, Total	(EPA 202.2)	ug/L	218.				9.5000			10/29/96	mike
Alkalinity	(EPA 310.1)	mg/L CaCO3	77.1				1.970			10/18/96	sharon
Arsenic, Total by Furnace	(EPA 206.2)	ug/L	<0.65				1.20			10/28/96	mike
Beryllium, Total	(EPA 210.2)	ug/L	<0.00				0.140			10/29/96	mike
Bicarbonate ion by Calculation	(SM4500-CO2D)	mg/L HCO3	76.96				3.100			10/18/96	sharon
Calcium, Total	(EPA 215.1)	mg/L	25.8				0.450			11/06/96	mike
Carbonate ion, by calculation	(SM4500-CO2D)	mg/L CO3	<0.1286				3.100			10/18/96	sharon
Cadmium, Total	(EPA 213.2)	ug/L	<0.10				0.290			10/22/96	mike
Chloride	(EPA 325.2)	mg/L	5.58				0.370			10/25/96	christy
Cyanide, Total	(EPA 335.4)	mg/L	0.017				0.00500			10/30/96	christy
Specific Conductance,25C,field	(EPA 120.1)	umhos/cm	163				1.870			10/17/96	sharon
Copper, Total	(EPA 220.2)	ug/L	<0.0				0.8000			10/21/96	mike
Oxygen, Membrane Dissolved	(EPA 360.1)	mg/L	3.67				0.100			10/17/96	sharon
Fecal Coliform MF	(600/8-78/017)	#/100 ml	154				1.000			10/18/96	karen
Iron, Total	(EPA 236.2)	ug/L	314.				5.560			10/29/96	mike
Hardness	(EPA 130.2)	mg/L CaCO3	93.0				2.17			10/25/96	sharon
Mercury, Total	(EPA 245.1)	ug/L	<0.20				0.520			11/01/96	mike
Potassium, Total	(EPA 258.1)	mg/L	0.51				0.0700			10/18/96	mike
Magnesium, Total	(EPA 242.1)	mg/L	4.42				0.810			11/06/96	mike
Sodium, Total	(EPA 273.1)	mg/L	3.19				0.140			10/18/96	mike
Nitrogen, Ammonia	(EPA 350.1)	mg/L	0.014				0.0140			10/25/96	christy
Nickel, Total	(EPA 249.2)	ug/L	<0.15				0.9600			10/24/96	mike
Nitrogen, Nitrite	(EPA 353.2)	mg/L	<0.003				0.005000			10/18/96	christy
Nitrogen, Nitrite plus Nitrate	(EPA 353.2)	mg/L	<0.000				0.0110			10/17/96	christy
Nitrogen,Nitrate by difference	(EPA 353.2)	mg/L	<0.000				0.0110			10/18/96	christy
Parathion-methyl	(EPA 505)	ug/L	BDl				0.369			10/29/96	andy
Parathion-ethyl	(EPA 505)	ug/L	BDL				0.328			10/29/96	andy
Malathion	(EPA 505)	ug/L	BDL				0.561			10/29/96	andy
Guthionn	(EPA 505)	ug/L	BDL				2.39			10/29/96	andy
Demeton	(EPA 505)	ug/L	BDL				32.1			10/29/96	andy
Lead, Total	(EPA 239.2)	ug/L	<0.23				0.5000			10/18/96	mike
Field, Hydrogen ion conc.	(EPA 150.1)	pH units	7.25				0.0800			10/17/96	sharon
Antimony, Total	(EPA 204.2)	ug/L	<0.48				0.860			10/30/96	mike
Selenium, Total by Furnace	(EPA 270.2)	ug/L	<0.43				1.800			10/28/96	mike
Silica, Dissolved	(SM4500-Si-D)	mg/L	8.58				0.102			10/28/96	christy
Sulfate, Total	(EPA 375.2)	mg/L	7.15				0.846			10/23/96	christy
Sulfide, Total	(EPA 376.1)	mg/L	<0.0				1.00			10/17/96	ron
Total Coliform MF	(600/8-78-017)	#/100 ml	533				1.00			10/18/96	karen
Residue,Total Filterable @180C	(EPA 160.1)	mg/L	124				13.60			10/18/96	sharon
Temperature	(EPA 170.1)	Celsius	21.2				0.0200			10/17/96	sharon
Thallium, Total	(EPA 279.2)	ug/L	<0.07				0.620			10/18/96	mike
Chlorine, Total Residual	(EPA 330.1)	mg/L	0.0				0.00			10/17/96	june
Phosphorus, Total	(EPA 365.4)	mg/L	0.049				0.0410			10/23/96	christy
Residue,Total Nonfilt @103-105	(EPA 160.2)	mg/L	3				1.000			10/22/96	sharon
Zinc, Total	(EPA 289.1)	ug/L	<9.				10.000			10/31/96	mike

Group # 15696

Electric Production & Env.Affairs COT290101 — S.O.Purdom Generating Station
Electric Department
City of Tallahassee — Sampled by : fondo

Tallahassee ,FL 32302
ATTN. Buddy Revells

Sample # 96-11312 — Sample ID ST.MARKS RIVER-PURDOM PLANT
Group # 15696 — Sample Site
Sample Type WATER — Sampled 10/17/96 09:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA8270/625)	ug/L	BDL				3.52	10/22/96	joe	10/29/96	andy
Acenaphthylene	(EPA 8270/625)	ug/L	BDL				3.76	10/22/96	joe	10/29/96	andy
Anthracene	(EPA 8270/625)	ug/L	BDL				2.67	10/22/96	joe	10/29/96	andy
Benzo(a)anthracene	(EPA 8270/625)	ug/L	BDL				2.56	10/22/96	joe	10/29/96	andy
Benzo(b)fluoranthene	(EPA 8270/625)	ug/L	BDL				4.80	10/22/96	joe	10/29/96	andy
Benzo(k)fluoranthene	(EPA 8270/625)	ug/L	BDL				2.50	10/22/96	joe	10/29/96	andy
Benzo(ghi)perylene	(EPA 8270/625)	ug/L	BDL				4.10	10/22/96	joe	10/29/96	andy
Benzo(a)pyrene	(EPA 8270/625)	ug/L	BDL				2.50	10/22/96	joe	10/29/96	andy
Chrysene	(EPA 8270/625)	ug/L	BDL				2.72	10/22/96	joe	10/29/96	andy
Dibenzo(ah)anthracene	(EPA 8270/625)	ug/L	BDL				2.50	10/22/96	joe	10/29/96	andy
Fluoranthene	(EPA 8270/625)	ug/L	BDL				2.18	10/22/96	joe	10/29/96	andy
Fluorene	(EPA 8270/625)	ug/L	BDL				4.10	10/22/96	joe	10/29/96	andy
Indeno(123cd)pyrene	(EPA 8270/625)	ug/L	BDL				3.70	10/22/96	joe	10/29/96	andy
Naphthalene	(EPA 8270/625)	ug/L	BDL				1.28	10/22/96	joe	10/29/96	andy
Phenanthrene	(EPA 8270/625)	ug/L	BDL				2.82	10/22/96	joe	10/29/96	andy
Pyrene	(EPA 8270/625)	ug/L	BDL				9.25	10/22/96	joe	10/29/96	andy
Benzidine	(EPA 8270/625)	ug/L	BDL				44.0	10/22/96	joe	10/29/96	andy
3,3-Dichlorbenzidine	(EPA 8270/625)	ug/L	BDL				16.5	10/22/96	joe	10/29/96	andy
Butylbenzylphthalate	(EPA 8270/625)	ug/L	BDL				1.98	10/22/96	joe	10/29/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270/625)	ug/L	BDL				4.80	10/22/96	joe	10/29/96	andy
Di-n-butylphthalate	(EPA 8270/625)	ug/L	BDL				2.77	10/22/96	joe	10/29/96	andy
Diethylphthalate	(EPA 8270/625)	ug/L	BDL				5.81	10/22/96	joe	10/29/96	andy
Dimethylphthalate	(EPA 8270/625)	ug/L	BDL				3.10	10/22/96	joe	10/29/96	andy
Di-n-octylphthalate	(EPA 8270/625)	ug/L	BDL				2.50	10/22/96	joe	10/29/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270/625)	ug/L	BDL				1.68	10/22/96	joe	10/29/96	andy
Bis(2-chloroethyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	10/22/96	joe	10/29/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	10/22/96	joe	10/29/96	andy
1,2-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				2.04	10/22/96	joe	10/29/96	andy
1,3-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.92	10/22/96	joe	10/29/96	andy
1,4-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.95	10/22/96	joe	10/29/96	andy
4-Bromophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				2.36	10/22/96	joe	10/29/96	andy
4-Chlorophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				3.44	10/22/96	joe	10/29/96	andy
2-chloronaphthalene	(EPA 8270/625)	ug/L	BDL				3.41	10/22/96	joe	10/29/96	andy
2,4-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				5.70	10/22/96	joe	10/29/96	andy
2,6-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				3.74	10/22/96	joe	10/29/96	andy
Hexachlorobenzene	(EPA 8270/625)	ug/L	BDL				0.0310	10/22/96	joe	10/29/96	andy
Hexachlorobutadiene	(EPA 8270/625)	ug/L	BDL				1.00	10/22/96	joe	10/29/96	andy
Hexachlorocyclopentadiene	(EPA 8270/625)	ug/L	BDL				0.0190	10/22/96	joe	10/29/96	andy
Hexachloroethane	(EPA 8270/625)	ug/L	BDL				0.530	10/22/96	joe	10/29/96	andy
Isophorone	(EPA 8270/625)	ug/L	BDL				0.970	10/22/96	joe	10/29/96	andy
Nitrobenzene	(EPA 8270/625)	ug/L	BDL				2.01	10/22/96	joe	10/29/96	andy
N-nitroso-di-n-propylamine	(EPA 8270/625)	ug/L	BDL				11.0	10/22/96	joe	10/29/96	andy
N-nitrosodiphenylamine	(EPA 8270/625)	ug/L	BDL				4.37	10/22/96	joe	10/29/96	andy
1,2,4-trichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.43	10/22/96	joe	10/29/96	andy
N-nitrosodimethylamine	(EPA 8270/625)	ug/L	BDL				10.0	10/22/96	joe	10/29/96	andy
Dioxin(2378-TCDD)	(EPA 8270/625)	ug/L	BDL				0.0500	10/22/96	joe	10/29/96	andy

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Buddy Revells

S.O.Purdom Generating Station

Sampled by : fondo

Sample # 96-11312 Sample ID ST.MARKS RIVER-PURDOM PLANT
Group # 15696 Sample Site
Sample Type WATER Sampled 10/17/96 09:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270/625)	ug/L	BDL				4.90	10/22/96	joe	10/29/96	andy

Electric Production & Env.Affairs COT290101 S.O.Purdom Generating Station
Electric Department
City of Tallahassee Sampled by : fondo

Tallahassee ,FL 32302
ATTN. Buddy Revells

Sample # 96-11312 Sample ID ST.MARKS RIVER-PURDOM PLANT
Group # 15696 Sample Site
Sample Type WATER Sampled 10/17/96 09:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Alachlor	(EPA 508)	ug/L	BDL				0.270	10/23/96	joe	10/25/96	andy
Aldrin	(EPA 508)	ug/L	BDL				0.0210	10/23/96	joe	10/25/96	andy
A-BHC	(EPA 508)	ug/L	BDL				0.0120	10/23/96	joe	10/25/96	andy
B-BHC	(EPA 508)	ug/L	BDL				0.0510	10/23/96	joe	10/25/96	andy
D-BHC	(EPA 508)	ug/L	BDL				0.0130	10/23/96	joe	10/25/96	andy
G-BHC(lindane)	(EPA 508)	ug/L	BDL				0.0120	10/23/96	joe	10/25/96	andy
Dieldrin	(EPA 508)	ug/L	BDL				0.0240	10/23/96	joe	10/25/96	andy
4,4'-DDD	(EPA 508)	ug/L	BDL				0.0630	10/23/96	joe	10/25/96	andy
4,4'-DDE	(EPA 508)	ug/L	BDL				0.0350	10/23/96	joe	10/25/96	andy
4,4'-DDT	(EPA 508)	ug/L	BDL				0.0410	10/23/96	joe	10/25/96	andy
Endosulfan I	(EPA 508)	ug/L	BDL				0.0200	10/23/96	joe	10/25/96	andy
Endosulfan II	(EPA 508)	ug/L	BDL				0.0370	10/23/96	joe	10/25/96	andy
Endrin	(EPA 508)	ug/L	BDL				0.0470	10/23/96	joe	10/25/96	andy
Endrin Aldehyde	(EPA 508)	ug/L	BDL				0.0540	10/23/96	joe	10/25/96	andy
Heptachlor	(EPA 508)	ug/L	BDL				0.0210	10/23/96	joe	10/25/96	andy
Heptachlor epoxide	(EPA 508)	ug/L	BDL				0.0210	10/23/96	joe	10/25/96	andy
Methoxychlor	(EPA 508)	ug/L	BDL				0.178	10/23/96	joe	10/25/96	andy
Hexachlorobenzene	(EPA 508)	ug/L	BDL				0.0310	10/23/96	joe	10/25/96	andy
Hexachlorocyclopentadiene	(EPA 508)	ug/L	BDL				0.0190	10/23/96	joe	10/25/96	andy
Trifluralin	(EPA 508)	ug/L	BDL				0.0480	10/23/96	joe	10/25/96	andy
Propachlor	(EPA 508)	ug/L	BDL				0.500	10/23/96	joe	10/25/96	andy
Chlordane	(EPA 508)	ug/L	BDL				0.192	10/23/96	joe	10/25/96	andy
Decachlorobiphenyl	(EPA 508)	ug/L	BDL				0.100	10/23/96	joe	10/25/96	andy
Toxaphene	(EPA 508)	ug/L	BDL				0.176	10/23/96	joe	10/25/96	andy

Electric Production & Env.Affairs COT290101 S.O.Purdom Generating Station
Electric Department
City of Tallahassee Sampled by : fondo

Tallahassee ,FL 32302
ATTN. Buddy Revells

Sample # 96-11312 Sample ID ST.MARKS RIVER-PURDOM PLANT
Group # 15696 Sample Site
Sample Type WATER Sampled 10/17/96 09:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(502.2)	ug/L	0				0.0500000			11/07/96	alan
Chloromethane	(502.2)	ug/L	0				0.0700000			11/07/96	alan
Vinyl chloride	(502.2)	ug/L	0				0.0500000			11/07/96	alan
Bromomethane	(502.2)	ug/L	0				0.0400000			11/07/96	alan
Chloroethane	(502.2)	ug/L	0				0.0400000			11/07/96	alan
Trichlorofluoromethane	(502.2)	ug/L	0				0.0600000			11/07/96	alan
1,1-Dichloroethylene	(502.2)	ug/L	0				0.0400000			11/07/96	alan
Methylene chloride	(502.2)	ug/L	0				0.0800000			11/07/96	alan
trans-1,2-Dichloroethylene	(502.2)	ug/L	0				0.0500000			11/07/96	alan
1,1-Dichloroethane	(502.2)	ug/L	0				0.0600000			11/07/96	alan
2,2-Dichloropropane	(502.2)	ug/L	0				0.140000			11/07/96	alan
cis-1,2-Dichloroethylene	(502.2)	ug/L	0				0.0600000			11/07/96	alan
Bromochloromethane	(502.2)	ug/L	0				0.0700000			11/07/96	alan
Chloroform	(502.2)	ug/L	0				0.0700000			11/07/96	alan
1,1,1-Trichloroethane	(502.2)	ug/L	0				0.0600000			11/07/96	alan
Carbon tetrachloride	(502.2)	ug/L	0				0.0600000			11/07/96	alan
1,1-Dichloropropene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
Benzene	(502.2)	ug/L	0				0.0200000			11/07/96	alan
1,2-Dichloroethane	(502.2)	ug/L	0				0.220000			11/07/96	alan
Trichloroethylene	(502.2)	ug/L	0				0.0800000			11/07/96	alan
1,2-Dichloropropane	(502.2)	ug/L	0				0.0900000			11/07/96	alan
Dibromomethane	(502.2)	ug/L	0				0.0700000			11/07/96	alan
Bromodichloromethane	(502.2)	ug/L	0				0.100000			11/07/96	alan
cis-1,3-Dichloropropylene	(502.2)	ug/L	0				0.120000			11/07/96	alan
Toluene	(502.2)	ug/L	0				0.0500000			11/07/96	alan
trans-1,3-Dichloropropylene	(502.2)	ug/L	0				0.100000			11/07/96	alan
1,1,2-Trichloroethane	(502.2)	ug/L	0				0.0300000			11/07/96	alan
Tetrachloroethylene	(502.2)	ug/L	0				0.0400000			11/07/96	alan
1,3-Dichloropropane	(502.2)	ug/L	0				0.0500000			11/07/96	alan
Dibromochloromethane	(502.2)	ug/L	0				0.0500000			11/07/96	alan
1,2-Dibromoethane	(502.2)	ug/L	0				0.0400000			11/07/96	alan
Chlorobenzene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
1,1,1,2-Tetrachloroethane	(502.2)	ug/L	0				0.0700000			11/07/96	alan
Ethylbenzene	(502.2)	ug/L	0				0.0200000			11/07/96	alan
m-Xylene	(502.2)	ug/L	0				0.0500000			11/07/96	alan
p-Xylene	(502.2)	ug/L	0				0.0500000			11/07/96	alan
o-Xylene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
Styrene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
Bromoform	(502.2)	ug/L	0				0.180000			11/07/96	alan
Isopropylbenzene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
Bromobenzene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
1,2,3-Trichloropropane	(502.2)	ug/L	0				0.0600000			11/07/96	alan
1,1,2,2-Tetrachloroethane	(502.2)	ug/L	0				0.0400000			11/07/96	alan
n-Propylbenzene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
2-Chlorotoluene	(502.2)	ug/L	0				0.0500000			11/07/96	alan
4-Chlorotoluene	(502.2)	ug/L	0				0.0800000			11/07/96	alan

Electric Production & Env.Affairs COT290101 S.O.Purdom Generating Station
Electric Department
City of Tallahassee Sampled by : fondo

Tallahassee ,FL 32302
ATTN. Buddy Revells

Sample # 96-11312 Sample ID ST.MARKS RIVER-PURDOM PLANT
Group # 15696 Sample Site
Sample Type WATER Sampled 10/17/96 09:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
1,3,5-Trimethylbenzene	(502.2)	ug/L	0				0.0200000			11/07/96	alan
t-Butylbenzene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
1,2,4-Trimethylbenzene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
s-Butylbenzene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
1,3-Dichlorobenzene	(502.2)	ug/L	0				0.0500000			11/07/96	alan
1,4-Dichlorobenzene	(502.2)	ug/L	0				0.0700000			11/07/96	alan
p-Isopropyltoluene	(502.2)	ug/L	0				0.0300000			11/07/96	alan
1,2-Dichlorobenzene	(502.2)	ug/L	0				0.0400000			11/07/96	alan
n-Butylbenzene	(502.2)	ug/L	0				0.0200000			11/07/96	alan
1,2-Dibromo-3-chloropropane	(502.2)	ug/L	0				0.120000			11/07/96	alan
1,2,4-Trichlorobenzene	(502.2)	ug/L	0				0.0800000			11/07/96	alan
Hexachlorobutadiene	(502.2)	ug/L	0				0.110000			11/07/96	alan
Naphthalene	(502.2)	ug/L	0				0.0600000			11/07/96	alan
1,2,3-Trichlorobenzene	(502.2)	ug/L	0				0.0800000			11/07/96	alan
MTBE	(502.2)	ug/L	0				5.00000			11/07/96	alan

Report 15696 Comment Page

Sample# 96-11312
Source: ST.MARKS RIVER-PURDOM PLANT

Data Entry Comments

Sampled, but not analyzed. (@VOC8021)

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

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ENVIRONMENTAL AFFAIRS

Laboratory Report

for

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee , FL 32302

Attention: Phil Bucci

JAM

Report#: 16036

JAN. -06' 97(MON) 15:27 TALL. ELECTRIC DEPT. TEL:891 8777 P.002

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101 S.O.Purdom Generating Station
Electric Department
City of Tallahassee Sampled by : S MCCLURE

Tallahassee ,FL 32302
ATTN. Buddy Revells

Sample # 96-12565 Sample ID ST MARKS RIVER-PURDOM PLANT
Group # 16036 Sample Site
Sample Type WATER Sampled 11/21/96 09:20

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Silver, Total	(272.2/ 7761)	ug/L	<0.11				0.9500			11/22/96	mike
Aluminum, Total	(EPA 202.2)	ug/L	29.1				9.5000			12/16/96	mike
Alkalinity	(EPA310.1/2320B)	mg/L CaCO3	119				1.970			11/21/96	sharon
Arsenic, Total by Furnace	(206.2/ 7060)	ug/L	<0.52				1.20			12/04/96	mike
Beryllium, Total	(EPA 210.2)	ug/L	<0.01				0.140			11/26/96	mike
Bicarbonate ion by Calculation	(SM4500-CO2D)	mg/L CaCO3	118.8				3.100			11/22/96	sharon
Calcium, Total	(EPA 215.1)	mg/L	40.4				0.450			12/09/96	mike
Carbonate ion, by calculation	(SM4500-CO2D)	mg/L CaCO3	<0.1690				3.100			11/22/96	sharon
Cadmium, Total	(213.2/ 7131)	ug/L	<0.07				0.290			12/05/96	mike
Chloride	(EPA 325.2)	mg/L	93.0				0.370			11/26/96	christy
Cyanide, Total	(EPA 335.4)	mg/L	<0.000				0.00500			11/25/96	christy
Specific Conductance,25C,field	(EPA 120.1)	umhos/cm	583				1.870			11/21/96	ron
Copper, Total	(EPA 220.2)	ug/L	<0.5				0.8000			12/02/96	mike
Oxygen, Membrane Dissolved	(EPA 360.1)	mg/L	3.88				0.100			11/21/96	ron
Fecal Coliform MF	(600/8-78/017)	#/100 ml	170				1.000			11/22/96	karen
Iron, Total	(EPA 236.2)	ug/L	65.6				5.560			11/21/96	mike
Hardness	(EPA130.2/2340C)	mg/L CaCO3	162				2.17			11/26/96	sharon
Mercury, Total	(245.1/ 7471)	ug/L	<0.04				0.520			12/05/96	mike
Potassium, Total	(EPA 258.1)	mg/L	2.32				0.0700			12/17/96	mike
Magnesium, Total	(EPA 242.1)	mg/L	13.4				0.810			12/09/96	mike
Sodium, Total	(EPA 273.1)	mg/L	53.8				0.140			12/17/96	mike
Nitrogen, Ammonia	(EPA 350.1)	mg/L	0.016				0.0140			11/26/96	christy
Nickel, Total	(EPA 249.2)	ug/L	1.7				0.9600			12/06/96	mike
Nitrogen, Nitrite	(EPA 353.2)	mg/L	<0.000				0.005000			11/22/96	christy
Nitrogen, Nitrite plus Nitrate	(EPA 353.2)	mg/L	0.124				0.0110			11/22/96	christy
Nitrogen,Nitrate by difference	(EPA 353.2)	mg/L	0.124				0.0110			11/22/96	christy
Parathion-methyl	(EPA 505)	ug/L	BDL				0.369			11/27/96	andy
Parathion-ethyl	(EPA 505)	ug/L	BDL				0.328			11/27/96	andy
Malathion	(EPA 505)	ug/L	BDL				0.561			11/27/96	andy
Guthionn	(EPA 505)	ug/L	BDL				2.39			11/27/96	andy
Demeton	(EPA 505)	ug/L	BDL				32.1			11/27/96	andy
Lead, Total	(239.2/ 7421)	ug/L	<0.46				0.5000			11/21/96	mike
Field, Hydrogen ion conc.	(EPA 150.1)	pH units	7.18				0.0800			11/21/96	christy
Antimony, Total	(EPA 204.2)	ug/L	<0.27				0.860			11/25/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	ug/L	<0.00				1.800			11/26/96	mike
Silica, Dissolved	(SM4500-Si-D)	mg/L	11.6				0.102			11/21/96	jam
Sulfate, Total	(EPA 375.2)	mg/L	21.7				0.846			12/04/96	christy
Sulfide, Total	(EPA 376.1)	mg/L	<0.0				1.00			11/21/96	ron
Total Coliform MF	(600/8-78-017)	#/100 ml	324				1.00			11/22/96	karen
Residue,Total Filterable @180C	(EPA 160.1)	mg/L	346				13.60			11/22/96	sharon
Temperature	(170.1/2550 B)	Celsius	20.3				0.0200			11/21/96	ron
Thallium, Total	(EPA 279.2)	ug/L	<0.12				0.620			11/27/96	mike
Chlorine, Total Residual	(EPA 330.1)	mg/L	0.0				0.00			11/21/96	karen
Phosphorus, Total	(EPA 365.4)	mg/L	<0.000				0.0410			12/03/96	christy
Residue,Total Nonfilt @103-105	(EPA 160.2)	mg/L	2				1.000			11/25/96	sharon
Zinc, Total	(EPA 289.1)	ug/L	<8.				10.000			12/16/96	mike

Group # 16036

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Tallahassee ,FL 32302
ATTN. Buddy Revells

Sample # 96-12565 Sample ID ST MARKS RIVER-PURDOM PLANT
Group # 16036 Sample Site
Sample Type WATER Sampled 11/21/96 09:20

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA8270/625)	ug/L	BDL				3.52	11/26/96	joe	11/27/96	andy
Acenaphthylene	(EPA 8270/625)	ug/L	BDL				3.76	11/26/96	joe	11/27/96	andy
Anthracene	(EPA 8270/625)	ug/L	BDL				2.67	11/26/96	joe	11/27/96	andy
Benzo(a)anthracene	(EPA 8270/625)	ug/L	BDL				2.56	11/26/96	joe	11/27/96	andy
Benzo(b)fluoranthene	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	11/27/96	andy
Benzo(k)fluoranthene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Benzo(ghi)perylene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	11/27/96	andy
Benzo(a)pyrene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Chrysene	(EPA 8270/625)	ug/L	BDL				2.72	11/26/96	joe	11/27/96	andy
Dibenzo(ah)anthracene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Fluoranthene	(EPA 8270/625)	ug/L	BDL				2.18	11/26/96	joe	11/27/96	andy
Fluorene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	11/27/96	andy
Indeno(123cd)pyrene	(EPA 8270/625)	ug/L	BDL				3.70	11/26/96	joe	11/27/96	andy
Naphthalene	(EPA 8270/625)	ug/L	BDL				1.28	11/26/96	joe	11/27/96	andy
Phenanthrene	(EPA 8270/625)	ug/L	BDL				2.82	11/26/96	joe	11/27/96	andy
Pyrene	(EPA 8270/625)	ug/L	BDL				9.25	11/26/96	joe	11/27/96	andy
Benzidine	(EPA 8270/625)	ug/L	BDL				44.0	11/26/96	joe	11/27/96	andy
3,3-Dichlorbenzidine	(EPA 8270/625)	ug/L	BDL				16.5	11/26/96	joe	11/27/96	andy
Butylbenzylphthalate	(EPA 8270/625)	ug/L	BDL				1.98	11/26/96	joe	11/27/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	11/27/96	andy
Di-n-butylphthalate	(EPA 8270/625)	ug/L	BDL				2.77	11/26/96	joe	11/27/96	andy
Diethylphthalate	(EPA 8270/625)	ug/L	BDL				5.81	11/26/96	joe	11/27/96	andy
Dimethylphthalate	(EPA 8270/625)	ug/L	BDL				3.10	11/26/96	joe	11/27/96	andy
Di-n-octylphthalate	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270/625)	ug/L	BDL				1.68	11/26/96	joe	11/27/96	andy
Bis(2-chloroethyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	11/27/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	11/27/96	andy
1,2-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				2.04	11/26/96	joe	11/27/96	andy
1,3-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.92	11/26/96	joe	11/27/96	andy
1,4-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.95	11/26/96	joe	11/27/96	andy
4-Bromophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				2.36	11/26/96	joe	11/27/96	andy
4-Chlorophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				3.44	11/26/96	joe	11/27/96	andy
2-chloronaphthalene	(EPA 8270/625)	ug/L	BDL				3.41	11/26/96	joe	11/27/96	andy
2,4-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	11/27/96	andy
2,6-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				3.74	11/26/96	joe	11/27/96	andy
Hexachlorobenzene	(EPA 8270/625)	ug/L	BDL				0.0310	11/26/96	joe	11/27/96	andy
Hexachlorobutadiene	(EPA 8270/625)	ug/L	BDL				1.00	11/26/96	joe	11/27/96	andy
Hexachlorocyclopentadiene	(EPA 8270/625)	ug/L	BDL				0.0190	11/26/96	joe	11/27/96	andy
Hexachloroethane	(EPA 8270/625)	ug/L	BDL				0.530	11/26/96	joe	11/27/96	andy
Isophorone	(EPA 8270/625)	ug/L	BDL				0.970	11/26/96	joe	11/27/96	andy
Nitrobenzene	(EPA 8270/625)	ug/L	BDL				2.01	11/26/96	joe	11/27/96	andy
N-nitroso-di-n-propylamine	(EPA 8270/625)	ug/L	BDL				11.0	11/26/96	joe	11/27/96	andy
N-nitrosodiphenylamine	(EPA 8270/625)	ug/L	BDL				4.37	11/26/96	joe	11/27/96	andy
1,2,4-trichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.43	11/26/96	joe	11/27/96	andy
N-nitrosodimethylamine	(EPA 8270/625)	ug/L	BDL				10.0	11/26/96	joe	11/27/96	andy
Dioxin(2378-TCDD)	(EPA 8270/625)	ug/L	BDL				0.0500	11/26/96	joe	11/27/96	andy

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Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270/625)	ug/L	BDL				4.90	11/26/96	joe	11/27/96	andy

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Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Aldrin	(EPA 625)	ug/L	BDL				4.00	11/26/96	joe	12/02/96	andy
A-BHC	(EPA 625)	ug/L	BDL				4.00	11/26/96	joe	12/02/96	andy
B-BHC	(EPA 625)	ug/L	BDL				4.30	11/26/96	joe	12/02/96	andy
D-BHC	(EPA 625)	ug/L	BDL				3.10	11/26/96	joe	12/02/96	andy
G-BHC(lindane)	(EPA 562)	ug/L	BDL				4.00	11/26/96	joe	12/02/96	andy
Chlordane	(EPA 625)	ug/L	BDL				10.0	11/26/96	joe	12/02/96	andy
Dieldrin	(EPA 625)	ug/L	BDL				2.50	11/26/96	joe	12/02/96	andy
4,4'-DDD	(EPA 625)	ug/L	BDL				2.80	11/26/96	joe	12/02/96	andy
4,4'-DDE	(EPA 625)	ug/L	BDL				5.60	11/26/96	joe	12/02/96	andy
4,4'-DDT	(EPA 625)	ug/L	BDL				2.80	11/26/96	joe	12/02/96	andy
Endosulfan I	(EPA 625)	ug/L	BDL				5.00	11/26/96	joe	12/02/96	andy
Endosulfan II	(EPA 625)	ug/L	BDL				5.00	11/26/96	joe	12/02/96	andy
Endosulfan Sulfate	(EPA 625)	ug/L	BDL				5.60	11/26/96	joe	12/02/96	andy
Endrin	(EPA 625)	ug/L	BDL				5.00	11/26/96	joe	12/02/96	andy
Endrin Aldehyde	(EPA 625)	ug/L	BDL				5.00	11/26/96	joe	12/02/96	andy
Heptachlor	(EPA 625)	ug/L	BDL				1.90	11/26/96	joe	12/02/96	andy
Heptachlor epoxide	(EPA 625)	ug/L	BDL				2.20	11/26/96	joe	12/02/96	andy
Methoxychlor	(EPA 625)	ug/L	BDL				5.00	11/26/96	joe	12/02/96	andy
Toxaphene	(EPA 625)	ug/L	BDL				10.0	11/26/96	joe	12/02/96	andy
Aroclor 1016	(EPA 625)	ug/L	BDL				10.0	11/26/96	joe	12/02/96	andy
Aroclor 1221	(EPA 625)	ug/L	BDL				10.0	11/26/96	joe	12/02/96	andy
Aroclor 1232	(EPA 625)	ug/L	BDL				10.0	11/26/96	joe	12/02/96	andy
Aroclor 1242	(EPA 625)	ug/L	BDL				10.0	11/26/96	joe	12/02/96	andy
Aroclor 1248	(EPA 625)	ug/L	BDL				10.0	11/26/96	joe	12/02/96	andy
Aroclor 1254	(EPA 625)	ug/L	BDL				10.0	11/26/96	joe	12/02/96	andy
Aroclor 1260	(EPA 625)	ug/L	BDL				10.0	11/26/96	joe	12/02/96	andy

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Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Chloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Vinyl chloride	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Bromomethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Chloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Trichlorofluoromethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Methylene chloride	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
trans-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,1-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
2,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.140000			12/05/96	alan
cis-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
Bromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Chloroform	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
1,1,1-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
Carbon tetrachloride	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1-Dichloropropene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Benzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
1,2-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.220000			12/05/96	alan
Trichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
1,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0900000			12/05/96	alan
Dibromomethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Bromodichloromethane	(502.2/ 8021)	ug/L	BDL				0.100000			12/05/96	alan
cis-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.120000			12/05/96	alan
Toluene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
trans-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.100000			12/05/96	alan
1,1,2-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Tetrachloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
1,3-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Dibromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,2-Dibromoethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Chlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,1,1,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Ethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
m-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
p-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
o-Xylene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Styrene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Bromoform	(502.2/ 8021)	ug/L	BDL				0.180000			12/05/96	alan
Isopropylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Bromobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2,3-Trichloropropane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1,2,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
n-Propylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
2-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
4-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan

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Sample Type WATER Sampled 11/21/96 09:20

Parameter	Method		Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
1,3,5-Trimethylbenzene	(502.2/ 8021	)	ug/L	BDL				0.0200000			12/05/96	alan
t-Butylbenzene	(502.2/ 8021	)	ug/L	BDL				0.0300000			12/05/96	alan
1,2,4-Trimethylbenzene	(502.2/ 8021	)	ug/L	BDL				0.0300000			12/05/96	alan
s-Butylbenzene	(502.2/ 8021	)	ug/L	BDL				0.0300000			12/05/96	alan
1,3-Dichlorobenzene	(502.2/ 8021	)	ug/L	BDL				0.0500000			12/05/96	alan
1,4-Dichlorobenzene	(502.2/ 8021	)	ug/L	BDL				0.0700000			12/05/96	alan
p-Isopropyltoluene	(502.2/ 8021	)	ug/L	BDL				0.0300000			12/05/96	alan
1,2-Dichlorobenzene	(502.2/ 8021	)	ug/L	BDL				0.0400000			12/05/96	alan
n-Butylbenzene	(502.2/ 8021	)	ug/L	BDL				0.0200000			12/05/96	alan
1,2-Dibromo-3-chloropropane	(502.2/ 8021	)	ug/L	BDL				0.120000			12/05/96	alan
1,2,4-Trichlorobenzene	(502.2/ 8021	)	ug/L	BDL				0.0800000			12/05/96	alan
Hexachlorobutadiene	(502.2/ 8021	)	ug/L	BDL				0.110000			12/05/96	alan
Naphthalene	(502.2/ 8021	)	ug/L	BDL				0.0600000			12/05/96	alan
1,2,3-Trichlorobenzene	(502.2/ 8021	)	ug/L	BDL				0.0800000			12/05/96	alan
MTBE	(502.2/ 8021	)	ug/L	BDL				5.00000			12/05/96	alan

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10.5.5 Ecology

10.5.5.1 Data Search/Literature Survey

This section includes descriptions of the data resources and methods used to provide the baseline ecological information presented in Sections 2.3.5 and 2.3.6.

Aquatic Ecology

The focus of aquatic studies was on important species which are designated as follows:

- Listed as endangered or threatened by the USFWS
- Listed as endangered, threatened, or species of special concern by the FGFWFC
- Listed as game or fish in the Florida Administrative Code (F.A.C.) Chapter 39-1
- Species which are indicators of, endemic to, or are otherwise unique to specific plant communities and habitat types

Terrestrial And Wetlands Ecology

The objective of the literature review was to obtain varied types of ecological information to be used to develop an understanding of the status of these ecological resources on and in the vicinity of the site. This information focused on the following:

- Regional vegetation descriptions, including wetlands
- Plant species lists and ecological reports for the area
- Lists and ecological reports of birds, mammals, reptiles, and amphibians common to the area
- Species checklists, reports of sightings, or abundance estimates
- Interspecific relationships and food chains of important species
- Locations of rare, threatened, or endangered species or critical habitats for these species in the region
- Occurrence of potential pre-existing stresses

Several data sources were used in the preparation of the impact assessment as related specifically to wetlands, important species, and plant communities. These were:

- Natural Resources Conservation Service soils maps
- Site inspections
- Aerial photographs

A description of potential ecological resources at the site of the station and its associated facilities was developed from a data base including information from available literature. Information sources reviewed for relevant ecological data were:

- In-house computer search utilizing the appropriate biological data bases
- Contacts with the FNAI

The information identified during the literature review included:

- Regional vegetation descriptions, including successional patterns
- Lists of birds, mammals, reptiles, and amphibians common to the vicinity of the proposed site
- Species checklists, reports of sightings, or abundance estimates
- Locations of rare, threatened or endangered species or critical habitats for these species
- Occurrence of pre-existing stresses or perturbations such as insect infestations, fires, flooding and severe weather

Vegetation/Land Use

The objective of this task was to collect and organize text and mapping data to provide the following:

- A 1:4,800 scale land use and vegetation map of the site and associated facilities
- Dominant or indicator vegetation species in vegetation communities
- An assessment of the quality or condition of site vegetation communities

10.5.5.2 Field And Data Collection Program

Aquatic Ecology

Water Quality Characterization. Measurements for water quality characteristics were made at the same point at each sampling station at the time of sampling for aquatic investigations, as follows:

- pH
- Dissolved oxygen (DO)
- Temperature (air and water)
- Conductivity
- Physical characteristics

Four of the stations utilized for water quality sampling stations were also used to collect aquatic ecology data presented in Section 2.3.4.

An Orion Model 230A pH Meter was used for pH measurements. The pH meter was calibrated and operated according to the manufacturer's specifications using pH 4.00 and pH 7.00 buffers for calibration.

Water and air temperatures were measured using an American Society for Testing and Materials (ASTM) thermometer calibrated against a National Bureau of Standards traceable thermometer. The data and time of day of sampling were recorded.

Dissolved oxygen was taken directly using a YSI Model 50B dissolved oxygen meter. The probe was hand agitated in the water, with sufficient time allowed for the probe to stabilize before readings were taken. Prior to field calibration, the probe membrane was inspected for damage and underlying bubbles; the membrane and potassium chloride solution were replaced, as necessary. Instrument calibration and operation were performed according to the manufacturer's instructions.

Conductivity, water temperature, and salinity were measured using a YSI Model 33 Salinity-Conductivity-Temperature Meter. The instrument was calibrated and operated according to the manufacturer's instructions. Calibration information was documented and any factors, such as weather conditions or unusual habitat conditions which could have resulted in unusual readings were described on the field data sheets.

Physical characteristics, depth, and light transmission were determined at each station. Depths were measured directly to the nearest 0.1 meter. Light transmission was recorded using a Secchi Disc and recorded to the nearest 0.1 m (0.3 foot).

Benthic Macroinvertebrate Sampling. Benthic macroinvertebrates are defined as being "benthic or substrate dwelling organisms visible to the unaided eye and are retained on a U.S. Standard No. 30 sieve" (ASTM, 1989). They represent an important link in the food chain of many fish species. The majority of these organisms are juvenile or mature life stages of five classes or subclasses: Oligochaeta, Crustacea, Insecta, Gastropoda, and Pelecypoda. Larger individuals or species of several other classes may also be considered macroinvertebrates. Benthic macroinvertebrate communities are often used as indicators of stress on an aquatic system because they are relatively immobile and their composition and density are largely determined by substrate types and local environmental conditions.

Hester-Dendy Artificial Substrate Sampling. Hester-Dendy artificial substrate samplers were placed at each station for a 4-week period once during the study. The artificial substrate samples were used to supplement the grab samples.

Hester-Dendy or multiple samplers consist of 14 tempered hardwood plates which serve as artificial substrates to be colonized by benthic macroinvertebrates. Each plate has a diameter of 7.5 cm and has a smooth surface on one side and a rough surface on the other. The sampler plates are held in place by a 0.63 cm diameter eyebolt. The first nine plates are separated by a single 2.5 cm diameter spacer which separates each plate approximately 3 mm. The tenth plate is separated by two spacers, plates 11 and 12 by three spacers and plates 13 and 14 by four spacers. Each sampler provides an efficient sampling surface area of 0.13 m^2 and the variable spacing of the plates allows for variable spaced habitats for colonization.

Three samplers were placed at each station. The samplers were floated at a depth of approximately four feet in deep water areas to insure the samplers were exposed in the euphotic zone to allow for the maximum abundance and diversity of macroinvertebrates to colonize the plates. Samplers were suspended in such a way as to prevent the samplers from contacting the substrates which may allow for excess silting of the sample, inhibiting colonization of the artificial substrates. Each sampler was anchored to the bottom to prevent relocation of the samplers by currents.

Samplers remained in place for four weeks, after which they were retrieved. To prevent the loss of organisms during sample retrieval, the samples were collected in a Wildco Standard No. 30 mesh wash bucket before being removed from the water. After being removed from the water, each sampler was disassembled and each plate and spacer was scrubbed with a toothbrush to remove the colonized organisms, which were collected in the wash bucket. Care was taken to insure that all of the organisms were removed from the plates and the spacers. Each sample was transferred from the wash bucket to an appropriately sized sample container and a sufficient amount of 70 to 80 percent ethanol was added to the sample to prevent decomposition. Each sample was labeled inside and out with the following information: station number, sampling date, sample number (composed of the station number, sample time, sampling date and replicate number), type of sample and collectors' names. All samples were promptly returned to the laboratory for analysis.

Immediately upon arrival in the laboratory, each sample was logged in on a sample status log and temporarily stored prior to processing. Each sampler was disassembled and each part cleaned to remove the organisms which colonized the artificial substrates. The washed samples were concentrated through a standard No. 30 mesh sieve in order to standardize the organism size and placed in an appropriate sized container before the identifications were conducted. After all of the samplers were disassembled and the samples concentrated, the organisms were identified.

All macroinvertebrates were identified to the lowest practicable taxonomic level (genus or species in most cases) and enumerated using stereo microscopes with appropriate magnification capabilities within the range of 6.4x to 80x. Identifications were made using the following primary keys: Merritt and Cummins (1984), Bringham et al. (1982), Pennak (1978), Parrish (1975), Hobbs (1981), and Wiggins (1977). Data sheets containing the taxa, number collected, and sample number were maintained during the identification. Each identified group of organisms was placed into a separate vial and preserved in 70 to 80 percent ethanol; glycerin was added to each sample to prevent desiccation. Each vial was labeled internally with the taxonomic information (order, family, genus, and species), project name, species number (a combination of the sample number and individual number to indicate species), date collected, date identified and the identifier's name. After each sample was identified, an entry was made in the sample status log indicating the date and the identifier's name.

All of the identified specimens were stored and their storage location noted in the sample status log. The samples will be inspected periodically to insure that the levels of preservative remain sufficient and that the samples are in good condition.

Data Analysis. All data were presented in tabular form to best document the established environmental conditions at each sampling area. Separate tables were developed for each sampling parameter. In addition to merely reporting numbers of organisms collected, selected biotic indices were computed including total number of taxa, percentage of dominant taxa, percentage diptera, Etheroptera/Pleucoptera/Trichoptera (EPT) taxa, Shannon-Weaver Diversity Index [Shannon, 1948] and Florida Index; as appropriate for the specific sampling parameter.

Fisheries Data. Fisheries populations potentially occurring within the St. Marks River Drainage were determined through literature review (Carr and Goin, 1959; Hocutt and Wiley, 1986; Stowe, 1976; Cherr, 1976; Lee et al., 1980), contacts with state universities (Florida State

University), and agency correspondence. Correspondence with FGFWFC and Florida Department of Environmental Protection, Marine Resources Division (FDEP-MRD) indicated that no state collections had been conducted on the St. Marks River.

Terrestrial And Wetlands Ecology

The objective of the field inspection program was to investigate the predominant vegetation and wildlife communities of the proposed site and directly associated facilities. This was done to document important botanical, wetland, and zoological features, such as the presence of rare, threatened or endangered biota, for characterization of existing site conditions.

Field inspections to characterize existing conditions were performed in the wetlands, forest lands, and disturbed areas encompassing the proposed project and associated facilities.

Threatened and endangered plant species surveys were made to record their presence or absence. The protected status of plant species was determined using the 1996 Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida (Wood, 1996).

The terrestrial and wetlands field program:

- Described plant communities of the site area
- Described the habitats and wildlife populations at the site, including mammals, birds, amphibians, and reptiles
- Determined the presence and habitat of state or federally protected plant and animal species that could occur in the site area
- Described the occurrence status of significant wildlife populations in the area

Surveying of existing terrestrial habitats for wildlife, botanical species and habitat types began in 1992.

Wildlife Studies - Mammals. Medium and large mammal studies were performed during the winter and summer. Documentation of game mammal and furbearer presence was accomplished through:

- Observation of mammals incidental to other programs
- Observation of signs, such as tracks and scat, encountered

Nongame mammal data were derived from agency contacts and literature searches. Sightings of species incidental to other sampling programs were incorporated into this data base.

Wildlife Studies - Birds. Data regarding bird species occurrences at the site were derived from site inspections.

Wildlife Studies - Reptiles and Amphibians. The occurrence of reptiles and amphibians was determined through observations made while conducting other terrestrial and aquatic field studies. These observations included species and numbers seen or heard by habitat type and locations. Tables were prepared providing amphibian and reptile species, occurrence at the site, special protected status, and preferred habitat types.

Vegetation/Land Use

A preliminary vegetation/land cover map of the site was prepared from 1994 aerial photography using FLUCCS Level II classifications. This map was taken to the site and checked for accuracy in the field. Cover areas greater than 2 acres in size were mapped. Input from ecological field studies was used to identify dominant or indicator species in plant communities.

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TABLE 10.5.5-1
FISH SPECIES POTENTIALLY FOUND WITHIN THE WAKULLA/ST. MARKS RIVER DRAINAGE AND SURROUNDING COASTAL AREA

Taxa	Common Name	Ecological Significance[1]	Hocutt/ Wiley[2]	Stowe[3]	Cherr[4]	Lee, et al[5]
Petromyzontidae						
Ichthyomyzon gagei	Southern brook lamprey	F				P (OR)
Carcharhinidae						
Carcharhinus leucas	bull shark	M				P (AR)
Dasyatidae						
Dasyatis sayi	Say's sting ray	M			1	
Acipenseridae						
Acipenser oxyrhychus	Atlantic sturgeon	A	?			P (CW)
Lepisosteidae						
Lepisosteus osseus	longnose gar	F	Ma	X		P (AR, OR)
Lepisosteus platyrhincus	Florida gar	F, E	N	L		P (AR, OR)
Amiidae						
Amia calva	bowfin	F	N	X		P (AR, OR)
Elopidae						
Elops saurus	ladyfish	M, SF				P (CW)
Megalops atlanticus	tarpon	M, SF				P (CW)
Anguillidae						
Anguilla rostrata	American eel	C	Ma	X		P (OR)
Ophichthidae						
Myrophis punctatus	speckeled worm eel	M			1	
Clupeidae						
Alosa alabamae	Alabama shad	A	?	PL (OR)		P (OR)
Alosa chrysochloris	slipjack herring	F				P (OR, CW)
Dorosoma cepedianum	gizzard shad	F, FF	Ma	PL (OR)		P (ND)
Dorosoma petenense	threadfin shad	F, FF	Ma	PL (OR)		P (OR, CW)
Engraulidae						
Anchoa mitchilli	bay anchovy	B, FF			5	P (CW)
Umbridae						
Umbra pygmaea	Eastern mudminnow	F	N	PX (AR)		P (OR)
Esocidae						
Esox americanus	redfin pickeral	F	N	X		X
Esox niger	chain pickeral	F, SF	?	L		P (OR)
Cyprinidae						
Hybopsis winchelli	clear chub	F				P (OR)
Notemigonus crysoleucas	golden shiner	F, FF	N	L		P (AR, OR)
Notropis chalybaeus	ironcolor shiner	F	N	L		P (AR, OR)
Notropis cummingsae	dusky shiner	F	N	X		X
Notropis emiliae	pugnose shiner	F	N	X		X
Notropis harperi	redeye chub	F	N	X		X
Notropis hypselopterus	sailfin shiner	F	N	X		X
Notropis leedsi	bannerfin shiner	F		PL (OR)		P (OR)
Notropis maculatus	taillight shiner	F	N	PL (AR, OR)		P (AR, OR)
Notropis petersoni	coastal shiner	F	N	X		X
Notropis texanus	weed shiner	F	N	PX (AR) L (OR)		P (OR)
Notropis venustus	blacktail shiner	F	?	PL (OR)		P (OR)
Semotilus atromaculatus	creek chub	F	?	PL (OR)		
Catostomidae						
Erimyzon sucetta	lake chubsucker	F	N	X		X
Minytrema melanops	spotted sucker	F	N	X		X

TABLE 10.5.5-1
FISH SPECIES POTENTIALLY FOUND WITHIN THE WAKULLA/ST. MARKS RIVER DRAINAGE AND SURROUNDING COASTAL AREA

Taxa	Common Name	Ecological Significance[1]	Hocutt/ Wiley[2]	Stowe[3]	Cherr[4]	Lee, et al[5]
Ictaluridae						
Ictalurus catus	white catfish	F, CF	N	L		P (ND)
Ictalurus natalis	yellow bullhead	F, SF	N	L		P (ND)
Ictalurus nebulosus	brown bullhead	F, SF		L		P (ND)
Ictalurus platycephalus	flat bullhead	F	?			
Ictalurus punctatus	channel catfish	F, CF	N	L		P (ND)
Ictalurus serracanthus	spotted bullhead	F	N	L		X
Noturus gyrinus	tadpole madtom	F	N	X		X
Noturus leptacanthus	speckled madtom	F	N	X		X
Aphredoderidae						
Aphredoderus sayanus	pirate perch	F	N	X		X
Synodontidae						
Synodus foetens	lizard fish	M			2	
Belonidae						
Strongylura marina	Atlantic needlefish	M	Ma		1	X
Strongylura notata	needlefish	M			490	
Strongylura timicu	needlefish	M			19	
Hemiramphidae						
Hemiramphus brasiliensis	balao	M			1	
Hyporhamphus unifasciatus	halfbeak	M			4	
Cyprinodontidae						
Adinia xenica	diamond killifish	M			4	
Cyprinodon variegatus	sheepshead minnow	F, B	Ma		125	X
Floridichthys carpio	gold-spotted killifish	M			227	
Fundulus chrysotus	golden topminnow	F	N	L		P (AR, OR)
Fundulus cingulatus	banded topminnow	F	N	L		P (OR)
Fundulus confluentus	marsh killifish	F, E	N	X		X
Fundulus escambiae	Eastern starhead topminnow	F	N			X
Fundulus grandis	gulf killifish	F, B			135	P (CW)
Fundulus lineolatus	lined topminnow	F	N	X		X
Fundulus notti	starhead topminnow	F		X		
Fundulus seminolis	Seminole killifish	F, E	N	X		X
Fundulus similis	longnose killifish	M			1285	
Jordanella floridae	flagfish	F, E	N	X		X
Leptolucania ommata	pygmy killifish	F	N	L		X
Lucania goodei	bluefin killifish	F, E	N	X		X
Lucania parva	rainwater killifish	F			22	X
Poecillidae						
Gambusia affinis	mosquitofish	F	N	X		X
Heterandria formosa	least killifish	F	N	X		X
Poecilia latipinna	sailfin molly	F	N	X	6	X
Syngnathidae						
Hippocampus zosterae	Southern sea horse	M			1	
Micro gnathus crinigerus	fringed pipefish	M			4	
Syngnathus floridae	Florida pipefish	M			11	
Syngnathus scovelli	gulf pipefish	B	?		6	P (OR, CW)
Mugilidae						
Mugil cephalus	striped mullet	M, FF, CF, B	Ma		2	X
Mugil curema	white mullet	M, FF			3	
Sphyraenodae						
Sphyraena barracuda	great baracuda	M, SF			4	
Polynemoidei						
Polydactylus octonemus	Atlantic threadfin	M			469	

TABLE 10.5.5-1
FISH SPECIES POTENTIALLY FOUND WITHIN THE WAKULLA/ST. MARKS RIVER DRAINAGE AND SURROUNDING COASTAL AREA

Taxa	Common Name	Ecological Significance[1]	Hocutt/ Wiley[2]	Stowe[3]	Cherr[4]	Lee, et al[5]
Atherinidae						
Labidesthes sicculus	brook silverside	F	N			X
Membras martinica	Northern silverside	M, B			2	
Menudua beryllina	tidewater silverside	F, B	Ma		2222	X
Centropomidae						
Centropomus undecimalis	snook	M, B, SF				P (CW)
Percichthyidae						
Morone saxatilis	striped bass	A, SF	Ma	L		X
Centrarchidae						
Acantharchus pomotis	mud sunfish	F	N	L		X
Centrarchus macropterus	flier	F	N	X		X
Elassoma evergladei	Everglades pygmy sunfish	F	N	L		X
Elassoma okefenokee	Okefenokee pygmy sunfish	F	N	X		X
Elassoma zonatum	banded pygmy sunfish	F	N			X
Enneacanthus chaetodon	blackbanded sunfish	F	N	PL (AR)		P (AR)
Enneacanthus gloriosus	bluespotted sunfish	F	N	L		P (AR, OR)
Enneacanthus obesus	banded sunfish	F	?	L		P (OR)
Lepomis auritus	redbreast sunfish	F, SF	N	X		P (ND)
Lepomis gulosus	warmouth	F, SF	N	L		X
Lepomis macrochirus	bluegill	F, SF	N	X		X
Lepomis marginatus	dollar sunfish	F	N	L		X
Lepomis microlophus	redear sunfish	F, SF	N	X		X
Lepomis punctatus	spotted sunfish	F	N	X		X
Micropterus notius	Suwannee bass	F, SF		PL (OR)		P (OR)
Micropterus salmoides	largemouth bass	F, SF	N	X		P (ND)
Pomoxis nigromaculatus	black crappie	F, SF	N	L		X
Percidae						
Etheostoma edwini	brown darter	F		PL (OR)		P (OR)
Etheostoma fusiforme	swamp darter	F	N	L		X
Etheostoma swaini	gulf darter	F		PL (OR)		P (OR)
Percina nigrofasciata	blackbanded darter	F	N	X		X
Carangidae						
Chloroscembrus chrysurus	bumper	M			5	
Oligoplites saurus	leatherjacket	M			60	
Selene vomer	lookdown	M			4	
Trachinotus falcatus	rough shad	M			29	
Gerreidae						
Eucinostomus argenteus	spotfin mojarra	M, B			511	X
Eucinostomus gulosus	silver jenny	M			92	
Pomadasyidae						
Orthopristis chrysoptera	pigfish	M			3	X
Sparidae						
Archosargus probatocephalus	sheepshead	M, SF				X
Lagodon rhomboides	pinfish	M, B			117	X
Sciaenidae						
Leiostomus xanthurus	spot	M, SF, CF			265	
Epihippidae						
Chaetodipterus faber	Atlantic spadefish	M			6	P (CW)
Blenniidae						
Chasmodes saburrae	Florida blenny	M			3	
Gobiidae						
Gobionellus boleosoma	darter goby	B				P (CW)
Gobiosoma bosci	naked goby	B				X

TABLE 10.5.5-1
FISH SPECIES POTENTIALLY FOUND WITHIN THE WAKULLA/ST. MARKS RIVER DRAINAGE AND SURROUNDING COASTAL AREA

Taxa	Common Name	Ecological Significance[1]	Hocutt/ Wiley[2]	Stowe[3]	Cherr[4]	Lee, et al[5]
Gobiosoma robustum	Code goby	B			8	X
Microgobius gulosus	clown goby	B			10	X
Monacanthidae						
Aluterus schoepfi	orange filefish	M			32	
Monacanthus hispidus	planehead (common) filefish	M			408	
Tetraodontidae						
Sphoeroides nephelus	Southern puffer	M			72	
Bothidae						
Paralichthys albigutta	gulf flounder	M, CF			11	
Paralichthys lethostigma	Southern flounder	M, CF				P (OR)
Soleidae						
Achirus lineatus	lined sole	M			19	
Trinectes maculatus	hogchoker	M, B, CF	Ma	X		X
Cynoglossidae						
Symphurus plagiusa	tonguefish	M			9	
Triglidae						
Prionotus scitulus	leopard searobin	M			2	
Batrachoididae						
Opsanus beta	gulf toadfish	M			14	

(1) Ecological Significance:
- F - Freshwater species
- M - Marine speices
- B - Brackishwater (euyhaline) species
- C - Catrodromous species, inhabits freshwater spwans in saltwater
- A - Anadromous species, inhabits saltwater, spawns in freshwater
- E - Species endimic to Florida
- CF - Commercial fish species
- SF - Sport (recreational) fish species

(2)
- Ma - Euryhaline species (anadromous, catadromous, estuarine, or other marine species which frequent freshwater)
- N - Native freshwater fish species
- ? - Suspected records without known museum records or other substantiation

(3)
- X - Indicates species collected by Stowe from the St. Marks drainage
- L - Indicates a record from literature or catalogue records or fishermen's reports
- P - Species not found in study area, but occur in one of both boundary rivers, the Aucilla River (AR) or Ochlockonee River (OR)

(4) Number indicates the total number of individuals collected during day and night collections for the duration of this study.

(5)
- X - Indicates that a record of that species exists for the Wakulla/St. Marks Drainage
- P - Indicates that that species potentially occurs in the Wakulla/St. Marks Drainage and has confirmed records in the following:
  - Aucilla River Drainage (AR)
  - Ochlockonee River Drainage (OR)
  - Coastal waters adjacent to the mouth of the Wakulla/St. Marks (CW)
  - St. Marks drainage is within the native distribution for species, but Lee et al. did not provide individual collection sites for these species on the distribution maps (ND)

Source: Hocutt/Wiley, 1986
Stowe, 1976
Cherr, 1974
Lee, et al., 1980

10.5.6 Meteorology/Air Quality

10.5.6.1 Joint Frequency Distribution of Wind Direction and Speed by Atmospheric Stability Class (Star Program Output) Tallahassee Regional Airport 1985-1989

TALLAHASSEE FLORIDA 1985 - 1989 STAR DECK (ISCST3)
FREQUENCY DISTRIBUTION A STABILITY

SPEED(MPH)

DIRECTION	1 - 3	4 - 7	8 - 12	13 - 18	19 - 24	GREATER THAN 24	TOTAL
N	.001072	.002259	.000000	.000000	.000000	.000000	.003331
NNE	.000502	.001164	.000000	.000000	.000000	.000000	.001666
NE	.000561	.000890	.000000	.000000	.000000	.000000	.001451
ENE	.000221	.000639	.000000	.000000	.000000	.000000	.000860
E	.000456	.000753	.000000	.000000	.000000	.000000	.001209
ESE	.000320	.000593	.000000	.000000	.000000	.000000	.000913
SE	.000324	.000616	.000000	.000000	.000000	.000000	.000940
SSE	.000452	.000730	.000000	.000000	.000000	.000000	.001182
S	.000789	.001118	.000000	.000000	.000000	.000000	.001907
SSW	.000239	.000593	.000000	.000000	.000000	.000000	.000833
SW	.000272	.000319	.000000	.000000	.000000	.000000	.000591
WSW	.000277	.000502	.000000	.000000	.000000	.000000	.000779
W	.000252	.000662	.000000	.000000	.000000	.000000	.000913
WNW	.000218	.000319	.000000	.000000	.000000	.000000	.000537
NW	.000190	.000616	.000000	.000000	.000000	.000000	.000806
NNW	.000475	.000707	.000000	.000000	.000000	.000000	.001182
TOTAL	.006618	.012482	.000000	.000000	.000000	.000000	

FREQUENCY OF OCCURENCE OF A STABILITY = .019100
FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH A STABILITY = .002875

TALLAHASSEE FLORIDA 1985 - 1989 STAR DECK (ISCST3)
FREQUENCY DISTRIBUTION B STABILITY

SPEED(MPH)

DIRECTION	1 - 3	4 - 7	8 - 12	13 - 18	19 - 24	GREATER THAN 24	TOTAL
N	.004790	.010634	.007416	.000000	.000000	.000000	.022840
NNE	.002620	.005887	.004085	.000000	.000000	.000000	.012592
NE	.001680	.004062	.002579	.000000	.000000	.000000	.008320
ENE	.001568	.002738	.001643	.000000	.000000	.000000	.005949
E	.002357	.002967	.002168	.000000	.000000	.000000	.007492
ESE	.001803	.003103	.001232	.000000	.000000	.000000	.006139
SE	.001692	.002510	.001757	.000000	.000000	.000000	.005959
SSE	.001793	.002852	.001483	.000000	.000000	.000000	.006129
S	.001989	.004039	.002807	.000000	.000000	.000000	.008835
SSW	.001003	.001894	.001073	.000000	.000000	.000000	.003969
SW	.001254	.001826	.000981	.000000	.000000	.000000	.004061
WSW	.000931	.001575	.000593	.000000	.000000	.000000	.003099
W	.001117	.001780	.001004	.000000	.000000	.000000	.003901
WNW	.000813	.001301	.000822	.000000	.000000	.000000	.002935
NW	.001127	.002031	.001232	.000000	.000000	.000000	.004390
NNW	.001852	.003081	.001962	.000000	.000000	.000000	.006895
TOTAL	.028388	.052280	.032837	.000000	.000000	.000000	

FREQUENCY OF OCCURENCE OF B STABILITY = .113505
FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH B STABILITY = .010132

TALLAHASSEE FLORIDA 1985 - 1989 STAR DECK (ISCST3)
FREQUENCY DISTRIBUTION C STABILITY

SPEED(MPH)

DIRECTION	1 - 3	4 - 7	8 - 12	13 - 18	19 - 24	GREATER THAN 24	TOTAL
N	.002595	.010337	.018781	.001871	.000000	.000000	.033584
NNE	.000984	.004016	.008694	.001095	.000000	.000000	.014790
NE	.000566	.002601	.004997	.000822	.000000	.000000	.008987
ENE	.000568	.002077	.004244	.000525	.000000	.000000	.007413
E	.000828	.002601	.004769	.000616	.000023	.000000	.008838
ESE	.000604	.002145	.003263	.000593	.000000	.000000	.006605
SE	.000499	.002145	.003240	.000662	.000000	.000000	.006546
SSE	.000712	.002168	.005043	.000981	.000023	.000000	.008927
S	.000900	.003446	.006777	.001711	.000000	.000000	.012835
SSW	.000583	.001826	.002328	.000456	.000000	.000000	.005193
SW	.000586	.001666	.002031	.000251	.000000	.000000	.004533
WSW	.000463	.001187	.001415	.000251	.000000	.000000	.003315
W	.000582	.001460	.001620	.000183	.000000	.000000	.003845
WNW	.000582	.001460	.001506	.000160	.000000	.000000	.003708
NW	.000459	.002054	.001826	.000137	.000000	.000000	.004476
NNW	.000950	.002716	.003857	.000274	.000000	.000000	.007795
TOTAL	.012459	.043905	.074392	.010588	.000046	.000000	

FREQUENCY OF OCCURENCE OF C STABILITY = .141390
FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH C STABILITY = .007234

TALLAHASSEE FLORIDA 1985 - 1989 STAR DECK (ISCST3)
FREQUENCY DISTRIBUTION D STABILITY

SPEED(MPH)

DIRECTION	1 - 3	4 - 7	8 - 12	13 - 18	19 - 24	GREATER THAN 24	TOTAL
N	.006319	.019465	.022044	.011478	.000274	.000000	.059580
NNE	.002505	.009447	.015175	.004746	.000114	.000000	.031987
NE	.002317	.006869	.008535	.002442	.000251	.000000	.020413
ENE	.001388	.005112	.006093	.001620	.000046	.000091	.014350
E	.002055	.006298	.006412	.001643	.000160	.000046	.016614
ESE	.001646	.005203	.004769	.001415	.000205	.000000	.013238
SE	.001718	.005157	.005294	.003560	.000251	.000068	.016049
SSE	.002283	.005614	.008352	.004906	.000342	.000023	.021520
S	.003376	.009516	.012459	.009219	.000456	.000046	.035073
SSW	.001514	.003240	.003560	.001552	.000068	.000023	.009957
SW	.001222	.002807	.002807	.000799	.000023	.000000	.007657
WSW	.000957	.001917	.001415	.000525	.000000	.000000	.004813
W	.001246	.002487	.001392	.000548	.000023	.000000	.005696
WNW	.001199	.001917	.001826	.000525	.000000	.000000	.005466
NW	.001084	.002784	.001848	.000844	.000000	.000000	.006560
NNW	.001965	.004427	.003491	.001620	.000023	.000000	.011527
TOTAL	.032792	.092260	.105472	.047442	.002236	.000297	

FREQUENCY OF OCCURENCE OF D STABILITY = .280498

FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH D STABILITY = .018803

TALLAHASSEE FLORIDA 1985 - 1989 STAR DECK (ISCST3)
FREQUENCY DISTRIBUTION E STABILITY

SPEED(MPH)

DIRECTION	1 - 3	4 - 7	8 - 12	13 - 18	19 - 24	GREATER THAN 24	TOTAL
N	.000000	.014217	.007439	.000000	.000000	.000000	.021656
NNE	.000000	.005112	.002967	.000000	.000000	.000000	.008078
NE	.000000	.005385	.001848	.000000	.000000	.000000	.007234
ENE	.000000	.003674	.001552	.000000	.000000	.000000	.005226
E	.000000	.005226	.001392	.000000	.000000	.000000	.006618
ESE	.000000	.003172	.000662	.000000	.000000	.000000	.003834
SE	.000000	.002921	.000525	.000000	.000000	.000000	.003446
SSE	.000000	.003583	.000822	.000000	.000000	.000000	.004404
S	.000000	.005773	.001780	.000000	.000000	.000000	.007553
SSW	.000000	.002693	.000525	.000000	.000000	.000000	.003218
SW	.000000	.001643	.000662	.000000	.000000	.000000	.002305
WSW	.000000	.001324	.000205	.000000	.000000	.000000	.001529
W	.000000	.001004	.000228	.000000	.000000	.000000	.001232
WNW	.000000	.000958	.000319	.000000	.000000	.000000	.001278
NW	.000000	.001232	.000570	.000000	.000000	.000000	.001803
NNW	.000000	.002624	.001575	.000000	.000000	.000000	.004199
TOTAL	.000000	.060540	.023071	.000000	.000000	.000000	

FREQUENCY OF OCCURENCE OF E STABILITY = .083611
FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH E STABILITY = .000000

TALLAHASSEE FLORIDA 1985 - 1989 STAR DECK (ISCST3)
FREQUENCY DISTRIBUTION F STABILITY

SPEED(MPH)

DIRECTION	1 - 3	4 - 7	8 - 12	13 - 18	19 - 24	GREATER THAN 24	TOTAL
N	.079293	.021154	.000000	.000000	.000000	.000000	.100447
NNE	.014046	.004861	.000000	.000000	.000000	.000000	.018907
NE	.013762	.004495	.000000	.000000	.000000	.000000	.018257
ENE	.009621	.003309	.000000	.000000	.000000	.000000	.012929
E	.014763	.004404	.000000	.000000	.000000	.000000	.019167
ESE	.008461	.002259	.000000	.000000	.000000	.000000	.010720
SE	.006320	.001346	.000000	.000000	.000000	.000000	.007667
SSE	.008765	.001826	.000000	.000000	.000000	.000000	.010590
S	.020512	.003788	.000000	.000000	.000000	.000000	.024300
SSW	.015507	.002556	.000000	.000000	.000000	.000000	.018062
SW	.014806	.002282	.000000	.000000	.000000	.000000	.017088
WSW	.011427	.001438	.000000	.000000	.000000	.000000	.012865
W	.013924	.001734	.000000	.000000	.000000	.000000	.015658
WNW	.013889	.002419	.000000	.000000	.000000	.000000	.016308
NW	.017366	.003035	.000000	.000000	.000000	.000000	.020401
NNW	.032071	.006458	.000000	.000000	.000000	.000000	.038529
TOTAL	.294532	.067363	.000000	.000000	.000000	.000000	

FREQUENCY OF OCCURENCE OF F STABILITY = .361896
FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH F STABILITY = .234791

10.5.7 Noise

There are no monitoring programs associated with this technical discipline.

10.5.8 Site Screening Assessment for Proposed Unit 8

Included in this Appendix is the Site Screening Assessment for Proposed Unit 8 prepared by Foster Wheeler Environmental Corporation. Based on the results of the study, the City has initiated activities at the Purdom Unit 8 construction site to remove surface soils believed to contain low-level petroleum constituents and asbestos. Low-level petroleum constituents were identified based on laboratory analyses of soil samples that exhibited elevated OVA-FID headspace readings which could be the result of past vehicle staging and parking in the area. The presence of asbestos is believed to be the result of storage of materials from long term maintenance and repair activities at the Purdom Station. Asbestos clean-up operations were initiated by the City and performed by Laidlaw Environmental Services in 1992.

As this SCA goes to press, the City is in the process of selecting industrial hygiene and hydrogeological consultants who will be responsible for delineation of the affected area, and subsequent soil removal and disposal at licensed disposal facilities.

SITE SCREENING ASSESSMENT FOR PROPOSED UNIT 8

for
CITY OF TALLAHASSEE
SAM O. PURDOM GENERATING STATION
ST. MARKS, FLORIDA

February 1997

Prepared for the
City of Tallahassee

Prepared by
Foster Wheeler Environmental Corporation
Stuart, FL

SITE SCREENING ASSESSMENT FOR PROPOSED UNIT 8

for
CITY OF TALLAHASSEE
SAM O. PURDOM GENERATING STATION
ST. MARKS, FLORIDA

February 1997

SIGNATURE PAGE
Foster Wheeler Environmental Corporation

Douglas J. Fulle Foster Wheeler Project Manager	Signature	2/28/97 Date
Gregory H. New, P.G. Foster Wheeler Task Manager	Signature	2/25/97 Date

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Executive Summary

The City of Tallahassee (City) is in the process of licensing the Sam O. Purdom Generating Station located at 667 Port Leon Drive, St. Marks, Wakulla County, Florida 32355 to construct a new generating unit: Purdom Unit 8. Purdom Unit 8 will be constructed in an open parcel of land located near the south-central portion of the City's property. As part of the Site Certification Application (SCA) for the Purdom Generating Station, the City of Tallahassee conducted a Site Screening Assessment of this site because of its prior industrial usage.

The Site Screening Assessment included screening of shallow soil samples from borings in the field with an organic vapor analyzer (OVA), laboratory analyses of surface soils and groundwater analyses.

While the soil assessment did detect some positive results, none of the results from the OVA headspace screening or laboratory analyses of soil samples from the site indicate exceedances of any applicable standards.

The results of the laboratory analyses of groundwater samples collected from one temporary monitoring well showed questionable elevated results for toluene and cadmium. This sample had an undesirably high turbidity which could have affected the results. Based on these questionable results, additional assessment of shallow groundwater in this vicinity was initiated as a supplemental activity. The results of a supplemental groundwater sample collected from a properly developed permanent monitoring well at this location did not duplicate the initial suspect toluene or cadmium results found in the previous sample, confirming the unreliability of the previous results.

Low levels of organic constituents were detected in some of the groundwater samples from the other temporary wells; however, none of these groundwater results were above FDEP regulatory or guidance concentrations. The City has undertaken to remove soil in several small areas of the site: one with low-level petroleum constituents based on soil OVA-FID headspace screening data and in two other areas where asbestos was found in surface soil samples. This material will be managed and disposed of in accordance with applicable requirements.

1. INTRODUCTION

Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) conducted a Site Screening Assessment (Assessment) on the proposed location for Purdom Unit 8 at the City of Tallahassee's (City) Sam O. Purdom Generating Station located at 667 Port Leon Drive, St. Marks, Wakulla County, Florida 32355. The location of the assessment activities is shown on Figure 1. This Assessment was conducted as part of the Site Certification Application (SCA) for the Purdom Generating Station. This report presents the results of the Assessment which was conducted November 19 through 22, 1996. Supplemental activities were conducted by Woodward-Clyde Consultants on February 21, 1997. The supplemental activities were conducted in order to provide confirmation of the Assessment results from two groundwater samples in which the data were questionable or results were inconclusive, and to provide groundwater data at a location where a well could not be installed during the Assessment.

The findings and conclusions for the site described in this report were prepared in accordance with the Assessment Work Plan dated November 15, 1996. These environmental assessment methods were used to provide the City with information regarding apparent environmental conditions. This report is based on review of the limited data, as described therein, in accordance with generally accepted professional practices, applicable to work of similar nature and complexity of similar localities, at the time the services were performed. In order to conduct the investigation for this report, Foster Wheeler Environmental relied upon readily available information from the City, field sampling, and laboratory results as discussed in the report and unless explicitly included in our scope included no verification of the accuracy or completeness of documentation or data or possible withholding of information by the interviewees, agencies, or other parties. This report is prepared for the sole use of the City.

The Assessment report is organized as follows:

- **Section 1.** provides an introduction to the Assessment.
- **Section 2.** presents the site background, and includes the site description, history, geology, and hydrogeology.
- **Section 3.** describes the field investigation performed as part of the Assessment and supplemental activities.
- **Section 4.** describes the soil and ground water quality based upon the field and laboratory results of the soil and ground water samples collected during the Assessment and subsequent supplemental activities.
- **Section 5.** presents a summary and conclusions derived from the Assessment and supplemental activities.
- **Section 6.** contains references.

IMAGE QUALITY

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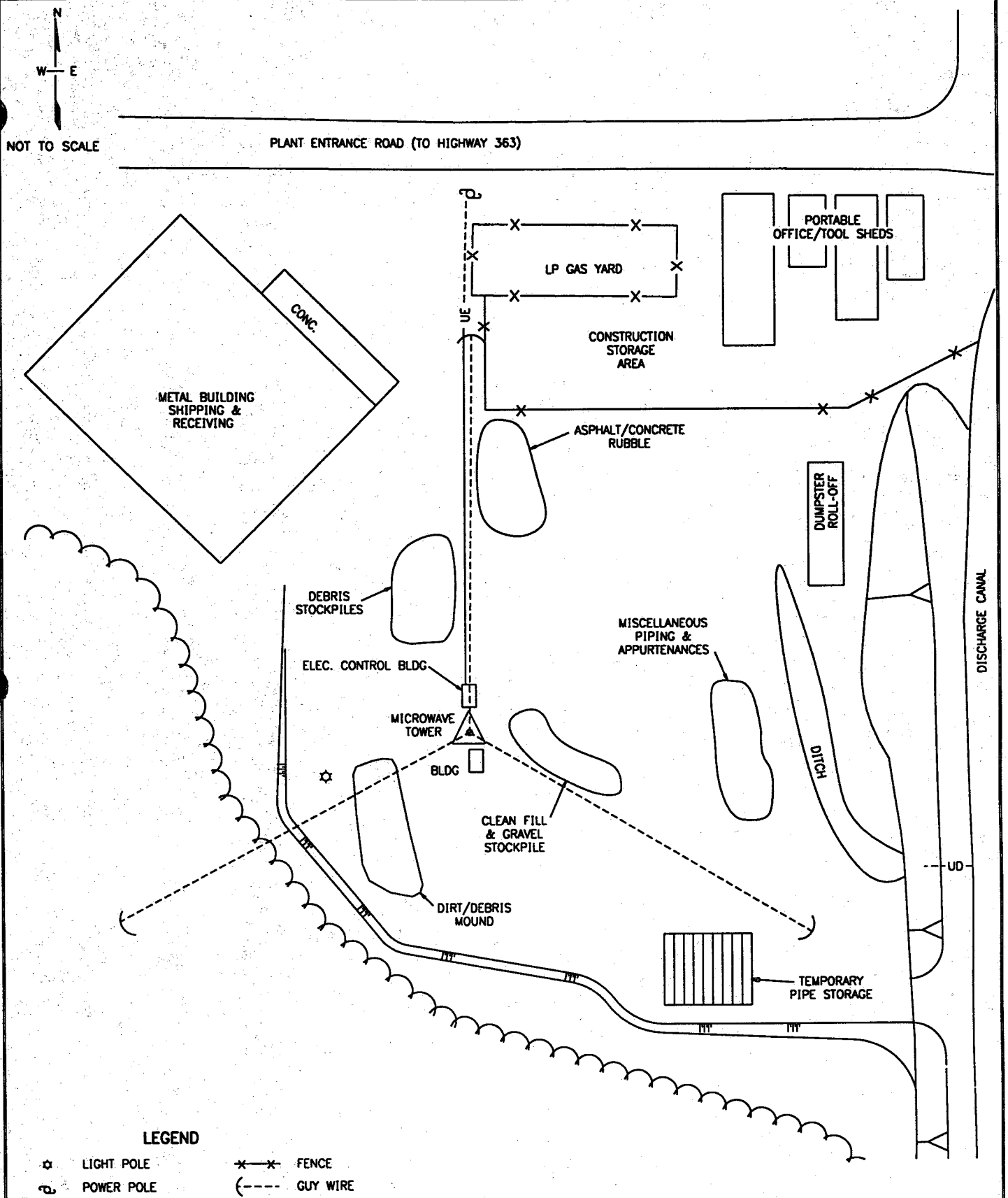


SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1996

CITY OF TALLAHASSEE

ASSESSMENT AREA

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 1

PLOT DATE FEB 997 C:\15840002\---\00000-16.DWG

2. SITE BACKGROUND, DESCRIPTION, AND HISTORY

The City is in the process of licensing Purdom Unit 8. The information presented in the following paragraphs was provided by the City.

The existing Purdom Station consists of nine electric generating units and associated facilities which were placed into operation between 1952 and 1966. The facility is located on a parcel of land in the northeast portion of the City of St. Marks adjacent to the St. Marks River. Units 1 through 4, located in the eastern portion of the property, are retired and are in the process of being dismantled. Of the five remaining operational generating units, three are gas/oil fired steam boilers and two are gas/oil fired combustion turbines. Fuel for the oil fired units is stored in several large aboveground oil storage tanks located in the southeast portion of the property. Natural gas is conveyed to the site via an underground pipeline which is owned and maintained by Florida Gas Transmission Corporation.

The new Purdom Unit 8 will be constructed on an open parcel of land located near the south-central portion of the City's property. A portion of this area is presently occupied by a radio tower and a small warehouse facility which stores plant supplies. Previously, this portion of the property had been used to store insulation material containing asbestos from older generating units which were dismantled. An asbestos removal contractor (Laidlaw) conducted an asbestos removal operation that disposed of asbestos contaminated soil and debris from this activity.

The City conducted this Assessment because this is an industrial site.

2.1 GEOLOGY AND HYDROGEOLOGY

A thorough discussion of the regional geology and hydrogeology of this area is provided in Section 2.3 of the SCA.

3. FIELD INVESTIGATIVE METHODOLOGY

This section describes the field investigation for the Assessment performed by Foster Wheeler Environmental on November 19 through 22, 1996 and summarizes the supplemental activities performed by Woodward-Clyde Consultants on February 21, 1997 for Purdom Unit 8.

After laboratory analyses were completed and peer review was accomplished, supplemental activities were initiated in February 1997 to provide confirmational data because: poor reproducibility for cadmium may have been due to high turbidity in the samples from one well, possible laboratory cross contamination and poor reproducibility in sample duplicates indicated questionable results for toluene in the same sample, and hard subsurface materials prevented the installation of a temporary monitoring well in the location of the soil boring with the highest soil OVA-FID headspace screening results during the Assessment.

3.1 QUALITY ASSURANCE

Field activities conducted by Foster Wheeler Environmental and by Woodward-Clyde Consultants were performed in accordance with their respective approved Comprehensive Quality Assurance Plans (Foster Wheeler Environmental CompQAP No. 880983G and Woodward-Clyde Consultants CompQAP No. 890701T) which are on file with the Florida

Department of Environmental Protection (FDEP). The CompQAP states that the field procedures shall follow the Standard Operating Procedures (SOPs) presented in Chapter 62-160, Florida Administrative Code (F.A.C.) and the FDEP SOP manual DER-QA-001/92. The CompQAP specifies sampling methodologies, equipment, laboratory analyses, and decontamination protocols which were followed during the course of the Assessment and supplemental activities. Field investigation and sampling equipment was pre-cleaned at an approved location (such as: Foster Wheeler Environmental's warehouse) prior to being transported to the jobsite for use.

Bound, weatherproof site logbooks were maintained by the Field Operations Leaders (FOL) throughout the field investigations. These logbooks document on-site activities associated with the field investigation, including (but not limited to) the use of sampling equipment, sampling and sample locations, safety issues, and other pertinent information.

Sample container preparation, shipment, and analyses was conducted in accordance with the FDEP SOPs. Prior to being shipped to the field, all applicable sample containers were pre-preserved by the analytical laboratory, except sample containers for volatile organic analyses; which were pre-preserved during the Assessment by the sampling team using concentrated hydrochloric acid and an eyedropper provided by the laboratory. Upon sample collection, the filled sample containers were sealed in ziploc bags and placed in a cooler with sufficient ice to maintain a temperature of 4° centigrade (C) inside the sample cooler, until the samples were delivered to the laboratory by the sampling team.

All samples sent for chemical analysis were documented with sample labels and chain-of-custody (C-O-C) forms. Proper C-O-C procedures were followed from the time of sample collection to the reporting of sample results by the analytical laboratory. Chain-of-custody forms listing each sample, sample collection date and time, sample matrices, etc. accompanied the samples from the time of collection until their arrival at the laboratory. Copies of these forms are included in Attachment B.

In addition to the soil and groundwater samples that were collected during the Assessment, soil and groundwater duplicate samples were collected. Field-cleaned equipment blank samples were also prepared from the soil and groundwater sampling equipment after it was decontaminated in the field. Both of these sets of quality assurance samples were analyzed by the laboratory in conjunction with the other routine sample analyses.

3.2 SOIL HEADSPACE SCREENING

Sixteen soil borings were completed in ten locations using stainless-steel hand augers during the Assessment between November 19 and 22, 1996. Soil boring locations were based on a grid of the proposed Purdom Unit 8 construction area. Soil samples were collected at 1- to 2-ft intervals from each boring and screened for volatile organic compounds with an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID) in accordance with the procedure outlined in Rule 62-770.200 F.A.C. (This procedure was established by the FDEP for use at petroleum sites and was used during this assessment as general guidance.) Because the OVA-FID instrument is sensitive to methane, a naturally occurring gas, both methane (charcoal) filtered and unfiltered OVA-FID headspace screening measurements were conducted on each

soil sample. The charcoal filter absorbs volatile organics in the sample before it enters the OVA-FID's detector, except methane which passes through to the detector. Thus, the difference between the unfiltered and filtered results gives an indication of the amount of volatile organics present in the sample.

The locations of the soil borings where OVA-FID soil headspace measurements were conducted during the Assessment are shown on Figure 2. From one to three soil samples were collected and screened from each boring until the depth of the water table was encountered by the boring. Some borings were aborted before the water table was encountered because debris such as broken concrete, masonry, and metal was encountered which prevented advancing the boring to a greater depth. Subsequent borings were initiated in each of these cases from a nearby location (within a few feet of the original location) and advanced to the water table. The first soil boring collected at each location is designated PG-XXSB-1, where XX denotes the sample location (sample locations were numbered one through ten). The last digit of the sample number designates the sequential soil boring number from each location. Subsequent borings from the same approximate location were numbered -2, -3, etc.

During the supplemental assessment performed on February 21, 1997, OVA-FID soil headspace screening was performed on soils retrieved from the auger flights while drilling the borings for two permanent monitoring wells.

In addition to OVA-FID screening, each boring was logged and visually classified using the Unified Soil Classification System (USCS) ASTM D2488. Obvious staining or disturbed substrate were noted in the boring logs. The results of the OVA-FID soil headspace screening data are presented and discussed in Section 4. Copies of the boring log for each soil boring are presented in Attachment A.

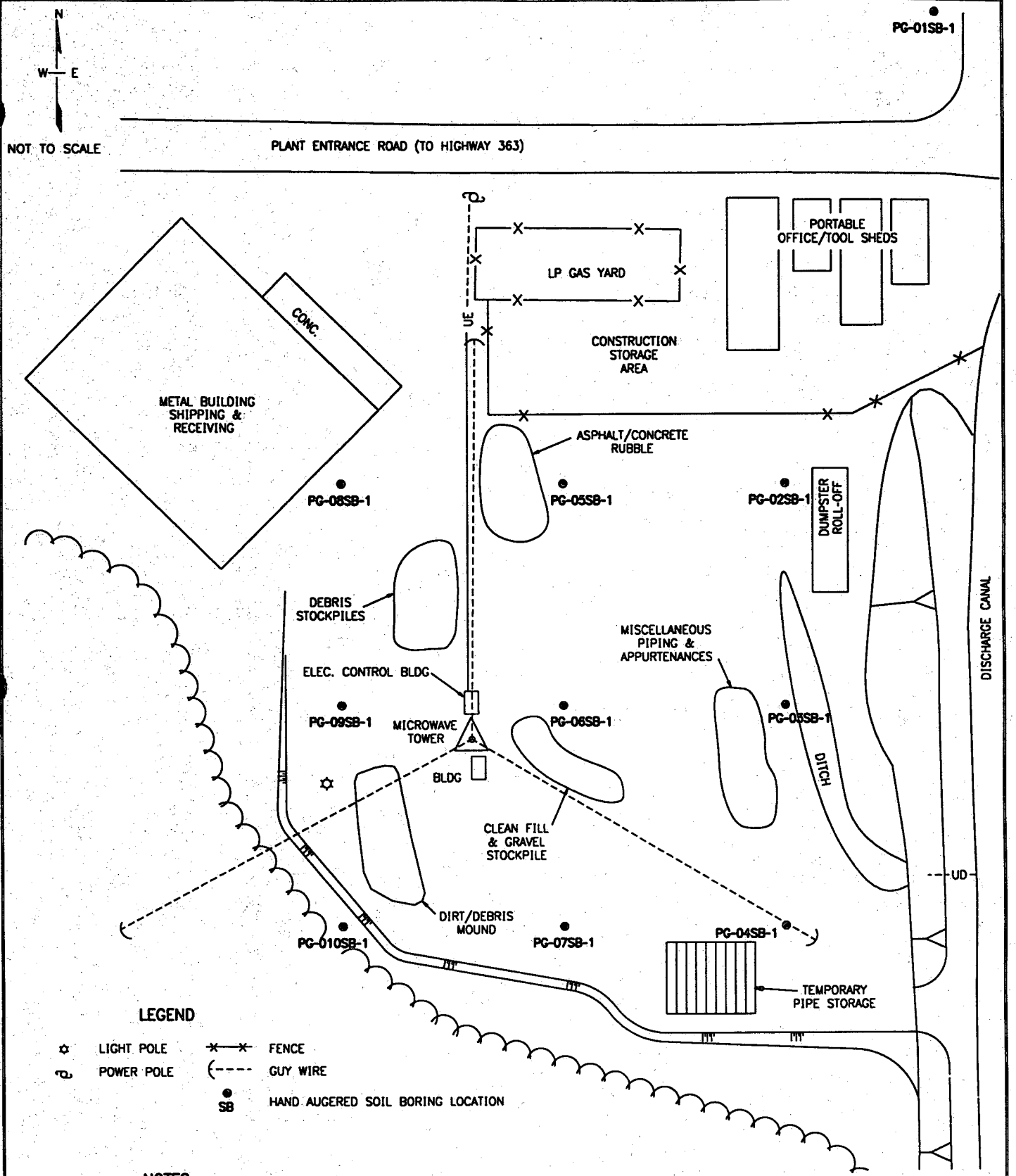
3.3 SURFACE SOIL SAMPLING

Based on a review of the OVA-FID soil screening data from the Assessment, four boring locations were selected to collect surface soil samples for laboratory analyses. Surface soil sample locations are shown on Figure 3. Surface soil samples for laboratory analyses were collected as composites from depths of 0 to 1 ft. Although the surface soil samples have the same sample numbers as the borings which were used to conduct the OVA-FID soil screening, each surface soil sample for laboratory analyses was collected from a separate boring at a unique location within a relatively small radius (1 to 5 ft) of the borings which were used to conduct the OVA-FID screening and soil classification. Before collecting the soil samples for laboratory analyses, any material that appeared to be foreign from the chosen sample interval (i.e., material that caved or fell into the borings) was discarded.

3.4 MONITORING WELL INSTALLATION

3.4.1 Temporary Monitoring Well Installation

Four shallow temporary 8 to 10-ft deep groundwater monitoring wells were installed at locations based on the results of the OVA-FID soil screening data during the Assessment conducted



NOTES

SAMPLE LOCATIONS DENOTE SOIL BORINGS SCREENED WITH AN OVA-FID FOR VOLATILE ORGANIC COMPOUNDS.

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1996

CITY OF TALLAHASSEE

HAND AUGERED SOIL BORING LOCATION MAP

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 2

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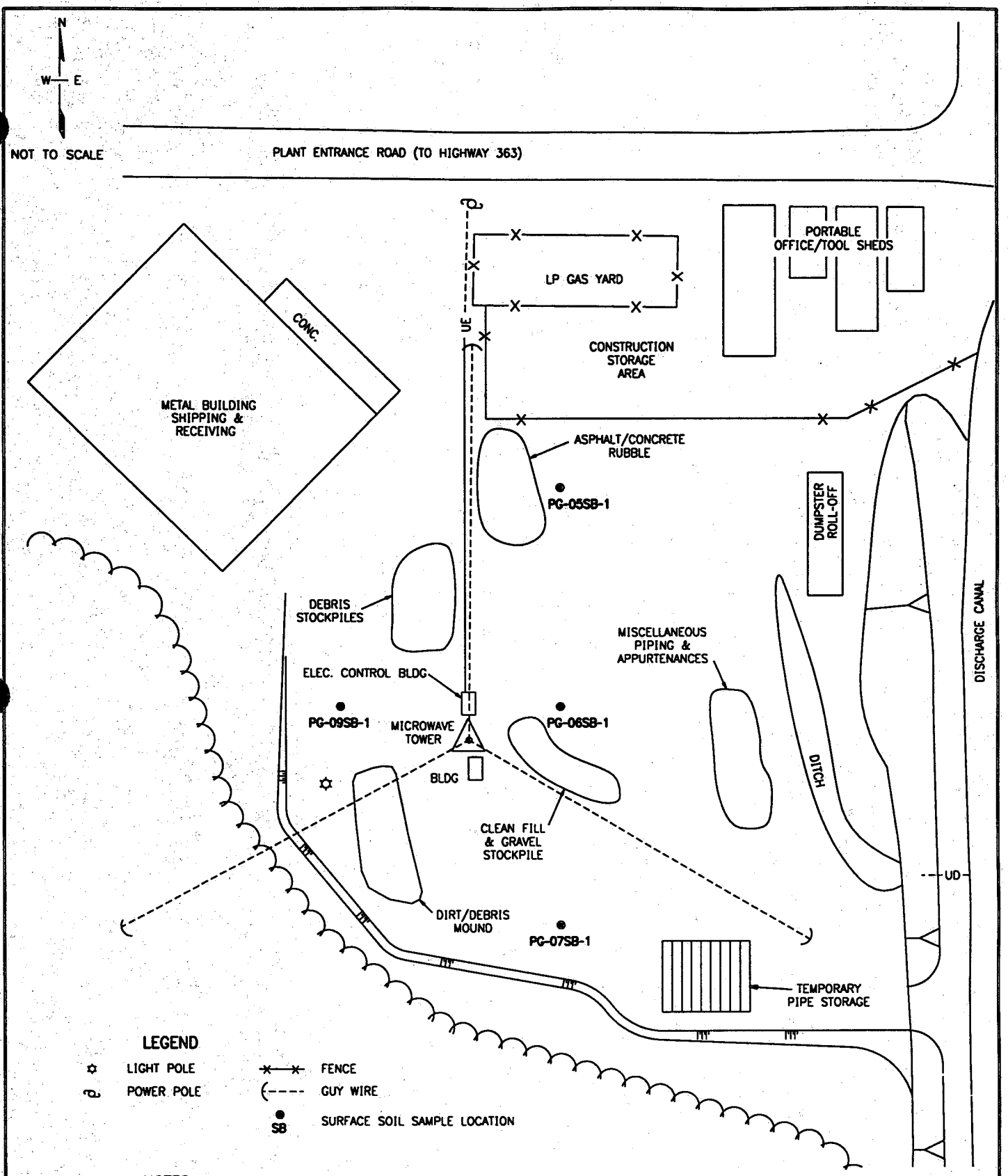


NOTES

SAMPLE LOCATIONS DENOTE SOIL BORINGS WHERE SURFACE SOIL SAMPLES WERE COLLECTED FROM 0-1 FT DEPTH FOR LABORATORY ANLYSIS.

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1996

CITY OF TALLAHASSEE

SURFACE SOIL SAMPLE LOCATION MAP

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 3

PLOT DATE FEB 997 C:\15840002\----\00000-18.DWG

between November 19 and 22, 1996. The wells were installed to provide for the collection of groundwater samples for laboratory analyses. The completed well locations are provided on Figure 4.

Temporary monitoring wells were constructed of 2-inch diameter, Type 316, stainless steel well riser and screen, encased in filter sock material, and backfilled with native soils. One 5-ft section of stainless steel well riser was used for the upper portion of each well. This upper section was threaded and coupled onto one 5-ft section of 0.010-inch wire-wrap, stainless steel well screen and placed into the borehole. The stainless steel well materials were decontaminated on-site between each temporary monitoring well location according to the provisions of the FDEP SOPs. The temporary well borings extended approximately 2-3 ft below the depth of the water table in each monitoring well location. This allowed groundwater samples to be obtained for screening purposes from each temporary monitoring well.

3.4.2 Permanent Monitoring Well Installation

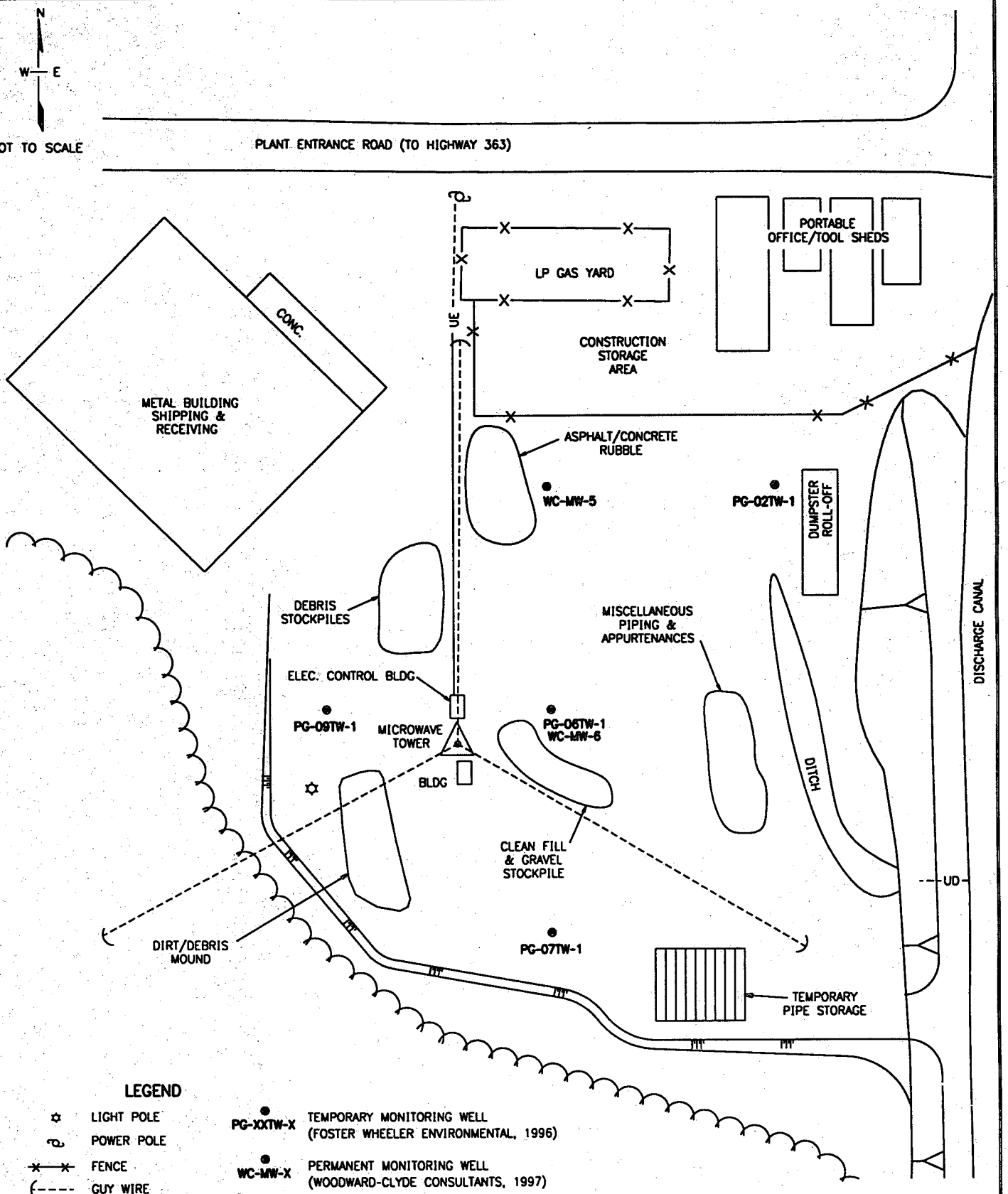
Two permanent shallow 12- to 13-ft deep groundwater monitoring wells were installed on February 21, 1997 at the same approximate locations as soil boring PG-05SB-1 and temporary monitoring well PG-06TW-1 completed during the Assessment. The wells were installed to provide for the collection of additional groundwater samples for laboratory analyses. The completed well locations are shown on Figure 4.

Permanent monitoring wells were constructed with 10 feet of 2-inch diameter 0.01-inch slot, Schedule 40 polyvinyl chloride (PVC) screen threaded and coupled to 2-inch diameter PVC riser pipe. A 20/30 grain size, filter pack was placed in the annular space around the screen from the bottom of the well to within about 1 to 2 ft above the screen. A nominal 1-ft thick bentonite seal was placed on top of the sand pack. Each well was grouted and sealed to the surface with a 3 to 5 percent mixture of bentonite and Portland cement. The wells were completed and finished above-grade with a watertight, locking well cap. Each well was developed by pumping until relatively clear, sediment-free discharge water was obtained (Woodward-Clyde Consultants, 1997).

3.5 GROUNDWATER SAMPLING

On November 22, 1996, groundwater samples were collected from the four temporary monitoring wells in accordance with the FDEP SOPs. Prior to groundwater sampling, each monitoring well was purged with new tubing and a peristaltic pump to remove standing water and to obtain representative samples of the surficial aquifer. Each well was purged dry prior to sampling.

Samples for volatile organic analyses were collected with decontaminated inert Teflon® bailers utilizing new cotton lanyards. Separate bailers which had been decontaminated prior to being transported to the field were used for sampling volatile organic compounds in each well. These samples were transferred immediately from the bailers to the sample container bottles, and were then placed on wet ice in preparation for shipment to the analytical laboratory.



SOURCES: FOSTER WHEELER ENVIRONMENTAL, 1996
WOODWARD-CLYDE CONSULTANTS, 1997

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CITY OF TALLAHASSEE

TEMPORARY AND PERMANENT MONITORING WELL LOCATION MAP

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 4

Samples for other analyses were collected from the discharge line of the peristaltic pump. During sample collection activities, field measurements of sample pH, temperature, specific conductance, and turbidity were recorded. Field measurements are summarized in Table 3, which is located in Section 4.4.

Supplemental activities conducted on February 21, 1997, included the collection of groundwater samples from the two permanent monitoring wells. Prior to groundwater sampling, each monitoring well was purged to obtain representative samples of the surficial aquifer. During sample collection activities field measurements of sample pH, temperature, specific conductance, and turbidity were recorded. Field measurements data are summarized in Table 3, located in Section 4.4. Groundwater samples were collected for analyses with Teflon® bailers.

3.6 LABORATORY ANALYSIS

3.6.1 Assessment Activities

The soil and groundwater samples collected during the Assessment were analyzed for Volatile Organic Aromatics/Purgeable Halocarbons (EPA 8021), Petroleum Range Organics (FL-PRO), eight RCRA metals (EPA Methods: 206.2/7060, 208.2/7081, 213.2/7191, 218.2/7191, 239.2/7421, 245.1/7471, 270.2/7440, and 272.2/7761), Base/Neutral Acid extractables, pesticides and PCBs (EPA 8270) in November 1996. In addition, the soil samples were analyzed for friable asbestos materials. Samples were analyzed by the City of Tallahassee Water Quality Division Laboratory, Savannah Laboratories and Environmental Services, Inc. and Micro Analytical Laboratories, Inc. Attachment C provides a list of the analyses performed by each laboratory.

3.6.2 Supplemental Activities

Two additional groundwater samples were collected for analyses from permanent monitoring wells in February 1997. One groundwater sample from well WC-MW-5, was analyzed for Volatile Organics (EPA 8010 and 8020), Polynuclear Aromatic Hydrocarbons (EPA 8100), and Petroleum Range Organics (FL-PRO). A second groundwater sample from well WC-MW-6 was analyzed for Purgeable Aromatics (EPA 8020) and Cadmium (EPA 213.2). Method 8100 provides results for a specific list of analytes which are related to hydrocarbon fuels and which are a subset of those found in EPA method 8270. Samples collected during the supplemental activities were analyzed by Savannah Laboratories and Environmental Services, Inc. A discussion of the analytical results is provided in Section 4.

3.6.3 Laboratory Data Validation

Attachment C presents the results of data validation performed on the Assessment data provided by the analytical laboratories. The data validation indicates that the results from the analytical laboratories are of acceptable quality. As a result of the data validation, some laboratory results are qualified as estimated values designated by the letter J in the analytical results summary table. Tables in Attachment C also provide a summary of the results of Quality Assurance samples (duplicates, equipment blanks, and trip blank samples) that were collected and analyzed as part of the Assessment.

4. RESULTS AND DISCUSSION OF THE SITE ASSESSMENT

This section presents the results of the soil and groundwater sample collection and analyses conducted during the Assessment and supplemental activities.

4.1 SITE SPECIFIC GEOLOGY

The surficial geology of the site was characterized using soil samples obtained from hand auger cuttings during the installation of the shallow soil borings and temporary monitoring wells conducted during the Assessment.

The shallow lithology, as described from the soil borings and temporary well logs, consists of the following general characterization in descending order. Discontinuous or mixed layers of topsoil, limerock fill, construction demolition debris, clayey sand, quartz beach sand, and marly or limey clays were encountered to a depth of approximately seven ft below land surface. From 7 to 9 ft below land surface a single unit of greenish-bluish gray to off-white or yellow, fat, marly clay was encountered. At a depth between nine and ten ft below land surface hard, dense limestone material (tentatively named St. Marks Formation) was encountered in all four temporary monitoring well borings.

4.2 SOIL OVA-FID HEADSPACE SCREENING RESULTS

During the Assessment and supplemental activities, 18 soil borings from ten locations were completed and screened with an OVA-FID in accordance with the methodology described in Rule 62-770.200(2), F.A.C.. The two borings completed during supplemental activities were located approximately in the same location as two of the previous borings conducted during the Assessment. Table 1 and Figure 5 present a summary of the soil OVA-FID headspace screening data. The results of the headspace screening of soil samples found six samples with results that were above 50 ppm. The results range from below the detection limit 0 parts per million (ppm) to greater than 1000 ppm in one sample.

The FDEP has established soil OVA-FID headspace screening standards under Rule 62-770, F.A.C. of 50 ppm for sites contaminated with products related to the kerosene or mixed product analytical group and 500 ppm for sites contaminated with products in the gasoline analytical group. However these standards are not applicable to the site which is the subject of this Assessment because it has not been used to store petroleum fuels or other related products and because no constituents which are indicative of these analytical groups were found in the surface soil or groundwater samples that were collected for laboratory analyses.

4.3 SURFACE SOIL ANALYTICAL RESULTS

During the Assessment, five surface soil samples including one duplicate were collected from four locations for laboratory analyses. Table 2 and Figure 6 each present a summary of the analytical results. Attachment B includes a complete copy of the laboratory analytical report. Surface soil samples were analyzed for Volatile Organic Aromatics/Purgeable Halocarbons,

TABLE 1
SOIL ORGANIC VAPOR HEADSPACE SCREENING RESULTS

NOVEMBER 1996

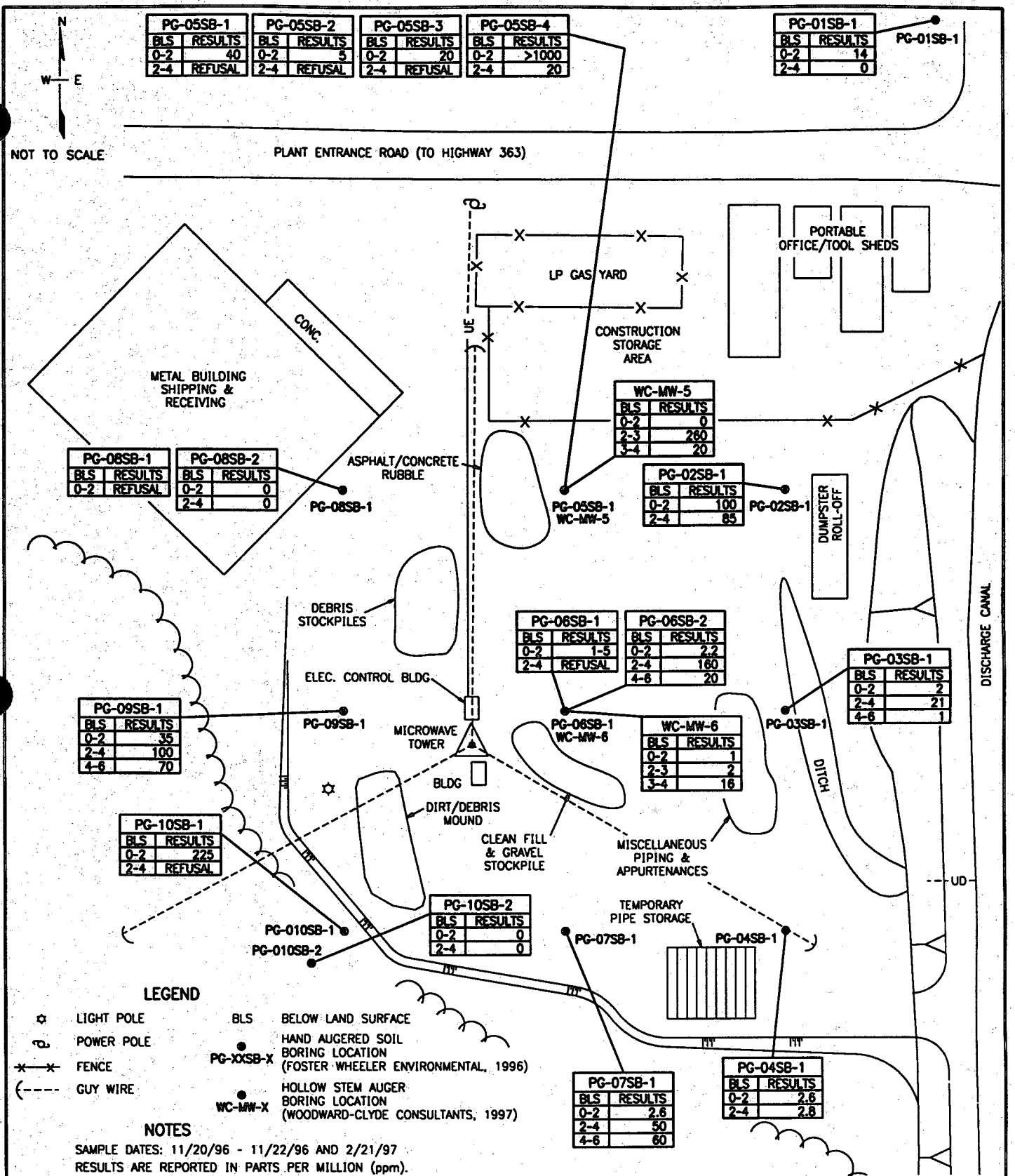
Boring No.	OVA Measurements (ppm)								
	0 - 2 feet			2 - 4 feet			4 - 6 feet		
	Unfiltered	Filtered	Difference	Unfiltered	Filtered	Difference	Unfiltered	Filtered	Difference
PG-01SB-1	60	46	14	30	38	<0	N/A	N/A	N/A
PG-02SB-1	300	200	100	300	215	85	N/A	N/A	N/A
PG-03SB-1	2.0	0.0	2.0	36.0	15.0	21	4.0	3.0	1.0
PG-04SB-1	2.6	N/A	N/A	2.8	N/A	N/A	N/A	N/A	N/A
PG-05SB-1	240	200	40	Refusal			N/A	N/A	N/A
PG-05SB-2	35	30	5	Refusal			N/A	N/A	N/A
PG-05SB-3	100	80	20	Refusal			N/A	N/A	N/A
PG-05SB-4	>1000	>1000	>1000	380	360	20	N/A	N/A	N/A
PG-06SB-1	1.5	N/A	N/A	Refusal			N/A	N/A	N/A
PG-06SB-2	2.2	N/A	N/A	340	180	160	320	300	20
PG-07SB-1	2.6	N/A	N/A	200	150	50	280	220	60
PG-08SB-1	Refusal			N/A	N/A	N/A	N/A	N/A	N/A
PG-08SB-2	0	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A
PG-09SB-1	50	15	35	200	100	100	340	270	70
PG-10SB-1	425	200	225	Refusal			N/A	N/A	N/A
PG-10SB-2	0	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A

Source: Foster Wheeler Environmental November 20-21, 1996.
N/A - Not analyzed.

FEBRUARY 1997

Boring No.	OVA Measurements (ppm)								
	2 feet			3 feet			4 feet		
	Unfiltered	Filtered	Difference	Unfiltered	Filtered	Difference	Unfiltered	Filtered	Difference
WC-MW-5	0	0	0	350	90	260	70	50	20
WC-MW-6	3	2	1	8	6	1	78	62	16

Source: Woodward-Clyde Consultants February 21, 1997.



NOTES

SAMPLE DATES: 11/20/96 - 11/22/96 AND 2/21/97

RESULTS ARE REPORTED IN PARTS PER MILLION (ppm).

SOIL SAMPLES WERE SCREENED AT 1 OR 2 FT. INTERVALS FROM LAND SURFACE TO THE WATERTABLE WITH AN OVA-FID IN ACCORDANCE WITH CHAPTER 62-770.200 F.A.C.

SOIL SCREENING DATA IS REPORTED AS THE DIFFERENCE OF UNFILTERED OVA-FID RESULTS MINUS METHANE FILTERED SAMPLE RESULTS.

SOURCES: FOSTER WHEELER ENVIRONMENTAL, 1996
WOODWARD-CLYDE CONSULTANTS, 1997

CITY OF TALLAHASSEE

OVA-FID SOIL SCREENING DATA SUMMARY

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 5

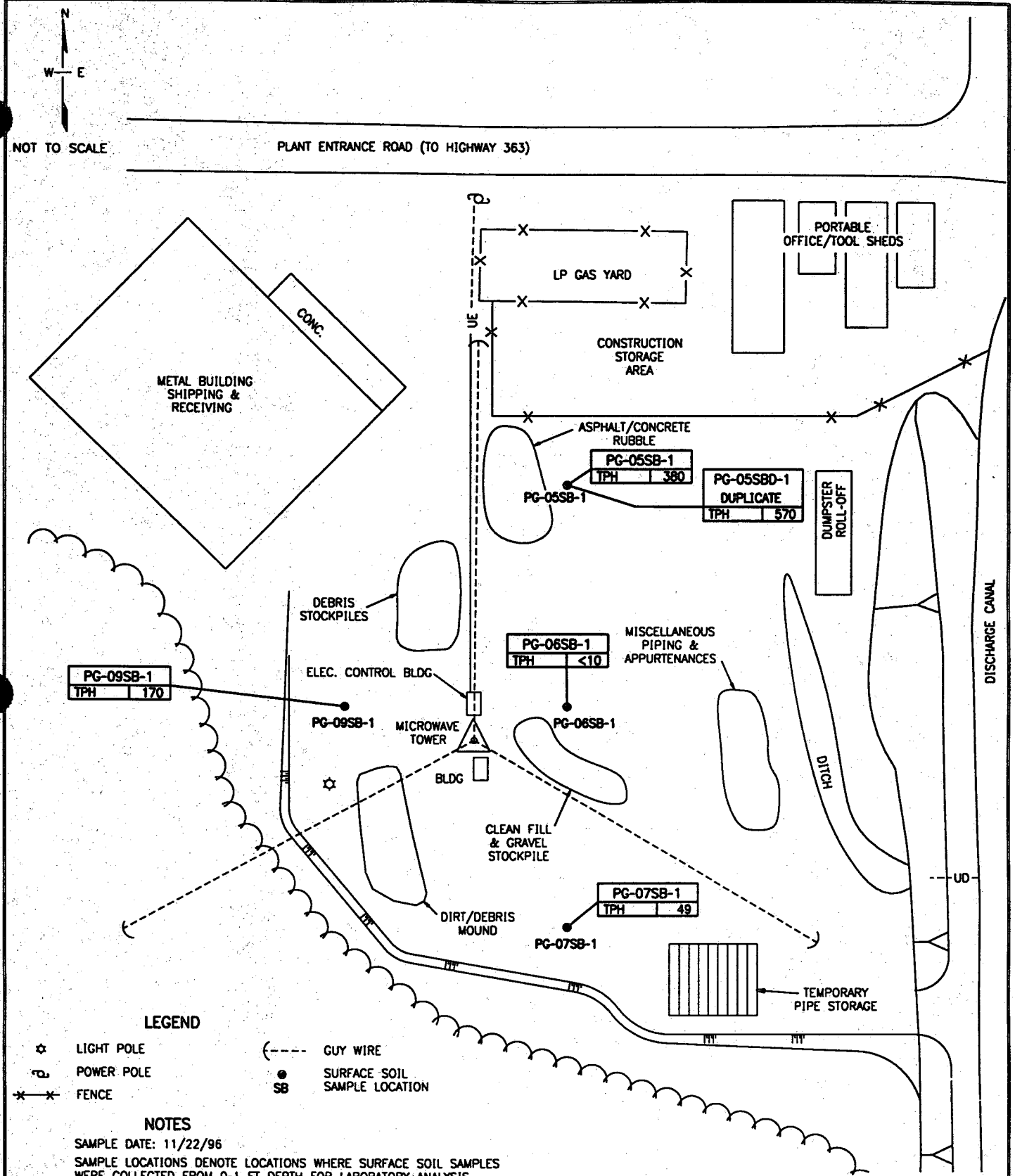
PLOT DATE FEB 1997 C:\15840002\----\00000-20.DWG

TABLE 2
SURFACE SOIL SAMPLE ANALYTICAL RESULTS SUMMARY - NOVEMBER 1996

ANALYTE	PG-05SB-1	PG-05SBD-1	PG-06SB-1	PG-07SB-1	PG-09SB-1
ORGANICS					
EPA 8270 Constituents	BDL[1]	BDL[1]	BDL[1]	BDL[1]	BDL[1]
Benzo(K)-fluoranthene[2]	0.30	0.48	BD[1]L	0.18	0.50
Benzo(a)-pyrene[2]	0.37	0.18	BDL[1]	0.13	0.90
Benzo(g,h,i)-perlene[2]	0.55	0.40	BDL[1]	BDL[1]	0.78
Chrysene[2]	0.82	0.52	BDL[1]	BDL[1]	1.14
Fluoranthene[2]	0.22	0.14	BDL[1]	0.21	0.69
Indeno (123-cd) pyrene[2]	0.52	0.33	BDL[1]	BDL[1]	0.66
Phenanthrene[2]	0.17	0.16	BDL[1]	0.09	0.51
Pyrene[2]	0.87	0.51	BDL[1]	0.18	BDL[1]
EPA 8021 Constituents	BDL[1]	BDL[1]	BDL[1]	BDL[1]	BDL[1]
PCBs	<0.34	<0.34	<0.34	<0.34	<0.34
FL Pro	380	570	<10	49	170
INORGANICS					
Asbestos	3-5% J	5-8% J	None	None	3-5%
Arsenic	2.85	3.49	<0.84	1.48	1.75
Barium	46	56	<5.14	18.6	18
Cadmium	0.48	0.4	<0.06	<0.12	0.68
Chromium	27.2	28.8	5.07	8.19	16.6
Mercury	<0.28	<0.19	<0.06	<0.03	5.26
Lead	64.8	57.2	4.14	9.6	57.5
Selenium	<0.18	<0.12	<0.16	<0	<0.01
Silver	<0.16	<0.21	<0.03	<0.03	<0.07

Notes:
Only results which are above the laboratory reporting limits are shown on this table.
All results are reported in mg/kg except asbestos, which is reported as a percent of the total sample volume.
J - Estimated value. The results for asbestos are estimated because of poor reproducibility between sample duplicates.
NL - Not Listed.

[1] BDL - Below laboratory reporting limit. Laboratory reporting limits vary by sample for each analytical method or analyte see Attachment C.
[2] Reported results were estimated by the laboratory and are below the quantitation limit of the sample.



NOTES

SAMPLE DATE: 11/22/96

SAMPLE LOCATIONS DENOTE LOCATIONS WHERE SURFACE SOIL SAMPLES WERE COLLECTED FROM 0-1 FT DEPTH FOR LABORATORY ANALYSIS.

ALL RESULTS ARE REPORTED IN mg/kg.

FIGURE SHOWS RESULTS FOR FL-PRO PETROLEUM RANGE ORGANICS (TPH)

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1996

CITY OF TALLAHASSEE

SURFACE SOIL SAMPLE PETROLEUM RANGE ORGANICS RESULTS SUMMARY

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 6

PLOT DATE FEB 997 C:\15840002\----\00000-21.DWG

Petroleum Range Organics, eight RCRA metals, Base/Neutral Acid Extractables (including pesticides and PCBs), and friable asbestos. None of the surface soil samples found concentrations of organic or inorganic compounds which are above regulatory or guidance concentration limits. This section discusses the results of each analytical method separately.

4.3.1 Purgeable Aromatics and Halocarbons (EPA 8021)

Volatile aromatics and halocarbons were not detected above the laboratory reporting limits or regulatory guidance concentrations in any of the surface soil samples collected for analyses.

4.3.2 Base Neutral/Acid Extractables and Pesticide/PCBs (EPA 8270)

Base Neutral/Acid Extractables and Pesticide/PCBs were not detected above the laboratory reporting limits in the surface soil samples collected for analyses. The results are summarized in Table 2. Low levels of some of the Polynuclear aromatic compounds (PAHs) were found in four of the samples. None of the results is above any regulatory standards or guidance concentrations.

4.3.3 Petroleum Range Organics (FL-PRO)

Petroleum range organics were detected in four of the surface soil samples collected for laboratory analyses. The highest results were found in samples PG-05SB-1 (380 mg/kg) and the duplicate of this sample PG-05SBD-1 (570 mg/kg). There are no established applicable standards or guidance concentrations for petroleum range organics in soil.

4.3.4 Asbestos

Asbestos was found in three of the surface soil samples which were analyzed. The results ranged from 3 to 5 percent in samples PG-05SB-1 and PG-09SB-1 at the low range, to 5 to 8 percent in duplicate sample PG-05SBD-1 at the high end. The FDEP has not established applicable standards or guidance concentrations for asbestos minerals in soil.

4.3.5 RCRA Metals

Analyses of surface soil samples were conducted for eight RCRA metals (arsenic, barium, cadmium, chromium, mercury, lead, selenium, and silver). All of the results are within the expected range for U.S. soils.

4.4 GROUNDWATER ANALYTICAL RESULTS

During the Assessment, five groundwater samples including one duplicate were collected from four temporary monitoring wells for laboratory analyses. Supplemental activities included the collection of two additional groundwater samples for selected laboratory analyses from two permanent monitoring wells. A summary of the field measurements that were recorded during well purging and sampling is presented as Table 3. The results of sample analyses are discussed separately for each analytical method in this section. Table 4 presents a summary of the analytical results from the Assessment and Table 5 summarizes the analytical results from the supplemental activities. Figure 7 provides a graphic summary of groundwater analytical results.

TABLE 3
GROUNDWATER SAMPLE FIELD MEASUREMENT DATA

NOVEMBER 1996

Sample ID	Temperature (°F)	pH (Standard Units)	Specific Conductance (µmhos)	Turbidity (NTU.)
PG-02TW-1	72.1	8.0	515	130.1
PG-06TW-1	62.0	7.2	1210	68.1
PG-07TW-1	68.1	7.1	1666	55.2
PG-09TW-1	72.5	7.1	1049	77.1

Source: Foster Wheeler Environmental November 22, 1996.

FEBRUARY 1997

Sample ID	Temperature (°F)	pH (Standard Units)	Specific Conductance (µmhos)	Turbidity (NTU.)
WC-MW-5	67.5	6.7	780	31
WC-MW-6	68	6.5	1400	31

Source: Woodward-Clyde Consultants February 21, 1997.

TABLE 4
GROUND WATER SAMPLE ANALYTICAL RESULTS SUMMARY - NOVEMBER 1996

Analyte	PG-02TW-1	PG-06TW-1	PG-06TWD-1	PG-07TW-1	PG-09TW-1
ORGANICS					
EPA 8270					
Diethylphthalate	6.77	<5.81	<5.81	<5.81	<5.81
EPA 8021					
Toluene	2.33 J	1.68 J	679 J	<0.05	2.72 JB
PCBs	<10	<10	<10	<10	<10
FL Pro	<300	860 J	<300 J	4100	<600[2]
INORGANICS[1]					
Arsenic	6.77	19.3	20.2	30	25.4
Barium	23.1	39.6	49.3	21	94.2
Cadmium	<0.11	10.7 J	1.04 J	0.62	4.86
Chromium	8.59	5.73	6.97	11.6	17.3
Mercury	<0.09	<0.26	<0.18	<0.07	<0.13
Lead	8.08	2.97	2.46	3.37	12.7
Selenium	20.9	20.3 J	12 J	2.88	3.95
Silver	<0.13	<0.09	<0.11	<0.11	<0.31

Notes:
Only results which are above the laboratory reporting limits are shown on this table.
All results are reported in µg/l.
J - Estimated value. Toluene results are "estimated" because the concentration in the samples is similar to the concentration found in the equipment blank samples; or, in the case of PG-06TW-1 and PG-06TWD-1, poor reproducibility between sample duplicates. In the case of the results for cadmium and FL-PRO, these results are also "estimated" because of poor reproducibility between sample duplicates.

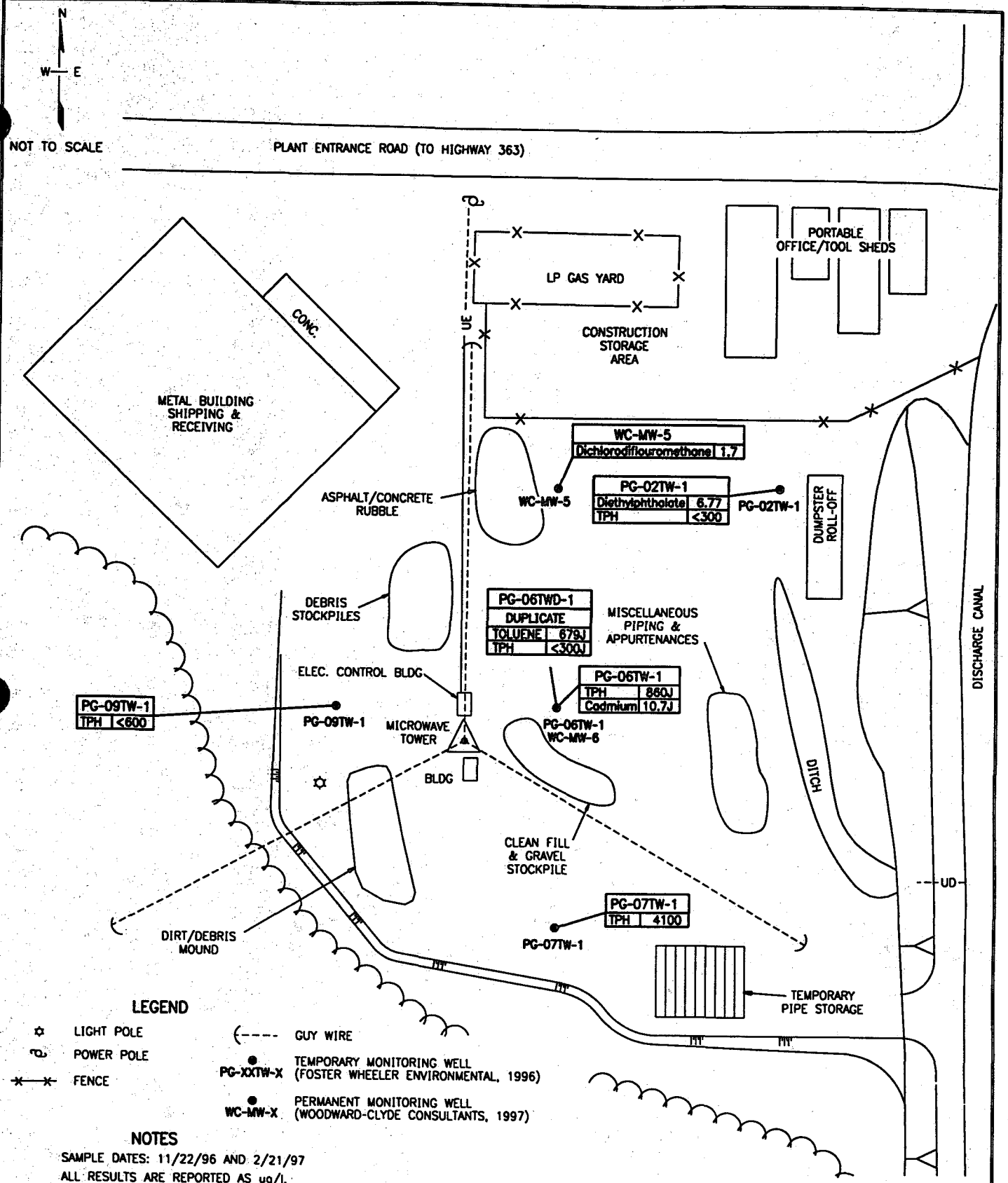
[1] Excessive sample turbidity (>50 NTUs) likely affected the results of the inorganic analysis.
[2] Reporting limit raised due to limited sample volume.

TABLE 5
GROUND WATER SAMPLES ANALYTICAL RESULTS SUMMARY - FEBRUARY 1997

Analyte	WC-MW-5	WC-MW-6
ORGANICS		
EPA 8020 Constituents	N/A	BDL[1]
EPA 8010 and 8021		
Dichlorodifluoromethane (Freon 12)	1.7	<1.0
EPA 8100	<10	N/A
FL Pro	<300	N/A
INORGANICS		
Cadmium	N/A	<1.0

Notes:
Only results which are above the laboratory reporting limits are shown on this table.
All results are reported in µg/l.
N/A - Not analyzed.

[1] BDL - Below laboratory reporting limit. Laboratory reporting limits vary by sample for each analytical method or analyte see Attachment C..



NOTES

SAMPLE DATES: 11/22/96 AND 2/21/97

ALL RESULTS ARE REPORTED AS ug/l.

FIGURE SHOWS FL-PRO PETROLEUM RANGE ORGANICS (TPH) RESULTS AND OTHER RESULTS OF INTEREST TO THE SITE.

SOURCES: FOSTER WHEELER ENVIRONMENTAL, 1996
WOODWARD-CLYDE CONSULTANTS, 1997

CITY OF TALLAHASSEE

GROUNDWATER SAMPLE ANALYTICAL RESULTS SUMMARY

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 7

PLOT DATE FEB 1997 C:\15840002\----\00000-22.DWG

4.4.1 Volatile Organics (EPA 8010 and 8020), Purgeable Aromatics (EPA 8020), and Volatile Organic Aromatics/ Purgeable Halocarbons (EPA 8021)

The Assessment results are summarized in Table 4. Toluene was reported in four groundwater samples collected during the Assessment. Each sample was analyzed for Volatile Organic Aromatics/Purgeable Halocarbons (EPA 8021). The highest concentration of toluene was 679 µg/l which was reported in sample PG-06TWD-1 (a duplicate sample). However, the toluene result for the other sample in this duplicate sample pair was only 1.68 µg/l. Toluene was also reported in the trip blank and both equipment blank samples at concentrations below 1 µg/l. Due to the occurrence of similar low levels of toluene in the sample blanks and in site groundwater samples, and the disparity in the toluene levels reported in the duplicate samples, the toluene results were questionable. No other volatile organic aromatics or purgeable halocarbons were detected above the laboratory reporting limits in the groundwater samples collected for analyses during the Assessment.

During the supplemental activities, two groundwater samples were collected for confirmational analyses. Results from the supplemental activities are summarized in Table 7. One sample was collected from a permanent monitoring well (WC-MW-6) located at the same approximate location as the sample mentioned above. Samples from this well were analyzed for volatile organics using two laboratory methods both of which provide results for toluene (EPA 8010 and 8020) and Purgeable Aromatics (EPA 8020). The results for toluene in both of these two different analyses were below the laboratory reporting limits of 1.0 µg/l which confirms the unreliability of suspect high toluene results in the previous sample.

A second groundwater sample was collected from a new location near soil boring PG-05SB-1 and analyzed for volatile organics (EPA 8010 and 8020). The only positive result from this sample was for dichlorodiflouromethane (Freon 12) at 1.7 µg/l, which is well below the FDEP guidance concentration level of concern of 1,400 µg/l.

All of the other results from these two supplemental samples were below the laboratory reporting limits. These analyses indicate that volatile organics are not present above regulatory standards in groundwater samples collected from this location.

4.4.2 Base Neutral/Acid, Pesticide, and PCB Extractables (EPA 8270)

Five groundwater samples were analyzed for Base Neutral/Acid, Pesticide, and PCB Extractables (EPA 8270) during the Assessment. The results are summarized in Table 4. Diethylphthalate was found in one sample PG-02TW-1 at 6.77 µg/l, which is well below the FDEP guidance concentration level of concern of 5,600 µg/l. Diethylphthalate is a common plasticizer compound which can result from contact with sampling and laboratory equipment. No other compounds from this analytical suite were detected above the laboratory reporting limits or regulatory guidance concentrations in any of the groundwater samples collected for analyses.

PCB results were reported as less than 10 µg/l by the laboratory. The laboratory also reported that PCBs were not seen on the chromatagrams at concentrations between 10 and 2 µg/l (telecon with Jeff Nielsen, City of Tallahassee Laboratory on 1/17/97). PCBs have very low aqueous

solubilities and they were not found in soil samples from the site; therefore, it is unlikely that PCBs are present in these groundwater samples at concentrations above the FDEP Primary Drinking Water Standard.

4.4.3 Polynuclear Aromatic Compounds (EPA 8100)

One groundwater sample was collected from monitoring well WC-MW-5 and analyzed for polynuclear aromatics (EPA 8100) during supplemental activities. These results are summarized in Table 5. This analytical method includes analytes which are a subset of the EPA 8270 list of analytes and primarily includes hydrocarbon fuel-related compounds. A sample was collected from this well for EPA 8100 analyses because of the elevated OVA-FID soil headspace screening measurement found in samples from a boring at this location during the Assessment. It was speculated that this elevated result may have resulted in hydrocarbon impacts to the groundwater. None of the compounds from this analytical suite were detected above the laboratory reporting limits in the groundwater sample collected for analysis.

4.4.4 Petroleum Range Organics (FL-PRO)

Groundwater samples were collected from four temporary monitoring wells during the Assessment and analyzed for petroleum range organics. Table 4 provides a summary of the results. Petroleum range organics were detected above the laboratory reporting limits in two of the samples. Sample PG-06TW-1 detected 860 J µg/l of petroleum range organics. However, the results from a duplicate of this sample (PG-06TWD-1) were below the laboratory reporting limit making these results questionable. Sample PG-07TW-1 found 4100 µg/l of petroleum hydrocarbons, below the FDEP Target Level of 5,000 µg/l (Rule 62-770, F.A.C). None of the other groundwater sample results had detectable levels of petroleum range organics.

During the supplemental activities, one groundwater sample was collected from a permanent monitoring well located near the former location of soil boring PG-05SB-1 and analyzed for petroleum range organics. The results from this sample analysis were below the laboratory reporting limit of the sample. These results are summarized in Table 5.

4.4.5 RCRA Metals

Analyses of groundwater samples collected during the Assessment were conducted for eight RCRA metals (arsenic, barium, cadmium, chromium, mercury, lead, selenium, and silver). These results are summarized in Table 4. Suspect cadmium results (10.7 µg/l) were found in one sample collected from temporary monitoring well PG-06TW-1. The results from the duplicate sample (PG-06TWD-1) collected from the same well were an order of magnitude lower (1.07 µg/l). Turbidity in this sample was 68.1 NTUs, higher than ideal value for groundwater samples of less than 50 NTUs. This high turbidity result may be indicative of high suspended solids which could have affected the results for cadmium. Difficulties were experienced in collecting adequate sample volume from each of the four initial temporary monitoring wells and all of the samples appeared opaque, apparently due to high levels of suspended solids which may have affected all of the results for RCRA metals analyses.

A permanent monitoring well (WC-MW-6) was installed at the approximate location of temporary monitoring well PG-06TW-1 during the supplemental activities. A sample was also collected from this well for cadmium analysis. The field turbidity measurement of 31 NTUs obtained from this properly installed and developed well is within the range of acceptable turbidity values. The cadmium results from this sample were below the laboratory reporting limit of 1.0 µg/l, thereby confirming the unreliability of the suspect cadmium result obtained in November.

5. SUMMARY AND CONCLUSIONS

None of the soil or groundwater data collected during the Site Screening Assessment and supplemental activities indicate exceedances of applicable regulatory standards or guidance concentrations established by the FDEP. However, the City has undertaken to remove soil from several small areas of the site: one with low level petroleum constituents based on soil OVA-FID headspace screening data and in two other areas where asbestos was found in surface soil samples. This material will be managed and disposed of in accordance with any applicable requirements.

5.1 SOIL OVA-FID HEADSPACE SCREENING

None of the results from the OVA-FID headspace screening of soil samples from the site indicate exceedances of applicable standards.

5.2 SURFACE SOIL SAMPLING

Although low levels of polynuclear aromatics (below normal laboratory reporting limits) and petroleum range organics were found in some surface soil samples collected during the Assessment, none of the results was above FDEP regulatory or guidance standards.

5.3 GROUNDWATER SAMPLING

The results of laboratory analyses of groundwater samples collected from the temporary monitoring wells installed in November found one questionable result for toluene with a concentration of 679 µg/l in a duplicate sample. Toluene was not found above the level found in the equipment blanks in the other sample from this duplicate pair. A cadmium concentration of 10.7 µg/l was also found in a sample from this well which exhibited high turbidity. Analysis of a duplicate sample from this well indicated a cadmium concentration of 1.04 mg/l. Based on these results, additional sampling of groundwater in this vicinity was performed in February. The results of this confirmational groundwater sample collected from a properly developed permanent monitoring well did not duplicate the initial toluene or cadmium results found in November, which confirms the unreliability of those results.

None of the other results for groundwater samples collected during the Assessment or subsequent supplemental activities were above FDEP regulatory or guidance concentrations.

6. REFERENCES

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Reynolds, Smith & Hills, Architects-Engineers. 1956. Electric Utilities City of Tallahassee, Florida, Additions to St. Marks Power Plant Unit No. 5, Outside Facilities. Jacksonville, Florida.

Rupert, Frank and Steve Spencer. 1988. Geology of Wakulla County, Florida, Bulletin No. 60. Florida Geological Survey, State of Florida, Department of Natural Resources. Tallahassee, Florida.

Rupert, Frank. 1993. Geologic Map of Wakulla County, Florida, Open File Series No. 30. Florida Geological Survey, Department of Natural Resources. Tallahassee, Florida.

USGS (United States Geological Survey). 1982. St. Marks, FLA 7.5 Minute Quadrangle Sheet. Denver, Colorado.

Woodward-Clyde Consultants, 1997, Letter Report to: Mr. Hal Avery, City of Tallahassee Purdom Power Plant; RE: Monitoring Well Installation and Groundwater Sampling Proposed Location of Unit 8 - Sam O. Purdom Generating Station 667 Port Leon Drive - St. Marks, Florida.

ATTACHMENT A

SOIL BORING LOGS

BORING LOG

PROJECT: Limited site Assessment
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: PG-01SB-1
DATE STARTED: 21-Nov-96
DATE COMPLETED: 21-Nov-96
TIME: 855
GROUNDWATER DEPTH: Approx.3.5 ft.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1					
	2	SC	Clayey Sand, dark brown, organic.	60.0	46.0	14.0
	3					
	4	SC	Clayey sand, dark brown. Wet @ 3.5 ft.	30.0	38.0	<0.0
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: Limited site Assessment
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: PG-02SB-1
DATE STARTED: 21-Nov-96
DATE COMPLETED: 21-Nov-96
TIME: 800
GROUNDWATER DEPTH: Approx.4.5 ft.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1		Topsoil, dark brown, humus.			
	2	ML	Limestone fragments and Clay, light gray, fat clay.	300.0	200.0	100.0
	3		Limestone, light gray.			
	4	CH	Marl, light gray, clay and limestone.	300.0	215.0	85.0
	5		Saturated Quartz Sand @ 4.5 ft.			
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: Limited site Assessment
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: PG-03SB-1
DATE STARTED: 20-Nov-96
DATE COMPLETED: 20-Nov-96
TIME: 1010
GROUNDWATER DEPTH: Approx. 7 ft.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1		Limerock fill.			
		SC	Clayey Sand, light gray.			
	2	ML	Clay, gray, limey.	2.0	0.0	2.0
	3					
	4	SP	Quartz Sand, light gray to white, fine to medium, damp.	36.0	15.0	21.0
	5					
	6	SP	Sand, light gray, damp.	4.0	3.0	1.0
	7	SP	Quartz Sand, light gray, saturated.	N/A	N/A	N/A
	8		Boring terminated.			
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: Limited site Assessment
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: PG-04SB-1
DATE STARTED: 20-Nov-96
DATE COMPLETED: 20-Nov-96
TIME: 1514
GROUNDWATER DEPTH: Approx. 4 ft.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1	SC	Clayey Quartz Sand, light brown.			
	2	ML	Limestone gravel and Marly Clay, tan.	2.6	N/A	2.6
	3					
	4	ML	Clay, light gray, marly, saturated @ 4 ft.	2.8	N/A	2.8
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: **Limited site Assessment**
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: **PG-05SB-1**
DATE STARTED: 20-Nov-96
DATE COMPLETED: 20-Nov-96
TIME: 1715
GROUNDWATER DEPTH: Unk.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1	SC	Clayey Sand, dark brown organic. Light			
	2		Aborted concrete.	240.0	200.0	40.0
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: Limited site Assessment
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: PG-05SB-2
DATE STARTED: 21-Nov-96
DATE COMPLETED: 21-Nov-96
TIME: 1050
GROUNDWATER DEPTH: Unk.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1					
	2	SM	Sandy Soil, black, organic.	35.0	30.0	5.0
	3		Aborted @ 2 ft. concrete.			
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

PAGE 1 OF 1

BORING LOG

PROJECT: **Limited site Assessment**
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: **PG-05SB-3**
DATE STARTED: 21-Nov-96
DATE COMPLETED: 21-Nov-96
TIME: 1120
GROUNDWATER DEPTH: Unk.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1					
	2	SM	Sandy Soil, black, organic. Strong HC odor.	100.0	80.0	20.0
	3		Aborted @ 2 ft. concrete.			
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: **Limited site Assessment**
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: **PG-05SB-4**
DATE STARTED: 21-Nov-96
DATE COMPLETED: 21-Nov-96
TIME: 1140
GROUNDWATER DEPTH: Approx. 5 ft.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1	SC	Clayey Sand, dark gray brown, organic.			
	2		Strong HC odor.	>1000	>1000	>1000
	3	CH	Clay, dark gray.			
	4	ML	Limestone, light gray, weathered, sandy, damp.	380.0	360.0	20.0
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: Limited site Assessment
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: PG-06SB-1
DATE STARTED: 20-Nov-96
DATE COMPLETED: 20-Nov-96
TIME: 1047
GROUNDWATER DEPTH: N/A
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1		Limerock and sand fill.			
	2	CH	Clay, light gray and tan, stiff, fat.	1.5	N/A	N/A
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: ***Limited site Assessment***
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: **PG-06SB-2**
DATE STARTED: 20-Nov-96
DATE COMPLETED: 20-Nov-96
TIME: 1430
GROUNDWATER DEPTH: Approx. 8 ft.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1					
	2	ML	Limestone and Clay, white to dark gray, soft, marly.	2.2	N/A	N/A
	3					
	4	OH	Clay, black, organic.	340.0	180.0	160.0
	5					
	6	SM	Quartz Sand, dark gray, fine-medium.	320.0	300.0	20.0
	7					
	8		Watertable @ 8 ft.			
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: Limited site Assessment
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: PG-07SB-1
DATE STARTED: 20-Nov-96
DATE COMPLETED: 20-Nov-96
TIME: 1540
GROUNDWATER DEPTH: Approx. 5.5 ft.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1					
	2	ML	Limestone and Clay, gray, sandy, marly, soft.	2.6	N/A	N/A
	3	CH	Clay, dark brown to black, marly.			
	4	CL	Clayey Sand, dark gray, damp.	200.0	150.0	50.0
	5	SM	Sand, dark gray, wet.	280.0	220.0	60.0
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: **Limited site Assessment**
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: **PG-08SB-1**
DATE STARTED: 20-Nov-96
DATE COMPLETED: 20-Nov-96
TIME: 1650
GROUNDWATER DEPTH: N/A
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1	ML	Limestone and Marl, brown.			
	2		Aborted concrete.	N/A	N/A	N/A
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: **Limited site Assessment**
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: **PG-08SB-2**
DATE STARTED: 21-Nov-96
DATE COMPLETED: 21-Nov-96
TIME: 930
GROUNDWATER DEPTH: Approx.3.5 ft.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1	ML	Limestone, tan.			
	2	ML	Limestone, tan, fill material.	0.0	N/A	N/A
	3	ML	Limestone			
	4	CL	Clay, gray, wet, sandy. Wet @ 3.5 ft.	0.0	N/A	N/A
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: Limited site Assessment
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: PG-09SB-1
DATE STARTED: 20-Nov-96
DATE COMPLETED: 20-Nov-96
TIME: 1115
GROUNDWATER DEPTH: Approx. 8 ft.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1	OH	Silty Clay and limerock fill.			
	2	ML	Limerock, Clay, and trash, tan to gray.	50.0	15.0	35.0
	3					
	4	ML	Sandy Marl, tan to cream, limey, soft. buried wood @ 4 ft.	200.0	100.0	100.0
	5					
	6	SM/SC	Quartz Sand and Muck, black organic humus underlain by dark gray sand.	340.0	270.0	70.0
	7					
	8	CH/OH	Clay, gray to green, wet, plastic, semi-waxy.			
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: **Limited site Assessment**
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: **PG-10SB-1**
DATE STARTED: 20-Nov-96
DATE COMPLETED: 20-Nov-96
TIME: 1600
GROUNDWATER DEPTH: N/A
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1					
	2	SC	Clayey Sand, dark gray brown, organic, marl.	425.0	200.0	225.0
	3		Aborted @ 2 ft. due to concrete. Two more adjacent locations were also aborted @2 ft because of buried concrete.			
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

BORING LOG

PROJECT: Limited site Assessment
PROJECT NO: 1584.005.009
LOCATION: Purdom Power Plant
GEOLOGIST: G. H. New
DRILLER: N/A
DRILLING/SAMPLING METHOD: Hand Auger

BORING NUMBER: PG-10SB-2
DATE STARTED: 21-Nov-96
DATE COMPLETED: 21-Nov-96
TIME: 1215
GROUNDWATER DEPTH: Approx. 5 ft.
ELEVATION: Approx. 10 ft.

SAMPLE ID	DEPTH (feet) 0	USCS CLASS.	MATERIAL DESCRIPTION	Unfiltered OVA (ppm)	Filtered OVA (ppm)	Diff. OVA (ppm)
	1					
	2	SC	Clayey Sand, light gray.	0.0	N/A	N/A
	3					
	4	OL	Clay, gray.	0.0	N/A	N/A
	5	SC	Clayey Sand, wet, saturated.	N/A	N/A	N/A
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					

NOTES:

ATTACHMENT B

LABORATORY ANALYTICAL DATA REPORT AND CHAIN OF CUSTODY

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

CITY OF TALLAHASSEE

CITY HALL
300 S. ADAMS ST.
TALLAHASSEE, FL
32301-1731
904/891-8100
TDD 1-800/955-8771

RON WEAVER
Mayor
SCOTT MADDOX
Mayor Pro Tem

JOHN PAUL RAINEY
Commissioner
DEBBIE LIGHTSEY
Commissioner
STEVE MEISBURG
Commissioner

STEVEN C. BURKETT
City Manager
ROBERT B. INZER
City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

January 16, 1997

Mr. Greg New
Foster Wheeler
759 South Federal Highway
Suite 100
Stuart, Florida 34994-2936

Greg

As per our phone conversation, I am sending you the following information regarding analysis done on the Purdom Plant samples.

--Methylene chloride and chloroform are commonly found in VOC samples as a result of laboratory contamination.

--The toluene values found in the sample duplicates are valid. I don't know why there is a discrepancy in their values.

--The reported MDL for aroclors is 10 ppb using EPA 8270. Actually, the method allows us to see levels as low as 2 ppb.

Also enclosed is the bench sheet for the 8270/solids analysis. I've highlighted PAH hits that were below reportable levels, that might be of interest to you.

If you have any questions, please contact me at (904) 891-1200.

Sincerely,

Jeff Nielsen

jn/vf

Enclosures

Printed on Recycled Paper with Soy Ink

Facsimile Cover Sheet

To: Greg New
Company: Foster Wheeler
Phone:
Fax: 561 781 3411

From: Jeff Nielsen
Company: Water Quality Division
City of Tallahassee
Phone: 904-891-1200
Fax: 904-891-1062

Date: 1/17/97
Pages including this cover page: 4

Comments:

25Nov96-8270

EPA 8270/625

Date: 11/25/96
Analyst: A Randall

Samples:	lab blk	LFB	96-12591	96-12591 MS	96-12591 MSD	96-12592	96-12593	96-12594	96-12595
SURROGATES (%rec.)									
2-Fluorophenol	117%	105%	93%	77%	74%	108%	140%	139%	117%
d5-Phenol	115%	105%	97%	78%	88%	109%	144%	146%	120%
d5-Nitrobenzene	98%	102%	83%	77%	76%	98%	119%	109%	101%
2-Fluorobiphenyl	102%	106%	101%	89%	87%	105%	112%	114%	103%
2,4,6-Tribromophenol	107%	119%	114%	117%	105%	87%	118%	118%	99%
d14-Terphenyl	119%	116%	125%	120%	97%	88%	143%	127%	126%
COMPOUNDS									
Phenol	BDL	103%	BDL	86%	87%	BDL	BDL	BDL	BDL
2-Chlorophenol	BDL	100%	BDL	76%	74%	BDL	BDL	BDL	BDL
Bis(2-chloroethyl)ether	BDL		BDL			BDL	BDL	BDL	BDL
1,3-Dichlorobenzene	BDL		BDL			BDL	BDL	BDL	BDL
1,4-Dichlorobenzene	BDL	86%	BDL	55%	52%	BDL	BDL	BDL	BDL
1,2-Dichlorobenzene	BDL		BDL			BDL	BDL	BDL	BDL
Bis(2-chloroisopropyl)ether	BDL		BDL			BDL	BDL	BDL	BDL
N-Nitrosodi-n-propyl amine	BDL	97%	BDL	79%	72%	BDL	BDL	BDL	BDL
Hexachloroethane	BDL		BDL			BDL	BDL	BDL	BDL
Nitrobenzene	BDL		BDL			BDL	BDL	BDL	BDL
Isophorone	BDL		BDL			BDL	BDL	BDL	BDL
2-Nitrophenol	BDL		BDL			BDL	BDL	BDL	BDL
2,4-Dimethylphenol	BDL		BDL			BDL	BDL	BDL	BDL
Bis(2-chloroethoxy)methane	BDL		BDL			BDL	BDL	BDL	BDL
2,4-Dichlorophenol	BDL		BDL			BDL	BDL	BDL	BDL
1,2,4-Trichlorobenzene	BDL	96%	BDL	69%	68%	BDL	BDL	BDL	BDL
Naphthalene	BDL		BDL			BDL	BDL	BDL	BDL
Hexachlorobutadiene	BDL		BDL			BDL	BDL	BDL	BDL
4-Chloro-3-methylphenol	BDL	113%	BDL	100%	97%	BDL	BDL	BDL	BDL
Hexachlorocyclopentadiene	BDL		BDL			BDL	BDL	BDL	BDL
2,4,6-Trichlorophenol	BDL		BDL			BDL	BDL	BDL	BDL
2-Chloronaphthalene	BDL		BDL			BDL	BDL	BDL	BDL
Dimethylphthalate	BDL		BDL			BDL	BDL	BDL	BDL
Acenaphthylene	BDL		BDL			BDL	BDL	BDL	BDL
2,6-Dinitrotoluene	BDL		BDL			BDL	BDL	BDL	BDL
Acenaphthene	BDL	99%	BDL	81%	80%	BDL	BDL	BDL	BDL
2,4-Dinitrophenol	BDL		BDL			BDL	BDL	BDL	BDL
4-Nitrophenol	BDL	80%	BDL	68%	83%	BDL	BDL	BDL	BDL
2,4-Dinitrotoluene	BDL	92%	BDL	85%	82%	BDL	BDL	BDL	BDL
Fluorene	BDL		BDL			BDL	BDL	BDL	BDL
Diethylphthalate	BDL		BDL			BDL	BDL	BDL	BDL
4-Chlorophenyl phenyl ether	BDL		BDL			BDL	BDL	BDL	BDL
2-Methyl-4,6-dinitrophenol	BDL		BDL			BDL	BDL	BDL	BDL
N-Nitrosodiphenylamine	BDL		BDL			BDL	BDL	BDL	BDL
1,2-Diphenylhydrazine	BDL		BDL			BDL	BDL	BDL	BDL
4-Bromophenylphenylether	BDL		BDL			BDL	BDL	BDL	BDL
Hexachlorobenzene	BDL		BDL			BDL	BDL	BDL	BDL
Pentachlorophenol	BDL	94%	BDL	91%	89%	BDL	BDL	BDL	BDL
Phenanthrene	BDL		0.16			0.09	BDL	0.17	BDL
Anthracene	BDL		BDL			BDL	BDL	BDL	BDL
Di-n-Butylphthalate	BDL		BDL			BDL	BDL	BDL	BDL
Fluoranthene	BDL		0.14			0.21	0.51	0.22	BDL
Benzidine	BDL		BDL			BDL	BDL	BDL	BDL
Pyrene	BDL	117%	0.51	117%	89%	0.18	0.69	0.87	BDL
Bis(2-ethylhexyl)adipate	BDL		BDL			BDL	BDL	BDL	BDL
Butylbenzylphthalate	BDL		BDL			BDL	BDL	BDL	BDL
Benzo[a]anthracene	BDL		BDL			BDL	BDL	BDL	BDL
3,3'-Dichlorobenzidine	BDL		BDL			BDL	BDL	BDL	BDL
Chrysene	BDL		0.52			BDL	1.14	0.82	BDL
Bis(2-ethylhexyl)phthalate	BDL		0.48			BDL	BDL	0.30	BDL
Di-n-octylphthalate	BDL		BDL			BDL	BDL	BDL	BDL
Benzo[b]fluoranthene	BDL		BDL			BDL	BDL	BDL	BDL
Benzo[k]fluoranthene	BDL		0.18			0.18	0.50	0.37	BDL
Benzo[a]pyrene	BDL		0.34			0.13	0.90	0.62	BDL
Indeno(1,2,3-c,d)pyrene	BDL		BDL			BDL	0.66	0.66	BDL
Dibenzo[a,h]anthracene	BDL		BDL			BDL	BDL	BDL	BDL
Benzo[g,h,i]perylene	BDL		BDL			BDL	0.78	0.55	BDL
N-nitrosodimethlamine	BDL		BDL			BDL	BDL	BDL	BDL

City of Tallahassee WQL PAH Data (mg/Kg dry wt.)

	PG-05530-1 96-12591	PG-0758-1 96-12592	PG-0958-1 96-12593	PG-0558-1 96-12594
Phenanthrene	0.164	0.086	0.514	0.168
Fluoranthene	0.136	0.211	0.690	0.219
Pyrene	0.505	0.181		0.872
Chrysene	0.520		1.140	0.817
Benzo(k)fluoranthene	0.475	0.178	0.504	0.297
Benzo(a)pyrene	0.177	0.126	0.900	0.370
Indeno(123-cd)pyrene	0.335		0.660	0.520
Benzo(ghi)perylene	0.402		0.780	0.554

0.7
BAP
0.5

27Nov96-8270

EPA 8270/625

Samples:	lab blk	96-12565	96-12565 MS	96-12565 MSD	96-12596	96-12597	96-12598	96-12599	96-12600	96-12601	96-12602
					PG-01596E-1	PG-01TWE-1	PG-02TW-1	PG-06TW-1	PG-06TWD-1	PG-07TW-1	PG-07TWD-1
								Date:		11/27/96 and 12/06/96	
								Analyst:		A Randall	
SURROGATES (%rec.)											
2-Fluorophenol	28%	34%	30%	31%	28%	26%	22%	32%	32%	35%	32%
d5-Phenol	17%	21%	20%	19%	16%	14%	9%	17%	17%	21%	16%
d5-Nitrobenzene	133%	133%	135%	140%	131%	65%	96%	118%	117%	62%	61%
2-Fluorobiphenyl	136%	137%	131%	144%	137%	66%	125%	134%	127%	61%	66%
2,4,6-Tribromophenol	130%	117%	135%	131%	136%	128%	94%	116%	117%	118%	97%
d14-Terphenyl	136%	135%	146%	148%	144%	60%	117%	112%	117%	52%	52%
COMPOUNDS											
Phenol	BDL	BDL	20%	19%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2-Chlorophenol	BDL	BDL	92%	90%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bis(2-chloroethyl)ether	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,3-Dichlorobenzene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,4-Dichlorobenzene	BDL	BDL	106%	112%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,2-Dichlorobenzene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bis(2-chloroisopropyl)ether	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
N-Nitrosodi-n-propyl amine	BDL	BDL	118%	116%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Hexachloroethane	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Nitrobenzene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Isophorone	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
2-Nitrophenol	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
2,4-Dimethylphenol	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bis(2-chloroethoxy)methane	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
2,4-Dichlorophenol	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,2,4-Trichlorobenzene	BDL	BDL	118%	123%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Naphthalene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Hexachlorobutadiene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
4-Chloro-3-methylphenol	BDL	BDL	114%	108%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Hexachlorocyclopentadiene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
2,4,6-Trichlorophenol	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
2-Chloronaphthalene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Dimethylphthalate	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Acenaphthylene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
2,6-Dinitrotoluene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Acenaphthene	BDL	BDL	114%	121%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2,4-Dinitrophenol	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
4-Nitrophenol	BDL	BDL	6%	1%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2,4-Dinitrotoluene	BDL	BDL	115%	109%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Fluorene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Diethylphthalate	BDL	BDL			BDL	BDL	6.77	BDL	BDL	BDL	BDL
4-Chlorophenyl phenyl ether	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
2-Methyl-4,6-dinitrophenol	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
N-Nitrosodiphenylamine	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,2-Diphenylhydrazine	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
4-Bromophenylphenylether	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Hexachlorobenzene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pentachlorophenol	BDL	BDL	37%	32%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Phenanthrene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Anthracene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Di-n-Butylphthalate	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Fluoranthene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzidine	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pyrene	BDL	BDL	138%	137%	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bis(2-ethylhexyl)adipate	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Butylbenzylphthalate	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzo[a]anthracene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
3,3'-Dichlorobenzidine	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chrysene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bis(2-ethylhexyl)phthalate	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Di-n-octylphthalate	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzo[b]fluoranthene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzo[k]fluoranthene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzo[a]pyrene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Indeno(1,2,3-c,d)pyrene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Dibenzo[a,h]anthracene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzo[g,h,i]perylene	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL
N-nitrosodimethlamine	BDL	BDL			BDL	BDL	BDL	BDL	BDL	BDL	BDL

27Nov96-8270

@CP8270

EPA 8270/625

Date: 11/27/96
Analyst: A Randall

Samples:	Lab Blk	96-12565	96-12565 MS	96-12565 MSD				
SURROGATES (%rec.)								
2-Fluorophenol	28%	34%	30%	31%				
d5-Phenol	17%	21%	20%	19%				
d5-Nitrobenzene	133%	133%	135%	140%				
2-Fluorobiphenyl	136%	137%	131%	144%				
2,4,6-Tribromophenol	130%	117%	135%	131%				
d14-Terphenyl	136%	135%	146%	148%				
COMPOUNDS								
Aldrin	BDL	BDL	101%	101%				
Alpha-BHC	BDL	BDL						
Beta-BHC	BDL	BDL						
Delta-BHC	BDL	BDL						
Gamma-BHC	BDL	BDL	102%	100%				
Chlordane	BDL	BDL						
Dieldrin	BDL	BDL	155%	154%				
4,4'-DDD	BDL	BDL						
4,4'-DDE	BDL	BDL						
4,4'-DDT	BDL	BDL	120%	106%				
Endosulfan I	BDL	BDL						
Endosulfan II	BDL	BDL						
Endosulfan sulfate	BDL	BDL						
Endrin	BDL	BDL	117%	111%				
Endrin Aldehyde	BDL	BDL						
Heptachlor	BDL	BDL	103%	101%				
Heptachlor Epoxide	BDL	BDL						
Methoxychlor	BDL	BDL						
Toxaphene	BDL	BDL						
Aroclor 1016	BDL	BDL						
Aroclor 1221	BDL	BDL						
Aroclor 1232	BDL	BDL						
Aroclor 1242	BDL	BDL						
Aroclor 1248	BDL	BDL						
Aroclor 1254	BDL	BDL						
Aroclor 1260	BDL	BDL						
also scanned for								
Ethyl Parathion	BDL	BDL						
Methyl Parathion	BDL	BDL						
Azinophos Methyl	BDL	BDL						
Malathion	BDL	BDL						
Demeton	BDL	BDL						
Dioxin	BDL	BDL						

CITY OF TALLAHASSEE

CITY HALL
300 S. ADAMS ST.
TALLAHASSEE, FL
32301-1731
904/891-8100
TDD 1-800/955-8771

RON WEAVER
Mayor
SCOTT MADDOX
Mayor Pro Tem
JOHN PAUL BAILEY
Commissioner
DEBBIE LIGHTSEY
Commissioner
STEVE MEISBURG
Commissioner
STEVEN C. BURKETT
City Manager
ROBERT B. INZER
City Treasurer-Clerk
JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

Greg New
Foster Wheeler Env.
759 S. Federal Hwy, Suite 100
Stuart, Fl. 34994

Dec. 19, 1996

Greg,

I talked with Jeff about sending the quality assurance data for volatile and semi-volatiles. There will be no problems in getting the information to you for your report. Jeff will send you that information sometime next week.

The aroclor data is attached. If you have any questions Jeff will be able to help.

Sincerely

Jamie J. Shakar
City of Tallahassee
water Quality Division
3805 Springhill Rd.
Tallahassee , Fl. 32310
(904) 891-1200
(904) 891-1062 fax

cc: William G. Leseman
Jeff Nielsen

Printed on Recycled Paper with Soy Ink

CITY OF TALLAHASSEE
Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
Cert. #51097 & E51259

Laboratory Report

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee, FL 32302
ATTN: GREG NEW

Sample # 96-12591 Sample ID PG-05SBD-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Soils/ Sol Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Base/Neutral Method (EPA 8270)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	mg/kg	BDL			0.0600	25-nov-1996	joe	27-nov-1996	andy
a-BHC	mg/kg	BDL			0.0400	25-nov-1996	joe	27-nov-1996	andy
b-BHC	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
d-BHC	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
g-BHC	mg/kg	BDL			0.0100	25-nov-1996	joe	27-nov-1996	andy
Chlordane	mg/kg	BDL			0.130	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	mg/kg	BDL			0.0500	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	mg/kg	BDL			0.0800	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	mg/kg	BDL			0.0900	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	mg/kg	BDL			0.0900	25-nov-1996	joe	27-nov-1996	andy
Endosulfan sulfate	mg/kg	BDL			0.0200	25-nov-1996	joe	27-nov-1996	andy
Endrin	mg/kg	BDL			0.00400	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	mg/kg	BDL			0.0200	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
Heptachlor Epoxide	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	mg/kg	BDL			0.00600	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	mg/kg	BDL			0.180	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy

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Laboratory Report

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee, FL 32302
ATTN: GREG NEW

Sample # 96-12592 Sample ID PG-07SB-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Soils/ Sol Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Base/Neutral Method (EPA 8270)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	mg/kg	BDL			0.0600	25-nov-1996	joe	27-nov-1996	andy
a-BHC	mg/kg	BDL			0.0400	25-nov-1996	joe	27-nov-1996	andy
b-BHC	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
d-BHC	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
g-BHC	mg/kg	BDL			0.0100	25-nov-1996	joe	27-nov-1996	andy
Chlordane	mg/kg	BDL			0.130	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	mg/kg	BDL			0.0500	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	mg/kg	BDL			0.0800	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	mg/kg	BDL			0.0900	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	mg/kg	BDL			0.0900	25-nov-1996	joe	27-nov-1996	andy
Endosulfan sulfate	mg/kg	BDL			0.0200	25-nov-1996	joe	27-nov-1996	andy
Endrin	mg/kg	BDL			0.00400	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	mg/kg	BDL			0.0200	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
Heptachlor Epoxide	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	mg/kg	BDL			0.00600	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	mg/kg	BDL			0.180	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy

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Sample # 96-12593 Sample ID PG-09SB-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Soils/ Sol Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Base/Neutral Method (EPA 8270)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	mg/kg	BDL			0.0600	25-nov-1996	joe	27-nov-1996	andy
a-BHC	mg/kg	BDL			0.0400	25-nov-1996	joe	27-nov-1996	andy
b-BHC	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
d-BHC	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
g-BHC	mg/kg	BDL			0.0100	25-nov-1996	joe	27-nov-1996	andy
Chlordane	mg/kg	BDL			0.130	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	mg/kg	BDL			0.0500	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	mg/kg	BDL			0.0800	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	mg/kg	BDL			0.0900	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	mg/kg	BDL			0.0900	25-nov-1996	joe	27-nov-1996	andy
Endosulfan sulfate	mg/kg	BDL			0.0200	25-nov-1996	joe	27-nov-1996	andy
Endrin	mg/kg	BDL			0.00400	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	mg/kg	BDL			0.0200	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
Heptachlor Epoxide	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	mg/kg	BDL			0.00600	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	mg/kg	BDL			0.180	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy

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Sample # 96-12594 Sample ID PG-05SB-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Soils/ Sol Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Base/Neutral Method (EPA 8270)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	mg/kg	BDL			0.0600	25-nov-1996	joe	27-nov-1996	andy
a-BHC	mg/kg	BDL			0.0400	25-nov-1996	joe	27-nov-1996	andy
b-BHC	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
d-BHC	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
g-BHC	mg/kg	BDL			0.0100	25-nov-1996	joe	27-nov-1996	andy
Chlordane	mg/kg	BDL			0.130	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	mg/kg	BDL			0.0500	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	mg/kg	BDL			0.0800	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	mg/kg	BDL			0.0900	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	mg/kg	BDL			0.0900	25-nov-1996	joe	27-nov-1996	andy
Endosulfan sulfate	mg/kg	BDL			0.0200	25-nov-1996	joe	27-nov-1996	andy
Endrin	mg/kg	BDL			0.00400	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	mg/kg	BDL			0.0200	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
Heptachlor Epoxide	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	mg/kg	BDL			0.00600	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	mg/kg	BDL			0.180	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy

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Sample # 96-12595 Sample ID PG-06SB-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Soils/ Sol Sampled 22-nov-1996 Received 23-nov-1996 Reported 20-dec-1996

Base/Neutral Method (EPA 8270)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	mg/kg	BDL			0.0600	25-nov-1996	joe	27-nov-1996	andy
a-BHC	mg/kg	BDL			0.0400	25-nov-1996	joe	27-nov-1996	andy
b-BHC	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
d-BHC	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
g-BHC	mg/kg	BDL			0.0100	25-nov-1996	joe	27-nov-1996	andy
Chlordane	mg/kg	BDL			0.130	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	mg/kg	BDL			0.0500	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	mg/kg	BDL			0.0700	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	mg/kg	BDL			0.0800	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	mg/kg	BDL			0.0900	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	mg/kg	BDL			0.0900	25-nov-1996	joe	27-nov-1996	andy
Endosulfan sulfate	mg/kg	BDL			0.0200	25-nov-1996	joe	27-nov-1996	andy
Endrin	mg/kg	BDL			0.00400	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	mg/kg	BDL			0.0200	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
Heptachlor Epoxide	mg/kg	BDL			0.0300	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	mg/kg	BDL			0.00600	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	mg/kg	BDL			0.180	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	mg/kg	BDL			0.340	25-nov-1996	joe	27-nov-1996	andy

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Laboratory Report

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Electric Department
City of Tallahassee

Tallahassee, FL 32302
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Sample # 96-12596 Sample ID PG-01SBE-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Water Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Chorinated Pests by GC/MS (EPA 8270/625)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
A-BHC	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
B-BHC	ug/L	BDL			4.30	25-nov-1996	joe	27-nov-1996	andy
D-BHC	ug/L	BDL			3.10	25-nov-1996	joe	27-nov-1996	andy
G-BHC(lindane)	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
Chlordane	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	ug/L	BDL			2.50	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan Sulfate	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
Endrin	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	ug/L	BDL			1.90	25-nov-1996	joe	27-nov-1996	andy
Heptachlor epoxide	ug/L	BDL			2.20	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy

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Laboratory Report

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City of Tallahassee

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Sample # 96-12597 Sample ID PG-01TWE-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Water Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Chorinated Pests by GC/MS (EPA 8270/625)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
A-BHC	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
B-BHC	ug/L	BDL			4.30	25-nov-1996	joe	27-nov-1996	andy
D-BHC	ug/L	BDL			3.10	25-nov-1996	joe	27-nov-1996	andy
G-BHC(lindane)	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
Chlordane	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	ug/L	BDL			2.50	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan Sulfate	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
Endrin	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	ug/L	BDL			1.90	25-nov-1996	joe	27-nov-1996	andy
Heptachlor epoxide	ug/L	BDL			2.20	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy

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Laboratory Report

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Sample # 96-12598 Sample ID PG-02TW-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Water Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Chorinated Pests by GC/MS (EPA 8270/625)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
A-BHC	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
B-BHC	ug/L	BDL			4.30	25-nov-1996	joe	27-nov-1996	andy
D-BHC	ug/L	BDL			3.10	25-nov-1996	joe	27-nov-1996	andy
G-BHC(lindane)	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
Chlordane	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	ug/L	BDL			2.50	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan Sulfate	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
Endrin	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	ug/L	BDL			1.90	25-nov-1996	joe	27-nov-1996	andy
Heptachlor epoxide	ug/L	BDL			2.20	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy

Report #: 16052

CITY OF TALLAHASSEE
Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
Cert. #51097 & E51259

Laboratory Report

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee, FL 32302
ATTN: GREG NEW

Sample # 96-12599 Sample ID PG-06TW-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Water Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Chorinated Pests by GC/MS (EPA 8270/625)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
A-BHC	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
B-BHC	ug/L	BDL			4.30	25-nov-1996	joe	27-nov-1996	andy
D-BHC	ug/L	BDL			3.10	25-nov-1996	joe	27-nov-1996	andy
G-BHC(lindane)	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
Chlordane	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	ug/L	BDL			2.50	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan Sulfate	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
Endrin	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	ug/L	BDL			1.90	25-nov-1996	joe	27-nov-1996	andy
Heptachlor epoxide	ug/L	BDL			2.20	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy

Report #: 16052

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Laboratory Report

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee, FL 32302
ATTN: GREG NEW

Sample # 96-12600 Sample ID PG-06TWD-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Water Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Chorinated Pests by GC/MS (EPA 8270/625)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
A-BHC	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
B-BHC	ug/L	BDL			4.30	25-nov-1996	joe	27-nov-1996	andy
D-BHC	ug/L	BDL			3.10	25-nov-1996	joe	27-nov-1996	andy
G-BHC(lindane)	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
Chlordane	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	ug/L	BDL			2.50	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan Sulfate	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
Endrin	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	ug/L	BDL			1.90	25-nov-1996	joe	27-nov-1996	andy
Heptachlor epoxide	ug/L	BDL			2.20	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy

Report #: 16052

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Laboratory Report

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee, FL 32302
ATTN: GREG NEW

Sample # 96-12601 Sample ID PG-07TW-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Water Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Chorinated Pests by GC/MS (EPA 8270/625)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	ug/L	BDL			4.00	25-nov-1996	joe	19-dec-1996	andy
A-BHC	ug/L	BDL			4.00	25-nov-1996	joe	19-dec-1996	andy
B-BHC	ug/L	BDL			4.30	25-nov-1996	joe	19-dec-1996	andy
D-BHC	ug/L	BDL			3.10	25-nov-1996	joe	19-dec-1996	andy
G-BHC(lindane)	ug/L	BDL			4.00	25-nov-1996	joe	19-dec-1996	andy
Chlordane	ug/L	BDL			10.0	25-nov-1996	joe	19-dec-1996	andy
Dieldrin	ug/L	BDL			2.50	25-nov-1996	joe	19-dec-1996	andy
4,4'-DDD	ug/L	BDL			2.80	25-nov-1996	joe	19-dec-1996	andy
4,4'-DDE	ug/L	BDL			5.60	25-nov-1996	joe	19-dec-1996	andy
4,4'-DDT	ug/L	BDL			2.80	25-nov-1996	joe	19-dec-1996	andy
Endosulfan I	ug/L	BDL			5.00	25-nov-1996	joe	19-dec-1996	andy
Endosulfan II	ug/L	BDL			5.00	25-nov-1996	joe	19-dec-1996	andy
Endosulfan Sulfate	ug/L	BDL			5.60	25-nov-1996	joe	19-dec-1996	andy
Endrin	ug/L	BDL			5.00	25-nov-1996	joe	19-dec-1996	andy
Endrin Aldehyde	ug/L	BDL			5.00	25-nov-1996	joe	19-dec-1996	andy
Heptachlor	ug/L	BDL			1.90	25-nov-1996	joe	19-dec-1996	andy
Heptachlor epoxide	ug/L	BDL			2.20	25-nov-1996	joe	19-dec-1996	andy
Methoxychlor	ug/L	BDL			5.00	25-nov-1996	joe	19-dec-1996	andy
Toxaphene	ug/L	BDL			10.0	25-nov-1996	joe	19-dec-1996	andy
Aroclor 1016	ug/L	BDL			10.0	25-nov-1996	joe	19-dec-1996	andy
Aroclor 1221	ug/L	BDL			10.0	25-nov-1996	joe	19-dec-1996	andy
Aroclor 1232	ug/L	BDL			10.0	25-nov-1996	joe	19-dec-1996	andy
Aroclor 1242	ug/L	BDL			10.0	25-nov-1996	joe	19-dec-1996	andy
Aroclor 1248	ug/L	BDL			10.0	25-nov-1996	joe	19-dec-1996	andy
Aroclor 1254	ug/L	BDL			10.0	25-nov-1996	joe	19-dec-1996	andy
Aroclor 1260	ug/L	BDL			10.0	25-nov-1996	joe	19-dec-1996	andy

Report #: 16052

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Laboratory Report

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee, FL 32302
ATTN: GREG NEW

Sample # 96-12602 Sample ID PG-09TW-1 FOSTER WHEELER Project FOSTER WHEEL
Sample Type Water Sampled 22-nov-1996 Received 23-nov-1996 Reported 19-dec-1996

Chorinated Pests by GC/MS (EPA 8270/625)

Parameter	Units	Result	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aldrin	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
A-BHC	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
B-BHC	ug/L	BDL			4.30	25-nov-1996	joe	27-nov-1996	andy
D-BHC	ug/L	BDL			3.10	25-nov-1996	joe	27-nov-1996	andy
G-BHC(lindane)	ug/L	BDL			4.00	25-nov-1996	joe	27-nov-1996	andy
Chlordane	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Dieldrin	ug/L	BDL			2.50	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDD	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDE	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
4,4'-DDT	ug/L	BDL			2.80	25-nov-1996	joe	27-nov-1996	andy
Endosulfan I	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan II	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endosulfan Sulfate	ug/L	BDL			5.60	25-nov-1996	joe	27-nov-1996	andy
Endrin	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Endrin Aldehyde	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Heptachlor	ug/L	BDL			1.90	25-nov-1996	joe	27-nov-1996	andy
Heptachlor epoxide	ug/L	BDL			2.20	25-nov-1996	joe	27-nov-1996	andy
Methoxychlor	ug/L	BDL			5.00	25-nov-1996	joe	27-nov-1996	andy
Toxaphene	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1016	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1221	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1232	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1242	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1248	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1254	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy
Aroclor 1260	ug/L	BDL			10.0	25-nov-1996	joe	27-nov-1996	andy

Report #: 16052

CITY OF TALLAHASSEE

CITY HALL
300 S. ADAMS ST.
TALLAHASSEE, FL
32301-1731
904/891-8100
TDD 1-800/955-8771

RON WEAVER
Mayor
SCOTT MADDOX
Mayor Pro Tem

JOHN PAUL BAILEY
Commissioner
DEBBIE LIGHTSEY
Commissioner
STEVE MEISBURG
Commissioner

STEVEN C. BURKETT
City Manager
ROBERT B. INZER
City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

Greg New
Foster Wheeler Env.
759 S. Federal Hwy, Suite 100
Stuart , Fl. 34994

Dec. 13, 1996

Greg ,

Per our discussion, I have included the results for the samples collected at the Purdom site. After review let me know if you have any questions or would like further analysis done.

Sincerely

Jamie J. Shakar
City of Tallahassee
Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310
(904) 891-1200
(904) 891-1062 fax

Printed on Recycled Paper with Soy Ink

sample#	sample_id	matrix_c
96-12591	PG-05SBD-1 FOSTER WHEELER	SOLIDS
96-12592	PG-07SB-1 FOSTER WHEELER	SOLIDS
96-12593	PG-09SB-1 FOSTER WHEELER	SOLIDS
96-12594	PG-05SB-1 FOSTER WHEELER	SOLIDS
96-12595	PG-06SB-1 FOSTER WHEELER	SOLIDS
96-12596	PG-01SBE-1 FOSTER WHEELER	WATER
96-12597	PG-01TWE-1 FOSTER WHEELER	WATER
96-12598	PG-02TW-1 FOSTER WHEELER	WATER
96-12599	PG-06TW-1 FOSTER WHEELER	WATER
96-12600	PG-06TWD-1 FOSTER WHEELER	WATER
96-12601	PG-07TW-1 FOSTER WHEELER	WATER
96-12602	PG-09TW-1 FOSTER WHEELER	WATER
96-13286	TB-01 FOSTER WHEELER	WATER

MICRO ANALYTICAL LABORATORIES, INC.
3618 NW 97th BOULEVARD
GAINESVILLE, FL 32606
352/332-1701 Fax: 352/332-3572

PLM ASBESTOS ANALYSIS REPORT

NIST BULK ACCREDITATION #101151

Samples Containing Less Than 10% ACM will be Point Counted at the Request of the Client for an Additional Fee.

MAL LOG: 15579
Client Ref.: T613359

PAGE NO: 1

Contact: LaDonna
Company: Savannah Laboratories
Address: 2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone/Fax: 904/878-3994 FX904/878-9504

Date Received: 12/11/96
Date Analyzed: 12/11/96
Microscopist: P.N.

Reviewed By: _____

M. A. L. Sample No.	Client Sample No.	Homogeneity	Asbestos (+/-)	Asbestos Type	Estimated % Asbestos	Sample Color	Other Fibers	Estimated % Other	Matrix
15579-1	T613359-1 96-12594	+	+	Amosite	3-5%	Brown	Misc. Organics	8-10%	Dirt
			Total Asbestos in Sample = 3-5%						
15579-2	T613359-2 96-12595	+	-	None		Brown	Misc. Organics	5-8%	Dirt
15579-3	T613359-3 96-12592	+	-	None		Brown	Misc. Organics	5-8%	Dirt
15579-4	T613359-4 96-12593	+	+	Chrysotile	3-5%	Brown	Misc. Organics	5-8%	Dirt
				Amosite	<1%		Fiberglass	<1%	
			Total Asbestos in Sample = 3-5%						
15579-5	T613359-5 96-12591	+	+	Chrysotile	3-5%	Brown	Misc. Organics	5-8%	Dirt
				Amosite	3-5%				
			Total Asbestos in Sample = 5-8%						

ANALYSIS METHOD USED: EPA 600/M4-82/020. Procedures described in EPA 600/R-93/116 have been incorporated where applicable. This report must not be reproduced except in full and with the approval of the laboratory. This report is not endorsed by NVLAP or any agency of the U.S. Government. The EPA has no approved test method for the identification of asbestos in vinyl tile. Often the asbestos was milled to a fiber size below the detection limit of PLM analysis. Therefore, a "None" reading on vinyl floor tiles does not necessarily exclude the presence of asbestos. Transmission electron microscopy provides a more conclusive form of analysis for vinyl floor tiles. The results of this test pertain only to the sample submitted by the client and designated in this report.

Nancy Dehgan, Laboratory Director

12-11-96 19:18 M.A.Labs.... RECEIVED FROM:904 878 9504 TO 904 332 3572 12/11/96 12:37 P.05
DEC.11.1996 6:18PM SAVANNAH LABS TALL NO.154 P.5/5

CITY OF TALLAHASSEE
Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
Cert. #51097 & E51259

Laboratory Report

for

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee , FL 32302

Attention: GREG NEW

JAM

Report#: 16052

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12591
Group # 16052
Sample Type SOLIDS

Sample ID PG-05SBD-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 10:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed	By
Silver, Total	(272.2/ 7761)	mg/kg	<0.21				0.95000	11/27/96 mike	12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	mg/kg	3.49				1.20		12/04/96	mike
Asbestos in Soils	(EPA600/4-83-42)	Struct/lit	+ATTACHED				0.000		12/12/96	savannah
Barium, Total	(208.2/ 7081)	mg/kg	56.0				9.0000	11/27/96 mike	12/11/96	mike
Cadmium, Total	(213.2/ 7131)	mg/kg	0.40				0.2900	11/27/96 mike	12/05/96	mike
Chromium, Total	(218.2/ 7191)	mg/kg	28.8				0.7800	11/27/96 mike	12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	mg/kg	570				10.000		12/11/96	savannah
Mercury, Total	(245.1/ 7471)	mg/kg	<0.19				0.520		12/11/96	mike
Lead, Total	(239.2/ 7421)	mg/kg	57.2				0.5000	11/27/96 mike	12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	mg/kg	<0.12				1.80		12/11/96	mike
Residue,Total @ 103-105 C	(EPA 160.3)	ppm	920823				5.600000		11/26/96	sharon

Water Quality Division
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Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12592
Group # 16052
Sample Type SOLIDS

Sample ID PG-07SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Silver, Total	(272.2/ 7761)	mg/kg	<0.03				0.95000	11/27/96	mike	12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	mg/kg	1.48				1.20			12/04/96	mike
Asbestos in Soils	(EPA600/4-83-42)	Struct/lit	-ATTACHED				0.000			12/12/96	savannah
Barium, Total	(208.2/ 7081)	mg/kg	18.6				9.0000	11/27/96	mike	12/11/96	mike
Cadmium, Total	(213.2/ 7131)	mg/kg	<0.12				0.2900	11/27/96	mike	12/05/96	mike
Chromium, Total	(218.2/ 7191)	mg/kg	8.19				0.7800	11/27/96	mike	12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	mg/kg	49				10.000			12/11/96	savannah
Mercury, Total	(245.1/ 7471)	mg/kg	<0.03				0.520			12/11/96	mike
Lead, Total	(239.2/ 7421)	mg/kg	9.60				0.5000	11/27/96	mike	12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	mg/kg	<0.00				1.80			12/11/96	mike
Residue,Total @ 103-105 C	(EPA 160.3)	ppm	920650				5.600000			11/26/96	sharon

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Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12593
Group # 16052
Sample Type SOLIDS

Sample ID PG-09SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 10:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Silver, Total	(272.2/ 7761)	mg/kg	<0.07				0.95000	11/27/96	mike	12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	mg/kg	1.75				1.20			12/04/96	mike
Asbestos in Soils	(EPA600/4-83-42)	Struct/lit	+ATTACHED				0.000			12/12/96	savannah
Barium, Total	(208.2/ 7081)	mg/kg	18.0				9.0000	11/27/96	mike	12/11/96	mike
Cadmium, Total	(213.2/ 7131)	mg/kg	0.68				0.2900	11/27/96	mike	12/05/96	mike
Chromium, Total	(218.2/ 7191)	mg/kg	16.6				0.7800	11/27/96	mike	12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	mg/kg	170				10.000			12/11/96	savannah
Mercury, Total	(245.1/ 7471)	mg/kg	5.26				0.520			12/11/96	mike
Lead, Total	(239.2/ 7421)	mg/kg	57.5				0.5000	11/27/96	mike	12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	mg/kg	<0.01				1.80			12/11/96	mike
Residue,Total @ 103-105 C	(EPA 160.3)	ppm	858913				5.600000			11/26/96	sharon

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Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12594
Group # 16052
Sample Type SOLIDS

Sample ID PG-05SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 10:30

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed	By
Silver, Total	(272.2/ 7761)	mg/kg	<0.16				0.95000	11/27/96 mike	12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	mg/kg	2.85				1.20		12/04/96	mike
Asbestos in Soils	(EPA600/4-83-42)	Struct/lit	+ATTACHED				0.000		12/12/96	savannah
Barium, Total	(208.2/ 7081)	mg/kg	46.0				9.0000	11/27/96 mike	12/11/96	mike
Cadmium, Total	(213.2/ 7131)	mg/kg	0.48				0.2900	11/27/96 mike	12/05/96	mike
Chromium, Total	(218.2/ 7191)	mg/kg	27.2				0.7800	11/27/96 mike	12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	mg/kg	380				10.000		12/11/96	savannah
Mercury, Total	(245.1/ 7471)	mg/kg	<0.28				0.520		12/11/96	mike
Lead, Total	(239.2/ 7421)	mg/kg	64.8				0.5000	11/27/96 mike	12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	mg/kg	<0.18				1.80		12/11/96	mike
Residue,Total @ 103-105 C	(EPA 160.3)	ppm	842503				5.600000		11/26/96	sharon

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ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12595
Group # 16052
Sample Type SOLIDS

Sample ID PG-06SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:25

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Silver, Total	(272.2/ 7761)	mg/kg	<0.03				0.95000	11/27/96	mike	12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	mg/kg	<0.84				1.20			12/04/96	mike
Asbestos in Soils	(EPA600/4-83-42)	Struct/lit	-ATTACHED				0.000			12/12/96	savannah
Barium, Total	(208.2/ 7081)	mg/kg	<5.14				9.0000	11/27/96	mike	12/11/96	mike
Cadmium, Total	(213.2/ 7131)	mg/kg	<0.06				0.2900	11/27/96	mike	12/05/96	mike
Chromium, Total	(218.2/ 7191)	mg/kg	5.07				0.7800	11/27/96	mike	12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	mg/kg	<10				10.000			12/11/96	savannah
Mercury, Total	(245.1/ 7471)	mg/kg	<0.06				0.520			12/11/96	mike
Lead, Total	(239.2/ 7421)	mg/kg	4.14				0.5000	11/27/96	mike	12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	mg/kg	<0.16				1.80			12/11/96	mike
Residue,Total @ 103-105 C	(EPA 160.3)	ppm	930502				5.600000			11/26/96	sharon

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ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12596
Group # 16052
Sample Type WATER

Sample ID PG-01SBE-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 08:30

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Silver, Total	(272.2/ 7761)	ug/L	<0.28				0.9500			12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	ug/L	<0.69				1.20			12/04/96	mike
Barium, Total	(208.2/ 7081)	ug/L	<0.44				9.000			12/11/96	mike
Cadmium, Total	(213.2/ 7131)	ug/L	<0.00				0.290			12/05/96	mike
Chromium, Total	(218.2/ 7191)	ug/L	3.10				0.7800			12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	ppm	<0.30				0.30000			12/12/96	savannah
Mercury, Total	(245.1/ 7471)	ug/L	<0.00				0.520			12/05/96	mike
Lead, Total	(239.2/ 7421)	ug/L	<0.02				0.5000			12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	ug/L	<0.20				1.800			12/11/96	mike

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ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12597 Sample ID PG-01TWE-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type WATER Sampled 11/22/96 08:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Silver, Total	(272.2/ 7761)	ug/L	<0.38				0.9500			12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	ug/L	<0.62				1.20			12/04/96	mike
Barium, Total	(208.2/ 7081)	ug/L	<0.00				9.000			12/11/96	mike
Cadmium, Total	(213.2/ 7131)	ug/L	<0.00				0.290			12/05/96	mike
Chromium, Total	(218.2/ 7191)	ug/L	2.33				0.7800			12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	ppm	<0.30				0.30000			12/12/96	savannah
Mercury, Total	(245.1/ 7471)	ug/L	<0.04				0.520			12/05/96	mike
Lead, Total	(239.2/ 7421)	ug/L	<0.00				0.5000			12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	ug/L	<0.00				1.800			12/11/96	mike

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Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12598
Group # 16052
Sample Type WATER

Sample ID PG-02TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 12:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed By
Silver, Total	(272.2/ 7761)	ug/L	<0.13				0.9500		12/10/96 mike
Arsenic, Total by Furnace	(206.2/ 7060)	ug/L	6.77				1.20		12/04/96 mike
Barium, Total	(208.2/ 7081)	ug/L	23.1				9.000		12/11/96 mike
Cadmium, Total	(213.2/ 7131)	ug/L	<0.11				0.290		12/05/96 mike
Chromium, Total	(218.2/ 7191)	ug/L	8.59				0.7800		12/04/96 mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	ppm	<0.30				0.30000		12/12/96 savannah
Mercury, Total	(245.1/ 7471)	ug/L	<0.09				0.520		12/05/96 mike
Lead, Total	(239.2/ 7421)	ug/L	8.08				0.5000		12/06/96 mike
Selenium, Total by Furnace	(270.2/ 7440)	ug/L	20.9				1.800		12/11/96 mike

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Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12599
Group # 16052
Sample Type WATER

Sample ID PG-06TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Silver, Total	(272.2/ 7761)	ug/L	<0.09				0.9500			12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	ug/L	19.3				1.20			12/04/96	mike
Barium, Total	(208.2/ 7081)	ug/L	39.6				9.000			12/11/96	mike
Cadmium, Total	(213.2/ 7131)	ug/L	10.7				0.290			12/05/96	mike
Chromium, Total	(218.2/ 7191)	ug/L	5.73				0.7800			12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	ppm	0.86				0.30000			12/12/96	savannah
Mercury, Total	(245.1/ 7471)	ug/L	<0.26				0.520			12/05/96	mike
Lead, Total	(239.2/ 7421)	ug/L	2.97				0.5000			12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	ug/L	20.3				1.800			12/11/96	mike

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City of Tallahassee Sampled by : GREG NEW

Tallahassee ,FL 32302
ATTN. Greg New

Sample # 96-12600 Sample ID PG-06TWD-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type WATER Sampled 11/22/96 09:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Silver, Total	(272.2/ 7761)	ug/L	<0.11				0.9500			12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	ug/L	20.2				1.20			12/04/96	mike
Barium, Total	(208.2/ 7081)	ug/L	49.3				9.000			12/11/96	mike
Cadmium, Total	(213.2/ 7131)	ug/L	1.04				0.290			12/05/96	mike
Chromium, Total	(218.2/ 7191)	ug/L	6.97				0.7800			12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	ppm	<0.30				0.30000			12/12/96	savannah
Mercury, Total	(245.1/ 7471)	ug/L	<0.18				0.520			12/05/96	mike
Lead, Total	(239.2/ 7421)	ug/L	2.46				0.5000			12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	ug/L	12.0				1.800			12/11/96	mike

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Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12601
Group # 16052
Sample Type WATER

Sample ID PG-07TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 11:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed	By
Silver, Total	(272.2/ 7761)	ug/L	<0.11				0.9500		12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	ug/L	30.0				1.20		12/04/96	mike
Barium, Total	(208.2/ 7081)	ug/L	21.0				9.000		12/11/96	mike
Cadmium, Total	(213.2/ 7131)	ug/L	0.62				0.290		12/05/96	mike
Chromium, Total	(218.2/ 7191)	ug/L	11.6				0.7800		12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	ppm	4.1				0.30000		12/12/96	savannah
Mercury, Total	(245.1/ 7471)	ug/L	<0.07				0.520		12/05/96	mike
Lead, Total	(239.2/ 7421)	ug/L	3.37				0.5000		12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	ug/L	2.88				1.800		12/11/96	mike

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Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12602 Sample ID PG-09TW-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type WATER Sampled 11/22/96 12:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Silver, Total	(272.2/ 7761)	ug/L	<0.31				0.9500			12/10/96	mike
Arsenic, Total by Furnace	(206.2/ 7060)	ug/L	25.4				1.20			12/04/96	mike
Barium, Total	(208.2/ 7081)	ug/L	94.2				9.000			12/11/96	mike
Cadmium, Total	(213.2/ 7131)	ug/L	4.86				0.290			12/05/96	mike
Chromium, Total	(218.2/ 7191)	ug/L	17.3				0.7800			12/04/96	mike
Fla Pro petroleum Hydrocarb	(FLPro(418.1))	ppm	<0.60				0.60000			12/12/96	savannah
Mercury, Total	(245.1/ 7471)	ug/L	<0.13				0.520			12/05/96	mike
Lead, Total	(239.2/ 7421)	ug/L	12.7				0.5000			12/06/96	mike
Selenium, Total by Furnace	(270.2/ 7440)	ug/L	3.95				1.800			12/11/96	mike

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Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12591 Sample ID PG-05SBD-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type SOLIDS Sampled 11/22/96 10:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Acenaphthylene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Anthracene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Benzo(a)anthracene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Benzo(b)fluoranthene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Benzo(k)fluoranthene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Benzo(ghi)perylene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Benzo(a)pyrene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Chrysene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Dibenzo(ah)anthracene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Fluoranthene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Fluorene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Indeno(123cd)pyrene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Naphthalene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Phenanthrene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Pyrene	(EPA 8270)	mg/kg	BDL			12.3	8.118	11/25/96	joe	11/25/96	andy
Benzidine	(EPA 8270)	mg/kg	BDL			12.3	16.7	11/25/96	joe	11/25/96	andy
3,3'-Dichlorobenzidine	(EPA 8270)	mg/kg	BDL			12.3	16.0	11/25/96	joe	11/25/96	andy
Butylbenzylphthalate	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Di-n-butylphthalate	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Diethylphthalate	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Dimethylphthalate	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Di-n-octylphthalate	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Bis(2-chloroethyl)ether	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
1,2-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
1,3-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
1,4-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
4-Bromophenylphenyl ether	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
4-Chlorophenylphenyl ether	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
2-Chloronaphthalene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
2,4-Dinitrotoluene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
2,6-Dinitrotoluene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Hexachlorobenzene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Hexachlorobutadiene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Hexachlorocyclopentadiene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Hexachloroethane	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Isophorone	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Nitrobenzene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
N-nitroso-di-n-propylamine	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
N-nitrosodiphenylamine	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
1,2,4-Trichlorobenzene	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
N-nitrosodimethylamine	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy
Dioxin(2,3,7,8-TCDD)	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96	joe	11/25/96	andy

CITY OF TALLAHASSEE
Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12591
Group # 16052
Sample Type SOLIDS

Sample ID PG-05SBD-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 10:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed By
Bis(2-ethylhexyl)adipate	(EPA 8270)	mg/kg	BDL			12.3	8.12	11/25/96 joe	11/25/96 andy

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12592
Group # 16052
Sample Type SOLIDS

Sample ID PG-07SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Acenaphthylene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Anthracene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Benzo(a)anthracene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Benzo(b)fluoranthene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Benzo(k)fluoranthene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Benzo(ghi)perylene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Benzo(a)pyrene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Chrysene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Dibenzo(ah)anthracene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Fluoranthene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Fluorene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Indeno(123cd)pyrene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Naphthalene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Phenanthrene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Pyrene	(EPA 8270)	mg/kg	BDL			9.911	6.541	11/25/96	joe	11/25/96	andy
Benzidine	(EPA 8270)	mg/kg	BDL			9.911	13.5	11/25/96	joe	11/25/96	andy
3,3'-Dichlorobenzidine	(EPA 8270)	mg/kg	BDL			9.911	12.9	11/25/96	joe	11/25/96	andy
Butylbenzylphthalate	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Di-n-butylphthalate	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Diethylphthalate	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Dimethylphthalate	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Di-n-octylphthalate	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Bis(2-chloroethyl)ether	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
1,2-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
1,3-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
1,4-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
4-Bromophenylphenyl ether	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
4-Chlorophenylphenyl ether	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
2-Chloronaphthalene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
2,4-Dinitrotoluene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
2,6-Dinitrotoluene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Hexachlorobenzene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Hexachlorobutadiene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Hexachlorocyclopentadiene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Hexachloroethane	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Isophorone	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Nitrobenzene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
N-nitroso-di-n-propylamine	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
N-nitrosodiphenylamine	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
1,2,4-Trichlorobenzene	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
N-nitrosodimethylamine	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy
Dioxin(2,3,7,8-TCDD)	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96	joe	11/25/96	andy

Group # 16052

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12592
Group # 16052
Sample Type SOLIDS

Sample ID PG-07SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed By
Bis(2-ethylhexyl)adipate	(EPA 8270)	mg/kg	BDL			9.911	6.54	11/25/96 joe	11/25/96 andy

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Electric Production & Env.Affairs COT290101 — Purdom Generating Site Assess
Electric Department
City of Tallahassee — Sampled by : GREG NEW

Tallahassee ,FL 32302
ATTN. Greg New

Sample # 96-12593 — Sample ID PG-09SB-1 FOSTER WHEELER
Group # 16052 — Sample Site
Sample Type SOLIDS — Sampled 11/22/96 10:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Acenaphthylene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Anthracene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Benzo(a)anthracene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Benzo(b)fluoranthene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Benzo(k)fluoranthene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Benzo(ghi)perylene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Benzo(a)pyrene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Chrysene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Dibenzo(ah)anthracene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Fluoranthene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Fluorene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Indeno(123cd)pyrene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Naphthalene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Phenanthrene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Pyrene	(EPA 8270)	mg/kg	BDL			14.55	9.603	11/25/96	joe	11/25/96	andy
Benzidine	(EPA 8270)	mg/kg	BDL			14.55	19.8	11/25/96	joe	11/25/96	andy
3,3'-Dichlorobenzidine	(EPA 8270)	mg/kg	BDL			14.55	18.9	11/25/96	joe	11/25/96	andy
Butylbenzylphthalate	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Di-n-butylphthalate	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Diethylphthalate	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Dimethylphthalate	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Di-n-octylphthalate	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Bis(2-chloroethyl)ether	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
1,2-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
1,3-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
1,4-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
4-Bromophenylphenyl ether	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
4-Chlorophenylphenyl ether	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
2-Chloronaphthalene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
2,4-Dinitrotoluene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
2,6-Dinitrotoluene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Hexachlorobenzene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Hexachlorobutadiene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Hexachlorocyclopentadiene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Hexachloroethane	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Isophorone	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Nitrobenzene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
N-nitroso-di-n-propylamine	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
N-nitrosodiphenylamine	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
1,2,4-Trichlorobenzene	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
N-nitrosodimethylamine	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy
Dioxin(2,3,7,8-TCDD)	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy

Group # 16052

Water Quality Division
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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12593
Group # 16052
Sample Type SOLIDS

Sample ID PG-09SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 10:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270)	mg/kg	BDL			14.55	9.60	11/25/96	joe	11/25/96	andy

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12594
Group # 16052
Sample Type SOLIDS

Sample ID PG-05SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 10:30

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Acenaphthylene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Anthracene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Benzo(a)anthracene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Benzo(b)fluoranthene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Benzo(k)fluoranthene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Benzo(ghi)perylene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Benzo(a)pyrene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Chrysene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Dibenzo(ah)anthracene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Fluoranthene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Fluorene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Indeno(123cd)pyrene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Naphthalene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Phenanthrene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Pyrene	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
Benzidine	(EPA 8270)	mg/kg	BDL			12.89	8.507	11/25/96	joe	11/25/96	andy
3,3'-Dichlorobenzidine	(EPA 8270)	mg/kg	BDL			12.89	17.5	11/25/96	joe	11/25/96	andy
Butylbenzylphthalate	(EPA 8270)	mg/kg	BDL			12.89	16.8	11/25/96	joe	11/25/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Di-n-butylphthalate	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Diethylphthalate	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Dimethylphthalate	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Di-n-octylphthalate	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Bis(2-chloroethyl)ether	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
1,2-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
1,3-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
1,4-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
4-Bromophenylphenyl ether	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
4-Chlorophenylphenyl ether	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
2-Chloronaphthalene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
2,4-Dinitrotoluene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
2,6-Dinitrotoluene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Hexachlorobenzene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Hexachlorobutadiene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Hexachlorocyclopentadiene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Hexachloroethane	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Isophorone	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Nitrobenzene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
N-nitroso-di-n-propylamine	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
N-nitrosodiphenylamine	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
1,2,4-Trichlorobenzene	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
N-nitrosodimethylamine	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy
Dioxin(2,3,7,8-TCDD)	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy

Group # 16052

CITY OF TALLAHASSEE
Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12594
Group # 16052
Sample Type SOLIDS

Sample ID PG-05SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 10:30

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270)	mg/kg	BDL			12.89	8.51	11/25/96	joe	11/25/96	andy

Water Quality Division
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Electric Production & Env.Affairs COT290101 Purdom Generating Site Assess
Electric Department
City of Tallahassee Sampled by : GREG NEW

Tallahassee ,FL 32302
ATTN. Greg New

Sample # 96-12595 Sample ID PG-06SB-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type SOLIDS Sampled 11/22/96 09:25

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Acenaphthylene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Anthracene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Benzo(a)anthracene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Benzo(b)fluoranthene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Benzo(k)fluoranthene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Benzo(ghi)perylene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Benzo(a)pyrene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Chrysene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Dibenzo(ah)anthracene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Fluoranthene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Fluorene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Indeno(123cd)pyrene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Naphthalene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Phenanthrene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Pyrene	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
Benzidine	(EPA 8270)	mg/kg	BDL			11.95	7.887	11/25/96	joe	11/25/96	andy
3,3'-Dichlorobenzidine	(EPA 8270)	mg/kg	BDL			11.95	16.3	11/25/96	joe	11/25/96	andy
Butylbenzylphthalate	(EPA 8270)	mg/kg	BDL			11.95	15.5	11/25/96	joe	11/25/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Di-n-butylphthalate	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Diethylphthalate	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Dimethylphthalate	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Di-n-octylphthalate	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Bis(2-chloroethyl)ether	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
1,2-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
1,3-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
1,4-Dichlorobenzene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
4-Bromophenylphenyl ether	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
4-Chlorophenylphenyl ether	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
2-Chloronaphthalene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
2,4-Dinitrotoluene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
2,6-Dinitrotoluene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Hexachlorobenzene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Hexachlorobutadiene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Hexachlorocyclopentadiene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Hexachloroethane	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Isophorone	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Nitrobenzene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
N-nitroso-di-n-propylamine	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
N-nitrosodiphenylamine	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
1,2,4-Trichlorobenzene	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
N-nitrosodimethylamine	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy
Dioxin(2,3,7,8-TCDD)	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12595
Group # 16052
Sample Type SOLIDS

Sample ID PG-06SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:25

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270)	mg/kg	BDL			11.95	7.89	11/25/96	joe	11/25/96	andy

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12596
Group # 16052
Sample Type WATER

Sample ID PG-01SBE-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 08:30

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA8270/625)	ug/L	BDL				3.52	11/26/96	joe	11/27/96	andy
Acenaphthylene	(EPA 8270/625)	ug/L	BDL				3.76	11/26/96	joe	11/27/96	andy
Anthracene	(EPA 8270/625)	ug/L	BDL				2.67	11/26/96	joe	11/27/96	andy
Benzo(a)anthracene	(EPA 8270/625)	ug/L	BDL				2.56	11/26/96	joe	11/27/96	andy
Benzo(b)fluoranthene	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	11/27/96	andy
Benzo(k)fluoranthene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Benzo(ghi)perylene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	11/27/96	andy
Benzo(a)pyrene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Chrysene	(EPA 8270/625)	ug/L	BDL				2.72	11/26/96	joe	11/27/96	andy
Dibenzo(ah)anthracene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Fluoranthene	(EPA 8270/625)	ug/L	BDL				2.18	11/26/96	joe	11/27/96	andy
Fluorene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	11/27/96	andy
Indeno(123cd)pyrene	(EPA 8270/625)	ug/L	BDL				3.70	11/26/96	joe	11/27/96	andy
Naphthalene	(EPA 8270/625)	ug/L	BDL				1.28	11/26/96	joe	11/27/96	andy
Phenanthrene	(EPA 8270/625)	ug/L	BDL				2.82	11/26/96	joe	11/27/96	andy
Pyrene	(EPA 8270/625)	ug/L	BDL				9.25	11/26/96	joe	11/27/96	andy
Benzidine	(EPA 8270/625)	ug/L	BDL				44.0	11/26/96	joe	11/27/96	andy
3,3-Dichlorbenzidine	(EPA 8270/625)	ug/L	BDL				16.5	11/26/96	joe	11/27/96	andy
Butylbenzylphthalate	(EPA 8270/625)	ug/L	BDL				1.98	11/26/96	joe	11/27/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	11/27/96	andy
Di-n-butylphthalate	(EPA 8270/625)	ug/L	BDL				2.77	11/26/96	joe	11/27/96	andy
Diethylphthalate	(EPA 8270/625)	ug/L	BDL				5.81	11/26/96	joe	11/27/96	andy
Dimethylphthalate	(EPA 8270/625)	ug/L	BDL				3.10	11/26/96	joe	11/27/96	andy
Di-n-octylphthalate	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270/625)	ug/L	BDL				1.68	11/26/96	joe	11/27/96	andy
Bis(2-chloroethyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	11/27/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	11/27/96	andy
1,2-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				2.04	11/26/96	joe	11/27/96	andy
1,3-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.92	11/26/96	joe	11/27/96	andy
1,4-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.95	11/26/96	joe	11/27/96	andy
4-Bromophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				2.36	11/26/96	joe	11/27/96	andy
4-Chlorophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				3.44	11/26/96	joe	11/27/96	andy
2-chloronaphthalene	(EPA 8270/625)	ug/L	BDL				3.41	11/26/96	joe	11/27/96	andy
2,4-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	11/27/96	andy
2,6-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				3.74	11/26/96	joe	11/27/96	andy
Hexachlorobenzene	(EPA 8270/625)	ug/L	BDL				0.0310	11/26/96	joe	11/27/96	andy
Hexachlorobutadiene	(EPA 8270/625)	ug/L	BDL				1.00	11/26/96	joe	11/27/96	andy
Hexachlorocyclopentadiene	(EPA 8270/625)	ug/L	BDL				0.0190	11/26/96	joe	11/27/96	andy
Hexachloroethane	(EPA 8270/625)	ug/L	BDL				0.530	11/26/96	joe	11/27/96	andy
Isophorone	(EPA 8270/625)	ug/L	BDL				0.970	11/26/96	joe	11/27/96	andy
Nitrobenzene	(EPA 8270/625)	ug/L	BDL				2.01	11/26/96	joe	11/27/96	andy
N-nitroso-di-n-propylamine	(EPA 8270/625)	ug/L	BDL				11.0	11/26/96	joe	11/27/96	andy
N-nitrosodiphenylamine	(EPA 8270/625)	ug/L	BDL				4.37	11/26/96	joe	11/27/96	andy
1,2,4-trichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.43	11/26/96	joe	11/27/96	andy
N-nitrosodimethylamine	(EPA 8270/625)	ug/L	BDL				10.0	11/26/96	joe	11/27/96	andy
Dioxin(2378-TCDD)	(EPA 8270/625)	ug/L	BDL				0.0500	11/26/96	joe	11/27/96	andy

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12596
Group # 16052
Sample Type WATER

Sample ID PG-01SBE-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 08:30

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270/625)	ug/L	BDL				4.90	11/26/96	joe	11/27/96	andy

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City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12597
Group # 16052
Sample Type WATER

Sample ID PG-01TWE-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 08:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA8270/625)	ug/L	BDL				3.52	11/26/96	joe	11/27/96	andy
Acenaphthylene	(EPA 8270/625)	ug/L	BDL				3.76	11/26/96	joe	11/27/96	andy
Anthracene	(EPA 8270/625)	ug/L	BDL				2.67	11/26/96	joe	11/27/96	andy
Benzo(a)anthracene	(EPA 8270/625)	ug/L	BDL				2.56	11/26/96	joe	11/27/96	andy
Benzo(b)fluoranthene	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	11/27/96	andy
Benzo(k)fluoranthene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Benzo(ghi)perylene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	11/27/96	andy
Benzo(a)pyrene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Chrysene	(EPA 8270/625)	ug/L	BDL				2.72	11/26/96	joe	11/27/96	andy
Dibenzo(ah)anthracene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Fluoranthene	(EPA 8270/625)	ug/L	BDL				2.18	11/26/96	joe	11/27/96	andy
Fluorene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	11/27/96	andy
Indeno(123cd)pyrene	(EPA 8270/625)	ug/L	BDL				3.70	11/26/96	joe	11/27/96	andy
Naphthalene	(EPA 8270/625)	ug/L	BDL				1.28	11/26/96	joe	11/27/96	andy
Phenanthrene	(EPA 8270/625)	ug/L	BDL				2.82	11/26/96	joe	11/27/96	andy
Pyrene	(EPA 8270/625)	ug/L	BDL				9.25	11/26/96	joe	11/27/96	andy
Benzidine	(EPA 8270/625)	ug/L	BDL				44.0	11/26/96	joe	11/27/96	andy
3,3-Dichlorbenzidine	(EPA 8270/625)	ug/L	BDL				16.5	11/26/96	joe	11/27/96	andy
Butylbenzylphthalate	(EPA 8270/625)	ug/L	BDL				1.98	11/26/96	joe	11/27/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	11/27/96	andy
Di-n-butylphthalate	(EPA 8270/625)	ug/L	BDL				2.77	11/26/96	joe	11/27/96	andy
Diethylphthalate	(EPA 8270/625)	ug/L	BDL				5.81	11/26/96	joe	11/27/96	andy
Dimethylphthalate	(EPA 8270/625)	ug/L	BDL				3.10	11/26/96	joe	11/27/96	andy
Di-n-octylphthalate	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	11/27/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270/625)	ug/L	BDL				1.68	11/26/96	joe	11/27/96	andy
Bis(2-chloroethyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	11/27/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	11/27/96	andy
1,2-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				2.04	11/26/96	joe	11/27/96	andy
1,3-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.92	11/26/96	joe	11/27/96	andy
1,4-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.95	11/26/96	joe	11/27/96	andy
4-Bromophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				2.36	11/26/96	joe	11/27/96	andy
4-Chlorophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				3.44	11/26/96	joe	11/27/96	andy
2-chloronaphthalene	(EPA 8270/625)	ug/L	BDL				3.41	11/26/96	joe	11/27/96	andy
2,4-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	11/27/96	andy
2,6-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				3.74	11/26/96	joe	11/27/96	andy
Hexachlorobenzene	(EPA 8270/625)	ug/L	BDL				0.0310	11/26/96	joe	11/27/96	andy
Hexachlorobutadiene	(EPA 8270/625)	ug/L	BDL				1.00	11/26/96	joe	11/27/96	andy
Hexachlorocyclopentadiene	(EPA 8270/625)	ug/L	BDL				0.0190	11/26/96	joe	11/27/96	andy
Hexachloroethane	(EPA 8270/625)	ug/L	BDL				0.530	11/26/96	joe	11/27/96	andy
Isophorone	(EPA 8270/625)	ug/L	BDL				0.970	11/26/96	joe	11/27/96	andy
Nitrobenzene	(EPA 8270/625)	ug/L	BDL				2.01	11/26/96	joe	11/27/96	andy
N-nitroso-di-n-propylamine	(EPA 8270/625)	ug/L	BDL				11.0	11/26/96	joe	11/27/96	andy
N-nitrosodiphenylamine	(EPA 8270/625)	ug/L	BDL				4.37	11/26/96	joe	11/27/96	andy
1,2,4-trichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.43	11/26/96	joe	11/27/96	andy
N-nitrosodimethylamine	(EPA 8270/625)	ug/L	BDL				10.0	11/26/96	joe	11/27/96	andy
Dioxin(2378-TCDD)	(EPA 8270/625)	ug/L	BDL				0.0500	11/26/96	joe	11/27/96	andy

Group # 16052

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12597
Group # 16052
Sample Type WATER

Sample ID PG-01TWE-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 08:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270/625)	ug/L	BDL				4.90	11/26/96	joe	11/27/96	andy

CITY OF TALLAHASSEE
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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12598
Group # 16052
Sample Type WATER

Sample ID PG-02TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 12:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA8270/625)	ug/L	BDL				3.52	11/26/96	joe	12/06/96	andy
Acenaphthylene	(EPA 8270/625)	ug/L	BDL				3.76	11/26/96	joe	12/06/96	andy
Anthracene	(EPA 8270/625)	ug/L	BDL				2.67	11/26/96	joe	12/06/96	andy
Benzo(a)anthracene	(EPA 8270/625)	ug/L	BDL				2.56	11/26/96	joe	12/06/96	andy
Benzo(b)fluoranthene	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	12/06/96	andy
Benzo(k)fluoranthene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Benzo(ghi)perylene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	12/06/96	andy
Benzo(a)pyrene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Chrysene	(EPA 8270/625)	ug/L	BDL				2.72	11/26/96	joe	12/06/96	andy
Dibenzo(ah)anthracene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Fluoranthene	(EPA 8270/625)	ug/L	BDL				2.18	11/26/96	joe	12/06/96	andy
Fluorene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	12/06/96	andy
Indeno(123cd)pyrene	(EPA 8270/625)	ug/L	BDL				3.70	11/26/96	joe	12/06/96	andy
Naphthalene	(EPA 8270/625)	ug/L	BDL				1.28	11/26/96	joe	12/06/96	andy
Phenanthrene	(EPA 8270/625)	ug/L	BDL				2.82	11/26/96	joe	12/06/96	andy
Pyrene	(EPA 8270/625)	ug/L	BDL				9.25	11/26/96	joe	12/06/96	andy
Benzidine	(EPA 8270/625)	ug/L	BDL				44.0	11/26/96	joe	12/06/96	andy
3,3-Dichlorbenzidine	(EPA 8270/625)	ug/L	BDL				16.5	11/26/96	joe	12/06/96	andy
Butylbenzylphthalate	(EPA 8270/625)	ug/L	BDL				1.98	11/26/96	joe	12/06/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	12/06/96	andy
Di-n-butylphthalate	(EPA 8270/625)	ug/L	6.77				2.77	11/26/96	joe	12/06/96	andy
Diethylphthalate	(EPA 8270/625)	ug/L	BDL				5.81	11/26/96	joe	12/06/96	andy
Dimethylphthalate	(EPA 8270/625)	ug/L	BDL				3.10	11/26/96	joe	12/06/96	andy
Di-n-octylphthalate	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270/625)	ug/L	BDL				1.68	11/26/96	joe	12/06/96	andy
Bis(2-chloroethyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
1,2-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				2.04	11/26/96	joe	12/06/96	andy
1,3-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.92	11/26/96	joe	12/06/96	andy
1,4-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.95	11/26/96	joe	12/06/96	andy
4-Bromophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				2.36	11/26/96	joe	12/06/96	andy
4-Chlorophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				3.44	11/26/96	joe	12/06/96	andy
2-chloronaphthalene	(EPA 8270/625)	ug/L	BDL				3.41	11/26/96	joe	12/06/96	andy
2,4-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
2,6-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				3.74	11/26/96	joe	12/06/96	andy
Hexachlorobenzene	(EPA 8270/625)	ug/L	BDL				0.0310	11/26/96	joe	12/06/96	andy
Hexachlorobutadiene	(EPA 8270/625)	ug/L	BDL				1.00	11/26/96	joe	12/06/96	andy
Hexachlorocyclopentadiene	(EPA 8270/625)	ug/L	BDL				0.0190	11/26/96	joe	12/06/96	andy
Hexachloroethane	(EPA 8270/625)	ug/L	BDL				0.530	11/26/96	joe	12/06/96	andy
Isophorone	(EPA 8270/625)	ug/L	BDL				0.970	11/26/96	joe	12/06/96	andy
Nitrobenzene	(EPA 8270/625)	ug/L	BDL				2.01	11/26/96	joe	12/06/96	andy
N-nitroso-di-n-propylamine	(EPA 8270/625)	ug/L	BDL				11.0	11/26/96	joe	12/06/96	andy
N-nitrosodiphenylamine	(EPA 8270/625)	ug/L	BDL				4.37	11/26/96	joe	12/06/96	andy
1,2,4-trichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.43	11/26/96	joe	12/06/96	andy
N-nitrosodimethylamine	(EPA 8270/625)	ug/L	BDL				10.0	11/26/96	joe	12/06/96	andy
Dioxin(2378-TCDD)	(EPA 8270/625)	ug/L	BDL				0.0500	11/26/96	joe	12/06/96	andy

Group # 16052

Water Quality Division
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Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12598
Group # 16052
Sample Type WATER

Sample ID PG-02TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 12:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270/625)	ug/L	BDL				4.90	11/26/96	joe	12/06/96	andy

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12599 Sample ID PG-06TW-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type WATER Sampled 11/22/96 09:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA8270/625)	ug/L	BDL				3.52	11/26/96	joe	12/06/96	andy
Acenaphthylene	(EPA 8270/625)	ug/L	BDL				3.76	11/26/96	joe	12/06/96	andy
Anthracene	(EPA 8270/625)	ug/L	BDL				2.67	11/26/96	joe	12/06/96	andy
Benzo(a)anthracene	(EPA 8270/625)	ug/L	BDL				2.56	11/26/96	joe	12/06/96	andy
Benzo(b)fluoranthene	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	12/06/96	andy
Benzo(k)fluoranthene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Benzo(ghi)perylene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	12/06/96	andy
Benzo(a)pyrene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Chrysene	(EPA 8270/625)	ug/L	BDL				2.72	11/26/96	joe	12/06/96	andy
Dibenzo(ah)anthracene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Fluoranthene	(EPA 8270/625)	ug/L	BDL				2.18	11/26/96	joe	12/06/96	andy
Fluorene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	12/06/96	andy
Indeno(123cd)pyrene	(EPA 8270/625)	ug/L	BDL				3.70	11/26/96	joe	12/06/96	andy
Naphthalene	(EPA 8270/625)	ug/L	BDL				1.28	11/26/96	joe	12/06/96	andy
Phenanthrene	(EPA 8270/625)	ug/L	BDL				2.82	11/26/96	joe	12/06/96	andy
Pyrene	(EPA 8270/625)	ug/L	BDL				9.25	11/26/96	joe	12/06/96	andy
Benzidine	(EPA 8270/625)	ug/L	BDL				44.0	11/26/96	joe	12/06/96	andy
3,3-Dichlorbenzidine	(EPA 8270/625)	ug/L	BDL				16.5	11/26/96	joe	12/06/96	andy
Butylbenzylphthalate	(EPA 8270/625)	ug/L	BDL				1.98	11/26/96	joe	12/06/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	12/06/96	andy
Di-n-butylphthalate	(EPA 8270/625)	ug/L	BDL				2.77	11/26/96	joe	12/06/96	andy
Diethylphthalate	(EPA 8270/625)	ug/L	BDL				5.81	11/26/96	joe	12/06/96	andy
Dimethylphthalate	(EPA 8270/625)	ug/L	BDL				3.10	11/26/96	joe	12/06/96	andy
Di-n-octylphthalate	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270/625)	ug/L	BDL				1.68	11/26/96	joe	12/06/96	andy
Bis(2-chloroethyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
1,2-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				2.04	11/26/96	joe	12/06/96	andy
1,3-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.92	11/26/96	joe	12/06/96	andy
1,4-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.95	11/26/96	joe	12/06/96	andy
4-Bromophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				2.36	11/26/96	joe	12/06/96	andy
4-Chlorophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				3.44	11/26/96	joe	12/06/96	andy
2-chloronaphthalene	(EPA 8270/625)	ug/L	BDL				3.41	11/26/96	joe	12/06/96	andy
2,4-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
2,6-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				3.74	11/26/96	joe	12/06/96	andy
Hexachlorobenzene	(EPA 8270/625)	ug/L	BDL				0.0310	11/26/96	joe	12/06/96	andy
Hexachlorobutadiene	(EPA 8270/625)	ug/L	BDL				1.00	11/26/96	joe	12/06/96	andy
Hexachlorocyclopentadiene	(EPA 8270/625)	ug/L	BDL				0.0190	11/26/96	joe	12/06/96	andy
Hexachloroethane	(EPA 8270/625)	ug/L	BDL				0.530	11/26/96	joe	12/06/96	andy
Isophorone	(EPA 8270/625)	ug/L	BDL				0.970	11/26/96	joe	12/06/96	andy
Nitrobenzene	(EPA 8270/625)	ug/L	BDL				2.01	11/26/96	joe	12/06/96	andy
N-nitroso-di-n-propylamine	(EPA 8270/625)	ug/L	BDL				11.0	11/26/96	joe	12/06/96	andy
N-nitrosodiphenylamine	(EPA 8270/625)	ug/L	BDL				4.37	11/26/96	joe	12/06/96	andy
1,2,4-trichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.43	11/26/96	joe	12/06/96	andy
N-nitrosodimethylamine	(EPA 8270/625)	ug/L	BDL				10.0	11/26/96	joe	12/06/96	andy
Dioxin(2378-TCDD)	(EPA 8270/625)	ug/L	BDL				0.0500	11/26/96	joe	12/06/96	andy

Group # 16052

Water Quality Division
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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12599
Group # 16052
Sample Type WATER

Sample ID PG-06TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270/625)	ug/L	BDL				4.90	11/26/96	joe	12/06/96	andy

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating.Site Assess

Sampled by : GREG NEW

Sample # 96-12600
Group # 16052
Sample Type WATER

Sample ID PG-06TWD-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA8270/625)	ug/L	BDL				3.52	11/26/96	joe	12/06/96	andy
Acenaphthylene	(EPA 8270/625)	ug/L	BDL				3.76	11/26/96	joe	12/06/96	andy
Anthracene	(EPA 8270/625)	ug/L	BDL				2.67	11/26/96	joe	12/06/96	andy
Benzo(a)anthracene	(EPA 8270/625)	ug/L	BDL				2.56	11/26/96	joe	12/06/96	andy
Benzo(b)fluoranthene	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	12/06/96	andy
Benzo(k)fluoranthene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Benzo(ghi)perylene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	12/06/96	andy
Benzo(a)pyrene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Chrysene	(EPA 8270/625)	ug/L	BDL				2.72	11/26/96	joe	12/06/96	andy
Dibenzo(ah)anthracene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Fluoranthene	(EPA 8270/625)	ug/L	BDL				2.18	11/26/96	joe	12/06/96	andy
Fluorene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	12/06/96	andy
Indeno(123cd)pyrene	(EPA 8270/625)	ug/L	BDL				3.70	11/26/96	joe	12/06/96	andy
Naphthalene	(EPA 8270/625)	ug/L	BDL				1.28	11/26/96	joe	12/06/96	andy
Phenanthrene	(EPA 8270/625)	ug/L	BDL				2.82	11/26/96	joe	12/06/96	andy
Pyrene	(EPA 8270/625)	ug/L	BDL				9.25	11/26/96	joe	12/06/96	andy
Benzidine	(EPA 8270/625)	ug/L	BDL				44.0	11/26/96	joe	12/06/96	andy
3,3-Dichlorbenzidine	(EPA 8270/625)	ug/L	BDL				16.5	11/26/96	joe	12/06/96	andy
Butylbenzylphthalate	(EPA 8270/625)	ug/L	BDL				1.98	11/26/96	joe	12/06/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	12/06/96	andy
Di-n-butylphthalate	(EPA 8270/625)	ug/L	BDL				2.77	11/26/96	joe	12/06/96	andy
Diethylphthalate	(EPA 8270/625)	ug/L	BDL				5.81	11/26/96	joe	12/06/96	andy
Dimethylphthalate	(EPA 8270/625)	ug/L	BDL				3.10	11/26/96	joe	12/06/96	andy
Di-n-octylphthalate	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270/625)	ug/L	BDL				1.68	11/26/96	joe	12/06/96	andy
Bis(2-chloroethyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
1,2-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				2.04	11/26/96	joe	12/06/96	andy
1,3-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.92	11/26/96	joe	12/06/96	andy
1,4-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.95	11/26/96	joe	12/06/96	andy
4-Bromophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				2.36	11/26/96	joe	12/06/96	andy
4-Chlorophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				3.44	11/26/96	joe	12/06/96	andy
2-chloronaphthalene	(EPA 8270/625)	ug/L	BDL				3.41	11/26/96	joe	12/06/96	andy
2,4-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
2,6-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				3.74	11/26/96	joe	12/06/96	andy
Hexachlorobenzene	(EPA 8270/625)	ug/L	BDL				0.0310	11/26/96	joe	12/06/96	andy
Hexachlorobutadiene	(EPA 8270/625)	ug/L	BDL				1.00	11/26/96	joe	12/06/96	andy
Hexachlorocyclopentadiene	(EPA 8270/625)	ug/L	BDL				0.0190	11/26/96	joe	12/06/96	andy
Hexachloroethane	(EPA 8270/625)	ug/L	BDL				0.530	11/26/96	joe	12/06/96	andy
Isophorone	(EPA 8270/625)	ug/L	BDL				0.970	11/26/96	joe	12/06/96	andy
Nitrobenzene	(EPA 8270/625)	ug/L	BDL				2.01	11/26/96	joe	12/06/96	andy
N-nitroso-di-n-propylamine	(EPA 8270/625)	ug/L	BDL				11.0	11/26/96	joe	12/06/96	andy
N-nitrosodiphenylamine	(EPA 8270/625)	ug/L	BDL				4.37	11/26/96	joe	12/06/96	andy
1,2,4-trichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.43	11/26/96	joe	12/06/96	andy
N-nitrosodimethylamine	(EPA 8270/625)	ug/L	BDL				10.0	11/26/96	joe	12/06/96	andy
Dioxin(2378-TCDD)	(EPA 8270/625)	ug/L	BDL				0.0500	11/26/96	joe	12/06/96	andy

Group # 16052

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
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CITY OF TALLAHASSEE Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12600
Group # 16052
Sample Type WATER

Sample ID PG-06TWD-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270/625)	ug/L	BDL				4.90	11/26/96	joe	12/06/96	andy

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12601
Group # 16052
Sample Type WATER

Sample ID PG-07TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 11:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA8270/625)	ug/L	BDL				3.52	11/26/96	joe	12/06/96	andy
Acenaphthylene	(EPA 8270/625)	ug/L	BDL				3.76	11/26/96	joe	12/06/96	andy
Anthracene	(EPA 8270/625)	ug/L	BDL				2.67	11/26/96	joe	12/06/96	andy
Benzo(a)anthracene	(EPA 8270/625)	ug/L	BDL				2.56	11/26/96	joe	12/06/96	andy
Benzo(b)fluoranthene	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	12/06/96	andy
Benzo(k)fluoranthene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Benzo(ghi)perylene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	12/06/96	andy
Benzo(a)pyrene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Chrysene	(EPA 8270/625)	ug/L	BDL				2.72	11/26/96	joe	12/06/96	andy
Dibenzo(ah)anthracene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Fluoranthene	(EPA 8270/625)	ug/L	BDL				2.18	11/26/96	joe	12/06/96	andy
Fluorene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	12/06/96	andy
Indeno(123cd)pyrene	(EPA 8270/625)	ug/L	BDL				3.70	11/26/96	joe	12/06/96	andy
Naphthalene	(EPA 8270/625)	ug/L	BDL				1.28	11/26/96	joe	12/06/96	andy
Phenanthrene	(EPA 8270/625)	ug/L	BDL				2.82	11/26/96	joe	12/06/96	andy
Pyrene	(EPA 8270/625)	ug/L	BDL				9.25	11/26/96	joe	12/06/96	andy
Benzidine	(EPA 8270/625)	ug/L	BDL				44.0	11/26/96	joe	12/06/96	andy
3,3-Dichlorbenzidine	(EPA 8270/625)	ug/L	BDL				16.5	11/26/96	joe	12/06/96	andy
Butylbenzylphthalate	(EPA 8270/625)	ug/L	BDL				1.98	11/26/96	joe	12/06/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	12/06/96	andy
Di-n-butylphthalate	(EPA 8270/625)	ug/L	BDL				2.77	11/26/96	joe	12/06/96	andy
Diethylphthalate	(EPA 8270/625)	ug/L	BDL				5.81	11/26/96	joe	12/06/96	andy
Dimethylphthalate	(EPA 8270/625)	ug/L	BDL				3.10	11/26/96	joe	12/06/96	andy
Di-n-octylphthalate	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270/625)	ug/L	BDL				1.68	11/26/96	joe	12/06/96	andy
Bis(2-chloroethyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
1,2-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				2.04	11/26/96	joe	12/06/96	andy
1,3-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.92	11/26/96	joe	12/06/96	andy
1,4-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.95	11/26/96	joe	12/06/96	andy
4-Bromophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				2.36	11/26/96	joe	12/06/96	andy
4-Chlorophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				3.44	11/26/96	joe	12/06/96	andy
2-chloronaphthalene	(EPA 8270/625)	ug/L	BDL				3.41	11/26/96	joe	12/06/96	andy
2,4-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
2,6-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				3.74	11/26/96	joe	12/06/96	andy
Hexachlorobenzene	(EPA 8270/625)	ug/L	BDL				0.0310	11/26/96	joe	12/06/96	andy
Hexachlorobutadiene	(EPA 8270/625)	ug/L	BDL				1.00	11/26/96	joe	12/06/96	andy
Hexachlorocyclopentadiene	(EPA 8270/625)	ug/L	BDL				0.0190	11/26/96	joe	12/06/96	andy
Hexachloroethane	(EPA 8270/625)	ug/L	BDL				0.530	11/26/96	joe	12/06/96	andy
Isophorone	(EPA 8270/625)	ug/L	BDL				0.970	11/26/96	joe	12/06/96	andy
Nitrobenzene	(EPA 8270/625)	ug/L	BDL				2.01	11/26/96	joe	12/06/96	andy
N-nitroso-di-n-propylamine	(EPA 8270/625)	ug/L	BDL				11.0	11/26/96	joe	12/06/96	andy
N-nitrosodiphenylamine	(EPA 8270/625)	ug/L	BDL				4.37	11/26/96	joe	12/06/96	andy
1,2,4-trichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.43	11/26/96	joe	12/06/96	andy
N-nitrosodimethylamine	(EPA 8270/625)	ug/L	BDL				10.0	11/26/96	joe	12/06/96	andy
Dioxin(2378-TCDD)	(EPA 8270/625)	ug/L	BDL				0.0500	11/26/96	joe	12/06/96	andy

Group # 16052

Water Quality Division
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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12601
Group # 16052
Sample Type WATER

Sample ID PG-07TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 11:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Bis(2-ethylhexyl)adipate	(EPA 8270/625)	ug/L	BDL				4.90	11/26/96	joe	12/06/96	andy

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12602
Group # 16052
Sample Type WATER

Sample ID PG-09TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 12:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Acenaphthene	(EPA8270/625)	ug/L	BDL				3.52	11/26/96	joe	12/06/96	andy
Acenaphthylene	(EPA 8270/625)	ug/L	BDL				3.76	11/26/96	joe	12/06/96	andy
Anthracene	(EPA 8270/625)	ug/L	BDL				2.67	11/26/96	joe	12/06/96	andy
Benzo(a)anthracene	(EPA 8270/625)	ug/L	BDL				2.56	11/26/96	joe	12/06/96	andy
Benzo(b)fluoranthene	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	12/06/96	andy
Benzo(k)fluoranthene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Benzo(ghi)perylene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	12/06/96	andy
Benzo(a)pyrene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Chrysene	(EPA 8270/625)	ug/L	BDL				2.72	11/26/96	joe	12/06/96	andy
Dibenzo(ah)anthracene	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Fluoranthene	(EPA 8270/625)	ug/L	BDL				2.18	11/26/96	joe	12/06/96	andy
Fluorene	(EPA 8270/625)	ug/L	BDL				4.10	11/26/96	joe	12/06/96	andy
Indeno(123cd)pyrene	(EPA 8270/625)	ug/L	BDL				3.70	11/26/96	joe	12/06/96	andy
Naphthalene	(EPA 8270/625)	ug/L	BDL				1.28	11/26/96	joe	12/06/96	andy
Phenanthrene	(EPA 8270/625)	ug/L	BDL				2.82	11/26/96	joe	12/06/96	andy
Pyrene	(EPA 8270/625)	ug/L	BDL				9.25	11/26/96	joe	12/06/96	andy
Benzidine	(EPA 8270/625)	ug/L	BDL				44.0	11/26/96	joe	12/06/96	andy
3,3-Dichlorbenzidine	(EPA 8270/625)	ug/L	BDL				16.5	11/26/96	joe	12/06/96	andy
Butylbenzylphthalate	(EPA 8270/625)	ug/L	BDL				1.98	11/26/96	joe	12/06/96	andy
Bis(2-ethylhexyl)phthalate	(EPA 8270/625)	ug/L	BDL				4.80	11/26/96	joe	12/06/96	andy
Di-n-butylphthalate	(EPA 8270/625)	ug/L	BDL				2.77	11/26/96	joe	12/06/96	andy
Diethylphthalate	(EPA 8270/625)	ug/L	BDL				5.81	11/26/96	joe	12/06/96	andy
Dimethylphthalate	(EPA 8270/625)	ug/L	BDL				3.10	11/26/96	joe	12/06/96	andy
Di-n-octylphthalate	(EPA 8270/625)	ug/L	BDL				2.50	11/26/96	joe	12/06/96	andy
Bis(2-chloroethoxy)methane	(EPA 8270/625)	ug/L	BDL				1.68	11/26/96	joe	12/06/96	andy
Bis(2-chloroethyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
Bis(2-chloroisopropyl)ether	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
1,2-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				2.04	11/26/96	joe	12/06/96	andy
1,3-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.92	11/26/96	joe	12/06/96	andy
1,4-Dichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.95	11/26/96	joe	12/06/96	andy
4-Bromophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				2.36	11/26/96	joe	12/06/96	andy
4-Chlorophenylphenyl ether	(EPA 8270/625)	ug/L	BDL				3.44	11/26/96	joe	12/06/96	andy
2-chloronaphthalene	(EPA 8270/625)	ug/L	BDL				3.41	11/26/96	joe	12/06/96	andy
2,4-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				5.70	11/26/96	joe	12/06/96	andy
2,6-dinitrotoluene	(EPA 8270/625)	ug/L	BDL				3.74	11/26/96	joe	12/06/96	andy
Hexachlorobenzene	(EPA 8270/625)	ug/L	BDL				0.0310	11/26/96	joe	12/06/96	andy
Hexachlorobutadiene	(EPA 8270/625)	ug/L	BDL				1.00	11/26/96	joe	12/06/96	andy
Hexachlorocyclopentadiene	(EPA 8270/625)	ug/L	BDL				0.0190	11/26/96	joe	12/06/96	andy
Hexachloroethane	(EPA 8270/625)	ug/L	BDL				0.530	11/26/96	joe	12/06/96	andy
Isophorone	(EPA 8270/625)	ug/L	BDL				0.970	11/26/96	joe	12/06/96	andy
Nitrobenzene	(EPA 8270/625)	ug/L	BDL				2.01	11/26/96	joe	12/06/96	andy
N-nitroso-di-n-propylamine	(EPA 8270/625)	ug/L	BDL				11.0	11/26/96	joe	12/06/96	andy
N-nitrosodiphenylamine	(EPA 8270/625)	ug/L	BDL				4.37	11/26/96	joe	12/06/96	andy
1,2,4-trichlorobenzene	(EPA 8270/625)	ug/L	BDL				1.43	11/26/96	joe	12/06/96	andy
N-nitrosodimethylamine	(EPA 8270/625)	ug/L	BDL				10.0	11/26/96	joe	12/06/96	andy
Dioxin(2378-TCDD)	(EPA 8270/625)	ug/L	BDL				0.0500	11/26/96	joe	12/06/96	andy

CITY OF TALLAHASSEE
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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12602
Group # 16052
Sample Type WATER

Sample ID PG-09TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 12:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed By
Bis(2-ethylhexyl)adipate	(EPA 8270/625)	ug/L	BDL				4.90	11/26/96 joe	12/06/96 andy

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12591
Group # 16052
Sample Type SOLIDS

Sample ID PG-05SBD-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 10:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(5030/ 8021)	mg/kg	BDL				0.0800	11/26/96	alan	12/05/96	alan
Chloromethane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Vinylchloride	(5030/8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Bromomethane	(5030/ 8021)	mg/kg	BDL				0.0300	11/26/96	alan	12/05/96	alan
Chloroethane	(5030/ 8021)	mg/kg	BDL				0.0300	11/26/96	alan	12/05/96	alan
Trichlorofluoromethane	(5030/ 8021)	mg/kg	BDL				0.0100	11/26/96	alan	12/05/96	alan
1,1-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
Methylenechloride	(5030/ 8021)	mg/kg	BDL				0.00700	11/26/96	alan	12/05/96	alan
t-1,2-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
1,1-Dichlroethane	(5030/ 8021)	mg/kg	BDL				0.00800	11/26/96	alan	12/05/96	alan
2,2-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.0100	11/26/96	alan	12/05/96	alan
c-1,2-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Bromochloromethane	(5030/ 8021)	mg/kg	BDL				0.0120	11/26/96	alan	12/05/96	alan
Chloroform	(5030/ 8021)	mg/kg	BDL				0.00500	11/26/96	alan	12/05/96	alan
1,1,1-Trichloroethane	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
Carbontetrachloride	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
1,1-Dichloropropene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Benzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichloroethane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Trichloroethylenee	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Dibromomethane	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Bromodichloromethane	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
c-1,3-Dichloropropylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Toluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
t-1,3-Dichloropropylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,1,2-Trichloroethane	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
Tetrachloroethylenene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,3-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Dibromochloromethane	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
1,2-Dibromoethane	(5030/ 8021)	mg/kg	BDL				0.0130	11/26/96	alan	12/05/96	alan
Chlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,1,1,2-Tetrachloroethane	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Ethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
m-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
p-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
O-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
total Xylenes	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Styrene	(5030/ 8021)	mg/kg	BDL				0.170	11/26/96	alan	12/05/96	alan
Bromoform	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Isopropylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Bromobenzene	(5030/ 8021)	mg/kg	BDL				0.0130	11/26/96	alan	12/05/96	alan
1,2,3-Trichloropropane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
1,1,2,2-Tetrachloroethane	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
n-Propylbenzene	(5030/ 8021)	mg/kg	BDL								
2-Chlorotoluene	(5030/ 8021)	mg/kg	BDL								

Group # 16052

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101 — Purdom Generating Site Assess
Electric Department
City of Tallahassee — Sampled by : GREG NEW

Tallahassee ,FL 32302
ATTN. Greg New

Sample # 96-12591 — Sample ID PG-05SBD-1 FOSTER WHEELER
Group # 16052 — Sample Site
Sample Type SOLIDS — Sampled 11/22/96 10:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
4-Chlorotoluene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,3,5-Trimethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
tert-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,4-Trimethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
sec-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,3-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,4-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
p-Isopropyltoluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
n-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dibromo-3-chloropropane	(5030/ 8021)	mg/kg	BDL				0.00700	11/26/96	alan	12/05/96	alan
1,2,4-Trichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1Hexachlorobutadiene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Naphthalene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,3-Trichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Acetone	(5030/ 8021)	mg/kg	BDL				0.0500	11/26/96	alan	12/05/96	alan
MTBE	(5030/ 8021)	mg/kg	BDL				0.0500	11/26/96	alan	12/05/96	alan

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Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12592 Sample ID PG-07SB-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type SOLIDS Sampled 11/22/96 09:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(5030/ 8021)	mg/kg	BDL				0.0800	11/26/96	alan	12/05/96	alan
Chloromethane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Vinylchloride	(5030/8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Bromomethane	(5030/ 8021)	mg/kg	BDL				0.0300	11/26/96	alan	12/05/96	alan
Chloroethane	(5030/ 8021)	mg/kg	BDL				0.0300	11/26/96	alan	12/05/96	alan
Trichlorofluoromethane	(5030/ 8021)	mg/kg	BDL				0.0100	11/26/96	alan	12/05/96	alan
1,1-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
Methylenechloride	(5030/ 8021)	mg/kg	BDL				0.00700	11/26/96	alan	12/05/96	alan
t-1,2-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
1,1-Dichlroethane	(5030/ 8021)	mg/kg	BDL				0.00800	11/26/96	alan	12/05/96	alan
2,2-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.0100	11/26/96	alan	12/05/96	alan
c-1,2-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Bromochloromethane	(5030/ 8021)	mg/kg	BDL				0.0120	11/26/96	alan	12/05/96	alan
Chloroform	(5030/ 8021)	mg/kg	BDL				0.00500	11/26/96	alan	12/05/96	alan
1,1,1-Trichloroethane	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
Carbontetrachloride	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
1,1-Dichloropropene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Benzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichloroethane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Trichloroethylenee	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Dibromomethane	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Bromodichloromethane	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
c-1,3-Dichloropropylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Toluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
t-1,3-Dichloropropylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,1,2-Trichloroethane	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
Tetrachloroethylenene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,3-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Dibromochloromethane	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
1,2-Dibromoethane	(5030/ 8021)	mg/kg	BDL				0.0130	11/26/96	alan	12/05/96	alan
Chlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,1,1,2-Tetrachloroethane	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Ethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
m-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
p-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
O-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
total Xylenes	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Styrene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Bromoform	(5030/ 8021)	mg/kg	BDL				0.170	11/26/96	alan	12/05/96	alan
Isopropylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Bromobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,3-Trichloropropane	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,1,2,2-Tetrachloroethane	(5030/ 8021)	mg/kg	BDL				0.0130	11/26/96	alan	12/05/96	alan
n-Propylbenzene	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
2-Chlorotoluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12592 Sample ID PG-07SB-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type SOLIDS Sampled 11/22/96 09:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
4-Chlorotoluene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,3,5-Trimethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
tert-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,4-Trimethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
sec-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,3-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,4-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
p-Isopropyltoluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
n-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dibromo-3-chloropropane	(5030/ 8021)	mg/kg	BDL				0.00700	11/26/96	alan	12/05/96	alan
1,2,4-Trichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1Hexachlorobutadiene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Naphthalene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,3-Trichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Acetone	(5030/ 8021)	mg/kg	BDL				0.0500	11/26/96	alan	12/05/96	alan
MTBE	(5030/ 8021)	mg/kg	BDL				0.0500	11/26/96	alan	12/05/96	alan

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Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12593 Sample ID PG-09SB-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type SOLIDS Sampled 11/22/96 10:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(5030/ 8021)	mg/kg	BDL				0.0800	11/26/96	alan	12/05/96	alan
Chloromethane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Vinylchloride	(5030/8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Bromomethane	(5030/ 8021)	mg/kg	BDL				0.0300	11/26/96	alan	12/05/96	alan
Chloroethane	(5030/ 8021)	mg/kg	BDL				0.0300	11/26/96	alan	12/05/96	alan
Trichlorofluoromethane	(5030/ 8021)	mg/kg	BDL				0.0100	11/26/96	alan	12/05/96	alan
1,1-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
Methylenechloride	(5030/ 8021)	mg/kg	BDL				0.00700	11/26/96	alan	12/05/96	alan
t-1,2-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
1,1-Dichloroethane	(5030/ 8021)	mg/kg	BDL				0.00800	11/26/96	alan	12/05/96	alan
2,2-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.0100	11/26/96	alan	12/05/96	alan
c-1,2-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Bromochloromethane	(5030/ 8021)	mg/kg	BDL				0.0120	11/26/96	alan	12/05/96	alan
Chloroform	(5030/ 8021)	mg/kg	BDL				0.00500	11/26/96	alan	12/05/96	alan
1,1,1-Trichloroethane	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
Carbontetrachloride	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
1,1-Dichloropropene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Benzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichloroethane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Trichloroethylenee	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Dibromomethane	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Bromodichloromethane	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
c-1,3-Dichloropropylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Toluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
t-1,3-Dichloropropylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,1,2-Trichloroethane	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
Tetrachloroethylenene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,3-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Dibromochloromethane	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
1,2-Dibromoethane	(5030/ 8021)	mg/kg	BDL				0.0130	11/26/96	alan	12/05/96	alan
Chlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,1,1,2-Tetrachloroethane	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Ethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
m-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
p-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
O-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
total Xylenes	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Styrene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Bromoform	(5030/ 8021)	mg/kg	BDL				0.170	11/26/96	alan	12/05/96	alan
Isopropylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Bromobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,3-Trichloropropane	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,1,2,2-Tetrachloroethane	(5030/ 8021)	mg/kg	BDL				0.0130	11/26/96	alan	12/05/96	alan
n-Propylbenzene	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
2-Chlorotoluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan

Group # 16052

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12593 Sample ID PG-09SB-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type SOLIDS Sampled 11/22/96 10:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
4-Chlorotoluene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,3,5-Trimethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
tert-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,4-Trimethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
sec-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,3-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,4-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
p-Isopropyltoluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
n-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dibromo-3-chloropropane	(5030/ 8021)	mg/kg	BDL				0.00700	11/26/96	alan	12/05/96	alan
1,2,4-Trichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1Hexachlorobutadiene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Naphthalene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,3-Trichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Acetone	(5030/ 8021)	mg/kg	BDL				0.0500	11/26/96	alan	12/05/96	alan
MTBE	(5030/ 8021)	mg/kg	BDL				0.0500	11/26/96	alan	12/05/96	alan

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Electric Department
City of Tallahassee — Sampled by : GREG NEW

Tallahassee ,FL 32302
ATTN. Greg New

Sample # 96-12594 — Sample ID PG-05SB-1 FOSTER WHEELER
Group # 16052 — Sample Site
Sample Type SOLIDS — Sampled 11/22/96 10:30

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(5030/ 8021)	mg/kg	BDL				0.0800	11/26/96	alan	12/05/96	alan
Chloromethane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Vinylchloride	(5030/8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Bromomethane	(5030/ 8021)	mg/kg	BDL				0.0300	11/26/96	alan	12/05/96	alan
Chloroethane	(5030/ 8021)	mg/kg	BDL				0.0300	11/26/96	alan	12/05/96	alan
Trichlorofluoromethane	(5030/ 8021)	mg/kg	BDL				0.0100	11/26/96	alan	12/05/96	alan
1,1-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
Methylenechloride	(5030/ 8021)	mg/kg	BDL				0.00700	11/26/96	alan	12/05/96	alan
t-1,2-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
1,1-Dichlroethane	(5030/ 8021)	mg/kg	BDL				0.00800	11/26/96	alan	12/05/96	alan
2,2-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.0100	11/26/96	alan	12/05/96	alan
c-1,2-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Bromochloromethane	(5030/ 8021)	mg/kg	BDL				0.0120	11/26/96	alan	12/05/96	alan
Chloroform	(5030/ 8021)	mg/kg	BDL				0.00500	11/26/96	alan	12/05/96	alan
1,1,1-Trichloroethane	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
Carbontetrachloride	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
1,1-Dichloropropene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Benzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichloroethane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Trichloroethylenee	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Dibromomethane	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Bromodichloromethane	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
c-1,3-Dichloropropylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Toluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
t-1,3-Dichloropropylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,1,2-Trichloroethane	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96	alan	12/05/96	alan
Tetrachloroethylenene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,3-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
Dibromochloromethane	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96	alan	12/05/96	alan
1,2-Dibromoethane	(5030/ 8021)	mg/kg	BDL				0.0130	11/26/96	alan	12/05/96	alan
Chlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,1,1,2-Tetrachloroethane	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Ethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
m-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
p-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
O-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
total Xylenes	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Styrene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
Bromoform	(5030/ 8021)	mg/kg	BDL				0.170	11/26/96	alan	12/05/96	alan
Isopropylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Bromobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,3-Trichloropropane	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,1,2,2-Tetrachloroethane	(5030/ 8021)	mg/kg	BDL				0.0130	11/26/96	alan	12/05/96	alan
n-Propylbenzene	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96	alan	12/05/96	alan
2-Chlorotoluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan

Group # 16052

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12594 Sample ID PG-05SB-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type SOLIDS Sampled 11/22/96 10:30

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
4-Chlorotoluene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,3,5-Trimethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
tert-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,4-Trimethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
sec-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,3-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,4-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
p-Isopropyltoluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
n-Butylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dibromo-3-chloropropane	(5030/ 8021)	mg/kg	BDL				0.00700	11/26/96	alan	12/05/96	alan
1,2,4-Trichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1Hexachlorobutadiene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Naphthalene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,3-Trichlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Acetone	(5030/ 8021)	mg/kg	BDL				0.0500	11/26/96	alan	12/05/96	alan
MTBE	(5030/ 8021)	mg/kg	BDL				0.0500	11/26/96	alan	12/05/96	alan

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Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12595 Sample ID PG-06SB-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type SOLIDS Sampled 11/22/96 09:25

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed By
Dichlorodifluoromethane	(5030/ 8021)	mg/kg	BDL				0.0800	11/26/96 alan	12/05/96 alan
Chloromethane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96 alan	12/05/96 alan
Vinylchloride	(5030/8021)	mg/kg	BDL				0.00300	11/26/96 alan	12/05/96 alan
Bromomethane	(5030/ 8021)	mg/kg	BDL				0.0300	11/26/96 alan	12/05/96 alan
Chloroethane	(5030/ 8021)	mg/kg	BDL				0.0300	11/26/96 alan	12/05/96 alan
Trichlorofluoromethane	(5030/ 8021)	mg/kg	BDL				0.0100	11/26/96 alan	12/05/96 alan
1,1-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96 alan	12/05/96 alan
Methylenechloride	(5030/ 8021)	mg/kg	BDL				0.00700	11/26/96 alan	12/05/96 alan
t-1,2-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96 alan	12/05/96 alan
1,1-Dichlroethane	(5030/ 8021)	mg/kg	BDL				0.00800	11/26/96 alan	12/05/96 alan
2,2-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.0100	11/26/96 alan	12/05/96 alan
c-1,2-Dichloroethylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
Bromochloromethane	(5030/ 8021)	mg/kg	BDL				0.0120	11/26/96 alan	12/05/96 alan
Chloroform	(5030/ 8021)	mg/kg	BDL				0.00500	11/26/96 alan	12/05/96 alan
1,1,1-Trichloroethane	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96 alan	12/05/96 alan
Carbontetrachloride	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96 alan	12/05/96 alan
1,1-Dichloropropene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan
Benzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan
1,2-Dichloroethane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96 alan	12/05/96 alan
Trichloroethylenee	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan
1,2-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
Dibromomethane	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan
Bromodichloromethane	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96 alan	12/05/96 alan
c-1,3-Dichloropropylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
Toluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan
t-1,3-Dichloropropylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
1,1,2-Trichloroethane	(5030/ 8021)	mg/kg	BDL				0.00400	11/26/96 alan	12/05/96 alan
Tetrachloroethylenene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan
1,3-Dichloropropane	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96 alan	12/05/96 alan
Dibromochloromethane	(5030/ 8021)	mg/kg	BDL				0.00600	11/26/96 alan	12/05/96 alan
1,2-Dibromoethane	(5030/ 8021)	mg/kg	BDL				0.0130	11/26/96 alan	12/05/96 alan
Chlorobenzene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
1,1,1,2-Tetrachloroethane	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
Ethylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan
m-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
p-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
O-Xylene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
total Xylenes	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
Styrene	(5030/ 8021)	mg/kg	BDL				0.00200	11/26/96 alan	12/05/96 alan
Bromoform	(5030/ 8021)	mg/kg	BDL				0.170	11/26/96 alan	12/05/96 alan
Isopropylbenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan
Bromobenzene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan
1,2,3-Trichloropropane	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan
1,1,2,2-Tetrachloroethane	(5030/ 8021)	mg/kg	BDL				0.0130	11/26/96 alan	12/05/96 alan
n-Propylbenzene	(5030/ 8021)	mg/kg	BDL				0.00300	11/26/96 alan	12/05/96 alan
2-Chlorotoluene	(5030/ 8021)	mg/kg	BDL				0.00100	11/26/96 alan	12/05/96 alan

Water Quality Division
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Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12595
Group # 16052
Sample Type SOLIDS

Sample ID PG-06SB-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:25

Parameter	Method		Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
4-Chlorotoluene	(5030/ 8021	)	mg/kg	BDL				0.00200	11/26/96	alan	12/05/96	alan
1,3,5-Trimethylbenzene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
tert-Butylbenzene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,4-Trimethylbenzene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
sec-Butylbenzene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,3-Dichlorobenzene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,4-Dichlorobenzene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
p-Isopropyltoluene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dichlorobenzene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
n-Butylbenzene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2-Dibromo-3-chloropropane	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,4-Trichlorobenzene	(5030/ 8021	)	mg/kg	BDL				0.00700	11/26/96	alan	12/05/96	alan
1Hexachlorobutadiene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Naphthalene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
1,2,3-Trichlorobenzene	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
Acetone	(5030/ 8021	)	mg/kg	BDL				0.00100	11/26/96	alan	12/05/96	alan
MTBE	(5030/ 8021	)	mg/kg	BDL				0.0500	11/26/96	alan	12/05/96	alan
								0.0500	11/26/96	alan	12/05/96	alan

CITY OF TALLAHASSEE
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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12596
Group # 16052
Sample Type WATER

Sample ID PG-01SBE-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 08:30

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Chloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Vinyl chloride	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Bromomethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Chloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Trichlorofluoromethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Methylene chloride	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
trans-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,1-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
2,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.140000			12/05/96	alan
cis-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
Bromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Chloroform	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
1,1,1-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
Carbon tetrachloride	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1-Dichloropropene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Benzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
1,2-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.220000			12/05/96	alan
Trichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
1,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0900000			12/05/96	alan
Dibromomethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Bromodichloromethane	(502.2/ 8021)	ug/L	BDL				0.100000			12/05/96	alan
cis-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.120000			12/05/96	alan
Toluene	(502.2/ 8021)	ug/L	0.94				0.0500000			12/05/96	alan
trans-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.100000			12/05/96	alan
1,1,2-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Tetrachloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
1,3-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Dibromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,2-Dibromoethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Chlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,1,1,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Ethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
m-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
p-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
o-Xylene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Styrene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Bromoform	(502.2/ 8021)	ug/L	BDL				0.180000			12/05/96	alan
Isopropylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Bromobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2,3-Trichloropropane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1,2,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
n-Propylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
2-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
4-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan

Group # 16052

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12596 Sample ID PG-01SBE-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type WATER Sampled 11/22/96 08:30

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed	By
1,3,5-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
t-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,2,4-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
s-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,3-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
1,4-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
p-Isopropyltoluene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,2-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
n-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
1,2-Dibromo-3-chloropropane	(502.2/ 8021)	ug/L	BDL				0.120000		12/05/96	alan
1,2,4-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
Hexachlorobutadiene	(502.2/ 8021)	ug/L	BDL				0.110000		12/05/96	alan
Naphthalene	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,2,3-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
MTBE	(502.2/ 8021)	ug/L	BDL				5.00000		12/05/96	alan

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12597
Group # 16052
Sample Type WATER

Sample ID PG-01TWE-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 08:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed	By
Dichlorodifluoromethane	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
Chloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Vinyl chloride	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
Bromomethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Chloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Trichlorofluoromethane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,1-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Methylene chloride	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
trans-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
1,1-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
2,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.140000		12/05/96	alan
cis-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
Bromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Chloroform	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
1,1,1-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
Carbon tetrachloride	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,1-Dichloropropene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Benzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
1,2-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.220000		12/05/96	alan
Trichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
1,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0900000		12/05/96	alan
Dibromomethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Bromodichloromethane	(502.2/ 8021)	ug/L	BDL				0.100000		12/05/96	alan
cis-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.120000		12/05/96	alan
Toluene	(502.2/ 8021)	ug/L	0.92				0.0500000		12/05/96	alan
trans-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.100000		12/05/96	alan
1,1,2-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Tetrachloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
1,3-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
Dibromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
1,2-Dibromoethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Chlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,1,1,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Ethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
m-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
p-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
o-Xylene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Styrene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Bromoform	(502.2/ 8021)	ug/L	BDL				0.180000		12/05/96	alan
Isopropylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Bromobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,2,3-Trichloropropane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,1,2,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
n-Propylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
2-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
4-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan

Group # 16052

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Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12597 Sample ID PG-01TWE-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type WATER Sampled 11/22/96 08:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
1,3,5-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
t-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2,4-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
s-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,3-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,4-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
p-Isopropyltoluene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
n-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
1,2-Dibromo-3-chloropropane	(502.2/ 8021)	ug/L	BDL				0.120000			12/05/96	alan
1,2,4-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
Hexachlorobutadiene	(502.2/ 8021)	ug/L	BDL				0.110000			12/05/96	alan
Naphthalene	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,2,3-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
MTBE	(502.2/ 8021)	ug/L	BDL				5.00000			12/05/96	alan

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City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12598 Sample ID PG-02TW-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type WATER Sampled 11/22/96 12:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Chloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Vinyl chloride	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Bromomethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Chloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Trichlorofluoromethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Methylene chloride	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
trans-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,1-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
2,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.140000			12/05/96	alan
cis-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
Bromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Chloroform	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
1,1,1-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
Carbon tetrachloride	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1-Dichloropropene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Benzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
1,2-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.220000			12/05/96	alan
Trichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
1,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0900000			12/05/96	alan
Dibromomethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Bromodichloromethane	(502.2/ 8021)	ug/L	BDL				0.100000			12/05/96	alan
cis-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.120000			12/05/96	alan
Toluene	(502.2/ 8021)	ug/L	2.33				0.0500000			12/05/96	alan
trans-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.100000			12/05/96	alan
1,1,2-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Tetrachloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
1,3-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Dibromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,2-Dibromoethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Chlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,1,1,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Ethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
m-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
p-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
o-Xylene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Styrene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Bromoform	(502.2/ 8021)	ug/L	BDL				0.180000			12/05/96	alan
Isopropylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Bromobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2,3-Trichloropropane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1,2,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
n-Propylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
2-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
4-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan

Group # 16052

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12598
Group # 16052
Sample Type WATER

Sample ID PG-02TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 12:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
1,3,5-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
t-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2,4-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
s-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,3-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,4-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
p-Isopropyltoluene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
n-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
1,2-Dibromo-3-chloropropane	(502.2/ 8021)	ug/L	BDL				0.120000			12/05/96	alan
1,2,4-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
Hexachlorobutadiene	(502.2/ 8021)	ug/L	BDL				0.110000			12/05/96	alan
Naphthalene	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,2,3-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
MTBE	(502.2/ 8021)	ug/L	BDL				5.00000			12/05/96	alan

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ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12599
Group # 16052
Sample Type WATER

Sample ID PG-06TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed	By
Dichlorodifluoromethane	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
Chloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Vinyl chloride	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
Bromomethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Chloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Trichlorofluoromethane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,1-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Methylene chloride	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
trans-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
1,1-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
2,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.140000		12/05/96	alan
cis-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
Bromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Chloroform	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
1,1,1-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
Carbon tetrachloride	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,1-Dichloropropene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Benzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
1,2-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.220000		12/05/96	alan
Trichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
1,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0900000		12/05/96	alan
Dibromomethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Bromodichloromethane	(502.2/ 8021)	ug/L	BDL				0.100000		12/05/96	alan
cis-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.120000		12/05/96	alan
Toluene	(502.2/ 8021)	ug/L	1.68				0.0500000		12/05/96	alan
trans-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.100000		12/05/96	alan
1,1,2-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Tetrachloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
1,3-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
Dibromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
1,2-Dibromoethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Chlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,1,1,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Ethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
m-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
p-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
o-Xylene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Styrene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Bromoform	(502.2/ 8021)	ug/L	BDL				0.180000		12/05/96	alan
Isopropylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Bromobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,2,3-Trichloropropane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,1,2,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
n-Propylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
2-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
4-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan

Group # 16052

CITY OF TALLAHASSEE
Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12599 Sample ID PG-06TW-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type WATER Sampled 11/22/96 09:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
1,3,5-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
t-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2,4-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
s-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,3-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,4-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
p-Isopropyltoluene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
n-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
1,2-Dibromo-3-chloropropane	(502.2/ 8021)	ug/L	BDL				0.120000			12/05/96	alan
1,2,4-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
Hexachlorobutadiene	(502.2/ 8021)	ug/L	BDL				0.110000			12/05/96	alan
Naphthalene	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,2,3-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
MTBE	(502.2/ 8021)	ug/L	BDL				5.00000			12/05/96	alan

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12600
Group # 16052
Sample Type WATER

Sample ID PG-06TWD-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Chloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Vinyl chloride	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Bromomethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Chloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Trichlorofluoromethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Methylene chloride	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
trans-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,1-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
2,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.140000			12/05/96	alan
cis-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
Bromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Chloroform	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
1,1,1-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
Carbon tetrachloride	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1-Dichloropropene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Benzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
1,2-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.220000			12/05/96	alan
Trichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
1,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0900000			12/05/96	alan
Dibromomethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Bromodichloromethane	(502.2/ 8021)	ug/L	BDL				0.100000			12/05/96	alan
cis-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.120000			12/05/96	alan
Toluene	(502.2/ 8021)	ug/L	679				0.0500000			12/05/96	alan
trans-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.100000			12/05/96	alan
1,1,2-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Tetrachloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
1,3-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Dibromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,2-Dibromoethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Chlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,1,1,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Ethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
m-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
p-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
o-Xylene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Styrene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Bromoform	(502.2/ 8021)	ug/L	BDL				0.180000			12/05/96	alan
Isopropylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Bromobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2,3-Trichloropropane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1,2,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
n-Propylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
2-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
4-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan

Group # 16052

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Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12600
Group # 16052
Sample Type WATER

Sample ID PG-06TWD-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 09:35

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed	By
1,3,5-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
t-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,2,4-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
s-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,3-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
1,4-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
p-Isopropyltoluene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,2-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
n-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
1,2-Dibromo-3-chloropropane	(502.2/ 8021)	ug/L	BDL				0.120000		12/05/96	alan
1,2,4-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
Hexachlorobutadiene	(502.2/ 8021)	ug/L	BDL				0.110000		12/05/96	alan
Naphthalene	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,2,3-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
MTBE	(502.2/ 8021)	ug/L	BDL				5.00000		12/05/96	alan

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12601 Sample ID PG-07TW-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type WATER Sampled 11/22/96 11:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Chloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Vinyl chloride	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Bromomethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Chloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Trichlorofluoromethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Methylene chloride	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
trans-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,1-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
2,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.140000			12/05/96	alan
cis-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
Bromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Chloroform	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
1,1,1-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
Carbon tetrachloride	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1-Dichloropropene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Benzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
1,2-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.220000			12/05/96	alan
Trichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
1,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0900000			12/05/96	alan
Dibromomethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Bromodichloromethane	(502.2/ 8021)	ug/L	BDL				0.100000			12/05/96	alan
cis-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.120000			12/05/96	alan
Toluene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
trans-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.100000			12/05/96	alan
1,1,2-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Tetrachloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
1,3-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
Dibromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,2-Dibromoethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
Chlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,1,1,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
Ethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
m-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
p-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
o-Xylene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Styrene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Bromoform	(502.2/ 8021)	ug/L	BDL				0.180000			12/05/96	alan
Isopropylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
Bromobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2,3-Trichloropropane	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,1,2,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
n-Propylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
2-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
4-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan

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Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12601
Group # 16052
Sample Type WATER

Sample ID PG-07TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 11:00

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed	By
1,3,5-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
t-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,2,4-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
s-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,3-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
1,4-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
p-Isopropyltoluene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,2-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
n-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
1,2-Dibromo-3-chloropropane	(502.2/ 8021)	ug/L	BDL				0.120000		12/05/96	alan
1,2,4-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
Hexachlorobutadiene	(502.2/ 8021)	ug/L	BDL				0.110000		12/05/96	alan
Naphthalene	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,2,3-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
MTBE	(502.2/ 8021)	ug/L	BDL				5.00000		12/05/96	alan

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ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12602 Sample ID PG-09TW-1 FOSTER WHEELER
Group # 16052 Sample Site
Sample Type WATER Sampled 11/22/96 12:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep. By	Analyzed	By
Dichlorodifluoromethane	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
Chloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Vinyl chloride	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
Bromomethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Chloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Trichlorofluoromethane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,1-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Methylene chloride	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
trans-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
1,1-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
2,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.140000		12/05/96	alan
cis-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
Bromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Chloroform	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
1,1,1-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
Carbon tetrachloride	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,1-Dichloropropene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Benzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
1,2-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.220000		12/05/96	alan
Trichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan
1,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0900000		12/05/96	alan
Dibromomethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Bromodichloromethane	(502.2/ 8021)	ug/L	BDL				0.100000		12/05/96	alan
cis-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.120000		12/05/96	alan
Toluene	(502.2/ 8021)	ug/L	2.72				0.0500000		12/05/96	alan
trans-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.100000		12/05/96	alan
1,1,2-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Tetrachloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
1,3-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
Dibromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
1,2-Dibromoethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
Chlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,1,1,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0700000		12/05/96	alan
Ethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000		12/05/96	alan
m-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
p-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
o-Xylene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Styrene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Bromoform	(502.2/ 8021)	ug/L	BDL				0.180000		12/05/96	alan
Isopropylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
Bromobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
1,2,3-Trichloropropane	(502.2/ 8021)	ug/L	BDL				0.0600000		12/05/96	alan
1,1,2,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000		12/05/96	alan
n-Propylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000		12/05/96	alan
2-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0500000		12/05/96	alan
4-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0800000		12/05/96	alan

Group # 16052

Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
CITY OF TALLAHASSEE Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-12602
Group # 16052
Sample Type WATER

Sample ID PG-09TW-1 FOSTER WHEELER
Sample Site
Sampled 11/22/96 12:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
1,3,5-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
t-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2,4-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
s-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,3-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0500000			12/05/96	alan
1,4-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0700000			12/05/96	alan
p-Isopropyltoluene	(502.2/ 8021)	ug/L	BDL				0.0300000			12/05/96	alan
1,2-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0400000			12/05/96	alan
n-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			12/05/96	alan
1,2-Dibromo-3-chloropropane	(502.2/ 8021)	ug/L	BDL				0.120000			12/05/96	alan
1,2,4-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
Hexachlorobutadiene	(502.2/ 8021)	ug/L	BDL				0.110000			12/05/96	alan
Naphthalene	(502.2/ 8021)	ug/L	BDL				0.0600000			12/05/96	alan
1,2,3-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000			12/05/96	alan
MTBE	(502.2/ 8021)	ug/L	BDL				5.00000			12/05/96	alan

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Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-13286
Group # 16052
Sample Type WATER

Sample ID TB-01 FOSTER WHEELER
Sample Site
Sampled 11/22/96 12:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
Dichlorodifluoromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			11/25/96	alan
Chloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			11/25/96	alan
Vinyl chloride	(502.2/ 8021)	ug/L	BDL				0.0500000			11/25/96	alan
Bromomethane	(502.2/ 8021)	ug/L	BDL				0.0400000			11/25/96	alan
Chloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			11/25/96	alan
Trichlorofluoromethane	(502.2/ 8021)	ug/L	BDL				0.0600000			11/25/96	alan
1,1-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			11/25/96	alan
Methylene chloride	(502.2/ 8021)	ug/L	0.80				0.0800000			11/25/96	alan
trans-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0500000			11/25/96	alan
1,1-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			11/25/96	alan
2,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.140000			11/25/96	alan
cis-1,2-Dichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0600000			11/25/96	alan
Bromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0700000			11/25/96	alan
Chloroform	(502.2/ 8021)	ug/L	0.30				0.0700000			11/25/96	alan
1,1,1-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0600000			11/25/96	alan
Carbon tetrachloride	(502.2/ 8021)	ug/L	BDL				0.0600000			11/25/96	alan
1,1-Dichloropropene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
Benzene	(502.2/ 8021)	ug/L	BDL				0.0200000			11/25/96	alan
1,2-Dichloroethane	(502.2/ 8021)	ug/L	BDL				0.220000			11/25/96	alan
Trichloroethylene	(502.2/ 8021)	ug/L	BDL				0.0800000			11/25/96	alan
1,2-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0900000			11/25/96	alan
Dibromomethane	(502.2/ 8021)	ug/L	BDL				0.0700000			11/25/96	alan
Bromodichloromethane	(502.2/ 8021)	ug/L	BDL				0.100000			11/25/96	alan
cis-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.120000			11/25/96	alan
Toluene	(502.2/ 8021)	ug/L	0.87				0.0500000			11/25/96	alan
trans-1,3-Dichloropropylene	(502.2/ 8021)	ug/L	BDL				0.100000			11/25/96	alan
1,1,2-Trichloroethane	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
Tetrachloroethylene	(502.2/ 8021)	ug/L	BDL				0.0400000			11/25/96	alan
1,3-Dichloropropane	(502.2/ 8021)	ug/L	BDL				0.0500000			11/25/96	alan
Dibromochloromethane	(502.2/ 8021)	ug/L	BDL				0.0500000			11/25/96	alan
1,2-Dibromoethane	(502.2/ 8021)	ug/L	BDL				0.0400000			11/25/96	alan
Chlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
1,1,1,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0700000			11/25/96	alan
Ethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			11/25/96	alan
m-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			11/25/96	alan
p-Xylene	(502.2/ 8021)	ug/L	BDL				0.0500000			11/25/96	alan
o-Xylene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
Styrene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
Bromoform	(502.2/ 8021)	ug/L	BDL				0.180000			11/25/96	alan
Isopropylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
Bromobenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
1,2,3-Trichloropropane	(502.2/ 8021)	ug/L	BDL				0.0600000			11/25/96	alan
1,1,2,2-Tetrachloroethane	(502.2/ 8021)	ug/L	BDL				0.0400000			11/25/96	alan
n-Propylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
2-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0500000			11/25/96	alan
4-Chlorotoluene	(502.2/ 8021)	ug/L	BDL				0.0800000			11/25/96	alan

CITY OF TALLAHASSEE
Water Quality Division
3805 Springhill Rd.
Tallahassee, Fl. 32310-6502
(904) 891-1200
Cert. #51097 & E51259

Electric Production & Env.Affairs COT290101
Electric Department
City of Tallahassee

Tallahassee ,FL 32302
ATTN. Greg New

Purdom Generating Site Assess

Sampled by : GREG NEW

Sample # 96-13286
Group # 16052
Sample Type WATER

Sample ID TB-01 FOSTER WHEELER
Sample Site
Sampled 11/22/96 12:45

Parameter	Method	Units	Results	Conc	%Rec.	Dilution	Det. Limit	Prep.	By	Analyzed	By
1,3,5-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			11/25/96	alan
t-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
1,2,4-Trimethylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
s-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
1,3-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0500000			11/25/96	alan
1,4-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0700000			11/25/96	alan
p-Isopropyltoluene	(502.2/ 8021)	ug/L	BDL				0.0300000			11/25/96	alan
1,2-Dichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0400000			11/25/96	alan
n-Butylbenzene	(502.2/ 8021)	ug/L	BDL				0.0200000			11/25/96	alan
1,2-Dibromo-3-chloropropane	(502.2/ 8021)	ug/L	BDL				0.120000			11/25/96	alan
1,2,4-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000			11/25/96	alan
Hexachlorobutadiene	(502.2/ 8021)	ug/L	BDL				0.110000			11/25/96	alan
Naphthalene	(502.2/ 8021)	ug/L	BDL				0.0600000			11/25/96	alan
1,2,3-Trichlorobenzene	(502.2/ 8021)	ug/L	BDL				0.0800000			11/25/96	alan
MTBE	(502.2/ 8021)	ug/L	BDL				5.00000			11/25/96	alan

Report 16052 Comment Page

Sample# 96-12591
Source: PG-05SBD-1 FOSTER WHEELER

Data Entry Comments

Results are mg/kgdw 2.65g extracted 92% dry weight (@BN8270)

Sample# 96-12592
Source: PG-07SB-1 FOSTER WHEELER

Data Entry Comments

Results are mg/kgdw 3.29g extracted 92% dry weight (@BN8270)

Sample# 96-12593
Source: PG-09SB-1 FOSTER WHEELER

Data Entry Comments

Results are mg/kgdw 2.40g extracted 85.9% dry weight (@BN8270)

Sample# 96-12594
Source: PG-05SB-1 FOSTER WHEELER

Data Entry Comments

Results are mg/kgdw 2.76g extracted 84.3% dry weight (@BN8270)

Sample# 96-12595
Source: PG-06SB-1 FOSTER WHEELER

Data Entry Comments

Results are mg/kgdw 2.70g extracted 93% dry weight (@BN8270)

Sample# 96-12596
Source: PG-01SBE-1 FOSTER WHEELER

Data Entry Comments

TRIP BLANK HAD 0.87ppb TOLUENE. (@VOC8021)

Sample# 96-12597
Source: PG-01TWE-1 FOSTER WHEELER

Report 16052 Comment Page

Data Entry Comments

TRIP BLANK HAD 0.87ppb TOLUENE. (@VOC8021)

Sample# 96-12598
Source: PG-02TW-1 FOSTER WHEELER

Data Entry Comments

TRIP BLANK HAD 0.87ppb TOLUENE. (@VOC8021)

Sample# 96-12600
Source: PG-06TWD-1 FOSTER WHEELER

Data Entry Comments

TRIP BLANK HAD 0.87ppb TOLUENE. (@VOC8021)

Sample# 96-12601
Source: PG-07TW-1 FOSTER WHEELER

Data Entry Comments

TRIP BLANK HAD 0.87ppb TOLUENE. (@VOC8021)

Sample# 96-12602
Source: PG-09TW-1 FOSTER WHEELER

Data Entry Comments

TRIP BLANK HAD 0.87ppb TOLUENE. (@VOC8021)

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

11631

☐ 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax (912) 352-0165
☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax (904) 878-9504
☐ 414 Southwest 12th Avenue, Deerfield Beach, FL 33442 — Phone: (305) 421-7400 — Fax (305) 421-2584
☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	1584.0009	Purdom Electric Plant

CLIENT NAME	TELEPHONE/FAX NO.
Foster Wheeler Env.	561-781-3402

CLIENT ADDRESS: 759 S. Federal Hwy, Suite 100, Stuart, FL 34994

CITY, STATE, ZIP CODE

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
C. Monaco, G. New	Greg New

PAGE 1 OF 1

☒ STANDARD TAT
☐ EXPEDITED TAT *

REPORT DUE DATE _____

* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	MATRIX TYPE: FL PRO — NUMBER OF CONTAINERS SUBMITTED
11/22/96	1200	PG-02TW-1	1				2
	0935	PG-06TW-1	1				2
	1100	PG-07TW-1	1				2
	1245	PG-09TW-1	1				2
	0935	PG-06TWD-1	1				2
	0845	PG-01TWE-1	1				2
11/22/96	0830	PG-01SBE-1	1				2

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
				11/19/96	1400		11/22/96	1500
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
			☐ YES ☐ NO			

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax (912) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax (904) 878-9504
414 Southwest 12th Avenue, Deerfield Beach, FL 33442 — Phone: (305) 421-7400 — Fax (305) 421-2584
900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	1584.0009	Purdom Electric Plant

CLIENT NAME	TELEPHONE/FAX NO.
Foster Wheeler Env.	561-781-3402

CLIENT ADDRESS	CITY, STATE, ZIP CODE
2599 S Federal Hwy, ~~Stuart~~ Suite 100	Stuart, FL 34994

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
C. Monaco, G. New	Greg New

PAGE 1 OF 1

☑ STANDARD TAT
☐ EXPEDITED TAT*
REPORT DUE DATE _____
* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS	NONAQUEOUS	OIL	AIR	REQUIRED ANALYSES: Asbestos	FL PRO RCRA Metals* As, Cd, Cr, Hg, Ag, Se, Pb	NUMBER OF CONTAINERS SUBMITTED								
11/22/96	1030	PG-05SB-1	/				1	1	N/A								* Use same container as asbestos sample
	0925	PG-06SB-1	/				1	1									
	0900	PG-07SB-1	/				1	1									
	1000	PG-09SB-1	/				1	1									
11/22/96	1035	PG-05SB0-1	/				1	1	N/A								

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
[signature]	11/19/96	1400	[signature]	11/22/96	1500			

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
			☐ YES ☐ NO			

SL **SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.** 11633

☐ 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax (912) 352-0165
☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax (904) 878-9504
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☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	1584.0009	Purdom Electric Plant

CLIENT NAME	TELEPHONE/FAX NO.
Foster Wheeler Env.	561-781-3402

CLIENT ADDRESS: 759 S Federal Hwy, Suite 100, Stuart, FL 34994

CITY, STATE, ZIP CODE

SAMPLER(S) NAME(S): C. Monaco, G New

CLIENT PROJECT MANAGER: Greg New

MATRIX TYPE: AQUEOUS MATRIX | NONAQUEOUS MATRIX | OIL MATRIX | AIR MATRIX

REQUIRED ANALYSES: 8010/8020 | 8130/8060 (CPCBs only) | RCRA Metals As, Ag, Se, Cd, Cr, Pb, Hg

PAGE 1 OF 1

☑ STANDARD TAT

☐ EXPEDITED TAT *

REPORT DUE DATE

* SUBJECT TO RUSH FEES *

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS	NONAQUEOUS	OIL	AIR	8010/8020	8130/8060 (CPCBs only)	RCRA Metals As, Ag, Se, Cd, Cr, Pb, Hg	NUMBER OF CONTAINERS SUBMITTED
11/22/96	1200	PG-02TW-1	1				2	1	1	
	0935	PG-06TW-1	1				2	1	1	
	1100	PG-07TW-1	1				2	1	1	
	1245	PG-09TW-1	1				2	1	1	
	0935	PG- TWD-1	1				2	1	1	
	0845	PG-01TWE-1	1				2	1	1	
11/22/96	0830	PG-01SBE-1	1				2	1	1	
N/A		TB-01	1				1			

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
				11/19/96	1430		11/22/96	1506
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
			☐ YES ☐ NO			

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900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	1584-0009	Pendora Electric Plant

CLIENT NAME	TELEPHONE/FAX NO.
Foster Wheeler Env.	561-781-3402

CLIENT ADDRESS: 759 S Federal Hwy, Suite 100 — CITY, STATE, ZIP CODE: Stuart, FL 34994

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
C Monaco, G New	Greg New

MATRIX TYPE: AQUEOUS MATRIX; NONAQUEOUS MATRIX; OIL MATRIX; AIR MATRIX

REQUIRED ANALYSES: 8015, 8020, 8050 (PCBs only), 8100

PAGE 1 OF 1

☑ STANDARD TAT

☐ EXPEDITED TAT *

REPORT DUE DATE _____

* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS SUBMITTED
11/22/96	1030	PG-05SB-1	1 1
	0925	PG-06SB-1	1 1
	0900	PG-07SB-1	1 1
	1000	PG-09SB-1	1 1
11/22/96	1035	PG-05SBD-1	1 1

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			[signature]	11/9/96	1400	[signature]	11/22/96	1500
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
			☐ YES ☐ NO			

ATTACHMENT C

DATA VALIDATION MEMORANDUM

ATTACHMENT C - Data Validation Report for the Assessment Conducted During November 1996

Introduction

This data set consisted of 8 water and 5 soil samples collected on November 22, 1996. The Foster Wheeler Environmental Field Team hand delivered the samples to the City of Tallahassee Water Quality Division Laboratory on November 22, 1996, in sealed coolers with Chain-of-Custody documentation. All of the samples were analyzed by the City of Tallahassee Water Quality Division Laboratory (City), Savannah Laboratories, Inc. (Savannah) and Micro Analytical Laboratories, Inc. (Micro). Table A provides a list of the analyses performed by each laboratory.

TABLE A
ANALYSES BY LABORATORY - NOVEMBER 1996

Analyses	City of Tallahassee Water Quality Division Laboratory	Savannah Laboratories, Inc.	Micro Analytical Laboratories, Inc.
Soil			
Asbestos	—	—	X
RCRA Metals	—	X	—
FL Pro	—	X	—
8270	X	—	—
8021	X	—	—
Water			
RCRA Metals	—	X	—
FL Pro	—	X	—
8270	X	—	—
8021	X	—	—

Table Legend:
— Analyses not performed by this laboratory.
X Analysis performed in this laboratory.

Laboratory Holding Times

All of the samples were extracted and/or analyzed within the required holding times by the analytical laboratories.

Blank Results

The results for the analytes in the trip, and equipment blank samples analyses were below detection limits except as noted. Table B provides a summary of the Quality Assurance sample results.

TABLE B
QUALITY ASSURANCE SAMPLES ANALYTICAL RESULTS SUMMARY - NOVEMBER 1996

Analyte	PG-01SBE-1	PG-01TWE-1	TB-01
ORGANICS			
EPA 8270 Constituents	BDL[1]	BDL[1]	BDL[1]
EPA 8021			
Methylene Chloride	<0.08	<0.08	0.8 B
Chloroform	<0.07	<0.07	0.3 B
Toluene	0.94 J	0.92 J	0.87 J
PCBs	<10.0	<10.0	NA
FL Pro	<300	<300	NA
INORGANICS			
Arsenic	<0.69	<0.62	NA
Barium	<0.44	<0.00	NA
Cadmium	<0.00	<0.00	NA
Chromium	3.1	2.33	NA
Mercury	<0.00	<0.04	NA
Lead	<0.02	<0.00	NA
Selenium	<0.2	<0.00	NA
Silver	<0.28	<0.38	NA

Notes:
Only results which are above the laboratory reporting limits are shown on this table.
All results are reported as µg/l.
B - Analyte is present in the laboratory blank(s).
J - Estimated value.
TB - Trip Blank.

[1] BDL - Below laboratory reporting limit. Laboratory reporting limits vary by sample for each analytical method or analyte see Attachment C

8021 Analyses - Toluene was found at 0.94 µg/l in the soil equipment blank sample (PG-01SBE-1), at 0.92 µg/l in the water equipment blank sample (PG-01TWE-1), and at 0.87 µg/l in the trip blank sample. All of the results for toluene which are less than 9 µg/l should be flagged with a "J" as these are estimated results. In addition, the trip blank sample (TB-01) also contained methylene chloride (0.80 µg/l) and chloroform (0.30 µg/l). Per the City laboratory (memo dated January 16, 1997) methylene chloride and chloroform show up periodically in sample blanks from the laboratory and are considered "laboratory contamination". Therefore, these results should be flagged as "B" to denote blank contamination.

8270 Analyses - The results for all of the analytes in the 8270 laboratory blank sample were below method detection limits.

Surrogate Recoveries

All of the surrogate recoveries, matrix spike (MS), and matrix spike duplicate (MSD) sample results from the 8270 analyses were within laboratory control limits. Surrogate results from the other analyses were not provided by the laboratory to Foster Wheeler Environmental.

Relative Percent Difference (RPD) Results for Duplicates

All of the results for sample duplicates met the 25 percent (%) RPD criteria for liquid sample analyses and the 50% RPD for solid sample analyses except as noted below:

Soil

Asbestos: Sample PG-05SBD-1 reportedly contained chrysotile asbestos fibers (3-5%) but the duplicate sample (PG-05SB-1), did not contain chrysotile. Both samples contained similar levels of amosite asbestos fibers. Sample results for both samples should be noted as J or estimated values.

Water

RCRA Metals Groundwater samples PG-06TW-1 and PG-06TWD-1 (duplicate). The RPDs for cadmium (164%) and selenium (51%) exceed the 25% RPD criteria for liquid sample analyses. These results should be noted as J or estimated values.

FL Pro: The RPD for groundwater samples PG-06TW-1 and PG-06TWD-1 (duplicate) was 96%. These results should be noted as J or estimated values.

Matrix Spike/Matrix Spike Duplicate Results

Matrix spike/matrix spike duplicate samples were not analyzed as part of this sample data set.

Conclusions

The data presented in these analytical reports is of acceptable quality and the laboratories experienced no problems (except as noted herein) during the analyses which might affect the quality of the results.

10.6 MATHEMATICAL CALCULATIONS

10.6.1 Human Resources Modelling

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

January 27,1997

Ms Carolyn S. Raepple
Hopping Green Sams & Smith
Post Office Box 6526
Tallahassee, Florida 32314

Re: EMF Compliance

Dear Ms Raepple:

The Department has reviewed your request of December 30, 1996, on behalf of the City of Tallahassee for permission to use the Southern California Edison EMF modeling program to demonstrate compliance with Florida Administrative Code Rule Chapter 62-814. It appears that the Southern California Edison program can provide results equivalent to the BPA program. Pursuant to 62-814.460(1)(c), F.A.C. the Department hereby approves the request of the City of Tallahassee to use the Southern California Edison program as an alternate for demonstrating compliance with the provisions of Chapter 62-814, F.A.C.

Sincerely,

Hamilton S. Oven

Hamilton S. Oven, P.E.
Administrator, Siting
Coordination Office

cc: Joe Norton

HOPPING GREEN SAMS & SMITH
PROFESSIONAL ASSOCIATION
ATTORNEYS AND COUNSELORS
123 SOUTH CALHOUN STREET
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RICHARD D. MELSON
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DAVID L. POWELL
WILLIAM D. PRESTON
CAROLYN S. RAEPPLE
DOUGLAS S. ROBERTS
GARY P. SAMS
ROBERT P. SMITH
CHERYL G. STUART

GARY K. HUNTER, JR.
JONATHAN T. JOHNSON
ROBERT A. MANNING
ANGELA R. MORRISON
GARY V. PERKO
KAREN M. PETERSON
R. SCOTT RUTH
W. STEVE SYKES
T. KENT WETHERELL, II

OF COUNSEL
W. ROBERT FOKES

Writer's Direct Dial No.
(904) 425-2346

December 26, 1996

Hamilton S. Oven, P. E.
Administrator
Office of Siting Coordination
2720 Blair Stone Road
Tallahassee, FL 32399

Re: Southern California Edison EMF Program
Equivalency Determination

Dear Mr. Oven:

My firm represents the City of Tallahassee on certain environmental matters, including several related to the City's electric utility operation. As an electric utility, the City anticipates filing computations for certain transmission lines to demonstrate compliance with the standards set forth in Rule 62-814.450, Florida Administrative Code. In making that demonstration, the City would like to utilize the electric and magnetic fields (EMF) program developed by Southern California Edison.

Pursuant to Rule 62-814.460(1)(c), Florida Administrative Code, the City requests you to determine the Southern California Edison EMF program is an equivalent methodology to the Bonneville Power Administration Corona and Field Effects Program for purposes of verifying compliance with the Department's EMF standards.

To assist you in this determination, attached is a sample EMF run from the Southern California Edison EMF program. The first page of the attached run provides the input data, and the subsequent pages provide the program's output.

If you have any questions regarding this matter, please give me a call.

Sincerely,

Carolyn S. Raepple

Main Title: Exist 1A H-Frame
Subtitle: Purdom 8 existing 4/0 CU
Input File: Exist1Ah.fld
Frequency (Hertz): 60
Soil Resistivity (Ohm-meter): 100
Maximum Horizontal Distance From Reference (ft): 100
Step Size (ft): 5
Height For Field Calculation (ft): 3
Left Coordinate of Right of Way (ft): -50
Right Coordinate of Right of Way (ft): 50

Phase Conductor Data

Number of Phases (<=25): 3

Phase ID No.	Phase ID Name	Phase Coordinates X(ft)	Phase Coordinates Y(ft)	SubConds. Per Bundle	Cond. Diam. (in.)	Bund. Diam. (in.)	Phase-Phase kV	Phase Curr. (Amp)	Phase Angle (deg)
1	A	-10.50	19.00	1	0.53	0.53	115.00	385.00	0.00
2	B	0.00	19.00	1	0.53	0.53	115.00	385.00	120.00
3	C	10.50	19.00	1	0.53	0.53	115.00	385.00	240.00

Ground Wire Data

Number of Ground Wires (<=10): 2

Ground Wire No.	Ground Wire Name	Ground Wire Coordinates X(ft)	Ground Wire Coordinates Y(ft)	GW Diam. (in.)	GW Curr. (Amp)	GW Phase Angle (deg)
1	1	-5.00	30.00	0.35	0.00	0.00
2	2	5.00	30.00	0.35	0.00	0.00

Input File: Exist1Ah.fld

Exist 1A H-Frame
Purdom 8 existing 4/0 CU

MAGNETIC FIELD VALUES

DISTANCE (Feet)	B in X (mG)	B in Y (mG)	B Product (mG)	B Max (mG)
-100	1.432	4.302	4.534	4.534
-95	1.665	4.732	5.016	5.016
-90	1.952	5.227	5.579	5.579
-85	2.307	5.800	6.242	6.242
-80	2.754	6.467	7.029	7.028
-75	3.321	7.248	7.973	7.972
-70	4.053	8.167	9.118	9.116
-65	5.014	9.253	10.524	10.521
-60	6.295	10.538	12.275	12.271
-55	8.038	12.056	14.490	14.483
-50	10.461	13.830	17.341	17.331
-45	13.905	15.848	21.084	21.065
-40	18.909	17.987	26.098	26.063
-35	26.313	19.841	32.955	32.887
-30	37.310	20.326	42.487	42.346
-25	53.100	17.052	55.771	55.455
-20	72.904	10.583	73.668	72.927
-15	88.826	34.432	95.266	93.515
-10	84.976	78.851	115.924	112.078
-5	61.116	114.314	129.626	122.701
0	47.529	125.443	134.146	125.443
5	61.116	114.314	129.626	122.701
10	84.976	78.851	115.924	112.078
15	88.826	34.432	95.266	93.515
20	72.904	10.583	73.668	72.927
25	53.100	17.052	55.771	55.455
30	37.310	20.326	42.487	42.346
35	26.313	19.841	32.955	32.887
40	18.909	17.987	26.098	26.063
45	13.905	15.848	21.084	21.065
50	10.461	13.830	17.341	17.331
55	8.038	12.056	14.490	14.483
60	6.295	10.538	12.275	12.271
65	5.014	9.253	10.524	10.521
70	4.053	8.167	9.118	9.116
75	3.321	7.248	7.973	7.972
80	2.754	6.467	7.029	7.028
85	2.307	5.800	6.242	6.242
90	1.952	5.227	5.579	5.579
95	1.665	4.732	5.016	5.016
100	1.432	4.302	4.534	4.534

Input File: Exist1Ah.fld

Exist 1A H-Frame
Purdom 8 existing 4/0 CU

ELECTRIC FIELD VALUES

DISTANCE (Feet)	E in X (kV/m)	E in Y (kV/m)	E Product (kV/m)	E Max (kV/m)
-100	0.004	0.044	0.044	0.044
-95	0.005	0.051	0.051	0.051
-90	0.006	0.059	0.060	0.060
-85	0.007	0.070	0.070	0.070
-80	0.009	0.083	0.083	0.083
-75	0.011	0.099	0.099	0.099
-70	0.014	0.119	0.120	0.120
-65	0.019	0.146	0.147	0.147
-60	0.025	0.182	0.183	0.183
-55	0.033	0.229	0.231	0.231
-50	0.045	0.293	0.296	0.296
-45	0.063	0.381	0.386	0.386
-40	0.089	0.504	0.512	0.512
-35	0.124	0.678	0.689	0.689
-30	0.168	0.920	0.935	0.935
-25	0.205	1.238	1.255	1.255
-20	0.189	1.595	1.606	1.606
-15	0.121	1.828	1.832	1.828
-10	0.356	1.665	1.703	1.683
-5	0.573	1.115	1.253	1.176
0	0.612	0.765	0.979	0.765
5	0.573	1.115	1.253	1.176
10	0.356	1.665	1.703	1.683
15	0.121	1.828	1.832	1.828
20	0.189	1.595	1.606	1.606
25	0.205	1.238	1.255	1.255
30	0.168	0.920	0.935	0.935
35	0.124	0.678	0.689	0.689
40	0.089	0.504	0.512	0.512
45	0.063	0.381	0.386	0.386
50	0.045	0.293	0.296	0.296
55	0.033	0.229	0.231	0.231
60	0.025	0.182	0.183	0.183
65	0.019	0.146	0.147	0.147
70	0.014	0.119	0.120	0.120
75	0.011	0.099	0.099	0.099
80	0.009	0.083	0.083	0.083
85	0.007	0.070	0.070	0.070
90	0.006	0.059	0.060	0.060
95	0.005	0.051	0.051	0.051
100	0.004	0.044	0.044	0.044

Main Title: Line 1A H-Frame
Subtitle: Purdom 8 Reconductor to 477 ACSR
Input File: Line1A H.fld
Frequency (Hertz): 60
Soil Resistivity (Ohm-meter): 100
Maximum Horizontal Distance From Reference (ft): 100
Step Size (ft): 5
Height For Field Calculation (ft): 3
Left Coordinate of Right of Way (ft): -50
Right Coordinate of Right of Way (ft): 50

Phase Conductor Data

Number of Phases (<=25): 3

Phase ID No.	Phase ID Name	Phase Coordinates X(ft)	Phase Coordinates Y(ft)	SubConds. Per Bundle	Cond. Diam. (in.)	Bund. Diam. (in.)	Phase-Phase kV	Phase Curr. (Amp)	Phase Angle (deg)
1	A	-10.50	29.00	1	0.86	0.86	115.00	640.00	0.00
2	B	0.00	29.00	1	0.86	0.86	115.00	640.00	120.00
3	C	10.50	29.00	1	0.86	0.86	115.00	640.00	240.00

Ground Wire Data

Number of Ground Wires (<=10): 2

Ground Wire No.	Ground Wire Name	Ground Wire Coordinates X(ft)	Ground Wire Coordinates Y(ft)	GW Diam. (in.)	GW Curr. (Amp)	GW Phase Angle (deg)
1	1	-5.00	40.00	0.35	0.00	0.00
2	2	5.00	40.00	0.35	0.00	0.00

Input File: Line1A H.fld

Line 1A H-Frame
Purdom 8 Reconductor to 477 ACSR

MAGNETIC FIELD VALUES

DISTANCE (Feet)	B in X (mG)	B in Y (mG)	B Product (mG)	B Max (mG)
-100	3.560	6.294	7.231	7.230
-95	4.104	6.827	7.965	7.964
-90	4.760	7.418	8.814	8.813
-85	5.559	8.073	9.802	9.800
-80	6.539	8.794	10.959	10.956
-75	7.753	9.581	12.325	12.321
-70	9.267	10.426	13.950	13.944
-65	11.174	11.310	15.899	15.891
-60	13.594	12.186	18.256	18.244
-55	16.684	12.970	21.132	21.113
-50	20.645	13.500	24.668	24.638
-45	25.715	13.497	29.041	28.993
-40	32.127	12.489	34.469	34.389
-35	40.001	9.815	41.187	41.050
-30	49.064	5.701	49.394	49.155
-25	58.156	10.633	59.120	58.702
-20	64.644	26.873	70.008	69.287
-15	64.533	49.091	81.083	79.895
-10	54.529	72.577	90.779	88.984
-5	36.026	90.491	97.399	95.035
0	22.649	97.137	99.742	97.137
5	36.026	90.491	97.399	95.035
10	54.529	72.577	90.779	88.984
15	64.533	49.091	81.083	79.895
20	64.644	26.873	70.008	69.287
25	58.156	10.633	59.120	58.702
30	49.064	5.701	49.394	49.155
35	40.001	9.815	41.187	41.050
40	32.127	12.489	34.469	34.389
45	25.715	13.497	29.041	28.993
50	20.645	13.500	24.668	24.638
55	16.684	12.970	21.132	21.113
60	13.594	12.186	18.256	18.244
65	11.174	11.310	15.899	15.891
70	9.267	10.426	13.950	13.944
75	7.753	9.581	12.325	12.321
80	6.539	8.794	10.959	10.956
85	5.559	8.073	9.802	9.800
90	4.760	7.418	8.814	8.813
95	4.104	6.827	7.965	7.964
100	3.560	6.294	7.231	7.230

Input File: Line1A H.flc

Line 1A H-Frame
Purdom 8 Reconductor to 477 ACSR

ELECTRIC FIELD VALUES

DISTANCE (Feet)	E in X (kV/m)	E in Y (kV/m)	E Product (kV/m)	E Max (kV/m)
-100	0.005	0.065	0.065	0.065
-95	0.006	0.075	0.075	0.075
-90	0.008	0.086	0.086	0.086
-85	0.009	0.100	0.100	0.100
-80	0.011	0.116	0.117	0.117
-75	0.014	0.137	0.137	0.137
-70	0.017	0.162	0.163	0.163
-65	0.021	0.193	0.194	0.194
-60	0.026	0.232	0.233	0.233
-55	0.033	0.281	0.283	0.283
-50	0.041	0.342	0.344	0.344
-45	0.050	0.417	0.420	0.420
-40	0.060	0.509	0.513	0.513
-35	0.068	0.617	0.621	0.621
-30	0.069	0.734	0.738	0.738
-25	0.055	0.842	0.844	0.843
-20	0.030	0.903	0.904	0.904
-15	0.076	0.870	0.873	0.872
-10	0.155	0.703	0.720	0.717
-5	0.219	0.412	0.467	0.457
0	0.242	0.154	0.287	0.242
5	0.219	0.412	0.467	0.457
10	0.155	0.703	0.720	0.717
15	0.076	0.870	0.873	0.872
20	0.030	0.903	0.904	0.904
25	0.055	0.842	0.844	0.843
30	0.069	0.734	0.738	0.738
35	0.068	0.617	0.621	0.621
40	0.060	0.509	0.513	0.513
45	0.050	0.417	0.420	0.420
50	0.041	0.342	0.344	0.344
55	0.033	0.281	0.283	0.283
60	0.026	0.232	0.233	0.233
65	0.021	0.193	0.194	0.194
70	0.017	0.162	0.163	0.163
75	0.014	0.137	0.137	0.137
80	0.011	0.116	0.117	0.117
85	0.009	0.100	0.100	0.100
90	0.008	0.086	0.086	0.086
95	0.006	0.075	0.075	0.075
100	0.005	0.065	0.065	0.065

Main Title: Existing 1B Single Pole
Subtitle: Purdom 8 existing 4/0 CU
Input File: Exist1BS.fld
Frequency (Hertz): 60
Soil Resistivity (Ohm-meter): 100
Maximum Horizontal Distance From Reference (ft): 100
Step Size (ft): 5
Height For Field Calculation (ft): 3
Left Coordinate of Right of Way (ft): -50
Right Coordinate of Right of Way (ft): 50

Phase Conductor Data

Number of Phases (<=25): 3

Phase ID No.	Phase ID Name	Phase Coordinates X(ft)	Phase Coordinates Y(ft)	SubConds. Per Bundle	Cond. Diam. (in.)	Bund. Diam. (in.)	Phase-Phase kV	Phase Curr. (Amp)	Phase Angle (deg)
1	A	4.50	34.00	1	0.53	0.53	115.00	385.00	0.00
2	B	-4.50	27.00	1	0.53	0.53	115.00	385.00	120.00
3	C	4.50	27.00	1	0.53	0.53	115.00	385.00	240.00

Ground Wire Data

Number of Ground Wires (<=10): 1

Ground Wire No.	Ground Wire Name	Ground Wire Coordinates X(ft)	Ground Wire Coordinates Y(ft)	GW Diam. (in.)	GW Curr. (Amp)	GW Phase Angle (deg)
1	1	0.00	45.00	0.35	0.00	0.00

Input File: Exist1BS.f

Existing 1B Single Pole
Purdom 8 existing 4/0 CU

MAGNETIC FIELD VALUES

DISTANCE (Feet)	B in X (mG)	B in Y (mG)	B Product (mG)	B Max (mG)
-100	1.185	2.379	2.658	2.379
-95	1.301	2.618	2.923	2.618
-90	1.439	2.891	3.229	2.895
-85	1.604	3.206	3.585	3.216
-80	1.806	3.569	4.000	3.591
-75	2.058	3.989	4.488	4.034
-70	2.376	4.476	5.068	4.559
-65	2.788	5.041	5.761	5.188
-60	3.329	5.696	6.597	5.948
-55	4.053	6.448	7.616	6.874
-50	5.036	7.298	8.868	8.014
-45	6.384	8.234	10.419	9.427
-40	8.240	9.207	12.356	11.191
-35	10.784	10.115	14.785	13.403
-30	14.192	10.785	17.825	16.168
-25	18.529	11.067	21.582	19.573
-20	23.456	11.387	26.074	23.615
-15	27.795	13.925	31.088	28.064
-10	29.392	20.792	36.003	32.299
-5	26.628	29.533	39.765	35.306
0	21.875	34.997	41.271	36.093
5	20.696	34.277	40.040	34.358
10	22.010	29.159	36.533	30.733
15	21.781	23.176	31.804	26.320
20	19.820	18.150	26.875	22.020
25	17.237	14.268	22.376	18.273
30	14.715	11.301	18.554	15.173
35	12.489	9.051	15.424	12.663
40	10.598	7.358	12.902	10.645
45	9.017	6.087	10.879	9.020
50	7.705	5.125	9.253	7.708
55	6.618	4.386	7.939	6.642
60	5.717	3.807	6.869	5.768
65	4.969	3.344	5.990	5.047
70	4.345	2.967	5.261	4.446
75	3.821	2.655	4.653	3.943
80	3.380	2.392	4.141	3.517
85	3.006	2.168	3.706	3.154
90	2.687	1.976	3.335	2.843
95	2.413	1.808	3.015	2.575
100	2.177	1.661	2.738	2.342

Input File: Exist1BS.f

Existing 1B Single Pole
Purdom 8 existing 4/0 CU

ELECTRIC FIELD VALUES

DISTANCE (Feet)	E in X (kV/m)	E in Y (kV/m)	E Product (kV/m)	E Max (kV/m)
-100	0.003	0.032	0.032	0.032
-95	0.003	0.037	0.037	0.037
-90	0.004	0.042	0.042	0.042
-85	0.004	0.048	0.048	0.048
-80	0.005	0.056	0.056	0.056
-75	0.007	0.066	0.066	0.066
-70	0.009	0.078	0.079	0.079
-65	0.011	0.094	0.094	0.094
-60	0.014	0.113	0.114	0.114
-55	0.018	0.139	0.140	0.140
-50	0.023	0.172	0.173	0.173
-45	0.030	0.215	0.217	0.217
-40	0.039	0.271	0.274	0.274
-35	0.050	0.344	0.348	0.347
-30	0.062	0.436	0.440	0.440
-25	0.071	0.545	0.550	0.549
-20	0.072	0.662	0.666	0.665
-15	0.065	0.760	0.763	0.761
-10	0.081	0.798	0.802	0.798
-5	0.134	0.749	0.761	0.751
0	0.170	0.650	0.672	0.652
5	0.158	0.581	0.602	0.582
10	0.120	0.548	0.561	0.548
15	0.090	0.502	0.510	0.503
20	0.072	0.437	0.443	0.439
25	0.058	0.369	0.374	0.371
30	0.045	0.308	0.312	0.310
35	0.035	0.258	0.260	0.259
40	0.027	0.216	0.218	0.217
45	0.021	0.183	0.184	0.183
50	0.017	0.155	0.156	0.156
55	0.013	0.133	0.133	0.133
60	0.011	0.114	0.115	0.115
65	0.009	0.099	0.099	0.099
70	0.007	0.086	0.086	0.086
75	0.006	0.075	0.076	0.076
80	0.005	0.066	0.067	0.067
85	0.004	0.059	0.059	0.059
90	0.004	0.052	0.052	0.052
95	0.003	0.047	0.047	0.047
100	0.003	0.042	0.042	0.042

Main Title: Line 1B Single Pole
Subtitle: Purdom 8 Reconductor to 477 ACSR
Input File: LINE1B S.FLD
Frequency (Hertz): 60
Soil Resistivity (Ohm-meter): 100
Maximum Horizontal Distance From Reference (ft): 100
Step Size (ft): 5
Height For Field Calculation (ft): 3
Left Coordinate of Right of Way (ft): -50
Right Coordinate of Right of Way (ft): 50

Phase Conductor Data

Number of Phases (<=25): 3

Phase ID No.	Phase ID Name	Phase Coordinates X(ft)	Phase Coordinates Y(ft)	SubConds. Per Bundle	Cond. Diam. (in.)	Bund. Diam. (in.)	Phase-Phase kV	Phase Curr. (Amp)	Phase Angle (deg)
1	A	4.50	39.00	1	0.86	0.86	115.00	640.00	0.00
2	B	-4.50	32.00	1	0.86	0.86	115.00	640.00	120.00
3	C	4.50	32.00	1	0.86	0.86	115.00	640.00	240.00

Ground Wire Data

Number of Ground Wires (<=10): 1

Ground Wire No.	Ground Wire Name	Ground Wire Coordinates X(ft)	Ground Wire Coordinates Y(ft)	GW Diam. (in.)	GW Curr. (Amp)	GW Phase Angle (deg)
1	1	0.00	50.00	0.35	0.00	0.00

Input File: LINE1B S.FL

Line 1B Single Pole
Purdom 8 Reconductor to 477 ACSR

MAGNETIC FIELD VALUES

DISTANCE (Feet)	B in X (mG)	B in Y (mG)	B Product (mG)	B Max (mG)
-100	1.950	3.837	4.304	3.849
-95	2.156	4.201	4.721	4.225
-90	2.402	4.612	5.200	4.657
-85	2.702	5.079	5.753	5.155
-80	3.070	5.607	6.393	5.733
-75	3.530	6.207	7.140	6.408
-70	4.110	6.884	8.018	7.201
-65	4.851	7.645	9.055	8.139
-60	5.808	8.491	10.287	9.255
-55	7.053	9.414	11.762	10.590
-50	8.678	10.389	13.537	12.196
-45	10.801	11.365	15.679	14.135
-40	13.550	12.253	18.269	16.478
-35	17.041	12.927	21.389	19.295
-30	21.298	13.302	25.110	22.643
-25	26.108	13.617	29.446	26.521
-20	30.799	15.064	34.286	30.807
-15	34.085	19.570	39.304	35.171
-10	34.393	27.264	43.888	39.023
-5	31.165	35.470	47.216	41.598
0	26.547	40.626	48.531	42.249
5	24.367	40.789	47.514	40.795
10	24.914	36.813	44.452	37.638
15	25.326	31.047	40.066	33.527
20	24.365	25.348	35.159	29.184
25	22.392	20.480	30.345	25.089
30	20.017	16.551	25.974	21.461
35	17.630	13.457	22.180	18.357
40	15.417	11.054	18.970	15.746
45	13.445	9.199	16.291	13.568
50	11.725	7.768	14.064	11.755
55	10.243	6.656	12.216	10.244
60	8.975	5.782	10.676	8.981
65	7.892	5.084	9.388	7.920
70	6.968	4.517	8.304	7.024
75	6.179	4.049	7.387	6.264
80	5.502	3.657	6.607	5.614
85	4.921	3.324	5.938	5.056
90	4.420	3.037	5.363	4.573
95	3.986	2.788	4.864	4.155
100	3.608	2.569	4.429	3.789

Input File: LINE1B S.F

Line 1B Single Pole
Purdom 8 Reconductor to 477 ACSR

ELECTRIC FIELD VALUES

DISTANCE (Feet)	E in X (kV/m)	E in Y (kV/m)	E Product (kV/m)	E Max (kV/m)
-100	0.003	0.039	0.039	0.039
-95	0.004	0.044	0.044	0.044
-90	0.004	0.051	0.051	0.051
-85	0.005	0.058	0.059	0.059
-80	0.006	0.068	0.068	0.068
-75	0.008	0.079	0.079	0.079
-70	0.010	0.093	0.094	0.093
-65	0.012	0.110	0.111	0.111
-60	0.015	0.132	0.133	0.133
-55	0.019	0.159	0.160	0.160
-50	0.023	0.193	0.195	0.195
-45	0.029	0.236	0.238	0.237
-40	0.036	0.288	0.290	0.290
-35	0.042	0.352	0.354	0.354
-30	0.048	0.425	0.428	0.428
-25	0.051	0.505	0.507	0.507
-20	0.048	0.579	0.581	0.581
-15	0.046	0.631	0.633	0.631
-10	0.063	0.641	0.644	0.641
-5	0.093	0.601	0.608	0.602
0	0.112	0.533	0.545	0.535
5	0.109	0.474	0.486	0.475
10	0.091	0.435	0.445	0.436
15	0.070	0.402	0.408	0.402
20	0.056	0.362	0.367	0.363
25	0.045	0.319	0.322	0.320
30	0.037	0.276	0.278	0.277
35	0.030	0.237	0.239	0.238
40	0.024	0.204	0.205	0.205
45	0.019	0.176	0.177	0.176
50	0.015	0.152	0.153	0.152
55	0.013	0.132	0.132	0.132
60	0.010	0.115	0.115	0.115
65	0.009	0.100	0.101	0.100
70	0.007	0.088	0.088	0.088
75	0.006	0.078	0.078	0.078
80	0.005	0.069	0.069	0.069
85	0.004	0.061	0.061	0.061
90	0.004	0.055	0.055	0.055
95	0.003	0.049	0.049	0.049
100	0.003	0.044	0.044	0.044

Main Title: Line 2C H-Frame
Subtitle: existing 336.4 mcm Purdom T/line
Input File: EXIST2CH.FLD
Frequency (Hertz): 60
Soil Resistivity (Ohm-meter): 100
Maximum Horizontal Distance From Reference (ft): 100
Step Size (ft): 5
Height For Field Calculation (ft): 3
Left Coordinate of Right of Way (ft): -50
Right Coordinate of Right of Way (ft): 50

Phase Conductor Data

Number of Phases (<=25): 3

Phase ID No.	Phase ID Name	Phase Coordinates X(ft)	Phase Coordinates Y(ft)	SubConds. Per Bundle	Cond. Diam. (in.)	Bund. Diam. (in.)	Phase-Phase kV	Phase Curr. (Amp)	Phase Angle (deg)
1	A	-14.00	27.00	1	0.72	0.72	115.00	510.00	0.00
2	B	0.00	27.00	1	0.72	0.72	115.00	510.00	120.00
3	C	14.00	27.00	1	0.72	0.72	115.00	510.00	240.00

Ground Wire Data

Number of Ground Wires (<=10): 2

Ground Wire No.	Ground Wire Name	Ground Wire Coordinates X(ft)	Ground Wire Coordinates Y(ft)	GW Diam. (in.)	GW Curr. (Amp)	GW Phase Angle (deg)
1	1	-7.00	38.00	0.35	0.00	0.00
2	2	7.00	38.00	0.35	0.00	0.00

Input File: EXIST2CH.FI

Line 2C H-Frame
existing 336.4 mcm Purdom T/line

MAGNETIC FIELD VALUES

DISTANCE (Feet)	B in X (mG)	B in Y (mG)	B Product (mG)	B Max (mG)
-100	3.622	6.936	7.825	7.824
-95	4.190	7.551	8.635	8.634
-90	4.880	8.238	9.575	9.573
-85	5.726	9.007	10.673	10.670
-80	6.772	9.865	11.966	11.961
-75	8.079	10.816	13.500	13.494
-70	9.727	11.857	15.336	15.327
-65	11.828	12.972	17.555	17.541
-60	14.531	14.119	20.261	20.240
-55	18.038	15.205	23.592	23.559
-50	22.613	16.048	27.729	27.676
-45	28.577	16.307	32.902	32.814
-40	36.255	15.394	39.387	39.239
-35	45.801	12.493	47.475	47.215
-30	56.770	8.208	57.360	56.896
-25	67.353	14.624	68.922	68.089
-20	73.781	34.416	81.413	79.934
-15	71.498	59.990	93.331	90.827
-10	59.344	84.065	102.901	99.024
-5	43.362	99.895	108.901	103.685
0	35.401	105.113	110.914	105.113
5	43.362	99.895	108.901	103.685
10	59.344	84.065	102.901	99.024
15	71.498	59.990	93.331	90.827
20	73.781	34.416	81.413	79.934
25	67.353	14.624	68.922	68.089
30	56.770	8.208	57.360	56.896
35	45.801	12.493	47.475	47.215
40	36.255	15.394	39.387	39.239
45	28.577	16.307	32.902	32.814
50	22.613	16.048	27.729	27.676
55	18.038	15.205	23.592	23.559
60	14.531	14.119	20.261	20.240
65	11.828	12.972	17.555	17.541
70	9.727	11.857	15.336	15.327
75	8.079	10.816	13.500	13.494
80	6.772	9.865	11.966	11.961
85	5.726	9.007	10.673	10.670
90	4.880	8.238	9.575	9.573
95	4.190	7.551	8.635	8.634
100	3.622	6.936	7.825	7.824

Input File: EXIST2CH.FI

Line 2C H-Frame
existing 336.4 mcm Purdom T/line

ELECTRIC FIELD VALUES

DISTANCE (Feet)	E in X (kV/m)	E in Y (kV/m)	E Product (kV/m)	E Max (kV/m)
-100	0.006	0.078	0.078	0.078
-95	0.008	0.089	0.090	0.090
-90	0.009	0.103	0.104	0.104
-85	0.011	0.121	0.121	0.121
-80	0.014	0.142	0.142	0.142
-75	0.017	0.167	0.168	0.168
-70	0.022	0.200	0.201	0.201
-65	0.028	0.240	0.242	0.242
-60	0.035	0.292	0.294	0.294
-55	0.044	0.357	0.360	0.360
-50	0.056	0.440	0.443	0.443
-45	0.070	0.544	0.549	0.549
-40	0.085	0.674	0.679	0.679
-35	0.096	0.826	0.832	0.832
-30	0.095	0.991	0.995	0.995
-25	0.072	1.135	1.137	1.137
-20	0.059	1.201	1.202	1.201
-15	0.139	1.126	1.135	1.130
-10	0.232	0.896	0.926	0.913
-5	0.284	0.595	0.659	0.622
0	0.296	0.426	0.519	0.426
5	0.284	0.595	0.659	0.622
10	0.232	0.896	0.926	0.913
15	0.139	1.126	1.135	1.130
20	0.059	1.201	1.202	1.201
25	0.072	1.135	1.137	1.137
30	0.095	0.991	0.995	0.995
35	0.096	0.826	0.832	0.832
40	0.085	0.674	0.679	0.679
45	0.070	0.544	0.549	0.549
50	0.056	0.440	0.443	0.443
55	0.044	0.357	0.360	0.360
60	0.035	0.292	0.294	0.294
65	0.028	0.240	0.242	0.242
70	0.022	0.200	0.201	0.201
75	0.017	0.167	0.168	0.168
80	0.014	0.142	0.142	0.142
85	0.011	0.121	0.121	0.121
90	0.009	0.103	0.104	0.104
95	0.008	0.089	0.090	0.090
100	0.006	0.078	0.078	0.078

Main Title: Line 2C H-Frame
Subtitle: Purdom 8 Reconductor to 477 ACSR
Input File: LINE2C H.FLD
Frequency (Hertz): 60
Soil Resistivity (Ohm-meter): 100
Maximum Horizontal Distance From Reference (ft): 100
Step Size (ft): 5
Height For Field Calculation (ft): 3
Left Coordinate of Right of Way (ft): -50
Right Coordinate of Right of Way (ft): 50

Phase Conductor Data

Number of Phases (<=25): 3

Phase ID No.	Phase ID Name	Phase Coordinates X(ft)	Phase Coordinates Y(ft)	SubConds. Per Bundle	Cond. Diam. (in.)	Bund. Diam. (in.)	Phase-Phase kV	Phase Curr. (Amp)	Phase Angle (deg)
1	A	-14.00	27.00	1	0.86	0.86	115.00	640.00	0.00
2	B	0.00	27.00	1	0.86	0.86	115.00	640.00	120.00
3	C	14.00	27.00	1	0.86	0.86	115.00	640.00	240.00

Ground Wire Data

Number of Ground Wires (<=10): 2

Ground Wire No.	Ground Wire Name	Ground Wire Coordinates X(ft)	Ground Wire Coordinates Y(ft)	GW Diam. (in.)	GW Curr. (Amp)	GW Phase Angle (deg)
1	1	-7.00	38.00	0.35	0.00	0.00
2	2	7.00	38.00	0.35	0.00	0.00

Input File: LINE2C H.FI

Line 2C H-Frame
Purdom 8 Reconductor to 477 ACSR

MAGNETIC FIELD VALUES

DISTANCE (Feet)	B in X (mG)	B in Y (mG)	B Product (mG)	B Max (mG)
-100	4.546	8.705	9.820	9.818
-95	5.258	9.475	10.837	10.834
-90	6.124	10.338	12.016	12.013
-85	7.186	11.303	13.394	13.390
-80	8.499	12.380	15.016	15.010
-75	10.138	13.573	16.941	16.933
-70	12.207	14.879	19.246	19.234
-65	14.843	16.279	22.030	22.012
-60	18.235	17.718	25.425	25.399
-55	22.636	19.081	29.606	29.564
-50	28.377	20.139	34.797	34.730
-45	35.861	20.464	41.289	41.179
-40	45.496	19.318	49.427	49.241
-35	57.476	15.678	59.576	59.250
-30	71.240	10.300	71.981	71.399
-25	84.522	18.351	86.491	85.445
-20	92.588	43.189	102.165	100.310
-15	89.723	75.282	117.122	113.979
-10	74.471	105.493	129.131	124.265
-5	54.415	125.359	136.659	130.114
0	44.424	131.907	139.186	131.907
5	54.415	125.359	136.659	130.114
10	74.471	105.493	129.131	124.265
15	89.723	75.282	117.122	113.979
20	92.588	43.189	102.165	100.310
25	84.522	18.351	86.491	85.445
30	71.240	10.300	71.981	71.399
35	57.476	15.678	59.576	59.250
40	45.496	19.318	49.427	49.241
45	35.861	20.464	41.289	41.179
50	28.377	20.139	34.797	34.730
55	22.636	19.081	29.606	29.564
60	18.235	17.718	25.425	25.399
65	14.843	16.279	22.030	22.012
70	12.207	14.879	19.246	19.234
75	10.138	13.573	16.941	16.933
80	8.499	12.380	15.016	15.010
85	7.186	11.303	13.394	13.390
90	6.124	10.338	12.016	12.013
95	5.258	9.475	10.837	10.834
100	4.546	8.705	9.820	9.818

Input File: LINE2C H.FI

Line 2C H-Frame
Purdom 8 Reconductor to 477 ACSR

ELECTRIC FIELD VALUES

DISTANCE (Feet)	E in X (kV/m)	E in Y (kV/m)	E Product (kV/m)	E Max (kV/m)
-100	0.007	0.080	0.080	0.080
-95	0.008	0.092	0.092	0.092
-90	0.010	0.106	0.107	0.107
-85	0.012	0.124	0.124	0.124
-80	0.014	0.145	0.146	0.146
-75	0.018	0.172	0.173	0.173
-70	0.022	0.205	0.206	0.206
-65	0.028	0.247	0.249	0.249
-60	0.036	0.300	0.302	0.302
-55	0.046	0.367	0.370	0.370
-50	0.058	0.452	0.455	0.455
-45	0.072	0.559	0.564	0.564
-40	0.087	0.692	0.697	0.697
-35	0.099	0.849	0.855	0.855
-30	0.098	1.018	1.023	1.022
-25	0.074	1.166	1.168	1.168
-20	0.061	1.234	1.235	1.234
-15	0.143	1.157	1.165	1.161
-10	0.239	0.920	0.951	0.937
-5	0.292	0.610	0.676	0.638
0	0.304	0.437	0.532	0.437
5	0.292	0.610	0.676	0.638
10	0.239	0.920	0.951	0.937
15	0.143	1.157	1.165	1.161
20	0.061	1.234	1.235	1.234
25	0.074	1.166	1.168	1.168
30	0.098	1.018	1.023	1.022
35	0.099	0.849	0.855	0.855
40	0.087	0.692	0.697	0.697
45	0.072	0.559	0.564	0.564
50	0.058	0.452	0.455	0.455
55	0.046	0.367	0.370	0.370
60	0.036	0.300	0.302	0.302
65	0.028	0.247	0.249	0.249
70	0.022	0.205	0.206	0.206
75	0.018	0.172	0.173	0.173
80	0.014	0.145	0.146	0.146
85	0.012	0.124	0.124	0.124
90	0.010	0.106	0.107	0.107
95	0.008	0.092	0.092	0.092
100	0.007	0.080	0.080	0.080

Main Title: Line 3 H-Frame
Subtitle: existing 336.4 mcm Purdom T/line
Input File: EXIST3 H.FLD
Frequency (Hertz): 60
Soil Resistivity (Ohm-meter): 100
Maximum Horizontal Distance From Reference (ft): 100
Step Size (ft): 5
Height For Field Calculation (ft): 3
Left Coordinate of Right of Way (ft): -50
Right Coordinate of Right of Way (ft): 50

Phase Conductor Data

Number of Phases (<=25): 3

Phase ID No.	Phase ID Name	Phase Coordinates X(ft)	Phase Coordinates Y(ft)	SubConds. Per Bundle	Cond. Diam. (in.)	Bund. Diam. (in.)	Phase-Phase kV	Phase Curr. (Amp)	Phase Angle (deg)
1	A	-14.00	29.00	1	0.72	0.72	115.00	510.00	0.00
2	B	0.00	29.00	1	0.72	0.72	115.00	510.00	120.00
3	C	14.00	29.00	1	0.72	0.72	115.00	510.00	240.00

Ground Wire Data

Number of Ground Wires (<=10): 2

Ground Wire No.	Ground Wire Name	Ground Wire Coordinates X(ft)	Ground Wire Coordinates Y(ft)	GW Diam. (in.)	GW Curr. (Amp)	GW Phase Angle (deg)
1	1	-7.00	40.00	0.35	0.00	0.00
2	2	7.00	40.00	0.35	0.00	0.00

Input File: EXIST3 H.F

Line 3 H-Frame
existing 336.4 mcm Purdom T/line

MAGNETIC FIELD VALUES

DISTANCE (Feet)	B in X (mG)	B in Y (mG)	B Product (mG)	B Max (mG)
-100	3.847	6.726	7.748	7.747
-95	4.440	7.296	8.541	8.539
-90	5.159	7.928	9.459	9.456
-85	6.035	8.627	10.528	10.525
-80	7.113	9.394	11.783	11.778
-75	8.450	10.227	13.267	13.259
-70	10.124	11.115	15.034	15.024
-65	12.235	12.028	17.157	17.142
-60	14.919	12.909	19.729	19.706
-55	18.349	13.647	22.867	22.832
-50	22.737	14.042	26.723	26.667
-45	28.318	13.753	31.481	31.390
-40	35.280	12.254	37.348	37.196
-35	43.588	9.043	44.517	44.259
-30	52.632	6.854	53.076	52.632
-25	60.712	16.233	62.845	62.078
-20	64.822	33.954	73.176	71.879
-15	61.737	55.364	82.925	80.835
-10	50.819	75.218	90.776	87.689
-5	36.502	88.531	95.761	91.755
0	28.930	93.059	97.452	93.059
5	36.502	88.531	95.761	91.755
10	50.819	75.218	90.776	87.689
15	61.737	55.364	82.925	80.835
20	64.822	33.954	73.176	71.879
25	60.712	16.233	62.845	62.078
30	52.632	6.854	53.076	52.632
35	43.588	9.043	44.517	44.259
40	35.280	12.254	37.348	37.196
45	28.318	13.753	31.481	31.390
50	22.737	14.042	26.723	26.667
55	18.349	13.647	22.867	22.832
60	14.919	12.909	19.729	19.706
65	12.235	12.028	17.157	17.142
70	10.124	11.115	15.034	15.024
75	8.450	10.227	13.267	13.259
80	7.113	9.394	11.783	11.778
85	6.035	8.627	10.528	10.525
90	5.159	7.928	9.459	9.456
95	4.440	7.296	8.541	8.539
100	3.847	6.726	7.748	7.747

Input File: EXIST3 H.FI

Line 3 H-Frame
existing 336.4 mcm Purdom T/line

ELECTRIC FIELD VALUES

DISTANCE (Feet)	E in X (kV/m)	E in Y (kV/m)	E Product (kV/m)	E Max (kV/m)
-100	0.007	0.081	0.082	0.082
-95	0.008	0.093	0.094	0.094
-90	0.010	0.108	0.108	0.108
-85	0.012	0.125	0.126	0.126
-80	0.014	0.147	0.147	0.147
-75	0.018	0.173	0.174	0.174
-70	0.022	0.205	0.206	0.206
-65	0.027	0.245	0.247	0.247
-60	0.034	0.296	0.297	0.297
-55	0.042	0.358	0.361	0.361
-50	0.052	0.436	0.440	0.440
-45	0.064	0.533	0.537	0.537
-40	0.074	0.648	0.653	0.652
-35	0.080	0.779	0.783	0.783
-30	0.075	0.913	0.916	0.916
-25	0.053	1.020	1.021	1.021
-20	0.053	1.055	1.057	1.055
-15	0.122	0.974	0.981	0.978
-10	0.196	0.767	0.791	0.782
-5	0.240	0.494	0.549	0.522
0	0.252	0.331	0.416	0.331
5	0.240	0.494	0.549	0.522
10	0.196	0.767	0.791	0.782
15	0.122	0.974	0.981	0.978
20	0.053	1.055	1.057	1.055
25	0.053	1.020	1.021	1.021
30	0.075	0.913	0.916	0.916
35	0.080	0.779	0.783	0.783
40	0.074	0.648	0.653	0.652
45	0.064	0.533	0.537	0.537
50	0.052	0.436	0.440	0.440
55	0.042	0.358	0.361	0.361
60	0.034	0.296	0.297	0.297
65	0.027	0.245	0.247	0.247
70	0.022	0.205	0.206	0.206
75	0.018	0.173	0.174	0.174
80	0.014	0.147	0.147	0.147
85	0.012	0.125	0.126	0.126
90	0.010	0.108	0.108	0.108
95	0.008	0.093	0.094	0.094
100	0.007	0.081	0.082	0.082

COMPUTERIZED TRAFFIC DATA, INC.
14444 BEACH BLVD. SUITE 18-332 JACKSONVILLE, FL. 32250
Volume Report with 24 Hour Totals

****

Data File : D0909001.PRN
Station : 000000001262
Identification : 000000001262
Interval : 15 minutes
Start date : Sep 9, 96
Start time : 00:00
Stop date : Sep 9, 96
Stop time : 24:00
City/Town : LN#2 WEST
County : WAKULLA
Location : PURDOM POWER PLANT EAST OF SR 363

****

Sep 9 Eastbound Volume for Lane 1 (IN)

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	0	0	0	4	17	0	3	0	1
30	0	0	0	0	0	0	2	3	0	4	0	0
45	0	0	0	0	0	0	1	1	0	3	2	3
00	0	0	0	0	0	1	7	1	1	1	2	1
Hr Total	0	0	0	0	0	1	14	22	1	11	4	5

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	2	2	3	4	0	2	3	0	0	0	0	0
30	4	1	1	0	0	1	0	0	1	0	0	0
45	2	1	1	0	0	0	6	0	0	0	0	0
00	2	1	1	1	0	1	0	0	0	0	0	0
Hr Total	10	5	6	5	0	4	9	0	1	0	0	0

24 Hour Total : 98
AM peak hour begins : 06:30 AM peak volume : 28 Peak hour factor : 0.41
PM peak hour begins : 12:00 PM peak volume : 10 Peak hour factor : 0.63

****

Sep 9 WEST[redacted]bound Volume for Lane 2 (OUT)

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	0	0	0	1	1	0	0	1	0
30	0	0	0	0	0	0	2	0	0	2	0	1
45	0	0	0	0	0	0	1	0	3	0	0	2
00	0	0	0	0	0	1	1	0	1	2	1	1
Hr Total	0	0	0	0	0	1	5	1	4	4	2	4

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	6	2	1	2	3	2	4	0	0	1	0	0
30	5	4	2	0	0	1	0	0	1	1	0	0
45	2	0	2	15	1	11	0	0	0	0	0	0
00	5	0	1	0	2	5	0	0	0	0	0	0
Hr Total	18	6	6	17	6	19	4	0	1	2	0	0

24 Hour Total : 100
AM peak hour begins : 11:30 AM peak volume : 14 Peak hour factor : 0.58
PM peak hour begins : 17:15 PM peak volume : 21 Peak hour factor : 0.48

****

COMPUTERIZED TRAFFIC DATA, INC.
14444 BEACH BLVD. SUITE 18-332 JACKSONVILLE, FL. 32250

Volume Report with 24 Hour Totals

****

Data File : D0909001.PRN
Station : 000000001262
Identification : 000000001262
Interval : 15 minutes
Start date : Sep 9, 96
Start time : 00:00
Stop date : Sep 9, 96
Stop time : 24:00
City/Town : LN#2 WEST
County : WAKULLA
Location : PURDOM POWER PLANT EAST OF SR 363

****

Sep 9 Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	0	0	0	5	18	0	3	1	1
30	0	0	0	0	0	0	4	3	0	6	0	1
45	0	0	0	0	0	0	2	1	3	3	2	5
00	0	0	0	0	0	2	8	1	2	3	3	2
Hr Total	0	0	0	0	0	2	19	23	5	15	6	9

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	8	4	4	6	3	4	7	0	0	1	0	0
30	9	5	3	0	0	2	0	0	2	1	0	0
45	4	1	3	15	1	11	6	0	0	0	0	0
00	7	1	2	1	2	6	0	0	0	0	0	0
Hr Total	28	11	12	22	6	23	13	0	2	2	0	0

24 Hour Total : 198
AM peak hour begins : 06:15 AM peak volume : 32 Peak hour factor : 0.44
PM peak hour begins : 12:00 PM peak volume : 28 Peak hour factor : 0.78

****

COMPUTERIZED TRAFFIC DATA, INC.
14444 BEACH BLVD. SUITE 18-332 JACKSONVILLE, FL. 32250

Volume Report with 24 Hour Totals

****

Data File : D0909005.PRN
Station : 000000000701
Identification : 000000001266
Start date : Sep 9, 96
Stop date : Sep 9, 96
City/Town : LN2 EAST
Location : US 98 WEST OF SR 363

Interval : 15 minutes
Start time : 00:00
Stop time : 24:00
County : WAKULLA

****

Sep 9 Westbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	3	1	7	1	13	36	36	29	16	31
30	1	1	0	2	5	5	14	58	18	15	26	27
45	1	6	5	6	7	10	36	52	22	23	22	25
00	7	0	1	0	9	12	33	24	32	39	21	30
Hr Total	9	7	9	9	28	28	96	170	108	106	85	113

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	41	52	45	41	83	44	24	14	11	11	15	12
30	31	31	27	43	58	40	46	16	14	12	18	5
45	39	44	40	83	39	35	29	14	60	12	5	5
00	31	29	40	64	34	49	19	17	12	5	6	3
Hr Total	142	156	152	231	214	168	118	61	97	40	44	25

24 Hour Total : 2216
AM peak hour begins : 06:45 AM peak volume : 179 Peak hour factor : 0.77
PM peak hour begins : 15:30 PM peak volume : 288 Peak hour factor : 0.87

****

Sep 9 East [redacted]bound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	3	2	0	2	3	13	29	66	31	19	20	19
30	2	4	1	2	4	21	54	57	25	22	24	34
45	1	0	0	1	4	20	68	39	27	35	28	49
00	0	1	1	5	3	19	45	28	27	22	20	52
Hr Total	6	7	2	10	14	73	196	190	110	98	92	154

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	40	29	33	31	38	39	42	19	12	11	8	9
30	35	34	33	46	41	32	27	18	10	11	8	6
45	28	23	43	40	48	41	20	22	9	53	7	7
00	32	36	31	36	41	40	21	30	11	11	10	2
Hr Total	135	122	140	153	168	152	110	89	42	86	33	24

24 Hour Total : 2206
AM peak hour begins : 06:30 AM peak volume : 236 Peak hour factor : 0.87
PM peak hour begins : 16:15 PM peak volume : 169 Peak hour factor : 0.88

****

COMPUTERIZED TRAFFIC DATA, INC.
14444 BEACH BLVD. SUITE 18-332 JACKSONVILLE, FL. 32250
Volume Report with 24 Hour Totals

****

Data File : D0909005.PRN
Station : 000000000701
Identification : 000000001266
Start date : Sep 9, 96
Stop date : Sep 9, 96
City/Town : LN2 EAST
Location : US 98 WEST OF SR 363
Interval : 15 minutes
Start time : 00:00
Stop time : 24:00
County : WAKULLA

****

Sep 9 Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	3	2	3	3	10	14	42	102	67	48	36	50
30	3	5	1	4	9	26	68	115	43	37	50	61
45	2	6	5	7	11	30	104	91	49	58	50	74
00	7	1	2	5	12	31	78	52	59	61	41	82
Hr Total	15	14	11	19	42	101	292	360	218	204	177	267

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	81	81	78	72	121	83	66	33	23	22	23	21
30	66	65	60	89	99	72	73	34	24	23	26	11
45	67	67	83	123	87	76	49	36	69	65	12	12
00	63	65	71	100	75	89	40	47	23	16	16	5
Hr Total	277	278	292	384	382	320	228	150	139	126	77	49

24 Hour Total : 4422
AM peak hour begins : 06:30 AM peak volume : 399 Peak hour factor : 0.87
PM peak hour begins : 15:30 PM peak volume : 443 Peak hour factor : 0.90

****

COMPUTERIZED TRAFFIC DATA, INC.
14444 BEACH BLVD. SUITE 18-332 JACKSONVILLE, FL. 32250
Volume Report with 24 Hour Totals

****

Data File : D0909007.PRN
Station : 000000000704
Identification : 000000001269
Start date : Sep 9, 96
Stop date : Sep 9, 96
City/Town : LN2 WEST
Location : US 98 EAST OF SR 363
Interval : 15 minutes
Start time : 00:00
Stop time : 24:00
County : WAKULLA

****

Sep 9 Eastbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	1
15	0	5	0	6	5	6	4	11	17	22	25	1
30	0	0	2	0	12	17	13	25	11	25	15	3
45	0	1	0	6	10	12	10	3	24	33	13	1
00	0	0	0	2	20	1	23	20	5	33	29	1
Hr Total	0	6	2	14	47	36	50	59	57	113	82	7

End Time	12	13	14	15	16	17	18	19	20	21	22	2
15	14	17	23	14	37	11	17	11	24	4	4	
30	18	23	15	10	24	26	13	19	6	2	2	
45	29	39	13	29	25	13	12	3	10	1	7	
00	21	19	26	34	29	20	10	6	5	1	0	
Hr Total	82	98	77	87	115	70	52	39	45	8	13	1

24 Hour Total : 1237
AM peak hour begins : 09:15 AM peak volume : 116 Peak hour factor : 0.8
PM peak hour begins : 15:30 PM peak volume : 124 Peak hour factor : 0.8

****

Sep 9 WEST ~~North~~bound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	1
15	3	2	0	0	0	2	10	12	14	19	28	1
30	3	0	2	3	3	1	11	13	8	21	9	
45	2	2	0	4	4	3	11	10	16	14	12	1
00	2	3	1	3	8	9	30	22	9	8	15	3
Hr Total	10	7	3	10	15	15	62	57	47	62	64	5

End Time	12	13	14	15	16	17	18	19	20	21	22	2
15	18	20	16	23	25	31	18	4	7	5	1	
30	25	14	27	18	18	22	11	11	5	8	7	
45	18	27	16	29	16	21	20	8	8	2	2	
00	28	16	18	19	21	14	7	8	5	5	5	
Hr Total	89	77	77	89	80	88	56	31	25	20	15	1

24 Hour Total : 1067
AM peak hour begins : 11:30 AM peak volume : 84 Peak hour factor : 0.7
PM peak hour begins : 16:45 PM peak volume : 95 Peak hour factor : 0.7

****

COMPUTERIZED TRAFFIC DATA, INC.
14444 BEACH BLVD. SUITE 18-332 JACKSONVILLE, FL. 32250

Volume Report with 24 Hour Totals

****

Data File : D0909007.PRN
Station : 000000000704
Identification : 000000001269
Start date : Sep 9, 96
Stop date : Sep 9, 96
City/Town : LN2 WEST
Location : US 98 EAST OF SR 363

Interval : 15 minutes
Start time : 00:00
Stop time : 24:00
County : WAKULLA

****

Sep 9 Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	3	7	0	6	5	8	14	23	31	41	53	25
30	3	0	4	3	15	18	24	38	19	46	24	43
45	2	3	0	10	14	15	21	13	40	47	25	22
00	2	3	1	5	28	10	53	42	14	41	44	42
Hr Total	10	13	5	24	62	51	112	116	104	175	146	132

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	32	37	39	37	62	42	35	15	31	9	5	11
30	43	37	42	28	42	48	24	30	11	10	9	0
45	47	66	29	58	41	34	32	11	10	3	9	6
00	49	35	44	53	50	34	17	14	10	6	5	4
Hr Total	171	175	154	176	195	158	108	70	70	28	28	21

24 Hour Total : 2304
AM peak hour begins : 09:15 AM peak volume : 187 Peak hour factor : 0.88
PM peak hour begins : 15.30 PM peak volume : 215 Peak hour factor : 0.87

****

COMPUTERIZED TRAFFIC DATA, INC.
14444 BEACH BLVD. SUITE 18-332 JACKSONVILLE, FL. 32250
Volume Report with 24 Hour Totals

****

Data File : D0909006.PRN
Station : 000000000705
Identification : 000000001268
Start date : Sep 9, 96
Stop date : Sep 9, 96
City/Town : LN2 NORTH
Location : SR 363 NORTH OF US 98
Interval : 15 minutes
Start time : 00:00
Stop time : 24:00
County : WAKULLA

****

Sep 9 Southbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	2	0	0	0	2	4	9	47	27	16	16	9
30	1	0	0	1	2	2	11	50	20	12	24	16
45	0	2	2	0	3	8	25	72	23	14	15	15
00	0	4	0	1	7	10	39	16	17	18	16	15
Hr Total	3	6	2	2	14	24	84	185	87	60	71	55

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	18	19	18	16	21	33	37	17	15	12	7	3
30	29	24	15	19	34	37	35	18	5	7	4	3
45	15	20	12	17	26	34	25	11	17	8	5	5
00	18	23	21	27	23	43	22	12	8	13	7	1
Hr Total	80	86	66	79	104	147	119	58	45	40	23	12

24 Hour Total : 1452
AM peak hour begins : 06:45 AM peak volume : 208 Peak hour factor : 0.72
PM peak hour begins : 17:15 PM peak volume : 151 Peak hour factor : 0.88

****

Sep 9 Northbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	1	0	6	1	5	12	27	28	28	12	14
30	0	0	0	1	0	9	18	27	17	12	16	21
45	1	0	1	1	1	4	21	33	23	22	18	11
00	5	0	1	1	0	17	24	27	18	18	17	27
Hr Total	6	1	2	9	2	35	75	114	86	80	63	73

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	17	25	28	13	35	30	13	20	8	16	1	3
30	10	16	25	22	83	27	18	16	13	4	13	12
45	13	14	28	52	39	26	18	12	13	9	9	1
00	11	15	26	47	32	30	20	24	9	10	4	2
Hr Total	51	70	107	134	189	113	69	72	43	39	27	18

24 Hour Total : 1478
AM peak hour begins : 07:15 AM peak volume : 115 Peak hour factor : 0.87
PM peak hour begins : 15:30 PM peak volume : 217 Peak hour factor : 0.65

****

COMPUTERIZED TRAFFIC DATA, INC.
14444 BEACH BLVD. SUITE 18-332 JACKSONVILLE, FL. 32250
Volume Report with 24 Hour Totals

****

Data File : D0909006.PRN
Station : 000000000705
Identification : 000000001268
Start date : Sep 9, 96
Stop date : Sep 9, 96
City/Town : LN2 NORTH
Location : SR 363 NORTH OF US 98
Interval : 15 minutes
Start time : 00:00
Stop time : 24:00
County : WAKULLA

****

Sep 9 Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	2	1	0	6	3	9	21	74	55	44	28	23
30	1	0	0	2	2	11	29	77	37	24	40	37
45	1	2	3	1	4	12	46	105	46	36	33	26
00	5	4	1	2	7	27	63	43	35	36	33	42
Hr Total	9	7	4	11	16	59	159	299	173	140	134	128

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	35	44	46	29	56	63	50	37	23	28	8	6
30	39	40	40	41	117	64	53	34	18	11	17	15
45	28	34	40	69	65	60	43	23	30	17	14	6
00	29	38	47	74	55	73	42	36	17	23	11	3
Hr Total	131	156	173	213	293	260	188	130	88	79	50	30

24 Hour Total : 2930
AM peak hour begins : 06:45 AM peak volume : 319 Peak hour factor : 0.76
PM peak hour begins : 15:30 PM peak volume : 316 Peak hour factor : 0.68

****

COMPUTERIZED TRAFFIC DATA, INC.
14444 BEACH BLVD. SUITE 18-332 JACKSONVILLE, FL. 32250

09-11-1996 Volume by Type Report - D0909010.PRN 10:15 Pg 1

Sta: 000000000702 Id: 000000660596 CId: 01 Fat: 200 Int: 15 Min.
Start: Mon - Sep 09, 1996 at 19:00 End: Tue - Sep 10, 1996 at 19:00
City/Town: County: WAKULLA
Location: SR 363 SOUTH OF US 98 File: D0909010.PRN
Ln1-North

Mon - Sep 9, 1996

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
19:15	1	6	1	0	0	0	0	0	2	0	0	0	0	0	1	11
19:30	0	3	1	0	0	0	0	1	0	0	0	0	0	0	0	5
19:45	0	10	3	0	1	0	0	0	0	0	0	0	0	0	0	14
20:00	0	8	1	1	0	0	0	0	1	0	0	0	0	0	0	11
Hourly Totals	1	27	6	1	1	0	0	1	3	0	0	0	0	0	1	41
20:15	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	10
20:30	0	10	2	0	0	0	0	0	0	0	0	0	0	0	0	12
20:45	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
21:00	1	7	4	0	0	0	0	0	0	0	0	0	0	0	0	12
Hourly Totals	1	35	7	0	0	0	0	0	0	0	0	0	0	0	0	43
21:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
21:30	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	6
21:45	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0	5
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Hourly Totals	0	11	2	0	0	0	0	1	0	0	0	0	0	0	0	14
22:15	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
22:30	0	1	2	0	0	0	0	0	0	0	0	0	0	0	1	4
22:45	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
23:00	0	3	1	0	0	0	0	0	1	0	0	0	0	0	0	5
Hourly Totals	0	10	3	0	0	0	0	0	1	0	0	0	0	0	1	15
23:15	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2
23:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Hourly Totals	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	5
Daily Totals	2	87	18	1	1	0	0	2	4	1	0	0	0	0	2	118
Percentages	1.69	73.73	15.25	0.85	0.85	0.00	0.00	1.69	3.39	0.85	0.00	0.00	0.00	0.00	1.69	

Sta: 000000000702 Id: 000000660596 CId: 01 Fmt: 200 Int: 15 Min.
Start: Mon - Sep 09, 1996 at 19:00 End: Tue - Sep 10, 1996 at 19:00
City/Town: County: WAKULLA
Location: SR 363 SOUTH OF US 98 File: D0909010.PRN
Ln1-North

Tue - Sep 10, 1996

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
Tue - Sep 10, 1996																
00:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
00:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
00:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Totals	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	3
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Hourly Totals	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
Hourly Totals	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	3
03:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Totals	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
04:15	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
04:30	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	3
04:45	0	1	0	0	0	0	0	1	2	0	0	0	0	0	0	4
05:00	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
Hourly Totals	0	1	0	0	0	0	0	6	4	0	0	0	0	0	0	11
05:15	1	2	0	0	0	0	0	2	2	0	0	0	0	0	0	7
05:30	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
05:45	0	5	0	0	0	0	0	0	1	0	0	0	0	0	0	6
06:00	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0	4
Hourly Totals	1	10	2	0	0	0	0	2	4	0	0	0	0	0	0	19

Sta: 000000000702 Id: 000000660596 CId: 01 Fmt: 200 Int: 15 Min.
Start: Mon - Sep 09, 1996 at 19:00 End: Tue - Sep 10, 1996 at 19:00
City/Town: County: WAKULLA
Location: SR 363 SOUTH OF US 98 File: D0909010.PRN
Ln1-North

Tue - Sep 10, 1996

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
06:15	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	8
06:30	0	5	2	1	0	0	0	0	1	0	0	0	0	0	0	9
06:45	0	10	1	1	0	0	0	0	1	1	0	0	0	0	0	14
07:00	0	12	2	0	0	0	0	1	0	0	0	0	0	0	0	15
Hourly Totals	0	31	9	2	0	0	0	1	2	1	0	0	0	0	0	46
07:15	0	12	1	1	0	0	0	0	1	0	0	0	0	0	0	15
07:30	0	5	1	0	1	0	0	0	3	0	0	0	0	0	0	10
07:45	0	10	2	1	0	0	0	0	0	1	0	0	0	0	0	14
08:00	0	7	0	0	0	1	0	0	2	0	0	0	0	0	0	10
Hourly Totals	0	34	4	2	1	1	0	0	6	1	0	0	0	0	0	49
08:15	0	14	1	0	0	0	0	0	0	0	0	0	0	0	0	15
08:30	0	9	2	1	0	0	0	0	4	0	0	0	0	0	0	16
08:45	0	5	6	0	0	0	0	0	0	0	0	0	0	0	0	11
09:00	0	6	2	0	0	0	0	1	2	0	0	0	0	0	0	11
Hourly Totals	0	34	11	1	0	0	0	1	6	0	0	0	0	0	0	53
09:15	0	2	0	0	0	0	0	0	5	0	0	0	0	0	0	7
09:30	0	7	0	0	0	1	0	0	1	0	0	0	0	0	0	9
09:45	0	9	2	0	1	0	0	0	3	0	0	0	0	0	0	15
10:00	0	7	2	0	0	0	0	0	1	0	0	0	0	0	0	10
Hourly Totals	0	25	4	0	1	1	0	0	10	0	0	0	0	0	0	41
10:15	1	9	1	1	1	0	0	0	0	0	0	0	0	0	1	14
10:30	0	10	3	0	0	1	0	0	2	0	0	0	0	0	0	16
10:45	0	11	0	0	0	0	0	0	2	0	0	0	0	0	0	13
11:00	0	7	0	0	0	0	0	1	2	0	0	0	0	0	0	10
Hourly Totals	1	37	4	1	1	1	0	1	6	0	0	0	0	0	1	53
11:15	0	2	1	0	1	0	0	0	1	0	0	0	0	0	0	5
11:30	0	5	1	0	0	0	0	0	0	0	0	0	0	0	1	7
11:45	1	15	4	1	0	0	0	2	0	0	0	0	0	0	0	23
12:00	0	15	4	0	0	0	0	1	0	0	0	0	0	0	1	21
Hourly Totals	1	37	10	1	1	0	0	3	1	0	0	0	0	0	2	56

Sta: 000000000702 Id: 000000660596 CId: 01 Fmt: 200 Int: 15 Min.
Start: Mon - Sep 09, 1996 at 19:00 End: Tue - Sep 10, 1996 at 19:00
City/Town: County: WAKULLA
Location: SR 363 SOUTH OF US 98 File: D0909010.PRN
Ln1-North

Tue - Sep 10, 1996

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
12:15	0	13	3	0	1	0	0	0	1	0	0	0	0	0	0	18
12:30	0	12	3	0	1	0	0	0	0	0	0	0	0	0	0	16
12:45	0	7	5	0	2	1	0	1	1	0	0	0	0	0	0	17
13:00	0	7	2	0	0	0	0	1	2	0	0	0	0	0	0	12
Hourly Totals	0	39	13	0	4	1	0	2	4	0	0	0	0	0	0	63
13:15	0	6	2	0	1	0	0	1	3	0	0	0	0	0	0	13
13:30	0	7	1	1	1	0	0	0	2	0	0	0	0	0	0	12
13:45	0	12	3	0	0	0	0	0	2	0	0	0	0	0	0	17
14:00	0	7	1	2	1	1	0	0	1	0	0	0	0	0	1	14
Hourly Totals	0	32	7	3	3	1	0	1	8	0	0	0	0	0	1	56
14:15	0	5	3	0	0	1	0	1	1	0	0	0	0	0	3	14
14:30	0	11	1	0	0	1	0	0	0	0	0	0	0	0	4	17
14:45	0	9	6	2	1	1	0	0	0	0	0	0	0	0	6	25
15:00	0	12	5	4	0	2	0	0	1	0	0	0	0	0	6	30
Hourly Totals	0	37	15	6	1	5	0	1	2	0	0	0	0	0	19	86
15:15	0	6	5	5	1	0	0	0	0	1	0	0	0	0	5	23
15:30	1	21	4	0	2	1	0	0	1	0	0	0	0	0	5	35
15:45	0	17	4	0	2	0	0	1	1	0	0	0	0	0	0	25
16:00	0	16	5	0	0	0	0	0	1	0	0	0	0	0	0	22
Hourly Totals	1	60	18	5	5	1	0	1	3	1	0	0	0	0	10	105
16:15	0	11	4	1	0	1	0	1	1	1	0	0	0	0	0	20
16:30	0	9	5	1	0	0	0	0	1	0	0	0	0	0	1	17
16:45	1	12	7	0	1	1	0	0	2	0	0	0	0	0	1	25
17:00	1	14	3	1	0	0	0	0	1	0	0	0	0	0	0	20
Hourly Totals	2	46	19	3	1	2	0	1	5	1	0	0	0	0	2	82
17:15	0	17	4	0	0	0	0	0	1	0	0	0	0	0	0	22
17:30	1	16	7	0	1	0	0	1	0	0	0	0	0	0	0	26
17:45	0	14	5	0	1	0	0	2	0	0	0	0	0	0	0	22
18:00	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	10
Hourly Totals	1	56	17	0	2	0	0	3	1	0	0	0	0	0	0	80

Sta: 000000000702 Id: 000000660596 CId: 01 Fmt: 200 Int: 15 Min.
Start: Mon - Sep 09, 1996 at 19:00 End: Tue - Sep 10, 1996 at 19:0
City/Town: County: WAKULLA
Location: SR 363 SOUTH OF US 98 File: D0909010.PRN
Ln1-North

Tue - Sep 10, 1996

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
18:15	0	7	6	0	0	0	0	3	1	1	0	0	0	0	0	18
18:30	0	12	3	0	0	0	0	0	0	0	0	0	0	0	0	15
18:45	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	8
19:00	0	4	2	0	0	0	0	0	0	1	0	0	0	0	0	7
Hourly Totals	0	31	11	0	0	0	0	3	1	2	0	0	0	0	0	48
Daily Totals	7	514	144	24	20	13	0	26	67	6	0	0	0	0	35	856
Percentages	0.82	60.05	16.82	2.80	2.34	1.52	0.00	3.04	7.83	0.70	0.00	0.00	0.00	0.00	4.09	

Station Data Summary

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
Grand Totals	9	601	162	25	21	13	0	28	71	7	0	0	0	0	37	974
Percentages	0.92	61.70	16.63	2.57	2.16	1.33	0.00	2.87	7.29	0.72	0.00	0.00	0.00	0.00	3.80	

Am/Pm Peak Hour Totals

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
Am Hour 11-12	1	37	10	1	1	0	0	3	1	0	0	0	0	0	2	56
Percentages	11.11	6.16	6.17	4.00	4.76	0.00	0.00	10.71	1.41	0.00	0.00	0.00	0.00	0.00	5.41	5.75
Pm Hour 15-16	1	60	18	5	5	1	0	1	3	1	0	0	0	0	10	105
Percentages	11.11	9.98	11.11	20.00	23.81	7.69	0.00	3.57	4.23	14.29	0.00	0.00	0.00	0.00	27.03	10.78

Sta: 000000000703 Id: 000000709257 CId: 01 Fmt: 200 Int: 15 Min.
Start: Mon - Sep 09, 1996 at 19:00 End: Tue - Sep 10, 1996 at 19:0
City/Town: County: WAKULLA
Location: SR 363 SOUTH OF US 98 File: D0909009.PRN
Ln1-South

Mon - Sep 9, 1996

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
19:15	0	6	1	0	0	0	0	0	1	0	0	0	1	0	0	9
19:30	1	7	0	0	1	0	0	0	0	0	0	0	0	0	1	10
19:45	0	7	2	0	0	0	0	0	0	0	0	0	0	0	1	10
20:00	0	11	1	0	0	0	0	0	0	0	0	0	0	0	0	12
Hourly Totals	1	31	4	0	1	0	0	0	1	0	0	0	1	0	2	41
20:15	0	5	1	0	0	0	0	0	1	0	0	0	0	0	0	7
20:30	0	10	2	0	0	0	0	0	0	0	0	0	0	0	0	12
20:45	0	5	0	0	0	0	0	1	0	0	0	0	1	0	0	7
21:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5
Hourly Totals	0	24	4	0	0	0	0	1	1	0	0	0	1	0	0	31
21:15	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	6
21:30	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
21:45	0	8	1	0	0	0	0	1	0	0	0	0	0	0	0	10
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Hourly Totals	0	18	2	0	0	0	0	1	0	0	0	0	0	0	0	21
22:15	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	3
22:30	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3
22:45	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
23:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	3
Hourly Totals	0	7	2	1	0	0	0	0	0	1	0	0	0	0	1	12
23:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23:30	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
23:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
24:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Hourly Totals	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	6
Daily Totals	1	85	13	1	1	0	0	2	2	1	0	0	2	0	3	111
Percentages	0.90	76.58	11.71	0.90	0.90	0.00	0.00	1.80	1.80	0.90	0.00	0.00	1.80	0.00	2.70	

Sta: 000000000703 Id: 000000709257 CId: 01 Fmt: 200 Int: 15 Min.
Start: Mon - Sep 09, 1996 at 19:00 End: Tue - Sep 10, 1996 at 19:0
City/Town: County: WAKULLA
Location: SR 363 SOUTH OF US 98 File: D0909009.PRN
Ln1-South

Tue - Sep 10, 1996

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
Tue - Sep 10, 1996																
00:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
00:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Totals	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
01:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
01:45	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Totals	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5
02:15	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
02:30	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
02:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Totals	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
03:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Hourly Totals	0	6	1	1	0	0	0	0	0	0	0	0	0	0	0	8
04:15	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
04:30	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:45	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	3
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Totals	0	6	1	0	0	0	0	1	0	0	0	0	0	0	0	8
05:15	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3
05:30	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
05:45	0	5	0	1	0	0	0	0	0	0	0	0	0	0	0	6
06:00	0	3	2	0	0	0	1	0	0	0	0	0	0	0	1	7
Hourly Totals	0	11	4	1	0	0	1	0	0	0	0	0	0	0	1	18

Sta: 000000000703 Id: 000000709257 CId: 01 Fmt: 200 Int: 15 Min.
Start: Mon - Sep 09, 1996 at 19:00 End: Tue - Sep 10, 1996 at 19:00
City/Town: County: WAKULLA
Location: SR 363 SOUTH OF US 98 File: D0909009.PRN
Ln1-South

Tue - Sep 10, 1996

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
06:15	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5
06:30	0	5	2	1	0	0	0	0	0	0	0	0	0	0	0	8
06:45	0	12	4	1	0	0	1	0	0	0	0	0	0	0	0	18
07:00	0	19	5	0	0	1	0	0	0	0	0	0	0	0	0	25
Hourly Totals	0	40	12	2	0	1	1	0	0	0	0	0	0	0	0	56
07:15	0	12	3	0	0	1	1	0	0	0	0	0	0	0	1	18
07:30	0	7	2	0	0	0	0	0	0	0	0	0	0	0	0	9
07:45	0	8	3	1	0	0	0	0	1	0	0	0	0	0	0	13
08:00	0	10	1	0	0	0	0	1	1	0	0	0	0	0	0	13
Hourly Totals	0	37	9	1	0	1	1	1	2	0	0	0	0	0	1	53
08:15	0	6	2	0	0	0	0	1	0	0	0	0	0	0	1	10
08:30	0	8	4	0	0	2	0	0	2	1	0	0	1	0	0	18
08:45	0	9	1	0	0	0	0	2	1	0	0	0	1	0	0	14
09:00	0	9	2	0	0	0	0	1	2	0	0	0	0	0	1	15
Hourly Totals	0	32	9	0	0	2	0	4	5	1	0	0	2	0	2	57
09:15	0	9	1	0	0	0	0	1	3	0	0	0	0	0	0	14
09:30	1	9	4	0	2	0	0	0	0	0	0	0	0	0	0	16
09:45	0	9	1	0	0	0	0	0	1	0	0	0	0	0	0	11
10:00	0	11	3	1	0	0	2	1	1	0	0	0	0	0	0	19
Hourly Totals	1	38	9	1	2	0	2	2	5	0	0	0	0	0	0	60
10:15	0	7	2	2	0	0	0	1	0	0	0	0	0	0	0	12
10:30	0	5	1	0	0	0	0	0	2	0	1	0	0	0	0	9
10:45	0	7	0	0	0	0	0	2	1	0	0	0	1	0	0	11
11:00	0	2	2	0	0	0	0	0	2	0	0	0	0	0	1	7
Hourly Totals	0	21	5	2	0	0	0	3	5	0	1	0	1	0	1	39
11:15	0	6	3	1	0	0	1	1	5	0	0	0	0	0	0	17
11:30	0	16	6	0	1	0	0	0	2	0	0	0	0	0	0	25
11:45	0	13	4	0	0	0	0	1	0	0	0	0	0	0	1	19
12:00	0	16	5	0	0	1	0	0	1	0	0	0	0	0	0	23
Hourly Totals	0	51	18	1	1	1	1	2	8	0	0	0	0	0	1	84

Sta: 000000000703 Id: 000000709257 CId: 01 Fmt: 200 Int: 15 Min.
Start: Mon - Sep 09, 1996 at 19:00 End: Tue - Sep 10, 1996 at 19:
City/Town: County: WAKULLA
Location: SR 363 SOUTH OF US 98 File: D0909009.PR
Ln1-South

Tue - Sep 10, 1996

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
12:15	0	18	7	1	0	0	0	2	2	0	0	0	0	0	10	40
12:30	0	8	3	0	0	0	1	0	3	0	0	0	0	0	0	15
12:45	0	8	2	0	0	0	0	1	0	0	0	0	0	0	1	12
13:00	0	13	5	0	1	0	0	0	2	0	0	0	0	0	1	22
Hourly Totals	0	47	17	1	1	0	1	3	7	0	0	0	0	0	12	89
13:15	0	9	2	0	0	0	0	2	4	0	0	0	0	0	1	18
13:30	0	9	4	1	0	1	0	0	0	0	0	0	0	0	0	15
13:45	0	11	3	1	1	0	0	0	2	0	0	0	0	0	0	18
14:00	0	10	3	0	1	1	0	2	2	0	0	0	0	0	0	19
Hourly Totals	0	39	12	2	2	2	0	4	8	0	0	0	0	0	1	70
14:15	0	8	1	1	0	0	0	1	1	0	0	0	0	0	0	12
14:30	0	7	3	0	1	0	0	0	0	0	0	0	0	0	1	12
14:45	0	4	2	0	0	0	0	2	4	0	0	0	0	0	0	12
15:00	0	8	2	1	1	0	0	0	3	0	0	0	0	0	1	16
Hourly Totals	0	27	8	2	2	0	0	3	8	0	0	0	0	0	2	52
15:15	0	9	3	1	0	0	0	1	3	0	0	0	0	0	0	17
15:30	0	7	1	1	0	0	0	0	3	0	0	0	0	0	0	12
15:45	0	11	4	0	0	1	0	0	0	0	0	0	0	0	1	17
16:00	0	14	2	0	0	0	0	0	2	0	0	0	1	0	1	20
Hourly Totals	0	41	10	2	0	1	0	1	8	0	0	0	1	0	2	66
16:15	0	21	3	0	0	2	0	2	0	1	0	0	0	0	1	30
16:30	0	6	1	0	0	0	0	0	1	0	0	0	0	0	0	8
16:45	0	9	4	1	0	0	0	1	1	0	0	0	1	0	0	17
17:00	0	13	2	0	0	1	1	0	0	0	1	0	1	0	0	19
Hourly Totals	0	49	10	1	0	3	1	3	2	1	1	0	2	0	1	74
17:15	1	15	5	0	0	0	0	1	0	0	0	0	0	0	0	22
17:30	0	8	2	0	0	0	0	0	2	0	0	0	1	0	0	13
17:45	0	22	3	1	0	0	0	1	0	0	0	0	0	0	1	28
18:00	0	15	3	0	0	0	0	0	1	0	0	0	0	0	1	20
Hourly Totals	1	60	13	1	0	0	0	2	3	0	0	0	1	0	2	83

Sta: 000000000703 Id: 000000709257 CId: 01 Fmt: 200 Int: 15 Min.
Start: Mon - Sep 09, 1996 at 19:00 End: Tue - Sep 10, 1996 at 19:00
City/Town: County: WAKULLA
Location: SR 363 SOUTH OF US 98 File: D0909009.PRN
Ln1-South

Tue - Sep 10, 1996

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
18:15	1	8	1	0	0	0	0	0	1	0	0	0	0	0	0	11
18:30	0	10	1	0	0	0	0	0	0	0	0	0	2	0	0	13
18:45	0	8	0	2	0	1	0	0	0	0	0	0	1	0	0	12
19:00	0	9	2	0	0	0	0	0	0	0	0	0	1	0	0	12
Hourly Totals	1	35	4	2	0	1	0	0	1	0	0	0	4	0	0	48
Daily Totals	3	548	146	20	8	12	8	29	62	2	2	0	11	0	26	877
Percentages	0.34	62.49	16.65	2.28	0.91	1.37	0.91	3.31	7.07	0.23	0.23	0.00	1.25	0.00	2.96	

Station Data Summary

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
Grand Totals	4	633	159	21	9	12	8	31	64	3	2	0	13	0	29	988
Percentages	0.40	64.07	16.09	2.13	0.91	1.21	0.81	3.14	6.48	0.30	0.20	0.00	1.32	0.00	2.94	

Am/Pm Peak Hour Totals

Type	Cycle	Cars	2A-4T	Buses	2A-SU	3A-SU	4A-SU	4A-ST	5A-ST	6A-ST	5A-MT	6A-MT	7A-MT	None	Other	Total
Am Hour 11-12	0	51	18	1	1	1	1	2	8	0	0	0	0	0	1	84
Percentages	0.00	8.06	11.32	4.76	11.11	8.33	12.50	6.45	12.50	0.00	0.00	0.00	0.00	0.00	3.45	8.50
Pm Hour 12-13	0	47	17	1	1	0	1	3	7	0	0	0	0	0	12	89
Percentages	0.00	7.42	10.69	4.76	11.11	0.00	12.50	9.68	10.94	0.00	0.00	0.00	0.00	0.00	41.38	9.01

Type Vehicle Classification Count
Location: SR 363, South of US 98; Southbound
Date: 9-Sep-96

Period	Vehicle Classification															
Starting time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	total
6:00 AM	0	40	12	2	0	1	1	0	0	0	0	0	0	0	0	56
7:00 AM	0	37	9	1	0	1	1	1	2	0	0	0	0	0	1	53
8:00 AM	0	32	9	0	0	2	0	4	5	1	0	0	2	0	2	57
9:00 AM	1	38	9	1	2	0	2	2	5	0	0	0	0	0	0	60
10:00 AM	0	21	5	2	0	0	0	3	5	0	1	0	1	0	1	39
11:00 AM	0	51	18	1	1	1	1	2	8	0	0	0	0	0	1	84
12:00 PM	0	47	17	1	1	0	1	3	7	0	0	0	0	0	12	89
13:00 PM	0	39	12	2	2	2	0	4	8	0	0	0	0	0	1	70
14:00 PM	0	27	8	2	2	0	0	3	8	0	0	0	0	0	2	52
15:00 PM	0	41	10	2	0	1	0	1	8	0	0	0	1	0	2	66
16:00 PM	0	49	10	1	0	3	1	3	2	1	1	0	2	0	1	74
17:00 PM	1	60	13	1	0	0	0	2	3	0	0	0	1	0	2	83
Totals																
6:00-17:00	2	482	132	16	8	11	7	28	61	2	2	0	7	0	25	783
0:00-24:00	4	633	159	21	9	12	8	31	64	3	2	0	13	0	29	988

Type Vehicle Classification Count
Location: SR 363, South of US 98; Northbound
Date: 9-Sep-96

Period	Vehicle Classification															
Starting time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	total
6:00 AM	0	31	9	2	0	0	0	1	2	1	0	0	0	0	0	46
7:00 AM	0	34	4	2	1	1	0	0	6	1	0	0	0	0	0	49
8:00 AM	0	34	11	1	0	0	0	1	6	0	0	0	0	0	0	53
9:00 AM	0	25	4	0	1	1	0	0	10	0	0	0	0	0	0	41
10:00 AM	1	37	4	1	1	1	0	1	6	0	0	0	0	0	1	53
11:00 AM	1	37	10	1	1	0	0	3	1	0	0	0	0	0	2	56
12:00 PM	0	39	13	0	4	1	0	2	4	0	0	0	0	0	0	63
13:00 PM	0	32	7	3	3	1	0	1	8	0	0	0	0	0	1	56
14:00 PM	0	37	15	6	1	5	0	1	2	0	0	0	0	0	19	86
15:00 PM	1	60	18	5	5	1	0	1	3	1	0	0	0	0	10	105
16:00 PM	2	46	19	3	1	2	0	1	5	1	0	0	0	0	2	82
17:00 PM	1	56	17	0	2	0	0	3	1	0	0	0	0	0	0	80
Totals																
6:00-17:00	6	468	131	24	20	13	0	15	54	4	0	0	0	0	35	770
0:00-24:00	9	601	162	25	21	13	0	28	71	7	0	0	0	0	37	974

Type Vehicle Classification Count
Location: SR 363, South of US 98; Both Directions
Date: 9-Sep-96

Period	Vehicle Classification															
Starting time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	total
6:00 AM	0	71	21	4	0	1	1	1	2	1	0	0	0	0	0	102
7:00 AM	0	71	13	3	1	2	1	1	8	1	0	0	0	0	1	102
8:00 AM	0	66	20	1	0	2	0	5	11	1	0	0	2	0	2	110
9:00 AM	1	63	13	1	3	1	2	2	15	0	0	0	0	0	0	101
10:00 AM	1	58	9	3	1	1	0	4	11	0	1	0	1	0	2	92
11:00 AM	1	88	28	2	2	1	1	5	9	0	0	0	0	0	3	140
12:00 PM	0	86	30	1	5	1	1	5	11	0	0	0	0	0	12	152
13:00 PM	0	71	19	5	5	3	0	5	16	0	0	0	0	0	2	126
14:00 PM	0	64	23	8	3	5	0	4	10	0	0	0	0	0	21	138
15:00 PM	1	101	28	7	5	2	0	2	11	1	0	0	1	0	12	171
16:00 PM	2	95	29	4	1	5	1	4	7	2	1	0	2	0	3	156
17:00 PM	2	116	30	1	2	0	0	5	4	0	0	0	1	0	2	163
Totals																
6:00-17:00	8	950	263	40	28	24	7	43	115	6	2	0	7	0	60	1553
0:00-24:00	13	1234	321	46	30	25	8	59	135	10	2	0	13	0	66	1962

Type Vehicle Classification Projection
Location: SR 363, South of US 98; Southbound
Date: 1999

Period	Vehicle Classification															
Starting time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	total
6:00 AM	0	44	13	2	0	1	1	0	0	0	0	0	0	0	0	62
7:00 AM	0	41	10	1	0	1	1	1	2	0	0	0	0	0	1	58
8:00 AM	0	35	10	0	0	2	0	4	6	1	0	0	2	0	2	63
9:00 AM	1	42	10	1	2	0	2	2	6	0	0	0	0	0	0	66
10:00 AM	0	23	6	2	0	0	0	3	6	0	1	0	1	0	1	43
11:00 AM	0	56	20	1	1	1	1	2	9	0	0	0	0	0	1	93
12:00 PM	0	52	19	1	1	0	1	3	8	0	0	0	0	0	13	98
13:00 PM	0	43	13	2	2	2	0	4	9	0	0	0	0	0	1	77
14:00 PM	0	30	9	2	2	0	0	3	9	0	0	0	0	0	2	57
15:00 PM	0	45	11	2	0	1	0	1	9	0	0	0	1	0	2	73
16:00 PM	0	54	11	1	0	3	1	3	2	1	1	0	2	0	1	82
17:00 PM	1	66	14	1	0	0	0	2	3	0	0	0	1	0	2	92
Totals																
6:00-17:00	2	532	146	18	9	12	8	31	67	2	2	0	8	0	28	864
0:00-24:00	4	699	175	23	10	13	9	34	71	3	2	0	14	0	32	1090

Total truck traffic (Class 4 - 13):	
6:00-17:00	157
0:00-24:00	180

Type Vehicle Classification Projection
Location: SR 363, South of US 98; Northbound
Date: 1999

Period	Vehicle Classification															
Starting time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	total
6:00 AM	0	34	10	2	0	0	0	1	2	1	0	0	0	0	0	51
7:00 AM	0	38	4	2	1	1	0	0	7	1	0	0	0	0	0	54
8:00 AM	0	38	12	1	0	0	0	1	7	0	0	0	0	0	0	58
9:00 AM	0	28	4	0	1	1	0	0	11	0	0	0	0	0	0	45
10:00 AM	1	41	4	1	1	1	0	1	7	0	0	0	0	0	1	58
11:00 AM	1	41	11	1	1	0	0	3	1	0	0	0	0	0	2	62
12:00 PM	0	43	14	0	4	1	0	2	4	0	0	0	0	0	0	70
13:00 PM	0	35	8	3	3	1	0	1	9	0	0	0	0	0	1	62
14:00 PM	0	41	17	7	1	6	0	1	2	0	0	0	0	0	21	95
15:00 PM	1	66	20	6	6	1	0	1	3	1	0	0	0	0	11	116
16:00 PM	2	51	21	3	1	2	0	1	6	1	0	0	0	0	2	90
17:00 PM	1	62	19	0	2	0	0	3	1	0	0	0	0	0	0	88
Totals																
6:00-17:00	7	517	145	26	22	14	0	17	60	4	0	0	0	0	39	850
0:00-24:00	10	663	179	28	23	14	0	31	78	8	0	0	0	0	41	1075

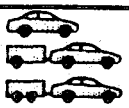
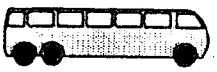
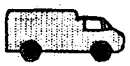
Total truck traffic (Class 4 - 13):	
6:00-17:00	143
0:00-24:00	182

Type Vehicle Classification Projection
Location: SR 363, South of US 98; Both Directions
Date: 1999

Period	Vehicle Classification															
Starting time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	total
6:00 AM	0	78	23	4	0	1	1	1	2	1	0	0	0	0	0	113
7:00 AM	0	78	14	3	1	2	1	1	9	1	0	0	0	0	1	113
8:00 AM	0	73	22	1	0	2	0	6	12	1	0	0	2	0	2	121
9:00 AM	1	70	14	1	3	1	2	2	17	0	0	0	0	0	0	111
10:00 AM	1	64	10	3	1	1	0	4	12	0	1	0	1	0	2	102
11:00 AM	1	97	31	2	2	1	1	6	10	0	0	0	0	0	3	155
12:00 PM	0	95	33	1	6	1	1	6	12	0	0	0	0	0	13	168
13:00 PM	0	78	21	6	6	3	0	6	18	0	0	0	0	0	2	139
14:00 PM	0	71	25	9	3	6	0	4	11	0	0	0	0	0	23	152
15:00 PM	1	111	31	8	6	2	0	2	12	1	0	0	1	0	13	189
16:00 PM	2	105	32	4	1	6	1	4	8	2	1	0	2	0	3	172
17:00 PM	2	128	33	1	2	0	0	6	4	0	0	0	1	0	2	180
Totals																
6:00-17:00	9	1048	290	44	31	26	8	47	127	7	2	0	8	0	66	1714
0:00-24:00	14	1362	354	51	33	28	9	65	149	11	2	0	14	0	73	2165

Total truck traffic (Class 4 - 13):	
6:00-17:00	300
0:00-24:00	362

FHWA CLASSIFICATION

CLASS GROUP		DESCRIPTION	NO. OF AXLES
1		MOTORCYCLES	2
2		ALL CARS	2
		CARS W/ 1-AXLE TRAILER	3
		CARS W/ 2-AXLE TRAILER	4
3		PICK-UPS & VANS 1 & 2 AXLE TRAILERS	2, 3, & 4
4		BUSES	2 & 3
5		2-AXLE, SINGLE UNIT	2
6		3-AXLE, SINGLE UNIT	3
7		4-AXLE, SINGLE UNIT	4
8		2-AXLE, TRACTOR, 1-AXLE TRAILER (2S1)	3
		2-AXLE, TRACTOR, 2-AXLE TRAILER (2S2)	4
		3-AXLE, TRACTOR, 1-AXLE TRAILER (3S1)	4
9		3-AXLE, TRACTOR, 2-AXLE TRAILER (3S2)	5
		3-AXLE, TRUCK, W/ 2-AXLE TRAILER	5
10		TRACTOR W/ SINGLE TRAILER	6 & 7
11		5-AXLE MULTI-TRAILER	5
12		6-AXLE MULTI-TRAILER	6
13	ANY 7 OR MORE AXLE		7 or more
14	NOT USED		
15	UNKNOWN VEHICLE TYPE		

SOURCE: HALL PLANNING AND ENGINEERING, 1997

CITY OF TALLAHASSEE

VEHICLE CLASSIFICATIONS

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure 1

PLOT DATE MAR 1997 C:\15840002\---\00000-48.DWG

10.6.2 Cultural Resources Modelling

There is no modelling associated with this technical discipline.

10.6.3 Groundwater Modeling

10.6.3.1 Introduction

Simulation of ground water flow in the vicinity of the Purdom Station was performed using the U.S. Geological Survey's Modular Three-Dimensional Finite-Difference Ground Water Flow Model (MODFLOW) to simulate the Upper Floridan aquifer system (McDonald and Harbaugh, 1988). The construction of the model and inputs for aquifer parameters were based on a recent USGS publication "Hydrogeologic Investigation and Simulation of Ground-Water flow in the Upper Floridan Aquifer of North-Central Florida and Southwestern Georgia and Delineation of Contributing Areas for Selected City of Tallahassee, Florida Water Supply Wells" which provides details on a similar MODFLOW model (Davis, 1996). This recently published USGS model covers a much broader geographic range than the model used for this study. Because of the broad, regional perspective of the USGS model it is difficult to discern the impacts of localized pumping withdrawals near the Purdom Station. The model which was constructed for the Purdom Station only covers a small portion of Wakulla County focusing on impacts from local withdrawal wells.

10.6.3.2 Model Input Parameter Selection

The model consisted of two layers each composed of 66 rows and 66 columns of cells which are 400 ft square. The entire model area encompasses approximately 25 square miles (66 x 400 ft = 26,400 ft). The model area was selected to include a 2.5 mile diameter area around the City of Tallahassee's four Purdom production wells in the wellfield which is located approximately 2 miles northwest of the Purdom Station. The thickness of the two model layers were input as 230 ft for the upper layer and 1970 ft for the lower layer. The total thickness of these two layers equals the estimated thickness of Upper Floridan aquifer in this region (230 + 1970 = 2200 ft estimated Upper Floridan aquifer thickness). The aquifer transmissivity was input as 10,000 ft^2/day (10,000 ft^2/day divided by 2200 ft [aquifer thickness] = 4.55 ft/day; the hydraulic conductivity of the aquifer). The aquifer porosity was input as 0.25 percent for both layers. The input values for aquifer thickness, transmissivity, and porosity in the Purdom model match the input values used in the USGS model (Davis, 1996).

Initial potentiometric heads in each model cell varied from 4 ft above mean sea level (MSL) to 0 ft MSL. The highest heads were established as model inputs in the cells along the top (northernmost) row of the model and the potentiometric head input values were gradually decreased from 4 ft to 0 ft toward the bottom (southernmost) row of the model to create a gradient in the Purdom model of 1 ft/mile approximately matching the regional gradient of the USGS model.

The USGS model separated the Upper Floridan aquifer unit into two model layers with the same hydraulic properties because nearly all of the withdrawal wells in the area are less than 230 ft in total depth. Pumping from the withdrawal wells is modeled exclusively in the upper model layer by assigning wells only to cells in the upper layers. Studies of the Upper Floridan aquifer in this area have shown that the majority of groundwater flow from the aquifer to pumping wells is provided by horizontal flow through more permeable zones in the upper aquifer materials.

Putting the withdrawal wells exclusively in the upper model layer forces the model to act in a similar fashion to the physical environment by providing water for the withdrawal wells predominately via horizontal flow through the upper model layer. In addition, the second model layer below the upper layer which has identical hydraulic properties as the upper layer allows some upward flow to occur in the model near large withdrawals as is thought to be the case in the physical environment. This arrangement of model layers is consistent in both models.

Recharge to the entire model area was adjusted experimentally during early model simulations and held constant throughout the later model simulations at 2.2 inches per year. Larger values of recharge resulted in excessive mounding throughout the model and no recharge resulted in excessively low potentiometric heads being derived by the model because recharge is one of only two sources of groundwater inflow available to the model (the only other potential source of groundwater inflow in the model were river cells). Recharge rates in the USGS model varied from 20 inches to less than 1 inch per year and were adjusted during model calibration. The exact recharge rate for the area of the Purdom model was not specified in the USGS modeling report. Local recharge to the aquifer near the Purdom site is thought to be highly variable as some areas near the site have thin layers of clayey soils at the surface (above the limestone aquifer materials) which limit recharge in those areas and other areas near the site have limestone essentially at ground surface. The most significant groundwater flows in the immediate area of the Purdom model are discharges in springs and rivers. Locally, springs are fed by lateral flow from northern (upgradient) recharge areas in the aquifer.

Cells in the model area which correspond to the two local rivers (Wakulla and St. Marks) were created using the MODFLOW River package option which allows them to act as either recharge or discharge cells depending on the stage of the river cells and the water level in the surrounding aquifer cells. When the potentiometric head in an aquifer cell adjacent to a river cell exceeds the river cell's stage the aquifer discharges to the river and when the river cell's stage exceeds the aquifer cell's head the river recharges the aquifer. The initial values of head in the river cells for the Purdom model were input as 1-2 ft below the initial head of the surrounding aquifer cells to simulate spring discharges into the rivers reported by the USGS and other sources. Actual values of river stage at various points within the model domain were not available for use as inputs to the model. Intuitively, the initial head of the river cells were gradually decreased from the north to the south (within the model) along the axis of the river channel cells matching the approximate gradient of the aquifer. This gradient allowed the model to simulate flow in the river to the south toward the mouths of the rivers. In the physical environment, both rivers discharge into a bay south of the area included in the model. The USGS reported in their model that the average discharge from the Wakulla River was 350 cubic ft/sec and the average discharge from the St. Marks River was 602 cubic ft/sec (Davis, 1996). These values were based on data collected in the field. Both of these rivers are fed by springs which discharge from the Upper Floridan aquifer. The USGS model domain includes the entire area of the drainage basins for both rivers and their total cumulative basin discharges are included in the reported flows. The area used for the Purdom model only includes a small portion of each river's basin. Consequently, it would not be realistic to match the USGS model's river discharges rates in the Purdom model because most of the flow to these rivers is contributed by sources outside of the model domain. However, because the entire river channel acts as a sink or discharge point for the Upper Floridan aquifer whenever the water levels in the aquifer exceed the river stage; it was important to include these

discharge cells in the model. The effect of the river cells on the model is that they help to create contours in the potentiometric surface generated from the Purdom model which are similar to those generated by the USGS model. This is achieved by river cells which provide recharge to the aquifer at points nearest large withdrawal wells and which also accept discharge from the aquifer at other points in order to maintain their pre-set stage provided as a model input value.

Drains were created in the cells along the southern edge of the model and experimentally adjusted along with recharge rates in the early model simulations until a potentiometric head and gradient was created throughout the model area which approximately matched the regional gradient shown by the USGS model. This adjustment was done when all of the existing local pumping wells were active in the early runs of the baseline simulation. This arrangement is very similar to the arrangement used in the USGS model which also used a combination of areal recharge, rivers, and drains to establish a regional flow gradient in their aquifer simulation model. The inputs for the drains were arbitrarily pre-set to the same elevation as the bottom of the upper model layer (-230 ft).Their flow was adjusted by changing the hydraulic conductivity of the drains. The hydraulic conductivity value used for the drains in all of the model simulations was 4.55 ft/day; which matched the reported hydraulic conductivity of the aquifer. This arrangement was necessary to create a regional flow in the aquifer from north to south (toward the Gulf of Mexico) matching the real conditions found in the area. This flow regime became the basis for all of the pumping and non-pumping withdrawal simulations run with the model to predict local impacts.

10.6.3.3 Model Simulations

Figure 10.6.3-1 depicts the model layout and the arrangement of the model cells including the locations of those which represent rivers, drains, and withdrawal wells. Two model simulations were executed corresponding to the two groundwater withdrawal scenarios which apply to the Purdom Station.

Pumping wells were created in the two model simulations as shown in Table 10.6.3-1. The individual well withdrawal rates in each of the two simulations were based on data provided in water use permits from the Northwest Florida Water Management District (NWFWMD) and from data in the USGS report. The City of Tallahassee has four operational wells in their Purdom wellfield, but they normally operate only two at a time; either wells 6 and 8 or wells 7 and 9 are pumped in tandem to provide a combined average withdrawal rate of 200 gpm. For simplicity, only one version of this pumping arrangement was simulated by the model because the impact to the model of withdrawing water from either pair of wells is essentially the same. For the purposes of the model simulation all of the City of Tallahassee's withdrawals were modeled as being pumped from the two northernmost wells. Primex Technologies (formerly Olin Corporation) has four wells, but no data was available regarding the usage of each individual well. The City of St. Marks has two wells which are both operated continuously (personal communication, Robert George, David H. Melvin & Associates, Inc., Tallahassee, Florida, January 3, 1997). Wakulla County only has one permitted withdrawal well.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

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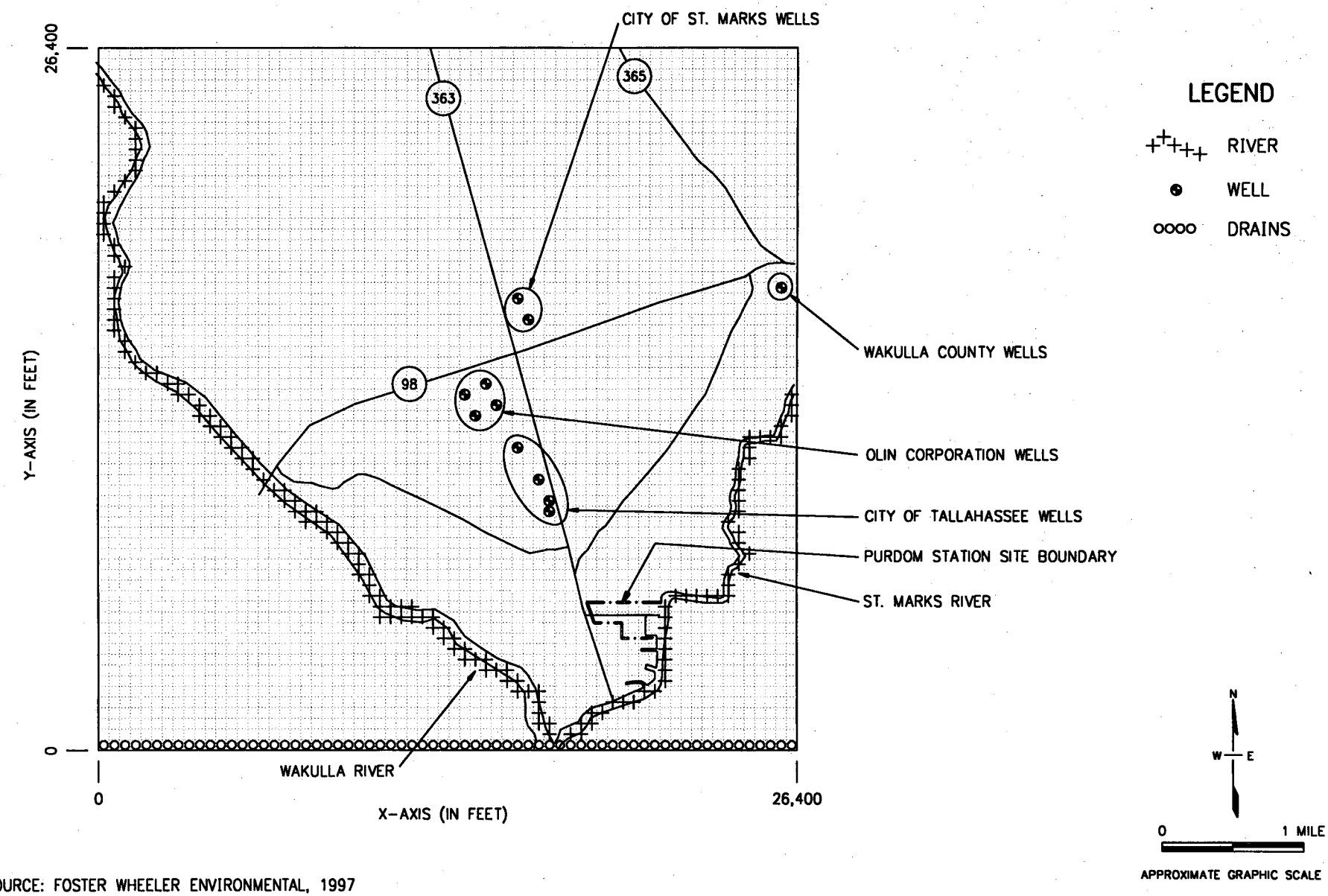

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

10.6.3-4

CITY OF TALLAHASSEE

GROUNDWATER MODEL
GRID LAYOUT

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
10.6.3-1

TABLE 10.6.3-1
MODEL DATA

Owner	No. Wells	Pumping Rate/Well (gpm)[1]	Simulation No.
City of Tallahassee	2	100	1
Primex Technologies (formerly Olin)	4	158	1
City of St. Marks	2	29	1
Wakulla County	1	1.3	1
City of Tallahassee	2	0	2
Primex (formerly Olin)	4	158	2
City of St. Marks	2	29	2
Wakulla County	1	1.3	2

[1] Permitted Average Daily Pumping Rates:
City of Tallahassee = 288,000 gpd
Primex Technologies(formerly Olin) = 910,000 gpd
City of St. Marks = 84,000 gpd
Wakulla County = 1,900 gpd.

Source: NWFWMD

The model simulations were executed in the transient mode for a time period of 10 years which approximates a steady-state condition. The 10-year simulation period was derived experimentally by interactively executing the model changing only the length of the simulation time and reviewing the output results until a time period was found after which measurable changes were not observed in the potentiometric head of the model results.

The model was not executed in the steady-state mode because this mode ignores aquifer storage. Aquifer storage plays an important role in the model and in the physical world because the change in aquifer storage created by various pumping scenarios controls the potentiometric surface of the aquifer. The Upper Floridan aquifer has an effective porosity or storage in the range of 25 percent. Water in the pore spaces of the aquifer is drained in response to increased pumping. As this stored water is removed it creates a cone of depression around pumping wells it causes an increase in aquifer recharge by reducing the volume of water which discharges to the area rivers.

The first model simulation depicts the baseline which corresponds to the existing conditions at the Plant. In this simulation, the Purdom wellfield withdraws 200 gpm from 2 wells operated in tandem. Other nearby withdrawals which are large enough potentially to impact the modeled region include withdrawals by Primex Technologies(formerly Olin Corporation), City of St. Marks, and Wakulla County. The second model simulation depicts the anticipated positive results from the cessation of pumping at the Purdom wellfield, planned when Purdom Unit 8 comes on line and is operated on natural gas fuel.

10.6.3.4 Model Results

Figure 10.6.3-2 from the first model simulation, depicts the potentiometric surface of the Upper Floridan aquifer for the baseline with the City of Tallahassee Purdom wells actively pumping.

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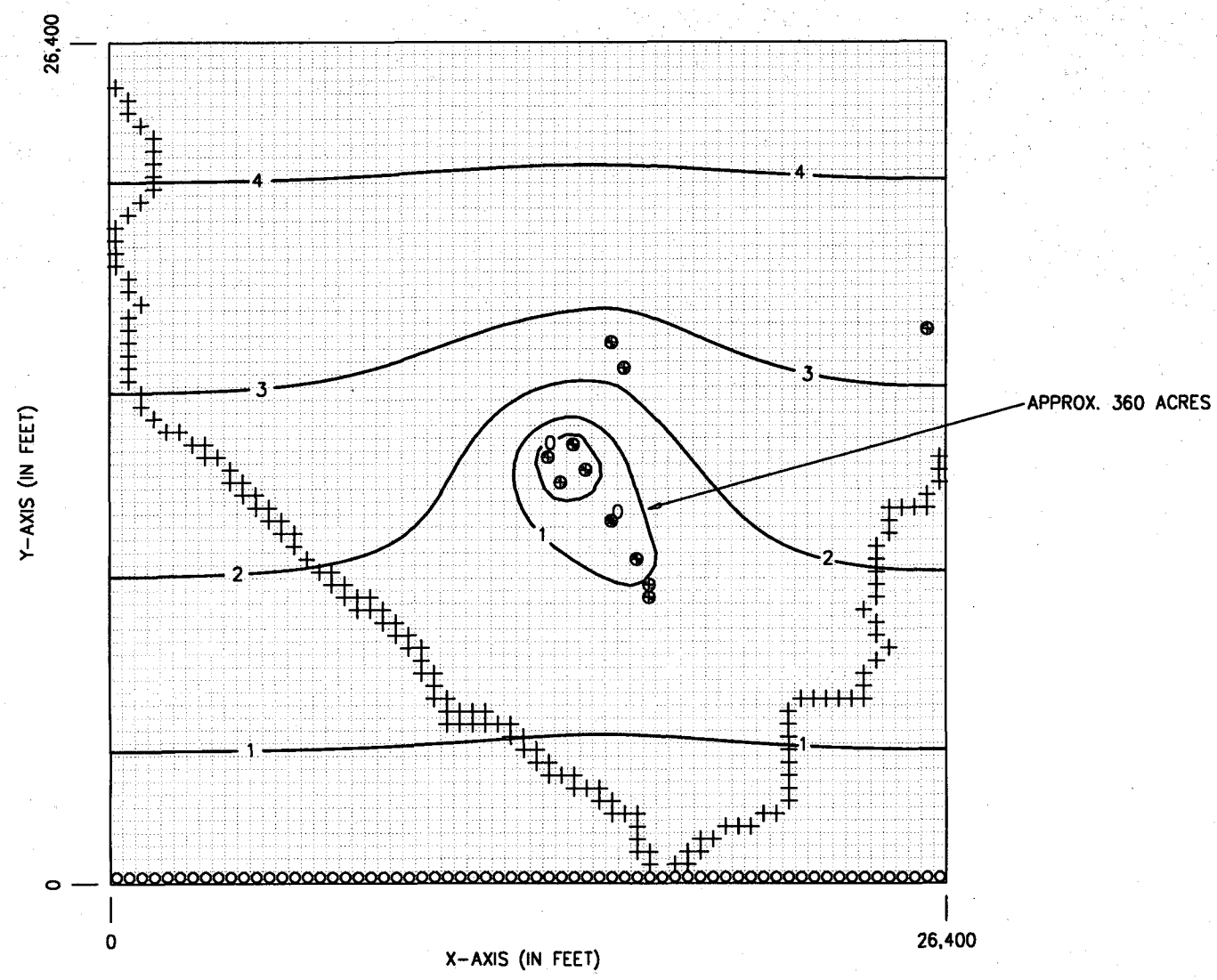
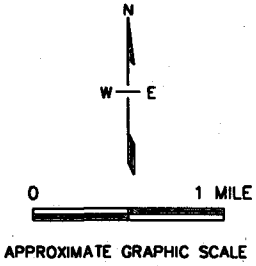


LEGEND

RIVER

WELL

DRAINS



APPROXIMATE GRAPHIC SCALE

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

GROUNDWATER MODEL
EXISTING CONDITIONS - BASELINE SIMULATION

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure

10.6.3-2

10.6.3-2

This figure represents the existing conditions in the Upper Floridan aquifer near the Purdom Station. The figure shows an elliptical shaped cone of depression area which encompasses the four Primex Technologies (formerly Olin Corporation) wells and the two active City of Tallahassee Purdom wells. This area of depressed potentiometric heads is approximately 5800 ft long by 4000 ft wide and includes approximately 360 acres. There is also a less pronounced depressed potentiometric area near the City of St. Marks two wells.

Figure 10.6.3-3 depicts the results of a predictive model simulation which was executed to model the expected impact resulting from removing the City of Tallahassee's Purdom wellfield from service. Figure 10.6.3-3 depicts a much smaller cone of depression around the Primex Technologies (formerly Olin Corporation) wells which will remain after the City of Tallahassee's Purdom wells are removed from service. This cone of depression is circular approximately 2800 ft in diameter and covers approximately 180 acres.

10.6.3.5 Model Conclusions

The results of the model simulations indicate that removing the City of Tallahassee's Purdom wellfield from service will be beneficial to groundwater resources in this area of Wakulla County. Cessation of pumping from this wellfield will reduce the diameter of the localized cone of depression caused by groundwater withdrawals and diminish the threat of saltwater intrusion to the area.

10.6.3.6 References

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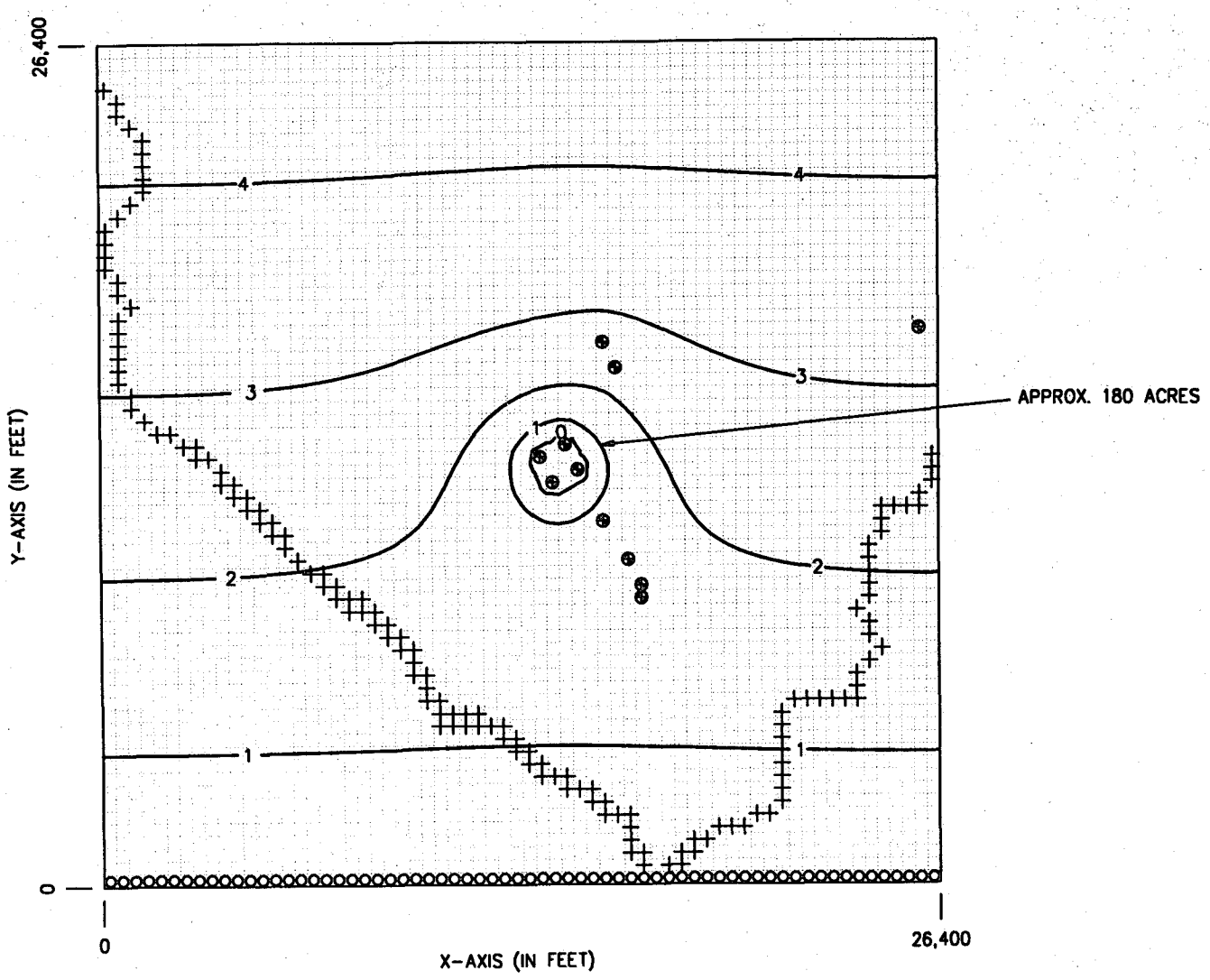
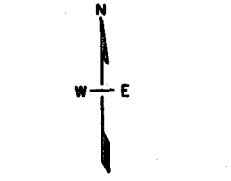


LEGEND

RIVER

WELL

DRAINS



APPROXIMATE GRAPHIC SCALE

SOURCE: FOSTER WHEELER ENVIRONMENTAL, 1997

CITY OF TALLAHASSEE

GROUNDWATER MODEL
FUTURE CONDITIONS - OPERATION OF PURDOM UNIT 8

PURDOM UNIT 8 PROJECT - ST MARKS, FLORIDA

Figure
10.6.3-3

10.6.3-8

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10.6.4 Surface Water Modelling

No surface water modelling required for this zero discharge facility.

10.6.5 Ecology Modelling

There is no modelling associated with this technical discipline.

10.6.6 Meteorology /Air Quality Modelling

Air Quality Models and Related Programs

Several models and associated programs were used in the air quality analysis presented in this application. These models and programs were downloaded from the EPA Office of Air Quality Planning and Standards (OAQPS) Technology Transfer Network (TNN).

The models and programs as well as the version number of each is presented in the table below.

Model / Program	Version
SCREEN3	96043
Industrial Source Complex (ISC3)	96113
Building Profile Input Program (BPIP)	95086

The cover page of the users guide is included in this appendix as well as excerpts from the users guides / modelling guidance documents which briefly describe each model / program.

EPA-454/B-95-004

SCREEN3 Model User's Guide

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Emissions, Monitoring, and Analysis Division
Research Triangle Park, North Carolina 27711

September 1995

EPA-454/R-92-019

Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

October 1992

1. INTRODUCTION

This document is an update and revision of an earlier guideline[1,2] for applying screening techniques to estimate the air quality impact of stationary sources. The application of screening techniques is addressed in Section 4.2.1 of the Guideline on Air Quality Models (Revised).[3] The current document incorporates changes and additions to the technical approach. The techniques are applicable to chemically stable, gaseous or fine particulate pollutants. An important advantage of the current document is that the single source, short-term techniques can be easily executed on an IBM® - PC (personal computer) compatible microcomputer with at least 256K of RAM using the SCREEN2 computer code. As with the earlier versions, however, many of the techniques can be applied with a pocket or desk calculator.

The techniques described in this document can be used to evaluate the air quality impact of sources pursuant to the requirements of the Clean Air Act,[4] such as those sources subject to the prevention of significant deterioration (PSD) regulation, addressed in 40 CFR 52.21. The techniques can also be used, where appropriate, for new major or minor sources or modifications subject to new source review regulations, and existing sources of air pollutants, including toxic air pollutants. This document presents a three-phase approach that is applicable to the air quality analysis:

Phase 1. Apply a simple screening procedure (Section 4.1) to determine if either (1) the source clearly poses no air quality problem or (2) the potential for an air quality problem exists.

Phase 2. If the simplified screening results indicate a potential threat to air quality, further analysis is warranted, and the detailed screening (basic modeling) procedures described in Sections 4.2 through 4.5 should be applied.

Phase 3. If the detailed screening results or other factors indicate that a more refined analysis is necessary, refer to the Guideline on Air Quality Models (Revised).[3]

The simple screening procedure (Phase 1) is applied to determine if the source poses a potential threat to air quality. The purpose of first applying a simple screening procedure is to conserve resources by eliminating from further analysis those sources that clearly will not cause or contribute to ambient concentrations in excess of short-term air quality standards or allowable concentration increments. A relatively large degree of "conservatism" is incorporated in that screening procedure to provide reasonable assurance that maximum concentrations will not be underestimated.

If the results of the simple screening procedure indicate a potential to exceed allowable concentrations, then a detailed screening analysis is conducted (Phase 2). The Phase 2 analysis will yield a somewhat conservative first approximation (albeit less conservative than the simple screening estimate) of the source's maximum impact on air quality. If the Phase 2 analysis indicates that the new source does not pose an air quality problem, further modeling may not be necessary. However, there are situations in which analysis beyond the scope of this document (Phase 3) may be required; for example when:

1. A more accurate estimate of the concentrations is needed (e.g., if the results of the Phase 2 analysis indicate a potential air quality problem).
2. The source configuration is complex.
3. Emission rates are highly variable.
4. Pollutant dispersion is significantly affected by nearby terrain features or large bodies of water.

In most of those situations, more refined analytical techniques, such as computer-based dispersion models,[3] can be of considerable help in estimating air quality impact.

EXCERPT FROM EPA-454/R-92-019-454/R-92-019

EPA-454/B-95-003a

USER'S GUIDE FOR THE INDUSTRIAL SOURCE COMPLEX (ISC3) DISPERSION MODELS

VOLUME I - USER INSTRUCTIONS

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Emissions, Monitoring, and Analysis Division
Research Triangle Park, North Carolina 27711

September 1995

A.5 INDUSTRIAL SOURCE COMPLEX MODEL (ISC3)

Reference

Environmental Protection Agency, 1995. User's Guide for the Industrial Source Complex (ISC3) Dispersion Models, Volumes 1 and 2. EPA Publication Nos. EPA-454/B-95-003a & b. Environmental Protection Agency, Research Triangle Park, NC. (NTIS Nos. PB 95-222741 and PB 95-222758, respectively)

Availability

The model code is available on the Support Center for Regulatory Air Models Bulletin Board System. ISCST3 (as PB 96-502000) and ISCLT3 (as PB 96-502018) are also available on diskette from the National Technical Information Service (see Section A.0).

Abstract

The ISC3 model is a steady-state Gaussian plume model which can be used to assess pollutant concentrations from a wide variety of sources associated with an industrial source complex. This model can account for the following: settling and dry deposition of particles; downwash; area, line and volume sources; plume rise as a function of downwind distance; separation of point sources; and limited terrain adjustment. ISC3 operates in both long-term and short-term modes.

a. Recommendations for Regulatory Use

ISC3 is appropriate for the following applications:

- Industrial source complexes;
- Rural or urban areas;
- Flat or rolling terrain;
- Transport distances less than 50 kilometers;
- 1-hour to annual averaging times; and
- Continuous toxic air emissions.

The following options should be selected for regulatory applications: For short term or long term modeling, set the regulatory "default option"; i.e., use the keyword *DFAULT*, which automatically selects stack tip downwash, final plume rise, buoyancy induced dispersion (BID), the vertical potential temperature gradient, a treatment for calms, the appropriate wind profile exponents, the appropriate value for pollutant half-life, and a revised building wake effects algorithm; set the "rural option" (use the keyword *RURAL*) or "urban option" (use the keyword *URBAN*); and set the "concentration option" (use the keyword *CONC*).

b. Input Requirements

Source data: location, emission rate, physical stack height, stack gas exit velocity, stack inside diameter, and stack gas temperature. Optional inputs include source elevation, building dimensions, particle size distribution with corresponding settling velocities, and surface reflection coefficients.

Meteorological data: ISCST3 requires hourly surface weather data from the preprocessor program RAMMET, which provides hourly stability class,wind direction, wind speed, temperature, and mixing height. For ISCLT3, input includes stability wind rose (STAR deck), average afternoon mixing height, average morning mixing height, and average air temperature.

Receptor data: coordinates and optional ground elevation for each receptor.

c. Output

Printed output options include:

- Program control parameters, source data, and receptor data;
- Tables of hourly meteorological data for each specified day;
- "N"-day average concentration or total deposition calculated at each receptor for any desired source combinations;
- Concentration or deposition values calculated for any desired source combinations at all receptors for any specified day or time period within the day;
- Tables of highest and second highest concentration or deposition values calculated at each receptor for each specified time period during a(n) "N"-day period for any desired source combinations, and tables of the maximum 50 concentration or deposition values calculated for any desired source combinations for each specified time period.

EXCERPT FROM 40 CFR 51 APPD. W

d. Type of Model

ISC3 is a Gaussian plume model. It has been revised to perform a double integration of the Gaussian plume kernel for area sources.

e. Pollutant Types

ISC3 may be used to model primary pollutants and continuous releases of toxic and hazardous waste pollutants. Settling and deposition are treated.

f. Source-Receptor Relationships

ISC3 applies user-specified locations for point, line, area and volume sources, and user-specified receptor locations or receptor rings.

User input topographic evaluation for each receptor is used. Elevations above stack top are reduced to the stack top elevation, i.e., "terrain chopping".

User input height above ground level may be used when necessary to simulate impact at elevated or "flag pole" receptors, e.g., on buildings.

Actual separation between each source-receptor pair is used.

g. Plume Behavior

ISC3 uses Briggs (1969, 1971, 1975) plume rise equations for final rise.

Stack tip downwash equation from Briggs (1974) is used.

Revised building wake effects algorithm is used. For stacks higher than building height plus one-half the lesser of the building height or building width, the building wake algorithm of Huber and Snyder (1976) is used. For lower stacks, the building wake algorithm of Schulman and Scire (Schulman and Hanna, 1986) is used, but stack tip downwash and BID are not used.

For rolling terrain (terrain not above stack height), plume centerline is horizontal at height of final rise above source.

Fumigation is not treated.

h. Horizontal Winds

Constant, uniform (steady-state) wind is assumed for each hour.

Straight line plume transport is assumed to all downwind distances.

Separate wind speed profile exponents (Irwin, 1979; EPA, 1980) for both rural and urban cases are used.

An optional treatment for calm winds is included for short term modeling.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Rural dispersion coefficients from Turner (1969) are used, with no adjustments for surface roughness or averaging time.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

EXCERPT FROM 40 CFR 51 APPD. W

k. Vertical Dispersion

Rural dispersion coefficients from Turner (1969) are used, with no adjustments for surface roughness.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 1.6 times the mixing height; uniform vertical mixing is assumed beyond that point.

Perfect reflection is assumed at the ground.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Time constant is input by the user.

m. Physical Removal

Dry deposition effects for particles are treated using a resistance formulation in which the deposition velocity is the sum of the resistances to pollutant transfer within the surface layer of the atmosphere, plus a gravitational settling term (EPA, 1994), based on the modified surface depletion scheme of Horst (1983).

n. Evaluation Studies

Bowers, J.F. and A.J. Anderson, 1981. An Evaluation Study for the Industrial Source Complex (ISC) Dispersion Model, EPA Publication No. EPA-450/4-81-002. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Bowers, J.F., A.J. Anderson and W.R. Hargraves, 1982. Tests of the Industrial Source Complex (ISC) Dispersion Model at the Armco Middletown, Ohio Steel Mill. EPA Publication No. EPA-450/4-82-006. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Environmental Protection Agency, 1992. Comparison of a Revised Area Source Algorithm for the Industrial Source Complex Short Term Model and Wind Tunnel Data. EPA Publication No. EPA-454/R-92-014. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 93-226751)

Environmental Protection Agency, 1992. Sensitivity Analysis of a Revised Area Source Algorithm for the Industrial Source Complex Short Term Model. EPA Publication No. EPA-454/R-92-015. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 93-226769)

Environmental Protection Agency, 1992. Development and Evaluation of a Revised Area Source Algorithm for the Industrial Source Complex Long Term Model. EPA Publication No. EPA-454/R-92-016. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 93-226777)

Environmental Protection Agency, 1994. Development and Testing of a Dry Deposition Algorithm (Revised). EPA Publication No. EPA-454/R-94-015. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 94-183100)

Scire, J.S. and L.L. Schulman, 1981. Evaluation of the BLP and ISC Models with SF_6 Tracer Data and SO_2 Measurements at Aluminum Reduction Plants. Air Pollution Control Association Specialty Conference on Dispersion Modeling for Complex Sources, St. Louis, MO.

Schulman, L.L. and S.R. Hanna, 1986. Evaluation of Downwash Modification to the Industrial Source Complex Model. *Journal of the Air Pollution Control Association*, 36: 258-264.

EXCERPT FROM 40 CFR 51 APPD. W

EPA-454/R-93-038
(Revised Februrary 8, 1995)
(Electronic copy only)

USER'S GUIDE
TO THE
BUILDING PROFILE INPUT PROGRAM

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Technical Support Division
Research Triangle Park, North Carolina 27711

October 1993

2.0 BPIP PROGRAM TECHNICAL DESCRIPTION

The Building Profile Input Program (BPIP) was designed to incorporate the concepts and procedures expressed in the GEP technical support document (see Reference 1), the Building Downwash guidance (References 2 through 4), and other related documents referenced below into a program that correctly calculates building heights (BH's) and projected building widths (PBW's). A copy of the source code is attached in Appendix A.

Other documents that relate directly to GEP and building downwash guidance can be found in Section 4. Among the documents are procedures and guidelines for: 1) when and how to use building downwash (See References 5, 6, and 7), 2) how to format the BH and PBW values for input to the ISC2 models (See Reference 6), and 3) questions and answers on implementing GEP stack height regulations (See Reference 8).

BPIP is divided into two parts. The first part is based solely on the GEP technical support document and is designed to determine whether or not a stack is being subjected to wake effects from a structure or structures. Several values are determined such as the GEP stack height, GEP related BH's and PBW's. Flags are set to indicate which stacks are being affected by which structure wake effects.

The second part calculates building downwash BH's and PBW's based on References 2 through 4 which can lead to different BH and PBW values than those calculated for GEP. This part performs the calculations only if a stack is being influenced by structure wake effects. Output is formatted for editing into either the ISCST2 or ISCLT2 model input runstream (See Reference 6).

Excertpt from EPA-454/R-93-038

EPA-454/R-92-023

VISCREEN USERS GUIDE

Revised October 1992

2 GENERAL CONCEPTS

In this section we present a brief overview of the concepts required to understand the technical approach used in plume visual impact screening and analysis. More detailed background information can be obtained from the references cited in the back of this document.

First, we discuss what makes a plume visible. Then, we present an overview of light scattering and absorption in the atmosphere and the emissions that are responsible. Next we describe the specific geometries assumed for plume visual impact analysis and present the basic formulas describing plume visual impact. Finally, we discuss plume perceptibility screening criteria.

WHAT MAKES A PLUME VISIBLE

The objective of plume visual impact screening and analysis is to determine whether or not a plume is visible as an object itself. To understand what makes a plume visible, we first ask what makes any object visible. Any viewed object is visually perceptible to a human observer if the light emanating from the object and impinging on the retina of the eye is sufficiently different from light emanating from other objects so that the difference or contrast between the given object and surrounding objects (its viewing background) produces a perceptible signal to the optic nerve and the brain. Visual perception requires contrast. Contrast can be large as in the case of this black type on white paper, or contrast can be small as in the case of touch-up paint that doesn't quite match.

Since the human eye responds differently to different wavelengths of light, the eye responds to color as well as brightness. The range of wavelengths to which the human eye responds is called the visible spectrum and ranges from the short-wavelength (0.4 micrometer, μm) blue to the middle-wavelength (0.55 μm) green to the long-wavelength (0.7 μm) red. Contrast can be defined at any wavelength as the relative difference in the intensity (called spectral radiance) between the viewed object and its background:

$$C = (I_{obj} - I_{back})/I_{back} \quad ,$$

where C is the contrast and I_{obj} and I_{back} are the light intensities (or spectral radiances) of the object and its background.

If the viewed object is brighter than its background, it will have a positive contrast. For example, a white cloud viewed against a dark blue sky will have a positive contrast. If the object is darker than the background, its contrast is negative. For example, a distant mountain is usually visible because of a negative contrast against the horizon sky (unless the mountain is snow-covered, in which case its contrast is generally positive).

Figure 2 illustrates the concept of contrast at different wavelengths with four hypothetical objects. Object 1 has spectral radiance distribution defined by I_1 over the visible spectrum. Because Object 1's spectral radiance is uniform over all visible wavelengths, it is nominally white. Object 2 is darker than Object 1 because spectral radiances at all wavelengths are lower than those for Object 1. In addition, Object 2 is a different color because there is relatively more light at the red end of the visible spectrum than at the blue end. The contrast of Object 2 against Object 1 is negative at all wavelengths, but blue contrasts are more negative than both green and red wavelengths. As a result Object 2 would appear dark red (brown) compared to Object 1. Similarly, Object 3 would appear as a dark blue, and Object 4 would appear as an even darker gray (or black). If Object 3 were the viewing background for Object 2, its contrast at the blue end of the visible spectrum would be negative, while its contrast at the red end would be positive. Thus, contrasts at all wavelengths in the visible spectrum characterize the brightness and color of a viewed object (such as a visible plume) relative to its viewing background.

In the plume visual impact screening model VISCREEN, contrasts at three wavelengths (0.45, 0.55, and 0.65 μm) are used to characterize blue, green, and red regions of the visible spectrum. In the plume visibility model PLUVUE II, calculations are performed for 39 wavelengths. Thus, we can ascertain whether a plume will be brighter or darker or discolored compared to its viewing background by evaluating its contrasts in the blue, green, and red portions of the visible spectrum. If plume contrast is positive, the plume is brighter than its viewing background; if negative, the plume is darker. If contrasts are different at different wavelengths, the plume is discolored. If contrasts are all zero, the plume is indistinguishable from its background (i.e., imperceptible).

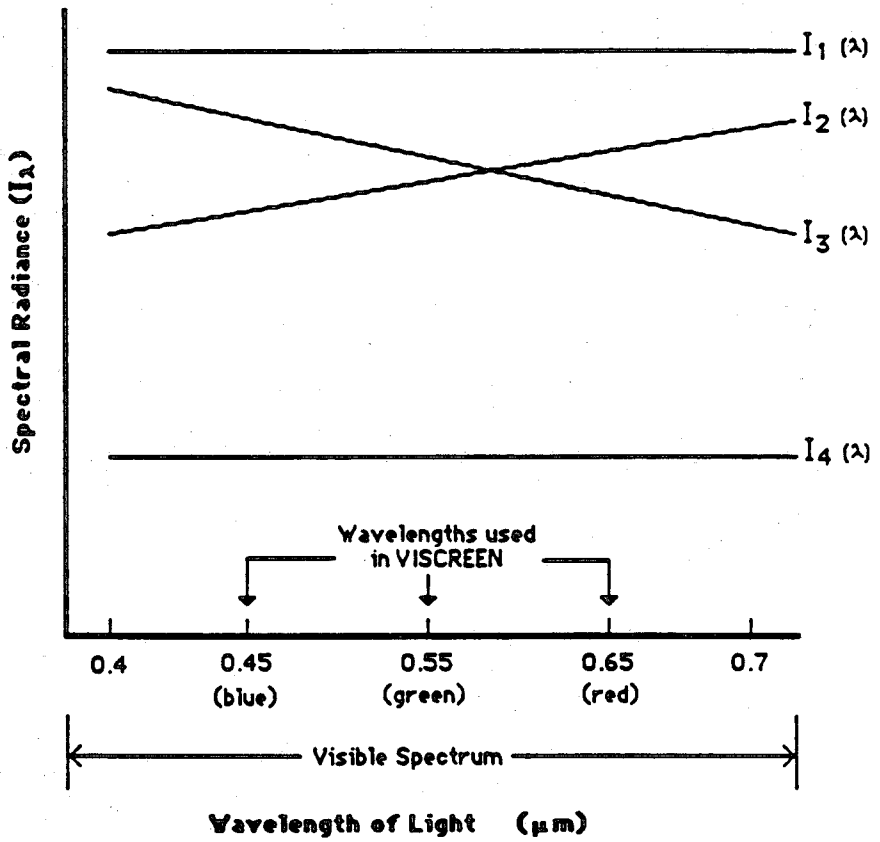

FIGURE 2. Example distributions of light intensity of four objects.

WHAT CAUSES PLUME CONTRAST

The contrast of this black text against the white paper is caused by differences in the amount of light reflected from the page. Almost all of the light impinging on the white paper is reflected, and almost none of the light impinging on the black ink is reflected; hence, the text has a large negative contrast (C = -1). Plume contrast is caused by a somewhat different set of physical processes: plume contrast results from an increase or decrease in light transmitted from the viewing background through the plume to the observer.

This increase or decrease in light intensity (spectral radiance) is caused by plume constituents that scatter and/or absorb light. There are only two common plume constituents that scatter or absorb light. Particulates, depending on their nature, can scatter light or both scatter and absorb light. Nitrogen dioxide (NO_2) absorbs light of all wavelengths in the visible spectrum but it is a stronger absorber at the blue end of the spectrum.

We can characterize the atmospheric optical properties of a plume in a manner analogous to the way plume concentrations are characterized. Instead of using mass concentration ($\mu g/m^3$), which is the mass of a given species per unit volume of ambient air, we use parameters called the light scattering coefficient (b_{scat}), the light absorption coefficient (b_{abs}), and their sum, the light extinction coefficient (b_{ext}). These coefficients are essentially the concentrations of the equivalent light scattering, absorption, and extinction cross-sectional area. They are cross-sectional area per unit volume of air; hence, their units are m^2/m^3 or m^{-1}.

These coefficients are similar to concentration in that they are proportional to the mass concentrations of the particulates and NO_2 that scatter and/or absorb light; however, since different chemical species have different light extinction efficiencies, there is no simple one-to-one relationship between mass concentration and light extinction. For example, submicron particles between 0.1 and 1 μm are much more effective in scattering light per unit mass than are either smaller or larger particles. Soot is a stronger light absorber than NO_2 per unit mass. Table 1 shows the light extinction efficiency of several common constituents of plumes and background atmospheres. Light extinction coefficient (b_{ext}) is the product of the mass concentration and the light extinction efficiency of the given species.

Plume visual impact models account for the concentrations of various species in a plume (e.g., NO_2, submicron particulate, coarse particulate, and soot) and their light scattering and absorption properties at various visible wavelengths (e.g., blue, green, red).

TABLE 1. Typical light extinction efficiencies for constituents of plumes and background atmospheres.

Constituent	Light Extinction Efficiency at $\lambda = 0.55$ μm (m^2/g)
Soot	13
Hygroscopic fine particles including ($SO_4^=$) and nitrates (NO_3^-)	4-8
Fine particles ($0.1 < D < 1$ μm)	3
Coarse particles ($1 < D < 10$ μm)	0.4
Nitrogen dioxide (NO_2)	0.17
Giant particles ($D > 10$ μm)	< 0.04

Sources: Latimer et al., 1978, 1985; Latimer and Ireson, 1980

PLUME EFFECTS ON LIGHT TRANSMISSION

Figure 3 shows a schematic of the viewing situation that is mathematically represented in a plume visual impact model. A plume of limited dimensions is embedded in an otherwise uniform background atmosphere. The observer's line of sight intersects the center of the plume at distance r_p from the observer and it intersects a viewing background object (e.g., a mountain) at distance r_0. The direct rays from the sun are at angle θ with respect to the line of sight. The change in the spectral light intensity at any point along the line of sight (either inside or outside the plume) as a function of distance r along the line of sight is:

$$\frac{dI(\lambda)}{dr} = -b_{ext}(\lambda)I(\lambda) + \frac{\bar{p}(\lambda,\theta)}{4\pi} b_{scat}(\lambda)F_s(\lambda) \quad , \tag{1}$$

where

r = the distance along the line of sight from the object to the observer;

$\bar{p}(\lambda, \theta)$ = the scattering distribution or phase function for scattering angle θ (see Figure 3 for definition of θ) modified to account for multiple, as well as single, light scattering;

$F_s(\lambda)$ = the solar flux (watt/m^2/μm) incident on the atmosphere,

$b_{scat}(\lambda)$ = the light scattering coefficient, which is the sum of the Rayleigh scattering (due to air molecules), b_R, and the scattering due to particles, b_{sp}:

$$b_{scat}(\lambda) = b_R(\lambda) + b_{sp}(\lambda) \quad ; \tag{2}$$

$b_{ext}(\lambda)$ = the light extinction coefficient, which is the sum of the scattering, $b_{scat}(\lambda)$, and absorption, (λ) b_{abs}, coefficients:

$$b_{ext}(\lambda) = b_{scat}(\lambda) + b_{abs}(\lambda) \quad . \tag{3}$$

On the right-hand side of Equation (1), the first term represents light absorbed and scattered out of the line of sight; the second term represents light scattered into the line of sight. The values of b_{scat} and b_{abs} can be evaluated if the aerosol and NO_2 concentrations and such characteristics as the refractive index and the size distribution of the

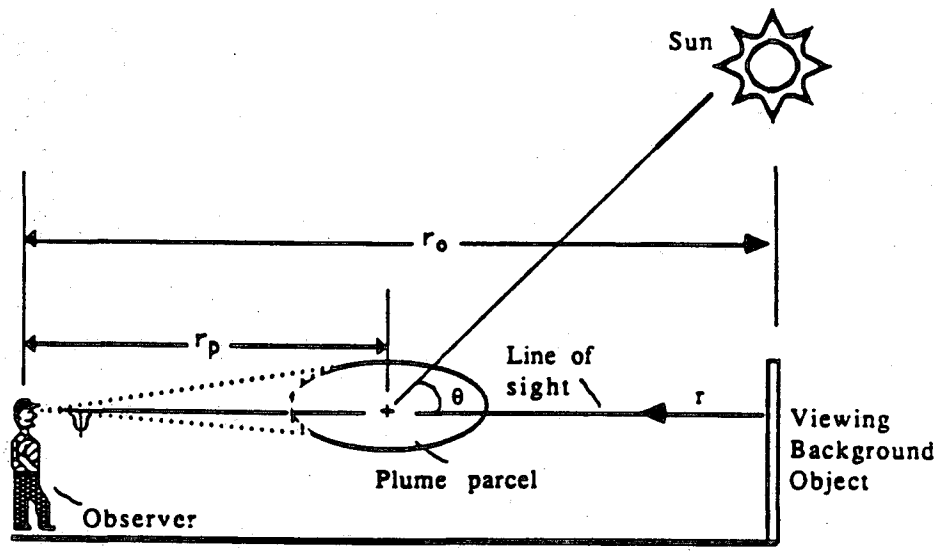

FIGURE 3. Geometry of plume, observer, viewing background, and sun.

aerosol are known. Except in the cleanest atmospheres, b_{scat} is dominated by b_{sp}; also, unless soot is present, b_{abs} is dominated by the absorption coefficient due to NO_2. Scattering and absorption are wavelength-dependent, and effects are greatest at the blue end (λ = 0.4 μm) of the visible spectrum ($0.4 < \lambda \leq 0.7$ μm). The Rayleigh scattering coefficient b_R is proportional to λ^{-4}; the scattering coefficient caused by particles is generally proportional to λ^{-n}, where $0 < n < 2$. Also, NO_2 absorption is greatest at the blue end. This wavelength dependence causes the natural blue sky coloration as well as discoloration of the atmosphere.

For a uniform atmosphere, without inhomogeneities caused by plumes (where b_{scat} and b_{ext} do not vary with distance r along the line of sight), Equation (1) can be solved to find the intensity and coloration of the horizon sky:

$$I_h(\lambda) = \frac{\bar{p}(\lambda,\theta)}{4\pi} \frac{b_{scat}(\lambda)}{b_{ext}(\lambda)} F_s(\lambda) \quad . \tag{4}$$

The perceived intensity of distant bright and dark objects will approach this intensity as an asymptote, as illustrated by Figure 4.

Atmospheric coloration is determined by the wavelength-dependent scattering and absorption in the atmosphere. The spectral distribution of $I(\lambda)$ for λ over the visible spectrum determines the perceived color and light intensity of the viewed object. The relative contributions of scattering (aerosols plus air) and absorption (NO_2) to coloration can be illustrated by rearranging Equation (1):

$$\frac{1}{I(\lambda)} \frac{dI(\lambda)}{dr} = b_{scat}(\lambda) \left(\frac{\frac{\bar{p}(\lambda,\theta)}{4\pi} F_s(\lambda)}{I(\lambda)} - 1 \right) - b_{abs}(\lambda) \quad . \tag{5}$$

Note from Equation (4) that when light absorption is negligible compared with light scattering (i.e., $b_{scat} \approx b_{ext}$), the clear horizon intensity, $I_{ho}(\lambda)$, is simply:

$$I_{h0}(\lambda) = \frac{\bar{p}(\lambda,\theta)\ F_s(\lambda)}{4\pi} \quad . \tag{6}$$

We now can rewrite Equation (5):

$$\frac{1}{I(\lambda)} \frac{dI(\lambda)}{dr} = b_{scat}(\lambda) \left[\frac{I_{h0}(\lambda)}{I(\lambda)} - 1 \right] - b_{abs}(\lambda) \quad . \tag{7}$$

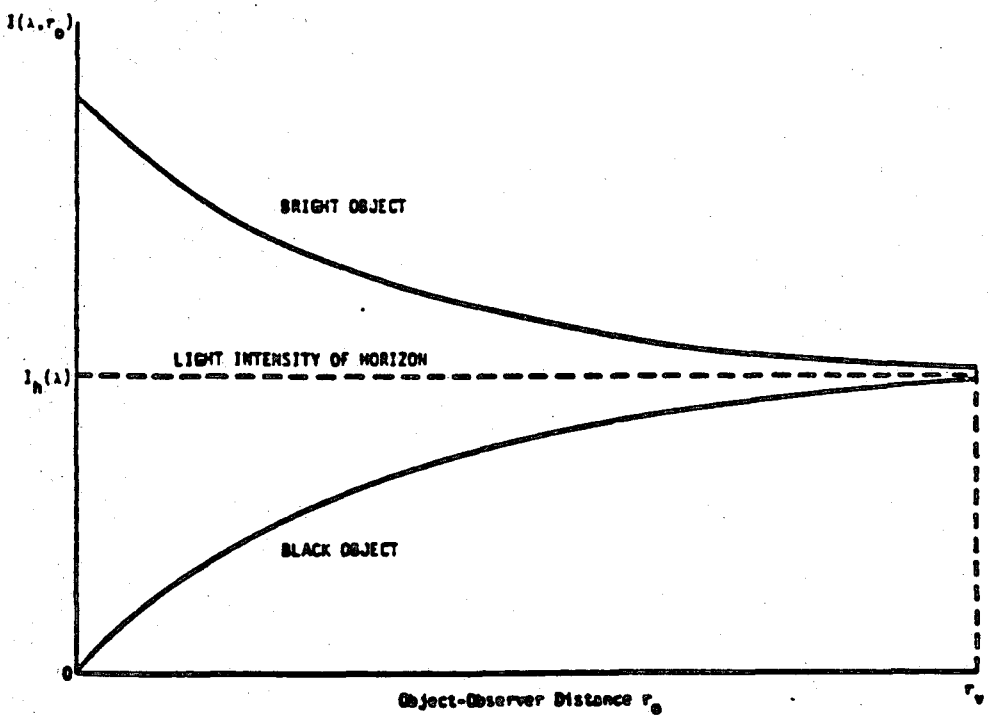

FIGURE 4. Effect of an atmosphere on the perceived light intensity of objects.

Equation (7) is thus an expression relating the effects of light scattering and light absorption to the change in spectral light intensity with distance along a sight path. On the right-hand side of Equation (7), the first term is the effect of light scattering, and the second term is the effect of light absorption (NO_2). As noted previously, since b_{scat} and b_{abs} (due to NO_2) are strong functions of wavelength and are greater at the blue end (λ = 0.4 μm), atmospheric coloration can result.

Equation (7) makes clear that NO_2 always tends to cause a decrease in light intensity since the second term in Equation (7) is always negative. However, particles may brighten or darken a plume, depending on whether the first term in Equation (7) is positive or negative. If, at a given point along the sight path, $I(\lambda)$ is greater than the clean horizon sky intensity $I_{h0}(\lambda)$, then the quantity in brackets in the first term on the right-hand side of Equation (7) will be negative, which means that the net effect of scattering will be to remove light from the line of sight. This effect would occur if a bright, white cloud or distant snowbank were observed through an aerosol that did not contain NO_2. If, however, $I(\lambda)$ is less than $I_{h0}(\lambda)$, then the quantity in brackets in Equation (7) will be positive, which means that the net effect of scattering will be to add light to the line of sight. This effect would occur if a distant, dark mountain were observed through an aerosol that did not contain NO_2; scattering would cause the mountain to appear lighter. Only light absorption can cause $I(\lambda)$ to be less than $I_{h0}(\lambda)$, and whenever $I(\lambda) < I_{h0}(\lambda)$, scattering will add light to the sight path, thereby masking the coloration caused by NO_2 light absorption.

The mathematical expressions used in this document and the plume visual impact screening model VISCREEN are simply solutions to Equation (1) for different boundary conditions and for different values of b_{scat}, b_{ext}, $\bar{p}(\theta)$ and F_s as they are affected by natural and man-made light scatterers and absorbers. The plume visibility models use similar formulations, but most account for multiple scattering effects.*

Now a plume (either ground-based or elevated) may be visible because it contrasts with a sky viewing background as shown in Figure 5(a) or it contrasts with a terrain feature as shown in Figure 5(b). The plume visual impact screening model VISCREEN evaluates both of these possible viewing backgrounds.

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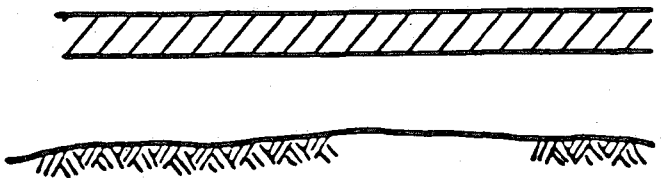
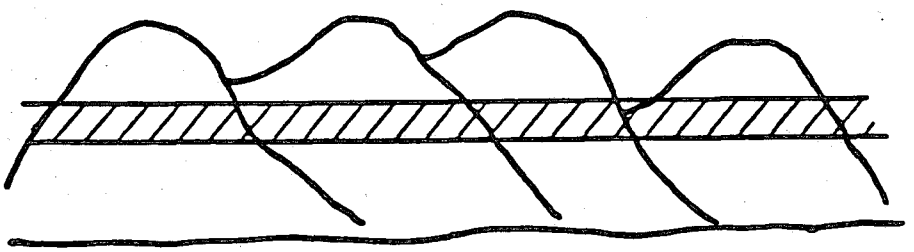
* Multiple scattering is light scattered into the line of sight after previous scattering (i.e., light reflected from terrain features and light scattered from other portions of the atmosphere).



(a) Plume Visible Against the Sky



(b) Plume Visible Against Terrain

FIGURE 5. Two viewing situations in which plumes may be visible.

Formulas for contrasts representative of both types of viewing situations can be derived by solving Equation (1) for appropriate boundary conditions.

Plume Contrast Against the Sky

Let us consider now the geometry shown in Figure 3, namely, the case of a plume embedded in an otherwise uniform background atmosphere. If we ignore the effects of multiple scattering, Equation (1) can be solved for the contrast between the plume and the horizon sky background (see Figure 5a) as observed at distance r_p from the plume as follows (Latimer and Ireson, 1980):

$$C_{plume} = \frac{I_{h\text{-}plume} - I_h}{I_h} = \left[\frac{(\overline{p}\,\overline{\omega})_{plume}}{(\overline{p}\,\overline{\omega})_{background}} - 1 \right] \left[1 - \exp(-\tau_{plume})\right] \exp(-b_{ext}\, r_p) \quad , \tag{8}$$

where

I_h = spectral radiance of horizon sky (without plume present)

$I_{h\text{-plume}}$ = spectral radiance of plume viewed in front of horizon sky

$\overline{p}$ = average phase function for the plume constituents and the background atmosphere

$\overline{\omega}$ = average albedo of plume and background, where albedo is the ratio of light scattering to total light extinction

τ_{plume} = plume optical thickness along the line of sight (increment above background)

=

$$\int_{plume} b_{ext}\, dr$$

b_{ext} = background atmosphere's light extinction coefficient

r_p = distance between plume centerline and observer

Note that, depending on whether the product of the phase function and the albedo ($\bar{p}\bar{\omega}$) for the plume is larger or smaller than that for the background, the plume will be brighter ($C > 0$) or darker ($C < 0$) than the background horizon sky. Also note that the contrast is dependent on the plume optical thickness (τ_{plume}); as τ_{plume} approaches zero, C_{plume} approaches zero. Plume contrast also diminishes as the plume-observer distance r_p increases.

Plume Contrast Against Terrain

To characterize the types of visibility impairment represented in Figure 5(b), we need to calculate a change in sky/terrain contrast caused by a plume:

$$\Delta C_r = C_r\Big|_{\text{with plume}} - C_r\Big|_{\text{without plume}}$$

where

$$C_r\Big|_{\text{with plume}} = \frac{I_{t\text{-plume}} - I_{h\text{-plume}}}{I_{h\text{-plume}}}$$

$$C_r\Big|_{\text{without plume}} = \frac{I_t - I_h}{I_h} \quad .$$

C_r = the sky-terrain contrast of a terrain feature at distance r from an observer

I_t, I_h = the spectral radiances of a terrain feature and the horizon sky (unaffected by plume)

$I_{t\text{-plume}}$, $I_{h\text{-plume}}$ = the spectral radiances of plumes viewed in front of horizon sky and terrain

For simplicity we assume that the terrain that is viewed behind the plume has an intrinsic radiance, I_{obj}, which is a function of the horizon sky radiance I_h, namely, $I_{obj} = (1 + C_0)I_h$. C_0 is the intrinsic contrast. If the terrain were black, C_0 would equal -1.

Again solving Equation (1) and ignoring multiple light scattering, we can derive the following expression for the change in terrain contrast caused by the plume (Latimer and Ireson, 1980):

$$\Delta C_r = -C_0 \exp(-b_{ext} r_o) \left[1 - \left(\frac{1}{1 + C_{plume}}\right) \exp(-\tau_{plume})\right] \quad , \qquad (9)$$

where r_o = distance between the terrain object and the observer.

Equations (8) and (9) are the analytical expressions at the heart of the plume visual impact screening model VISCREEN. Careful examination of these two equations illustrates the following sensitivities:

1. Plume contrasts (against both the sky and terrain) increase with increasing plume light extinction (i.e., as concentrations of particulates and NO_2 in a plume increase).

2. Plume contrasts increase if the line of sight is oriented to intersect a larger amount of plume material (i.e., the line of sight is along the plume centerline).

3. Plume contrasts increase for sun angles and for particle size distributions that tend to maximize the difference (both positive and negative) between the phase functions for the background atmosphere and for the plume.

4. Plume contrasts increase if the plume is moved closer to the observer.

5. Plume contrasts increase with decreasing light extinction of the background atmosphere (i.e., with increasing background visual range).

6. Plume contrasts against terrain are maximum if the terrain object is relatively close to the observer and the terrain's intrinsic contrast is maximum (e.g., if it were black).

Since screening calculations are designed to be conservative estimates of worst-case conditions, situations are selected to (1) maximize the concentrations and light scattering efficiencies of optically active plume constituents, the intersection of the line of sight and the plume, the background visual range, the intrinsic contrast of terrain objects, and the difference between background and plume phase functions; and (2) minimize the distance between the observer and the plume. Once conservative estimates of worst-case conditions are specified, the plume visual impact

screening model VISCREEN uses Equations (8) and (9) to calculate plume contrasts. If such contrast values are larger than screening criteria, the possibility that the plume will cause significant visual impact cannot be ruled out, and less conservative, more realistic estimates would be required.

PLUME PERCEPTIBILITY

The perceptibility of a plume depends on the plume contrast at all visible wavelengths. At a single wavelength, the contrast between the plume and its surroundings is determined by the difference in the intensity of the light reaching the observer from each. Therefore a single measure, intensity, could be used to quantify contrast if visible light were composed of a single wavelength. With a range of wavelengths, a measure of contrast must recognize both "overall" intensity, and perceived color, and so perceptibility is really a function of changes in both brightness and color. To address the added dimension of color as well as brightness, the color contrast parameter, ΔE, was chosen for use as the primary basis for determining the perceptibility of plume visual impacts in screening analyses. ΔE provides a single measure of the difference between two arbitrary colors as perceived by humans. This parameter allows us to make quantitative comparisons of the perceptibility of two plumes, even though one may be a reddish discoloration viewed against a blue sky while the other may be a white plume viewed against a dark green forest canopy.

Contrasting surfaces are detected by human vision using three types of visual information (cues). The trichromatic theory of Helson (1938) and Judd (1940) predicts colors perceived by human subjects based on the visual qualities described as brightness (intensity), lightness (saturation), and color (hue). Perceived brightness of a colored surface is dependent upon the intensity of the applied illumination. For example, the brightness of the white of a daisy is larger for a daisy in direct sunlight than for a daisy in the shade. The color or hue of a surface is dependent on the ratio of the intensity of red to green light that is reflected. The lightness of a color is the strength or density of a color and is often called the saturation. An example of this cue comes from photography: a properly or slightly underexposed color is said to be more saturated than an overexposed color which appears to be washed out by the addition of white. Color contrast is therefore made up of differences in these three visual qualities (cues).

As implied by its name, the trichromatic theory of color assumes that all shades of color are composed of three primary colors: red, green, and blue. These primary colors are not single wavelengths, but rather an envelope of wavelengths, whose peak intensities occur at frequencies we associate with each of the primary colors. The purely chromatic character-

istics of a perceived color are then described by three numbers (X=red, Y=green, Z=blue) that represent the intensity of each color in the "mix". (These are computed as the integration over the visible spectrum of the product of the intensity of the illumination and the trichromatic weighting function for each primary color.)

The amounts of red, green, and blue (X,Y,Z) can be used to approximate the three cues used to quantify the contrast between colored objects. Three empirical mathematical functions of (X,Y,Z) were defined which quantitatively best capture the qualitative features of the three cues: brightness, hue, and saturation. Each of these three mathematical functions is defined relative to the one or more components of chromaticity of a reference white card under direct sunlight (X_o, Y_o, Z_o). For brightness, only a single chromatic component is needed, and since the eye is most sensitive to intensity changes in green, the function for brightness, L^*, is defined in terms of Y. Since hue depends on the red/green reflected intensity ratio, the function describing hue, a^*, is defined in terms of X and Y. The mathematical function describing the amount of saturation, b^*, is defined in terms of Y and Z (see equations in Appendix B).

For each of the three visual cues, the contrast between two surfaces is simply a difference between the values of the mathematical functions for each surface. For example, contrast due to changes in brightness is defined as the difference in the function for brightness, ΔL^*. The total color contrast, ΔE, is taken to be the sum

$$\Delta E = \left[(\Delta L^*)^2 + (\Delta a^*)^2 + (\Delta b^*)^2\right]^{1/2}$$

This formulation is based on the following assumptions:

(1) ΔE depends only on ΔL, Δa, and Δb;

(2) Differences in contrast cues ΔL^*, Δa^*, and Δb^* are independent of one another.

Although a ΔE of 1 and a contrast of 0.02 have been traditionally assumed to be the threshold of perceptibility, a survey of the literature (see Appendix A) suggests a broad range of perceptibility thresholds. The most sensitive observers are able to detect contrasts or color changes one-half this magnitude, and the casual observer may require contrast or color changes more than two times larger than these "traditional" values. In addition, the literature suggests that perceptibility thresholds increase for very wide and for very narrow plumes, with plumes less than 0.02° being essentially imperceptible. Figure 6 summarizes the range of perceptibility thresholds supported in the literature.

The plume visual impact screening model VISCREEN is designed to ascertain whether the plume from a facility has the potential to be perceptible to untrained observers under "reasonable worst case" conditions. If either of two screening criteria is exceeded, more comprehensive (and realistic) analyses should be carried out. The first criterion is a ΔE value of 2.0; the second is a green (0.55 μm) contrast value of 0.05. In the case of sufficiently narrow or broad plumes, the higher perception thresholds (for diffuse-edged plumes) are used instead of the above criteria.

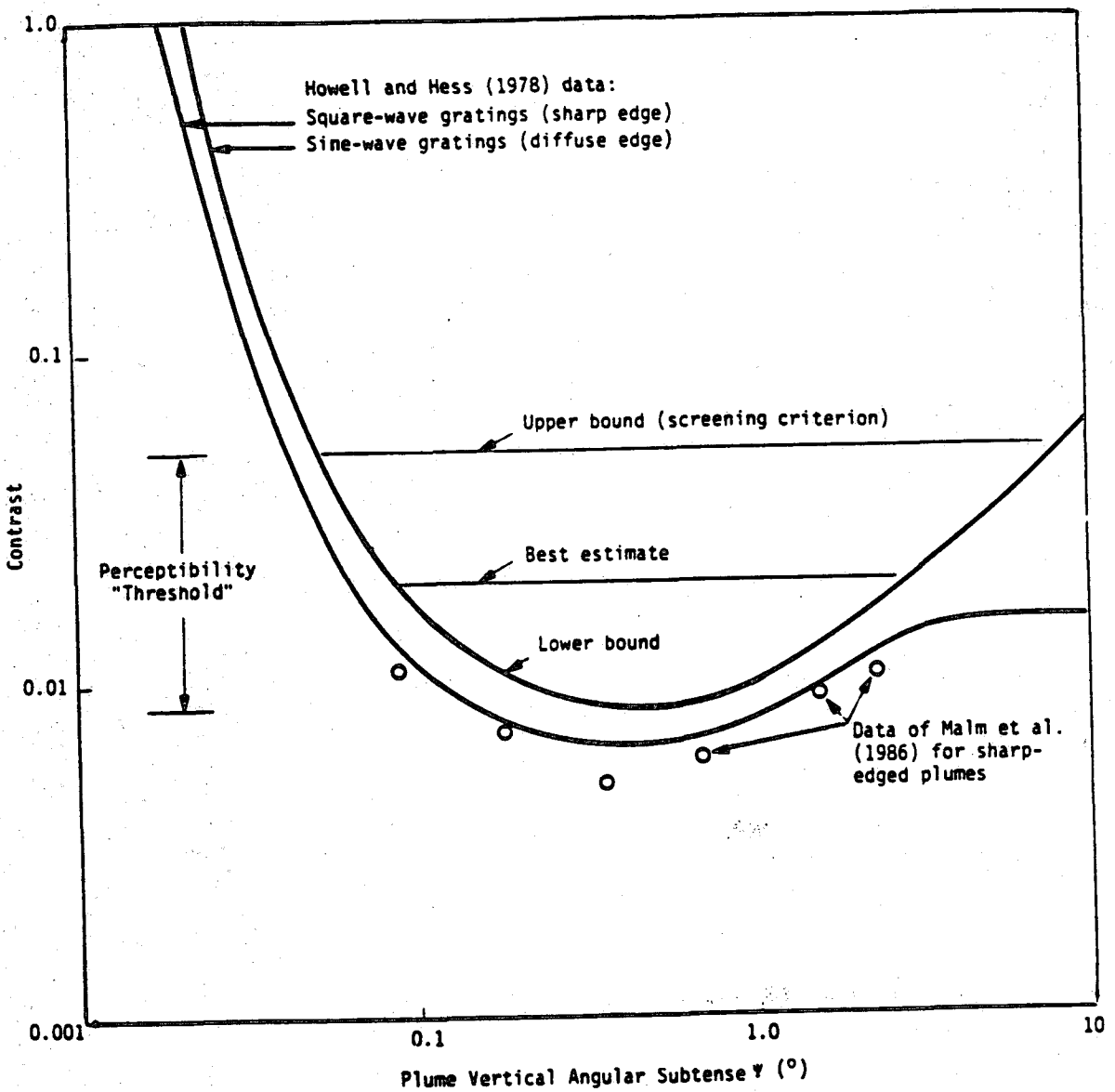


FIGURE 6. Plume perceptibility threshold as a function of plume thickness (Ψ). See definition of Ψ in the Glossary in the front of this workbook and in Figure 3.

10.6.7 Noise Modelling

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

NOISECALC: A Computer Program for Sound Propagation Calculations*

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NOISECALC is a general purpose, menu driven program for IBM-PC compatible computers that takes the tedium out of sound propagation calculations. Source data is entered as octave band sound pressure levels (or sound power levels). The program handles barriers, atmospheric attenuation, excess attenuation, and source directionality. The choice of program outputs ranges from a simple summary of sound levels to a detailed breakdown of major contributing sources for each receiver. Copies of the program on 5¼" diskettes may be obtained from the author for the cost of reproduction and mailing.

Sound propagation calculations are not difficult, but they are tedious and time-consuming. The calculations must be done individually for each of the octave bands, incorporating different amounts of excess attenuation to account for atmospheric absorption, ground cover, enclosures, reflectors, barriers, etc. It may be necessary to consider source directionality and to combine the sound from several sources. Then all of the calculations must be redone for the next receiver, and the next. It is precisely this repetitive nature of the calculations that makes the use of a digital computer program ideal for sound propagation problems. NOISECALC, the IBM-PC compatible program described in this article will not decide what calculations are needed for a particular problem (it is not an "expert" program), but once the problem has been specified, it will do the tedious calculations.

The program was developed at the New York State Department of Public Service to assist with noise calculations for major power projects, primarily electric power plants and gas compressor stations. It was written in BASIC on the department's PRIME computer (PRIME Computer, Inc.). In order that the program could be converted easily for use on personal computers, the program was written using primarily simple BASIC commands common to most versions of the BASIC language. The completed program was then downloaded to a COMPAQ computer (COMPAQ Computer Corp.), an IBM-PC compatible, and modified to use various features of COMPAQ Portable Computer BASIC Version 1.13. The completed program, whose 1140 program lines use about 32K bytes of memory, has also been run without modification on the AT&T, IBM-PC, IBM-PC-Jr, Tandy 1200, and Chameleon Plus computers. Extensive documentation within the program will permit individuals familiar with BASIC to understand and modify the program for special applications.

The program is menu driven, so it is very easy to use. But because the program is so easy to use, it is possible for an inexperienced person to generate pages of very impressive looking but erroneous results; as Peter Baade observed, "it is not *whether or not* we use [computer] tools, but how well we use them."[1] The program must be used intelligently; the noise control engineer must understand the calculation procedures used by the program so that the proper alternatives can be chosen from the many program options offered. This article describes the computational procedures used in the program and presents a typical application of the program. An appendix explains how to use the options offered by the program.

Computational Procedures

NOISECALC offers seven options in its main menu. Four of the options create disk data files using source, receiver, barrier or path-specific attenuation data entered by the user. The fifth option uses the data files and computational options specified by the user to create a report giving the resulting sound level at each receiver location (and, if desired, the octave band sound

pressure levels at each receiver and a ranking of major contributing sources). The remaining options are a barrier utility (to solve a single source/single barrier/single receiver problem) and a utility to add or subtract sound levels or to combine octave band sound pressure levels.

Data input. The program only handles point sources; line sources must be approximated as a series of point sources. Octave band data for each source may be entered as sound pressure levels or sound power levels; the data is converted if necessary and stored in the disk file as sound power levels; the conversion from sound pressure level to sound power level assumes that the source is at ground level (hemispherical propagation). Similarly, dimensions may be entered in feet or metres, but the data is stored in the disk file in metres. The data files are easily read and edited, if desired, by a system editor; the file formats are documented in the program.

Sound propagation. The only attenuation automatically included in the sound propagation calculations is that due to hemispherical divergence; that is, all sources are assumed to be located at ground level, the most common assumption in industrial noise control. If a source is located significantly above the ground, it may be appropriate to reduce the source sound power by one-half (the sound power level or sound pressure level is reduced by 3 dB) and to add an image source below the ground plane.

Several attenuation options are offered by the program. Atmospheric attenuation can be included; if it is, the program uses the American National Standard Method for the Calculation of the Absorption of Sound by the Atmosphere.[2] Non-path-specific attenuations (specified by the user) can be used to include the insertion loss of an enclosure and the symmetrical propagation effects or to scale (increase or decrease) all source sound power levels.

Path-specific attenuations can be used for a variety of purposes.[3] They can be used to include the effects of vegetation, foliage and wind (shadow zones). They can also be used to incorporate directional source characteristics and reflectors (a negative attenuation will increase the sound in a specified direction). They can be used to modify the barrier attenuations calculated by the program to account for source images, insufficient barrier width, and the effects of wind. In addition, path-specific attenuations can be used to incorporate the results of recent sound propagation research.[4]

Barrier attenuation. The barrier calculation procedure used assumes an infinitely long barrier perpendicular to the source-receiver path. If this assumption is correct (or nearly so), the barrier can be completely specified by giving the coordinates of the top of the barrier at the point where the barrier intersects the source-receiver path. Acceptable accuracy is obtained even if the coordinates are not exact, so a single set of barrier coordinates can sometimes be used for more than one source-receiver path. During the barrier calculations, the program checks to be sure the barrier coordinates are not too far from the source-receiver path, and the user is warned if the horizontal bending angle from source to barrier to receiver is 10 degrees or more.

More precisely, the barrier calculation procedure assumes a semi-infinite barrier in free space as described by Maekawa.[5] The program uses the closed-form approximation to Maekawa's data shown by Beranek;[3] the maximum barrier attenuation in any octave band is limited to 24 dB. The attenuation is 5 dB when the Fresnel number is zero, and 0 dB when the Fresnel number is negative.

In practice, the free space assumption means that the source and receiver must be "well above" the ground.[6] For a particular source/barrier/receiver combination, the validity of the free space assumption can be tested easily using the program's barrier calculation utility. Assume a source at height z_s, a barrier at height z_b and a receiver at height z_r; then calculate the levels at the receiver for the following four cases: the source at z_s and the receiver at z_r, the image source at $-z_s$ and the receiver at z_r, the source at z_s and the image receiver at $-z_r$, and the image source at $-z_s$ and the image receiver at $-z_r$ (the barrier height is always z_b). If the sum of all four levels differs significantly from the level for the source at z_s and the receiver at z_r, then the free space assumption is invalid and the sum of all four levels is the correct level.

If the source and receiver are both at ground level, this procedure will yield a level which is 6 dB greater than the free space calculation. The correct level is only about 5 dB greater than the free space calculation, since Maekawa's data allow for the reflection of some sound energy from the ground.[4] Also, because the barrier attenuation is artificially limited to 24 dB, this procedure will erroneously show some reduction in barrier attenuation even when the source and receiver are "well above" the ground. As shown in Table 1, this error can be significant when the barrier attenuation is large.

TABLE 1
ERRONEOUS REDUCTION IN BARRIER ATTENUATION OBSERVED DURING CHECK OF GROUND REFLECTIONS

	Free Space Attenuation	Reduction in Attenuation
	5	0.2
	10	0.5
dB	15	1.4
	20	3.4
	24	6.0

The barrier attenuation utility can also be used to evaluate a barrier which does not satisfy the semi-infinite assumption. The procedure is described by Maekawa.[5]

Application of the Program

The program has been applied to a variety of energy-related projects. The impetus for writing the program was a complaint about the noise from a large gas compressor station in a rural area of

western New York. The five gas compressors, driven by internal combustion gas engines totaling more than 2000 horsepower, exceeded the regulatory noise limit (40 dBA at any residence) by 9 dB. The program was used to evaluate the effect of a 20-foot high, 500-foot long barrier which was proposed to solve the problem. The barrier, a combination earthen berm and prefabricated concrete structure, was found to be adequate and is under construction.

One of the more interesting applications of the program was a proposed wind farm in the Catskill Mountains where seventy-one 300 kW vertical axis wind turbines are planned. The following example is a simplification of that application. Although background noise is obviously an important consideration,—turbines only operate when the wind is blowing—the background noise is omitted from the example to simplify the presentation.

The example (Fig. 1) employs five 300 kW vertical axis wind turbines in a linear array with 200-foot spacing. Each turbine produces 61 dB(A) at 100 feet. The octave band sound pressure levels for one turbine are given in Table 2; the source height is 56 feet. The terrain is hard and relatively flat except for a densely wooded area shielding Receiver 1 from Turbines 1 through 4, and a long, low hill shielding Receiver 2 from all turbines.

The barrier coordinates shown in Fig. 1 identify the point on the crest of the hill where the ridge line intersects the path from Turbine 3 to Receiver 2. That point is used in the barrier calculations for the paths from all turbines to Receiver 2. As a result, when the calculations for the paths from Turbines 1 and 5 to Receiver 2 are performed, the program cautions the user that the barrier lies 12 and 14 degrees off the paths respectively.

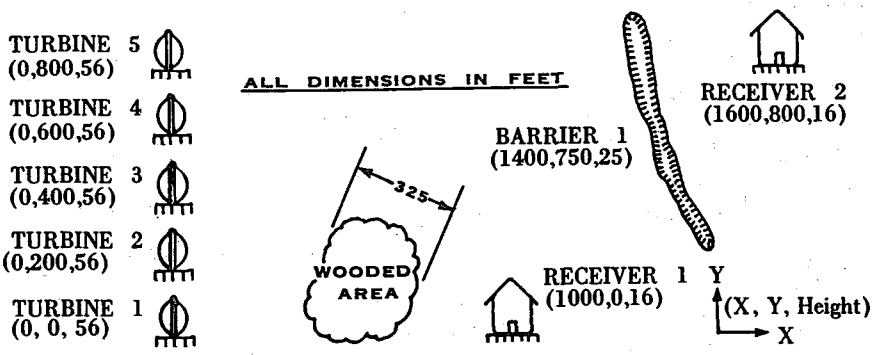


Figure 1—Vertical axis wind turbine example

Path-specific attenuations were used to include the effect of the wooded area in the propagation calculations for the paths from Turbines 1 through 4 to Receiver 1. The octave band attenuations are shown in Table 2. The atmospheric absorption for standard-day conditions was also included in the calculations.

The results of the program calculations for the example are also shown in Table 2. The sound levels at Receivers 1 and 2 are 39 dB(A) and 35 dB(A) respectively; the program identifies Turbine 5 as the major contributing source for both receivers.

Conclusion

People who have used NOISECALC have found it helpful and easy to use. The program is copyrighted, but copies of the program may be obtained for personal use or for use within a firm by sending a check for $10.00, payable to the New York State Department of Public Service, to:

Daniel A. Driscoll
NYS Department of Public Service
Three Empire State Plaza
Albany, NY 12223

The $10.00 is estimated to cover the cost of a 5¼" diskette, copying, postage and handling. If someone outside of your firm would like a copy, please have them obtain it from the author so distribution of the program can be controlled.

TABLE 2
DATA AND RESULTS FOR THE VERTICAL AXIS WIND TURBINE EXAMPLE

	31.5	63	125	250	500	1K	2K	4K	8K	Lin	A
Each Turbine at 100 feet (dB)	73	70	63	60	55	57	52	45	42	75	61
Excess Attenuation of Woods (dB)	4	4	5	7	9	11	13	17	21	—	—
Result at Receiver 1 (dB)	56	53	45	41	34	35	28	14	0	58	39
Result at Receiver 2 (dB)	51	47	40	37	31	31	23	6	0	53	35

References

1. P.K. Baade, "To Compute or Not to Compute, That is NOT the Question," *Noise Control Engineering Journal*, 24,1 (1985), p. 3.
2. *American National Standard Method for the Calculation of the Absorption of Sound by the Atmosphere*, ANSI S1.26 - 1978 (ASA 23-1978) Section 4.5 and Appendix D.
3. L.L. Beranek, *Noise and Vibration Control* (McGraw-Hill, New York, 1971), pp. 169-191.
4. T.F.W. Embleton, "Sound Propagation Outdoors—Improved Prediction Schemes for the '80s," *Noise Control Engineering Journal*, 18, 1 (1982), pp. 30-39.
5. Z. Maekawa, "Noise Reduction by Screens," *Applied Acoustics*, 1 (1968), pp. 157-173.
6. C.M. Harris, *Handbook of Noise Control*, 2nd Ed., (McGraw-Hill, New York, 1979), pp. 3-6.

Appendix

Starting NOISECALC. To begin using NOISECALC, depress the "Caps

Lock" key, if necessary, to shift the computer to upper case, then load and run BASIC, and load and run NC (COMPAQ Command: BASICA NC). The screen clears and the main menu appears.

The main menu offers the following choices:

1. Input Source Data
2. Input Receiver Coordinates
3. Input Barrier Coordinates
4. Input Path-specific Attenuations
5. Sound Propagation Calculations
6. Barrier Calculation Utility
7. Combine Sound Levels
8. Quit

The menu items are in the approximate order that the features would be used for a new project. Press "1" to input source data, "2" to input receiver coordinates, etc. After each portion of the program is used, the program returns to the main menu. The following paragraphs describe each menu choice in order.

Input Source Data. The program first asks for a project name. Because the project name is used as the source data file name, it is helpful to append a "-S" to the name of the project. Type the name, press "enter" (or "return"), and the program creates a disk file using the specified name.

The program then asks for the number of sources to be used; type the number and press "enter." If the number of sources is greater than 10, the DIMension statements at the beginning of the program must first be modified; list program lines 10 through 190 for instructions.

The user is then asked whether distances (and coordinate dimensions) will be in metres or feet, whether a rectangular (x,y,z) or cylindrical (r, Θ, z) coordinate system will be used, and whether source levels will be sound power levels or sound pressure levels (the source levels can also be entered in a different form for each source). If the sound pressure level option is chosen, the program will ask for the reference distance. Source directional characteristics can be accommodated through the use of path-specific attenuations as described below.

For each source, the program then prompts the user to enter a source name (or a brief description), the source location (three coordinates separated by commas and followed by "enter") and the octave band data for the source (ten sound pressure levels separated by commas and followed by "enter").

On many computers the keys "shift" and "PrtSc" may be pressed to "print the screen." If this feature is available on your computer, it may be used to make a printed copy of the data input form at any time during data entry.

Input Receiver Coordinates. The procedure is similar to source data entry except no octave band data is entered. A convenient receiver data file name is the project name with a "-R" appended. If the user chooses to enter ambient data for each receiver location, only sound pressure level and A-weighted sound level are used. Again, if the number of receiver points is greater than 10, the DIMension statements at the beginning of the program must be changed.

Input Barrier Coordinates. After asking for the barrier data file name (e.g. "project name" -B), the program asks for the number of barrier locations to be entered (if more than 10, the DIMension statements must be changed), and the number of sources and receivers in the source data file and receiver data file to be used with this barrier data file. The program uses the number of sources and receivers to perform several checks to validate the data.

Next, the program offers the various distance and coordinate options described earlier, and then, for each barrier, asks you to enter the barrier coordinates and a list of the source-receiver paths affected by the barrier. For example, if a barrier near receiver #2 will attenuate the sound from sources #1, #2 and #3, the user would type "1, 2 enter 2, 2 enter 3, 2 enter," or, if sources #1, #2 and #3 were the only sources, the user can simply type "0,2 enter." Only one barrier is permitted on any source-receiver path.

Input Path-specific Attenuations. The program begins by asking for the path-specific attenuation data file name (e.g. "project name" -P), the number of path-specific attenuations to be entered, and the number of sources and receivers in the source data file and receiver data file to be used with this path-specific attenuation data file. The user is then asked whether the attenuations are to be entered in dB, dB/100 metres, or dB/1000 feet; or, the choice can be different for each attenuation. Finally, for each attenuation, the user is asked to enter the octave band sound pressure level reductions and the source-receiver paths affected by the attenuation. Each path can have one attenuation in dB and a second in either dB/100 metres or dB/1000 feet.

Sound Propagation Calculations. From the main menu, sound propagation calculations can be chosen by pressing either "5" or "enter."

The program first asks for the project name (the source data file name assigned during source data input); the program then reads the source data file and prints on the screen the name and sound power level of each source. Next the user is asked to enter the receiver data file name.

The program then offers a series of options. Atmospheric attenuation can be included or not: the user can choose standard conditions (15°C and 70 percent relative humidity) or specify the temperature and relative humidity to be used.

If the project involves barriers and/or path-specific attenuations, the program asks for the appropriate data file names. The user is also given the opportunity to enter additional non-path-specific attenuations in dB and/or dB/100 metres or dB/1000 feet.

Next, the program asks for the type of output report desired: the "results summary" lists only the sound pressure level and sound level at each receiver location; the "results with and without background noise" option

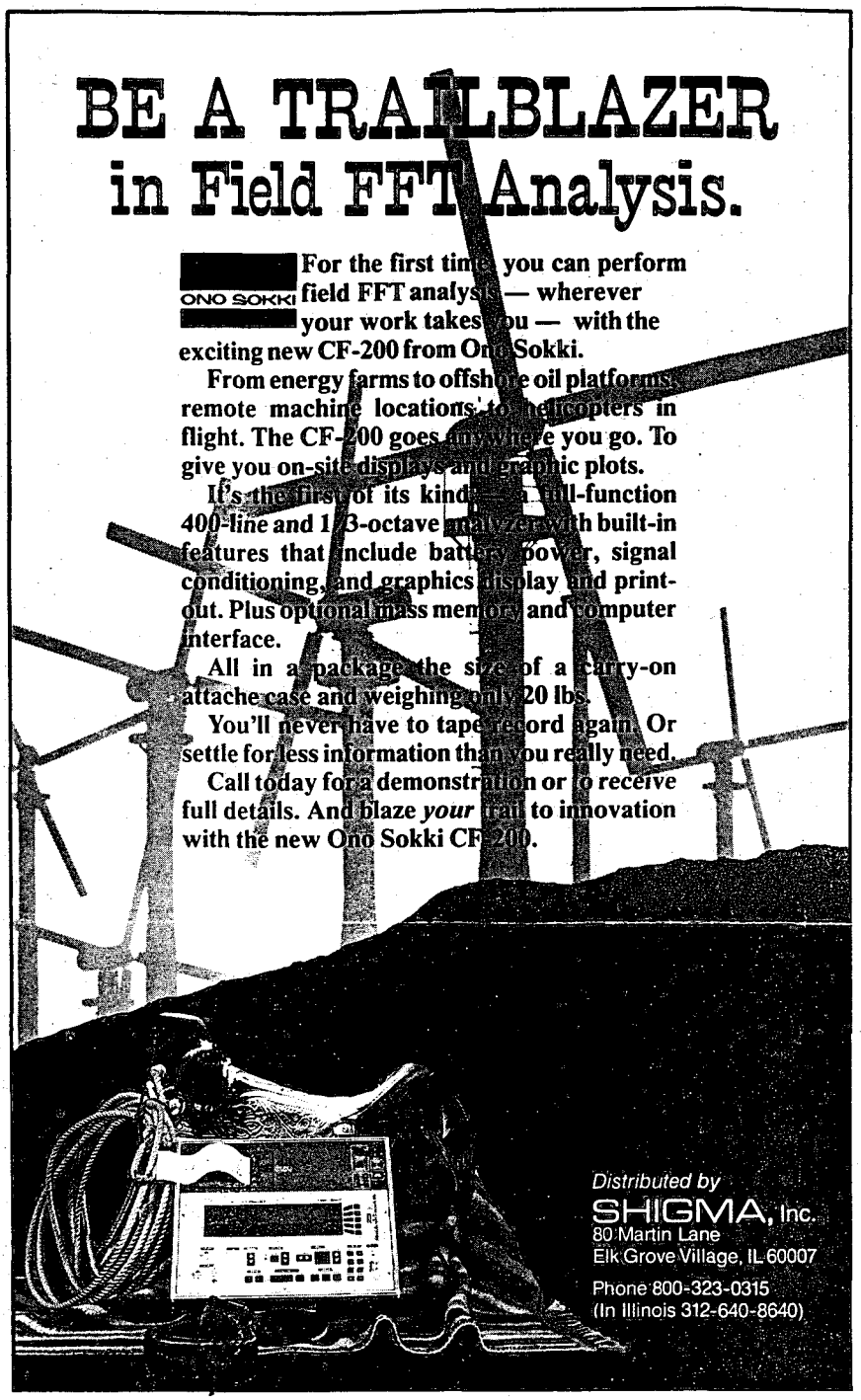
adds the octave band sound pressure levels at each receiver; the third alternative, in addition, identifies and ranks major contributing sources (sources whose contributions are within 10 dB of the total sound level) for each receiver location.

Finally, the program asks whether a printed report is desired. If so, the user can enter a report heading of up to ten lines; this permits the user to note the source locations and sound levels used, receiver locations, and the various calculation options chosen. As the report is produced, the program pauses periodically to permit the user to record results from the screen or adjust the paper in the printer. An output data file is not created.

Barrier Calculation Utility. The barrier calculation utility calculates the sound pressure level, the sound level, and the octave band sound pressure levels at one receiver location for a single source and a single barrier. The program first asks whether atmospheric absorption is to be considered; it then asks for the barrier, receiver, and source data (with the same options described earlier), and whether the user wants a printed report. The report gives the resulting sound pressure level and sound level at the receiver location with and without the barrier, the octave band sound pressure levels at the receiver location with the barrier, and the barrier attenuations.

Combine Sound Levels. Two options are offered in this utility. One permits the user to add or subtract sound levels; the other sums octave band sound pressure levels to give total sound pressure level and A-weighted sound level.

Quit. Quit returns control to BASIC.



Case Histories and Technical Notes

The *Noise Control Engineering Journal* encourages the submission of case histories of noise control articles which discuss the application of well-known principles in the control of industrial machinery, vehicle, and other noise. Case histories can be brief and do not necessarily have to include new or original information. We also encourage the submission of technical notes, brief contributions which do contain new information.

10.7 PUBLIC PARTICIPATION PROGRAM COMMENTS/PLAN OF STUDY CROSS REFERENCE

10.7.1 Plan of Study Issues

APPENDIX 10.7.1 - PLAN OF STUDY ISSUES/SCA SECTION ADDRESSING ISSUES

Plan of Study Issue	SCA Section Addressing Issue
ST. MARKS RIVER	
• Barge traffic - current and future	SCA Section 3.3.3
• General health and well-being of lower St. Marks River and how it relates to wildlife and fisheries habitat and population	SCA Section 2.3.6
• Minimum flows and levels in St. Marks River	SCA Section 2.3.4
• What happens if permitting process gets bogged down? Is there a back-up plan for the City of St., Marks effluent disposal?	SCA Section 5.2 & Section 5.5
• Entrainment and impingement of biological resources in water intake - current vs. future (316B)	SCA Section 5.1.3
• Baseline water quality data for St. Marks River	SCA Section 2.3.4
• Past and future maintenance dredging schedules for canals on-site and changes/impacts	SCA Section 10.1.4
• Any emergency discharges?	SCA Section 3.5.1, 3.2, 5.1, 5.2, & 5.5
• Impact of any new intake structure on recreational use of river	SCA Section 2.3 & 7.2
MANATEES	
• Evaluation of manatee habitat impacts year-round	SCA Section 5.1.2
• Collection of manatee sighting data in adjacent waters	SCA Section 2.3.6
• Manatee winter population impact	SCA Section 5.1.2
• Closure of discharge canal from boat traffic	SCA Section 5.1.2
AIR QUALITY	
• Air impacts on Class I Air Quality Related Values	SCA Section 5.6
• Air quality impacts at St. Marks refuge and 17,700 acre wilderness area	SCA Section 5.6
• Air quality improvement over existing plant	SCA Section 5.6
• Past actual emissions vs. permitted emission limits	SCA Section 5.6.1 & 10.1.5
• Continuous low load operation on the turbine - air emissions under this condition	SCA Section 3.4 & 5.6.1

APPENDIX 10.7.1 - PLAN OF STUDY ISSUES/SCA SECTION ADDRESSING ISSUES

Plan of Study Issue	SCA Section Addressing Issue
• Will it be .05% sulfur content in the secondary fuel?	SCA Section 3.1 & 3.4
• Quantity of particulates in the emissions	SCA Section 5.6.1 & 10.1.5
• Applicability of "bubbling"	SCA Section 3.4, 5.6.2, & 10.1.5
• Flame stability problems on some low NOx burners	SCA Section 3.4 & 10.1.5
• Compliance by CEMS for NOx	SCA Section 5.6.2 & 10.1.5
• Conditioning of turbine inlet air	SCA Section 3.4
LINEAR FACILITIES	
• State highway, lands and right-of-way crossings during renovation of pipeline	SCA Section 6.1.8
• Land use and environmental impacts from corridors for associated facilities	SCA Sections 3.1, 6.1.6, & 6.1.7
• Will change in conductor require additional clearing or new structures?	SCA Section 3.1 & 6.2.3
• Current maintenance practices for the transmission line	SCA Section 6.2.4.2
TRAFFIC	
• Trips generated during construction and operation by vehicle type	SCA Section 2.3.6, 4.6.1, & 4.6.2
• Any roadway improvements planned for entrance to plant?	SCA Section 3.9
• Commercial deliveries planned?	SCA Section 4.6.2
HABITAT & IMPORTANT SPECIES	
• General listed species impacts from plant construction, operation and linear facilities	SCA Section 4.4, 5.6.1, 6.1, & 6.2
• Baseline bio criteria monitoring data - environmental health indicators, e.g. Shannon Weaver diversity index	SCA Section 2.3.6 & 10.5.5
• Quantify wetland impact from construction of associated facilities	SCA Section 3.1, 4.1, 4.4, & 6.3.4

APPENDIX 10.7.1 - PLAN OF STUDY ISSUES/SCA SECTION ADDRESSING ISSUES

Plan of Study Issue	SCA Section Addressing Issue
• Delineation of wetlands at plant site and along linear facility ROWs	SCA Section 2.3.5 & 6.3.4
DRAINAGE	
• Impacts of flooding and impacts of hurricane • Stormwater design, including retrofit of existing plant • Turbidity control measures for plant construction and linear facility construction	SCA Section 2.1.5 & 4.1.3 SCA Section 3.2, 3.8, & 5.3 SCA Section 4.1.1, 4.2, & 4.4
LAND USE COMPATIBILITY	
• Noise in dB's at night - want to see reduction • Compliance with local land development regulations and consistency with local, regional, and state plans • Aesthetic impacts now compared with future including the height of structures	SCA Section 2.3.8 & 5.7 SCA Section 2.2, 2.3.8, & 5.7 SCA Section 3.1, 4.6, & 7.2.2
WASTE MANAGEMENT	
• Any waste products being transported out? • Storage and disposal of waste	SCA Section 4.1 & 5.4 SCA Section 4.1 & 5.4
ECONOMIC IMPACT	
• Will there always be shift work?	SCA Section 5.9.1
PUBLIC SERVICES AND FACILITIES	
• What are proposed fire control and safety measures? Any increased need for fire protection?	SCA Section 3.10.1 SCA Section 7.2
AVIATION	
• Any impact on aviation due to facility height?	SCA Section 7.2 & 10.1.7
FUEL HANDLING & STORAGE	
• Back-up fuel delivery and storage • Do safety measures for exiting fuel storage meet existing current standards? Any increase in fuel storage?	SCA Section 3.3 SCA Section 3.3 & 3.3.4

APPENDIX 10.7.1 - PLAN OF STUDY ISSUES/SCA SECTION ADDRESSING ISSUES

Plan of Study Issue	SCA Section Addressing Issue
CULTURAL RESOURCES	
• Impacts on archeological and historical sites	SCA Section 2.2.6, 4.8, & 5.10

10.7.2 Plan of Study Comments

APPENDIX 10.7.2
PLAN OF STUDY COMMENTS/RESPONSES/SCA SECTION REFERENCES
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - AIR QUALITY

Comment:

The Bureau of Air Regulation has conducted a preliminary review of the Proposed Plan of Study (POS) and Air Quality Modelling Protocol for the planned Purdom Unit 8 Project Site Certification and PSD Permit application. Based on the information received, it appears that the POS insures that all of the key concerns which we foresee will be addressed.

Response:

No response or changes to the POS required.

SCA Section Reference:

Not applicable.

Comment

The approach to a determination of Best Available Control Technology (BACT) for nitrogen oxides (NO_x) from the combustion turbine appears sound. Our most recent BACT emission limits have ranged from 12-15 parts per million. We understand that the City is working with the turbine manufacturer to achieve even lower emissions. This will result in relatively low NO_x emissions, which are less than the emissions from the existing units during recent years, and will establish limits where there are presently none. Similarly, with respect to sulfur dioxide (SO_2), the use of clean fuels will insure that emissions remain below those of recent years and will reduce the permitted limits by roughly 99 percent. Our view of the project with respect to the rest of the pollutants is similar although we understand that emissions of carbon monoxide and particulate matter will increase but will be permitted at levels well below existing limits.

Response:

No response or changes to the POS required.

SCA Section Reference:

SCA Section 3.4 discusses BACT.

Comment:

We recommend that the City include in the POS a review of requirements under the Title IV Federal Acid Rain Program. These are given in Rule 62-214, F.A.C. and 40 CFR 72. In reviewing the POS, we also note that the request to set emission limits for SO_2 at 1.3 pounds per million Btu heat input ($lb/10^6$ Btu) for existing Units 5 and 6 cannot be accomplished under Title V.

Response:

The City has revised the POS to include a review of Title IV requirements. It is the City's intent to file a Title IV Acid Rain Permit application together with the SCA. With respect to the Title V requested SO_2 emission limit of 1.3 lbs/mmBtu, it is understood, based on a 10/15/96 meeting with DEP, that the emission limit can be accomplished through the Title V process.

SCA Section Reference:

SCA Section 10.1.5 contains the Title V and Title IV permit applications.

Comment:

Attached are comments that we received from the Department of Interior Fish and Wildlife Service following the September 25 meeting and their review of the POS. These are consistent with what their representative from the Denver office stated at the meeting. We consider the Modelling Protocol to be acceptable following incorporation of those comments into a revised POS.

Response:

Please see the attached responses to the individual comments from the U.S. Fish and Wildlife Services. As the City has addressed all of their comments, it is understood that the Modelling Protocol is now acceptable to the DEP.

SCA Section Reference:

Not applicable.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - SITING

Comment:

Information on the length and location of the FGT natural gas line that has to be upgraded to serve the plant should be provided. While this work is not included in the siting application, the impacts of this work will be secondary impacts of the Purdom project and therefore needs to be identified and reviewed.

Response:

Expansion of the existing natural gas line will be permitted by the Florida Gas Transmission Company. SCA Section 6.1 will provide a general description of the anticipated pipeline expansion and its impacts including information, to the extent available, on the length and location of the line to be upgraded. No revision to the POS is required.

SCA Section Reference:

SCA Section 6.3 addresses the Natural Gas Lateral and its environmental effects.

Comment:

The water quality standards identified to be used in the baseline survey included the freshwater standards for heavy metals. Sampling for heavy metals in the water column is usually done one foot above the bottom, which may be within the saltwater wedge in the river. Salinity should be checked at the same time and depth that the heavy metal samples are taken. Which standard to use for the data should be determined on the bases of the salinity.

If the salt wedge proves to be a distinct and relatively constant feature in the river, the applicant should consider doing baseline sampling both above and within the wedge.

Response:

The permitting history of the Purdom Station and F.A.C. 62-302.200(20) are quite consistent and clear that the "receiving" body of water is considered to be fresh water. As the intake will be near the surface, the sampling will be near the surface as well. Also, as a result of the zero discharge design, we expect to have no impact on the salt wedge. Thus, there is no need to revise the POS.

SCA Section Reference:

SCA Section 10.5.4 contains surface water sampling results.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER QUALITY

Comment:

I see they are planning to use Hester-Dendy (HDs) samplers instead of the 20-dip net sweeps that we developed, this is probably because HDs are still in the rule. However, they might want to consider using the dip nets since we are moving to this gear type. We should check with Russ. I am not familiar with this kind of permitting scenario, but I wanted my comment to be put forth in case it proves relevant to the ones managing this project.

Response:

HD samples were collected during August 1996. At that time, no dip net sweeps were conducted and, due to the depths of the channel, there are only limited habitats available in which to conduct sweeps. Benthic macronivertebrates studies were based on studies previously conducted at the Purdom Plant and the St. Marks River by the FDEP, Dames & Moore and others. Typically, these studies did not include dip net sweeps. Currently, HD sample collections are required by the rule as the appropriate method for sampling benthic macroinvertebrates. As a result, there are no plans to include dip net sweeps in the Foster Wheeler Work Plan. If, at a later date, the State should require that dip net sweeps be conducted, these samples can be collected by field personnel at the site and shipped to us. No changes in the POS are required.

SCA Section Reference:

SCA Section 10.5.5 contains the results of the HD sampling. Section 2.3.6.1 discusses sampling methods..

Comment:

I looked briefly at the Tallahassee proposal from the perspective of reuse. It probably will come as no surprise but I strongly support the use of reclaimed water for cooling purposes at the power plant.

Please note, that Part VII of Chapter 62-610, F.A.C. regulates industrial uses of reclaimed water from domestic wastewater sources. Current rules require only basic disinfection and secondary treatment for such a reuse activity. We are proposing to add the full Part III requirements (including filtration high-level disinfection, Class I reliability, minimum size, and others) for use of reclaimed water in open cooling towers. This will be part of the Phase II rulemaking which should be completed in early 1998. If this change is made in Phase II, it would apply to

wastewater projects having complete permit applications submitted after the effective date of the Phase II revisions.

Response:

Should Part VII of Rule 62-610 F.A.C. be modified in the future, and should the modified rule be applicable to the project, the City would expect to be able to demonstrate that equivalent or superior treatment is being applied. For instance, discontinuance of dechlorination at the St. Marks Treatment Plant would result in greater disinfection than is currently achieved. In any case, no change to the POS appears warranted.

SCA Section Reference:

SCA Section 3.5 discusses the use of reclaimed water at Purdom Station.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - SOLID WASTE

No comments.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - PROTECTED SPECIES

No comments.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - MARINE RESOURCES

No comments.

U.S. FISH AND WILDLIFE SERVICE - AIR QUALITY BRANCH

Comment:

Place modelling receptors at 75-meter intervals along the nearest Class I area boundary (boundary length approximately 1.8 km) for all analyses. After initial screening identifies the receptor with the maximum concentration value, bracket this receptor with additional receptors at 15-meter intervals (four on each side) to pinpoint the maximum concentration value. We recommend this because of the proximity of the source to the Class I area boundary and the need, therefore, for ensuring the maximum concentration value and its location are identified.

Response:

The POS will be revised to include receptors at 75-meter intervals along the northern most boundary of the St. Marks Wilderness Area. Additional receptors will be placed around the receptor with the maximum impact (determined during the screening level modelling). These receptors will be spaced at 15-meter intervals (four on each side of the maximum impact receptor).

SCA Section Reference:

SCA Section 5.6 discusses Air Quality Impacts. The PSD application contained in SCA Section 10.1.5 contains further discussion, along with modelling results.

Comment:

Employ the FWS/National Park Service (NPS) significant impact levels to assess contribution to Class I increment consumption. FDEP has routinely required PSD applicants to apply these levels.

Response:

The City of Tallahassee does not agree that the FWS/NPS Significant Impact Levels (SILs) are the appropriate values to use for determining whether the project will have a significant impact on any Class I areas. The City believes that the Class I SILs proposed by the U.S. Environmental Protection Agency (EPA) in the July 23, 1996, Federal Register are more appropriate especially since it is understood that DEP has decided to use these EPA values in the ongoing Chassahowitzka Study. However, since the City plans to do multiple source modelling of Class I area impacts regardless of whether the project's impact are considered "significant", the importance of the question of which set of SILs to use is considerably diminished. Therefore, the POS has been modified to indicate that project impacts will be compared to both sets of SILs.

SCA Section Reference:

The PSD application contained in SCA Section 10.1.5 contains a discussion of the modelling approach along with air quality modelling results. Both EPA and FLM-approved significant impact levels are addressed.

Comment:

Conduct a visible plume impact analysis using a background visual range at 65 km. When emissions estimates are finalized, consult with our office on the need for a regional haze analysis.

Response:

The visibility screen impact analysis will be conducted using VISCREEN and a background visual range of 65 km. The FWS will be provided with the final emission estimates when available.

SCA Section Reference:

The PSD application contained in SCA Section 10.1.5 contains a discussion of the modelling approach along with air quality modelling results.

Comment:

Consult with our office on the need for additional air quality related values analyses if final emissions estimates indicate that PSD review is required for pollutants besides PM and CO (i.e., sulfur dioxide, nitrogen oxides).

Response:

Although projected emission rates are not yet finalized, it is still the City's intent to "net out" for SO_2 and NO_x. However, for purposes of general understanding, the City would like to know the AQRVs which the Fish and Wildlife Service deems significant vis-à-vis SO_2 and NO_x emissions for the St. Marks Wilderness Area.

SCA Section Reference:

The PSD application contained in SCA Section 10.1.5 contains a discussion of the modelling approach along with air quality modelling results.

U.S. FISH & WILDLIFE SERVICE - ST. MARKS NWR

Comment:

As you know, the Purdom facility is not immediately connected to lands and waters of the St. Marks National Wildlife Refuge. The connection is only through air and water flow. The water connector, the St. Marks River, is State of Florida waters, so I will not presume to provide comments on the State's jurisdiction. I am comfortable that if the Purdom Unit 8 Project meets the State of Florida requirements for clean water, then the Refuge's interest through this water way will be protected. The same is basically true with Ellen Porter's clean air comments. If the Purdom Unit 8 Project satisfies Ms. Porter's clean air concerns/feedback, then St. Marks NW Refuge's concerns will have been addressed.

Other than clean air and water concerns, the Purdom Unit 8 project appears to be a neutral factor as far as St. Marks NW Refuge's concerned, and the Refuge will neither benefit or lose by its presence.

Response:

The project's zero discharge wastewater design will ensure that the State of Florida clean water requirements will be met. In fact, several wastewater streams currently discharging to the St. Marks River will be eliminated thus enhancing water quality. As indicated in other responses, the City has addressed Ellen Porter's [U.S. Fish & Wildlife Service air Quality Branch] clean air comments. No additional changes in the POS are required.

SCA Section Reference:

SCA Section 3.5 discusses the project's zero discharge wastewater design. SCA references for the clean air comments follow the individual comments.

U.S. FOREST SERVICE

Comment:

As discussed earlier, the air quality related values (AQRV) of Bradwell Bay Wilderness, a CAA Class I area under Forest Service management, are fresh air (lack of odor) and vegetation. Upon learning that preliminary emission estimates project no net increase in emissions of sulfur or nitrogen, our concern regarding impacts on these values (AQRVs) diminished greatly.

Response:

No response or changes in the POS required.

SCA Section Reference:

The PSD application contained in SCA Section 10.1.5 addresses AQRVs.

Comment:

Even though visibility (regional haze) need not be considered as a Bradwell Bay AQRV, there is some concern regarding possible impacts of a plume from Purdom No. 8 that might be visible near the Wilderness. In as much as plume visual impact screening analysis must be done, regardless of the presence of a Class I area, I'd appreciate it if you would include a viewpoint within the Wilderness when you run the screening model. During the meeting, representatives of the USDA Fish and Wildlife Service said their data showed that a background visual range of 65 km should be used in these screening models. We agree with that determination.

Response:

The Air Quality Modelling Protocol has been modified to indicate the use of a 65 km background visual range for visual plume screening. The visibility analyses will include a viewpoint in the Bradwell Bay Wilderness Area for your information.

SCA Section Reference:

The PSD application contained in SCA Section 10.1.5 contains the visibility analyses.

Comment:

With earlier correspondence, we sent a copy of *Foliar Ozone Injury Surveys (1995) In National Forests in Alabama, Florida and Mississippi* (Chappelka, 1996). It reported only slight injury at Bradwell Bay, typical of the five years over which this inventory was repeated. During discussion of this topic, the presence of an ozone monitor, managed by the National Dry Deposition Network, near the town of Sumatra was mentioned. Data from this monitor may be helpful in evaluating rural ozone conditions in the Florida panhandle. Information from this ozone monitor may be obtained from Mr. Ralph Baumgardner, US-EPA, Office of Research & Development (919-541-4625).

Response:

The search for background air quality data will include a call to Mr. Baumgardner regarding the availability of ozone data from the Sumatra Area.

SCA Section Reference:

The PSD application contained in SCA Section 10.1.5 contains an evaluation of ozone conditions in the Purdom Station area.

FLORIDA GAME AND FRESH WATER FISH COMMISSION

Comment:

The Office of Environmental Services of the Florida Game and Fresh Water Fish Commission has reviewed the referenced POS and finds that it adequately addresses fish and wildlife issues of interest to our agency.

Response:

No response or changes in the POS required.

SCA Section Reference:

Not applicable.

APALACHEE REGIONAL PLANNING COUNCIL

Comment:

The Council staff has several issues of concern which should be addressed in the final study. First, it is the understanding of Council staff that the project is located in the floodplain of the St. Marks River. Discussion should be added concerning what will happen in the event of a flood. Similarly, the facility is located in a hurricane evacuation zone. The continued operation of the facility during and after a major storm should be addressed. For instance, are there circumstances in which the facility would close? What happens if access roads are unusable?

Response:

SCA Section 2.1.5 will address the 100-year flood levels at the site which is located in the flood plain. Section 3.8 will address the on-site drainage system and its performance during floods. The ability of the facility to operate during storms and/or floods will also be addressed in this section. Section 4.1.3 will discuss project impacts on flooding levels.

SCA Section Reference:

The above-mentioned SCA Sections 2.1.5, 3.8, and 4.1.3 address these flooding/major storm concerns.

Comment:

Second, there is no discussion of what happens if there is a fire onsite. Will the town of St. Marks fire department need additional equipment? Will other area departments be called? Are there any special risks involved? Please add discussion of this concern to the study.

Response:

Since the Purdom Generating Station is an existing power plant, fire protection measures and equipment are already in place. Existing practices for fire protection and fire fighting at the plant will be described in Section 2 of the SCA. In addition, any further needs for equipment, cooperative service arrangements, etc. that could involve local governments or volunteer fire departments in the area will be identified and discussed in the SCA in Section 7.

SCA Section Reference:

SCA Section 2.2.7 discusses existing public services, Section 3.10 discusses Purdom Station systems, and SCA Sections 7.1 and 7.2 discuss further needs.

Comment:

Council staff has already had discussions with Hall Planning and Engineering concerning the traffic study for this project. The proposed POS appears adequate. It also appears that sufficient information is proposed concerning potential impacts to the water quality of the St. Marks River and the air quality within the St. Marks National Wildlife Refuge.

Response:

No response or changes to the POS required.

SCA Section Reference:

SCA Sections 4.6 and 5.9 discuss traffic impacts; Sections 4.2 and 5.3 discuss impacts on surface water bodies; and SCA Sections 4.5 and 5.6 discuss air quality impacts.

FLORIDA DEPARTMENT OF TRANSPORTATION

Comment:

Map(s) showing the location of the Florida Gas Transmission Pipeline relative to the State Highway System (SHS), including locations where the pipeline will be enlarged, locations where the pipeline will cross the roadways and roadway rights-of-way and any locations where the pipeline will be replaced.

Response:

The existing gas pipeline system will be upgraded and will be permitted by the Florida Gas Transmission Company. Although not required, the SCA Section 6.1 will provide a general description of the anticipated pipeline expansion (which is expected to occur within the existing right-of-way) and its associated impacts including, to the extent available, the maps requested. No changes in the POS are required.

SCA Section Reference:

SCA Section 6.3 discusses the natural gas pipeline.

Comment:

If there are any SHS roadway or associated right-of-way crossings by the pipeline, please identify the method which will be used to install the pipeline in these locations. In addition, the traffic management plans to be used during this construction should be outlined.

Response:

Permitting of the natural gas pipeline upgrade will be handled by Florida Gas Transmission through the normal permitting procedures of the Florida Department of Transportation (FDOT), including submittal (as normally required by FDOT) of drawings and/or a description of pipeline installation methods and Traffic Control Plans called for in this comment. Florida Gas Transmission is the best source of this information since they are quite experienced at pipeline construction in relation to road rights-of-way in Florida and will be directly responsible for the work. To the extent available from FGT at the time of SCA preparation, the requested information will be provided in the SCA.

With regard to the water reuse pipeline connecting the City of St. Marks' treatment plant to the Purdom Generating Station, it is expected that the pipeline will cross or use primarily local road rights-of-way within the City of St. Marks. Any state highway system, county or city road rights-of-way to be used or crossed for water reuse pipeline construction will be identified in the SCA. The SCA will also include a description of pipeline installation methods. Pipeline installation methods and traffic control plans will be in conformance with FDOT Traffic Control Plan Standards for state highway system road rights-of-way, if any are crossed or used. For local road rights-of-way crossed or used, construction plans will implement local permit requirements to ensure public safety and convenience.

SCA Section Reference:

SCA Section 6.3 discusses the natural gas pipeline and SCA Section 6.1 discusses issues related to the water reuse pipeline.

Comment:

The height of the Unit and any attendant structures should be indicated in the description of the Unit and the relationship of these structures to the flight paths of any published approach to the Tallahassee Regional Airport should be defined.

Response:

The height of the Unit has been added to the description. The project is not expected to pose a hazard to air navigation and this will be addressed in the Site Certification Application. If necessary, a "Notice of Proposed Construction or Alteration" will be filed with the FAA.

SCA Section Reference:

SCA Section 10.1.7 addresses Federal Aviation Administration concerns.

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Comment:

The District's primary concerns with this project will be its potential impacts to surface water resources (St. Marks River) and associated biota. We expect the study to fully address net loss of water in the system relative to low flow and any impacts which might result under such conditions. Such impacts would likely be related to an increase in the extent of saltwater intrusion up the river, among other possibilities. Although details concerning number and locations of samples or river profile stations are not provided in the POS, we feel that the proposed study (assuming appropriate sample sizes and locations are used) will provide information appropriate for our review needs.

We found some of the statements concerning reduction of water withdrawals and "zero discharge" to be somewhat confusing in terms of the overall changes in water use which will result from construction of Unit 8. Although actual withdrawals may be reduced, a net loss of water would occur in the St. Marks River because the discharge of once-through cooling water would be eliminated. It would be helpful if you could prepare some simple graphics showing the current and proposed water budget for the Purdom Plant so one can easily be compared to the other. This would help reviewers and interested citizens to better understand the water use impacts of the proposed changes.

Response:

The SCA will fully address the potential project impacts to surface water resources including the minor net loss of water in the system relative to low flow and associated impacts. This results from the selection of Best Conventional Pollutant Control Technology (closed cycle cooling towers) for cooling at Unit 8. These minor impacts will be included in Chapter 5, Sections 5.1.2 and 5.3.1. Simplified flow diagrams for the Purdom Station water use will be presented as part of SCA Sections 2.3.3 and 2.3.4 for the existing station, and 3.5.1 and 3.5.4 for conditions with the proposed project. No changes to the POS are required.

SCA Section Reference:

Impacts to surface water resources will be included in Chapter 5, Sections 5.1 and 5.3.1. Simplified flow diagrams for the Purdom Station water use will be presented as part of SCA Sections 2.3.3 and 2.3.4 for the existing station, and 3.5.1 and 3.5.4 for conditions with the proposed project.

FLORIDA DEPARTMENT OF STATE - DIVISION OF HISTORICAL RESOURCES

Comment:

A review of the Florida Site File indicates that no significant archaeological or historical sites are recorded for or likely to be present within the area of the proposed Purdom Unit 8. We also note that a new pipeline, constructed along existing streets, will be necessary to delivery fuel to the new unit. The new pipeline may proceed without further involvement from our agency if project activities do not entail construction of lines that are located outside existing road prisms (the ditch-to-ditch or curb-to-curb area). Therefore, conditioned upon the construction of the new pipeline within existing road prisms, it is the opinion of this office that the proposed project will have no effect on historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical or architectural value.

Response:

The City of Tallahassee contacted DHR again in 1996. DHR confirmed their earlier evaluation and stated that a "review of the Florida Site File indicates that no significant archaeological or historical sites are recorded for or likely to be present within the area of the proposed Purdom Unit 8." The DER also concluded the project will have no effect on historic properties, provided that any new off-site pipelines (i.e., the water reuse pipeline) which may be part of the project be constructed within the limits of existing road prisms. Therefore, no changes to the POS are required.

SCA Section Reference:

SCA Section 4.8 discusses impacts on archeological and historical sites.

FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS

No comments.

WAKULLA COUNTY

No comments.

LEON COUNTY

No comments.

CITY OF ST. MARKS

No comments.

FLORIDA PUBLIC SERVICE COMMISSION

No comments.

10.7.3 Public Comments

10.7.3.1 September 12, 1996 Briefing for Environmental Groups

Comment Summary

Follow-up Correspondence

City of Tallahassee Purdom Unit 8
Briefing/Workshop for Environmental Groups
Comment Summary
September 12, 1996

Attendance List

Gail Kamaras	Legal Environmental Assistance Foundation
Debra Swim	Legal Environmental Assistance Foundation
Ze Ferreira	Project for an Energy Efficient Florida

Comment Summary

- Concerned about the decision already made to build this unit
- There may be some additional opportunities to purchase power that will come up. With competition other utilities will be trying to make sure they stay in business.
- Your gas prices are at odds with forecasts from EIA. Skeptical about those numbers.
- Landscaping would be good from public standpoint
- What are the City's intentions with regard to energy conservation and demand-side management programs? Will City meet PSC's goals, or exceed PSC's, or try to get PSC's goals lowered?
- City doesn't appear to have aimed demand-side management at new construction - missing opportunities that are arising because of growth
- Even with unit cost of $440/kw can achieve savings cheaper than can generate -- conservation is part of a pollution prevention strategy
- Noticed your mission is to provide electricity rather than provide energy services - should use efficiency improvement as a customer retention tool e.g. FSU Law School like a meat locker
- City's concerns about competition are real; know they need the revenue
- Project looks to be well-thought out from an environmental management standpoint

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

Sent to 3 attendees

CITY OF TALLAHASSEE

CITY HALL
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TALLAHASSEE, FL
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RON WEAVER
Mayor
SCOTT MADDOX
Mayor Pro Tem
JOHN PAUL BAILEY
Commissioner
DEBBIE LIGHTSEY
Commissioner
STEVE MEISBURG
Commissioner
STEVEN C. BURKETT
City Manager
ROBERT B. INZER
City Treasurer-Clerk
JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

25 October 1996

Ms. Debra Swim
Legal Environmental Assistance Foundation
1115 N. Gadsden Street
Tallahassee, FL 32303-6327

Dear Ms. Swim:

Thank you for attending our recent briefing on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. Enclosed are summaries of your comments plus others with whom we have met, including regulatory agency representatives, who were briefed on September 10, 1996, and members of the public who attended the project open houses held between September 17 and 19, 1996.

There were a few questions that came up during the briefing that the staff members and consultants who were there were unable to answer. Attached are the responses to your comments.

Your name will be maintained on the project mailing list so that we can continue to keep you informed of our progress through the permitting process. In the meantime, if you have further questions or comments on the project, please feel free to write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via E mail at purdom8@sc.ci.tlh.fl.us.

City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Thank you for your interest in the Purdom Unit 8 Project.

Sincerely,

Rob McGarrah
Project Manager

Printed on Recycled Paper with Soy Ink

ENVIRONMENTAL GROUP MEETING

RESPONSES TO COMMENTS

1. **Concerned about the decision already being made to build this unit. There may be some additional opportunities to purchase power that will come up. With competition, other utilities will be trying to make sure they stay in business.**

   The Capacity and Energy RFP was structured so that proposals would be evaluated for both purchased power options as well as new units. The timing of the RFP was based upon the time needed to license and build a new unit as well as the time needed to complete the RFP process and evaluation.

   In addition to the initial RFP providing opportunities for purchased power, Electric Operations continues to monitor the changing electric market in order to capitalize on changes that will result in a more beneficial option for the City's customers. Electric Operations has also committed to conduct a final market review prior to the final release of the procurement and construction activities. This market review will be intended to determine whether the construction of Purdom Unit 8 is still the best option for the City's customers.

2. **Your gas prices are at odds with forecasts from EIA. Skeptical about those numbers.**

   The natural gas pricing contained in the Purdom Unit 8 alternative was not based on a fuel forecast but rather on competitive bids for firm supplies obtained by the City's Fuel Management Division. Fuel Management issued a competitive solicitation for natural gas for the period 1996 - 2020. A number of proposals were received by the City, including two proposals for the period 2000 - 2020. Since the time of the receipt of the natural gas proposals, both fuel vendors who provided the 2000 - 2020 natural gas pricing have provided updated pricing information that showed the prices continuing to move downward. These offers are priced below some gas forecasts for the same period because the offers are for firm quantities over a fixed term, allowing for more flexible pricing.

3. **What are the City's intentions with regard to energy conservation and demand side management programs? Will City meet or exceed PSC goals or will the City try to get the PSC goals lowered? The City doesn't appear to have aimed demand side management at new construction -- missing opportunities that are arising because of growth. Even with unit cost of $440/kW -- savings can be achieved cheaper than generation. Conservation is a part of pollution prevention program.**

   The City continues to be committed to conservation and demand side management programs. The integrated resource planning (IRP) process utilized during the recent planning process included analysis of conservation and demand side management alternatives. The City's DSM portfolio is broad-based and the mix of residential and commercial measures has been promoted since 1984. The City's recent program is projected to meet or exceed the goals approved by the PSC in February of this year. The City's new construction efforts work in concert with state building codes to ensure that buildings are as energy cost efficient as practical. While these efforts, on a unit-cost basis, may sometimes be less expensive than new generation, there is not enough conservation potential to offset the need for this new unit. From an overall environmental perspective, the addition of this new unit has a positive pollution reduction benefit due to its lower emissions, on a per MW basis, and the ability for the City to retire early two older, less efficient generating units.

4. **Noticed your mission is to provide electricity rather than provide energy services -- should use efficiency improvement as a customer retention tool. For example -- FSU Law School is like a meat locker.**

   The mission of the City's Electric utility is to be the preferred provider of electric services in this

community. This includes exploring possibilities to provide efficiency programs that make sense. The City devotes significant resources to this effort through the Energy Services function within Utility Services. Towards that end, the City is continuing to pursue opportunities in its energy conservation effort to design commercial programs that are mutually beneficial to the customer, the utility and the environment. Currently these programs include loans for HVAC changeouts, lightening changeouts, fuel switching, and building envelope enhancements and commercial demonstrations of energy conservation, advanced technology, and customer control of energy use projects.

Sent 76 to those invited but did not attend environmental group briefing

CITY OF TALLAHASSEE

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City Manager
ROBERT B. INZER
City Treasurer-Clerk
JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

8 October 1996

Mr. Martin Costello
Florida Department of Environmental Protection
Twin Towers, MS 3550
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Costello:

We missed seeing you at the September 12th briefing for environmental groups on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. Enclosed is some information on the project that you might find helpful. Also enclosed are summaries of the comments we received from the few people who did attend the briefing plus others with whom we have met, including regulatory agency representatives, who were briefed on September 10, 1996, and members of the public who attended the project open houses held between September 17 and 19, 1996.

Your name will be maintained on the project mailing list so that we can continue to keep you informed of our progress through the permitting process. In the meantime, if you have any questions or comments on the project, or wish to have your name removed from the mailing list, please feel free to write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via E mail at purdom8@sc.ci.tlh.fl.us.

City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Thank you for your interest in the Purdom Unit 8 Project.

Sincerely,

Rob McGarrah
Project Manager

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City Manager
ROBERT B. INZER
City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

RECEIVED
JAN 4 RECD
MOORE-BOWERS GROUP

January 3, 1997

Mr. & Mrs Rudloe
P. O. 428
Panacea, FL 32346

Re: City of Tallahassee -- Purdom Unit 8

Dear Mr. & Ms. Rudloe:

Jennette Curtis of the City of Tallahassee environmental staff recently contacted you concerning the proposed new natural gas fired unit at the existing Purdom Generating Station in St. Marks. During the phone conversation, a number of issues were raised dealing with the potential environmental impact of this facility. Based on these comments, I believe that there may be some misunderstanding as to what the City of Tallahassee is proposing. I wanted to take a moment to recap some of the project highlights and provide you with some project briefing materials.

The proposed Purdom Unit 8 is a state-of-the art natural gas fired electric generating unit. It is being sited at the City's Sam O. Purdom Generating station located in St. Marks Florida. In conjunction with the addition of Unit 8, the City will be early retiring two of the existing Purdom units, units 5 & 6. The decision to pursue the addition of Unit 8 was made by the Tallahassee City Commission after a competitive process to determine the least cost, most environmentally friendly method to meet the City's electric customers needs in the year 2000 and beyond.

The City has made a number of design commitments associated with this unit. These commitments were not driven by regulation but rather by a desire to provide the City's customers with the most environmentally responsible project. Some of the highlights are:

- The addition of a cooling tower and zero discharge water treatment facility that allows for Unit 8 to have no water discharge to the St. Marks River. The addition of this equipment will allow for:
  - ⇒ The reuse of the City of St. Marks treated sewage effluent and two existing permitted treated effluent streams from the Purdom facility. This will eliminate three permitted discharges that currently go to the St. Marks River, and
  - ⇒ The elimination of groundwater withdrawals from the existing Purdom deep wells.

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- With the early retirement of Purdom Units 5 & 6, approximately 50% of the current Purdom cooling water requirements from the St. Marks River will be eliminated. This will result in a reduction of thermal loading on the St. Marks River by approximately 50%.
- As a result of the technology improvements associated with Unit 8, the early retirement of Units 5 & 6 and the reduced utilization of Unit 7, the annual air emissions of sulfur dioxide (SO_2) and Oxides of Nitrogen (NO_x) will not increase over the ***actual*** average emissions of these pollutants during the previous two years even though the facility capacity will increase by over 200 megawatts. (one megawatt provides electricity to 1 home for approximately 1 month)
- Unit 8 will be located on the existing plant site in an area that is currently cleared. Based on the current unit layout, we do not expect to encroach into any existing wetlands on the site nor do we expect to perform any dredge or fill activities on any water body.

I have enclosed copies of the project brochure and a background information section from the project's plan of study. These documents have been submitted to the regulatory and governmental agencies, and local environmental groups and distributed at several public meetings previously help to inform the public about the project..

I would certainly be interested in having the opportunity to sit down with you and discuss this project. If you would like to have this discussion, please contact me at 904-891-5534.

Yours truly,

Rob McGarrah
Production Superintendent
Purdom Unit 8 Project Manager

Enclosures (2)

cc: Purdom Unit 8 Project Team

10.7.3.2 September 17 - 19, 1996 Open Houses

Comment Summary

Follow-up Correspondence

City of Tallahassee Purdom Unit 8
Open Houses Comment Summary
September 17-19, 1996

Tallahassee Locations

Attendance List

Paco de la Fuente	UAG
Stan Derzypolski	
Lyn Doby-Stanfield	United Way
Edward J. Malo	
Sherri Braddy	Florida Trail Assoc., Apalachee Chapter
Norene Chase	Big Bend Group of the Sierra Club
Charles A Cyrus, Sr.	Capital City Chamber of Commerce
John Whitton	Sierra Club
Bob Fulford	CONA
Edwin Thorpe	
Mike McBee	

Comment Summary

- Wanted details of capacity bidding process
- Asked about reconductoring of transmission lines
- Interested in the transmission line conductor. Wondered whether the structures could take the extra weight and what they were made of.
- Asked about the use of the St. Marks effluent for cooling.
- Asked several questions on retail wheeling
- St. Marks and Wakulla County issues/concerns
- General discussion of decision-making process and why there was some citizen concern.
- How is Purdom 8 project funded? Should structure rates so higher users fund more of project because of their impact on load. (Lower users pay less)
- We need more load management
- General interest in overall process and unit. Very interested in engineering and construction phases. Requested information on Minority Business Enterprise participation on project.
- General interest to provide other members of Sierra Club with information. Not opposed.
- Concerned that Tallahassee cannot compete with larger companies if retail competition becomes a reality. Wants to be sure Tallahassee continues to pursue conservation. Concerned about what will happen to the City's smaller customer if there's retail competition.
- Interested in our public involvement process/format.
- How are we going to pay for this project? Was told that money was coming from municipal bonds not taxes. Owns other City bonds as investments.

St. Marks

Attendance List

Mike Reffitt	Local 592 Plumbers & Pipefitters
George Tillman	Located 100 feet from property
Marie & Hugh Williams	
John Cooksey	

City of Tallahassee Purdom Unit 8
Open Houses Comment Summary
September 17-19, 1996

David Field	
Micky Cantner	
Allen Hobbs	Shell Island Marina
Alex Hobbs	Shell Island Marina
Chuck Shields	Shields Marina & City of St. Marks
Jennifer Young	
Carlene Daggett	
Charles Daggett	St. Marks City Commissioner
Dave Hedrick	Wave 94 FM
Robert Seidler	
Irvine Leonard	Local 592 Plumbers & Pipefitters
Jack Butler	I.B.E.W.
Joan Hoover	
J. Peterman	City of Tallahassee

Comment Summary

- Will you be putting rope across intake canal to keep boaters out?
- Have you cut down bushes in front of manatee sign?
- Will new unit have heated discharge?
- Will you be handling storm water?
- Will residual from zero discharge plant be landfilled?
- Concerned about manatees - wants to block off Unit 6/7 discharge canal
- Concerned about noise from hogging during start up. Asked about noise level from new unit.
- Positive interest in Unit 8. She is an engineer at Olin. Asked about our flood design. Interested in learning about what's planned.
- Interested in noise from new unit. Complained about noise from hoggers during startup. Asked if existing plant is about or below 55 dba. Asked about storm water treatment and keeping spills out of the river
- Interested in water demand from St. Marks water system for use in designing their system.
- Will electric and magnetic fields (EMF) increase with reconductoring of transmission lines? Lives adjacent to line being upgraded. Issue of tax exemption - wants to look up statute. General information on size of unit.
- Concerned about impact on St. Marks. What are local benefits? Any expansion of site? Any opposition?
- Support for project. Has lived in St. Marks for 18 years. Wishes us the best.
- What is existing transmission EMFcompared to reconductored EMF?
- What if any additional revenue will come in for St. Marks? Will the water tower bring any increased costs to City of St. Marks?
- Will the wells also be for St. Marks? Will the existing gas turbines run more or less? Jet engines are noisy. How will this be quiet? Will the gas line have to be upgraded?
- Noise. Said noise increased about one year ago. Wondered why. Thought trees were cut down.
- Where is nearest similar unit?
- Issue of tax exemption

Sent 254 to those invited to open houses but did not attend

CITY OF TALLAHASSEE

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City Treasurer-Clerk
JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

3 October 1996

Mr. Leslie Fusaro
NationsBank
122 East Jefferson Street
Tallahassee, Florida 32301

Dear Mr. Fusaro:

We missed seeing you at our recent open houses on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. Enclosed is some information on the project that you might find helpful. Also enclosed is a summary of the comments we received from everyone who attended the open houses.

Your name will be maintained on the project mailing list so that we can continue to keep you informed of our progress through the permitting process. In the meantime, if you have any questions or comments on the project, or wish to have your name removed from the mailing list, please feel free to write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via E mail at purdom8@sc.ci.tlh.fl.us.

City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Thank you for your interest in the Purdom Unit 8 Project.

Sincerely,

Rob McGarrah
Project Manager

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Sent 20 to those who attended open houses
with no need for follow up

CITY OF TALLAHASSEE

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City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

October 17, 1996

Mr. Paco de la Fuente
1317 Dillard Street
Tallahassee, FL 32312

Dear Mr. de la Fuente:

Thank you for attending our recent open house on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. We appreciate your taking the time to come and find out about the project and tell us your concerns. We hope you found the information helpful. Enclosed is a summary of the comments and questions we received from everyone who attended the open houses.

We will continue to keep you informed of our progress through the permitting process. In the meantime, if you have any questions or comments on the project, please feel free to write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via e-mail at purdom8 @sc.ci.tlh.fl.us.

City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Thanks again for your interest in the Purdom Unit 8 Project.

Sincerely,

Rob McGarrah
Project Manager

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JAMES R. ENGLISH
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RICARDO FERNANDEZ
City Auditor

25 October 1996

Mr. Stan Derzypolski
Growth & Environmental Group of
Public Agenda
1830 Myrick Road
Tallahassee, FL 32303

Dear Mr. Derzypolski:

Thank you for attending our recent open house on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. We appreciate your taking the time to come and find out about the project and tell us your concerns. Enclosed is a summary of the comments and questions we received from everyone who attended the open houses.

According to our records you had a question about how the Purdom Unit 8 generating station would be funded. Here's what we were able to find out:

> The final decision of how to finance the Purdom Unit 8 project will be made in the Spring of 1998 based on recommendations from the City's financial management specialist and the City Treasurer-Clerk. Currently plans are to utilize Municipal Electric Revenue bonds for the financing of the project.
>
> The financing costs associated with Unit 8 will be allocated across the City's electric customers based on Florida Public Service Commission approved rate tariffs. These rate tariffs allocate the electric system costs to the differing customer classes based on the cost of servicing these differing customer classes. Therefore, to some extent, there is a spreading of the financing costs based on use.

You also had a question about demand side management programs. Here's what we were able to find out about that:

> The City continues to be committed to conservation and demand side management programs. The integrated resource planning (IRP) process utilized during the recent planning process included analysis of conservation and demand side management alternatives. The City's DSM portfolio is broad-based and the mix of residential and commercial measures has been promoted since 1984. The City's recent program is projected to meet or exceed the goals approved by the PSC in February of this year. The City's new construction efforts work in concert with state building codes to ensure that buildings are as energy cost efficient as practical. While these efforts, on a unit-cost basis, may sometimes be less expensive than new generation, there is not enough conservation potential to offset the need for this new unit. From an overall environmental perspective, the addition of this new unit has a positive pollution reduction benefit due to its lower emissions, on a per MW basis, and the ability for the City to retire early two older, less efficient generating units.

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Thanks again for your interest in the Purdom Unit 8 Project. If you have further questions, please write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via E mail at purdom8@sc.ci.tlh.fl.us.

City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Sincerely,

Rob McGarrah
Project Manager

CITY OF TALLAHASSEE

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City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

25 October 1996

Mr. Mickey Canter
HuManatee
Post Office Box 338
St. Marks, FL 32355

Dear Mr. Canter:

Thank you for attending our recent open house on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. We appreciate your taking the time to come and find out about the project and tell us your concerns. Enclosed is a summary of the comments and questions we received from everyone who attended the open houses.

According to our records you had a series of questions that were similar to others who attended the open houses. Attached is a consolidated list of questions and concerns with our comments. I trust that you find this information helpful.

Thanks again for your interest in the Purdom Unit 8 Project. If you have further questions, please write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via E mail at purdom8@sc.ci.tlh.fl.us.

City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Sincerely,

Rob McGarrah
Project Manager

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1. **Will the City be putting a rope across intake canal to keep boaters out?**

The City has been approached by Florida Department of Environmental Protection (DEP) personnel who are responsible for manatee protection. They have requested that the City consider placing a cable across the existing Units 6 & 7 discharge canal to keep boaters from entering the canal. The City is working with DEP to determine the process required to accomplish this activity.

2. **Will the new unit have heated discharge?**

No. Purdom Unit 8 will have a zero discharge water treatment facility to prevent any heated discharge from Unit 8. This zero discharge facility will also allow for the reuse of two existing waste streams from the Purdom facility as well as the existing City of St. Marks sewage effluent. The existing Purdom Units 5 & 6 will be retired in conjunction with the installation of Unit 8. This will result in the elimination of the heated discharges from these two units to the St. Marks River. However, since Purdom Unit 7 will remain in operation, although at a reduced level, some heated water discharge from this unit will remain.

3. **Will the residual from the zero discharge facility be landfilled?**

The current plans are to landfill the zero discharge filter cake at an approved landfill. This is the currently accepted disposal method for this material. There has been some interest raised as to possible commercial reuse of this material. The City is exploring this opportunity.

4. **What is the noise level from Unit 8? There has been an increase in noise from he Purdom Plant during the past year or so. Concerned about the noise from the hoggers. Is the noise from the existing plant at or below 55 dBa? Will the existing gas turbines be run more or less? Jet engines are noisy.**

The current U.S. Environmental Protection Agency noise guidelines provide for the annual average day/night noise levels to be at or below 55 dBa at the nearest residence. Unit 8 is being designed in a manner that the noise level from the Purdom site, during normal operations, will meet this level at the nearest residence. (This design is based on existing resident locations.) It is important to note that there will be some abnormal operating conditions (start-ups, emergency trips, etc.) that will result in short term noise levels at or above the 55 dBa.

A noise study was completed for the Purdom facility in 1994. Based on actual test data, the facility average annual day/night noise level was below 55 dBa at the nearest residence. There were some short term noise levels that were above 55 dBa during the operation of the existing gas turbines. However, these short term levels did not exceed the 65 dBa which are generally acceptable during the day. Since the existing gas turbines are utilized for peaking and emergency conditions, they operate on an infrequent basis and rarely during nighttime periods. The future use of these gas turbines is not expected to change materially.

There have been no operational changes in the Purdom facility that would have resulted in additional noise being generated. The hoggers are utilized only during start-up of the units. The facility has installed silencers on these hoggers within the past 5 years to reduce their noise level. In order to reduce the noise associated with the existing plant PA system, the facility has increased the use of radios and reduced the number of external speakers that are in operation.

5. **What are the plans for stormwater? What about spills to the river?**

The construction of Unit 8 will include stormwater retention/detention facilities to meet the local land development guidelines and water management district criteria.

The addition of Unit 8 will result in a reduction in the amount of heavy oil stored at the Purdom facility. This is due to one of the existing heavy fuel oil storage tanks being converted from oil storage to

water storage. Unit 8 will utilize diesel as its backup fuel. The existing diesel storage tank will be utilized for this backup fuel supply.

The City currently participates in the St. Marks Spill Co-op. This Co-op pools resources to protect the St. Marks River in the event of an oil spill. The City will continue to participate in this effort.

CITY OF TALLAHASSEE

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ROBERT B. INZER
City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

25 October 1996

Ms. Carlene Daggett
Post Office Box 202
St. Marks, FL 32355

Dear Ms. Daggett:

Thank you for attending our recent open house on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. We appreciate your taking the time to come and find out about the project and tell us your concerns. Enclosed is a summary of the comments and questions we received from everyone who attended the open houses.

According to our records you had a question about the noise from hoggers and if the existing plant is at or below 55 dBa. Here's what we were able to find out:

> The current U.S. Environmental Protection Agency noise guidelines provide for the annual average day/night noise levels to be at or below 55 dBa at the nearest residence. Unit 8 is being designed in a manner that the noise level from the Purdom site, during normal operations, will meet this level at the nearest residence. (This design is based on existing resident locations.) It is important to note that there will be some abnormal operating conditions (start-ups, emergency trips, etc.) that will result in short term noise levels at or above the 55dBa.
>
> A noise study was completed for the Purdom facility in 1994. Based on actual test data, the facility average annual day/night noise level was below 55 dBa at the nearest residence. There were some short term noise levels that were above 55 dBa during the operation of the existing gas turbines. However, these short term levels did not exceed the 65 dBa which are generally acceptable during the day. Since the existing gas turbines are utilized for peaking and emergency conditions, they operate on an infrequent basis and rarely during nighttime periods. The future use of these gas turbines is not expected to change materially.
>
> There have been no operational changes in the Purdom facility that would have resulted in additional noise being generated. The hoggers are utilized only during start-up of the units. The facility has installed silencers on these hoggers within the past 5 years to reduce their noise level. In order to reduce the noise associated with the existing plant PA system, the facility has increased the use of radios and reduced the number of external speakers that are in operation.

You had also inquired about storm water treatment and keeping spills out of the river. Here's what we were able to find out:

> The construction of Unit 8 will include stormwater retention/detention facilities to meet the local land development guidelines and water management district criteria.
>
> The addition of Unit 8 will result in a reduction in the amount of heavy oil stored at the Purdom facility. This is due to one of the existing heavy fuel oil storage tanks being converted from oil storage to water storage. Unit 8 will utilize diesel as its backup fuel. The existing diesel storage tank will be utilized for this backup fuel supply.

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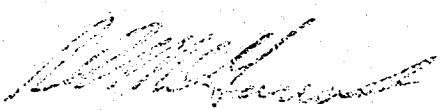
The City currently participates in the St. Marks Spill Co-op. This Co-op pools resources to protect the St. Marks River in the event of an oil spill. The City will continue to participate in this effort.

Thanks again for your interest in the Purdom Unit 8 Project. If you have further questions, please write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via E mail at purdom8@sc.ci.tlh.fl.us.

City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Sincerely,



Rob McGarrah
Project Manager

CITY OF TALLAHASSEE

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JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

25 October 1996

The Honorable Charles Daggett
City of St. Marks
Post Office Box 296
St. Marks, FL 32355

Dear Commissioner Daggett:

Thank you for attending our recent open house on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. We appreciate your taking the time to come and find out about the project and tell us your concerns. Enclosed is a summary of the comments and questions we received from everyone who attended the open houses.

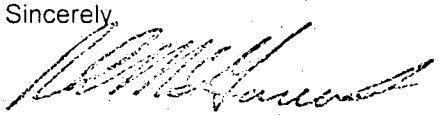
According to our records you had a question about water demand on the St. Marks water system. Here's what we were able to find out:

> Other than the drinking water for plant personnel, Unit 8 will require additional water from the St. Marks potable water system only during certain periods where Unit 8 is burning the diesel back-up fuel for extended periods of time. The maximum demand is approximately 80 GPM. During the development of the Unit 8 alternative, the Unit 8 project team provided this information to the engineering firm that is designing the City of St. Marks water system modifications.

Thanks again for your interest in the Purdom Unit 8 Project. If you have further questions, please write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via E mail at purdom8@sc.ci.tlh.fl.us.

City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Sincerely,



Rob McGarrah
Project Manager

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City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

25 October 1996

Mr. Mike Reffitt
46 Big White Oaklane
Crawfordville, FL 32327

Dear Mr. Reffitt:

Thank you for attending our recent open house on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. We appreciate your taking the time to come and find out about the project and tell us your concerns. Enclosed is a summary of the comments and questions we received from everyone who attended the open houses.

According to our records you had a question about the existing EMF levels compared to reconductored EMF levels. Here's what we were able to find out:

> EMF is a function of the amount of current a transmission lines carries as well as the physical layout and height of the lines and the distance from the lines. In the case of the City's transmission lines, there are two types of structures used, H-frame and single pole, and varying right-of-way configurations. As a result the information outlined below is generic to the "typical" arrangement of each type of structure and the "typical" right-of-way. If there is a specific location that is of interest, a specific review of that location can be accomplished by the City. For reference purposes, the Florida standard on EMF requires that the EMF at the edge of the right-of-way be at or below 150 milligauss.
>
> Currently two of the three transmission lines utilize 4/0 copper wire. These lines will be upgraded with 477ACSR wire to accommodate the increased capacity at the Purdom facility. The 477ACSR wire has an increased current rating as compared to the 4/0 copper wire. Preliminary modeling has been conducted to determine the EMF values for the existing 4/0 copper, at its maximum current rating, and the 477ACSR, at its maximum current rating. This modeling has been conducted for both types of structures utilized in the City. The results of this preliminary modeling are outlined below:
>
> - The EMF levels, both current and future, at the centerline of both types of structures are between 37% and 83% of the EMF limit at the edge of the right-of-way, which is the point at which the EMF standard applies.
> - For a typical 100 foot right-of-way, with the structures at the center of the right-of-way, the EMF levels, both current and future, are between 6% and 17% of the EMF limit at the edge of the right-of-way.
> - For a typical 100 foot right-of-way, with the structures at the center of the right-of-way, the worst case EMF level change from current to future is from 11% (current) to 17% (future) of the EMF limit at the edge of the right-of-way.

Thanks again for your interest in the Purdom Unit 8 Project. If you have further questions, please write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via E mail at purdom8@sc.ci.tlh.fl.us.

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City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Sincerely,

Rob McGarrah
Project Manager

CITY OF TALLAHASSEE

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City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

25 October 1996

Mr. George Tillman
Post Office Box 386
St. Marks, FL 32355

Dear Mr. Tillman:

Thank you for attending our recent open house on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. We appreciate your taking the time to come and find out about the project and tell us your concerns. Enclosed is a summary of the comments and questions we received from everyone who attended the open houses.

According to our records you had a question about the noise level from Unit 8. Here's what we were able to find out:

The current U.S. Environmental Protection Agency noise guidelines provide for the annual average day/night noise levels to be at or below 55 dBa at the nearest residence. Unit 8 is being designed in a manner that the noise level from the Purdom site, during normal operations, will meet this level at the nearest residence. (This design is based on existing resident locations) It is important to note that there will be some abnormal operating conditions (start-ups, emergency trips, etc.) that will result in short term noise levels at or above the 55 dBa.

A noise study was completed for the Purdom facility in 1994. Based on actual test data, the facility average annual day/night noise level was below 55 dBa at the nearest residence. There were some short term noise levels that were above 55 dBa during the operation of the existing gas turbines. However, these short term levels did not exceed the 65 dBa which are generally acceptable during the day. Since the existing gas turbines are utilized for peaking and emergency conditions, they operate on an infrequent basis and rarely during nighttime periods. The future use of these gas turbines is not expected to change materially.

There have been no operational changes in the Purdom facility that would have resulted in additional noise being generated. The hoggers are utilized only during start-up of the units. The facility has installed silencers on these hoggers within the past 5 years to reduce their noise level. In order to reduce the noise associated with the existing plant PA system, the facility has increased the use of radios and reduced the number of external speakers that are in operation.

Thanks again for your interest in the Purdom Unit 8 Project. If you have further questions, please write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via E mail at purdom8@sc.ci.tlh.fl.us.

City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Sincerely,

Rob McGarrah
Project Manager

Printed on Recycled Paper with Soy Ink

CITY OF TALLAHASSEE

CITY HALL
300 S. ADAMS ST.
TALLAHASSEE, FL
32301-1731
904/891-8100
TDD 1-800/955-8771

RON WEAVER
Mayor
SCOTT MADDOX
Mayor Pro Tem
JOHN PAUL BAILEY
Commissioner
DEBBIE LIGHTSEY
Commissioner
STEVE MEISBURG
Commissioner
STEVEN C. BURKETT
City Manager
ROBERT B. INZER
City Treasurer-Clerk
JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

25 October 1996

Mr. John Cooksey
Post Office Box 5
Lloyd, FL 32337

Dear Mr. Cooksey:

Thank you for attending our recent open house on the proposed new natural gas-fired electric generating unit at the Purdom Generating Station in St. Marks. We appreciate your taking the time to come and find out about the project and tell us your concerns. Enclosed is a summary of the comments and questions we received from everyone who attended the open houses.

According to our records you had a question about where the nearest similar unit is located. Here's what we were able to find out:

> Within Florida, there are two locations where there are similar General Electric units. These are: Florida Power & Light's Martin plant located in Martin County near Indiantown and Florida Power Corporation's Polk County Power Plant located near Fort Meade, Florida.

Thanks again for your interest in the Purdom Unit 8 Project. If you have further questions, please write to me at the following address or call the project voice mail at (904) 891-5585. You may also contact us via E mail at purdom8@sc.ci.tlh.fl.us.

City of Tallahassee Electric Department
2602 Jackson Bluff Road
Tallahassee, FL 32304

Sincerely,

Rob McGarrah
Project Manager

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10.7.3.3 Telephone and E-mail Inquiries

CITY OF TALLAHASSEE

PURDOM UNIT 8 ANSWER LINE

CITY OF TALLAHASSEE

FROM: Rob McGarrah, Purdom 8 Project Manager

TO: Cal Cameron
3115 O'brien Drive
Tallahassee, FL 32308

We appreciate your interest in the Purdom Unit 8 project. I hope that the answer provided below answers your question fully. If it does not, please call our answer line again at 891-5585.

QUESTION: Has the City reviewed the possibility of utilizing purchase power in lieu of expanding the City's facilities in an arrangement similar to what Portland Oregon recently entered into with LG&E.

ANSWER: The City continually looks at the economics of purchased power versus utilization and/or expansion of existing facilities. In the case of the proposed Purdom Unit 8 expansion, the City issued a request for proposals (RFP) in August of 1995 requesting proposals to meet our customers needs in the year 2000 and beyond. This RFP was structured such that external firms could provide proposals for purchased power, new generating facilities or a combination. An evaluation was conducted comparing these external proposals against the self-build alternatives. This evaluation found that the proposed expansion of the Purdom facility was the least cost method of meeting our customers needs. The Purdom Unit 8 expansion was evaluated to be 16%, or approximately $80 million (on a net present value basis for the 20 year planning period) less expensive than the next closest external proposal. An additional market test will be performed by the City just prior to the City Commission issuing the final notice to proceed for the procurement and construction activities for Purdom Unit 8 to begin.

I have also enclosed a copy of the project brochure as well as the background information from the permitting plan of study. These documents go into more detail about the project itself and the efficiencies the City's customers will benefit from.

CITY OF TALLAHASSEE

PURDOM UNIT 8 ANSWER LINE

CITY OF TALLAHASSEE

FROM: Rob McGarrah, Purdom 8 Project Manager

TO: W. L. Brubaker
3713 Foxford Circle
Tallahassee, FL 32308

We appreciate your interest in the Purdom Unit 8 project. I hope that the answer provided below answers your question fully. If it does not, please call our answer line again at 891-5585.

QUESTION: Please send me copies of your informational brochure on the planned expansion.

ANSWER: Enclosed you will find the Purdom Unit 8 project brochure. I have also enclosed a copy of the background information section of the permitting plan of study.

CITY OF TALLAHASSEE

PURDOM UNIT 8 ANSWER LINE

CITY OF TALLAHASSEE

FROM: Rob McGarrah, Purdom 8 Project Manager

TO: Jerry Harrington
128 Teal Lane
Tallahassee, FL 32308

We appreciate your interest in the Purdom Unit 8 project. I hope that the answer provided below answers your question fully. If it does not, please call our answer line again at 891-5585.

QUESTION: At least a percentage of solar power should be phased in over a period of time. If done incrementally consistent with budget constraints, power would be available at more reasonable prices and better for ecology in the long run.

ANSWER: Solar power is an end user technology and is dependent upon the owner of the occupant to install. It is for this reason that the City continues to support solar and other alternative energy technologies primarily as a part of the energy efficiency and conservation programs we have promoted over the past 10 years. One of these programs include the City's 5% loan program the City has offered since 1983 for customers who desire to make solar upgrades. In addition, the City is currently participating in a solar demonstration project where a number of homes and business have had solar upgrades installed and the performance and cost is being monitored.

PURDOM 8 CONTACT FORM

DATE: 9-9-96	TIME: am	LOCATION: Telephone
COT PERSONNEL Rob McGarrah		**OTHERS:** Ray Boyette

DISCUSSION: My Boyette had previously called into the voice mail line concerning whether the transmission line easement would be expanded. We responded with the information that it would not require expansion. He called again recently because he had received conflicting information that the easement was being surveyed for expansion.

I explained again that we were not planning on expanding the easement and reviewed the work to be completed. He was happy with this information.

During the course of the conversation, he indicated that he was going to build on his property adjacent to the easement in Wakulla County and planned on using a portion of the easement for his crushed stone driveway. He asked if there was a problem with this. I told him that I would pass this on to the appropriate person within our Utility.

TO DO ITEMS:
Determine whether the use of the easement would be a problem.

PURDOM 8 CONTACT FORM

DATE: 9/16/96	TIME: 5:00 PM	LOCATION: Telephone
COT PERSONNEL Rob McGarrah		OTHERS: Martha Bell 5088 Tallow Point Road Tallahassee, FL 668-0452

DISCUSSION:

Ms. Bell had called the PP8 voice mail line and asked that someone call her to answer her questions.

Her first question was what were we doing? I explained the City's need and the IRP and RFP processes. I also explained how we had a self build team and an evaluation team and the separation we had set up. I explained how the PP8 project had been selected as the least cost best project and what it entailed. I also explained the PP8 team makeup and how the experience that was on the team.

Ms. Bell then asked who in the City had the knowledge and ability to make the decision on this. I explained the make up of the evaluation committee, the oversight committee, and the involvement of Stone & Webster as well as R. W. Beck.

She seemed to be comfortable with the process and the folks involved. She did ask where Stone & Webster and Beck were headquartered. I told her that I would have to get back to her on that.

Ms. Bell then went into a long discussion of problems she has encountered with her electric service (constant failure of major appliances like hot water heaters (4 have failed) and microwaves (3 have failed)), stormwater runoff, sewer service and water service. She indicated that she has talked to many people within the City, including Dan Kleman and Jim English, and those she talked to did not give her the right answer. She also indicated that she had a large electric bill this year while she was on vacation even through her power had been turned off. (She indicated that we had reduced her bill after she had called and complained) She expressed some concerns about someone stealing electricity from her.

I ended the call by telling her that I would pass on her concerns and someone would get back to her.

TO DO ITEMS:

Pass on Ms. Bell's concerns to energy services.

SUBSEQUENT TO THIS DICUSSION, WE HAVE BEEN ADVISED THAT ALL CONTACT WITH MS. BELL SHOULD BE REFRRED TO THE CITY ATTORNEY'S OFFICE FOR HANDLING.

PURDOM 8 CONTACT FORM

DATE: 10/2/96	TIME: 1330	LOCATION: Telcon
COT PERSONNEL Ben A. Cowart		OTHERS: Gail Kamaras, LEAF

DISCUSSION:

Received telephone from Gail Kamaras of Leaf. She wanted to come over and look through our files on Purdom Unit 8. She stated that this was a follow-up call to a request that she made earlier to Rob McGarrah. I told her to let me check with Rob and the Treasure Clerk's office to see if anything had been done on her request. I called her back to say that she needed to make a formal request to the T/C's office and to be specific in her request. I explained that the records are not kept in a central location. She stated that she was interested in looking at the gas pricing and the RFP on gas. I explained that the alternative submittal had the gas pricing and the gas RFP was performed by the fuels department. She stated that she was not interested in having a lot of copying done, she just wanted to look.

I told her that these records were easy to send to City Hall to keep her from coming out to Jackson Bluff. She stated that she would file the request and did not mind coming out.

She stated that she went to the Library to find the copy of the submittal, but the person at the reference desk had no knowledge of the book. I told her I would follow-up and see what happened to the book.

TO DO ITEMS:

Ben will contact Roger McDonald to pull together the gas RFP and results. I will forward my copy of the submittal to T/C office for the request.

Ben will follow-up on the Library copy.

PURDOM 8 CONTACT FORM

DATE: 10-15-96	TIME: 8:30 am	LOCATION: Phone
COT PERSONNEL Rob McGarrah		**OTHERS:** Kim Barfield -- 488-9169
DISCUSSION: Asked if there was a new power plant being built in Tallahassee. I explained the PP8 project. She then asked when employment applications would be taken and I told her that we would be using the standard City process for any employment opportunities associated with this project.		
TO DO ITEMS:		

PURDOM 8 CONTACT FORM

DATE: 11/5/96	TIME: 6:10 pm	LOCATION: Telephone
COT PERSONNEL Rob McGarrah		**OTHERS:** Cynthia Hollis 222-5869

Ms. Hollis called the PP8 voice mail line on 11/4/96 and asked for a call from us to discuss the project. I returned her call this evening. This is a recap of the conversation.

- **What type of generation is currently begin produced at the St. Marks facility?**
  I reviewed the existing natural gas fired steam and combustion turbine units as well as the combined-cycle design of the new unit. The focus was on the natural gas and enhanced efficiency.
- **What is the water usage and impacts from the plant?**
  I reviewed the once through and ground water usage for the existing facility. I also reviewed the PP8 enhancements including cooling towers, zero discharge facility, retirement of Units 5 & 6 and the reuse of existing discharges. She was pleased with this information
- **Has an environmental impact study been done concerning the hot water discharge impacts from the current facility on the river, especially during the cold months?**
  I reviewed that the existing facility permits are periodically renewed. During this renewal process, a review is made as to the facilities impacts and our compliance with all applicable requirements.
- **Can cooling towers be added to existing units to eliminate the heated discharge?**
  I explained that while technically feasible, the City's reliance on the existing units following PP8's commercial operation would decrease. This would result in additional reductions in water discharge.

Ms. Hollis thanked me for the information and ended the call.

TO DO ITEMS:

none

PURDOM 8 CONTACT FORM

DATE: 11/6/96	TIME: 1330	LOCATION: Telcon
COT PERSONNEL Ben A. Cowart		OTHERS: Hugh Williams Marpan Supply

DISCUSSION:

Mr. Williams is a former City of Tallahassee Commissioner, who served during the construction of Units 5,6 & 7. He has lived in St. Marks for the past 19 years and still owns Marpan Supply, a mill supply, in Tallahassee. He is very much in favor of the project and is offering any support that the City may required. This support is for both the Wakulla County/ St. Marks area and with the City of Tallahassee area.

He attended the open house in St. Marks and was impressed with the presentation.

Mr. Williams is a very pleasant talking gentleman and it was enjoyable to talk with him.

TO DO ITEMS:

Wants to have lunch with me, Rob and Kevin (or any combination) at Nick's Rest. (a local establishment with assigned seating for the regulars) any day between 12 and 2. This is his usual dinning spot.

PURDOM 8 CONTACT FORM

DATE: 11/25/96	TIME: 6:30 pm	LOCATION: Telephone
COT PERSONNEL Rob McGarrah		**OTHERS:** W. L. Brubaker

{Mr. Brubaker had previously called the answer line and requested information on the project. This information was mailed to him today.}

Mr. Brubaker called this afternoon and I returned his call. He started by saying that he had been watching CNBC today where there were discussions about the utility buy-outs that were going to go on in the country. He stated that he did not believe that we should be trying to get into the utility business when there were so many changes on the horizon. I explained that we were not "getting into" the utility business but that we had been in the electric utility business since 1902. I explained that we were the 4th largest municipal in Florida and the 2nd largest municipal system in the US.

He stated that we should just buy the electricity we needed from one of the large producers who would dominate the market. He say no reason for us to make the investment we were going to make when we could get the electricity without the investment. I reviewed the RFP process with Mr. Brubaker and explained that we had solicited offers for supplying the capacity we needed. I explained that he was correct that we could buy the capacity without making the investment, but that our customers would have to pay an additional 16% over the cost of the self-build alternative.

He asked how we stood with FP&L and other utilities on a wholesale basis. I told him that I did not have the numbers in front of me, but that we competed daily in the wholesale market and generally generated several million in revenues for our customers from this market. We also talked about fuel being the single biggest expense for a utility and that the efficiency of Unit 8 was 40% better thus allowing for a significant fuel cost reduction. I also explained that Unit 8 was the most efficient unit commercially available today.

Mr. Brubaker asked who made the decision on the plant. I explained that the City Commission made the ultimate decision. He was concerned that the City Commission did not have the knowledge to make such a decision. I reviewed the evaluation process, the involvement of Stone & Webster, and the Oversight Committee. I also explained the process review conducted by R. W. Beck and the Auditor. Mr. Brubaker did not feel the Auditor added to the process since he did not have detail knowledge of power generation. I also explained that we would have to go before the Public Service Commission as well as the financial community prior to the project receiving final approval. Mr. Brubaker indicated that the financial community would be easy since the project would be backed with taxes. I explained that the project would be financed with electric system revenue bonds and that these were not guaranteed with City taxes.

Mr. Brubaker asked how we could compete with the folks who were in the business of

generating electricity. I explained the project team make-up and the teaming concept with Raytheon. I pointed out that Raytheon is the #2 EPC firm in the world and they brought their market presence to our project. I also explained the financial advantages we as a municipality brought to he table. (taxes, financing, profit, etc.)

He raised the issue of retail wheeling and the potential loss of customers. I explained that the evaluation team tested for this in the evaluation. I pointed out that if we were to lose some of our major customers, that we would be able to retire older less efficient units and reduce our costs. He suggested that we go ahead and let these customers go now to reduce our costs. I pointed out that we would also lose the revenue, and the general fund transfer opportunities, if we were to lose these customers and that this would result in reduced service levels within the City.

As we ended the call, I asked Mr. Brubaker to review the materials I had sent him and asked him to call us back if he had additional questions. I told him that while we realized that we would not convince all of our customers that we were doing the right thing, we did want to take every opportunity to answer our customers questions.

TO DO ITEMS:

NONE

PURDOM 8 CONTACT FORM

DATE: 12/05/96	TIME: 1300	LOCATION: Telcon
COT PERSONNEL Ben Cowart		**OTHERS:** David Zimmer 3886 Paddrick Road Tallahassee, Fl 32308 893-1809

DISCUSSION:

Mr. Zimmer originally called into the System Planning Group with questions about the PP8 project. Joe Ging took the call, then forwarded him to me. Mr. Zimmer stated that he follows futures and the market and found that electrical energy began trading on Monday, 12/1 at $11.25/MW or approx. 1 1/12/kW. He wanted to know how could we possibly compete against those prices and why did we not look to purchase the power instead of building. I explained that when we conducted our energy and capacity RFP, it was designed to test the market for the best available prices. I explained about our partnership with Raytheon and their market presence. I then explained that a company could be offering energy at the prices quoted on the market but once you added wheeling charges, the price could double. I then had to explain about wheeling charges and how systems are monitored for energy flow, system demand and sales.

He then asked me to explain in further detail the sales aspect. I told him that the City, like other utilities has a system broker that can on an hourly basis make sales and purchases for energy. I told him that it could be very possible that the City is buying this $11.25/MW energy, but again when the transportation charges are added, the cost is not that low. Once he understood that we act like the market he was happy and his concerns went away. He stated that no further follow-up would be required.

We then got into a discussion about our electric rates and the "taxes" that are added on top of our energy and capacity charges. It might be good if someone followed up with him that can better explain our rate system. (He did say that the follow-up was not necessary).

He ended the conversation by stating that he originally planned to write a "Butt Blistering" letter to the editor about the City and the project, but decided to try to talk to someone for some answers first. He stated that he would not be writing the letter.

TO DO ITEMS:

Consider writing him a letter thanking him for getting the facts first before he wrote his letter.

Follow-up with him on the rate structure and make-up.