Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

Golder Associates

May 31, 2000

9937518B/R1/03

Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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BUREAU OF AIR REGULATION

Attention: Mr. A. A. Linero, P.E.
Administrator, New Source Review Section

Subject: File No. 0050009-005-AC (PSD-FL-288)
Stone Container Corp. Panama City Mill
Pulp Production Increase

Dear Mr. Linero:

Please find enclosed four (4) copies of the ambient impact analysis report for Stone Container Corporation's Panama City mill. This report is being submitted in support of the request for a pulp production increase for the mill. Please forward a copy of the report to EPA Region 4 as soon as possible, in order to begin their review of the ISC-PRIME model.

Responses to the Department's completeness letter dated May 9, 2000, are being developed and will be forthcoming in the near future. Please call if you have any questions concerning this information.

Sincerely,

GOLDER ASSOCIATES INC.

David A. Buff

David A. Buff, P.E.
Principal Engineer
Florida P.E. # 19011
SEAL

cc: Ed Middleswart, FDEP Pensacola (w/o report)
David Riley
Charlie Ackel
Tom Clements
Steve Hamilton

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REVISED

AMBIENT IMPACT ANALYSIS
FOR
STONE CONTAINER CORPORATION

PANAMA CITY MILL

Prepared For:

STONE CONTAINER CORPORATION
PANAMA CITY, FLORIDA

Prepared By:

Golder Associates Inc.
6241 NW 23rd Street, Suite 500
Gainesville, Florida 32653-1500

May 2000
9937518B/R1

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1.0 INTRODUCTION

Stone Container Corporation (SCC) operates a Kraft pulp mill located in Panama City, Bay County, Florida. SCC proposes to revise the pulp production capacity of the mill for PSD purposes, as described in the air construction permit application for the pulp production increase.

At SCC's request, Golder Associates Inc. (Golder) has conducted an atmospheric dispersion modeling analysis of the Panama City mill in support of the air construction permit application for the revised pulp production capacity. As a prerequisite to issuance of an air construction permit, SCC Panama City must demonstrate that the mill is in compliance with all ambient air quality standards (AAQS) and prevention of significant deterioration (PSD) Class II and Class I allowable increments.

This report presents an assessment of potential air quality impacts associated with the SCC Panama City mill. This report contains the technical information and analysis developed in accordance with PSD regulations as promulgated by the U.S. Environmental Protection Agency (EPA) and implemented through delegation to the Florida Department of Environmental Protection (FDEP). The air quality impacts of the following pollutants, for which AAQS and PSD increments have been promulgated, are addressed:

- Particulate matter with aerodynamic diameter of 10 microns or less (PM_{10}),
- Nitrogen dioxide (NO_x),
- Sulfur dioxide (SO_2), and
- Carbon monoxide (CO) (AAQS only).

The existing applicable national and Florida AAQS are presented in Table 1-1. Primary national AAQS were promulgated to protect the public health, and secondary national AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air.

Florida has adopted state AAQS in Rule 62-2-4.240. These standards are the same as the national AAQS, except in the case of SO_2. For SO_2, Florida has adopted the former national 24-hour and annual average secondary standards of 260 $\mu g/m^3$ and 60 $\mu g/m^3$, respectively.

EPA has promulgated allowable PSD air quality increments, which limit increases in air quality levels above an air quality baseline concentration level for SO_2, PM_{10}, and NO_2. Increases above these increments would constitute significant deterioration. The EPA class designations and allowable PSD increments are presented in Table 1-1. The magnitude of the allowable increment depends on the classification of the area in the source is located or will have an impact. Three classifications are designated based on criteria established in the Clean Air Act Amendments. Congress promulgated 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 be allowed greater deterioration than Class II areas, were designated. The State of Florida has adopted the EPA class designations and allowable PSD increments for SO_2, PM_{10}, and NO_2 increments.

Bay County has been designated as an attainment or unclassifiable area for all criteria pollutants. The county is also classified as a PSD Class II area for PM_{10}, SO_2, and NO_2.. The nearest PSD Class I areas are the St. Marks National Wilderness Area and the Bradwell Bay Wilderness Area, located about 95 km east of the SCC Panama City mill.

The air quality impact analysis demonstrates that emissions from the SCC Panama City mill will not result in ambient concentrations above the AAQS or the PSD Class II or Class I increments.

This report is divided into five major sections, including this introduction:

- Section 2.0 presents a description of the SCC Panama City facility, along with source emission rates and stack parameters;
- Section 3.0 presents existing air quality data for purposes of determining suitable background air quality concentrations for each pollutant;

- Section 4.0 presents the air modeling methodology, emissions inventories and data used in the modeling analysis;
- Section 5.0 presents the air dispersion modeling results.

The preliminary modeling analysis predicted exceedances of the SO_2 and PM_{10} AAQS, based on maximum emission rates from modeled sources. Based on this analysis, SCC proposes the following SO_2 emission limits for the combination boilers to comply with the SO_2 AAQS.

24-hr SO_2 AAQS

1. SO_2 emission limit for the No. 3 Combination Boiler of 485 lb/hr (24-hour average),
2. SO_2 emission limit for the No. 4 Combination Boiler of 575 lb/hr (24-hour average), and
3. Combined SO_2 emission limit for the No. 3 and No. 4 Combination Boilers of 525 lb/hr (24-hour avg.) when both boilers are burning fuel oil and/or coal.

3-hr SO_2 AAQS

1. SO_2 emission limit for the No. 3 Combination Boiler of 875 lb/hr (3-hour average),
2. SO_2 emission limit for the No. 4 Combination Boiler of 875 lb/hr (3-hour average),
3. Combined SO_2 emission limit for the No. 3 and No. 4 Combination Boilers of 1,750 lb/hr (3-hour avg.) when both boilers are burning fuel oil and/or coal.

These SO_2 emission rates represent a significant reduction from the current allowable emissions for these sources. Currently, the combination boilers SO_2 emissions are limited by fuel usage rates and fuel oil and coal sulfur content. SCC proposes to install a continuous SO_2 monitor for the combination boilers to monitor compliance with these SO_2 limits. A single SO_2 monitor is proposed to alternatively monitor the two combination boilers. SCC will continue to employ caustic addition to the wet scrubbing system on the No. 4 Combination Boiler to achieve the individual and combined SO_2 emission rates. Caustic addition to the wet scrubbing system on No. 3 Combination Boiler will be implemented and used as needed.

SCC proposes the following lower emission limits to meet the PM_{10} AAQS:

- Lime Slaker - 4 lb/hr

Table 1-1. National and State AAQS, Allowable PSD Increments, and Significant Impact Levels ($\mu g/m^3$)

Pollutant	Averaging Time	AAQS			PSD Increments		Significant Impact Levels[d]
		National Primary Standard	National Secondary Standard	State of Florida	Class I	Class II	
Particulate Matter[a] (PM_{10})	Annual Arithmetic Mean	50	50	50	4	17	1
	24-Hour Maximum	150[b]	150[b]	150[b]	8	30	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	1
	24-Hour Maximum	365[b]	NA	260[b]	5	91	5
	3-Hour Maximum	NA	1,300[b]	1,300[b]	25	512	25
Carbon Monoxide	8-Hour Maximum	10,000[b]	10,000[b]	10,000[b]	NA	NA	500
	1-Hour Maximum	40,000[b]	40,000[b]	40,000[b]	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	1
Ozone[a]	1-Hour Maximum	235[c]	235[c]	235[c]	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5	NA	NA	NA

Note: Particulate matter (PM_{10}) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.
NA = Not applicable, i.e., no standard exists.

[a] On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, $PM_{2.5}$ standards were introduced with a 24-hour standard of 65 $\mu g/m^3$ (3-year average of 98th percentile) and an annual standard of 15 $\mu g/m^3$ (3-year average at community monitors). Implementation of these standards are many years away. The ozone standard was modified to be 0.08 ppm for 8-hour average; achieved when 3-year average of 99th percentile is 0.08 ppm or less. FDEP has not yet adopted these standards.

[b] Short-term maximum concentrations are not to be exceeded more than once per year.

[c] Achieved when the expected number of days per year with concentrations above the standard is fewer than 1.

[d] Maximum concentrations.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978. 40 CFR 50. 40 CFR 52.21. Rule 62-204, F.A.C.

2.0 PROJECT DESCRIPTION

2.1 SITE DESCRIPTION

The SCC Panama City mill is located in Panama City , Bay County , Florida. A site map of the area, showing the plant property boundaries, is provided in Figure 2-1. The mill consists of a Kraft pulp and paper mill which has two recovery boilers, two smelt dissolving tanks, a lime kiln, a lime slaker, a bleach plant, and two combination bark/fossil-fuel boilers, which constitute the permitted point sources for the facility. No new additional point sources will be required at the facility to destroy non-condensable gases containing total reduced sulfur (TRS) as part of the Cluster Rule Compliance project. The No. 3 combination boiler will be used to incinerate off-gases from the proposed condensate stripper being installed for cluster rule compliance.

2.2 SCC PANAMA CITY EMISSIONS

The maximum short-term (hourly) emissions for all permitted point sources of PM_{10}, SO_2, NO_x, and CO located at the SCC Panama City mill are presented in Table 2-1. The maximum emissions were used for modeling all averaging times (i.e., 1-hour, 3-hour, 3-hour, 24-hour and annual). The maximum emissions are based on the permitted emission rates or maximum calculated emission rates derived from permitted operational rates, except for SO_2 emissions from the combination boilers, and PM_{10} emission from the lime slaker. SCC proposes to limit SO_2 emissions from the Nos. 3 and 4 Combination Boilers to the following to meet the SO_2 AAQS:

	3-hour average (lb/hr)	24-hour average (lb/hr)
No. 3 Combination Boiler	875	485
No. 4 Combination Boiler	875	575
Combined Operation	1,750	525

The recovery boilers emissions are based on the burning of black liquor solids (BLS), since BLS is the primary fuel of the recovery boilers.

SCC also proposes to reduce maximum permitted PM emissions from the line slaker to 4 lb/hr. This reduction in permitted emissions is proposed to meet the PM_{10} 24-hr AAQS, based on the modeling analysis.

The proposed cluster rule changes, i.e., additional TRS burning in the No. 4 Combination Boiler, stripper off-gas burning in the No. 3 Combination Boilers, and modified bleach plant, are included in Table 2-1. The additional TRS burning from the proposed condensate stripper will generate additional SO_2 and NO_x emissions. SO_2 emissions will be controlled by caustic addition and the proposed continuous SO_2 monitor. CO emissions will result from the modified bleach plant. Supportive tables are presented in Appendix A.

Baseline emissions for the SCC Panama City mill, for purposes of calculating PSD increment consumption, are presented in Table 2-2. For SO_2 and PM_{10}, the major source baseline date is January 6, 1975; for NO_x, the date is March 8, 1988. The 1974 PSD baseline emissions were obtained from 1974 plant operating data, construction and operating permits in existence at the time, permit application information, and previous stack testing performed at the Panama City mill. The 1988 baseline emissions for NO_x were obtained from the 1988 Annual Operating Report submitted by SCC to FDEP. Supportive tables are presented in Appendix B.

2.3 SITE LAYOUT AND STRUCTURES

A plot plan of the SCC Panama City facility , showing stack locations, is presented in Figure 2-2. The dimensions of the major buildings and structures at the facility are presented in Section 4.0. The SCC site and modeling receptors used in the modeling analysis are shown in Figure 2-3. A photograph of the most significant structure at the facility, the recovery boiler building, is presented in Figure 2-4. The combination boiler stacks are also shown.

2.4 STACK PARAMETERS

Stack parameters for both the future case and the PSD baseline years are presented in Table 2-3. For both cases, stack data are based on available construction/operation permit information and stack testing. Supportive information for baseline stack parameters is provided in Appendix B.

Table 2-1. Maximum Future Emissions Used in the Modeling Analysis for Stone Container - Panama City

Emission Unit	Unit ID	PM_{10} lb/hr	PM_{10} g/s	SO_2 lb/hr	SO_2 g/s	NO_x lb/hr	NO_x g/s	CO lb/hr	CO g/s
No. 1 Recovery Boiler	RB1	87.3	11.00	129.8	16.35	72.1	9.08	2,474.0	311.72
No. 2 Recovery Boiler	RB2	87.3	11.00	129.8	16.35	72.1	9.05	2,474.0	311.72
No. 1 Smelt Dissolving Tank	SDT1	26.6	3.35	1.0	0.13	2.0	0.26	--	--
No. 2 Smelt Dissolving Tank	SDT2	25.5	3.21	1.0	0.13	2.0	0.26	--	--
Lime Kiln	LK1	29.3	3.69	4.7	0.59	44.7	5.63	4.5	0.57
No. 3 Combination Boiler	BB3	47.8	12.32	240.0[b]	30.24	157.1	19.79	176.4	22.23
No. 4 Combination Boiler	BB4	81.5	10.27	285.0[b]	35.91	189.1	23.83	177.8	22.40
Modified Bleach Plant	BLEACH	--	--	--	--	--	--	46.2	5.82
Lime Slaker	LSKR	4.0[a]	0.50	--	--	--	--	--	--
Woodyard	WOODYARD	3.7	0.47	--	--	--	--	--	--
TOTALS		443.2	54.7	778.7	98.1	544.3	72.2	5,252.3	661.8

[a] Represents a reduction in emissions from current permitted or maximum emission rate.

[b] Proposed 24-hour average permit limits when both No. 3 and No. 4 Combination Boilers are burning fuel oil and/or coal (525 lb/hr total).

Maximum individual 3-hour average SO_2 limits are:	No. 3 Combination Boiler	875 lb/hr
	No. 4 Combination Boiler	875 lb/hr
Maximum individual 24-hour average SO_2 limits are:	No. 3 Combination Boiler	485 lb/hr
	No. 4 Combination Boiler	575 lb/hr

Table 2-2. Baseline Emissions Used in the Modeling Analysis for Stone Container - Panama City

Emission Unit	Unit ID	1974 Baseline				1988 Baseline	
		PM_{10}		SO_2		NO_x	
		Short-Term Emissions					
		lb/hr	g/s	lb/hr	g/s		
No. 1 Recovery Boiler	RB1	45.9	5.78	121.5	15.3	--	--
No. 2 Recovery Boiler	RB2	52.3	6.59	121.5	15.3	--	--
No. 1 Smelt Dissolving Tank	SDT1	4.0	0.50	7.5	0.9	--	--
No. 2 Smelt Dissolving Tank	SDT2	19.7	2.48	7.5	0.9	--	--
Lime Kiln	LK1	24.1	3.04	3.2	0.4	--	--
No. 4 Power Boiler	PB4[a]	11.9	1.50	205.5	25.9	--	--
No. 5 Power Boiler	PB5[a]	12.2	1.54	212.0	26.7	--	--
No. 6 Power Boiler	PB6	30.2	3.81	524.0	66.0		
No. 3 Combination Boiler	BB3	140.1	17.65	342.9	43.2		
No. 4 Combination Boiler	BB4	140.1	17.65	546.0	68.8	--	--
Lime Slaker	LSKR	5.0	0.63	--	--		
TOTALS		480.5	60.54	2,091.6	263.5	--	--
		Long-Term Emissions					
		TPY	g/s	TPY	g/s	TPY	g/s
No. 1 Recovery Boiler	RB1	192.7	5.54	452.8	13.0	276.9	7.97
No. 2 Recovery Boiler	RB2	219.7	6.32	452.8	13.0	287.4	8.27
No. 1 Smelt Dissolving Tank	SDT1	16.6	0.48	26.4	0.8	7.0	0.20
No. 2 Smelt Dissolving Tank	SDT2	82.9	2.38	26.4	0.8	7.8	0.22
Lime Kiln	LK1	101.2	2.91	12.0	0.3	137.0	3.94
No. 4 Power Boiler	PB4[a]	44.6	1.28	773.9	22.3	--	--
No. 5 Power Boiler	PB5[a]	44.6	1.28	773.9	22.3	97.5	2.80
No. 6 Power Boiler	PB6	111.6	3.21	1,934.7	55.7	--	--
No. 3 Combination Boiler	BB3	697.4	20.06	1,335.9	38.4	228.3	6.57
No. 4 Combination Boiler	BB4	747.7	21.51	2,114.8	60.8	484.3	13.93
Lime Slaker	LSKR	21.0	0.60	--	--	--	--
TOTALS		2,259.0	64.98	7,903.6	227.4	1,526.2	43.9

[a] Common stack in baseline.

Table 2-3. Stack Parameters and Locations Used in the Modeling Analysis for Stone Container- Panama City

		Relative Location				Stack Parameters				Operating Parameters			
		X		Y		Height		Diameter		Temperature		Velocity	
Emission Unit	Unit ID	(ft)	(m)	(ft)	(m)	(ft)	(m)	(ft)	(m)	(°F)	(°K)	(ft/s)	(m/s)
						Future Conditions							
No. 1 Recovery Boiler[a]	RB1	16	5	-29	-9	233	71.0	6.46	1.97	286	414	93.8	28.60
No. 2 Recovery Boiler[a]	RB2	59	18	21	6	233	71.0	6.46	1.97	310	428	93.5	28.50
No. 1 Smelt Dissolving Tank	SDT1	3	1	-18	-5	233	71.0	6.00	1.83	166	348	17.2	5.24
No. 2 Smelt Dissolving Tank	SDT2	45	14	33	10	233	71.0	6.00	1.83	166	348	15.0	4.56
Lime Kiln	LK1	537	164	-118	-36	61	18.6	8.00	2.44	167	348	38.8	11.84
Slaker	LSKR	136	40	-484	-148	56	17.1	2.90	0.88	200	366	42.9	13.09
No. 3 Combination Boiler	BB3	-77	-23	27	8	213	64.9	7.80	2.38	149	338	77.1	23.50
No. 4 Combination Boiler	BB4	-108	-33	-9	-3	213	64.9	7.80	2.38	143	335	89.6	27.32
Bleach Plant	BLEACH	202	62	-688	-210	86	26.2	3.00	0.91	114	319	59.0	17.97
						NO_x PSD Baseline (1988) Conditions							
No. 1 Recovery Boiler[a]	RB1	16	5	-29	-9	233	71.0	6.46	1.97	310	428	88.0	26.82
No. 2 Recovery Boiler[a]	RB2	59	18	21	6	233	71.0	6.46	1.97	320	433	81.3	24.78
No. 1 Smelt Dissolving Tank	SDT1	3	1	-18	-5	233	71.0	6.00	1.83	150	339	16.9	51.5
No. 2 Smelt Dissolving Tank	SDT2	45	14	33	10	233	71.0	6.00	1.83	140	333	17.4	5.30
Lime Kiln	LK1	537	164	-118	-36	61	18.6	8.00	2.44	160	344	33.6	10.24
Slaker	LSKR	136	41	-484	-148	56	17.1	2.90	0.88	155	341	44.1	13.44
No. 5 Power Boiler	PB5	-152	-46	41	12	296	90.2	12.00	3.66	400	478	24.8	7.56
No. 3 Combination Boiler	BB3	-77	-23	27	8	213	64.9	7.80	2.38	149	338	77.1	23.50
No. 4 Combination Boiler	BB4	-108	-33	-9	-3	213	64.9	7.80	2.38	143	335	89.6	27.32
						PM/SO_2 PSD Baseline (1974) Conditions							
No. 1 Recovery Boiler[a]	RB1	16	5	-29	-9	233	71.0	6.46	1.97	310	428	88.0	26.82
No. 2 Recovery Boiler[a]	RB2	59	18	21	6	233	71.0	6.46	1.97	320	433	81.3	24.78
No. 1 Smelt Dissolving Tank	SDT1	3	1	-18	-5	233	71.0	6.00	1.83	150	339	16.9	5.15
No. 2 Smelt Dissolving Tank	SDT2	45	14	33	10	233	71.0	6.00	1.83	140	333	17.4	5.30
Lime Kiln	LK1	537	164	-118	-36	61	18.6	8.00	2.44	160	344	33.6	10.24
Slaker	LSKR	136	41	-484	-148	56	17.1	3.00	0.91	155	341	44.1	13.44
No. 4 Power Boiler[b]	PB4	-152	-46	41	12	296	90.2	12.00	3.66	400	478	24.8	7.57
No. 5 Power Boiler[b]	PB5	-152	-46	41	12	296	90.2	12.00	3.66	400	478	24.8	7.56
No. 6 Power Boiler	PB6	172	52	18	5	241	73.5	8.00	2.44	430	494	35.6	10.85
No. 3 Combination Boiler	BB3	-77	-23	27	8	150	45.7	8.50	2.59	440	500	48.2	14.69
No. 4 Combination Boiler	BB4	-108	-33	-9	-3	150	45.7	7.34	2.24	470	516	60.6	18.47

a Source has two identical stacks. Parameters are for each stack

b Nos. 4 and 5 Power Boilers shared a common stack.

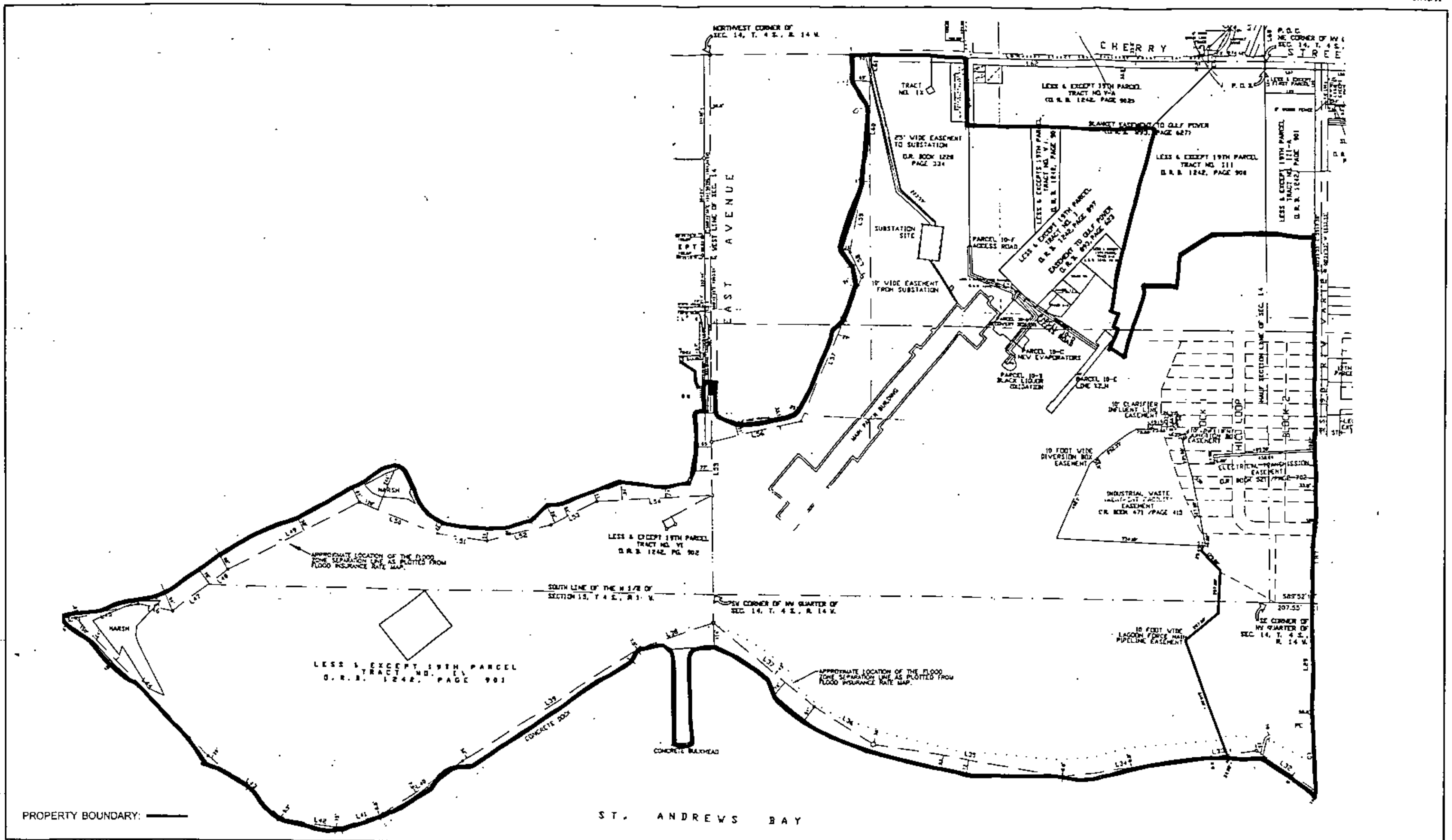
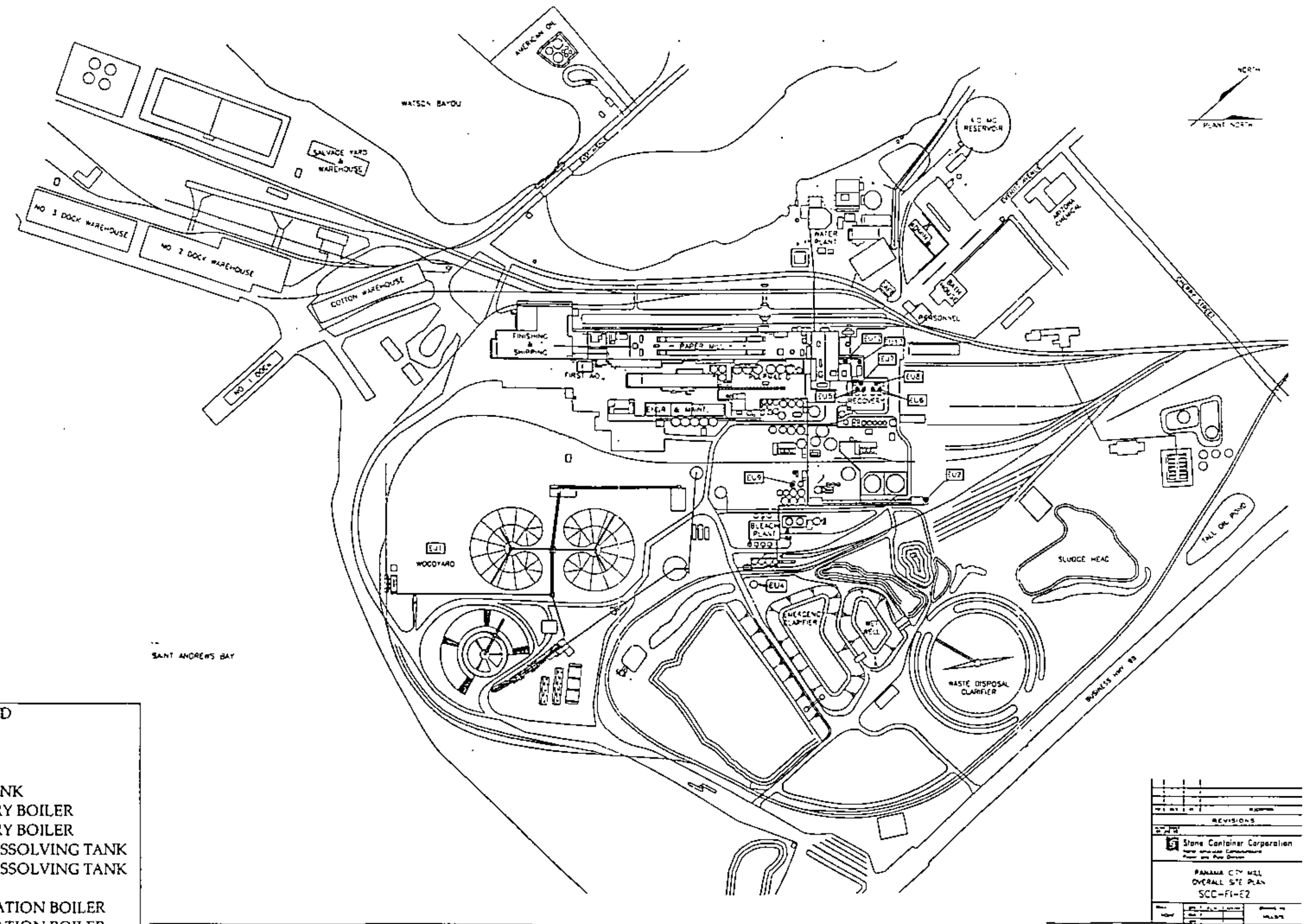


Figure 2-1. Panama City Property Boundary

Smurfit-Stone Container Corporation

Golder Associates



LEGEND

EU1	WOODYARD
EU2	LIME KILN
EU4	METHANOL TANK
EU5	NO. 1 RECOVERY BOILER
EU6	NO. 2 RECOVERY BOILER
EU7	NO. 1 SMELT DISSOLVING TANK
EU8	NO. 2 SMELT DISSOLVING TANK
EU9	LIME SLAKER
EU12	NO. 3 COMBINATION BOILER
EU13	NO. 4 COMBINATION BOILER

Figure 2-2. Facility Plot Plan

Smurfit-Stone Container Corporation

Golder Associates

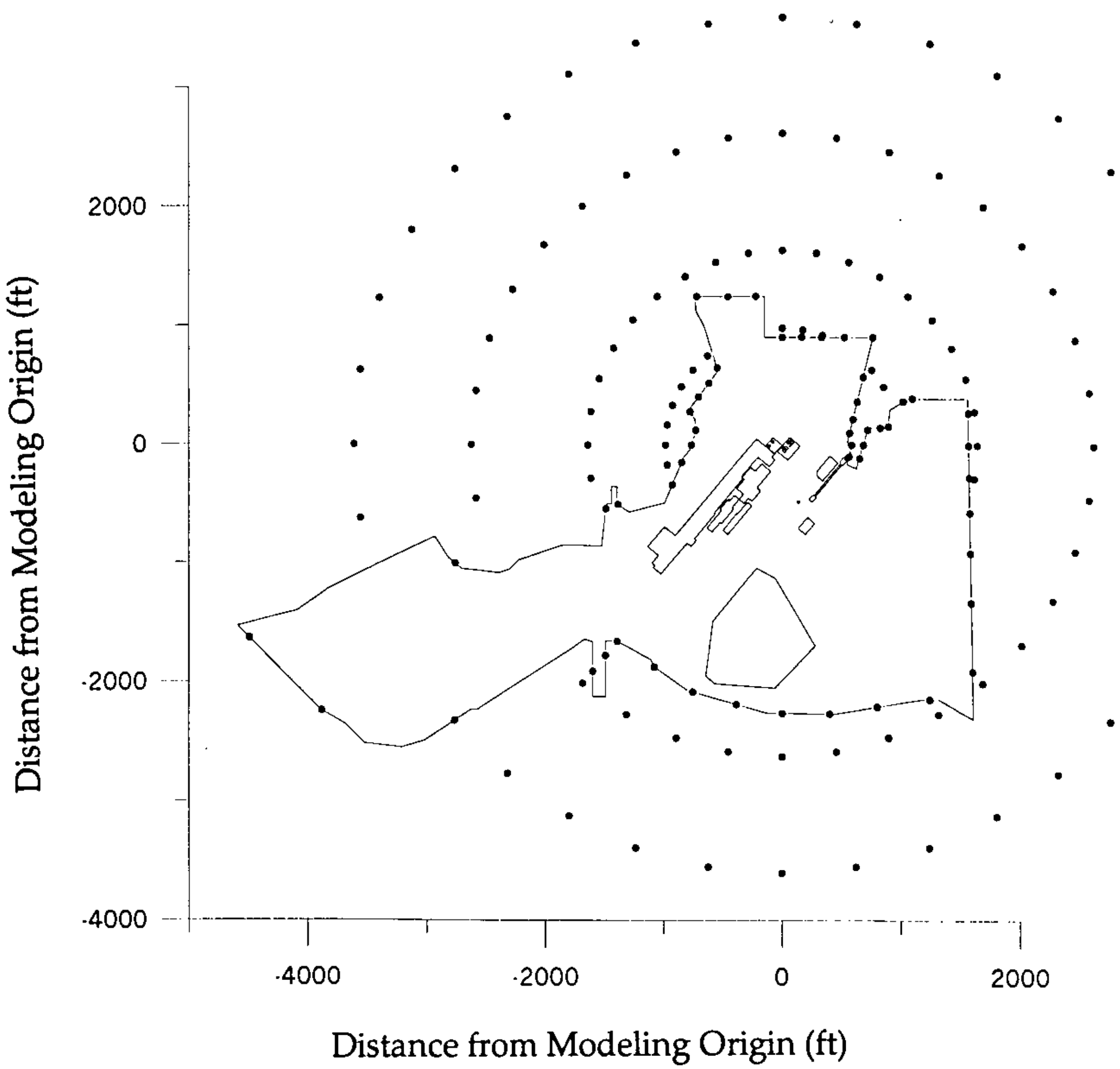


Figure 2-3
SCC Site and Near-Field Modeling Receptor Locations

Golder Associates

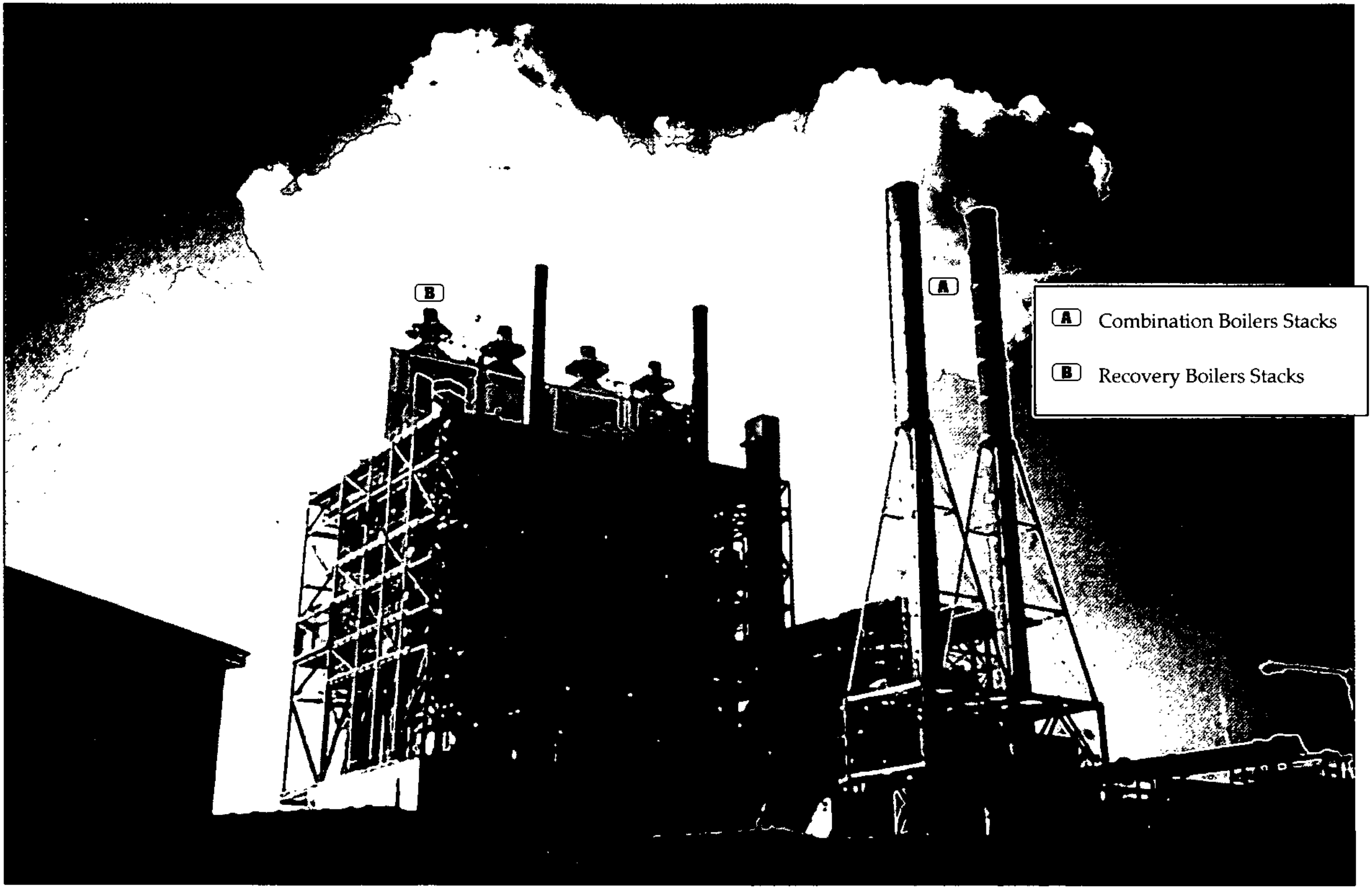


Figure 2-4. Photo of Recovery Boilers Building at SCC, Panama City
Note: Unlabeled stacks are smelt dissolving tank vents.

Source: Golder Associates Inc., 2000

Golder Associates

3.0 AMBIENT MONITORING ANALYSIS

Background concentrations are necessary to determine total ambient air quality impacts to demonstrate compliance with AAQS. For purposes of this analysis, background concentrations are defined as concentrations due to sources other than those specifically included in the modeling analysis. For all pollutants, background concentrations would include other air emission sources not included in the modeling (i.e., faraway sources or small sources), fugitive emission sources, and natural background sources. For the purposes of this analysis, air quality monitoring data were used to develop appropriate background concentrations.

3.1 PM_{10} AMBIENT BACKGROUND CONCENTRATIONS

A summary of ambient PM_{10} data for existing monitors located in the vicinity of the SCC Panama City mill is presented in Table 3-1. Data are presented for the last two years of record, 1997 and 1998. As shown, only one PM_{10} monitor was operational in the vicinity of Panama City during this period. The monitoring data show that ambient PM_{10} concentrations were well below the 24-hour and annual AAQS of 150 $\mu g/m^3$ and 50 $\mu g/m^3$, respectively. The highest recorded 24-hour concentration was 73 $\mu g/m^3$, and the annual average concentration was 28 $\mu g/m^3$.

For purposes of establishing an ambient PM_{10} background concentration for use in the modeling analysis, the annual average PM_{10} concentration of 25 $\mu g/m^3$ recorded at the Panama City monitor during 1997 was selected. This concentration was utilized for both the 24-hour and annual average background PM_{10} concentrations in the air quality impact analysis since the existing SCC Panama City mill impacts this monitor, which is included explicitly in the modeling analysis. Other major point sources of PM in the area impact this monitor and are also included explicitly in the modeling analysis. Therefore, this monitor would be influenced significantly by the SCC mill and other point sources and would represent a conservative estimate of actual background concentrations.

3.2 SO_2 AMBIENT BACKGROUND CONCENTRATIONS

A summary of continuous ambient SO_2 data for existing monitors located in the Pensacola area is presented in Table 3-2. In 1997 and 1998, the closest SO_2 monitors to the Panama City facility were located in Pensacola. The data from these stations were selected to represent a conservative estimate of air quality in the vicinity of the Panama City facility. The Pensacola monitors were selected based on their reasonable proximity to the Panama City facility and the similarity of air emission sources located in each area. In addition, there are more air emission sources in Pensacola than Panama City.

Data are presented for the last 2 years of record, 1997 to 1998. As shown, two SO_2 mor operational in Pensacola during this period. The monitoring data show that am concentrations were well below the 3-hour, 24-hour average, and annual AAQS of 1 260 $\mu g/m^3$, and 60 $\mu g/m^3$, respectively.

For purposes of establishing an ambient SO_2 background concentration for use in the modeling analysis, the annual average SO_2 concentration of 12 $\mu g/m^3$ recorded at the Pensacola monitor during 1997 was selected. This concentration was utilized for the 3- hour, 24-hour and annual average background SO_2 concentrations in the air quality impact analysis since this monitor is impacted by an existing paper mill in the Pensacola area with emissions similar to these from the SCC mill. Also, all major sources of SO_2 in Panama City are explicitly included in the modeling analysis. Therefore, concentrations measured at this monitor would represent a conservative estimate of actual background concentrations.

3.3 CO AMBIENT BACKGROUND CONCENTRATIONS

There are no CO monitors located in Panama City or in the Florida panhandle. The closest CO monitors to the Panama City facility were located in Jacksonville. A summary of continuous ambient CO data for 1997 and 1998, for monitors located in Jacksonville is presented in Table 3-3. The data from these stations represent a conservative estimate of air quality in the vicinity of the Panama City facility.

Data are presented for the last two years of record, 1997 and 1998. Although several CO monitoring stations are located in Jacksonville, the station exhibiting the lowest CO levels was selected for use, since this would be more representative of levels in Panama City. The CO monitoring data show that ambient CO concentrations were well below the 1-hour and 8-hour AAQS of 35 ppm (40,000 $\mu g/m^3$) and 9 ppm (10,000 $\mu g/m^3$), respectively. The monitor in

Jacksonville is not considered to be representative of the Panama City area due to the distance this monitor is located from Panama City, but is the closest monitoring station, and therefore was used in the analysis.

For purposes of establishing an ambient CO background concentration for use in the modeling analysis, the second highest 1-hour CO concentration of 6,000 $\mu g/m^3$ (5 ppm) and the second highest 8-hour concentration of 3,000 $\mu g/m^3$ (3 ppm), recorded at the Jacksonville monitor during 1997, were selected. These concentrations are very conservative since the concentrations measured at this monitor is impacted by significant mobile sources in Jacksonville, while Panama City has a relatively small number of mobile sources.

3.4 NO_X AMBIENT BACKGROUND CONCENTRATIONS

A summary of continuous ambient NO_2 data for the monitor located in Pensacola is presented in Table 3-4. The closest NO_2 monitor to the Panama City facility was located in Pensacola. The data from this station were selected to represent a conservative estimate of air quality in the vicinity of the Panama City facility. The Pensacola monitor was selected based on the reasonable proximity to the Panama City facility and the similarity of air emission sources located in each area. In addition, there are more air emission sources in Pensacola than Panama City.

The NO_2 monitor shows that ambient NO_2 concentrations were well below the annual AAQS of 100 $\mu g/m^3$. Data for 1997 were selected since no data were available for 1998.

For purposes of establishing an ambient NO_2 background concentration for use in the modeling analysis, the annual average concentration of 16 $\mu g/m^3$ recorded at this monitor during 1997 was selected. This NO_2 concentration was utilized for the annual average background NO_2 concentrations in the air quality impact analysis since this monitor is impacted by an existing paper mill in the Pensacola area with emissions similar to those at the SCC mill. Also, all major point sources of NO_2 in the Panama City area were explicitly included in the modeling analysis. Therefore, concentrations measured at this monitor would represent a conservative estimate of actual background concentrations.

Table 3-1. Summary of PM_{10} Ambient Monitoring Data Collected in Panama City

Year	County	Station ID	Monitor Location	Number of Hourly Observations	Concentration ($\mu g/m^3$) Maximum 24-Hour	2nd High 24-Hour	3rd High 24-Hour	Annual Average
1997	Bay	3480-004-F02	Panama City - Cherry Street and Henderson Avenue	56	62	52	51	25
1998	Bay	12-005-1004	Panama City - Cherry Street and Henderson Avenue	54	73	64	62	28

Note: $\mu g/m^3$ = micrograms per cubic meter

Table 3-2. Summary of Sulfur Dioxide Ambient Monitoring Data Collected in Pensacola

Year	County	Station ID	Monitor Location	Number of Hourly Observations	Concentration ($\mu g/m^3$) Maximum 3-Hour	2nd High 3-Hour	Maximum 24-Hour	2nd-High 24-Hour	Annual Average
1997	Escambia	3540-004-F01	Pensacola - Ellyson Industrial Park	8,715	233	191	98	76	11
1977	Escambia	3540-022-F02	Pensacola - 11000 University Parkway	8,657	333	322	114	86	12
1998	Escambia	12-033-0004	Pensacola - Ellyson Industrial Park	8,707	254 (0.1 ppm)	215 (0.08 ppm)	60 (0.023 ppm)	58 (0.022 ppm)	10 (0.004 ppm)
1998	Escambia	12-033-0022	Pensacola - 11000 University Parkway	8,595	265 (0.1 ppm)	212 (0.08 ppm)	63 (0.021 ppm)	63 (0.024 ppm)	8 (0.003 ppm)

Note: $\mu g/m^3$ = micrograms per cubic meter

Table 3-3. Summary of Carbon Monoxide Ambient Monitoring Data Collected in Jacksonville

Year	County	Station ID	Monitor Location	Number of Hourly Observations	Concentration ($\mu g/m^3$) Maximum 1-Hour	2nd High 1-Hour	Maximum 8-Hour	2nd-High 8-Hour
1997	Duval	1960-083-H01	Jacksonville - 1200 S. McDuff Avenue	8,544	8,000 (7 ppm)	6,000 (5 ppm)	3,000 (3 ppm)	3,000 (3 ppm)
1998	Duval	12-031-0083	Jacksonville - 1200 S. McDuff Avenue	8,013	5,400 (4.9 ppm)	5,300 (4.8 ppm)	3,400 (3.1 ppm)	3,200 (2.9 ppm)

Note: ppm = parts per million
1 ppm = 1,111 $\mu g/m^3$
$\mu g/m^3$ = micrograms per cubic meter

Table 3-4. Summary of Nitrogen Dioxide Ambient Monitoring Data Collected in Pensacola

Year	County	Station ID	Monitor Location	Number of Hourly Observations	Annual Average Concentration ($\mu g/m^3$)
1997	Escambia	3540-004-F01	Pensacola - Ellyson Industrial Park	6,161	16

Note: ppm = parts per million
0.053 ppm = 100 $\mu g/m^3$
$\mu g/m^3$ = micrograms per cubic meter

4.0 AIR QUALITY IMPACT ANALYSIS METHODOLOGY

The air quality impact analysis is provided to demonstrate that the mill's emissions of SO_2, NO_x, PM_{10}, and CO will comply with the AAQS and allowable PSD Class I and II increments. This section presents the air quality modeling methodology.

The air quality modeling analysis was initially performed using the Industrial Source Complex Short-Term (ISCST3) model, Version 98356, currently recommended for regulatory applications, to assess maximum ground-level impacts due to sources at the plant. These maximum concentrations were predicted at or near the plant boundary due to building downwash conditions. The building downwash routines currently in the ISCST3 model assume that, if a stack is within the building wake region, it is treated as though it were at the center of the lee wall of the building. The wake region is assumed to extend downwind about 5 times L (5L) from the lee of the building where L is the lesser dimension of the building height or width. The location of the stack or the plume within the wake region is not considered even though the effect of building downwash conditions are reduced downwind of the building. The building downwash routines assume an "all-or-nothing" approach even though stacks or plumes located in the far wake region (about 3L to 5L) will be less influenced by downwash conditions than those located in the near wake region.

It should also be noted that the downwash routines in the ISCST3 model were largely developed with data that represented neutral stability , moderate to high wind speeds, winds perpendicular to the building face, and non-buoyant or low buoyancy plumes. Besides the lack of consideration of a stack's location within the building wake region, some of the limitations of the these downwash routines include:

- No consideration for streamline deflection to account for ascent of wind streamlines upwind of and over the building and descent in the lee of the building;
- No connection between plume material captured by the near wake and far wake concentrations;
- No wind direction effects for squat buildings; and

- Predictions of high concentrations during light wind speed, stable conditions that are not supported by observations.

Based on the sources under evaluation for this project, the associated stacks (boilers) at the mill are located within 3L from the most influential buildings (see Section 4.7). Although these sources are within the wake effects of these buildings, the current downwash procedures assume that these stacks are essentially on the buildings and the full downwash effects are used to predict maximum concentrations. Based on studies performed by the EPRI (1997), the effects of building downwash within the wake region are reduced as a stack's or plume's location increases away from the building. In fact, wind tunnel and field studies have made it clear that incorporating the location of stacks, as well as estimates of wind speed, streamline deflection, and turbulence intensities in the wake, are crucial in improving model simulations of the influence of buildings on ground-level concentrations. As a result, the use of the building downwash routine in the ISCST3 model is not appropriate for assessing building downwash effects for the sources at the mill since the stack and plume locations are not considered and the plumes from these sources would not be expected to be influenced by the full downwash effects within the entire wake region.

To provide more realistic plume behavior and resulting concentrations in the vicinity of nearby building structures, a non-regulatory version of the Industrial Source Complex Short-Term (ISCST) model was used to assess building downwash effects. Referred to as the ISC-PRIME model (Version 99020), the model incorporates the Plume Rise Model Enhancement (PRIME) downwash algorithm developed by the Electric Power Research Institute (EPRI). The ISC-PRIME model, which has undergone extensive testing by the EPA and EPRI, is currently planned as a future replacement for the current regulatory version of the ISCST3 model. Based on discussions with FDEP and EPA, it is anticipated that the model would be included as a regulatory model after EPA holds the seventh Conference on Air Quality Modeling tentatively scheduled for the fall of 1999. Other than having different downwash algorithms, the ISC-PRIME and ISCST3 models are identical and use the same methods for estimating pollutant concentrations. A more detailed discussion on the ISC-PRIME model is presented in Sections 4.4 and 4.7.

4.1 AIR MODELING ANALYSIS APPROACH

An air quality impact analysis of the SCC mill was conducted for four pollutants for which AAQS and PSD increments have been established: SO_2, NO_2, PM_{10}, and CO (AAQS only for CO). The analysis followed EPA and FDEP modeling guidelines for assessing compliance with the AAQS and PSD increments.

The impact analysis used screening and refinement phases to determine the maximum pollutant impacts associated with the SCC mill. The difference between the two modeling phases is the density of the receptor grid spacing used when predicting concentrations. Concentrations are predicted for the screening phase using a coarse (i.e., large spacing) receptor grid and a 5-year meteorological data record. In this analysis, the receptor grid consisted of a polar receptor grid with a 10-degree angular spacing between receptors.

Refinements of the maximum predicted concentrations from the screening phase are typically performed in the vicinity of the receptors of the screening receptor grid at which the highest predicted concentrations occurred over the 5-year period. Generally, if maximum concentrations predicted in another year are within 10 percent of the overall maximum concentration predicted for the 5-year period, then the other concentrations are refined as well. Modeling refinements are performed to determine maximum concentrations with a receptor grid spacing of 100 meters (m) or less.

The domain of a refined receptor grid will generally extend to all adjacent screening receptors surrounding a particular screening grid receptor. The air dispersion model is then executed with the refined grid for the entire year of meteorology during which the maximum concentration in the screening phase occurred. This approach is used to ensure that a valid maximum concentration is obtained.

Because the SCC mill is located approximately 95 and 137 km, from the Bradwell Bay National Wildlife Refuge (BBNWR) and the St. Marks NWR (SMNWR) PSD Class I areas, respectively, a PSD increment consumption analysis was conducted at those areas.

A more detailed description of the model, along with the emission inventory, meteorological data, and screening receptor grids, is presented in the following sections.

4.2 AAQS AND PSD CLASS II INCREMENT ANALYSES

In general, when 5 years of meteorological data are used, the highest annual and the highest, second-highest (H2H) short-term concentrations are to be compared to the applicable AAQS and allowable PSD Class II increments. The H2H is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with most air quality standards and all allowable PSD increments, which permit a short-term average concentration to be exceeded once per year at each receptor.

For the AAQS analysis, the future emissions of the plant site are modeled together with background emission facilities. Additionally, a non-modeled background concentration is added to the maximum predicted air quality concentrations to determine a total air quality concentration. The maximum annual and H2H short-term total concentrations are compared to the AAQS.

For the PSD Class II increment analysis, the PSD increment consuming and expanding sources at the SCC mill site are modeled with background PSD consuming or expanding sources. The maximum annual and H2H short-term PSD increment are compared to the allowable PSD Class II increments.

4.3 PSD CLASS I INCREMENT ANALYSIS

For PM_{10}, SO_2 and NO_2, which have established PSD Class I allowable increments, a detailed PSD increment analysis was performed at the PSD Class I area. For the PSD Class I increment analysis, the PSD increment consuming and expanding sources at the SCC mill site are modeled along with other background PSD consuming or expanding sources located within 150 miles from the PSD Class I area. The maximum annual and H2H short-term concentrations are compared to the allowable PSD Class I increments.

4.4 MODEL SELECTION

The ISC-PRIME dispersion model (Version 99020) was used to evaluate the pollutant impacts due to the proposed project alone and in combination with other emission sources. This model is currently available for evaluation on the EPA's Internet website, Support Center for Regulatory Air Models (SCRAM), within the Technical Transfer Network (TTN). A listing of ISC-PRIME model features is presented in Table 4-1. The ISC-PRIME model is designed to calculate hourly concentrations based on hourly meteorological data (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights). The ISC-PRIME model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights. These areas are referred to as simple terrain. The model can also be applied in areas where the terrain exceeds the stack heights. These areas are referred to as complex terrain.

Since the terrain surrounding the SCC mill is flat, the modeling analysis assumed that all receptors were at the base elevation of the sources (i.e., flat terrain assumption in ISC-PRIME).

In this analysis, the EPA regulatory default options were used to predict all maximum impacts. The ISC-PRIME model can run in the rural or urban land use mode, which affects stability dispersion coefficients, wind speed profiles, and mixing heights. Land use can be characterized based on a scheme recommended by EPA (Auer, 1978). If more than 50 percent of the land use within a 3-km radius circle around a project is classified as industrial or commercial, or high-density residential, then the urban option should be selected. Otherwise, the rural option is appropriate. Based on reviews of aerial and U.S. Geological Survey (USGS) topographical maps and a site visit, the land use within a 3-km (1.9 mile) radius of the SCC mill site is considered to be rural (i.e., very little heavy industrial, light-moderate industrial, commercial, or compact residential land use categories). Therefore, the rural mode was used in the air dispersion model to predict impacts from the SCC mill and other emission sources considered in the modeling analysis.

The ISC-PRIME model was used to predict maximum pollutant concentrations for the annual, 24-hour, 8-hour, 3-hour, and 1-hour averaging periods. The predicted concentrations were then compared to allowable PSD increments and the AAQS.

4.5 METEOROLOGICAL DATA

Meteorological data used in the ISC-PRIME model to determine air quality impacts consisted of a 5-year period of hourly surface weather observations and twice-daily upper air soundings. The first two years of the data record, 1986 to 1987, consisted of surface and upper air soundings from the National Weather Service (NWS) stations located at the Pensacola Regional Airport (PEN) and Apalachicola, respectively. The last three years of the data record, 1988 to 1990, consisted of surface and upper air soundings from Apalachicola. Concentrations were predicted using each of the 5 years of hourly meteorological data. The NWS station at Pensacola is located approximately 156 km (97 miles) west of the mill site. The NWS station at Apalachicola is located approximately 73 km (45 miles) east-southeast of the mill site. The data collected at Pensacola and Apalachicola are considered to experience the same marine-like climatic features that are expected to occur at the SCC mill site.

The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling height. The wind speed, cloud cover, and cloud ceiling values were used in the ISC-PRIME meteorological preprocessor program to determine atmospheric stability using the Turner stability scheme. Based on the temperature measurements at morning and afternoon, mixing heights were calculated from the radiosonde data at Apalachicola using the Holzworth approach (Holzworth, 1972). Hourly mixing heights were derived from the morning and afternoon mixing heights using the interpolation method developed by EPA (Holzworth, 1972). The hourly surface data and mixing heights were used to develop a sequential, hourly meteorological data set (i.e., wind direction, wind speed, temperature, stability, and mixing heights). Because the observed hourly wind directions at the NWS stations are classified into one of thirty-six 10-degree sectors, the wind directions were randomized within each sector to account for the expected variability in air flow. These calculations were performed using the EPA RAMMET meteorological preprocessor program. The height of the wind speed sensors at Pensacola and Apalachicola are 22 and 30 feet, respectively. These heights were used in the ISC-PRIME modeling analysis.

4.6 EMISSION INVENTORY

4.6.1 SCC MILL

The maximum emissions for the SCC mill for the future operating condition are summarized in Table 2-1. The 1974 PSD baseline emissions for PM_{10} and SO_2 and the 1988 baseline emissions for NO_x are presented in Table 2-2. Future and baseline stack parameters and source locations are presented in Table 2-3. The future source emissions and operating parameters were used for the AAQS modeling analysis, while the future and baseline source emissions and parameters were used for the PSD Class I and II increment analyses.

4.6.2 OTHER EMISSION SOURCES

The emission inventories for other facilities were developed from source information provided by the FDEP and from discussions with FDEP State and Regional Office personnel. Source information for Gulf Power Corporation's Lansing Smith Power Plant was obtained from FDEP from a recent air modeling analysis. For PSD Class I and Class II increment analyses, Bay County Energy Systems was the only PSD increment consuming source in the vicinity of the SCC mill.

FDEP has approved a technique for eliminating sources in the modeling analyses if the source's emissions do not meet an emission criterion. The technique is the *Screening Threshold* method, developed by the North Carolina Department of Natural Resources and Community Development (NCDNRCD), and approved by EPA. The method is designed to objectively eliminate from the emission inventory those sources that are unlikely to have a significant interaction with the source undergoing evaluation. In general, sources that should be considered in the modeling analyses are those with emissions greater than a screening threshold value (in TPY) that is calculated by the following criteria:

$$Q = 20 \times D$$

where Q = the screening threshold value (TPY), and

D = The distance (km) from the proposed facility to the source undergoing evaluation for short-term analysis, or

= The distance (km) from the edge of the proposed facility's significant impact area to the source undergoing evaluation for long-term (annual) analysis.

For this analysis, the long-term criterion was used since fewer facilities would be eliminated than with the short-term criterion. Also, the total emissions from a facility were used rather than emissions from individual sources for comparison to the screening threshold value. These methods result in a more conservative approach to produce higher-than-expected concentrations. Those facilities with maximum allowable emissions that are below the calculated *screening threshold* were eliminated from further consideration in the AAQS modeling analyses.

<u>Sulfur Dioxide</u>

A summary of all nearby background facilities, their locations with respect to the SCC mill, and their allowable SO_2 emission rates is provided in Table 4-2. Based on the NC screening technique, the facilities to be included in the air modeling analysis are the Gulf Power Corporation Lansing Smith Power Plant, Arizona Chemical Company, and Florida Coast Paper in Gulf County. Although emissions from the Bay County Energy Systems facility were below the emission threshold, this facility was included in the air modeling analysis because it is a PSD increment consuming source. In addition, City of Tallahassee Hopkins and Purdom plants were included in the Class I increment modeling inventory only, due to their proximity to the Class I areas.

The individual source emissions, stack, and operating parameters for sources considered in the AAQS and PSD Class I and II modeling analyses are presented in Table 4-3. To minimize model run time, identical stacks within facilities were combined into one source and small emission sources within distant facilities were combined into one source.

Particulate Matter

A summary of all nearby background facilities, their locations with respect to the SCC mill, and their allowable PM emission rate is provided in Table 4-4. Based on the NCDNRCD screening technique, the facilities included in the air modeling analysis were the Gulf Power Corporation Lansing Smith Power Plant, Arizona Chemical Company, and Florida Coast Paper in Gulf County. As previously discussed, Bay County Energy Systems and City of Tallahassee Hopkins and Purdom facilities were also included in the air modeling analysis. The individual source emissions, stack, and operating parameters for sources considered in the AAQS and PSD Class I and II modeling analyses are presented in Table 4-5. To minimize model run time, identical stacks within facilities were combined into one source and small emission sources within distant facilities were combined into one source.

Carbon Monoxide

No other facilities were considered in the CO AAQS analysis. The high CO background concentration developed from monitoring data (see Section 3.0) provides a conservative background representing concentrations from other CO emission sources in the Bay County area.

Nitrogen Oxides

A summary of all nearby background facilities, their locations with respect to the SCC mill, and their allowable NO_x emission rate is provided in Table 4-6. Based on the NCDNRCD facility screening technique, the facilities included in the air modeling analysis were the Gulf Power Corporation Lansing Smith Power Plant, Arizona Chemical Company, and Florida Coast Paper in Gulf County. The only PSD increment-affecting sources among the background sources were the two City of Tallahassee facilities. The individual source emissions, stack, and operating parameters for the AAQS modeling analysis is presented in Table 4-7. To minimize model execution time, identical stacks within facilities were combined into one source and small emission sources within distant facilities were combined into one source.

4.7 BUILDING DOWNWASH EFFECTS FOR SCC MILL

Based on the building dimensions associated with buildings and structures at the plant, all stacks at the SCC mill will comply with the good engineering practice (GEP) stack height regulations. However, these stacks are calculated to be less than GEP height. Therefore, the potential for building downwash to occur was considered in the air modeling analysis for these stacks.

Generally, a stack is considered to be within the influence of a building if it is within the lesser of 5 times L, where L is the lesser dimension of the building height or projected width. The ISCST3 model uses two procedures to address the effects of building downwash. For both methods, the direction-specific building dimensions are input for H_b and l_b for 36 radial directions, with each direction representing a 10-degree sector. The H_b is the building height and l_b is the lesser of the building height or projected width. For short stacks (i.e., physical stack height is less than $H_b + 0.5\,l_b$), the Schulman and Scire (1980) method is used. The features of the Schulman and Scire method are as follows:

1. Reduced plume rise as a result of initial plume dilution,
2. Enhanced plume spread as a linear function of the effective plume height, and
3. Specification of building dimensions as a function of wind direction.

For cases where the physical stack height is greater than $H_b + 0.5\,l_b$, but less than GEP, the Huber-Snyder (1976) method is used. Both downwash algorithms affect stacks that are within the influence of a building, without regard for the actual distance the stack or stack's plume is from the building during any given moment.

As discussed previously, the ISC-PRIME model was developed to correct the deficiencies of the building downwash within the current version of the ISCST3 model. The ISC-PRIME model incorporates the PRIME algorithm that was developed under the support of EPRI.

Based on studies performed by the EPA (1997), the effects of building downwash within the wake region are reduced as a stack's location increases away from the building. In fact, wind tunnel and field studies have made it clear that incorporating the location of stacks and plumes, as well as estimates of wind speed, streamline deflection, and turbulence intensities in the wake, are crucial in improving model simulations of the influence of buildings on ground-level concentrations. As a result, the use of the building downwash routine in the ISCST3 model is not appropriate for assessing building downwash effects for the sources at the mill since the stack and plume locations are not considered and the plumes from these sources would not be expected to be influenced by the full downwash effects within the wake region.

The building dimensions considered in the air modeling analysis for the SCC mill are presented in Table 4-8. The location of the SCC mill's buildings and stacks are shown on the site plot plan in Figures 2-2 and 2-3.

At the Panama City mill, several stacks are in the area of influence (i.e., within 5 L) of the tallest structure: the 198-ft Recovery Boilers building. The 239-ft tall higher tier of the building is not of sufficient width to influence stacks at the mill. The stack height to building height ratios for the stacks range from 0.28 to 1.08 and the distance of these boilers from the buildings are as follows:

Stack Location with Respect to:

Source	198-ft Recovery Boilers Building	
	Distance (ft)	D/L
No. 1 and No. 2 Recovery Boiler	0	0
No. 1 and No. 2 Smelt Dissolving Tank	0	0
No. 3 Combination Boiler	126	0.65
No. 4 Combination Boiler	117	0.60
Lime Kiln	403	2.07
Lime Slaker	366	1.88

Note: Distance (D) = Distance from source to the Recovery Boilers building,
L = lesser dimension of the projected height or width of the Recovery Boilers building = 194 ft.

Although certain stacks at the mill are within the wake effects of nearby buildings, the current downwash procedures assume that these stacks are essentially on the buildings and the full downwash effects are used to estimate maximum concentrations. In reality, the building downwash effects should be reduced from that assumed by the ISCST3 downwash routines as the plume travels away from the building.

The primary purpose for using the ISC-PRIME model in this modeling analysis is to incorporate more realistic assumptions and procedures in evaluating ground-level concentrations that the ISCST3 model does not consider. The following features include:

1. Enhanced plume dispersion in the region of a building's turbulent wake
2. Reduced plume rise due to streamline deflection in the lee of a building
3. Increased plume entrainment in the building wake
4. Continuous plume treatment from the near field wake adjoining the building to the far wake fields away from the building, and
5. Reduced downwash effects as a plume's position increases away from the building.

For sources located away from buildings, it is important that the plume's position is tracked within the wake to account for the reduced downwash effect from buildings as a plume travels further from influence of the building.

For the modeling analysis, the ISC-PRIME model's input files for the downwash analysis are very similar to those in the current regulatory ISCST3 model. The direction-specific building dimensions are input for H_b and l_b for 36 radial directions, with each direction representing a 10-degree. The H_b is the building height and l_b is the lesser of the building height or projected width. In addition, the ISC-PRIME model inputs three additional building parameters that further describe the building/wake configuration:

- Projected length of the building along the flow direction,
- Along-flow distance from the stack to the center of the upwind face of the projected building, and
- Cross-flow distance from the stack to the center of the upwind face of the projected building.

All direction-specific building parameters were calculated with the Building Profile Input Program, Version 95039, modified to process the additional direction-specific building information for ISC-PRIME (BPIPPRM). BPIPPRM was used to generate building data for the ISC-PRIME model input. A detailed listing of direction-specific building data used in the air modeling analysis is provided in Appendix C.

A comparison of stack, operating, and building data for the Panama City mill and the data cited in the evaluation of the ISC-PRIME model is presented in Table 4-9.

4.8 RECEPTOR LOCATIONS

For predicting maximum concentrations in the vicinity of the SCC mill, different receptor arrays were used in the screening and refined analysis. The screening analyses used an array of both gridded and discrete polar receptors. The discrete receptor array consisted of 138 receptors, including 36 receptors located along the property line of SCC mill (see Figures 2-2 and 2-3). An additional 102 receptors were located offsite the SCC mill property boundary at distances of 0.3, 0.6, and 0.9 km along radials spaced at 10 degrees with the grid centered on the easternmost corner of the Combination Boilers building. A summary of the property boundary receptors used at SCC mill is presented in Table 4-10.

For the screening analysis, an additional 324 receptors were included in a polar grid with an angular spacing of 10 degrees and at distances along each radial of 1.2, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, and 5.0 km from the origin location.

Modeling refinements were performed, as needed, by employing a polar receptor grid with a maximum spacing of 100 m along each radial and an angular spacing between radials of 1 or 2 degrees. At a distance of less than 575 m, the angular distance between receptors is 100 m or less and additional refinements may not be performed. At distances of 600 m and beyond, modeling refinements are performed by employing an angular spacing between radials of 1 or 2 degrees and a spacing interval along radials of 100 m.

Pollutant concentrations for SO_2, PM_{10}, and NO_2 were also predicted at 33 receptors located in and around the BBNWR and the SMNWR PSD Class I Areas. A listing of these receptors is presented in Table 4-11. Due to the large distance from the SCC mill to the BBNWR and the SMNWR, additional receptor refinements were not performed for these areas.

4.9 BACKGROUND CONCENTRATIONS

Total air quality impacts were predicted for the AAQS analysis by adding the maximum annual and highest, second-highest short-term concentrations due to all modeled sources to estimated background concentrations. Background concentrations are concentrations due to sources not explicitly included in the modeling analysis. These concentrations consist of two components:

- Impacts due to other non-modeled emission sources (i.e., point sources not explicitly included in the modeling inventory), and
- Natural and fugitive emission sources.

The non-modeled background concentrations were obtained from air quality monitoring data, as described in Section 3.0, and are as follows:

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)
PM_{10}	24-hour	25
	Annual	25
SO_2	3-hour	12
	24-hour	12
	Annual	12
NO_x	Annual	16
CO	8-hour	3,000
	1-hour	6,000

Table 4-1. Major Features of the ISC-PRIME Model

ISC-PRIME Model Features[a]
• Polar or Cartesian coordinate systems for receptor locations
• Rural or one of three urban options which affect wind speed profile exponent, dispersion rates, and mixing height calculations
• Plume rise due to momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1969, 1971, 1972, and 1975; Bowers, et al., 1979).
• Procedures suggested by Schulman et al. (1998) for evaluating building wake effects
• Procedures suggested by Briggs (1974) for evaluating stack-tip downwash
• Separation of multiple emission sources
• Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations
• Capability of simulating point, line, volume, area, and open pit sources
• Capability to calculate dry and wet deposition, including both gaseous and particulate precipitation scavenging for wet deposition
• Variation of wind speed with height (wind speed-profile exponent law)
• Concentration estimates for 1 hour to annual average times
• Terrain-adjustment procedures for elevated terrain including a terrain truncation algorithm for ISCST3; a built-in algorithm for predicting concentrations in complex terrain
• Consideration of time-dependent exponential decay of pollutants
• The method of Pasquill (1976) to account for buoyancy-induced dispersion
• A regulatory default option to set various model options and parameters to EPA recommended values (see text for regulatory options used)
• Procedure for calm-wind processing including setting wind speeds less than 1 m/s to 1 m/s.

Note: ISC-PRIME = Industrial Source Complex Short-Term Model with Plume Rise Model Enhancement (PRIME) downwash algorithm.

[a] References:

Bowers, J.F., J.R. Bjorklund and C.S. Cheney. 1979. Industrial Source Complex (ISC) Dispersion Model User's Guide. Volume I, EPA-450/4-79-030; Volume II. EPA-450/4-79-031. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

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Briggs, G.A. 1974. Diffusion Estimation for Small Emissions. *In*: ERL, ARL USAEC Report ATDL-106. U.S. Atomic Energy Commission, Oak Ridge, Tennessee.

Briggs, G.A. 1975. Plume Rise Predications. In Lectures on Air Pollution and Environmental Impact Analysis. American Meteorological Society, Boston, Massachusetts.

Briggs, G.A. 1979. Some Recent Analyses of Plume Rise Observations. *In*: Proceedings of the Second International Clean Air Congress. Academic Press, New York.

Pasquill, F. 1976. Atmospheric Dispersion Parameters in Gaussian Plume Modeling - Part II. Possible Requirements for Change in the Turner Workbook Values. EPA-600/4-76-030b, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

Schulman, L.L. and J.S. Scire. 1980. Buoyant Line and Point Source (BLP) Dispersion Model User's Guide. Document P-7304B, Environmental Research and Technology, Inc., Concord, MA.

Table 4-2. Summary of Competing SO_2 Facilities Considered for Inclusion in the AAQS and PSD Class I and Class II Air Modeling Analyses

Facility ID Number	Facility	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to Smurfit-Stone Mill X (km)	Relative to Smurfit-Stone Mill Y (km)	Distance (km)	Direction (deg)	Maximum SO_2 Emissions (TPY)	Q, Emission Threshold Distance x 20	Include in Modeling Analysis ?
0050001	Arizona Chemical Company	Bay	633.1	3335.4	0.3	0.3	0.4	45	1,226	8.5	YES
0050008	G.A.C. Contractors	Bay	634.9	3343.7	2.1	8.6	8.9	14	2	177.1	NO
0050038	Triangle Construction	Bay	638.8	3347.0	6.0	11.9	13.3	27	45	266.5	NO
0050014	Gulf Power	Bay	625.2	3349.1	-7.6	14.0	15.9	332	80,769	318.6	YES
0050031	Bay County Energy Systems	Bay	644.0	3348.9	11.2	13.8	17.8	39	313	355.5	YES[a]
0450002	Sylvachem	Gulf	663.4	3299.6	30.6	-35.5	46.9	139	2	937.4	NO
0450005	Florida Coast Paper	Gulf	662.8	3299.0	30.0	-36.1	46.9	140	3,224	938.8	YES
7300003	City of Tallahassee - Hopkins	Leon	769.5	3340.0	136.7	4.9	136.8	88	17,428	2735.7	YES[b]
1290001	City of Tallahassee - Purdom	Wakulla	749.5	3371.7	116.7	36.6	122.3	73	5,414	2446.7	YES[b]
SSCC Mill UTM coordinates:			632.8	3335.1							

The facility screening process was limited to facilities that are within 70 km of the project site.

[a] Facility was included in the air modeling analysis, because of its proximity to the PSD Class I areas.

[b] Facility included for PSD Class I analysis only.

Table 4-3. Summary of Background SO_2 Sources Included in the Air Modeling Analysis

Facility ID Number	Facility	Units	ISC-PRIME ID Name	Stack Parameters: Height (m)	Diameter (m)	Temper. (K)	Velocity (m/s)	Emission Rate (g/s)	PSD Source? (EXP/CON)	Modeled in: AAQS	Class II	Class I
0050001	Arizona Chemical Company											
		Boiler #1	ARIZCHM1	30.5	1.22	510.9	22.75	17.64		Yes	No	No
		Boiler #2	ARIZCHM2	30.5	1.22	466.5	17.64	17.64		Yes	No	No
0050014	Gulf Power											
		Lansing Smith Units 1 and 2	GULFPW12	60.7	5.49	441.0	31.30	3258.20		Yes	No	No
		Peaking Turbines	GULFPWPK	10.1	4.18	922.0	36.90	34.50		Yes	No	No
0050031	Bay County Energy Systems											
		Boilers No. 1 and 2	BAYENRGY	38.1	1.37	477.6	17.50	9.02	CON	Yes	Yes	Yes
0050005	Florida Coast Paper											
		Kiln #1		33.8	1.22	352.6	20.78	0.30				
		Kiln #2		33.8	1.22	352.6	19.85	0.30				
		Kiln #3		33.5	1.22	352.6	18.31	0.30				
		Smelt Dissolving Tank No. 5		38.1	1.07	360.4	7.71	0.44				
		Smelt Dissolving Tank No. 6		38.1	1.07	355.4	7.71	0.44				
		Smelt Dissolving Tank No. 7		30.5	2.38	367.6	2.25	1.32				
			FCPLKSDT	30.5	2.38	367.6	2.25	3.10		Yes	No	No
		Recovery Boiler #5		38.1	2.56	460.9	14.81	32.29				
		Recovery Boiler #7		38.1	2.56	394.3	2.94	32.26				
		Recovery Boiler #7		61.0	5.33	429.8	9.10	22.06				
			PCPRB567	38.1	2.56	394.3	9.10	86.61		Yes	No	No
		Power Boiler #9	FCPPB9	51.8	4.27	343.1	10.33	76.23	CON	Yes	Yes	Yes
7300003	City of Tallahassee S.O.Purdom Plant											
		Unit No. 2	TALPURD2	26.0	1.95	478.0	5.89	-39.88	EXP	No	No	Yes
		Unit No. 3	TALPURD3	26.0	1.95	478.0	5.89	-39.88	EXP	No	No	Yes
		Unit No. 4	TALPURD4	26.0	1.95	478.0	5.89	-39.88	EXP	No	No	Yes
		Unit No. 5	TALPURD5	38.1	3.96	447.0	7.23	-104.04	EXP	No	No	Yes
		Unit No. 6	TALPURD6	38.1	3.96	447.0	7.23	-104.04	EXP	No	No	Yes
		Unit No. 7	TALPURD7	54.9	2.74	422.0	14.44	-68.92	EXP	No	No	Yes
		Unit No. 8	TALPURD8	61.0	5.00	353.0	15.38	7.82	CON	No	No	Yes
		Gas Turbines	TALPURGT	11.6	3.05	744.0	25.56	-10.29	EXP	No	No	Yes
1290001	City of Tallahassee A.B.Hopkins Plant											
		Unit No. 1	TALHOPK1	61.0	3.35	400.0	21.11	-227.59	EXP	No	No	Yes
		Unit No. 2	TALHOPK2	76.2	4.27	400.0	21.00	410.76	CON	No	No	Yes

Table 4-4. Summary of Competing PM Facilities Considered for Inclusion in the AAQS and PSD Class I and Class II Air Modeling Analyses

Facility ID Number	Facility	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to Smurfit-Stone Mill X (km)	Relative to Smurfit-Stone Mill Y (km)	Relative to Smurfit-Stone Mill Distance (km)	Relative to Smurfit-Stone Mill Direction[a] (deg)	Maximum PM Emissions (TPY)	Q, Emission Threshold Distance x 20	Include in Modeling Analysis ?
0050001	Arizona Chemical Company	Bay	633.1	3335.4	0.3	0.3	0.4	45	219	8.5	YES
0050005	Florida Asphalt Paving	Bay	631.4	3338.3	-1.4	3.2	3.5	336	29	69.9	NO
0050008	G.A.C. Contractors	Bay	634.9	3343.7	2.1	8.6	8.9	14	44	177.1	NO
0050038	Triangle Construction	Bay	638.8	3347.0	6.0	11.9	13.3	27	12	266.5	NO
0050014	Gulf Power	Bay	625.2	3349.1	-7.6	14.0	15.9	332	1,836	318.6	YES
0050031	Bay County Energy Systems	Bay	644.0	3348.9	11.2	13.8	17.8	39	59	355.5	YES[a]
0050028	Louisiana Pacific	Bay	608.8	3355.2	-24.0	20.1	31.3	310	37	626.1	NO
0450001	Premier Refractories, Inc	Gulf	664.7	3302.8	31.9	-32.3	45.4	135	345	907.9	NO
0450002	Sylvachem	Gulf	663.4	3299.6	30.6	-35.5	46.9	139	71	937.4	NO
0450005	Florida Coast Paper	Gulf	662.8	3299.0	30.0	-36.1	46.9	140	1,831	938.8	YES
1330002	Florida Asphalt Paving	Washington	624.4	3399.8	-8.4	64.7	65.2	353	44	1304.9	NO
1310019	Perdue Farms	Walton	590.1	3399.3	-42.7	64.2	77.1	326	87	1542.1	NO
7300003	City of Tallahassee - Hopkins	Leon	769.5	3340.0	145.1	-59.8	157.0	112	788	3139.0	YES[b]
1290001	City of Tallahassee - Purdom	Wakulla	749.5	3371.7	125.1	-28.1	128.2	103	463	2564.9	YES[b]
SSCC Mill UTM coordinates:			632.8	3335.1							

The facility screening process was limited to facilities that are within 70 km of the project site.

[a] Facility was included in the air modeling analysis, because it is a PSD source

[b] Facility included for PSD Class I analysis only, because of its proximity to the PSD Class I areas.

Table 4-5. Summary of Background PM Sources Included in the Air Modeling Analysis

Facility ID Number	Facility	Units	ISC-PRIME ID Name	Stack Parameters Height (m)	Diameter (m)	Temper. (K)	Velocity (m/s)	Emission Rate (g/s)	PSD Source? (EXP/CON)	Modeled in AAQS	Class II	Class I
0050001	Arizona Chemical Company											
		Boiler #1	ARIZCHM1	30.5	1.22	510.9	22.75	2.20		Yes	No	No
		Boiler #2	ARIZCHM2	30.5	1.22	466.5	17.64	2.20		Yes	No	No
0050014	Gulf Power											
		Lansing Smith Units 1 and 2	GULFPW12	60.7	5.49	441.0	31.30	48.01		Yes	No	No
		Peaking Turbines	GULFPWPK	10.1	4.18	922.0	36.90	4.16		Yes	No	No
0050031	Bay County Energy Systems											
		Boilers No. 1 and 2	BAYENRGY	38.1	1.37	477.6	17.50	1.72	CON	Yes	Yes	Yes
0050005	Florida Coast Paper											
		Kiln #1		33.8	1.22	352.6	20.78	1.30				
		Kiln #2		33.8	1.22	352.6	19.85	1.30				
		Kiln #3		33.5	1.22	352.6	18.31	1.30				
		Slaker A		12.2	0.76	355.4	1.45	3.23				
		Slaker B		12.2	0.76	355.4	1.45	3.23				
		Smelt Dissolving Tank No. 5		38.1	1.07	360.4	7.71	0.71				
		Smelt Dissolving Tank No. 6		38.1	1.07	355.4	7.71	0.71				
		Smelt Dissolving Tank No. 7		30.5	2.38	367.6	2.25	2.51				
			FCPLKSDT	30.5	2.38	367.6	2.25	14.29		Yes	No	No
		Recovery Boiler #5		38.1	2.56	460.9	14.81	4.72				
		Recovery Boiler #7		38.1	2.56	394.3	2.94	4.72				
		Recovery Boiler #7		61.0	5.33	429.8	9.10	19.20				
			PCPRB567	38.1	2.56	394.3	9.10	28.64		Yes	No	No
		Power Boiler #9	FCPPB9	51.8	4.27	343.1	10.33	11.11	CON	Yes	Yes	Yes
7300003	City of Tallahassee S.O.Purdom Plant											
		Unit No. 2	TALPURD2	26.0	1.95	478.0	5.89	-1.81	EXP	No	No	Yes
		Unit No. 3	TALPURD3	26.0	1.95	478.0	5.89	-1.81	EXP	No	No	Yes
		Unit No. 4	TALPURD4	26.0	1.95	478.0	5.89	-1.81	EXP	No	No	Yes
		Unit No. 5	TALPURD5	38.1	3.96	447.0	7.23	-4.73	EXP	No	No	Yes
		Unit No. 6	TALPURD6	38.1	3.96	447.0	7.23	-4.73	EXP	No	No	Yes
		Unit No. 8	TALPURD8	61.0	5.00	353.0	15.38	2.14	CON	No	No	Yes
		Cooling Tower	TALPCOOL	13.4	10.08	305.0	7.09	0.30	CON	No	No	Yes
		Gas Turbines	TALPURGT	11.6	3.05	744.0	25.56	0.01	CON	No	No	Yes
1290001	City of Tallahassee A.B.Hopkins Plant											
		Unit No. 2	TALHOPK2	76.2	4.27	400.0	21.00	29.32	CON	No	No	Yes

Table 4-6. Summary of Competing NO_x Facilities Considered for Inclusion in the AAQS and PSD Class I Air Modeling Analyses

			UTM Coordinates		Relative to Smurfit-Stone Mill				Maximum NOx	Q, Emission	Include in
Facility ID Number	Facility	County	East (km)	North (km)	X (km)	Y (km)	Distance (km)	Direction (deg)	Emissions (TPY)	Threshold Distance x 20	Modeling Analysis ?
0050001	Arizona Chemical Company	Bay	633.1	3335.4	0.3	0.3	0.4	45	460	8.5	YES
0050024	US Air Force - Tyndall	Gulf	635.6	3326.8	2.8	-8.3	8.8	161	19	175.2	NO
0050008	G.A.C. Contractors	Bay	634.9	3343.7	2.1	8.6	8.9	14	13	177.1	NO
0050014	Gulf Power	Bay	625.2	3349.1	-7.6	14.0	15.9	332	6,920	318.6	YES
0050031	Bay County Energy Systems	Bay	644.0	3348.9	11.2	13.8	17.8	39	236	355.5	NO
0450002	Sylvachem	Gulf	663.4	3299.6	30.6	-35.5	46.9	139	201	937.4	NO
0450005	Florida Coast Paper	Gulf	662.8	3299.0	30.0	-36.1	46.9	140	2,839	938.8	YES
1330005	Florida Gas Transmission		610.6	3394.2	-22.2	59.1	63.1	339	1,062	1262.6	NO
1310019	Perdue Farms	Walton	590.1	3399.3	-42.7	64.2	77.1	326	36	1542.1	NO
7300003	City of Tallahassee - Hopkins	Leon	769.5	3340.0	136.7	4.9	136.8	88	5,384	2735.7	YES[a]
1290001	City of Tallahassee - Purdom	Wakulla	749.5	3371.7	116.7	36.6	122.3	73	465	2446.7	YES[a]
SSCC Mill UTM coordinates:			632.8	3335.1							

The facility screening process was limited to facilities that are within 70 km of the project site.

[a] Facility included for PSD Class I analysis only, because of its proximity to the PSD Class I areas.

Table 4-7. Summary of Background NO_2 Sources Included in the Air Modeling Analysis

Facility ID Number	Facility	Units	ISC-PRIME ID Name	Stack Parameters: Height (m)	Stack Parameters: Diameter (m)	Stack Parameters: Temper. (K)	Stack Parameters: Velocity (m/s)	Emission Rate (g/s)	PSD Source? (EXP/CON)	Modeled in: AAQS	Modeled in: Class II	Modeled in: Class I
0050001	Arizona Chemical Company											
		Boiler #1	ARIZCHM1	30.5	1.22	510.9	22.75	6.62		Yes	No	No
		Boiler #2	ARIZCHM2	30.5	1.22	466.5	17.64	6.62		Yes	No	No
0050014	Gulf Power											
		Lansing Smith Units 1 and 2	GULFPW12	60.7	5.49	441.0	31.30	258.00		Yes	No	No
		Peaking Turbines	GULFPWPK	10.1	4.18	922.0	36.90	47.67		Yes	No	No
0050031	Bay County Energy Systems											
		Boilers No. 1 and 2	BAYENRGY	38.1	1.37	477.6	17.50	6.78	CON	Yes	Yes	Yes
0050005	Florida Coast Paper											
		Kiln #1		33.8	1.22	352.6	20.78	7.76				
		Kiln #2		33.8	1.22	352.6	19.85	7.76				
		Kiln #3		33.5	1.22	352.6	18.31	7.76				
			FCPLKSDT	30.5	2.38	367.6	2.25	23.28		Yes	No	No
		Recovery Boiler #5		38.1	2.56	460.9	14.81	34.03				
		Recovery Boiler #7		38.1	2.56	394.3	2.94	16.80				
		Recovery Boiler #7		61.0	5.33	429.8	9.10	4.40				
			PCPRB567	38.1	2.56	394.3	9.10	55.23		Yes	No	No
		Power Boiler #9	FCPPB9	51.8	4.27	343.1	10.33	33.34		Yes	No	No
7300003	City of Tallahassee S.O.Purdom Plant											
		Unit No. 5	TALPURD5	38.1	3.96	447.0	7.23	-0.52	EXP	No	No	Yes
		Unit No. 6	TALPURD6	38.1	3.96	447.0	7.23	-1.25	EXP	No	No	Yes
		Unit No. 7	TALPURD8	54.9	2.74	422.0	14.44	11.98	CON	No	No	Yes
		Gas Turbines	TALPURGT	11.6	3.05	744.0	25.56	0.17	CON	No	No	Yes
		Auxiliary Boiler	TALPAUXB	9.2	0.61	450.0	6.47	0.0675	CON	No	No	Yes
1290001	City of Tallahassee A.B.Hopkins Plant											
		Unit No. 2	TALHOPK2	76.2	4.27	400.0	21.00	94.50	CON	No	No	Yes

Table 4-8. SCC Mill Building Structures Considered in the Air Modeling Analysis

Structure	Height		Length		Width	
	ft	m	ft	m	ft	m
Recovery Boilers Building Upper Tiers	239.0	72.8	34.5	10.5	18.0	5.5
Recovery Boilers Building Lower Level	198.0	60.4	157.5	48.0	126.0	38.4
Bleach Plant	71.0	21.6	123.0	37.5	78.0	23.8
Engineering & Maintenance	35.0	10.7	315.0	96.0	55.5	16.9
Offices/Storeroom	35.0	10.7	361.5	110.2	88.5	27.0
Cooling Towers	30.0	9.1	199.5	60.8	90.0	27.4
Pulp Mill	83.0	25.3	295.5	90.1	193.5	59.0
Paper Mill	40.0	12.2	1284.0	391.4	352.5	107.4
Bark Boilers Building	111.0	33.8	97.5	29.7	100.5	30.6
Power Boiler 6 Building[a]	150.0	45.7	34.5	10.5	52.5	16.0

[a] Existed during baseline (1974 and 1988) only.

Table 4-9. Comparison of Stack, Operating, and Building Data for Plant Smith to Emission Units Used in the Evaluation of the ISC-PRIME Model

Parameters	Panama City Mill						Emission Units in ISC-PRIME Evaluation	
	No. 1/No. 2 Recovery Boilers	No. 1/No. 2 Smelt Dissolving Tanks	No. 3 Combination Boiler	No. 4 Combination Boiler	Lime Kiln	Lime Slaker	Bowline Point	Lee Power Plant
Stack data								
Height (m)	71.0	71.0	64.9	64.9	18.6	17.1	86.9	64.8
Diameter (m)	1.97	1.83	2.38	2.38	2.44	0.88	5.7	2.5
Operating data								
Temperature (K)	414-428	348	338	335	348	366	370 to 400	440
Velocity (m/s)	28.6	5.2-4.6	23.5	27.32	11.84	13.1	10 to 30	17
Influencing Building Data								
Height (m)	60.4	60.4	60.4	60.4	60.4	60.4	65.2	42.6
Length (m)	48.0	48.0	48.0	48.0	48.0	48.0		
Width (m)	38.4	38.4	38.4	38.4	38.4	38.4		
Diagonal (m)	59.3	59.3	59.3	59.3	59.3	59.3		
Lessor dimension (Lb) (m) [a]	59.3	59.3	59.3	59.3	59.3	59.3	65.2	42.6
Ratio								
Stack height/ Lessor building dimension	1.20	1.20	1.09	1.09	0.31	0.29	1.33	1.52
Distance of Measurements/Predictions								
Method	Predictions-Maximum Concentrations with ISC-PRIME model [b]						Measurements/ Predictions (4 sites)	Measurements/ Predictions (6 sites)
Distance from Unit (m)	500	500	500	500	500	500	251 to 848	150 to 900
Ratio-Distance/Lessor Dimension	8.4	8.4	8.4	8.4	8.4	8.4	3.8 to 13.0	3.5 to 21.1

[a] Based on evaluation used in determining a Good Engineering Practice (GEP) stack height.
[b] Based on distance to maximum 24-hr SO_2 impacts due to SCC mill.

Table 4-10. Property Boundary Receptors Used in the Air Modeling Analysis

Receptor	Direction (degrees)	Distance (meters)	Receptor	Direction (degrees)	Distance (meters)
1	10	282	19	190	677
2	20	295	20	200	675
3	30	320	21	210	659
4	40	362	22	220	659
5	50	272	23	230	1102
6	60	223	24	240	1367
7	70	194	25	250	301
8	80	176	26	260	263
9	90	179	27	270	234
10	100	175	28	280	226
11	110	512	29	290	253
12	120	558	30	300	249
13	130	633	31	310	247
14	140	760	32	320	260
15	150	755	33	330	442
16	160	716	34	340	407
17	170	702	35	350	389
18	180	690	36	360	277

Note: Distances are relative to the air modeling origin location, which is the easternmost corner of the Combination boilers building.

Table 4-11. Summary of Receptors Used for the PSD Class I Modeling Analyses

Receptor	UTM Coordinate (m)		Receptor	UTM Coordinate (m)		Receptor	UTM Coordinate (m)	
Number	Easting	Northing	Number	Easting	Northing	Number	Easting	Northing
St. Marks NWR			50	771000	3332000	100	784000	3336183
1	769660	3334380	51	773000	3330500	101	783000	3336171
2	770000	3333480	52	774000	3330500	102	791646	3336585
3	770420	3332920	53	771000	3336000	103	791439	3338244
4	771060	3332350	54	773000	3336000	104	789431	3338305
5	771850	3332110	55	774000	3336000	105	791300	3332259.3
6	772100	3332710	56	775000	3335000	106	791300	3331468.6
7	772380	3332160	57	775000	3334000	107	790443	3338299.2
8	772230	3331440	58	775000	3333000	108	791257.6	3335786.3
9	771570	3331050	59	776000	3333000			
10	771450	3330530	60	776000	3331000	St. Marks NWR (Thoms Isl.)		
11	771700	3330220	61	778000	3333500	109	744700	3322400
12	772420	3329810	62	779000	3334000	110	745400	3321399.9
13	773350	3329870	63	789000	3333000	111	746500	3321399.9
14	774000	3330230	64	794368	3328454.5	112	747100	3320500
15	774270	3331020	65	778372	3332268.5	113	746400	3319899.9
16	774100	3330040	66	778882.5	3332190.7	114	746200	3318800
17	774740	3330480	67	779661.2	3332675.2	115	745600	3318000
18	775370	3330910	68	780388.1	3332580.1	116	745200	3319200
19	776140	3331240	69	780742.8	3332363.7	117	745200	3320399.9
20	776220	3331880	70	781219.2	3332424.5	118	744100	3321500
21	776490	3332400	71	781868.1	3332952.4	119	744700	3321000
22	776440	3333010	72	782335.4	3332987	120	744700	3321700
23	777370	3332250	73	782984.3	3333471.6	121	745400	3321000
24	770000	3338000	74	783192	3333359.1	122	745400	3322000
25	770000	3336000	75	783936.1	3333488.9	123	746000	3319500
26	772000	3336000	76	784585	3333627.3	124	746000	3320500
27	772000	3333000	77	785173.4	3333203.3	125	746000	3321200
28	772000	3331000	78	785597	3333748.3			
29	775000	3333000	79	786159.4	3333644.4	Bradwell Bay NWR		
30	775000	3331000	80	787000	3333750	1	728000	3343000
31	777000	3333000	81	788000	3333218.75	2	728000	3341000
32	770200	3339000	82	782000	3335390.24	3	731000	3343000
33	770200	3338000	83	781000	3335268.29	4	731000	3341000
34	770200	3337200	84	780000	3333939	5	731000	3338000
35	774400	3336100	85	789500	3331512	6	733000	3343000
36	770400	3333000	86	791098	3330375	7	733000	3341000
37	768900	3337600	87	790098	3330847	8	733000	3338000
38	769100	3336800	88	794098	3329274	9	733000	3336000
39	768800	3338400	89	793098	3329183	10	733000	3333000
40	769300	3338800	90	792098	3329606	11	736000	3346000
41	769800	3339100	91	791244	3330549	12	736000	3343000
42	768755	3338411	92	791305	3333366	13	736000	3341000
43	769098	3338713	93	790915	3335000	14	736000	3338000
44	769399	3338902	94	791342	3337159	15	736000	3336000
45	769717	3339105	95	789000	3337914	16	738000	3343000
46	770257	3339219	96	788000	3337182	17	738000	3341000
47	769200	3336000	97	787000	3336476	18	741000	3341000
48	769700	3335000	98	786000	3336415			
49	770000	3334000	99	785000	3336244			

5.0 AIR MODELING ANALYSIS RESULTS

5.1 AAQS ANALYSES

Maximum predicted annual and 24-hour SO_2 concentrations are presented in Table 5-1 for three combination boiler emission scenarios:

1. Combination Boilers No. 3 and No. 4 both operating and emitting a maximum of 240 and 285 lb/hr, respectively (525 lb/hr total);
2. Combination Boiler No. 3 operating on fuel oil emitting a maximum of 485 lb/hr with No. 4 Combination Boiler operating on bark/natural gas only (minimal SO_2 emissions); and
3. Combination Boiler No. 4 operating on fuel oil and emitting a maximum of 575 lb/hr with No. 3 Combination Boiler operating on bark/natural gas only (minimal SO_2 emissions).

The maximum predicted 3-hour SO_2 concentrations are determined for the emission scenario of Combination Boilers No. 3 and No 4 both operating and emitting a maximum of 875 lb/hr SO_2 each. The maximum predicted NO_x, PM_{10}, and CO concentrations from the screening analysis due to all future modeled sources are presented in Table 5-2.

Based on the results of the screening analyses presented in Tables 5-1 and 5-2, refined modeling analyses were performed for each pollutant. The refined modeling results are added to a measured non-modeled background concentration to produce a cumulative total air quality concentration that can be compared with the AAQS. A summary of the refined analysis is presented in Table 5-3. All maximum impacts occurred at or near the SCC property boundary.

From the refined analyses, the maximum predicted total SO_2 concentrations are 42, 257, and 1,225 $\mu g/m^3$, for the annual, 24-hour, and 3-hour averaging times, respectively. These concentrations are all below the AAQS of 60, 260, and 1,300 $\mu g/m^3$ for the respective averaging times.

The maximum predicted total NO_2 concentration is 34 μg/m³, for the annual averaging time. This concentration is below the AAQS of 100 μg/m³.

The maximum predicted total PM_{10} concentrations are 44 and 146 μg/m³, for the annual and 24-hour averaging times, respectively. These concentrations are all below the AAQS of 50 and 150 μg/m³ for the respective averaging times.

The maximum predicted total CO concentrations are 8,994 and 10,417 μg/m³, for the 8-hour and 1-hour averaging times, respectively. These concentrations are below the AAQS of 10,000 and 40,000 μg/m³ for the respective averaging times.

5.2 PSD CLASS II ANALYSIS

Maximum predicted annual and 24-hour SO_2 PSD Class II increment consumption is presented in Table 5-4 for the three combination boiler emission scenarios. The maximum predicted 3-hour SO_2 PSD Class II increment consumption is determined for the emission scenario of Combination Boilers No. 3 and No 4 operating together and emitting SO_2 at 900 lb/hr each. The maximum predicted NO_2 and PM_{10} concentrations from the screening analysis due to all PSD-affecting sources are presented in Table 5-5. Based on the results of the screening analyses performed in Tables 5-4 and 5-5, refined modeling analyses were shown for all pollutants. The refined modeling results are compared with the allowable PSD Class II increments in Table 5-6.

The maximum predicted Class II SO_2 increment consumption concentrations are 18 and 500 μg/m³, for the 24-hour and 3-hour averaging times, respectively. For the annual averaging time, the PSD increment was predicted to be expanded in all areas (i.e., <0.0 μg/m³). These concentrations are all below the allowable PSD Class II increments of 20, 91, and 512 μg/m³, for the annual, 24-hour, and 3-hour averaging times, respectively.

The maximum predicted Class II NO_2 increment consumption concentration is 6.1 μg/m³, which is below the allowable PSD Class II increment of 25 μg/m³.

The maximum predicted Class II PM_{10} increment consumption concentrations are 3.3 and 22.6 μg/m^3, for the annual and 24-hour averaging times, respectively. These concentrations are below the allowable PSD Class II increments of 17 and 30 μg/m^3, respectively.

5.3 PSD CLASS I ANALYSIS

The maximum predicted SO_2, PM_{10}, and NO_2 concentrations due to PSD-affecting sources at the BBNWR and SMNWR PSD Class I areas are compared to the allowable PSD Class I increments in Table 5-7. The maximum predicted Class I SO_2 increment consumption concentrations are <0, 3.05, and 12.66 μg/m^3 for the annual, 24-hour, and 3-hour averaging times, respectively. These concentrations are below the allowable PSD Class I increments of 2, 5 and 25 μg/m^3, respectively, for the annual, 24-hour, and 3-hour averaging times.

The maximum predicted Class I PM_{10} increment consumption concentrations are less than 0.0 μg/m^3 for the annual averaging time and 0.73 μg/m^3 for the 24-hour averaging time, respectively. These concentrations are below the allowable PSD Class I increments of 4 μg/m^3 and 8 μg/m^3 for the annual and 24-hour averaging times, respectively.

The maximum predicted Class I NO_2 increment consumption concentration is 0.39 μg/m^3 for the annual averaging time. This concentration is well below the allowable PSD Class I increment of 2.5 μg/m^3.

5.4 MODEL COMPARISON

A comparison of ISCST3 and ISC-PRIME model results for SO_2 and PM_{10} are presented in Table 5-8. Two modeling scenarios are presented for comparison. The first column (Column A) presents the ISCST3 model results for the proposed compliance scenario, i.e., proposed lower emission rates for SO_2 and PM_{10} as described in Sections 1.0 and 2.0. The second column (Column B) provides ISCST-PRIME model results for the compliance scenario.

Table 5-1. Maximum Predicted SO_2 Impacts Due to All Future Sources, AAQS Screening Analysis

Averaging Time	Concentration[a] (ug/m^3)	Receptor Location[b] Direction (degree)	Distance (m)	Time Period (YYMMDDHH)
Both Combination Boilers Operating on Fuel Oil and/or Coal				
Annual				
	26.8	170	702	86123124
	28.7	170	702	87123124
	22.4	300	900	88123124
	19.9	330	900	89123124
	28.8	300	900	90123124
HSH 24-Hour				
	178	160	716	86081824
	243	290	500	87120724
	167	160	900	88100424
	164	150	755	89022324
	186	300	700	90060124
HSH 3-Hour				
	1,046	270	900	86021606
	1,213	280	700	87120806
	1,023	260	700	88092806
	981	270	700	89112503
	1,140	300	700	90091312
Only Combination Boiler No. 3 Operating on Fuel Oil and/or Coal				
Annual				
	27.7	170	702	86123124
	29.5	170	702	87123124
	22.5	300	900	88123124
	20.5	330	900	89123124
	28.8	300	900	90123124
HSH 24-Hour				
	186	160	716	86081824
	243	290	500	87120724
	172	160	900	88100424
	173	180	690	89122224
	188	300	700	90021424
Only Combination Boiler No. 4 Operating on Fuel Oil and/or Coal				
Annual				
	26.1	170	702	86123124
	28.0	170	702	87123124
	22.5	300	900	88123124
	19.4	330	900	89123124
	29.2	300	900	90123124
HSH 24-Hour				
	173	160	900	86030124
	245	290	500	87120724
	163	160	900	88100424
	163	150	755	89022324
	189	300	700	90060124

[a] Based on 5-year meteorological record, Pensacola/Apalachicola, 1986-87, and Apalachicola/Apalachicola, 1988-90

[b] Relative to Modeling Analysis Origin Location

Note:

YYMMDDHH = Year, Month, Day, Hour Ending

HSH = Highest, Second-Highest Concentration in 5 years.

Table 5-2. Maximum Predicted NO_2, PM_{10}, and CO Pollutant Impacts Due to All Future Sources, AAQS Screening Analyses

Averaging Time	Concentration[a] (ug/m^3)	Receptor Location[b] Direction (degree)	Distance (m)	Time Period (YYMMDDHH)
NO_2				
Annual				
	14.6	170	702	86123124
	15.3	170	702	87123124
	13.1	300	900	88123124
	10.8	330	900	89123124
	17.2	300	900	90123124
PM_{10}				
Annual				
	18.2	180	700	86123124
H6H 24-Hour				
	110.6	300	500	87031824
CO				
H2H 8-Hour				
	1,978	170	702	86050324
	2,895	280	300	87120808
	1,788	300	500	88040116
	1,779	180	690	89020916
	1,914	270	500	90042008
H2H 1-Hour				
	4,144	350	900	86100401
	4,199	270	900	87060723
	4,198	340	900	88062223
	4,406	340	900	89060502
	4,176	280	900	90011719

[a] Based on 5-year meteorological record, Pensacola/Apalachicola, 1986-87, and Apalachicola /Apalachicola, 1988-90

[b] Relative to Modeling Analysis Origin Location

Notes

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

H6H = 6th-Highest Concentration in 5 years.

Table 5-3. Maximum Predicted Pollutant Impacts Due to All Future Sources for Comparison to AAQS, Refined Analysis

Averaging Time	Concentration (ug/m³)			Receptor Location[b]		Time Period	Florida
	Total	Modeled	Background	Direction (degree)	Distance (m)	(YYMMDDHH)	AAQS (ug/m³)
SO_2							
Both Combination Boilers Operating on Fuel Oil and/or Coal							
Annual	40.7	28.7	12	170	702	87123124	60
	41.3	29.3	12	302	800	90123124	
H2H 24-Hour	255	243	12	290	500	87120724	260
H2H 3-Hour	1,225	1,213	12	280	700	87120806	1300
Only Combination Boiler No. 3 Operating on Fuel Oil and/or Coal							
Annual	41.6	29.6	12	172	698	87123124	60
	41.5	29.5	12	302	800	90123124	
H2H 24-Hour	255	243	12	290	500	87120724	260
Only Combination Boiler No. 4 Operating on Fuel Oil and/or Coal							
Annual	40.0	28.0	12	170	702	87123124	60
	41.5	29.5	12	302	800	90123124	
H2H 24-Hour	257	245	12	290	500	87120724	260
NO_2							
Annual	33.7	17.7	16	302	800	90123124	100
PM_{10}							
Annual	43.7	18.7	25	176	700	86123124	50
H6H 24-Hour	145.5	120.5	25	272	800	87031824	150
CO							
H2H 8-Hour	8,994	2,994	6,000	278	400	87120808	10,000
H2H 1-Hour	10,339	4,339	6,000	346	900	86020519	40,000
	10,319	4,319	6,000	268	900	87060722	
	10,417	4,417	6,000	342	900	88070923	
	10,406	4,406	6,000	340	900	89060502	
	10,265	4,265	6,000	278	900	90010324	

[a] Based on 5-year meteorological record, Pensacola/Apalachicola, 1986-87, and Apalachicola /Apalachicola, 1988-90

[b] Relative to Modeling Analysis Origin Location

Notes

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

H6H = 6th-Highest Concentration in 5 years.

Table 5-4. Maximum Predicted SO_2 PSD Class II Increment - Screening Analysis

Averaging Time	Concentration[a] (ug/m^3)	Receptor Location[b] Direction (degree)	Distance (m)	Time Period (YYMMDDHH)
Both Combination Boilers Operating on Fuel Oil and/or Coal				
Annual				
	<0	NA	NA	86123124
	<0	NA	NA	87123124
	<0	NA	NA	88123124
	<0	NA	NA	89123124
	<0	NA	NA	90123124
HSH 24-Hour				
	8.2	310	700	86082224
	7.0	210	1200	87092224
	14.0	300	1500	88020324
	7.0	350	1200	89070124
	6.7	260	700	90062924
HSH 3-Hour				
	395	330	900	86090918
	500	320	700	87060215
	452	300	900	88020112
	400	310	700	89072615
	434	270	700	90091212
Only Combination Boiler No. 3 Operating on Fuel Oil and/or Coal				
Annual				
	<0	NA	NA	86123124
	<0	NA	NA	87123124
	<0	NA	NA	88123124
	<0	NA	NA	89123124
	<0	NA	NA	90123124
HSH 24-Hour				
	6.8	270	2500	86020324
	7.0	260	700	87092824
	13.2	300	1500	88020324
	7.2	360	700	89042024
	7.8	260	1200	90121724
Only Combination Boiler No. 4 Operating on Fuel Oil and/or Coal				
Annual				
	<0	NA	NA	86123124
	<0	NA	NA	87123124
	<0	NA	NA	88123124
	<0	NA	NA	89123124
	<0	NA	NA	90123124
HSH 24-Hour				
	10.8	310	700	86082224
	7.9	210	1500	87092224
	15.2	300	1500	88020324
	8.2	350	1200	89070124
	7.9	260	700	90062924

[a] Based on 5-year meteorological record, Pensacola/Apalachicola, 1986-87, and Apalachicola/Apalachicola, 1988-90

[b] Relative to Modeling Analysis Origin Location

Notes:
YYMMDDHH = Year, Month, Day, Hour Ending
HSH = Highest, Second-Highest Concentration in 5 years.

Table 5-5. Maximum Predicted PM_{10} and NO_2 PSD Class II Increment, Screening Analysis

Averaging Time	Concentration[a] (ug/m³)	Receptor Location[b] Direction (degree)	Distance (m)	Time Period (YYMMDDHH)
PM_{10}				
Annual				
	2.84	190	700	86123124
	2.40	190	700	87123124
	2.63	200	700	88123124
	2.76	200	700	89123124
	3.17	300	900	90123124
H2H 24-Hour				
	15.0	270	700	86101224
	16.7	190	700	87122224
	20.8	20	295	88071024
	18.2	20	300	89010124
	16.8	20	500	90072224
NO_2				
Annual				
	4.4	170	702	86123124
	4.6	170	702	87123124
	4.4	300	900	88123124
	3.5	300	900	89123124
	6.0	300	900	90123124

[a] Based on 5-year meteorological record, Pensacola/Apalachicola, 1986-87, and Apalachicola /Apalachicola, 1988-90

[b] Relative to Modeling Analysis Origin Location

Notes

NA = Not Applicable

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

Table 5-6. Maximum Predicted Pollutant PSD Increment Consumption For Comparision With PSD Class II Allowable Increments, Refined Analysis

Averaging Time	Concentration (ug/m^3)	Receptor Location[b] Direction (degree)	Receptor Location[b] Distance (m)	Time Period (YYMMDDHH)	Allowable PSD Class II Increment (ug/m^3)
SO_2					
Both Combination Boilers Operating on Fuel Oil and/or Coal					
Annual	<0	NA	NA	NA	20
H2H 24-Hour	16.6	302	1700	88020324	91
H2H 3-Hour	500	320	700	87060215	512
Only Combination Boiler No. 3 Operating on Fuel Oil and/or Coal					
Annual	<0	NA	NA	NA	20
H2H 24-Hour	15.7	302	1700	88020324	91
Only Combination Boiler No. 4 Operating on Fuel Oil and/or Coal					
Annual	<0	NA	NA	NA	20
H2H 24-Hour	17.8	302	1700	88020324	91
PM_{10}					
Annual	3.3	300	800	90123124	17
H2H 24-Hour	22.6	16	400	88071024	30
	19.7	16	400	89010124	
NO_2					
Annual	6.1	302	800	90123124	25

[a] Based on 5-year meteorological record, Pensacola/Apalachicola, 1986-87, and Apalachicola/Apalachicola, 1988-90

[b] Relative to Modeling Analysis Origin Location

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

PSD = Prevention of Significant Deterioration

Table 5-7. Maximum Predicted SO_2, PM_{10}, and NO_2 PSD Increment at the Bradwell Bay and St. Marks NWRs

Averaging Time	Concentration[a] (ug/m³)	Receptor Location (U (m)	(m)	Time Period (YYMMDDH	Allowable PSD Class I Increment (ug/m³)
SO_2					
Annual					
	<0	NA	NA	86123124	2
	<0	NA	NA	87123124	
	<0	NA	NA	88123124	
	<0	NA	NA	89123124	
	<0	NA	NA	90123124	
H2H 24-Hour					
	2.47	728000	3341000	86010824	5
	2.11	738000	3341000	87102224	
	2.78	736000	3343000	88112224	
	3.05	736000	3343000	89080824	
	1.54	747100	3320500	90092424	
H2H 3-Hour					
	11.87	731000	3343000	86120103	25
	8.96	738000	3343000	87102212	
	10.67	736000	3343000	88010306	
	12.66	736000	3343000	89080812	
	8.61	736000	3341000	90080812	
PM_{10}					
Annual					
	<0	NA	NA	86123124	1
	<0	NA	NA	87123124	
	<0	NA	NA	88123124	
	<0	NA	NA	89123124	
	<0	NA	NA	90123124	
H2H 24-Hour					
	0.51	728000	3341000	86010824	5
	0.46	741000	3341000	87122224	
	0.65	736000	3346000	88010324	
	0.73	733000	3343000	89092024	
	0.40	786000	3336415	90102524	
NO_2					
Annual					
	0.39	770000	3338000	86123124	2.5
	0.38	770000	3338000	87123124	
	0.26	769700	3335000	88123124	
	0.26	736000	3346000	89123124	
	0.26	770000	3338000	90123124	

[a] Based on 5-year meteorological record, Pensacola/Apalachicola, 1986-87, and Apalachicola /Apalachicola, 1988-90

Note:

PSD = Prevention of Significant Deterioration

YYMMDDHH = Year, Month, Day, Hour Ending

UTM = Universal Transverse Mercator

H2H = Highest, 2nd-Highest

Table 5-8. ISCST3 and ISC-PRIME Results: Maximum Predicted Pollutant Impacts

Pollutant/ Averaging Time	(A) ISCST3 Reduced SO_2 and PM Emissions[a] Concentration (mg/m^3)	(B) ISC-PRIME Reduced SO_2 and PM Emissions[a] Concentration (mg/m^3)	Florida Air Quality Standard Standard (mg/m^3)
	AMBIENT AIR QUALITY STANDARDS		
SO_2			
Annual	45	41	60
24-Hour	283	257	260
3-Hour	2,597	1,225	1,300
PM_{10}			
Annual	45	44	50
24-Hour[b]	155	133	150
	PSD CLASS II INCREMENTS		
SO_2			
Annual	<0	0	20
24-Hour	7	17.8	91
3-Hour	1,057	500	512
PM_{10}			
Annual	2	3.3	50
24-Hour	14	22.6	150
	PSD CALSS I INCREMENTS		
SO_2			
Annual	<0	0.017	2
24-Hour	3.0	1.3	5
3-Hour	14.1	8.3	25
PM_{10}			
Annual	0.03	0	4
24-Hour	0.73	0.005	8

[a] Based on emissions for compliance scenario, as described in Section 2.0.

[b] Based on sixth-highest concentration in five years.

Notes

All concentrations represent Highest, 2nd-Highest Concentration in 5 years, unless otherwise noted.
Based on 5-year meterolological record, West Palm Beach, 1987-91.
All predicted concentrations include the following background concentrations:

SO_2 = 12 μg/m^3, annual average
= 12 μg/m^3, 24-hour average
= 12 μg/m^3, 3-hour average
PM_{10} = 25 μg/m^3, annual average
= 25 μg/m^3, 24-hour average
CO = 3,000 μg/m^3, 8-hour average
= 6,000 μg/m^3, 1-hour average

APPENDIX A

MAXIMUM CALCULATED EMISSION RATES

Table A-1. Maximum Emissions from Recovery Boiler Nos. 1 and 2 , Stone Container Corporation, Panama City

Regulated Pollutant	Each Recovery Boiler: Emission Factor	Reference	Activity Factor (a)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	112.5 lb/hr	1	8,760 hr/yr	112.5	492.8
Particulate (PM10)	77.6 % of PM	6	--	87.30	382.4
Sulfur dioxide	0.18 lb/MMBtu	3	721 MMBtu/hr	129.78	568.4
Nitrogen oxides	0.10 lb/MMBtu	3	721 MMBtu/hr	72.10	315.8
Carbon monoxide	20 lb/1,000 lb BLS	7	123.7 1,000 lb BLS/hr	2,474	2,872
VOC	0.058 lb C /MMBtu	3	721 MMBtu/hr	41.82	183.2
Sulfuric acid mist	0.011 lb/MMBtu	5	721 MMBtu/hr	7.95	34.8
Total reduced sulfur	17.5 ppmvd	1	187,100 dscfm (b)	17.3	75.9
Lead	7.2E-06 lb/MMBtu	2	721 MMBtu/hr	5.2E-03	2.3E-02
Mercury	5.5E-06 lb/MMBtu	2	721 MMBtu/hr	4.0E-03	1.7E-02
Beryllium	1.9E-07 lb/MMBtu	2	721 MMBtu/hr	1.4E-04	6.0E-04
Fluorides	ND	4	--	--	--

Notes:
(a) Based on currently permitted maximum operating rate of 123,700 lb virgin BLS/hr, 5,830 Btu/lb BLS, and 8,760 hr/yr.
(b) Based on 1997 compliance testing and 8% salt cake content of BLS throughput, ie. 92% virgin BLS. Flow rate at 8% oxygen.

References:
1. Currently permitted emission limit.
2. Emission factor based on NCASI Bulletin No. 650, Table 11D, direct contact evaporator, average factor used.
3. Emission factor based on NCASI Bulletin No. 646, Tables 8-11, direct contact evaporator with ESP, average factor used.
4. From "Application of Combustion Modifications to Industrial Combustion Equipment" EPA-600/7-79-015a. one test from recovery boiler.
5. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).
6. Based on AP-42 Tables 10.2-1, 10.2-2, and Figure 10.2-2 for Kraft pulping sources.
7. Based on NCASI Bulletin No. 416, Table 5 and Figure 17 (20 lb/1,000 lb BLS for hourly emissions and 5.3 lb/1,000 lb BLS for annual average).

Table A-2a. Maximum Emissions for Individual Fuels, No. 3 Combination Boiler Stone Container, Panama City

Regulated Pollutant	No. 6 Oil					Wood/Bark					Natural Gas				
	Emission Factor	Ref.	Activity Factors (a)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Emission Factor	Ref	Activity Factors (a,b)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Emission Factor	Ref.	Activity Factors (a)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	0.10 lb/MMBt	1	378 MMBtu/hr	37.80	165.56	0.3 lb/MMBt	1	474 MMBtu/hr	109.50 (e)	479.61	0.1 /MMBtu	1	30 MBtu/hr	3.00	13.14
Particulate (PM10)	86 % of PM	9	–	32.51	142.39	87 % of PM	5	– –	95.27	417.26	0.1 /MMBtu	1	30 MBtu/hr	3.00	13.14
Sulfur dioxide: 3-hr	875 lb/hr	8	– Mgal/hr	875 00		0.075 lb/TWWF	5	60.0 tons/hr	4.50		0.6 b/MMscf	6	0.03 MMscf/h	0.018	
24-hr	485 lb/hr (d)	8	–	485.00	2,124.30	0.075 lb/TWWF	5	60.0 tons/hr	4.50	19.71	0.6 b/MMscf	6	0.03 MMscf/h	0.018	0.079
Nitrogen oxides	47 lb/Mgal	2	2.52 Mgal/hr	118.44	518.77	1.5 lb/TWWF	5	60.0 tons/hr	90 00	394.20	280 lb/MMsc	6	0.03 MMscf/h	8.40	36.79
Carbon monoxide	5 lb/Mgal	2	2.52 Mgal/hr	12.60	55.19	2.923 lb/TWWF	7	60.0 tons/hr	175.38	768 16	84 lb/MMsc	6	0.03 MMscf/h	2.52	11.04
VOC	0 28 lb/Mgal	2	2.52 Mgal/hr	0.71	3.09	0.12 lb/TWWF	3	60.0 tons/hr	7.20	31.54	5.5 lb/MMsc	6	0.03 MMscf/h	1.65E-01	7.23E-01
Sulfuric acid mist: 24-	5.7S lb/Mgal (c	2	2.52 Mgal/hr	42.23	184.97	6.1 % of SO2	4	60.0 tons/hr	0 27	1.20	6.1 % of SO	4	–	0.0011	0.0048
Total reduced sulfur	–		–	–	–	–		–	–	–	–		–	–	–
Lead	1.51E-03 lb/Mgal	2	2.52 Mgal/hr	3.81E-03	1.67E-02	4.45E-04 lb/TWWF	5	60.0 tons/hr	2.67E-02	1.17E-01	1.00E-08 lb/MMsc	6	0.03 MMscf/h	3.00E-10	1 31E-09
Mercury	1.13E-04 lb/Mgal	2	2.52 Mgal/hr	2.85E-04	1.25E-03	5.15E-06 lb/TWWF	5	60.0 tons/hr	3.09E-04	1.35E-03	2.60E-04 lb/MMsc	6	0.03 MMscf/h	7.80E-06	3.42E-05
Beryllium	2.78E-05 lb/Mgal	2	2.52 Mgal/hr	7.01E-05	3.07E-04	– –		– –	–	–	1.20E-05 lb/MMsc	6	0.03 MMscf/h	3.60E-07	1.58E-06
Fluorides	3.73E-02 lb/Mgal	2	2.52 Mgal/hr	9.40E-02	4.12E-01	– –		– –	–	–	– –		– –	–	–

Notes:
TWWF - ton of wet wood residue fuel
All annual emissions based on 8,760 hr/yr operation.
Footnotes:
(a) Refer to Attachment SCC-EU8-G1.
(b) Based on 30 tons/hr dry basis, and 50% moisture in wood/bark.
(c) S = 2.4% max by current permit
(d) Proposed permit limit for 24 hour average for No. 3 Combination Boiler operating, with No. 4 Combination Boiler shutdown or operating on bark/natural gas only .
(e) Based on limit in current operating permit.
References:
1. Based on Florida Rule 62-296.410.
2. Emission Factors based on AP-42 Section 1.3 Table 1.3-1, 1.3-3, 1.3-4 and 1.3-11 for metals (assuming uncontrolled for metals). For sulfuric acid mist, factor shown is for SO3. Convert to HsSO4 by multiplying by 98/80
3. Emission Factor Based on NCASI TB 646 for an average Spreader Stoker Boilers with Scrubbers Tables1, 2, and 3.
4. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil: 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and sulfur trioxide molecular weights (98/80).
5. Emission Factors based on AP-42 Section 1.6 Table 1.6-1, 1.6-2, 1.6-3, 1.6-5 and 1.6-6 (2/99).
6. Emission Factors based on AP-42 Section 1.4 Table 1.4-1, 1.4-2, and 1.4-4.
7. Emission Factor Based on NCASI TB 416, Table 4.
8. Based on proposed permit limit.
9. Based on AP-42 Section 1.3, Table 1.3-5, for industrial boilers firing residual oil with no control

Table A-2b. Proposed Maximum Emissions For Alternate Fuel Scenarios for No. 3 Combination Boiler, Stone Container, Panama City

Regulated Pollutant	Maximum Wood/Bark plus Fuel Oil		Maximum Fuel Oil plus Wood/Bark		Condensate Stripper		Maximum (a)	
	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	109.50	479.61	56.40	247.03	--	--	109.50	479.61
Particulate (PM10)	97.76	428.18	48.69	213.26	--	--	97.76	428.18
Sulfur dioxide: 3-hr	77.22	--	875.00	--	240.24	--	875.00	--
24-hr	77.22	338.23	485.00	2,124.30	240.24	1,052.25	485.00	2,124.30
Nitrogen oxides	99.07	433.93	130.14	570.01	27.00	87.86	157.14	657.88
Carbon monoxide	176.35	772.39	35.40	155.05	--	--	176.35	772.39
VOC	7.25	31.77	1.64	7.19	--	--	7.25	31.77
Sulfuric acid mist	2.91	12.77	42.27	185.12	--	--	42.27	185.12
Total reduced sulfur	--	--	--	--	3.81	16.69	3.81	16.69
Lead	2.70E-02	1.18E-01	7.28E-03	3.19E-02	--	--	2.70E-02	1.18E-01
Mercury	3.31E-04	1.45E-03	3.25E-04	1.42E-03	--	--	3.31E-04	1.45E-03
Beryllium	5.37E-06	2.35E-05	7.01E-05	3.07E-04	--	--	7.01E-05	3.07E-04
Fluorides	7.20E-03	3.15E-02	9.40E-02	4.12E-01	--	--	9.40E-02	4.12E-01

(a) Maximum of either firing scenario plus the condensate stripper, except for 3-hour and 24-hour SO2 emissions, which are limited to 875 lb/hr and 485 lb/hr, respectively.

Table A-3a. Maximum Emissions for Individual Fuels, No 4 Combination Boiler, Stone Container, Panama City.

Regulated Pollutant	No. 6 Oil Emission Factor	Ref.	Activity Factors [a]	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Wood/Bark Emission Factor	Ref.	Activity Factors [a,b]	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Gas Emission Factor	Ref.	Activity Factors [a]	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Coal Emission Factor	Ref.	Activity Factors [a]	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	0.10 lb/MMBtu	1	473 MMBtu/hr	47.3	207.17	0 30 lb/MMBt	1	474 MMBtu/hr	86 60 [i]	379.31	0.1 b/MMBtu	1	40 MMBtu/	4 00	17 52	0.1 lb/MMBtu	1	395 MMBtu/h	39 50	173.01
Particulate (PM10)	86 % of PM	10	– –	40 68	178.17	87 % of PM	5	– –	75 34	330.00	0.1 b/MMBtu	1	40 MMBtu/	4 00	17 52	90 % of PM	7	–	35.55	155 71
Sulfur dioxide: 3-hr	875 lb/hr	9	3.153 Mgal/hr	875.00 [e]		0 075 lb/TWWF	9	60.0 tons/hr	4.50	19 71	0.6 lb/MMscf	6	0.04 MMscf/h	0.024		875 lb/hr [e]	–	–	875 0	
24-hr	575 lb/hr [h]	9		575.00	2,518.50	– –		– –	–	–	0.6 lb/MMscf	6	0 04 MMscf/h	0.024	0.11	575 lb/hr	9	–	575.0	2,518.50
Nitrogen oxides	47 lb/Mgal	2	3.153 Mgal/hr	148 19	649 08	1.5 lb/TWWF	5	60.0 tons/hr	90 00	394.20	280 lb/MMscf	6	0 04 MMscf/h	11 20	49 06	11 lb/ton	7	15.8 TPH	173 8	761.24
Carbon monoxide	5 lb/Mgal	2	3.153 Mgal/hr	15.77	69 05	2.923 lb/TWWF	8	60.0 tons/hr	175 38	768.16	84 lb/MMscf	6	0.04 MMscf/h	3 36	14 72	5 lb/ton	7	15.8 TPH	79 0	346 02
VOC	0.28 lb/Mgal	2	3.153 Mgal/hr	0.88	3 87	0.12 lb/TWWF	3	60.0 tons/hr	7.20	31.54	5.5 lb/MMscf	6	0.04 MMscf/h	0 22	0 96	0 05 lb/ton	3	15 8 TPH	0.79	3 46
Sulfuric acid mist: 24-hr	6.1 % of SO2	4	3.153 Mgal/hr	35.08	153 6	6 1 % of SO2	4	– –	0 27	1.20	6.1 % of SO2	4	–	1.46E-03	6 41E-03	6.1 % of SO2	4	–	35.08	153.63
Total reduced sulfur [c]	– –	–	– –		–	– –		– –	–	–	–		–	–	–	5 ppmvd [f]	1	164,500 acfm [g]	4.40	19.27
Lead	1.51E-03 lb/Mgal	2	3 153 Mgal/hr	4.8E-03	2.1E-02	4.45E-04 lb/TWWF	5	60 0 tons/hr	2.67E-02	1.17E-01	1.0E-08 lb/MMscf	6	0.04 MMscf/h	4 00E-10	1.75E-09	4.20E-04 lb/ton	7	15 8 TPH	6 64E-03	2.91E-02
Mercury	1.13E-04 lb/Mgal	2	3.153 Mgal/hr	3.6E-04	1.6E-03	5 15E-06 lb/TWWF	5	60 0 tons/hr	3.09E-04	1.35E-03	2.6E-04 lb/MMscf	6	0 04 MMscf/h	1.04E-05	4.56E-05	8.30E-05 lb/ton	7	15.8 TPH	1.31E-03	5 74E-03
Beryllium	2.78E-05 lb/Mgal	2	3.153 Mgal/hr	8.8E-05	3.8E-04	– –		–	–	–	1 20E-05 lb/MMscf	6	0.04 MMscf/h	4.80E-07	2.10E-06	2.10E-05 lb/ton	7	15.8 TPH	3.32E-04	1.45E-03
Fluorides	3.73E-02 lb/Mgal	2	3.153 Mgal/hr	1.2E-01	5.2E-01	– –		– –	–	–	– –		– –	–	–	0.15 lb/ton	7	15.8 TPH	2.37	10 38

Notes:
TWWF - ton of wet wood residue fuel
All annual emissions based on 8,760 hr/yr operation.
Footnotes
[a] Refer to Attachment SCC-EU9-G1.
[b] Based on 30 tons/hr dry basis and 50% moisture in wood/bark.
[c] TRS gases from digester and MEE system must be incinerated in the Lime Kiln or Bark Boiler at a minumum of 1,200 deg F for at least 0.5 seconds.
[d] Maximum fuel oil sulfur content = 2.4%
[e] Proposed permit limit, including TRS burning.
[f] All TRS emissions calculated under coal section.
[g] Based on Title V application.
[h] Proposed permit limit for 24 hour average for No. 4 Combination Boiler operating, and with No. 3 Combination Boiler shutdown or operating on bark/natural gas only.
[i] Based on limit in AC03-190964.
References:
1. Based on Florida Rule 62-296.410.
2. Emission Factors based on AP-42 Section 1 3 Table 1.3-1, 1.3-3, 1.3-4 and 1.3-11 for metals (assuming uncontrolled for metals)
3. Emission Factor Based on NCASI TB 646 for an average Spreader Stoker Boilers with Scrubbers Tables1, 2, and 3.
4. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil: 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and sulfur trioxide molecular weights (98/80).
5. Emission Factors based on AP-42 Section 1.6 Table 1.6-1, 1.6-2, 1.6-3, 1.6-5 and 1.6-6 (2/99).
6. Emission Factors based on AP-42 Section 1.4 Table 1.4-1, 1.4-2, and 1.4-4 .
7. Emission Factors based on AP-42 Section 1.1 Tables 1.1-3, 1.1-5, 1.1-9, 1.1-18 and 1.1-19 for spreader stoker boilers.
8. Emission Factor Based on NCASI TB 416, Table 4.
9. Based on proposed permit limit.
10. Based on AP-42 Section 1.3, Table 1.3-5, for industrial boilers firing residual oil with no control.

Table A-3b. Proposed Maximum Emissions For Alternate Fuel Scenarios, No. 4 Combination Boiler, Stone Container, Panama City

	Maximum Wood/Bark and Fuel Oil		Maximum Fuel Oil		Maximum Coal and Wood/Bark		Maximum Any Scenario	
Regulated Pollutant	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	86.60	379.31	47.30	207.17	63.80	279.44	86.60	379.31
Particulate (PM10)	81.45	356.74	40.68	178.17	56.69	248.31	81.45	356.74
Sulfur dioxide: 3-hr	182.73		875.00		875.00		875.00	
24-hr	182.73	800.34	575.00	2,518.50	575.00	2,518.50	575.00	2,518.50
Nitrogen oxides	112.23	491.57	148.19	649.08	189.10	828.26	189.10	828.26
Carbon monoxide	177.75	778.52	15.77	69.05	108.81	476.61	177.75	778.52
VOC	7.33	32.12	0.88	3.87	2.01	8.82	7.33	32.12
Sulfuric acid mist	11.15	48.82	35.08	153.63	35.12	153.83	35.12	153.83
Total reduced sulfur	--	--	--	--	4.4	19.3	4.40	19.27
Lead	2.74E-02	1.20E-01	4.76E-03	2.09E-02	1.12E-02	4.89E-02	2.74E-02	1.20E-01
Mercury	3.62E-04	3.57E+02	3.56E-04	1.56E-03	1.36E-03	5.97E-03	1.36E-03	3.57E+02
Beryllium	1.31E-05	5.76E-05	8.77E-05	3.84E-04	3.32E-04	1.45E-03	3.32E-04	1.45E-03
Fluorides	1.76E-02	7.73E-02	1.18E-01	5.15E-01	2.37	10.38	2.37	10.38

Table A-4. Future Emissions from No. 1 Smelt Dissolving Tank at Stone Container, Panama City.

Regulated Pollutant	Emission Factor		Reference	Activity Factor (a)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	29.71	lb/hr	1	8,760 hr/yr	29.7	130.1
Particulate (PM10)	89.5	% of PM	2	--	26.6	116.5
Sulfur dioxide	0.016	lb/ton BLS	3	61.85 tons BLS/hr	0.99	4.33
Nitrogen oxides	0.033	lb/ton BLS	3	61.85 tons BLS/hr	2.04	8.94
Carbon monoxide	--			--	--	--
VOC	0.062	lb/ton BLS	3	61.85 tons BLS/hr	3.83	16.8
Sulfuric acid mist	5	% of SO2	5	--	0.061	0.27
Total reduced sulfu	0.048	lb/ton BLS	6	61.85 tons BLS/hr	3.0	13.0
Lead	1.7E-05	lb/ton BLS	4	61.85 tons BLS/hr	0.001	0.005
Mercury	1.8E-07	lb/ton BLS	4	61.85 tons BLS/hr	1.1E-05	4.9E-05
Beryllium	1.4E-07	lb/ton BLS	4	61.85 tons BLS/hr	8.7E-06	3.8E-05
Fluorides	--			--	--	--

note:
(a) Based on the currently permitted maximum allowable operating rate of 123,700 lb virgin BLS/hr and 8,760 hr/yr.

References:
1. Currently permitted emission limit.
2. AP-42, Table 10.2-7.
3. Data is averages from NCASI Bulletin No. 646, Tables 16-18, for smelt dissolving tanks with scrubbers.
4. Data is averages from NCASI Bulletin No. 650, Tables 14A and 14B, for smelt dissolving tanks with scrubbers.
5. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).
6. Based on Rule 62-296.404(3)(d)1., F.A.C

Table A-5. Maximum Emissions from No. 2 Smelt Dissolving Tank at Stone Container, Panama City.

Regulated Pollutant	Emission Factor		Reference	Activity Factor (a)		Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	28.5	lb/hr	1	8,760	hr/yr	28.5	124.9
Particulate (PM10)	89.5	% of PM	2	--		25.5	111.8
Sulfur dioxide	0.016	lb/ton BLS	3	61.85	tons BLS/hr	0.99	4.33
Nitrogen oxides	0.033	lb/ton BLS	3	61.85	tons BLS/hr	2.04	8.94
Carbon monoxide	--			--		--	--
VOC	0.062	lb/ton BLS	3	61.85	tons BLS/hr	3.83	16.8
Sulfuric acid mist	5	% of SO2	5	--		0.061	0.27
Total reduced sulfur	0.048	lb/ton BLS	1	61.85	tons BLS/hr	3.0	13.0
Lead	1.7E-05	lb/ton BLS	4	61.85	tons BLS/hr	0.001	0.005
Mercury	1.8E-07	lb/ton BLS	4	61.85	tons BLS/hr	1.1E-05	4.9E-05
Beryllium	1.4E-07	lb/ton BLS	4	61.85	tons BLS/hr	8.7E-06	3.8E-05
Fluorides	--			--		--	--

note:
(a) Based on the currently permitted maximum allowable operating rate of 123,700 lb virgin BLS/hr and 8,760 hr/yr.

References:
1. Currently permitted emission limit.
2. AP-42, Table 10.2-7.
3. Data is averages from NCASI Bulletin No. 646, Tables 16-18, for smelt dissolving tanks with scrubbers.
4. Data is averages from NCASI Bulletin No. 650, Tables 14A and 14B, for smelt dissolving tanks with scrubbers.
5. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).

Table A-6 Maximum Emissions from the Woodyard at Stone Container, Panama City

SOURCE	Type of Operation (	M Moisture Content (%)	U Wind Speed (MPH)	Uncontrolled Emission Factor	Type of Control	Control Efficienc (%)	Controlled Emission Factor	Activity Factor	Maximum Annua PM Emissions (tons/yr)	PM10 Size Multiplier (c)	Maximum Annual PM10 Emissions (tons/yr)
ROUNDWOOD HANDLING											
Debarker	Debarking	--	--	0.024 lbs/ton (d)	Enclosure	80	0.00480 lbs/ton	1,946,934 TPY (e)	4.673	0.35	1.635
Chipper	Continuous Drop	30	7.8	0.00013 lbs/ton	None	0	0.00013 lbs/ton	1,946,934 TPY (e)	0.125	0.35	0.044
Chip Surge Bin to Conveyor	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.00003 lbs/ton	1,946,934 TPY (e)	0.025	0.35	0.0088
Conveyor to Tower No. 1 Chip Diverter	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.00003 lbs/ton	1,946,934 TPY (e)	0.025	0.35	0.0088
BARK HANDLING											
Debarker to Bark Conveyor	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.00003 lbs/ton	155,755 TPY (f)	0.0020	0.35	0.00070
Bark Conveyor to No. 1 Bark Diverter	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.00003 lbs/ton	155,755 TPY (f)	0.0020	0.35	0.00070
No. 1 Bark Diverter to Emergency Bark Storage Pile	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.00003 lbs/ton	0 TPY (f)	0.0000	0.35	0.00000
Emergency Bark Storage Pile	Wind Erosion	–	–	–	None	0	–	–	0.0094	1.0	0.0094
Unhogged Bark Storage Pile	Wind Erosion	–	–	–	None	0	–	–	0.0094	1.0	0.0094
Trucked Bark to Purchased Unhogged Bark Storage Pile	Batch Drop	30	7.8	0.00013 lbs/ton	None	0	0.00013 lbs/ton	316,098 TPY (g)	0.0203	0.35	0.00712
Front End Loaded to Bark Hopper	Batch Drop	30	7.8	0.00013 lbs/ton	None	0	0.00013 lbs/ton	316,098 TPY (g)	0.0203	0.35	0.00712
Wastewood Conveyor to No. 1 Bark Diverter	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	316,098 TPY (g)	0.0041	0.35	0.00142
No. 1 Bark Diverter to Disc Screen	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	471,853 TPY (h)	0.0061	0.35	0.00213
Bark Hog	Hammermill	–	–	0.024 lbs/ton (d)	Enclosed	80	0.00480 lbs/ton	471,853 TPY (h)	1.132	1.0	1.132
Bark Hog to Hogged Bark Conveyor	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	471,853 TPY (h)	0.0061	0.35	0.00213
Hogged Bark Conveyor to Hogged Bark Pile	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	471,853 TPY (h)	0.0061	0.35	0.00213
Hogged Bark Pile	Wind Erosion	–	–	–	None	0	–	–	0.0023	1.0	0.0023
Bark Bin Cyclone	Cyclone Vent	–	–	2.0 lb/hr	Cyclone	0	2.0 lb/hr	8,760 hr/yr	8.76	0.35	3.07
Bark Bin Cyclone to Small Bark Bin and Screw	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	471,853 TPY (h)	0.0061	0.35	0.00213
Small Bark Bin and Screw to Bark Conveyor	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	471,853 TPY (h)	0.0061	0.35	0.00213
Bark Conveyor to No. 2 Bark Diverter	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	471,853 TPY (h)	0.0061	0.35	0.00213
Bark Storage Pile Maintenance	Vehicular Traffic	–	–	0.74 lbs/VMT	None	0	0.74 lbs/VMT	21,900 VMT (i)	8.103	0.35	2.836
PURCHASED CHIP HANDLING											
Truck Unloading (Chip Van Hopper)	Batch Drop	30	7.8	0.00013 lbs/ton	Covered	60	0.000051 lbs/ton	762,300 TPY (j)	0.020	0.35	0.0069
Railcar Unloading (Chip Van Hopper)	Batch Drop	30	7.8	0.00013 lbs/ton	Covered	60	0.000051 lbs/ton	762,300 TPY (j)	0.020	0.35	0.0069
Truck Unloading Conveyor to Tower No. 1 Chip Diverter	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	762,300 TPY (j)	0.010	0.35	0.0034
Railcar Unloading Conveyor to Tower No. 1 Chip Diverte	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	762,300 TPY (j)	0.010	0.35	0.0034
MANUFACTURED AND PURCHASED CHIP PROCESSING											
Tower No. 1 Diverter to Chip Conveyor (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,315,779 TPY (k)	0.043	0.35	0.015
Chip Conveyor to Tower No. 2 Diverter (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,315,779 TPY (k)	0.043	0.35	0.015
Tower No. 2 Diverter to Chip Reclaim Conveyor (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,315,779 TPY (k)	0.043	0.35	0.015
Chip Reclaim Coveyor to Radial Conveyor (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,315,779 TPY (k)	0.043	0.35	0.015
Radial Conveyor to Chip Reclaimer Storage Pile (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,315,779 TPY (k)	0.043	0.35	0.015
Chip Reclaimer Storage Pile (2)	Wind Erosion	–	–	–	None	0	–	–	0.048	1.0	0.048
Chip Reclaimer Storage Pile to Chip Conveyor (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,315,779 TPY (k)	0.043	0.35	0.015
Chip Conveyor to Tower No. 2 Diverter (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,315,779 TPY (k)	0.043	0.35	0.015
Tower No. 2 Diverter to Chip Screw (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,315,779 TPY (k)	0.043	0.35	0.015
Chip Screw to Primary Screen (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,315,779 TPY (k)	0.043	0.35	0.015
Chip Screens	Screening										
Softwood Primary Screen Cyclone	Cyclone Vent	–	–	2.0 lb/hr	Cyclone, Enclosure	80	0.40 lb/hr	8,760 hr/yr	1.752	0.35	0.613
Hardwood Primary Screen Cyclone	Cyclone Vent	–	–	2.0 lb/hr	Enclosure	80	0.40 lb/hr	8,760 hr/yr	1.752	0.35	0.613
Primary Screen to Secondary Screen (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,315,779 TPY (k)	0.043	0.35	0.015
Secondary Screen to Chip Conveyor (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	2,321,045 TPY (l)	0.030	0.35	0.010
Screen Building Rejects Cyclone	Cyclone Vent	–	–	2.0 lb/hr	None	0	2.0 lb/hr	8,760 hr/yr	8.760	0.35	3.066
Screen Building Rejects Cyclone to Chip Conveyor	Continuous Drop	30	7.8	0.00013 lbs/ton	Covered	60	0.000051 lbs/ton	994,734 TPY (m)	0.026	0.35	0.009
Fines Blowline Emergency Storage Pile	Wind Erosion	–	–	–	None	0	–	–	0.00017	1.0	0.00017
Fines Blowline Cyclone	Cyclone Vent	–	–	2.0 lb/hr	None	0	2.0 lb/hr	8,760 hr/yr	8.760	0.35	3.07
Fines Blowline Cyclone to Wastewood/Sludge Conveyor	Continuous Drop	30	7.8	0.00013 lbs/ton	Covered	60	0.000051 lbs/ton	9,947 TPY (n)	0.000	0.35	0.000
Chip Conveyor to No. 5 Transfer Tower (2)	Continuous Drop	30	7.8	0.00013 lbs/ton	Enclosed	80	0.000026 lbs/ton	3,305,772 TPY (o)	0.043	0.35	0.015
TOTAL									44.61		16.39

Notes.

(a) Batch Drop and Continuous Drop Emission Factors are computed from AP-42 (US EPA, 1995) Section 13.2.4-3(1) E = 0.0032 x (U/5) ^ 1.3 / (M/2) ^ 1.4 lb/ton

(b) Wind Erosion Emissions based on AP-42 (US EPA, 1995) Section 13.2.5. Refer to Attachment A for derivation

(c) PM10 Size Multiplier is based on particles < 10 micrometers

(d) Debarker emissions are based on Table 28 of NCASI Technical Bulletin No. 424 (March 1984), Fugitive Dust Emission Factors and Control Methods Important to Forest Products Industry Manufacturing Operations

(e) Roundwood throughput is based on 466,800 cords/yr (softwood) @ 2.7 tons/cord and 178,800 cords/yr (hardwood) @ 2.85 tons/cord, plus 10 percent.

(f) Bark throughput is based on 8 percent of roundwood

(g) Based on purchased bark.

(h) Total bark throughput is sum of manufactured bark and purchased bark.

(i) Vehicle miles traveled (VMT) was calculated assuming front end loader operating 12 hrs/day, 365 days/yr in the woodyard

(j) Purchased chip throughput is based on 142,800 cords/yr (softwood) and 411,600 cords/yr (hardwood) @ 2.5 tons/cord, plus 10 percent

(k) Total chip throughput is based on 92 percent of roundwood throughput plus purchased chip throughput.

(l) Based on 70% of total chip throughput.

(m) Based on 30% of total chip throughput

(n) Fines separated from wood chip stream

(o) Total chips minus fines

Table A-7. Maximum Emissions from Lime Kiln (No. 6 Fuel Oil Fired) at Stone Container, Panama City.

Regulated Pollutant	Emission Factor		Reference	Activity Factor (a)		Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	29.83	lb/hr	1	8,760	hr/yr	29.83	130.7
Particulate (PM10)	98.3	% of PM	2	--		29.32	128.4
Sulfur dioxide	0.23	lb/ton CaO	4	20.4	ton CaO/hr	4.69	20.6
Nitrogen oxides	2.19	lb/ton CaO	4	20.4	ton CaO/hr	44.68	195.7
Carbon monoxide	0.22	lb/ton CaO	6	20.4	ton CaO/hr	4.49	19.7
VOC	0.24	lb C/ton CaO	4	20.4	ton CaO/hr	4.81	21.1
Sulfuric acid mist	0.014	lb/ton CaO	5	20.4	ton CaO/hr	0.29	1.3
Total reduced sulfur	20	ppmvd (b)	1	68,000	dscfm	7.27	31.9
Lead	3.8E-03	lb/ton CaO	3	20.4	ton CaO/hr	7.8E-02	3.4E-01
Mercury	9.1E-06	lb/ton CaO	3	20.4	ton CaO/hr	1.9E-04	8.1E-04
Beryllium	1.7E-05	lb/ton CaO	3	20.4	ton CaO/hr	3.5E-04	1.5E-03
Fluorides	--			--		--	--

Footnotes
(a) Based on currently permitted operating limit of 18.35 tons CaO/hr plus 10% impurities (20.4 tons/hr), 8,760 hr/yr.
(b) TRS Emission Factor as H2S corrected to 10% O2 as a 12-hour average.

References
1. Currently permitted emission limit.
2. Based on AP-42 Section 10.2 and Tables 10.2-1 and 10.2-4.
3. Based on NCASI Technical Bulletin No. 650, Table 13C.
4. Based on NCASI Technical Bulletin No. 646, Tables 12-14.
5. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).
6. Based on NCASI Technical Bulletin No. 416, Table 6.

Table A-8. Maximum Emissions from Lime Slaker at Stone Container, Panama City

Regulated Pollutant	Emission Factor	Reference	Activity Factor (a)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	4.0 lb/hr	1	8,760 hr/yr	4.0	17.5
Particulate (PM10)	100 % of PM	3	--	4.0	17.5
VOC	4.4E-02 lb/ton CaO	2	28.1 ton CaO/hr (b	1.24	5.4
Total reduced sulfur	ND	2	--	--	--

ND = Non-detectable
Footnotes
(a) Based on ratio of 1997 CaO production and pulp production to proposed pulp production plus 10% (purchased lime) and 8,760 hr/yr.
(b) 10% impurities included

References
1. Proposed emission limit.
2. Based on NCASI Technical Bulletin No. 701,page 237 and Table 17.
3. No data found, assume 100%.

Table A-9. Estimated CO Emissions From the Modified Bleach Plant,
Stone Container Corporation, Panama City, Florida

Source and Pulp Type	Emission Factor (a) (lb/ADTBP)	Production Rate Maximum (b) (ADTBP/day)	Production Rate Annual (c) (ADTBP/yr)	Maximum Emission Rate (d) lb/hr	Maximum Emission Rate (d) TPY
Bleaching Stages					
Hardwood	0.57	1,115.8	396,109	26.50	112.89
Softwood	1.02	725.3	257,482	30.82	131.32

Notes:
ADTUBP = Air Dried Tons of Unbleached Bleached Pulp
ODTUBP = Oven Dried Tons of Unbleached Bleached Pulp
ADTBP = Air Dried Tons of Bleached Pulp
ODTBP = Oven Dried Tons of Bleached Pulp
lb/hr = pounds per hour
TPY = tons per year
Footnotes:
(a) Emission factors based on data in NCASI Technical Bulletin No. 760: Carbon Monoxide Emissions From Oxygen Delignification and Chlorine Dioxide Bleaching of Wood Pulp.
Bleaching Stages:
Hardwood: Bleach plant design is 35.5 lb ClO2/ODTUBP / 0.94 = 37.8 lb ClO2/ODTBP = 1.9%
Using NCASI equation for hardwood (Figure 11): CO = (-0.03 x %ClO2) + 0.69 lb/ODTBP
CO = 0.63 lb/ODTBP x 0.90 = 0.57 lb/ADTBP
Softwood: Bleach plant design is 69 lb ClO2/ODTUBP / 0.94 = 75.8 lb ClO2/ODTBP = 3.8%
Using NCASI equation for softwood (Figure 8): CO = (0.18 x %ClO2) + 0.45 lb/ODTBP
CO = 1.13 lb/ODTBP x 0.90 = 1.02 lb/ADTBP

(b) Production rates based on following:
Hardwood - 1,187 ADTUBP/day = 1,115.8 ADTBP/day (bleached pulp = 94% of unbleached pulp)
Softwood - 797 ADTUBP/day = 725.3 ADTBP/day (bleached pulp = 91% of unbleached pulp)

(c) 355 day/yr operation.

(d) Bleach plant operates on hardwood or softwood, but not both at the same time.

APPENDIX B

BASELINE EMISSION AND STACK PARAMETERS

Stack Parameters for 1974 Baseline Sources, Stone Container Panama City Mill

Source	Stack Height (ft)	Stack Diameter (ft)	Stack Temp. (°F)	Flow Rate (acfm)	Stack Velocity (ft/s)	Basis
No. 4 Power Boiler	296	12.0	400	75,800	24.83	1/13/78 Stack Test
No. 5 Power Boiler	Common Stack with No. 4 PB		400	92,700	24.83	5/25/78 Stack Test
No. 6 Power Boiler	241	8.0	430	107,500	35.6	1/23/75 Application; 1980 Stack Test
No. 3 Bark Boiler w/ mech. Collectors	150	8.5	440	164,000	48.2	1/21/71 Application
No. 4 Bark Boiler w/ mech. Collectors	150	7.34	470	154,000	60.6	1/21/71 Application
No. 1 Recovery Boiler (2 stacks each)	233	6.46	310	172,900	88.0	12/8/77 Stack Test
No. 2 Recovery Boiler (2 stacks each)	233	6.46	320	159,800	81.3	12/29/77 Stack Test
No. 1 Smelt Dissolving Tank	233	6.0	150	28,700	16.9	12/5/78 Stack Test
No. 2 Smelt Dissolving Tank	233	6.0	140	29,500	17.4	12/30/77 Stack Test
Lime Kiln	61	6.66	160	70,260	33.6	12/11/75 & 1/12/78 Stack Tests
Lime Slaker	56	3.0	155	19,200	44.1	7/31/78 Stack Test

Stone Container- Panama City
PSD 1974 Baseline Emissions

			Short-Term Emissions						Annual Average Emissions		
		input	SO2 (lb/hr)	PM (lb/hr)	PM10 (lb/hr)			Input	SO2 (TPY)	PM (TPY)	PM10 (TPY)
BB3	No 6 oil (gal/hr)	910	342.9	23.0		AP-42, 2.4% S; PM10 is 95% of PM	No 6 oil (gal)	6,979,873	1,315.0	88.2	83.8
	Bark (ton/hr)	12.67	1.0	177.4	140.1	AP-42: PM10 is 79% of PM	Bark (ton)	110,960	20.9	776.7	613.6
	Total orMax		343.8	177.4	140.1		Total		1,335.9	864.9	697.4
BB4	No 6 oil (gal/hr)	1,449	546.0	36.6		AP-42, 2.4% S	No 6 oil (gal)	11,114,105	2,093.9	140.5	133.4
	Bark (ton/hr)	12.67	1.0	177.4	140.1	AP-42: 79% of PM	Bark (ton)	110,960	20.9	776.7	613.6
	Natural Gas (10^6 scf/hr)	1.38	0.8	10.5		AP-42	Natural Gas (10^6 scf)	165.936	0.05	0.6	0.6
	Total or Max		547.8	177.4	140.1		Total		2,114.9	917.8	747.7
	* Both Bark Boilers were equipped with mechanical cyclones and had fly ash reinjection in 1974.										
PB4	No 6 oil (gal/hr)	545.3	205.5	13.8	11.9	AP-42, 2.4% S; PM10 is 86% of PM	No 6 oil (gal)*	4,107,544	773.9	51.9	44.6
PB5	No 6 oil (gal/hr)	562.7	212.0	14.2	12.2	AP-42, 2.4% S; PM10 is 86% of PM	No 6 oil (gal)*	4,107,544	773.9	51.9	44.6
PB6	No 6 oil (gal/hr)	1,390.7	524.0	35.2	30.2	AP-42, 2.4% S; PM10 is 86% of PM	No 6 oil (gal)*	10,268,860	1,934.7	129.8	111.6
							* Note: Total BBLS fuel oil = 440,094. (total bbls)*(42 gal/bbls) Each boiler ratio is 1:1:2.5 bassed on heat input.				
RB1	MMBtu/hr	675	121.5			NCASI: 0.18 lb/MMBtu	lbs BLS @ 6,000 Btu/lb	838,500,000	452.8		
	Actuals from 12/08/77 test			59.12	45.88	AP-42: PM10 is 77.6 of PM	Actuals from 12/08/77 test; 350 day/yr			248.3	192.7
RB2	MMBtu/hr	675	121.5			NCASI: 0.18 lb/MMBtu	lbs BLS @ 6,000 Btu/lb	838,500,000	452.8		
	Actuals from 8/28/73 test			67.4	52.30	AP-42: PM10 is 77.6 of PM	Actuals from 8/28/73 test; 350 day/yr			283.1	219.7
SD1	BLS (ton ADUP/hr)	37.5	7.5			AP-42: 0.2 lb/ton ADUP	BLS (ton ADUP)	263,797	26.4		
	Actuals from 12/5/78 test			4.41	3.95	AP-42: PM10 is 89.5% of PM	Actuals from 12/5/78 test; 350 day/yr			18.5	16.6
SD2	BLS (ton ADUP/hr)	37.5	7.5			AP-42: 0.2 lb/ton ADUP	BLS (ton ADUP)	263,797	26.4		
	Actuals from 12/30/77 test			22.05	19.73	AP-42: PM10 is 89.5% of PM	Actuals from 12/30/77 test; 350 day/yr			92.6	82.9
Slaker	Actuals from 10/20/72 application			5.0	5.0	PM10 assumed equal to PM	Actuals from 10/20/72 application; 350 day/yr			21.0	21.0
Kiln	Actuals from 1/8/73 application			24.5	24.08	AP-42: PM10 is 98.3% of PM	Actuals from 1/8/73 application; 350 day/yr			102.9	101.2
	AP-42: 0.028 lb/MMBtu		3.2				AP-42: 0.028 lb/MMBtu		12.0		

Table B-1. 1987-1988 Baseline Emissions, SCC Panama City

Pollutant	No . 1 Smelt Dissolving Tank (TPY)	No . 2 Smelt Dissolving Tank (TPY)	No. 1 Recovery Boiler (TPY)	No. 2 Recovery Boiler (TPY)	No. 3 Bark Boiler (TPY)	No. 4 Bark Boiler (TPY)	No. 5 Power Boiler (TPY)	Lime Kiln (TPY)	Lime Slaker (TPY)	TOTAL (TPY)
Particulate (TSP)	72.13	82.83	61.27	145.00	172.70	133.19	41.41	109.38	35.10	853.02
Particulate (PM10)	64.55	74.14	47.55	112.52	150.25	115.87	41.41	107.52	35.10	748.92
Sulfur dioxide	3.40	3.79	579.65	642.97	861.64	959.75	221.67	14.39	--	3,287.27
Nitrogen oxides	7.02	7.82	276.90	287.38	228.33	484.28	97.50	137.00	--	1,526.22
Carbon monoxide	--	--	2,258.66	2,259.56	318.93	457.22	22.13	13.76	--	5,330.26
Volatile organic comp	13.19	14.68	144.05	145.26	3.84	6.53	1.36	14.76	2.81	346.49
Sulfuric acid mist	0.21	0.23	17.39	19.66	31.01	46.01	6.91	0.88	--	122.31
Total Reduced Sulfur	3.49	7.11	16.37	30.80	--	--	--	0.68	--	58.44
Lead	3.6E-03	4.0E-03	1.9E-02	1.9E-02	1.6E-02	3.1E-02	8.8E-04	0.24	--	3.3E-01
Mercury	3.8E-05	4.3E-05	1.4E-02	1.4E-02	5.8E-04	3.4E-03	1.7E-04	5.7E-04	--	3.2E-02
Beryllium	3.0E-05	3.3E-05	4.9E-04	5.0E-04	1.1E-04	8.1E-04	2.1E-05	1.1E-03	--	3.1E-03
Fluorides	--	--	2.1E-02	2.8E-02	1.5E-01	4.7E-02	2.2E-02	--	--	2.7E-01

Table B-2. 1987-1988 Baseline Emissions from No. 1 Recovery Boiler at Stone Container Corporation, Panama City

	BLS				No. 6 Fuel Oil				Tall Oil Pitch				Gas				
Regulated Pollutant	Emission Factor	Ref.	Activity Factor (a)	Annual Emissions (TPY)	Emission Factor	Ref.	Activity Factors (d)	Annual Emissions (TPY)	Emission Factor	Ref.	Activity Factors (c)	Annual Emissions (TPY)	Emission Factor	Ref.	Activity Factors (e)	Annual Emissions (TPY)	TOTAL ANNUAL EMISSIONS
Particulate (PM)	15.0 lb/hr	1	8,153 hr/yr	61.3	--		--	–	--		--	–	--		--	--	61.3
Particulate (PM10)	77.6 % of PM	6	--	47.5	--		--	--	–		–	--	–		--	--	47.5
Sulfur dioxide	0.18 lb/MMBtu	3	4.96E+06 MMBtu/yr	446.4	157 S (b)	8	820.01 Mgal/yr	133.2	–		–	–	0.6 lb/MMscf	9	19.120 MMscf/yr	0.0037	579.7
Nitrogen oxides	0.10 lb/MMBtu	3	4.96E+06 MMBtu/yr	248.0	47 lb/Mgal	8	820.01 Mgal/yr	19.3	0.31 lb/MMBt	10	44,402 MMBtu/yr	7.0	280 lb/MMscf	9	19.120 MMscf/yr	2.68	276.9
Carbon monoxide	5.3 lb/1,000 lb BLS	7	850,968 1,000 lb BLS/yr	2,255	5 lb/Mgal	8	820.01 Mgal/yr	2.05	0.033 lb/MMBt	10	44,402 MMBtu/yr	0.74	84 lb/MMscf	9	19.120 MMscf/yr	0.80	2258.7
VOC	0.058 lb C/MMBtu	3	4.96E+06 MMBtu/yr	143.8	0.28 lb/Mgal	8	820.01 Mgal/yr	0.11	0.0019 lb/MMBt	10	44,402 MMBtu/yr	0.04	5.5 lb/MMscf	9	19.120 MMscf/yr	0.05	144.0
Sulfuric acid mist	0.005 lb/MMBtu	5	4.96E+06 MMBtu/yr	12.6	5.7 S as SO3 (b)	8	820.01 Mgal/yr	4.84	–		–	–	0.037 lb/MMscf	5	19.120 MMscf/yr	0.00023	17.4
Total reduced sulfur	6.3 ppmvd (f)	1	118,974 dscfm	16.4	–		--	--			--	–	--		--	--	16.4
Lead	7.2E-06 lb/MMBtu	2	4.96E+06 MMBtu/yr	1.8E-02	1.5E-03 lb/Mgal	8	820.01 Mgal/yr	6.2E-04	1.0E-05 lb/MMBt	10	44,402 MMBtu/yr	2.2E-04	1.0E-08 lb/MMscf	9	19.120 MMscf/yr	9.56E-11	1.9E-02
Mercury	5.5E-06 lb/MMBtu	2	4.96E+06 MMBtu/yr	1.4E-02	1.1E-04 lb/Mgal	8	820.01 Mgal/yr	4.6E-05	7.5E-07 lb/MMBt	10	44,402 MMBtu/yr	1.7E-05	2.6E-04 lb/MMscf	9	19.120 MMscf/yr	2.49E-06	1.4E-02
Beryllium	1.9E-07 lb/MMBtu	2	4.96E+06 MMBtu/yr	4.7E-04	2.8E-05 lb/Mgal	8	820.01 Mgal/yr	1.1E-05	1.9E-07 lb/MMBt	10	44,402 MMBtu/yr	4.1E-06	1.20E-05 lb/MMscf	9	19.120 MMscf/yr	1.15E-07	4.9E-04
Fluorides	ND	4	--	–	3.7E-02 lb/Mgal	8	820.01 Mgal/yr	1.5E-02	2.5E-04 lb/MMBt	10	44,402 MMBtu/yr	5.5E-03	--		--	–	2.1E-02

ND = Non-detectable
ton = 2000 lb.
note:
(a) Heat input rate based on 1987-1988 BLS burned and 5,830 Btu/lb BLS
1987: 428,768 tons burned
1988: 422,200 tons burned
(b) Average fuel oil sulfur content = 2.07%
(c) Heat input rate based on 1987-1988 tall oil pitch (TOP) burned and 35.1 MMBtu/ton TOP
1987: 2,530 tons burned
1988: 0.0 tons burned
(d) Based on average 1987-1988 fuel oil usage and 150,000 Btu/gal fuel oil
1987: 1099.48 Mgal/yr @ 2.04% S
1988: 540.54 Mgal/yr @ 2.13% S
(e) Based on average 1987-1988 natural gas usage and 1,000 Btu/scf natural gas.
1987: 38.23 MMscf/yr
1988: 0.0 MMscf/yr
(f) Corrected to 8% O2

References:
1. Based on the average of the 1987 and 1988 compliance tests and operating data:
1987 = 12.32 lb PM/hr for 8,435 hr/yr; 6.31 ppmvd at 123,765 dscfm
1988 = 17.94 lb PM/hr for 7,871 hr/yr; 6.31 ppmvd at 113,839 dscfm
2. Emission factor based on NCASI Bulletin No. 650, Table 11D, direct contact evaporator, average factor used.
3. Emission factor based on NCASI Bulletin No. 646, page 16 and Tables 10 and 11, direct contact evaporator with ESP, average factor used.
4. From "Application of Combustion Modifications to Industrial Combustion Equipment" EPA-600/7-79-015a.
one test from recovery boiler.
5. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).
6. Based on AP-42 Table 10.2-2, and Figure 10.2-2 for Kraft pulping sources.
7. Based on NCASI Bulletin No. 416, Table 5.
8. Emission Factors based on AP-42 Section 1.3 Table 1.3-1, 1.3-3, 1.3-4 and 1.3-11 for metals (assuming uncontrolled).
9. Emission Factors based on AP-42 Section 1.4 Table 1.4-1, 1.4-2, and 1.4-4.
10. Similar to No. 6 Fuel Oil, No. 6 Fuel Oil emission factors converted to lb/MMBtu.

Table B-3. 1987-1988 Baseline Emissions from No. 2 Recovery Boiler at Stone Container Corporation, Panama City

	BLS				No. 6 Fuel Oil				Tall Oil Pitch				Gas				
Regulated Pollutant	Emission Factor	Ref.	Activity Factor (a)	Annual Emissions (TPY)	Emission Factor	Ref.	Activity Factors (d)	Annual Emissions (TPY)	Emission Factor	Ref.	Activity Factors (c)	Annual Emissions (TPY)	Emission Factor	Ref.	Activit y Factors (e)	Annual Emissions (TPY)	TOTAL ANNUAL EMISSIONS
Particulate (PM)	34.4 lb/hr	1	8,423 hr/yr	145.0	–		–	–	–		–	–	–		–	–	145.0
Particulate (PM10)	77.6 % of PM	6	–	112.5	–		–	–	–		–	–	–		–	–	112.5
Sulfur dioxide	0 18 lb/MMBtu	3	5.00E+06 MMBtu/yr	450.0	157 S (b)	8	1,187.53 Mgal/yr	193 0	–		–	–	0.6 lb/MMscf	9	19 120 MMscf/y	0 0037	643.0
Nitrogen oxides	0.10 lb/MMBtu	3	5 00E+06 MMBtu/yr	250.0	47 lb/Mgal	8	1,187.53 Mgal/yr	27.9	0.31 lb/MMBt	10	43,366 MMBtu/y	6.8	280 lb/MMscf	9	19 120 MMscf/y	2.68	287 4
Carbon monoxide	5.3 lb/1,000 lb BLS	7	850,968 1,000 lb BLS/yr	2,255	5 lb/Mgal	8	1,187.53 Mgal/yr	2.97	0.033 lb/MMBt	10	43,366 MMBtu/y	0.72	84 lb/MMscf	9	19.120 MMscf/y	0.80	2259.6
VOC	0.058 lb C/MMBtu	3	5.00E+06 MMBtu/yr	145.0	0.28 lb/Mgal	8	1,187.53 Mgal/yr	0 17	0.0019 lb/MMBt	10	43,366 MMBtu/y	0.04	5.5 lb/MMscf	9	19 120 MMscf/y	0 05	145.3
Sulfuric acid mist	0.005 lb/MMBtu	5	5 00E+06 MMBtu/yr	12.7	5.7 S as SO3 (b)	8	1,187.53 Mgal/yr	7.01	–		–	–	0 037 lb/MMscf	5	19 120 MMscf/y	0.00023	19 7
Total reduced sulfu	11.2 ppmvd (f)	1	121,662 dscfm	30.8	–		–	–	–		–	–	–		–	–	30.8
Lead	7.2E-06 lb/MMBtu	2	5 00E+06 MMBtu/yr	1.8E-02	1.5E-03 lb/Mgal	8	1,187.53 Mgal/yr	9.0E-04	1.0E-05 lb/MMBt	10	43,366 MMBtu/y	2.2E-04	1.0E-08 lb/MMscf	9	19.120 MMscf/y	9.56E-11	1.9E-02
Mercury	5.5E-06 lb/MMBtu	2	5.00E+06 MMBtu/yr	1.4E-02	1.1E-04 lb/Mgal	8	1,187.53 Mgal/yr	6.7E-05	7.5E-07 lb/MMBt	10	43,366 MMBtu/y	1.6E-05	2.6E-04 lb/MMscf	9	19.120 MMscf/y	2.49E-06	1.4E-02
Beryllium	1.9E-07 lb/MMBtu	2	5 00E+06 MMBtu/yr	4.8E-04	2.8E-05 lb/Mgal	8	1,187.53 Mgal/yr	1.7E-05	1.9E-07 lb/MMBt	10	43,366 MMBtu/y	4.0E-06	1.20E-05 lb/MMscf	9	19.120 MMscf/y	1.15E-07	5.0E-04
Fluorides	ND	4	–	–	3.7E-02 lb/Mgal	8	1,187.53 Mgal/yr	2.2E-02	2.5E-04 lb/MMBt	10	43,366 MMBtu/y	5.4E-03	–		–	–	2.8E-02

ND = Non-detectable
ton = 2000 lb.
note:
(a) Heat input rate based on 1987-1988 BLS burned and 5,830 Btu/lb BLS
    1987: 428,768 tons burned
    1988: 428,315 tons burned
(b) Average fuel oil sulfur content = 2.07%
(c) Heat input rate based on 1987-1988 tall oil pitch (TOP) burned and 35.1 MMBtu/ton TOP
    1987: 2,147 tons burned
    1988: 0.0 tons burned
(d) Based on average 1987-1988 fuel oil usage and 150,000 Btu/gal fuel oil
    1987: 1488.02 Mgal/yr @ 2.04% S
    1988: 887.04 Mgal/yr @ 2.13% S
(e) Based on average 1987-1988 natural gas usage and 1,000 Btu/scf natural gas.
    1987: 38.23 MMscf/yr
    1988: 0.0 MMscf/yr

References:
1. Based on the average of the 1987 and 1988 compliance tests and operating data:
   1987 = 25.30 lb PM/hr for 8,406 hr/yr; 11.24 ppmvd at 123,620 dscfm
   1988 = 43.53 lb PM/hr for 8,440 hr/yr; 11.24 ppmvd at 119,711 dscfm
2. Emission factor based on NCASI Bulletin No. 650, Table 11D, direct contact evaporator, average factor used.
3. Emission factor based on NCASI Bulletin No. 646, page 16 and Tables 10 and 11, direct contact evaporator with ESP, average factor used.
4. From "Application of Combustion Modifications to Industrial Combustion Equipment" EPA-600/7-79-015a.
   one test from recovery boiler
5. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take
   into account the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).
6. Based on AP-42 Table 10 2-2, and Figure 10.2-2 for Kraft pulping sources.
7. Based on NCASI Bulletin No. 416, Table 5.
8. Emission Factors based on AP-42 Section 1.3 Table 1.3-1, 1.3-3, 1.3-4 and 1.3-11 for metals (assuming uncontrolled).
9. Emission Factors based on AP-42 Section 1.4 Table 1.4-1, 1.4-2, and 1.4-4.
10. Similar to No. 6 Fuel Oil, No. 6 Fuel Oil emission factors converted to lb/MMBtu.

Table B-4. 1987-1988 Baseline Emissions from Power Boiler No. 5 at Stone Container, Panama City.

Regulated Pollutant	No. 6 Oil Emission Factor	Ref.	ctivity Factors (a	Annual Emissions (TPY)	Gas Emission Factor	Ref.	Activity Factors (a)	Annual Emissions (TPY)	Turpentine Heads Emission Factor	Ref.	Activity Factors (a)	Annual Emissions (TPY)	Total Annual Emissions (TPY)
Particulate (PM)	--		--	--	11.9 lb/hr	1	6960 hr/yr	41.4	--		--	--	41.4
Particulate (PM10)	--		--	--	100 % of PM	6	--	41.4	--		--	--	41.4
Sulfur dioxide	157 S (c)	2	1,164 Mgal/yr	190.1	0.6 lb/MMscf	6	433.714 MMscf/yr	0.1301	1.05 lb/MMBt	7	60,149 MMBtu/y	31.5	221.7
Nitrogen oxides	47 lb/Mgal	2	1,164 Mgal/yr	27.4	280 lb/MMscf	6	433.714 MMscf/yr	60.72	0.31 lb/MMBt	7	60,149 MMBtu/y	9.42	97.5
Carbon monoxide	5 lb/Mgal	2	1,164 Mgal/yr	2.91	84 lb/MMscf	6	433.714 MMscf/yr	18.22	0.033 lb/MMBt	7	60,149 MMBtu/y	1.00	22.1
VOC	0.28 lb/Mgal	2	1,164 Mgal/yr	0.16	5.5 lb/MMscf	6	433.714 MMscf/yr	1.19	0.0019 lb/MMBt	7	60,149 MMBtu/y	0.056	1.4
Sulfuric acid mist	5.7 S as SO3 (c)(d)	2	1,164 Mgal/yr	6.90	0.037 lb/MMscf	4	433.714 MMscf/yr	0.0080	--		--	--	6.9
Total reduced sulfu	--		--	--	--		--	--	--		--	--	--
Lead	1.5E-03 lb/Mgal	2	1,164 Mgal/yr	8.8E-04	1.0E-08 lb/MMscf	6	433.714 MMscf/yr	2.17E-09	6.7E-11 lb/MMBt	7	60,149 MMBtu/y	2.0E-09	8.8E-04
Mercury	1.1E-04 lb/Mgal	2	1,164 Mgal/yr	6.6E-05	2.6E-04 lb/MMscf	6	433.714 MMscf/yr	5.64E-05	1.7E-06 lb/MMBt	7	60,149 MMBtu/y	5.2E-05	1.7E-04
Beryllium	2.8E-05 lb/Mgal	2	1,164 Mgal/yr	1.6E-05	1.20E-05 lb/MMscf	6	433.714 MMscf/yr	2.60E-06	8.0E-08 lb/MMBt	7	60,149 MMBtu/y	2.4E-06	2.1E-05
Fluorides	3.7E-02 lb/Mgal	2	1,164 Mgal/yr	2.2E-02	--		--	--	--		--	--	2.2E-02

Footnotes

(a) Based on 1987 and 1988 average fuel usage rates.

1987: 2,022.38 Magl No. 6 Fuel Oil/yr @ 2.04% S; 489.088 MMscf natural gas/yr; and 3,427.28 tons turpentine heads/yr @35.1 MMBtu/ton

1988: 1,505.7 Magl No. 6 Fuel Oil/yr @ 2.13% S; 378.34 MMscf natural gas/yr; and 0.0 tons turpentine heads/yr @35.1 MMBtu/ton

(b) 50% H2O and heat content of 7.9 MMBtu/ton (wet).

(c) S = 2.08%

(d) Adjusted to account for the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).

References

1. Based on the average of the 1987 and 1988 compliance tests and operating data:
   1987 = 11.2 lb PM/hr and 180.4 lb SO2/hr for 8,172 hr/yr
   1988 = 12.92 lb PM/hr and 213.3 lb SO2/hr for 5,747 hr/yr
2. Emission Factors based on AP-42 Section 1.3 Table 1.3-1, 1.3-3, 1.3-4 and 1.3-11 for metals (assuming uncontrolled).
3. Emission Factor Based on NCASI TB 646 for an average Spreader Stoker Boilers with Scrubbers Tables1, 2, and 3.
4. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and sulfur trioxide molecular weights (98/80) .
5. Emission Factors based on AP-42 Section 1.6 Table 1.6-1, 1.6-2, 1.6-3, 1.6-5 and 1.6-6 (2/99).
6. Emission Factors based on AP-42 Section 1.4 Table 1.4-1, 1.4-2, and 1.4-4.
7. Similar to No. 6 Fuel Oil, No. 6 Fuel Oil emission factors converted to lb/MMBtu.

Table B-5. 1987-1988 Baseline Emissions from No. 3 Bark Boiler at Stone Container, Panama City.

Regulated Pollutant	No. 6 Oil Emission Factor	Ref.	ctivity Factors (a	Annual Emissions (TPY)	Wood/Bark Emission Factor	Ref	Activity Factors (a)(b	Annual Emissions (TPY)	Gas Emission Factor	Ref.	Activity Factors (a)	Annual Emissions (TPY)	Turpentine Residue Emission Factor	Ref	Activity Factors (a)	Annual Emissions (TPY)	Total Annual Emissions (TPY)
Particulate (PM)	--		--	--	40 9 lb/hr	1	8,441 hr/yr	172.7	--		--	--	--		--	--	172.7
Particulate (PM10)	--		--	--	87 % of PM	5	--	150.3	--		--	--	--		--	--	150.3
Sulfur dioxide	157 S (c)	2	7,992 Mgal/yr	852.3	0.075 lb/TWWF	5	43,692 TPY	1.1	0 6 lb/MMscf	6	37.624 MMscf/yr	0.0073	1.05 lb/MMBt	7	15,830 MMBtu/y	8.3	861.6
Nitrogen oxides	47 lb/Mgal	2	7,992 Mgal/yr	187.8	1.5 lb/TWWF	5	43,692 TPY	32.8	280 lb/MMscf	6	37.624 MMscf/yr	5 27	0.31 lb/MMBt	7	15,830 MMBtu/y	2.48	228 3
Carbon monoxide	5 lb/Mgal	2	7,992 Mgal/yr	19.98	13.6 lb/TWWF	5	43,692 TPY	297	84 lb/MMscf	6	37.624 MMscf/yr	1 58	0.033 lb/MMBt	7	15,830 MMBtu/y	0.26	318.9
VOC	0 28 lb/Mgal	2	7,992 Mgal/yr	1.12	0.12 lb/TWWF	3	43,692 TPY	2.6	5.5 lb/MMscf	6	37.624 MMscf/yr	0.10	0.0019 lb/MMBt	7	15,830 MMBtu/y	0 015	3.8
Sulfuric acid mist	5 7 S as SO3 (c)(d)	2	7,992 Mgal/yr	30.94	0.005 lb/TWWF	4	43,692 TPY	0.1	0 037 lb/MMscf	4	37.624 MMscf/yr	0.00045	--		--	--	31.0
Total reduced sulfu	--		--	--	--		--	--	--		--	--	--		--	--	--
Lead	1.5E-03 lb/Mgal	2	7,992 Mgal/yr	6.0E-03	4 5E-04 lb/TWWF	5	43,692 TPY	9.7E-03	1.0E-08 lb/MMscf	6	37.624 MMscf/yr	1 88E-10	6.7E-11 lb/MMBt	7	15,830 MMBtu/y	5.3E-10	1.6E-02
Mercury	1.1E-04 lb/Mgal	2	7,992 Mgal/yr	4.5E-04	5.2E-06 lb/TWWF	5	43,692 TPY	1.1E-04	2.6E-04 lb/MMscf	6	37.624 MMscf/yr	4 89E-06	1.7E-06 lb/MMBt	7	15,830 MMBtu/y	1 4E-05	5.8E-04
Beryllium	2.8E-05 lb/Mgal	2	7,992 Mgal/yr	1.1E-04	--		--	--	1.20E-05 lb/MMscf	6	37.624 MMscf/yr	2.26E-07	8.0E-08 lb/MMBt	7	15,830 MMBtu/y	6.3E-07	1.1E-04
Fluorides	3.7E-02 lb/Mgal	2	7,992 Mgal/yr	1.5E-01	--		--	--	--		--	--	--		--	--	1.5E-01

TWWF - ton of wet wood residue fuel

Footnotes

(a) Based on 1987 and 1988 average fuel usage rates.

1987: 7,498.26 Magl No. 6 Fuel Oil/yr @ 2.04% S; 0.0 tons Bark/yr; 75 248 MMscf natural gas/yr; and 0.0 tons turpentine residue/yr @ 35.1 MMBtu/ton

1988: 8,486.02 Magl No 6 Fuel Oil/yr @ 2.13% S; 87,383 tons Bark/yr; 0.0 MMscf natural gas/yr; and 902 tons turpentine residue/yr @ 35.1 MMBtu/ton

(b) 50% H2O and heat content of 7.9 MMBtu/ton (wet).

(c) S = 2.09% (assume 35% removal in wet scrubber).

(d) Adjusted to account for the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).

References

1. Based on the average of the 1987 and 1988 compliance tests and operating data:
   1987 = 34.84 lb PM/hr and 180.4 lb SO2/hr for 8,443 hr/yr
   1988 = 47.00 lb PM/hr and 213.3 lb SO2/hr for 8,438 hr/yr
2. Emission Factors based on AP-42 Section 1.3 Table 1.3-1, 1.3-3, 1.3-4 and 1.3-11 for metals (assuming uncontrolled).
3. Emission Factor Based on NCASI TB 646 for an average Spreader Stoker Boilers with Scrubbers Tables1, 2, and 3.
4. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and sulfur trioxide molecular weights (98/80) (Assuming 35 % removal by scrubber)
5. Emission Factors based on AP-42 Section 1.6 Table 1.6-1, 1.6-2, 1 6-3, 1.6-5 and 1.6-6 (2/99).
6. Emission Factors based on AP-42 Section 1.4 Table 1.4-1, 1.4-2, and 1.4-4.
7. Similar to No. 6 Fuel Oil, No. 6 Fuel Oil emission factors converted to lb/MMBtu.

Table B-6. 1987-1988 Baseline Emissions from No. 4 Bark Boiler at Stone Container, Panama City.

Regulated Pollutant	No. 6 Oil				Wood/Bark				Gas				Coal				Total Annual Emissions (TPY)
	Emission Factor	Ref.	Activity Factors (a	Annual Emissions (TPY)	Emission Factor	Ref.	ctivity Factors (a)(b	Annual Emissions (TPY)	Emission Factor	Ref.	Activity Factors (a)	Annual Emissions (TPY)	Emission Factor	Ref.	Activity Factors (a)	Annual Emissions (TPY)	
Particulate (PM)	--		--	--	31.55 lb/hr (d)	1	8,443 hr/yr	133.19	--		--	--	--		--	--	133.2
Particulate (PM10)	--		--	--	87 % of PM	5	--	115.87	--		--	--	--		--	--	115.9
Sulfur dioxide	157 S (d)	2	2,544 Mgal/yr	266.1	0.075 lb/TWW	5	63,222 TPY	1.5	0.6 lb/MMscf	6	59.940 MMscf/yr	0.01	38 S (c)	7	73,737 tons/yr	692.1	959.8
Nitrogen oxides	47 lb/Mgal	2	2,544 Mgal/yr	59.78	1.5 lb/TWW	5	63,222 TPY	47.4	280 lb/MMscf	6	59.940 MMscf/yr	8 39	10 lb/ton	7	73,737 tons/yr	368.7	484.3
Carbon monoxide	5 lb/Mgal	2	2,544 Mgal/yr	6.36	13.6 lb/TWW	5	63,222 TPY	430	84 lb/MMscf	6	59.940 MMscf/yr	2 52	0.5 lb/ton	7	73,737 tons/yr	18.4	457.2
VOC	0.28 lb/Mgal	2	2,544 Mgal/yr	0.36	0.12 lb/TWW	3	63,222 TPY	3.8	5.5 lb/MMscf	6	59.940 MMscf/yr	0 16	0.06 lb/ton	3	73,737 tons/yr	2 2	6.5
Sulfuric acid mist	5.7 S	2	2,544 Mgal/yr	9.66	0.005 lb/TWW	4	63,222 TPY	0.1	0.03675 lb/MMscf	4	59.940 MMscf/yr	0.001	1.51 lb/ton	4	73,737 tons/yr	36 3	46.0
Total reduced sulfu	--		--	--	--	1	--	--	--		--	--	--		--	--	--
Lead	1.5E-03 lb/Mgal	2	2,544 Mgal/yr	1.9E-03	4 5E-04 lb/TWW	5	63,222 TPY (a)	1.4E-02	1.0E-08 lb/MMscf	6	59.940 MMscf/yr	3.00E-10	4.2E-04 lb/ton	7	73,737 tons/yr	1 5E-02	3.1E-02
Mercury	1.1E-04 lb/Mgal	2	2,544 Mgal/yr	1.4E-04	5 2E-06 lb/TWW	5	63,222 TPY (a)	1.6E-04	2.6E-04 lb/MMscf	6	59.940 MMscf/yr	7.79E-06	8.3E-05 lb/ton	7	73,737 tons/yr	3.1E-03	3.4E-03
Beryllium	2.8E-05 lb/Mgal	2	2,544 Mgal/yr	3.5E-05	--		--	--	1.20E-05 lb/MMscf	6	59 940 MMscf/yr	3 60E-07	2.1E-05 lb/ton	7	73,737 tons/yr	7.7E-04	8 1E-04
Fluorides	3.7E-02 lb/Mgal	2	2,544 Mgal/yr	4.7E-02	--		--	--	--		--	--	--		--	--	4.7E-02

TWWF - ton of wet wood residue fuel

Footnotes

(a) Based on 1987 and 1988 average fuel usage rates.

1987: 4,571.07 Magl No. 6 Fuel Oil/yr @ 2.04% S; 51,679 tons Bark/yr; 111.871 MMscf natural gas/yr, and 76,571 tons coal/yr @ 0.80% S

1988: 515.97 Magl No. 6 Fuel Oil/yr @ 2.13% S, 74,764 tons Bark/yr; 0.0 MMscf natural gas/yr; and 70,902 tons coal/yr @ 0.71% S

(b) 50% H2O and heat content of 7.9 MMBtu/ton (wet).

(c) Average 1996-1997 coal sulfur content = 0.76% (assume 35% removal in wet scrubber).

(d) S = 2 05% (assume 35% removal in wet scrubber).

References

1. Based on the average of the 1987 and 1988 compliance tests and operating data:
   - 1987 = 36.98 lb PM/hr for 8,451 hr/yr
   - 1988 = 26.1 lb PM/hr for 8,434 hr/yr
2. Emission Factors based on AP-42 Section 1.3 Table 1.3-1, 1.3-3, 1 3-4 and 1.3-11 for metals (assuming uncontrolled).
3. Emission Factor Based on NCASI TB 646 for an average Spreader Stoker Boilers with Scrubbers Tables1, 2, and 3.
4. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and sulfur trioxide molecular weights (98/80) (Assuming 35 % removal by scrubber).
5. Emission Factors based on AP-42 Section 1 6 Table 1.6-1, 1 6-2, 1.6-3, 1.6-5 and 1.6-6 (2/99).
6. Emission Factors based on AP-42 Section 1.4 Table 1.4-1, 1.4-2, and 1.4-4.
7. Emission Factors based on AP-42 Section 1.1 Tables 1.1-3 and 1 1-18 (35% SO2 removal by wet scrubber).

Table B-7. 1987-1988 Baseline Emissions from Lime Kiln (No. 6 Fuel Oil Fired) at Stone Container, Panama City.

Regulated Pollutant	Emission Factor	Reference	Activity Factor (a)	Annual Emissions (TPY)
Particulate (PM)	26.08 lb/hr	1	8,388 hr/yr	109.4
Particulate (PM10)	98.3 % of PM	2	--	107.5
Sulfur dioxide	0.23 lb/ton CaO	4	125,112 ton CaO/yr	14.4
Nitrogen oxides	2.19 lb/ton CaO	4	125,112 ton CaO/yr	137.0
Carbon monoxide	0.22 lb/ton CaO	6	125,112 ton CaO/yr	13.8
VOC	0.24 lb C/ton CaO	4	125,112 ton CaO/yr	14.8
Sulfuric acid mist	0.014 lb/ton CaO	5	125,112 ton CaO/yr	0.9
Total reduced sulfur	0.67 ppmvd (b)	1	45,000 dscfm	0.7
Lead	3.8E-03 lb/ton CaO	3	125,112 ton CaO/yr	2.4E-01
Mercury	9.1E-06 lb/ton CaO	3	125,112 ton CaO/yr	5.7E-04
Beryllium	1.7E-05 lb/ton CaO	3	125,112 ton CaO/yr	1.1E-03
Fluorides	--		--	--

Footnotes
(a) 1987-1988 average operating hours, CaO production and pulp production:
1987 = 115,571 tons CaO (10% impurities)
1988 = 134,652 tons CaO (10% Impurities)
(b) TRS Emission Factor as H2S corrected to 10% O2 as a 12-hour average.

References
1. Compliance testing and operating rates:
1987: 27.07 lb PM/hr, no data for TRS, and 8,328 hr/yr
1988: 25.11 lb PM/hr, 0.67 ppmvd TRS, and 8,448 hr/yr
2. Based on AP-42 Section 10.2 and Tables 10.2-1 and 10.2-4.
3. Based on NCASI Technical Bulletin No. 650, Table 13C.
4. Based on NCASI Technical Bulletin No. 646, Tables 12-14.
5. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).
6. Based on NCASI Technical Bulletin No. 416, Table 6.

Table B-8. 1987-1988 Baseline Emissions from Lime Slaker at Stone Container, Panama City.

Regulated Pollutant	Emission Factor	Reference	Activity Factor (a)	Annual Emissions (TPY)
Particulate (PM)	8.370 lb/hr	1	8,388 hr/yr	35.1
Particulate (PM10)	100 % of PM	3	--	35.1
VOC	4.4E-02 lb /ton CaO	2	127,953 ton CaO/yr	2.8
Total reduced sulfur	ND	2	--	--

ND = Non-detectable

Footnotes

(a) 1987-1988 average operating hours and CaO recovery.
1987 = 115,571 tons CaO (10% impurities)
1988 = 140,335 tons CaO (10% impurities)

References

1. Compliance testing and operating hours:
1987: 5.93 lb PM/hr and 8,328 hr/yr
1988: 10.78 lb PM/hr and 8,448 hr/yr
2. Based on NCASI Technical Bulletin No. 701,page 237 and Table 17.
3. No data found, assume 100%.

Table B-9. 1987-1988 Baseline Emissions from No. 2 Smelt Dissolving Tank at Stone Container, Panama City.

Regulated Pollutant	Emission Factor		Reference	Activity Factor (a)		Annual Emissions (TPY)
Particulate (PM)	20.1	lb/hr	1	8,230	hr/yr	82.8
Particulate (PM10)	89.5	% of PM	2	--		74.1
Sulfur dioxide	0.016	lb/ton BLS	3	473,694	tons BLS/yr	3.79
Nitrogen oxides	0.033	lb/ton BLS	3	473,694	tons BLS/yr	7.82
Carbon monoxide	--			--		--
VOC	0.062	lb/ton BLS	3	473,694	tons BLS/yr	14.68
Sulfuric acid mist	5	% of SO2	5	--		0.23
Total reduced sulfur	0.0300	lb/ton BLS	1	473,694	tons BLS/yr	7.11
Lead	1.7E-05	lb/ton BLS	4	473,694	tons BLS/yr	4.0E-03
Mercury	1.8E-07	lb/ton BLS	4	473,694	tons BLS/yr	4.3E-05
Beryllium	1.4E-07	lb/ton BLS	4	473,694	tons BLS/yr	3.3E-05
Fluorides	--			--		--

ton = 2000 lb.
note:
(a) Average 1987-1988 BLS from No. 1 Recovery Boiler
1987: 428,768 tons burned
1988: 428,315 tons burned

References:
1. Based on the average of the 1987 and 1988 compliance tests and operating data:
1987 = 14.67 lb PM/hr and 0.0461 lbTRS/3000 lb BLS; for 8,406 hr/yr
1988 = 25.57 lb PM/hr and 0.0440 lbTRS/3000 lb BLS; for 8,440 hr/yr
2. AP-42, Table 10.2-7.
3. Data is averages from NCASI Bulletin No. 646, Tables 16-18, for smelt dissolving tanks with scrubbers.
4. Data is averages from NCASI Bulletin No. 650, Tables 14A and 14B, for smelt dissolving tanks with scrubbers.
5. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).

Table B-10. 1987-1988 Baseline Emissions from No. 1 Smelt Dissolving Tank at Stone Container, Panama City.

Regulated Pollutant	Emission Factor		Reference	Activity Factor (a)		Annual Emissions (TPY)
Particulate (PM)	17.13	lb/hr	1	8,421	hr/yr	72.1
Particulate (PM10)	89.5	% of PM	2	--		64.6
Sulfur dioxide	0.016	lb/ton BLS	3	425,484	tons BLS/yr	3.40
Nitrogen oxides	0.033	lb/ton BLS	3	425,484	tons BLS/yr	7.02
Carbon monoxide	--			--		--
VOC	0.062	lb/ton BLS	3	425,484	tons BLS/yr	13.2
Sulfuric acid mist	5	% of SO2	5	--		0.21
Total reduced sulfur	0.0164	lb/ton BLS	1	425,484	tons BLS/yr	3.49
Lead	1.7E-05	lb/ton BLS	4	425,484	tons BLS/yr	3.6E-03
Mercury	1.8E-07	lb/ton BLS	4	425,484	tons BLS/yr	3.8E-05
Beryllium	1.4E-07	lb/ton BLS	4	425,484	tons BLS/yr	3.0E-05
Fluorides	--			--		--

ton = 2000 lb.
note:
(a) Average 1987-1988 BLS from No. 1 Recovery Boiler
1987: 428,768 tons burned
1988: 422,200 tons burned

References:
1. Based on the average of the 1987 and 1988 compliance tests and operating data:
1987 = 14.85 lb PM/hr and 0.02 lbTRS/3000 lb BLS; for 8,435 hr/yr
1988 = 19.42 lb PM/hr and 0.0291 lbTRS/3000 lb BLS; for 8,406 hr/yr
2. AP-42, Table 10.2-7.
3. Data is averages from NCASI Bulletin No. 646, Tables 16-18, for smelt dissolving tanks with scrubbers.
4. Data is averages from NCASI Bulletin No. 650, Tables 14A and 14B, for smelt dissolving tanks with scrubbers.
5. Based on similar derivation of sulfuric acid mist from AP-42 for fuel oil. 5% of SO2 becomes SO3 then take into account the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).

APPENDIX C

BUILDING DOWNWASH PROCESSING

```
' SCC Building Locations, Future, Panama City, M,TN 6/6/99'
'ST'
'METERS' 1.0
'UTMN' 0.
12
'RecovBlr' 1 0
4  60.3504
   19.03              19.84
   45.65              -2.50
   14.79             -39.27
  -11.82             -16.94
'tier #1'  1 0
4  72.8472
    6.96             -20.16
   -1.10             -13.40
    2.43              -9.20
   10.48             -15.96
'tier #2'  1 0
4  72.8472
   13.13             -12.81
    5.07              -6.05
    8.60              -1.84
   16.65              -8.60
'tier #3'  1 0
4  72.8472
   19.89              -4.75
   11.83               2.01
   15.36               6.21
   23.41              -0.55
'tier #4'  1 0
4  72.8472
   25.76               2.25
   17.71               9.01
   21.24              13.22
   29.29               6.46
'BleachPlt' 1 0
4  21.6408
   64.75            -187.43
   82.96            -202.71
   58.87            -231.43
   40.65            -216.15
'Eng. & Maint' 1 0
6  10.668
 -152.07            -220.35
 -115.63            -176.92
 -113.88            -178.39
  -88.60            -148.27
  -77.40            -157.68
 -139.11            -231.22
'Supt OffSt'  1 0
12 10.668
  -193.14            -214.53
  -154.65            -168.65
  -158.85            -165.13
  -138.28            -140.61
  -134.07            -144.14
  -122.32            -130.13
  -109.71            -140.71
  -127.93            -162.42
  -124.08            -165.65
```

```
  -155.52              -203.13
  -159.38              -199.90
  -180.54              -225.11
'CoolTowers'  1 0
5  9.144
  142.97               -46.56
  121.96               -28.92
   89.63               -67.45
   89.87               -81.38
  103.88               -93.14
'Pulp Mill'  1 0
14 25.2984
  -28.39               -68.69
  -63.95              -111.07
  -54.49              -119.00
  -76.83              -145.62
  -86.28              -137.68
  -97.45              -150.99
 -109.71              -140.71
  -98.54              -127.40
 -116.41              -112.41
  -96.72               -88.94
 -102.32               -84.24
  -80.28               -57.97
  -68.02               -68.26
  -51.86               -49.00
'Paper Mill' 1 0
22 12.192
 -311.97              -332.67
  -331.23              -316.51
  -327.12              -311.60
  -334.82              -305.14
  -318.07              -285.18
  -345.39              -262.25
  -302.48              -211.12
  -275.17              -234.04
   -65.33                16.03
   -19.10               -22.77
   -26.45               -31.52
   -17.69               -38.87
   -32.39               -56.38
   -61.81               -31.69
  -104.42               -82.48
   -99.52               -86.59
  -174.46              -175.90
  -172.01              -177.96
  -225.79              -242.05
  -221.23              -245.87
  -234.75              -261.98
  -245.26              -253.17
'Bark Blr'   1 0
4  33.8328
  -23.47                19.69
    0.00                 0.00
  -19.10               -22.77
  -42.57                -3.08
11
'LKILN'    0.0     18.6   163.79   -35.97
'LSKR '    0.0     17.1    41.47  -147.60
'RB1  '    0.0     71.0     5.00    -8.97
```

```
'SDT1  '    0.0       71.0     0.80     -5.45
'RB2   '    0.0       71.0    17.93      6.44
'SDT2  '    0.0       71.0    13.73      9.96
'BB3   '    0.0       64.9   -28.16     17.66
'BB4   '    0.0       64.9   -33.45     11.35
'BLEACH'    0.0       26.2    61.52   -209.78
'INCIN '    0.0       36.6   121.0     -17.97
'PB5    '   0.0       90.2   -46.2      12.51
0
```

SCC Building Locations, Future, Panama City, M,TN 6/6/99

=============================
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.

UTMP is set to UTMN. The input is assumed to be in a local X-Y coordinate system as opposed to a UTM coordinate system. True North is in the positive Y direction.

Plant north is set to 0.00 degrees with respect to True North.

SCC Building Locations, Future, Panama City, M,TN 6/6/99

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
LKILN	18.60	0.00	149.24	149.24
LSKR	17.10	0.00	149.23	149.23
RB1	71.00	0.00	149.24	149.24
SDT1	71.00	0.00	149.24	149.24
RB2	71.00	0.00	149.24	149.24
SDT2	71.00	0.00	149.24	149.24
BB3	64.90	0.00	149.24	149.24
BB4	64.90	0.00	149.24	149.24
BLEACH	26.20	0.00	149.23	149.23
INCIN	36.60	0.00	149.24	149.24
PB5	90.20	0.00	149.24	149.24

* 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.

DATE : 0/ 0/ 0
TIME : 0: 0: 0

SCC Building Locations, Future, Panama City, M,TN 6/6/99

BPIP output is in meters

SO	BUILDHGT	LKILN	0.00	0.00	0.00	0.00	9.14	9.14
SO	BUILDHGT	LKILN	9.14	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	LKILN	0.00	60.35	60.35	0.00	0.00	0.00
SO	BUILDHGT	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	LKILN	0.00	0.00	0.00	0.00	37.57	46.58
SO	BUILDWID	LKILN	54.16	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	LKILN	0.00	57.48	59.11	0.00	0.00	0.00
SO	BUILDWID	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	LKILN	0.00	0.00	0.00	0.00	63.06	63.40
SO	BUILDLEN	LKILN	61.81	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	LKILN	0.00	59.10	57.47	0.00	0.00	0.00
SO	BUILDLEN	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	LKILN	0.00	0.00	0.00	0.00	-85.81	-86.72
SO	XBADJ	LKILN	-84.99	-169.64	-175.61	-176.25	-171.53	-161.60
SO	XBADJ	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	LKILN	0.00	110.53	118.14	0.00	0.00	0.00
SO	XBADJ	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	LKILN	0.00	0.00	0.00	0.00	13.50	3.73
SO	YBADJ	LKILN	-6.15	51.36	26.25	0.35	-25.56	-50.70
SO	YBADJ	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	LKILN	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	LKILN	0.00	-51.36	-26.25	0.00	0.00	0.00
SO	YBADJ	LKILN	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	LSKR	60.35	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	LSKR	0.00	0.00	25.30	25.30	25.30	25.30
SO	BUILDHGT	LSKR	25.30	25.30	60.35	60.35	60.35	60.35
SO	BUILDHGT	LSKR	60.35	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	LSKR	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	LSKR	0.00	21.64	60.35	60.35	60.35	60.35
SO	BUILDWID	LSKR	54.09	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	LSKR	0.00	0.00	101.99	108.36	111.43	111.12
SO	BUILDWID	LSKR	107.44	108.59	56.99	58.94	59.10	57.47
SO	BUILDWID	LSKR	54.09	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	LSKR	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	LSKR	0.00	41.05	56.99	58.94	59.10	57.47
SO	BUILDLEN	LSKR	58.95	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	LSKR	0.00	0.00	88.02	79.09	67.76	58.80
SO	BUILDLEN	LSKR	58.99	69.36	49.07	54.10	57.48	59.11
SO	BUILDLEN	LSKR	58.95	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	LSKR	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	LSKR	0.00	29.93	49.07	54.10	57.48	59.11
SO	XBADJ	LSKR	102.05	0.00	0.00	0.00	0.00	0.00

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SO XBADJ     LSKR          0.00      0.00   -157.88   -161.59   -160.39   -156.21
SO XBADJ     LSKR       -150.88   -146.92   -156.23   -165.02   -168.79   -167.44
SO XBADJ     LSKR       -161.00      0.00      0.00      0.00      0.00      0.00
SO XBADJ     LSKR          0.00      0.00      0.00      0.00      0.00      0.00
SO XBADJ     LSKR          0.00    -75.40    107.16    110.92    111.32    108.33
SO YBADJ     LSKR         48.12      0.00      0.00      0.00      0.00      0.00
SO YBADJ     LSKR          0.00      0.00     47.60     26.72      5.02    -16.84
SO YBADJ     LSKR        -38.18    -57.09     47.67     24.08     -0.24    -24.56
SO YBADJ     LSKR        -48.12      0.00      0.00      0.00      0.00      0.00
SO YBADJ     LSKR          0.00      0.00      0.00      0.00      0.00      0.00
SO YBADJ     LSKR          0.00     24.17    -47.67    -24.08      0.24     24.56


SO BUILDHGT RB1           60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDHGT RB1           60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDHGT RB1           60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDHGT RB1           60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDHGT RB1           60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDHGT RB1           60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDWID RB1           54.09     49.07     42.55     34.75     42.56     49.07
SO BUILDWID RB1           54.10     57.48     59.11     58.95     57.00     53.31
SO BUILDWID RB1           48.01     53.31     56.99     58.94     59.10     57.47
SO BUILDWID RB1           54.09     49.07     42.55     34.75     42.56     49.07
SO BUILDWID RB1           54.10     57.48     59.11     58.95     57.00     53.31
SO BUILDWID RB1           48.01     53.31     56.99     58.94     59.10     57.47
SO BUILDLEN RB1           58.95     57.00     53.31     48.01     53.31     56.99
SO BUILDLEN RB1           58.94     59.10     57.47     54.09     49.07     42.55
SO BUILDLEN RB1           34.75     42.56     49.07     54.10     57.48     59.11
SO BUILDLEN RB1           58.95     57.00     53.31     48.01     53.31     56.99
SO BUILDLEN RB1           58.94     59.10     57.47     54.09     49.07     42.55
SO BUILDLEN RB1           34.75     42.56     49.07     54.10     57.48     59.11
SO XBADJ    RB1          -28.14    -25.12    -21.35    -16.92    -18.01    -18.55
SO XBADJ    RB1          -18.53    -17.95    -16.82    -15.18    -13.08    -10.58
SO XBADJ    RB1           -7.77    -13.05    -17.94    -22.27    -25.94    -28.81
SO XBADJ    RB1          -30.81    -31.87    -31.97    -31.09    -35.30    -38.44
SO XBADJ    RB1          -40.41    -41.16    -40.65    -38.91    -35.99    -31.97
SO XBADJ    RB1          -26.98    -29.50    -31.14    -31.82    -31.54    -30.30
SO YBADJ    RB1          -11.86    -11.45    -10.69     -9.60     -8.23     -6.60
SO YBADJ    RB1           -4.77     -2.80     -0.74      1.33      3.37      5.31
SO YBADJ    RB1            7.08      8.65      9.94     10.94     11.60     11.92
SO YBADJ    RB1           11.86     11.45     10.69      9.60      8.23      6.60
SO YBADJ    RB1            4.77      2.80      0.74     -1.33     -3.37     -5.31
SO YBADJ    RB1           -7.08     -8.65     -9.94    -10.94    -11.60    -11.92


SO BUILDHGT SDT1          60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDHGT SDT1          60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDHGT SDT1          60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDHGT SDT1          60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDHGT SDT1          60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDHGT SDT1          60.35     60.35     60.35     60.35     60.35     60.35
SO BUILDWID SDT1          54.09     49.07     42.55     34.75     42.56     49.07
SO BUILDWID SDT1          54.10     57.48     59.11     58.95     57.00     53.31
SO BUILDWID SDT1          48.01     53.31     56.99     58.94     59.10     57.47
SO BUILDWID SDT1          54.09     49.07     42.55     34.75     42.56     49.07
SO BUILDWID SDT1          54.10     57.48     59.11     58.95     57.00     53.31
SO BUILDWID SDT1          48.01     53.31     56.99     58.94     59.10     57.47
SO BUILDLEN SDT1          58.95     57.00     53.31     48.01     53.31     56.99
SO BUILDLEN SDT1          58.94     59.10     57.47     54.09     49.07     42.55
SO BUILDLEN SDT1          34.75     42.56     49.07     54.10     57.48     59.11
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SO BUILDLEN SDT1        58.95    57.00    53.31    48.01    53.31    56.99
SO BUILDLEN SDT1        58.94    59.10    57.47    54.09    49.07    42.55
SO BUILDLEN SDT1        34.75    42.56    49.07    54.10    57.48    59.11
SO XBADJ    SDT1       -30.88   -27.00   -22.29   -16.92   -17.05   -16.67
SO XBADJ    SDT1       -15.79   -14.42   -12.62   -10.43    -7.93    -5.18
SO XBADJ    SDT1        -2.29    -7.66   -12.79   -17.53   -21.74   -25.29
SO XBADJ    SDT1       -28.07   -30.00   -31.02   -31.09   -36.25   -40.32
SO XBADJ    SDT1       -43.15   -44.68   -44.85   -43.66   -41.14   -37.37
SO XBADJ    SDT1       -32.46   -34.90   -36.28   -36.57   -35.74   -33.82
SO YBADJ    SDT1       -16.61   -16.60   -16.09   -15.08   -13.62   -11.75
SO YBADJ    SDT1        -9.52    -7.00    -4.26    -1.40     1.50     4.36
SO YBADJ    SDT1         7.09     9.60    11.82    13.68    15.13    16.12
SO YBADJ    SDT1        16.61    16.60    16.09    15.08    13.62    11.75
SO YBADJ    SDT1         9.52     7.00     4.26     1.40    -1.50    -4.36
SO YBADJ    SDT1        -7.09    -9.60   -11.82   -13.68   -15.13   -16.12

SO BUILDHGT RB2         60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDHGT RB2         60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDHGT RB2         60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDHGT RB2         60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDHGT RB2         60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDHGT RB2         60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDWID RB2         54.09    49.07    42.55    34.75    42.56    49.07
SO BUILDWID RB2         54.10    57.48    59.11    58.95    57.00    53.31
SO BUILDWID RB2         48.01    53.31    56.99    58.94    59.10    57.47
SO BUILDWID RB2         54.09    49.07    42.55    34.75    42.56    49.07
SO BUILDWID RB2         54.10    57.48    59.11    58.95    57.00    53.31
SO BUILDWID RB2         48.01    53.31    56.99    58.94    59.10    57.47
SO BUILDLEN RB2         58.95    57.00    53.31    48.01    53.31    56.99
SO BUILDLEN RB2         58.94    59.10    57.47    54.09    49.07    42.55
SO BUILDLEN RB2         34.75    42.56    49.07    54.10    57.48    59.11
SO BUILDLEN RB2         58.95    57.00    53.31    48.01    53.31    56.99
SO BUILDLEN RB2         58.94    59.10    57.47    54.09    49.07    42.55
SO BUILDLEN RB2         34.75    42.56    49.07    54.10    57.48    59.11
SO XBADJ    RB2        -45.56   -44.03   -41.16   -37.03   -37.82   -37.45
SO XBADJ    RB2        -35.95   -33.36   -29.75   -25.24   -19.96   -14.07
SO XBADJ    RB2         -7.77    -9.56   -11.05   -12.22   -13.01   -13.40
SO XBADJ    RB2        -13.39   -12.97   -12.15   -10.97   -15.49   -19.54
SO XBADJ    RB2        -22.99   -25.75   -27.72   -28.85   -29.11   -28.48
SO XBADJ    RB2        -26.98   -33.00   -38.02   -41.88   -44.47   -45.71
SO YBADJ    RB2         -1.81    -4.57    -7.20    -9.61   -11.72   -13.48
SO YBADJ    RB2        -14.83   -15.73   -16.15   -16.09   -15.53   -14.50
SO YBADJ    RB2        -13.03   -11.16    -8.96    -6.48    -3.81    -1.01
SO YBADJ    RB2          1.81     4.57     7.20     9.61    11.72    13.48
SO YBADJ    RB2         14.83    15.73    16.16    16.09    15.53    14.50
SO YBADJ    RB2         13.03    11.16     8.96     6.48     3.81     1.01

SO BUILDHGT SDT2        60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDHGT SDT2        60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDHGT SDT2        60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDHGT SDT2        60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDHGT SDT2        60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDHGT SDT2        60.35    60.35    60.35    60.35    60.35    60.35
SO BUILDWID SDT2        54.09    49.07    42.55    34.75    42.56    49.07
SO BUILDWID SDT2        54.10    57.48    59.11    58.95    57.00    53.31
SO BUILDWID SDT2        48.01    53.31    56.99    58.94    59.10    57.47
SO BUILDWID SDT2        54.09    49.07    42.55    34.75    42.56    49.07
SO BUILDWID SDT2        54.10    57.48    59.11    58.95    57.00    53.31
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SO BUILDWID SDT2     48.01   53.31   56.99   58.94   59.10   57.47
SO BUILDLEN SDT2     58.95   57.00   53.31   48.01   53.31   56.99
SO BUILDLEN SDT2     58.94   59.10   57.47   54.09   49.07   42.55
SO BUILDLEN SDT2     34.75   42.56   49.07   54.10   57.48   59.11
SO BUILDLEN SDT2     58.95   57.00   53.31   48.01   53.31   56.99
SO BUILDLEN SDT2     58.94   59.10   57.47   54.09   49.07   42.55
SO BUILDLEN SDT2     34.75   42.56   49.07   54.10   57.48   59.11
SO XBADJ    SDT2    -48.30  -45.90  -42.10  -37.03  -36.86  -35.58
SO XBADJ    SDT2    -33.21  -29.83  -25.55  -20.49  -14.81   -8.68
SO XBADJ    SDT2     -2.29   -4.16   -5.91   -7.47   -8.81   -9.88
SO XBADJ    SDT2    -10.65  -11.10  -11.21  -10.98  -16.44  -21.41
SO XBADJ    SDT2    -25.73  -29.27  -31.92  -33.60  -34.26  -33.87
SO XBADJ    SDT2    -32.46  -38.39  -43.16  -46.62  -48.67  -49.23
SO YBADJ    SDT2     -6.55   -9.72  -12.60  -15.09  -17.12  -18.63
SO YBADJ    SDT2    -19.58  -19.93  -19.67  -18.82  -17.40  -15.45
SO YBADJ    SDT2    -13.03  -10.21   -7.08   -3.74   -0.28    3.19
SO YBADJ    SDT2      6.55    9.72   12.60   15.09   17.12   18.63
SO YBADJ    SDT2     19.58   19.93   19.67   18.82   17.40   15.45
SO YBADJ    SDT2     13.03   10.21    7.08    3.74    0.28   -3.19

SO BUILDHGT BB3      60.35   33.83   33.83   33.83   33.83   60.35
SO BUILDHGT BB3      60.35   60.35   60.35   60.35   60.35   60.35
SO BUILDHGT BB3      60.35   60.35   60.35   60.35   60.35   60.35
SO BUILDHGT BB3      60.35   33.83   33.83   33.83   33.83   60.35
SO BUILDHGT BB3      60.35   60.35   60.35   60.35   60.35   60.35
SO BUILDHGT BB3      60.35   60.35   60.35   60.35   60.35   60.35
SO BUILDWID BB3      54.09   38.95   35.33   67.21   35.34   49.07
SO BUILDWID BB3      54.10   57.48   59.11   58.95   57.00   53.31
SO BUILDWID BB3      48.01   53.31   56.99   58.94   59.10   57.47
SO BUILDWID BB3      54.09   38.95   35.33   67.21   35.34   49.07
SO BUILDWID BB3      54.10   57.48   59.11   58.95   57.00   53.31
SO BUILDWID BB3      48.01   53.31   56.99   58.94   59.10   57.47
SO BUILDLEN BB3      58.95   38.40   34.59   57.15   34.59   56.99
SO BUILDLEN BB3      58.94   59.10   57.47   54.09   49.07   42.55
SO BUILDLEN BB3      34.75   42.56   49.07   54.10   57.48   59.11
SO BUILDLEN BB3      58.95   38.40   34.59   57.15   34.59   56.99
SO BUILDLEN BB3      58.94   59.10   57.47   54.09   49.07   42.55
SO BUILDLEN BB3      34.75   42.56   49.07   54.10   57.48   59.11
SO XBADJ    BB3     -48.61  -34.89  -30.48  -25.15  -24.37   -3.15
SO XBADJ    BB3       3.52   10.08   16.34   22.10   27.19   31.45
SO XBADJ    BB3      34.75   28.66   21.71   14.09    6.05   -2.18
SO XBADJ    BB3     -10.34   -3.51   -4.10  -32.00  -10.22  -53.84
SO XBADJ    BB3     -62.46  -69.19  -73.81  -76.19  -76.25  -74.00
SO XBADJ    BB3     -69.50  -71.22  -70.78  -68.19  -63.52  -56.93
SO YBADJ    BB3     -49.14  -13.03  -15.55  -35.89  -19.13  -46.24
SO YBADJ    BB3     -41.14  -34.79  -27.37  -19.13  -10.31   -1.17
SO YBADJ    BB3       8.00   16.93   25.35   32.99   39.64   45.08
SO YBADJ    BB3      49.14   13.03   15.55   35.89   19.13   46.24
SO YBADJ    BB3      41.14   34.79   27.37   19.13   10.31    1.17
SO YBADJ    BB3      -8.00  -16.93  -25.35  -32.99  -39.64  -45.08

SO BUILDHGT BB4      60.35   33.83   33.83   33.83   33.83   60.35
SO BUILDHGT BB4      60.35   60.35   60.35   60.35   60.35   60.35
SO BUILDHGT BB4      60.35   60.35   60.35   60.35   60.35   60.35
SO BUILDHGT BB4      60.35   33.83   33.83   33.83   33.83   60.35
SO BUILDHGT BB4      60.35   60.35   60.35   60.35   60.35   60.35
SO BUILDHGT BB4      60.35   60.35   60.35   60.35   60.35   60.35
SO BUILDWID BB4      54.09   38.95   35.33   67.21   35.34   49.07
```

SO	BUILDWID	BB4	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	BB4	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDWID	BB4	54.09	38.95	35.33	67.21	35.34	49.07
SO	BUILDWID	BB4	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	BB4	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDLEN	BB4	58.95	38.40	34.59	57.15	34.59	56.99
SO	BUILDLEN	BB4	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	BB4	34.75	42.56	49.07	54.10	57.48	59.11
SO	BUILDLEN	BB4	58.95	38.40	34.59	57.15	34.59	56.99
SO	BUILDLEN	BB4	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	BB4	34.75	42.56	49.07	54.10	57.48	59.11
SO	XBADJ	BB4	-41.47	-27.15	-22.37	-16.92	-16.26	4.59
SO	XBADJ	BB4	10.65	16.39	21.63	26.21	30.00	32.88
SO	XBADJ	BB4	34.74	27.23	18.89	9.97	0.75	-8.49
SO	XBADJ	BB4	-17.47	-11.25	-12.21	-40.24	-18.33	-61.58
SO	XBADJ	BB4	-69.59	-75.49	-79.10	-80.30	-79.07	-75.43
SO	XBADJ	BB4	-69.50	-69.79	-67.96	-64.07	-58.23	-50.62
SO	YBADJ	BB4	-53.26	-15.84	-16.98	-35.89	-17.69	-43.42
SO	YBADJ	BB4	-37.02	-29.49	-21.06	-12.00	-2.57	6.94
SO	YBADJ	BB4	16.23	25.04	33.08	40.12	45.94	50.37
SO	YBADJ	BB4	53.26	15.84	16.98	35.89	17.69	43.42
SO	YBADJ	BB4	37.02	29.49	21.06	12.00	2.57	-6.94
SO	YBADJ	BB4	-16.23	-25.04	-33.08	-40.12	-45.94	-50.37

SO	BUILDHGT	BLEACH	21.64	21.64	21.64	21.64	21.64	21.64
SO	BUILDHGT	BLEACH	21.64	21.64	21.64	21.64	21.64	21.64
SO	BUILDHGT	BLEACH	21.64	21.64	21.64	60.35	60.35	60.35
SO	BUILDHGT	BLEACH	21.64	21.64	21.64	21.64	21.64	21.64
SO	BUILDHGT	BLEACH	21.64	21.64	21.64	21.64	21.64	21.64
SO	BUILDHGT	BLEACH	21.64	21.64	21.64	21.64	21.64	21.64
SO	BUILDWID	BLEACH	39.33	35.16	29.92	23.78	29.93	35.17
SO	BUILDWID	BLEACH	39.34	42.31	44.00	44.35	43.36	41.05
SO	BUILDWID	BLEACH	37.49	41.05	43.36	58.94	59.10	57.47
SO	BUILDWID	BLEACH	39.33	35.16	29.92	23.78	29.93	35.17
SO	BUILDWID	BLEACH	39.34	42.31	44.00	44.35	43.36	41.05
SO	BUILDWID	BLEACH	37.49	41.05	43.36	44.36	44.00	42.31
SO	BUILDLEN	BLEACH	44.35	43.36	41.05	37.49	41.05	43.36
SO	BUILDLEN	BLEACH	44.36	44.00	42.31	39.33	35.16	29.92
SO	BUILDLEN	BLEACH	23.78	29.93	35.17	54.10	57.48	59.11
SO	BUILDLEN	BLEACH	44.35	43.36	41.05	37.49	41.05	43.36
SO	BUILDLEN	BLEACH	44.36	44.00	42.31	39.33	35.16	29.92
SO	BUILDLEN	BLEACH	23.78	29.93	35.17	39.34	42.31	44.00
SO	XBADJ	BLEACH	-21.78	-21.25	-20.07	-18.29	-20.08	-21.26
SO	XBADJ	BLEACH	-21.79	-21.66	-20.87	-19.45	-17.43	-14.89
SO	XBADJ	BLEACH	-11.89	-15.04	-17.74	-230.30	-233.51	-229.62
SO	XBADJ	BLEACH	-22.57	-22.11	-20.97	-19.20	-20.97	-22.10
SO	XBADJ	BLEACH	-22.57	-22.34	-21.44	-19.89	-17.73	-15.03
SO	XBADJ	BLEACH	-11.89	-14.88	-17.42	-19.44	-20.86	-21.65
SO	YBADJ	BLEACH	-0.22	-0.15	-0.07	0.00	0.08	0.16
SO	YBADJ	BLEACH	0.23	0.29	0.35	0.40	0.43	0.45
SO	YBADJ	BLEACH	0.45	0.44	0.42	26.51	-9.19	-44.61
SO	YBADJ	BLEACH	0.22	0.15	0.07	0.00	-0.08	-0.16
SO	YBADJ	BLEACH	-0.23	-0.29	-0.35	-0.40	-0.43	-0.45
SO	YBADJ	BLEACH	-0.45	-0.44	-0.42	-0.39	-0.34	-0.28

SO	BUILDHGT	INCIN	9.14	9.14	9.14	0.00	0.00	0.00
SO	BUILDHGT	INCIN	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	INCIN	0.00	9.14	9.14	9.14	9.14	9.14

SO	BUILDHGT	INCIN	9.14	9.14	9.14	0.00	0.00	0.00
SO	BUILDHGT	INCIN	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	INCIN	0.00	9.14	9.14	9.14	9.14	9.14
SO	BUILDWID	INCIN	48.90	42.98	35.75	0.00	0.00	0.00
SO	BUILDWID	INCIN	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	INCIN	0.00	63.06	63.40	61.81	58.34	53.34
SO	BUILDWID	INCIN	48.90	42.98	35.75	0.00	0.00	0.00
SO	BUILDWID	INCIN	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	INCIN	0.00	63.06	63.40	61.81	58.34	53.34
SO	BUILDLEN	INCIN	66.38	66.53	64.66	0.00	0.00	0.00
SO	BUILDLEN	INCIN	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	INCIN	0.00	37.57	46.58	54.16	60.10	64.22
SO	BUILDLEN	INCIN	66.38	66.53	64.66	0.00	0.00	0.00
SO	BUILDLEN	INCIN	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	INCIN	0.00	37.57	46.58	54.16	60.10	64.22
SO	XBADJ	INCIN	-77.00	-76.49	-73.66	0.00	0.00	0.00
SO	XBADJ	INCIN	-124.46	-130.62	-132.82	-130.98	-125.16	-115.54
SO	XBADJ	INCIN	0.00	9.01	9.96	10.62	10.95	10.95
SO	XBADJ	INCIN	10.62	9.96	9.00	0.00	0.00	0.00
SO	XBADJ	INCIN	65.51	71.52	75.35	76.89	76.10	72.99
SO	XBADJ	INCIN	0.00	-46.58	-56.54	-64.78	-71.06	-75.17
SO	YBADJ	INCIN	-2.15	-8.93	-15.45	0.00	0.00	0.00
SO	YBADJ	INCIN	43.36	26.20	8.25	-9.95	-27.84	-44.90
SO	YBADJ	INCIN	0.00	-33.08	-26.97	-20.04	-12.50	-4.70
SO	YBADJ	INCIN	2.15	8.93	15.45	0.00	0.00	0.00
SO	YBADJ	INCIN	-43.36	-26.20	-8.25	9.95	27.84	44.90
SO	YBADJ	INCIN	0.00	33.08	26.97	20.04	12.50	4.70

SO	BUILDHGT	PB5	33.83	33.83	33.83	33.83	33.83	33.83
SO	BUILDHGT	PB5	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	PB5	60.35	60.35	60.35	60.35	60.35	33.83
SO	BUILDHGT	PB5	33.83	33.83	33.83	33.83	33.83	33.83
SO	BUILDHGT	PB5	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	PB5	60.35	60.35	60.35	60.35	60.35	33.83
SO	BUILDWID	PB5	41.39	38.95	35.33	67.21	35.34	38.96
SO	BUILDWID	PB5	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	PB5	48.01	53.31	56.99	58.94	59.10	42.57
SO	BUILDWID	PB5	41.39	38.95	35.33	67.21	35.34	38.96
SO	BUILDWID	PB5	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	PB5	48.01	53.31	56.99	58.94	59.10	42.57
SO	BUILDLEN	PB5	41.06	38.40	34.59	57.15	34.59	38.41
SO	BUILDLEN	PB5	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	PB5	34.75	42.56	49.07	54.10	57.48	42.46
SO	BUILDLEN	PB5	41.06	38.40	34.59	57.15	34.59	38.41
SO	BUILDLEN	PB5	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	PB5	34.75	42.56	49.07	54.10	57.48	42.46
SO	XBADJ	PB5	-30.04	-23.88	-17.00	-9.61	-7.24	-4.65
SO	XBADJ	PB5	22.23	28.74	34.38	38.97	42.38	44.50
SO	XBADJ	PB5	45.26	36.31	26.27	15.42	4.11	-7.18
SO	XBADJ	PB5	-11.02	-14.52	-17.58	-47.54	-27.35	-33.76
SO	XBADJ	PB5	-81.18	-87.85	-91.85	-93.06	-91.44	-87.05
SO	XBADJ	PB5	-80.01	-78.87	-75.34	-69.52	-61.58	-35.28
SO	YBADJ	PB5	-26.98	-28.22	-28.60	-46.40	-26.78	-24.63
SO	YBADJ	PB5	-42.47	-32.85	-22.22	-10.93	0.70	12.31
SO	YBADJ	PB5	23.54	34.06	43.54	51.71	58.30	24.92
SO	YBADJ	PB5	26.98	28.22	28.60	46.40	26.78	24.63
SO	YBADJ	PB5	42.47	32.85	22.22	10.93	-0.70	-12.31
SO	YBADJ	PB5	-23.54	-34.06	-43.54	-51.71	-58.30	-24.92

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' SCC Building Locations, 1974 Baseline Panama City, M,TN 6/6/99'
'ST'
'METERS' 1.0
'UTMN' 0.
13
'RecovBlr' 1 0
4  60.3504
   19.03             19.84
   45.65             -2.50
   14.79            -39.27
  -11.82            -16.94
'PB6 Build' 1 0
4  45.7
   64.35            -12.22
   71.11             -4.16
   58.85             58.85
   52.09             -1.93
'tier #1'  1 0
4  72.8472
    6.96            -20.16
   -1.10            -13.40
    2.43             -9.20
   10.48            -15.96
'tier #2'  1 0
4  72.8472
   13.13            -12.81
    5.07             -6.05
    8.60             -1.84
   16.65             -8.60
'tier #3'  1 0
4  72.8472
   19.89             -4.75
   11.83              2.01
   15.36              6.21
   23.41             -0.55
'tier #4'  1 0
4  72.8472
   25.76              2.25
   17.71              9.01
   21.24             13.22
   29.29              6.46
'BleachPlt' 1 0
4  21.6408
   64.75           -187.43
   82.96           -202.71
   58.87           -231.43
   40.65           -216.15
'Eng. & Maint' 1 0
6  10.668
 -152.07           -220.35
 -115.63           -176.92
 -113.88           -178.39
  -88.60           -148.27
  -77.40           -157.68
 -139.11           -231.22
'Supt OffSt'  1 0
12 10.668
  -193.14           -214.53
  -154.65           -168.65
  -158.85           -165.13
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  -138.28          -140.61
  -134.07          -144.14
  -122.32          -130.13
  -109.71          -140.71
  -127.93          -162.42
  -124.08          -165.65
  -155.52          -203.13
  -159.38          -199.90
  -180.54          -225.11
'CoolTowers'  1 0
5  9.144
  142.97           -46.56
  121.96           -28.92
   89.63           -67.45
   89.87           -81.38
  103.88           -93.14
'Pulp Mill'  1 0
14 25.2984
  -28.39           -68.69
  -63.95          -111.07
  -54.49          -119.00
  -76.83          -145.62
  -86.28          -137.68
  -97.45          -150.99
 -109.71          -140.71
  -98.54          -127.40
 -116.41          -112.41
  -96.72           -88.94
 -102.32           -84.24
  -80.28           -57.97
  -68.02           -68.26
  -51.86           -49.00
'Paper Mill' 1 0
22 12.192
 -311.97          -332.67
  -331.23          -316.51
  -327.12          -311.60
  -334.82          -305.14
  -318.07          -285.18
  -345.39          -262.25
  -302.48          -211.12
  -275.17          -234.04
   -65.33            16.03
   -19.10           -22.77
   -26.45           -31.52
   -17.69           -38.87
   -32.39           -56.38
   -61.81           -31.69
  -104.42           -82.48
   -99.52           -86.59
  -174.46          -175.90
  -172.01          -177.96
  -225.79          -242.05
  -221.23          -245.87
  -234.75          -261.98
  -245.26          -253.17
'Bark Blr'   1 0
4  33.8328
  -23.47            19.69
    0.00             0.00
```

```
  -19.10              -22.77
  -42.57               -3.08
11
'LKILN'    0.0       18.6  163.79  -35.97
'LSKR '    0.0       17.1   41.47 -147.60
'RB1  '    0.0       71.0    5.00   -8.97
'SDT1 '    0.0       71.0    0.80   -5.45
'RB2  '    0.0       71.0   17.93    6.44
'SDT2 '    0.0       71.0   13.73    9.96
'BB3  '    0.0       45.7  -28.16   17.66
'BB4  '    0.0       45.7  -33.45   11.35
'BLEACH'   0.0       21.9   61.52 -209.78
'PB4/5 '   0.0       90.2  -46.2    12.51
'PB6   '   0.0       73.5   52.41    5.56
0
```

SCC Building Locations, 1974 Baseline Panama City, M,TN 6/6/99

============================
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.

UTMP is set to UTMN. The input is assumed to be in a local X-Y coordinate system as opposed to a UTM coordinate system. True North is in the positive Y direction.

Plant north is set to 0.00 degrees with respect to True North.

SCC Building Locations, 1974 Baseline Panama City, M,TN 6/6/99

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
LKILN	18.60	0.00	149.24	149.24
LSKR	17.10	0.00	149.23	149.23
RB1	71.00	0.00	149.24	149.24
SDT1	71.00	0.00	149.24	149.24
RB2	71.00	0.00	149.24	149.24
SDT2	71.00	0.00	149.24	149.24
BB3	45.70	0.00	149.24	149.24
BB4	45.70	0.00	149.24	149.24
BLEACH	21.90	0.00	149.23	149.23
PB4/5	90.20	0.00	149.24	149.24
PB6	73.50	0.00	149.24	149.24

* 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.

DATE : 0/ 0/ 0
TIME : 0: 0: 0

SCC Building Locations, 1974 Baseline Panama City, M,TN 6/6/99

BPIP output is in meters

SO	BUILDHGT	LKILNb	0.00	0.00	0.00	0.00	9.14	9.14
SO	BUILDHGT	LKILNb	9.14	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	LKILNb	45.70	45.70	0.00	0.00	0.00	0.00
SO	BUILDHGT	LKILNb	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	LKILNb	0.00	60.35	60.35	0.00	0.00	0.00
SO	BUILDHGT	LKILNb	0.00	45.70	0.00	0.00	0.00	0.00
SO	BUILDWID	LKILNb	0.00	0.00	0.00	0.00	37.57	46.58
SO	BUILDWID	LKILNb	54.16	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	LKILNb	50.91	102.85	0.00	0.00	0.00	0.00
SO	BUILDWID	LKILNb	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	LKILNb	0.00	57.48	59.11	0.00	0.00	0.00
SO	BUILDWID	LKILNb	0.00	102.85	0.00	0.00	0.00	0.00
SO	BUILDLEN	LKILNb	0.00	0.00	0.00	0.00	63.06	63.40
SO	BUILDLEN	LKILNb	61.81	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	LKILNb	49.90	57.98	0.00	0.00	0.00	0.00
SO	BUILDLEN	LKILNb	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	LKILNb	0.00	59.10	57.47	0.00	0.00	0.00
SO	BUILDLEN	LKILNb	0.00	57.98	0.00	0.00	0.00	0.00
SO	XBADJ	LKILNb	0.00	0.00	0.00	0.00	-85.81	-86.72
SO	XBADJ	LKILNb	-84.99	-169.64	-175.61	-176.25	-171.53	-161.60
SO	XBADJ	LKILNb	-141.34	-140.09	0.00	0.00	0.00	0.00
SO	XBADJ	LKILNb	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	LKILNb	0.00	110.53	118.14	0.00	0.00	0.00
SO	XBADJ	LKILNb	0.00	82.11	0.00	0.00	0.00	0.00
SO	YBADJ	LKILNb	0.00	0.00	0.00	0.00	13.50	3.73
SO	YBADJ	LKILNb	-6.15	51.36	26.25	0.35	-25.56	-50.70
SO	YBADJ	LKILNb	-20.27	-70.87	0.00	0.00	0.00	0.00
SO	YBADJ	LKILNb	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	LKILNb	0.00	-51.36	-26.25	0.00	0.00	0.00
SO	YBADJ	LKILNb	0.00	70.87	0.00	0.00	0.00	0.00

SO	BUILDHGT	LSKRb	60.35	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	LSKRb	0.00	0.00	25.30	25.30	25.30	25.30
SO	BUILDHGT	LSKRb	25.30	25.30	60.35	60.35	60.35	60.35
SO	BUILDHGT	LSKRb	60.35	45.70	0.00	0.00	0.00	0.00
SO	BUILDHGT	LSKRb	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	LSKRb	0.00	21.64	60.35	60.35	60.35	60.35
SO	BUILDWID	LSKRb	54.09	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	LSKRb	0.00	0.00	101.99	108.36	111.43	111.12
SO	BUILDWID	LSKRb	107.44	108.59	56.99	58.94	59.10	57.47
SO	BUILDWID	LSKRb	54.09	73.56	0.00	0.00	0.00	0.00
SO	BUILDWID	LSKRb	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	LSKRb	0.00	41.05	56.99	58.94	59.10	57.47
SO	BUILDLEN	LSKRb	58.95	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	LSKRb	0.00	0.00	88.02	79.09	67.76	58.80
SO	BUILDLEN	LSKRb	58.99	69.36	49.07	54.10	57.48	59.11
SO	BUILDLEN	LSKRb	58.95	107.27	0.00	0.00	0.00	0.00
SO	BUILDLEN	LSKRb	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	LSKRb	0.00	29.93	49.07	54.10	57.48	59.11
SO	XBADJ	LSKRb	102.05	0.00	0.00	0.00	0.00	0.00

SO	XBADJ	LSKRb	0.00	0.00	-157.88	-161.59	-160.39	-156.21
SO	XBADJ	LSKRb	-150.88	-146.92	-156.23	-165.02	-168.79	-167.44
SO	XBADJ	LSKRb	-161.00	-199.94	0.00	0.00	0.00	0.00
SO	XBADJ	LSKRb	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	LSKRb	0.00	-75.40	107.16	110.92	111.32	108.33
SO	YBADJ	LSKRb	48.12	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	LSKRb	0.00	0.00	47.60	26.72	5.02	-16.84
SO	YBADJ	LSKRb	-38.18	-57.09	47.67	24.08	-0.24	-24.56
SO	YBADJ	LSKRb	-48.12	-57.99	0.00	0.00	0.00	0.00
SO	YBADJ	LSKRb	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	LSKRb	0.00	24.17	-47.67	-24.08	0.24	24.56

SO	BUILDHGT	RB1b	60.35	60.35	60.35	45.70	60.35	60.35
SO	BUILDHGT	RB1b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	RB1b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	RB1b	60.35	60.35	60.35	45.70	60.35	60.35
SO	BUILDHGT	RB1b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	RB1b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDWID	RB1b	54.09	49.07	42.55	49.90	42.56	49.07
SO	BUILDWID	RB1b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	RB1b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDWID	RB1b	54.09	49.07	42.55	49.90	42.56	49.07
SO	BUILDWID	RB1b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	RB1b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDLEN	RB1b	58.95	57.00	53.31	50.91	53.31	56.99
SO	BUILDLEN	RB1b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	RB1b	34.75	42.56	49.07	54.10	57.48	59.11
SO	BUILDLEN	RB1b	58.95	57.00	53.31	50.91	53.31	56.99
SO	BUILDLEN	RB1b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	RB1b	34.75	42.56	49.07	54.10	57.48	59.11
SO	XBADJ	RB1b	-28.14	-25.12	-21.35	35.66	-18.01	-18.55
SO	XBADJ	RB1b	-18.53	-17.95	-16.82	-15.18	-13.08	-10.58
SO	XBADJ	RB1b	-7.77	-13.05	-17.94	-22.27	-25.94	-28.81
SO	XBADJ	RB1b	-30.81	-31.87	-31.97	-86.57	-35.30	-38.44
SO	XBADJ	RB1b	-40.41	-41.16	-40.65	-38.91	-35.99	-31.97
SO	XBADJ	RB1b	-26.98	-29.50	-31.14	-31.82	-31.54	-30.30
SO	YBADJ	RB1b	-11.86	-11.45	-10.69	-22.61	-8.23	-6.60
SO	YBADJ	RB1b	-4.77	-2.80	-0.74	1.33	3.37	5.31
SO	YBADJ	RB1b	7.08	8.65	9.94	10.94	11.60	11.92
SO	YBADJ	RB1b	11.86	11.45	10.69	22.61	8.23	6.60
SO	YBADJ	RB1b	4.77	2.80	0.74	-1.33	-3.37	-5.31
SO	YBADJ	RB1b	-7.08	-8.65	-9.94	-10.94	-11.60	-11.92

SO	BUILDHGT	SDT1b	60.35	60.35	60.35	45.70	60.35	60.35
SO	BUILDHGT	SDT1b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	SDT1b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	SDT1b	60.35	60.35	60.35	45.70	60.35	60.35
SO	BUILDHGT	SDT1b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	SDT1b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDWID	SDT1b	54.09	49.07	42.55	49.90	42.56	49.07
SO	BUILDWID	SDT1b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	SDT1b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDWID	SDT1b	54.09	49.07	42.55	49.90	42.56	49.07
SO	BUILDWID	SDT1b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	SDT1b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDLEN	SDT1b	58.95	57.00	53.31	50.91	53.31	56.99
SO	BUILDLEN	SDT1b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	SDT1b	34.75	42.56	49.07	54.10	57.48	59.11

SO	BUILDLEN	SDT1b	58.95	57.00	53.31	50.91	53.31	56.99
SO	BUILDLEN	SDT1b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	SDT1b	34.75	42.56	49.07	54.10	57.48	59.11
SO	XBADJ	SDT1b	-30.88	-27.00	-22.29	35.66	-17.05	-16.67
SO	XBADJ	SDT1b	-15.79	-14.42	-12.62	-10.43	-7.93	-5.18
SO	XBADJ	SDT1b	-2.29	-7.66	-12.79	-17.53	-21.74	-25.29
SO	XBADJ	SDT1b	-28.07	-30.00	-31.02	-86.57	-36.25	-40.32
SO	XBADJ	SDT1b	-43.15	-44.68	-44.85	-43.66	-41.14	-37.37
SO	XBADJ	SDT1b	-32.46	-34.90	-36.28	-36.57	-35.74	-33.82
SO	YBADJ	SDT1b	-16.61	-16.60	-16.09	-28.09	-13.62	-11.75
SO	YBADJ	SDT1b	-9.52	-7.00	-4.26	-1.40	1.50	4.36
SO	YBADJ	SDT1b	7.09	9.60	11.82	13.68	15.13	16.12
SO	YBADJ	SDT1b	16.61	16.60	16.09	28.09	13.62	11.75
SO	YBADJ	SDT1b	9.52	7.00	4.26	1.40	-1.50	-4.36
SO	YBADJ	SDT1b	-7.09	-9.60	-11.82	-13.68	-15.13	-16.12

SO	BUILDHGT	RB2b	60.35	60.35	60.35	45.70	60.35	60.35
SO	BUILDHGT	RB2b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	RB2b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	RB2b	60.35	60.35	60.35	45.70	60.35	60.35
SO	BUILDHGT	RB2b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	RB2b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDWID	RB2b	54.09	49.07	42.55	49.90	42.56	49.07
SO	BUILDWID	RB2b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	RB2b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDWID	RB2b	54.09	49.07	42.55	49.90	42.56	49.07
SO	BUILDWID	RB2b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	RB2b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDLEN	RB2b	58.95	57.00	53.31	50.91	53.31	56.99
SO	BUILDLEN	RB2b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	RB2b	34.75	42.56	49.07	54.10	57.48	59.11
SO	BUILDLEN	RB2b	58.95	57.00	53.31	50.91	53.31	56.99
SO	BUILDLEN	RB2b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	RB2b	34.75	42.56	49.07	54.10	57.48	59.11
SO	XBADJ	RB2b	-45.56	-44.03	-41.16	15.54	-37.82	-37.45
SO	XBADJ	RB2b	-35.95	-33.36	-29.75	-25.24	-19.96	-14.07
SO	XBADJ	RB2b	-7.77	-9.56	-11.05	-12.22	-13.01	-13.40
SO	XBADJ	RB2b	-13.39	-12.97	-12.15	-66.45	-15.49	-19.54
SO	XBADJ	RB2b	-22.99	-25.75	-27.72	-28.85	-29.11	-28.48
SO	XBADJ	RB2b	-26.98	-33.00	-38.02	-41.88	-44.47	-45.71
SO	YBADJ	RB2b	-1.81	-4.57	-7.20	-22.61	-11.72	-13.48
SO	YBADJ	RB2b	-14.83	-15.73	-16.15	-16.09	-15.53	-14.50
SO	YBADJ	RB2b	-13.03	-11.16	-8.96	-6.48	-3.81	-1.01
SO	YBADJ	RB2b	1.81	4.57	7.20	22.61	11.72	13.48
SO	YBADJ	RB2b	14.83	15.73	16.16	16.09	15.53	14.50
SO	YBADJ	RB2b	13.03	11.16	8.96	6.48	3.81	1.01

SO	BUILDHGT	SDT2b	60.35	60.35	60.35	45.70	60.35	60.35
SO	BUILDHGT	SDT2b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	SDT2b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	SDT2b	60.35	60.35	60.35	45.70	60.35	60.35
SO	BUILDHGT	SDT2b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	SDT2b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDWID	SDT2b	54.09	49.07	42.55	49.90	42.56	49.07
SO	BUILDWID	SDT2b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	SDT2b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDWID	SDT2b	54.09	49.07	42.55	49.90	42.56	49.07
SO	BUILDWID	SDT2b	54.10	57.48	59.11	58.95	57.00	53.31

SO	BUILDWID	SDT2b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDLEN	SDT2b	58.95	57.00	53.31	50.91	53.31	56.99
SO	BUILDLEN	SDT2b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	SDT2b	34.75	42.56	49.07	54.10	57.48	59.11
SO	BUILDLEN	SDT2b	58.95	57.00	53.31	50.91	53.31	56.99
SO	BUILDLEN	SDT2b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	SDT2b	34.75	42.56	49.07	54.10	57.48	59.11
SO	XBADJ	SDT2b	-48.30	-45.90	-42.10	15.55	-36.86	-35.58
SO	XBADJ	SDT2b	-33.21	-29.83	-25.55	-20.49	-14.81	-8.68
SO	XBADJ	SDT2b	-2.29	-4.16	-5.91	-7.47	-8.81	-9.88
SO	XBADJ	SDT2b	-10.65	-11.10	-11.21	-66.45	-16.44	-21.41
SO	XBADJ	SDT2b	-25.73	-29.27	-31.92	-33.60	-34.26	-33.87
SO	XBADJ	SDT2b	-32.46	-38.39	-43.16	-46.62	-48.67	-49.23
SO	YBADJ	SDT2b	-6.55	-9.72	-12.60	-28.09	-17.12	-18.63
SO	YBADJ	SDT2b	-19.58	-19.93	-19.67	-18.82	-17.40	-15.45
SO	YBADJ	SDT2b	-13.03	-10.21	-7.08	-3.74	-0.28	3.19
SO	YBADJ	SDT2b	6.55	9.72	12.60	28.09	17.12	18.63
SO	YBADJ	SDT2b	19.58	19.93	19.67	18.82	17.40	15.45
SO	YBADJ	SDT2b	13.03	10.21	7.08	3.74	0.28	-3.19

SO	BUILDHGT	BB3b	60.35	33.83	33.83	33.83	33.83	60.35
SO	BUILDHGT	BB3b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	BB3b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	BB3b	60.35	33.83	33.83	33.83	33.83	60.35
SO	BUILDHGT	BB3b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	BB3b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDWID	BB3b	54.09	38.95	35.33	67.21	35.34	49.07
SO	BUILDWID	BB3b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	BB3b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDWID	BB3b	54.09	38.95	35.33	67.21	35.34	49.07
SO	BUILDWID	BB3b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	BB3b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDLEN	BB3b	58.95	38.40	34.59	57.15	34.59	56.99
SO	BUILDLEN	BB3b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	BB3b	34.75	42.56	49.07	54.10	57.48	59.11
SO	BUILDLEN	BB3b	58.95	38.40	34.59	57.15	34.59	56.99
SO	BUILDLEN	BB3b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	BB3b	34.75	42.56	49.07	54.10	57.48	59.11
SO	XBADJ	BB3b	-48.61	-34.89	-30.48	-25.15	-24.37	-3.15
SO	XBADJ	BB3b	3.52	10.08	16.34	22.10	27.19	31.45
SO	XBADJ	BB3b	34.75	28.66	21.71	14.09	6.05	-2.18
SO	XBADJ	BB3b	-10.34	-3.51	-4.10	-32.00	-10.22	-53.84
SO	XBADJ	BB3b	-62.46	-69.19	-73.81	-76.19	-76.25	-74.00
SO	XBADJ	BB3b	-69.50	-71.22	-70.78	-68.19	-63.52	-56.93
SO	YBADJ	BB3b	-49.14	-13.03	-15.55	-35.89	-19.13	-46.24
SO	YBADJ	BB3b	-41.14	-34.79	-27.37	-19.13	-10.31	-1.17
SO	YBADJ	BB3b	8.00	16.93	25.35	32.99	39.64	45.08
SO	YBADJ	BB3b	49.14	13.03	15.55	35.89	19.13	46.24
SO	YBADJ	BB3b	41.14	34.79	27.37	19.13	10.31	1.17
SO	YBADJ	BB3b	-8.00	-16.93	-25.35	-32.99	-39.64	-45.08

SO	BUILDHGT	BB4b	60.35	33.83	33.83	33.83	33.83	60.35
SO	BUILDHGT	BB4b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	BB4b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	BB4b	60.35	33.83	33.83	33.83	33.83	60.35
SO	BUILDHGT	BB4b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDHGT	BB4b	60.35	60.35	60.35	60.35	60.35	60.35
SO	BUILDWID	BB4b	54.09	38.95	35.33	67.21	35.34	49.07

SO BUILDWID	BB4b	54.10	57.48	59.11	58.95	57.00	53.31
SO BUILDWID	BB4b	48.01	53.31	56.99	58.94	59.10	57.47
SO BUILDWID	BB4b	54.09	38.95	35.33	67.21	35.34	49.07
SO BUILDWID	BB4b	54.10	57.48	59.11	58.95	57.00	53.31
SO BUILDWID	BB4b	48.01	53.31	56.99	58.94	59.10	57.47
SO BUILDLEN	BB4b	58.95	38.40	34.59	57.15	34.59	56.99
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SO BUILDLEN	BB4b	34.75	42.56	49.07	54.10	57.48	59.11
SO BUILDLEN	BB4b	58.95	38.40	34.59	57.15	34.59	56.99
SO BUILDLEN	BB4b	58.94	59.10	57.47	54.09	49.07	42.55
SO BUILDLEN	BB4b	34.75	42.56	49.07	54.10	57.48	59.11
SO XBADJ	BB4b	-41.47	-27.15	-22.37	-16.92	-16.26	4.59
SO XBADJ	BB4b	10.65	16.39	21.63	26.21	30.00	32.88
SO XBADJ	BB4b	34.74	27.23	18.89	9.97	0.75	-8.49
SO XBADJ	BB4b	-17.47	-11.25	-12.21	-40.24	-18.33	-61.58
SO XBADJ	BB4b	-69.59	-75.49	-79.10	-80.30	-79.07	-75.43
SO XBADJ	BB4b	-69.50	-69.79	-67.96	-64.07	-58.23	-50.62
SO YBADJ	BB4b	-53.26	-15.84	-16.98	-35.89	-17.69	-43.42
SO YBADJ	BB4b	-37.02	-29.49	-21.06	-12.00	-2.57	6.94
SO YBADJ	BB4b	16.23	25.04	33.08	40.12	45.94	50.37
SO YBADJ	BB4b	53.26	15.84	16.98	35.89	17.69	43.42
SO YBADJ	BB4b	37.02	29.49	21.06	12.00	2.57	-6.94
SO YBADJ	BB4b	-16.23	-25.04	-33.08	-40.12	-45.94	-50.37

SO BUILDHGT	PB45b	33.83	33.83	33.83	33.83	33.83	45.70
SO BUILDHGT	PB45b	60.35	60.35	60.35	60.35	60.35	60.35
SO BUILDHGT	PB45b	60.35	60.35	60.35	60.35	60.35	33.83
SO BUILDHGT	PB45b	33.83	33.83	33.83	33.83	33.83	45.70
SO BUILDHGT	PB45b	60.35	60.35	60.35	60.35	60.35	60.35
SO BUILDHGT	PB45b	60.35	60.35	60.35	60.35	60.35	33.83
SO BUILDWID	PB45b	41.39	38.95	35.33	67.21	35.34	64.30
SO BUILDWID	PB45b	54.10	57.48	59.11	58.95	57.00	53.31
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SO BUILDWID	PB45b	54.10	57.48	59.11	58.95	57.00	53.31
SO BUILDWID	PB45b	48.01	53.31	56.99	58.94	59.10	42.57
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SO BUILDLEN	PB45b	58.94	59.10	57.47	54.09	49.07	42.55
SO BUILDLEN	PB45b	34.75	42.56	49.07	54.10	57.48	42.46
SO BUILDLEN	PB45b	41.06	38.40	34.59	57.15	34.59	36.24
SO BUILDLEN	PB45b	58.94	59.10	57.47	54.09	49.07	42.55
SO BUILDLEN	PB45b	34.75	42.56	49.07	54.10	57.48	42.46
SO XBADJ	PB45b	-30.04	-23.88	-17.00	-9.61	-7.24	77.90
SO XBADJ	PB45b	22.23	28.74	34.38	38.97	42.38	44.50
SO XBADJ	PB45b	45.26	36.31	26.27	15.42	4.11	-7.18
SO XBADJ	PB45b	-11.02	-14.52	-17.58	-47.54	-27.35	-114.15
SO XBADJ	PB45b	-81.18	-87.85	-91.85	-93.06	-91.44	-87.05
SO XBADJ	PB45b	-80.01	-78.87	-75.34	-69.52	-61.58	-35.28
SO YBADJ	PB45b	-26.98	-28.22	-28.60	-46.40	-26.78	-44.54
SO YBADJ	PB45b	-42.47	-32.85	-22.22	-10.93	0.70	12.31
SO YBADJ	PB45b	23.54	34.06	43.54	51.71	58.30	24.92
SO YBADJ	PB45b	26.98	28.22	28.60	46.40	26.78	44.54
SO YBADJ	PB45b	42.47	32.85	22.22	10.93	-0.70	-12.31
SO YBADJ	PB45b	-23.54	-34.06	-43.54	-51.71	-58.30	-24.92

SO BUILDHGT	PB6b	60.35	60.35	60.35	45.70	60.35	60.35
SO BUILDHGT	PB6b	60.35	60.35	60.35	60.35	60.35	60.35
SO BUILDHGT	PB6b	60.35	60.35	60.35	60.35	60.35	60.35

54-d

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

IN REPLY REFER TO

MAY 12 2000

RECEIVED

MAY 18 2000

BUREAU OF AIR REGULATION

Re: PSD-FL-288

Mr. C. H. Fancy
Chief, Bureau of Air Regulation
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road, MS 48
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

Our Air Quality Branch has reviewed the Prevention of Significant Deterioration permit application for Stone Container Corporation's (SCC) proposed increase in pulp production at its Panama City mill. The mill is located 120 km west of St. Marks Wilderness, a Class I area, administered by the Fish and Wildlife Service.

The technical review comments from our Air Quality Branch are enclosed. In summary, SCC's best available control technology analysis is incomplete. We recommend that SCC revise its analysis.

In addition, SCC's Class I increment analysis is incomplete. SCC should evaluate cumulative impacts to the PM-10 Class I increment at Bradwell Bay Wilderness and St. Marks Wilderness because their analysis predicted that PM-10 concentrations would exceed the significant impact level for this increment. Also, SCC should evaluate impacts to the 3-hr and 24-hr SO_2 Class I increments.

Thank you for giving us the opportunity to comment on this permit application. We appreciate your cooperation in notifying us of proposed projects with the potential to impact the air quality and related resources of our Class I air quality areas. If you have any questions, please contact Ms. Ellen Porter of our Air Quality Branch in Denver at 303/969-2617.

Sincerely yours,

Sam D. Hamilton
Regional Director

Enclosure

cc: S. Arif, BAR
B. Mitchell, BAR
NWD
C. Holladay, BAR
EPA
NPS
D. Buff, PE

Review of Prevention of Significant Deterioration
Permit Application for Stone Container Corporation
Panama City, Florida
PSD-FL-288

by

Air Quality Branch, U. S. Fish and Wildlife Service – Denver
April 20, 2000

Stone Container Corporation (SCC) has requested a permit to increase pulp production at its Panama City mill. The increased throughput of pulp will increase emissions from recovery boilers 1&2, smelt dissolving tanks 1&2, the lime kiln, the bleach plant, the pulping area, the lime slaker, the chemical recovery area, the paper making process, and combination boiler number 3. The mill is located in Panama City, Florida, 120 km west of St. Marks Wilderness, a Class I area administered by the U.S. Fish and Wildlife Service (FWS).

This project will result in PSD-significant increases in emissions of nitrogen oxides (NO_X), sulfur dioxide (SO_2), volatile organic compounds (VOC), total particulate matter (TSP), fine particulate matter (PM-10), sulfuric acid mist (SAM), total reduced sulfur (TRS), and beryllium (Be). Emissions (in tons per year – TPY) are summarized below.

POLLUTANT	EMISSIONS INCREASE (TPY)
NO_X	138
SO2	155
VOC	174
PM-10	624
TSP	779
SAM	26
TRS	151
Be	0.00046

Best Available Control Technology (BACT) Review

Recovery Boilers

The recovery boilers are equipped with high efficiency electrostatic precipitators for particulate control, which represents BACT for particulate control. However, the proposed emission limit of 0.044gr/dscf does not represent BACT. SCC should show why it is technically or economically infeasible to meet the particulate emissions levels that have been established as BACT for other sources. For example, Willamette Industries in South Carolina, Boise Cascade in Alabama, and Gulf States Paper in Alabama all meet a 0.021gr/dscf limit for particulates.

SCC has determined that BACT for NO_x emissions from the recovery boilers is combustion control. SCC states that selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR) are considered unproven and infeasible for recovery boilers. SCC rejected SCR based on the high amounts of sodium in the gas stream, which might cause catalyst fouling and plugging. The concerns regarding SNCR focused on the formation of ammonium bi-sulfate, which would precipitate out downstream of the SNCR system. While we understand that these are concerns, significant improvements in SCR and SNCR systems have been made recently.[1] We suggest that SCC investigate these options more closely. SCC also notes that the retrofits for the recovery boilers would be extensive and costly. In order to make an economic argument against a control option, SCC needs to provide an economic analysis showing the costs for this source rather than relying on an industry wide analysis.

The recovery boilers at SCC are of a direct contact type. This type of recovery boiler emits higher concentrations of total reduced sulfur (TRS) than the indirect contact boilers. SCC states that when EPA evaluated control technologies for the Maximum Achievable Control Technology (MACT) standards for the paper and pulp industry, EPA determined that requiring conversion to indirect contact recovery boilers was generally too costly. Therefore, SCC concludes that indirect contact recovery boilers cannot be considered BACT. We do not agree with SCC on this point. The MACT standards are based on industry wide numbers rather than the source specific requirements of BACT. The costs for an entire industry may be significantly different than those for an individual facility. We believe that SCC must provide an economic analysis of conversion to indirect contact recovery boilers for this facility in order to remove the option as too costly in a BACT analysis. Indirect contact recovery boilers have been used successfully by this industry and therefore must be fully investigated as a BACT alternative.

The recovery boilers are a major source of SO_2 at this site. While we realize that SO_2 control on recovery boilers is not an industry practice, we feel that SCC should investigate possible SO_2 control technologies. The 1990 NSR workshop manual in describing the top down BACT analysis states that:

> "The control alternatives should include not only existing controls for the source category in question, but also (through technology transfer) controls applied to similar source categories and gas streams, and innovative control technologies."

Because scrubbing for SO_2 is common in other processes and industries SCC should investigate SO_2 controls as an option for the recovery boilers.

Lime Kiln

The lime kiln is currently controlled with a high efficiency venturi scrubber. We agree that this control method has been used as BACT in the past. However, SCC should

[1] Hernquist, Robert, "Update: Performance of a NO_x SCR design for high efficiency at high concentration, dust and SO_2 loading", 1998 SCR/SNCR conference proceedings.

investigate the feasibility of adding on an electrostatic precipitator as was done at Champion Paper in Florida. SCC also needs to establish a technical or economic reason why they cannot meet a lower emission limit than the proposed 0.067gr/dscf. Willamette Industries in South Carolina and Weyerhaeuser in Mississippi are required to meet a 0.033gr/dscf particulate limit.

Smelt Dissolving Tanks

SCC currently uses wet scrubbers to control particulate and beryllium from the smelt dissolving tanks. The proposed production increase will result in significant particulate emission increases from the smelt dissolving tanks. The BACT analysis does not specify whether the wet scrubbers employed are high or low efficiency. SCC proposes a BACT/MACT limit of 0.2 lb/ton black liquor solids, but states that this limit will be implemented over the MACT schedule after the MACT II limit is promulgated. This does not satisfy BACT. BACT does not allow for an undetermined time frame for implementation. Additionally, Weyerhaeuser in Mississippi, Riverwood International in Georgia, and Gulf States Paper in Alabama are currently meeting a 0.12 lb/ton black liquor solids particulate emission limit as BACT. Not only does SCC need to establish a technical reason why they cannot meet a 0.12 lb/ton limit, but to delay the installation of BACT until the MACT II is promulgated is unacceptable and contrary to PSD.

Bleach Plants

We agree that wet scrubber technology constitutes BACT for this process. SCC should implement the BACT controls on a BACT timeframe, not under the MACT timeframe. We would also encourage SCC to investigate bleaching processes that do not involve chlorine, even though BACT does not require that SCC investigate alternative bleaching processes. Bleaching methods using ozone and hydrogen peroxide have been employed at other sources and provide an alternative to chlorine processes.

Lime Slaker

SCC states that 4 lb/hr for particulate emissions represents BACT for this source. While there is no information in the RACT/BACT/LAER clearinghouse on lime slakers, Champion Paper in Florida uses a medium efficiency scrubber and attains 0.9 lb particulate/hr. SCC should explain why they cannot meet the same limit with what appears to be the same technology.

Conclusion

SCC relies heavily on decisions made under the MACT ruling throughout this analysis. We feel that this is inappropriate and would undermine BACT and PSD. The MACT and BACT standards are based on very different starting points. Additionally, MACT standards are applied to an entire source category while BACT applies on a case-by-case basis to a single source. The MACT standard is established by taking the emissions average of the best performing 12% of existing sources or the emissions average of the

best performing five sources if there are fewer than 30 sources in the source category. [2] BACT is established as the emissions limitation based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the reviewing authority, on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable for such source or modification.[3] Based on the definitions of MACT and BACT we do not agree that meeting the MACT necessarily complies with BACT requirements. We also feel that SCC cannot use the MACT to avoid a complete BACT analysis or to extend the time frame for installation of BACT controls.

Air Quality Related Values Analysis

The permit application contains no discussion of Class I increments. However, Table 3-1, "Maximum predicted concentrations due to the proposed project only at St. Marks and Bradwell Bay Class I areas" indicates that the maximum PM-10 concentration, averaged over 24 hours, is 0.34 micrograms per cubic meter (ug/m^3). This concentration exceeds the significant impact level for the Class I PM-10 increment of 0.3 ug/m^3. SCC should do a cumulative analysis for this increment. In addition, Table 3-1 shows the maximum annual concentration for SO_2, but not the maximum concentrations for the short-term averaging periods. SCC should evaluate consumption of the 3-hr and 24-hr SO_2 increments at the Class I areas.

Contact: Ellen Porter, Air Quality Branch (303) 969-2617.

[2] USC Section 7412 CAA Section 112

[3] 40 CFR 63 subpart A

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

May 9, 2000

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Jack B. Prescott, General Manager
Stone Container Corporation
One Everitt Avenue
Panama City, Florida 32402

Re: DEP File No. 0050009-005-AC (PSD-FL-288)
Panama City Mill
Pulp Production Increase

Dear Mr. Prescott:

The Department has received the application on April 10, 2000 for an increase in the pulp production from 668,850 tons per year (TPY) ADUP to 781,000 TPY ADUP at the above referenced facility in Bay County. Based on our initial review of the proposed project, we have determined that additional information is needed in order to continue processing this application package. We are enclosing comments submitted by the U.S. Fish and Wildlife Service (USFWS), which also reflects our incompleteness issues concerning this project. Please respond to USFWS concerns along with the information requested below to the Department's Bureau of Air Regulation:

1. Submit cost analysis for using cleaner fuel oil in terms of \$/ton of SO_2 removed. The facility presently is burning No. 6 fuel oil with a maximum sulfur content of 2.4 percent, by weight. The cost analysis should focus on fuel oil with sulfur content of 0.5, 1 and 1.5 percent, by weight.
2. Please submit stack test data for the last two years for all the affected PSD pollutants for the Recovery Boilers, Lime Kiln, Smelt Dissolving Tanks, Bleach Plant, Lime Slaker and Combination Boilers
3. Please indicate the reasons for not using 1999 as one of the years in determining baseline actual emissions.
4. The overall plant flow diagram indicates 228 MMBtu/hr bark input to the No. 3 Combination Boiler while the application indicates 474 MMBtu/hr. Please explain the discrepancy.
5. Since there is no PCP exemption for the collateral pollutant SO_2 generated when burning TRS gases in the No. 3 Combination Boiler, please provide the net SO_2 emissions change when firing the TRS gases from the condensate stripper and any other emissions unit/activity in the No. 3 Combination Boiler. If the net SO_2 change is greater than significant (see Table 400-2, Chapter 62-212, F.A.C.), then the SO_2 emissions are subject to the PSD new source review (NSR) requirements at Rule 62-212.400(5), F.A.C. Also, there were no "Baseline Emissions Tables" for the combination boilers in Appendix B; and, due to the potential PSD NSR requirements, please provide such a table for the No. 3 Combination Boiler.

We have not yet received approval concerning the ISC-PRIME model from the EPA. Please submit the revised ambient impact analysis, which presents the necessary information for approval of the ISC-PRIME model. We are also awaiting any incompleteness comments concerning this project from EPA. Their comments will be forwarded to you as soon as we receive them.

The Department will resume processing this application after receipt of the requested information. If you have any questions regarding this matter, please call Syed Arif, P.E. at (850) 921-9528 or Chris Carlson at (850) 921-9537.

Sincerely,

for A. A. Linero, P.E. Administrator
New Source Review Section

AAL/sa

Enclosure

cc: Gregg Worley, EPA
John Bunyak, NPS
Ellen Porter, USF&WS
Ed Middleswart, P.E., DEP-NWD
Bruce Mitchell, DEP-BAR
David A. Buff, P.E., Golder Associates Inc.

Review of Prevention of Significant Deterioration
Permit Application for Stone Container Corporation
Panama City, Florida
PSD-FL-288

by

Air Quality Branch, U. S. Fish and Wildlife Service – Denver
April 20, 2000

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This project will result in PSD-significant increases in emissions of nitrogen oxides (NO_X), sulfur dioxide (SO_2), volatile organic compounds (VOC), total particulate matter (TSP), fine particulate matter (PM-10), sulfuric acid mist (SAM), total reduced sulfur (TRS), and beryllium (Be). Emissions (in tons per year – TPY) are summarized below.

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investigate the feasibility of adding on an electrostatic precipitator as was done at Champion Paper in Florida. SCC also needs to establish a technical or economic reason why they cannot meet a lower emission limit than the proposed 0.067gr/dscf. Willamette Industries in South Carolina and Weyerhaeuser in Mississippi are required to meet a 0.033gr/dscf particulate limit.

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Conclusion

SCC relies heavily on decisions made under the MACT ruling throughout this analysis. We feel that this is inappropriate and would undermine BACT and PSD. The MACT and BACT standards are based on very different starting points. Additionally, MACT standards are applied to an entire source category while BACT applies on a case-by-case basis to a single source. The MACT standard is established by taking the emissions average of the best performing 12% of existing sources or the emissions average of the

best performing five sources if there are fewer than 30 sources in the source category.[2] BACT is established as the emissions limitation based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the reviewing authority, on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable for such source or modification.[3] Based on the definitions of MACT and BACT we do not agree that meeting the MACT necessarily complies with BACT requirements. We also feel that SCC cannot use the MACT to avoid a complete BACT analysis or to extend the time frame for installation of BACT controls.

Air Quality Related Values Analysis

The permit application contains no discussion of Class I increments. However, Table 3-1, "Maximum predicted concentrations due to the proposed project only at St. Marks and Bradwell Bay Class I areas" indicates that the maximum PM-10 concentration, averaged over 24 hours, is 0.34 micrograms per cubic meter (ug/m^3). This concentration exceeds the significant impact level for the Class I PM-10 increment of 0.3 ug/m^3. SCC should do a cumulative analysis for this increment. In addition, Table 3-1 shows the maximum annual concentration for SO_2, but not the maximum concentrations for the short-term averaging periods. SCC should evaluate consumption of the 3-hr and 24-hr SO_2 increments at the Class I areas.

Contact: Ellen Porter, Air Quality Branch (303) 969-2617.

[2] USC Section 7412 CAA Section 112
[3] 40 CFR 63 subpart A

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse, so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Jack B. Prescott, Gen. Mgr
Stone Container Corp
1 Everitt Ave
Panama City, Fl
32402

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)*

B. Date of Delivery 5/11/

C. Signature
X Rose Matteson ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
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US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Jack Prescott	
Street & Number Stone Container	
Post Office, State, & ZIP Code PC Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 5-9-00	
0050009-005-AC PSD-FI-288	

PS Form **3800**, April 1995

EPA - Stan Crewell modeling
Greg Worley - sent to
Ellen Porter - NPS

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

May 8, 2000

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Jack B. Prescott, General Manager
Stone Container Corporation
One Everitt Avenue
Panama City, Florida 32402

Re: DEP File No. 0050009-005-AC (PSD-FL-288)
Panama City Mill
Pulp Production Increase

Dear Mr. Prescott:

The Department has received the application on April 10, 2000 for an increase in the pulp production from 668,850 tons per year (TPY) ADUP to 781,000 TPY ADUP at the above referenced facility in Bay County. Based on our initial review of the proposed project, we have determined that additional information is needed in order to continue processing this application package. We are enclosing comments submitted by the U.S. Fish and Wildlife Service (USFWS), which also reflects our incompleteness issues concerning this project. Please respond to USFWS concerns along with the information requested below to the Department's Bureau of Air Regulation:

1. Submit cost analysis for using cleaner fuel oil in terms of \$/ton of SO_2 removed. The facility presently is burning No. 6 fuel oil with a maximum sulfur content of 2.4 percent by weight. The cost analysis should focus on fuel oil with sulfur content of 0.5, 1 and 1.5 percent.
2. Please submit stack test data for the last two years for all the affected PSD pollutants for the Recovery Boilers, Lime Kiln, Smelt Dissolving Tanks, Bleach Plant, Lime Slaker and Combination Boilers.
3. Please indicate the reasons for not using 1999 as one of the years in determining baseline actual emissions.
4. The overall plant flow diagram indicates 228 MMBtu/hr bark input to the No. 3 Combination Boiler while the application indicates 474 MMBtu/hr. Please explain the discrepancy.

We have not yet received approval concerning the ISC-PRIME model from the EPA. Please submit the revised ambient impact analysis, which presents the necessary information for approval of the ISC-PRIME model. We are also awaiting any incompleteness comments concerning this project from EPA. Their comments will be forwarded to you as soon as we receive them.

Review of Prevention of Significant Deterioration
Permit Application for Stone Container Corporation
Panama City, Florida
PSD-FL-288

by

Air Quality Branch, U. S. Fish and Wildlife Service – Denver
April 20, 2000

Stone Container Corporation (SCC) has requested a permit to increase pulp production at its Panama City mill. The increased throughput of pulp will increase emissions from recovery boilers 1&2, smelt dissolving tanks 1&2, the lime kiln, the bleach plant, the pulping area, the lime slaker, the chemical recovery area, the paper making process, and combination boiler number 3. The mill is located in Panama City, Florida, 120 km west of St. Marks Wilderness, a Class I area administered by the U.S. Fish and Wildlife Service (FWS).

This project will result in PSD-significant increases in emissions of nitrogen oxides (NO_X), sulfur dioxide (SO_2), volatile organic compounds (VOC), total particulate matter (TSP), fine particulate matter (PM-10), sulfuric acid mist (SAM), total reduced sulfur (TRS), and beryllium (Be). Emissions (in tons per year – TPY) are summarized below.

POLLUTANT	EMISSIONS INCREASE (TPY)
NO_X	138
SO2	155
VOC	174
PM-10	624
TSP	779
SAM	26
TRS	151
Be	0.00046

Best Available Control Technology (BACT) Review

Recovery Boilers

The recovery boilers are equipped with high efficiency electrostatic precipitators for particulate control, which represents BACT for particulate control. However, the proposed emission limit of 0.044gr/dscf does not represent BACT. SCC should show why it is technically or economically infeasible to meet the particulate emissions levels that have been established as BACT for other sources. For example, Willamette Industries in South Carolina, Boise Cascade in Alabama, and Gulf States Paper in Alabama all meet a 0.021gr/dscf limit for particulates.

SCC has determined that BACT for NO_x emissions from the recovery boilers is combustion control. SCC states that selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR) are considered unproven and infeasible for recovery boilers. SCC rejected SCR based on the high amounts of sodium in the gas stream, which might cause catalyst fouling and plugging. The concerns regarding SNCR focused on the formation of ammonium bi-sulfate, which would precipitate out downstream of the SNCR system. While we understand that these are concerns, significant improvements in SCR and SNCR systems have been made recently.[1] We suggest that SCC investigate these options more closely. SCC also notes that the retrofits for the recovery boilers would be extensive and costly. In order to make an economic argument against a control option, SCC needs to provide an economic analysis showing the costs for this source rather than relying on an industry wide analysis.

The recovery boilers at SCC are of a direct contact type. This type of recovery boiler emits higher concentrations of total reduced sulfur (TRS) than the indirect contact boilers. SCC states that when EPA evaluated control technologies for the Maximum Achievable Control Technology (MACT) standards for the paper and pulp industry, EPA determined that requiring conversion to indirect contact recovery boilers was generally too costly. Therefore, SCC concludes that indirect contact recovery boilers cannot be considered BACT. We do not agree with SCC on this point. The MACT standards are based on industry wide numbers rather than the source specific requirements of BACT. The costs for an entire industry may be significantly different than those for an individual facility. We believe that SCC must provide an economic analysis of conversion to indirect contact recovery boilers for this facility in order to remove the option as too costly in a BACT analysis. Indirect contact recovery boilers have been used successfully by this industry and therefore must be fully investigated as a BACT alternative.

The recovery boilers are a major source of SO_2 at this site. While we realize that SO_2 control on recovery boilers is not an industry practice, we feel that SCC should investigate possible SO_2 control technologies. The 1990 NSR workshop manual in describing the top down BACT analysis states that:

> "The control alternatives should include not only existing controls for the source category in question, but also (through technology transfer) controls applied to similar source categories and gas streams, and innovative control technologies."

Because scrubbing for SO_2 is common in other processes and industries SCC should investigate SO_2 controls as an option for the recovery boilers.

Lime Kiln

The lime kiln is currently controlled with a high efficiency venturi scrubber. We agree that this control method has been used as BACT in the past. However, SCC should

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[1] Hernquist, Robert, "Update: Performance of a NO_x SCR design for high efficiency at high concentration, dust and SO_2 loading", 1998 SCR/SNCR conference proceedings.

investigate the feasibility of adding on an electrostatic precipitator as was done at Champion Paper in Florida. SCC also needs to establish a technical or economic reason why they cannot meet a lower emission limit than the proposed 0.067gr/dscf. Willamette Industries in South Carolina and Weyerhaeuser in Mississippi are required to meet a 0.033gr/dscf particulate limit.

Smelt Dissolving Tanks

SCC currently uses wet scrubbers to control particulate and beryllium from the smelt dissolving tanks. The proposed production increase will result in significant particulate emission increases from the smelt dissolving tanks. The BACT analysis does not specify whether the wet scrubbers employed are high or low efficiency. SCC proposes a BACT/MACT limit of 0.2 lb/ton black liquor solids, but states that this limit will be implemented over the MACT schedule after the MACT II limit is promulgated. This does not satisfy BACT. BACT does not allow for an undetermined time frame for implementation. Additionally, Weyerhaeuser in Mississippi, Riverwood International in Georgia, and Gulf States Paper in Alabama are currently meeting a 0.12 lb/ton black liquor solids particulate emission limit as BACT. Not only does SCC need to establish a technical reason why they cannot meet a 0.12 lb/ton limit, but to delay the installation of BACT until the MACT II is promulgated is unacceptable and contrary to PSD.

Bleach Plants

We agree that wet scrubber technology constitutes BACT for this process. SCC should implement the BACT controls on a BACT timeframe, not under the MACT timeframe. We would also encourage SCC to investigate bleaching processes that do not involve chlorine, even though BACT does not require that SCC investigate alternative bleaching processes. Bleaching methods using ozone and hydrogen peroxide have been employed at other sources and provide an alternative to chlorine processes.

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Contact: Ellen Porter, Air Quality Branch (303) 969-2617.

[2] USC Section 7412 CAA Section 112

[3] 40 CFR 63 subpart A

Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

April 12, 2000

Mr. Gregg Worley, Chief
Air, Radiation Technology Branch
Preconstruction/HAP Section
U.S. EPA – Region IV
61 Forsyth Street
Atlanta, Georgia 30303

Re: Stone Container Corporation – Panama City Mill
0050009-005-AC, PSD-FL-288

Dear Mr. Worley:

Enclosed for your review and comment is an application to increase pulp production at the referenced facility.

Please note that the applicant seeks approval by the Department and EPA to use ISC-PRIME to conduct ambient impact analyses.

Your comments can be forwarded to my attention at the letterhead address or faxed to me at (850)922-6979. If you have any questions, please contact Syed Arif at (850)921-9528 or Chris Carlson at 850/921-9537.

Sincerely,

AAL 4/12

A. A. Linero, P.E.
Administrator
New Source Review Section

AAL/kt

Enclosures

cc: S. Arif, BAR

Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

April 12, 2000

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS-Air Quality Division
Post Office Box 25287
Denver, CO 80225

Re: Stone Container Corporation – Panama City Mill
0050009-005-AC, PSD-FL-288

Dear Mr. Bunyak:

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Please note that the applicant seeks approval by the Department and EPA to use ISC-PRIME to conduct ambient impact analyses.

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