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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

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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.

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_2),
- 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 62-204.240. 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 analysis;
- Section 5.0 presents the air dispersion modeling results.

The preliminary modeling analysis predicted exceedences of the SO_2 AAQS. SCC proposes the following SO_2 emission limits for the combination boilers to comply with the SO_2 AAQS.

1. Proposed SO_2 emission limit for the No. 3 Combination Boiler of 200 lb/hr.
2. Proposed SO_2 emission limit for the No. 4 Combination Boiler of 250 lb/hr.

Currently, the combination boilers SO_2 emissions are limited by fuel usage rates and sulfur content.

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] (PM10)	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 (PM10) = 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. A thermal oxidizer has been proposed for the facility to destroy non-condensable gases containing total reduced sulfur (TRS), as part of a Cluster Rule Compliance project.

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 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. SCC proposes to limit SO_2 emissions from the Nos. 3 and 4 Combination Boilers to 200 lb/hr and 250 lb/hr, respectively. The recovery boilers emissions are based on the burning of black liquor solids (BLS), since BLS are the primary fuel of the recovery boilers. The proposed cluster rule changes, i.e., new TRS thermal oxidizer and modified bleach plant are included in Table 2-1. 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, as well as permit application information, and previous stack testing performed at the Panama City mill. The 1988 baseline emissions for NO_x were also 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.

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}		SO_2		NO_x		CO	
		Short-Term Emissions							
		(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
No. 1 Recovery Boiler	RB1	87.3	11.00	129.8	16.35	72.1	9.08	2474.0	311.72
No. 2 Recovery Boiler	RB2	87.3	11.00	129.8	16.35	72.1	9.08	2474.0	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	95.3	12.01	200.0	25.20	156.0	19.65	85.7	10.8
No. 4 Combination Boiler	BB4	75.3	9.49	250.0	31.50	218.8	27.57	166.7	21
Proposed Thermal Oxidizer	INCIN	0.15	0.02	62.4	7.87	5.16	0.65	1.26	0.16
Modified Bleach Plant	BLEACH	--	--	--	--	--	--	46.2	5.82
Lime Slaker	LSKR	4.0	0.50	--	--	--	--	--	--
Woodyard	WOODYARD	3.7	0.47	--	--	--	--	--	--
TOTALS		434.5	54.7	778.7	98.1	572.9	72.2	5252.3	661.8

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

Emission Unit	Unit ID	PM_{10} (1974)		SO_2 (1974)		NO_x (1988)	
		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	11.9	1.50	205.5	25.9	--	--
No. 5 Power Boiler	PB5	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	BB3	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	44.6	1.28	773.9	22.3	--	--
No. 5 Power Boiler	PB5	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

Same

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

Emission Unit	Unit ID	Relative Location (d) X (ft)	X (m)	Y (ft)	Y (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Operating Parameters Temperature (°F)	Temperature (°K)	Velocity (ft/s)	Velocity (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	5.25
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	LKILN	537	164	-118	-36	61	18.6	8.00	2.44	167	348	38.8	11.84
Slaker	LSKR	136	41	-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
New Thermal Oxidizer	INCIN	397	121	-59	-18	120	36.6	3.00	0.91	169	349	27.4	8.34
Bleach Plant	NEWBLCH	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	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	LKILN	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	LKILN	537	164	-118	-36	61	18.6	6.66	2.03	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) No.4 and 5 Power Boilers shared a common stack.

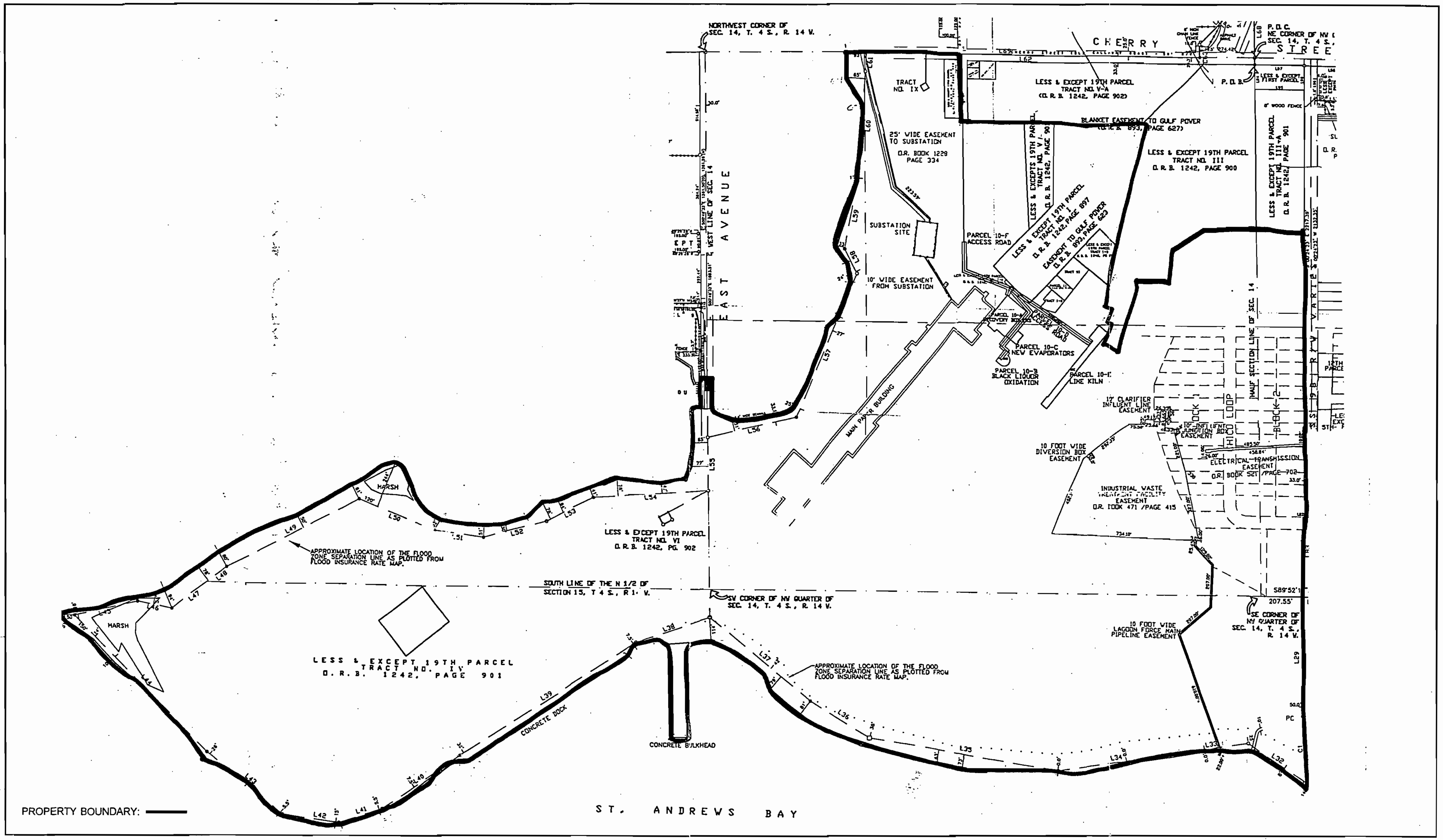

Figure 2-1. Panama City Property Boundary

Smurfit-Stone Container Corporation

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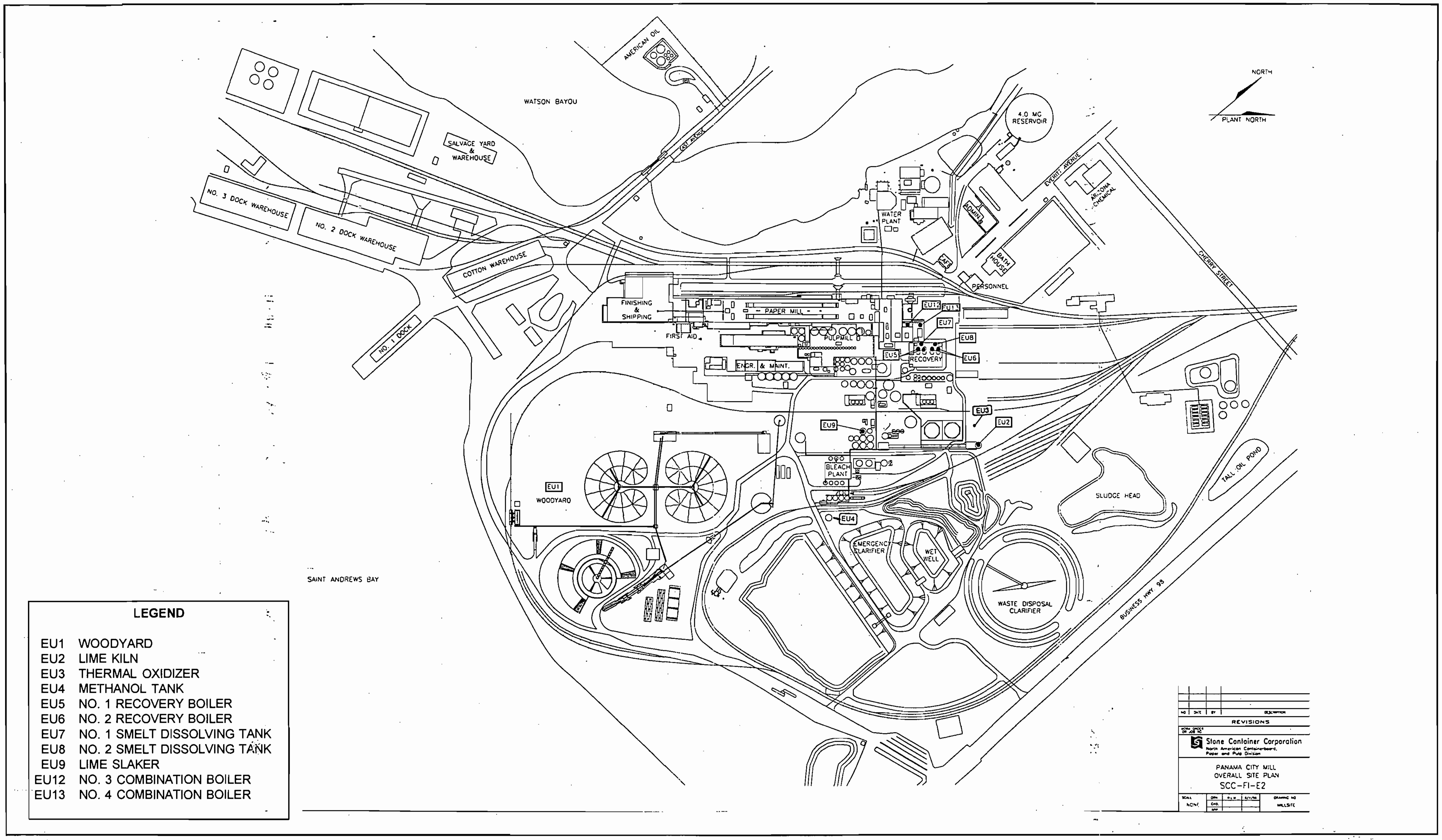
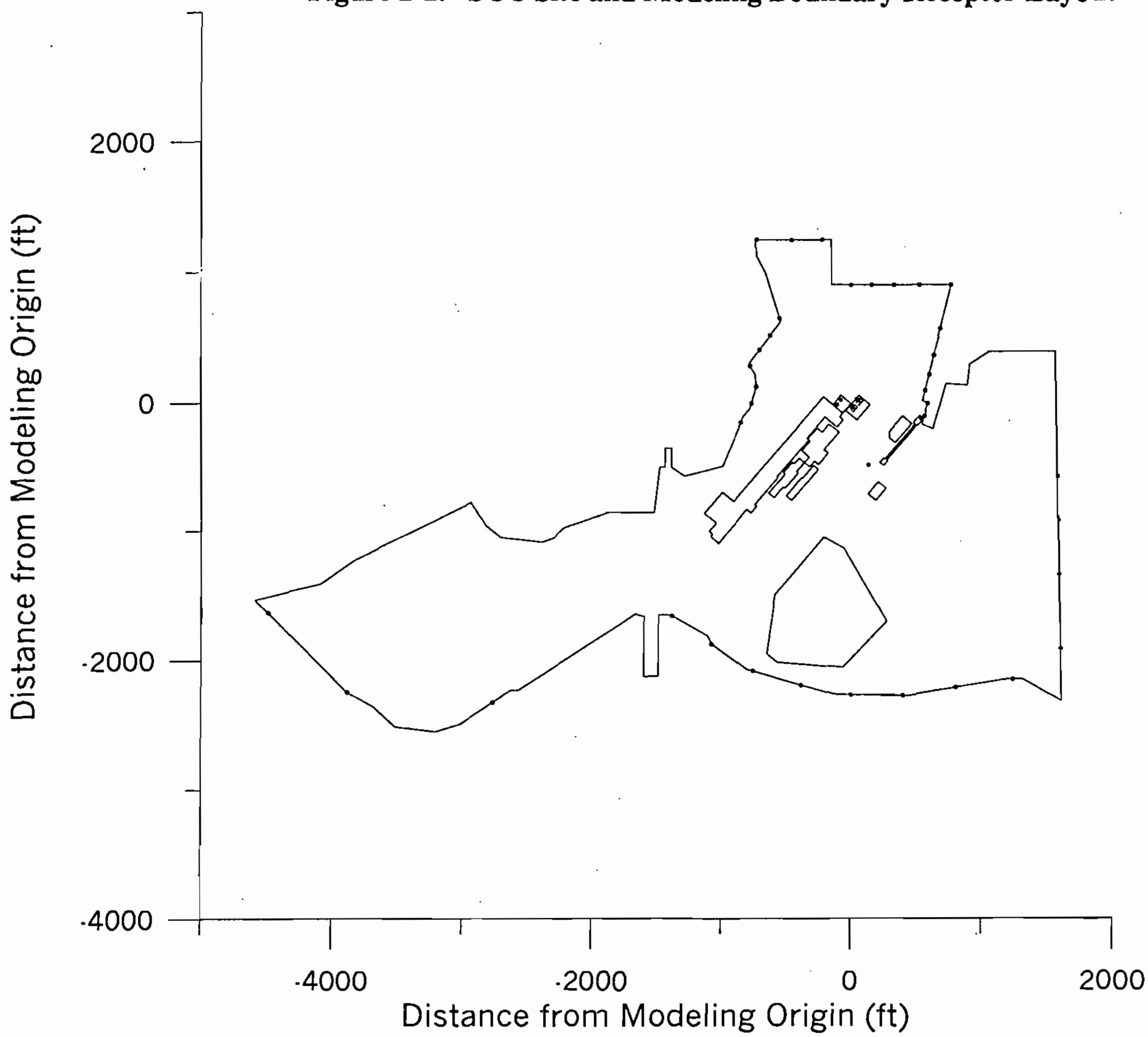


Figure 2-2. Facility Plot Plan

Smurfit-Stone Container Corporation

Golder Associates

Figure 2-2. SCC Site and Modeling Boundary Receptor Layout



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 monitors were operational in Pensacola during this period. The monitoring data show that ambient SO_2 concentrations were well below the 3-hour, 24-hour average, and annual AAQS of 1,300 $\mu g/m^3$, 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 be influenced by emission sources and 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.

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 operating 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 be influenced by emissions sources and 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 Daily 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
1997	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 (0.024 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

					Concentration ($\mu g/m^3$)			
Year	County	Station ID	Monitor Location	Number of Hourly Observations	Maximum 1-Hour	2nd-High 1-Hour	Maximum 8-Hour	2nd-High 8-Hour
1997	Duval	1960-083-H01	Jacksonville-1200 S. McDuff Ave	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 Ave	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

Although the proposed modification does not require a PSD review, 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 6.1.5.4). 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 6.1.3 and 6.1.5.4.

The ISC-PRIME model was used in the same manner as the ISCST3 model would be used in a regulatory evaluation, and followed EPA and FDEP modeling guidelines for determining compliance with AAQS and PSD increments.

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). 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, an increment 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 were modeled together with background emission facilities. Additionally, a non-modeled background concentration was 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 were modeled with background PSD consuming or expanding sources. The maximum annual and H2H short-term PSD increment consumption concentrations were 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 preformed 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 were modeled along with other background PSD consuming or expanding sources within 150 miles from the PSD Class I area. The maximum annual and H2H short-term concentrations were 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 averaging the annual and 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 ISCPRIME 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 PSD Class II increment analyses, Bay County Energy Systems was the only PSD increment consuming source identified 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.

Sulfur Dioxide

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 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. 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. 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 TPY PM emission rates 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 facility was 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 TPY NO_x emission rates 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. There are no PSD increment-affecting sources among the background sources. The individual source emissions, stack, and operating parameters for the AAQS modeling analysis are presented in Table 4-7. 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.

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 EPRI (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 entire wake region.

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

Although these 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 Hb and lb for 36 radial directions, with each direction representing a 10-degree. The Hb is the building height and lb 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.

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 Figure 2-2). 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 the SCC Mill is presented in Table 4-9.

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 were not performed. At distances of 600 m and beyond, modeling refinements were 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 4-10. 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
• 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.

Source: EPA, 1999.

Table 4-2. Summary of Competing SO_2 Facilities Considered for Inclusion in the AAQS and PSD 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 (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
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

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)	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 No 1	ARIZCHM1	30.5	1.22	510.9	22.75	17.64		Yes	No	No
		Boiler No 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
0450005	Florida Coast Paper											
		Kiln No 1		33.8	1.22	352.6	20.78	0.30				
		Kiln No 2		33.8	1.22	352.6	19.85	0.30				
		Kiln No 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 No 5		38.1	2.56	460.9	14.81	32.29				
		Recovery Boiler No 6		38.1	2.56	394.3	2.94	32.26				
		Recovery Boiler No 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		Yes	No	No

Table 4-4. Summary of Competing PM Facilities Considered for Inclusion in the AAQS and PSD 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)	Y (km)	Distance (km)	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
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

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 No 1	ARIZCHM1	30.5	1.22	510.9	22.75	2.20		Yes	No	No
		Boiler No 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	1.71	CON	Yes	Yes	Yes
0450005	Florida Coast Paper											
		Kiln No 1		33.8	1.22	352.6	20.78	1.30				
		Kiln No 2		33.8	1.22	352.6	19.85	1.30				
		Kiln No 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 No 5		38.1	2.56	460.9	14.81	4.72				
		Recovery Boiler No 6		38.1	2.56	394.3	2.94	4.72				
		Recovery Boiler No 7		61.0	5.33	429.8	9.10	19.20				
			FCPRB567	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		Yes	No	No

Table 4-6. Summary of Competing NOx Facilities Considered for Inclusion in the AAQS 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 (deg)	Maximum NOx 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	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	Washington	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
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.

Table 4-7. Summary of Background NO_x 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 No 1	ARIZCHM1	30.5	1.22	510.9	22.75	6.62		Yes	No	No
		Boiler No 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		Yes	No	No
0450005	Florida Coast Paper											
		Kiln No 1		33.8	1.22	352.6	20.78	7.76				
		Kiln No 2		33.8	1.22	352.6	19.85	7.76				
		Kiln No 3		33.5	1.22	352.6	18.31	7.76				
		Smelt Dissolving Tank No 5		38.1	1.07	360.4	7.71	---				
		Smelt Dissolving Tank No 6		38.1	1.07	355.4	7.71	---				
		Smelt Dissolving Tank No 7		30.5	2.38	367.6	2.25	---				
			FCPLKSDT	30.5	2.38	367.6	2.25	23.28		Yes	No	No
		Recovery Boiler No 5		38.1	2.56	460.9	14.81	34.03				
		Recovery Boiler No 6		38.1	2.56	394.3	2.94	16.80				
		Recovery Boiler No 7		61.0	5.33	429.8	9.10	4.40				
			FCPRB567	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

Table 4-8. SSCC 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] Existing during baseline (1974 and 1988) only.

Table 4-9. Property Boundary Receptors Used in the Air Modeling Analysis

Receptor	Direction (degrees)	Distance (m)	Receptor	Direction (degrees)	Distance (m)
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 4-10. Summary of Receptors Used for the PSD Class I Modeling Analyses

Receptor Number	UTM Coordinate (m) Easting	UTM Coordinate (m) Northing
Bradwell Bay National Wildlife Refuge		
1	728000	3343000
2	728000	3341000
3	731000	3343000
4	731000	3341000
5	731000	3338000
6	733000	3343000
7	733000	3341000
8	733000	3338000
9	733000	3336000
10	733000	3333000
11	736000	3346000
12	736000	3343000
13	736000	3341000
14	736000	3338000
15	736000	3336000
16	738000	3343000
17	738000	3341000
18	741000	3341000
St. Marks National Wildlife Refuge		
19	770000	3338000
20	770000	3336000
21	772000	3336000
22	772000	3333000
23	772000	3331000
24	775000	3333000
25	775000	3331000
26	777000	3333000
27	780000	3333000
28	782000	3336000
29	782000	3333000
30	785000	3336000
31	785000	3333000
32	787000	3336000
33	787000	3333000

All receptors in UTM Zone 16

5.0 AIR MODELING ANALYSIS RESULTS

5.1 AAQS ANALYSES

The maximum predicted SO_2, PM_{10}, NO_2, and CO concentrations from the screening analysis due to all future modeled sources are presented in Table 5-1. Based on the results of the screening analyses, 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 5-2. All maximum impacts occurred at or near the SCC property boundary.

The maximum predicted total SO_2 concentrations are 43, 259.7, and 587 $\mu g/m^3$, for the annual, 24-hour and 3-hour averaging times, respectively. These concentrations are all below the AAQS of 60, 260, and 1,300 $\mu g/m^3$, respectively.

The maximum predicted total PM_{10} concentrations are 43.5 and 133 $\mu g/m^3$, for the annual and 24-hour averaging times, respectively. These concentrations are all below the AAQS of 50 and 150 $\mu g/m^3$, respectively.

The maximum predicted total CO concentrations are 5,936 and 10,360 $\mu g/m^3$, for the 8-hour and 1-hour averaging times, respectively. These concentrations are below the AAQS of 10,000 and 40,000 $\mu g/m^3$, respectively.

The maximum predicted total NO_2 concentration is 36 $\mu g/m^3$, for the annual averaging time. This concentration is below the AAQS of 100 $\mu g/m^3$.

5.1.1 PSD Class II Analysis

The maximum predicted SO_2, PM_{10} and NO_2 concentrations from the screening analysis due to all PSD-affecting sources are presented in Table 5-3. Based on the results of the screening analyses, refined modeling analyses were performed for all pollutants. The refined modeling results are compared to the allowable PSD Class II increments in Table 5-4.

The maximum predicted SO_2 concentrations are 55 and 231 μg/m^3, 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. These concentrations are all below the allowable PSD Class II increments of 20, 91, and 512 μg/m^3, for the annual, 24-hour and 3-hour averaging times, respectively.

The maximum predicted PM_{10} concentrations are 3.6 and 22.8 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.

The maximum predicted NO_2 concentration is 11.1 μg/m^3, which is below the allowable PSD Class II increment of 25 μg/m^3.

5.1.2 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 5-5.

The maximum predicted SO_2 concentrations are 0.017, 1.30, and 8.31 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 PM_{10} concentrations are less than zero for the annual averaging time and is 0.005 μg/m^3 for the 24-hour averaging time. 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 NO_2 concentration is 0.03 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.

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

Averaging Time	Concentration[a] (ug/m^3)	Receptor Location[b] Direction (degree)	Receptor Location[b] Distance (m)	Time Period (YYMMDDHH)
<u>SO_2</u>				
Annual				
	28	170	702	86123124
	29	170	702	87123124
	24	300	700	88123124
	21	330	900	89123124
	31	300	700	90123124
H2H 24-Hour				
	179	160	716	86030124
	244	290	500	87120724
	200	100	487	88110524
	163	150	755	89122324
	201	300	700	90021424
H2H 3-Hour				
	408	270	900	86030903
	474	280	500	87120806
	514	100	700	88022803
	460	90	900	89071121
	493	90	900	90061706
<u>NO_2</u>				
Annual				
	15.4	170	702	86123124
	17.6	170	702	87123124
	15.1	300	900	88123124
	12.5	330	900	89123124
	19.5	300	900	90123124
<u>PM_{10}</u>				
Annual				
	17.6	180	690	86123124
H6H 24-Hour				
	107.8	300	500	90060124
<u>CO</u>				
H2H 8-Hour				
	1944	170	702	86050324
	2846	280	300	87120808
	1743	300	500	88040116
	1742	180	690	89020916
	1876	270	500	90042008
H2H 1-Hour				
	4114	350	900	86100401
	4105	280	900	87031422
	4129	340	900	88062223
	4347	340	900	89060502
	4102	350	700	90091020

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

[b] Relative to Modeling Analysis Origin Location

<u>Notes</u>

YYMMDDHH = Year, Month, Day, Hour Ending

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

H6H = 6th-Highest Concentration in 5 years.

Table 5-2. Maximum Predicted Pollutant Impacts Due to All Future Sources For Comparison to AAQS, Refined Analysis

Averaging Time	Concentration (ug/m^3)			Receptor Location[b]		Time Period	Florida
	Total	Modeled	Background	Direction (degree)	Distance (m)	(YYMMDDHH)	AAQS (ug/m^3)
SO_2							
Annual	41	29.4	12	170	702	87123124	60
	43	31.0	12	302	800	90123124	
H2H 24-Hour	259.7	247.7	12	290	400	87120724	260
	214	202	12	300	800	90021424	
H2H 3-Hour	587	575	12	98	800	88022803	1300
	542	530	12	96	900	90080724	
NO_2							
Annual	34	17.6	16	170	702	87123124	100
	36	20.1	16	302	800	90123124	
PM_{10}							
Annual	43.5	18.5	25	176	700	86123124	50
H6H 24-Hour	133	107.8	25	300	500	90060124	150
CO							
H2H 8-Hour	5,936	2936	3,000	278	400	87120808	10,000
H2H 1-Hour	10,289	4,289	6,000	346	900	86020519	40,000
	10,327	4,327	6,000	344	900	87061923	
	10,360	4,360	6,000	342	900	88070923	
	10,347	4,347	6,000	340	900	89060502	
	10,127	4,127	6,000	350	800	90091020	

[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 PSD Class II Increment, Screening Analysis

Averaging Time	Concentration[a] (ug/m³)	Receptor Location[b] Direction (degree)	Distance (m)	Time Period (YYMMDDHH)
SO_2				
Annual				
	<0	NA	NA	86123124
	<0	NA	NA	87123124
	<0	NA	NA	88123124
	<0	NA	NA	89123124
	<0	NA	NA	90123124
H2H 24-Hour				
	25.1	100	500	86071324
	22.4	80	700	87031924
	32.9	280	226	88040424
	46.3	90	500	89090124
	30.6	300	249	90121224
H2H 3-Hour				
	180	110	512	86022409
	145	110	512	87090609
	163	280	226	88010112
	185	90	478	89051418
	175	100	487	90070209
PM_{10}				
Annual				
	3.12	190	700	86123124
	2.67	190	700	87123124
	2.98	200	700	88123124
	3.17	210	700	89123124
	3.43	290	700	90123124
H2H 24-Hour				
	16.7	200	700	86120124
	18.3	190	700	87090124
	21.8	10	282	88030924
	20.9	20	300	89010124
	18.8	20	295	90043024
NO_2				
Annual				
	6.5	170	702	86123124
	6.8	170	702	87123124
	7.9	300	900	88123124
	6.3	300	900	89123124
	10.8	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 5-4. Maximum Predicted Pollutant PSD Increment Consumption For Comparision With PSD Class II Allowable Increments, Refined Analysis

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[b] Direction (degree)	Receptor Location[b] Distance (m)	Time Period (YYMMDDHH)	Allowable PSD Class II Increment ($\mu g/m^3$)
SO_2					
Annual	<0	NA	NA	NA	20
H2H 24-Hour	55	94	500	89081724	91
H2H 3-Hour	200	108	505	86120209	512
	231	94	600	89082421	
	192	104	400	90110521	
PM_{10}					
Annual	3.6	298	800	90123124	17
H2H 24-Hour	21.8	10	282	88030924	30
	22.8	16	400	89022724	
NO_2					
Annual	11.1	302	800	90123124	25

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to modeling analysis origin location

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

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

Table 5-5. Maximum Predicted SO_2 PSD Increment at the Bradwell Bay and St. Marks NWRs

Averaging Time	Concentration[a] (ug/m³)	Receptor Location (UTM) East (m)	Receptor Location (UTM) North F31(m)	Time Period (YYMMDDHH)	Allowable PSD Class I Increment (ug/m³)
SO_2					
Annual					
	0.007	731000	3343000	86123124	2
	0.017	733000	3333000	87123124	
	<0	NA	NA	88123124	
	0.003	736000	3346000	89123124	
	<0	NA	NA	90123124	
H2H 24-Hour					
	1.18	731000	3338000	86030624	5
	0.95	733000	3338000	87041924	
	1.30	731000	3343000	88032124	
	1.29	733000	3338000	89042524	
	1.00	736000	3343000	90011124	
H2H 3-Hour					
	6.68	728000	3341000	86070824	25
	5.47	728000	3341000	87012721	
	7.19	731000	3343000	88032121	
	8.31	733000	3346000	89042703	
	7.91	736000	3338000	90101303	
PM_{10}					
Annual					
	<0	NA	NA	86123124	4
	<0	NA	NA	87123124	
	<0	NA	NA	88123124	
	<0	NA	NA	89123124	
	<0	NA	NA	90123124	
H2H 24-Hour					
	0.001	728000	3343000	86051924	8
	0.000	728000	3343000	87090924	
	0.004	728000	3343000	88030924	
	0.000	787000	3333000	89070324	
	0.005	728000	3343000	90021924	
NO_2					
Annual					
	0.014	728000	3341000	86123124	2.5
	0.013	728000	3341000	87123124	
	0.025	728000	3343000	88123124	
	0.023	733000	3333000	89123124	
	0.030	731000	3338000	90123124	

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

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

UTM = Universal Transverse Mercator

H2H = Highest, 2nd-Highest

APPENDIX A

MAXIMUM CALCULATED EMISSION RATES

Table A-1. Proposed Maximum Emissions from Each Recovery Boiler (Nos. 1 and 2 Recovery Boilers) at Stone Container Corporation, Panama City

	Black Liquor Solids Burning						
Regulated Pollutant	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	0.005	lb/MMBtu	5	721	MMBtu/hr	3.65	16.0
Total reduced sulfur	17.5	ppmvd	1	187,100	dscfm (g)	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	--		--	--

Note:
(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 currently permitted maximum heat input of 721 MMBtu/hr, average No. 6 Fuel Oil heat content of 150,000 Btu/gal, and 8,760 hr/yr.
(c) Maximum S = 2.5%.
(d) Based on maximum heat input of 721 MMBtu/hr, average natural gas heat content of 1,000 Btu/scf, and 8,760 hr/yr.
(e) Based on 3,570,000 gallons of No. 6 Fuel Oil per year.
(f) Based on 535 MMscf of natural gas per year.
(g) Based on firing with No. 6 Fuel Oil (only) for 742 hr/yr and BLS for the remaining 8,018 hr/yr.
(h) Based on firing with No. 6 Fuel Oil for 742 hr/yr (only), natural gas for 742 hr/yr, and BLS for the remaining 7,276 hr/yr.
(g) Based on 1997 compliance testing and 8% salt cake content of BLS throughput, i.e., 92% virgin BLS.

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-2. Proposed Maximum Emissions from No. 3 Combination Boiler at Stone Container, Panama City.

Regulated Pollutant	No. 6 Oil Emission Factor	Ref.	Activity Factors (b)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Wood/Bark Emission Factor	Ref.	Activity y Factors (a) (b)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Gas Emission Factor	Ref.	Activity y Factors (b)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)	Maximum Hourly Emissions (e) (lb/hr)	Maximum Annual Emissions (e) (TPY)
Particulate (PM)	--		--	--	--	109.5 lb/hr	8	8,760 hr/yr	109.50	479.6	--		--	--	--	109.50	479.6
Particulate (PM10)	--		--	--	--	87 % of PM	5	--	95.27	417.3	--		--	--	--	95.27	417.3
Sulfur dioxide	--		--	--	--	200 lb/hr	8	8,760 hr/yr	200.00	876.0	--		--	--	--	200.00	876.00
Nitrogen oxides	47 lb/Mgal	2	2.52 Mgal/hr	118.44	518.8	1.5 lb/TWWF	5	25.0 TPH	37.50	164.3	280 lb/MMscf	6	0.03 MMscf/hr	8.40	36.79	155.94	683.0
Carbon monoxide	5 lb/Mgal	2	2.52 Mgal/hr	12.60	55.19	2.923 lb/TWWF	7	25.0 TPH	73.08	320.1	84 lb/MMscf	6	0.03 MMscf/hr	2.52	11.04	85.68	375
VOC	0.28 lb/Mgal	2	2.52 Mgal/hr	0.71	3.09	0.12 lb/TWWF	3	25.0 TPH	3.00	13.1	5.5 lb/MMscf	6	0.03 MMscf/hr	0.17	0.72	3.71	16.23
Sulfuric acid mist	5.7 S (c) (d)	2	2.52 Mgal/hr	53.22	233.10	12.250 lb/TWWF	4	25.0 TPH	199.06	871.89	0.037 lb/MMscf	4	0.03 MMscf/hr	0.001	0.003	252.28	1,105.0
Total reduced sulfur	--		--	--	--	--		--	--	--	--		--	--	--	--	--
Lead	1.5E-03 lb/Mgal	2	2.52 Mgal/hr	3.8E-03	1.7E-02	4.5E-04 lb/TWWF	5	25.0 TPH	1.1E-02	4.9E-02	1.0E-08 lb/MMscf	6	0.03 MMscf/hr	3.0E-10	1.3E-09	1.5E-02	6.5E-02
Mercury	1.1E-04 lb/Mgal	2	2.52 Mgal/hr	2.8E-04	1.2E-03	5.2E-06 lb/TWWF	5	25.0 TPH	1.3E-04	5.6E-04	2.6E-04 lb/MMscf	6	0.03 MMscf/hr	7.8E-06	3.4E-05	4.1E-04	1.8E-03
Beryllium	2.8E-05 lb/Mgal	2	2.52 Mgal/hr	7.0E-05	3.1E-04	--		--	--	--	1.2E-05 lb/MMscf	6	0.03 MMscf/hr	3.6E-07	1.6E-06	7.0E-05	3.1E-04
Fluorides	3.7E-02 lb/Mgal	2	2.52 Mgal/hr	9.4E-02	4.1E-01	--		--	--	--	--		--	--	--	9.4E-02	4.1E-01

TWWF - ton of wet wood residue fuel

Note:
(a) 50% H_2O and heat content of 7.9 MMBtu/ton.
(b) Based on currently permitted maximum utilization rates.
(c) S = 2.4% max by current permit
(d) Adjusted to account for the ratio of sulfuric acid mist and gaseous sulfate molecular weights (98/80).
(e) Based on firing maximum allowable No. 6 Fuel Oil usage and Wood/Bark usage simultaneously for 8,760 hr/yr.

References
1. Based currently permitted emission limit.
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 (35% SO_2 removal by wet scrubber) (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 SO_2 becomes SO_3 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 (35% SO_2 removal by wet scrubber) (2/99).
6. Emission Factors based on AP-42 Section 1.4 Table 1.4-1, 1.4-2, and 1.4-4 (35% SO_2 removal by wet scrubber).
7. Emission Factor Based on NCASI TB 416, Table 4.
8. Based on proposed permit limit for any combination of fuels.

Table A-3. Proposed Maximum Emissions from No. 4 Combination Boiler at Stone Container, Panama City

Regulated Pollutant	No. 6 Oil Emission Factor	Ref.	Activity Factors (a)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	--		--	--	--
Particulate (PM10)	--		--	--	--
Sulfur dioxide	--		--	--	--
Nitrogen oxides	47 lb/Mgal	2	3.15 Mgal/hr	148.1	648.5
Carbon monoxide	5 lb/Mgal	2	3.15 Mgal/hr	15.8	69.0
VOC	0.28 lb/Mgal	2	3.15 Mgal/hr	0.88	3.86
Sulfuric acid mist	5.7 S	2	3.15 Mgal/hr	18.0	78.6
Total reduced sulfur (c)	--		--	--	--
Lead	1.5E-03 lb/Mgal	2	3.15 Mgal/hr	4.8E-03	2.1E-02
Mercury	1.1E-04 lb/Mgal	2	3.15 Mgal/hr	3.6E-04	1.6E-03
Beryllium	2.8E-05 lb/Mgal	2	3.15 Mgal/hr	8.8E-05	3.8E-04
Fluorides	3.7E-02 lb/Mgal	2	3.15 Mgal/hr	1.2E-01	5.1E-01

Regulated Pollutant	Wood/Bark Emission Factor	Ref.	Activity Factors (a) (b)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	86.60 lb/hr	1	8,760 hr/yr	86.60	379.3
Particulate (PM10)	87 % of PM	5	--	75.3	330.0
Sulfur dioxide	250 lb/hr	9	8,760 hr/yr	250.0	1,095
Nitrogen oxides	1.5 lb/TWWF	5	30.0 hr/yr	45.0	197.1
Carbon monoxide	2.923 lb/TWWF	8	30.0 hr/yr	87.7	384.1
VOC	0.12 lb/TWWF	3	30.0 hr/yr	3.60	15.77
Sulfuric acid mist	15.313 lb/TWWF	4	30.0 hr/yr	459.4	2012.1
Total reduced sulfur (c)	--		--	--	--
Lead	4.5E-04 lb/TWWF	5	30.0 hr/yr	1.3E-02	5.8E-02
Mercury	5.2E-06 lb/TWWF	5	30.0 hr/yr	1.5E-04	6.8E-04
Beryllium	--		--	--	--
Fluorides	--		--	--	--

Regulated Pollutant	Gas Emission Factor	Ref.	Activity Factors (a)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	--		--	--	--
Particulate (PM10)	--		--	--	--
Sulfur dioxide	--		--	--	--
Nitrogen oxides	280 lb/MMscf	6	0.04 MMscf/h	11.2	49.1
Carbon monoxide	84 lb/MMscf	6	0.04 MMscf/h	3.4	14.7
VOC	5.5 lb/MMscf	6	0.04 MMscf/h	0.22	0.96
Sulfuric acid mist	0.037 lb/MMscf	4	0.04 MMscf/h	0.0015	0.0064
Total reduced sulfur (c)	--		--	--	--
Lead	1.0E-08 lb/MMscf	6	0.04 MMscf/h	4.0E-10	1.8E-09
Mercury	2.6E-04 lb/MMscf	6	0.04 MMscf/h	1.0E-05	4.6E-05
Beryllium	1.20E-05 lb/MMscf	6	0.04 MMscf/h	4.8E-07	2.1E-06
Fluorides	--		--	--	--

Regulated Pollutant	Coal Emission Factor	Ref.	Activity Factors (a)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Particulate (PM)	--		--	--	--
Particulate (PM10)	--		--	--	--
Sulfur dioxide	--		--	--	--
Nitrogen oxides	11 lb/ton	7	15.8 TPH	173.8	761.2
Carbon monoxide	5 lb/ton	7	15.8 TPH	79.0	346.0
VOC	0.05 lb/ton	3	15.8 TPH	0.79	3.46
Sulfuric acid mist	2.572 lb/ton	4	15.8 TPH	40.6	178.0
Total reduced sulfur (c)	5 ppmvd (f)	1	256,950 acfm (g)	6.87	30.10
Lead	4.2E-04 lb/ton	7	15.8 TPH	6.6E-03	2.9E-02
Mercury	8.3E-05 lb/ton	7	15.8 TPH	1.3E-03	5.7E-03
Beryllium	2.1E-05 lb/ton	7	15.8 TPH	3.3E-04	1.5E-03
Fluorides	--		--	--	--

TWWF - ton of wet wood residue fuel

Note:
(a) Based on currently permitted maximum utilization rates.
(b) 50% H2O and heat content of 7.9 MMBtu/ton.
(c) TRS gases from digester and MEE system must be incinerated in the Lime Kiln or Bark Boiler at a minimum of 1200 F for at least 0.5 seconds.
(d) Maximum fuel oil sulfur content = 2.4%
(e) Maximum coal sulfur content = 1.7%
(f) All TRS emissions calculated under coal section.
(g) Based on Title V application and TRS burning 8,760 hr/yr.

References
1. Based currently permitted emission limit.
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 (35% SO2 removal by wet scrubber) (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) (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 (35% SO2 removal by wet scrubber) (2/99).
6. Emission Factors based on AP-42 Section 1.4 Table 1.4-1, 1.4-2, and 1.4-4 (35% SO2 removal by wet scrubber).
7. Emission Factors based on AP-42 Section 1.1 Tables 1.1-3 and 1.1-18 (35% SO2 removal by wet scrubber).
8. Emission Factor Based on NCASI TB 416, Table 4.
9. Based on proposed permit limit for any combination of fuels.

Regulated Pollutant	Oil/Bark Hourly Emissions (lb/hr)	Oil/Bark Annual Emissions (TPY)	Coal/Bark Hourly Emissions (lb/hr)	Coal/Bark Annual Emissions (TPY)	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (TPY)
Particulate (PM)	86.6	379.3	86.6	379.3	86.6	379.3
Particulate (PM10)	75.3	330.0	75.3	330.0	75.3	330.0
Sulfur dioxide	250.0	1,095.0	250.0	1095.0	250.0	1,095
Nitrogen oxides	193.1	845.6	218.8	958.3	218.8	958.3
Carbon monoxide	103.4	453	166.7	730.1	166.7	730
VOC	4.5	19.6	4.4	19.2	4.5	19.6
Sulfuric acid mist	477.3	2,090.7	500.0	2190.0	500.0	2,190.0
Total reduced sulfur	6.9	30.1	6.9	30.1	6.9	30.1
Lead	1.8E-02	7.9E-02	2.0E-02	8.8E-02	2.0E-02	8.8E-02
Mercury	5.1E-04	2.2E-03	1.5E-03	6.4E-03	1.5E-03	6.4E-03
Beryllium	8.8E-05	3.8E-04	3.3E-04	1.5E-03	3.3E-04	1.5E-03
Fluorides	1.2E-01	5.1E-01	--	--	1.2E-01	5.1E-01

Table A-4. Proposed 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 sulfur	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.

Note:
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. Proposed 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.

Note:
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. Proposed 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
Note:	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 Conveyor 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). $E = 0.0032 \times (U/5)^{1.3} / (M/2)^{1.4}$ 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. Proposed 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.
Note:
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. Proposed Maximum Emissions from Lime Slaker at Stone Container, Panama City

Regulated Pollutant	Emission Factor	Reference	Activity Factor	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 [a]	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 (10% impurities included).

References

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

Table A-9. Maximum Carbon Monoxide Emissions From the Modified Bleach Plant, Stone Container, Panama City

Pollutant Source and Pulp Type	Emission Factor (lb/ADTBP)		Production Rate Maximum (b) (ADTBP/day)	Production Rate Annual (c) (ADTBP/yr)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Oxygen Delignification						
Hardwood	0.063	(a)	1,116	396,102	2.9	12.5
Softwood	0.51	(a)	725	265,959	15.4	67.8
Bleaching Stages						
Hardwood	0.57	(a)	1,116	396,102	26.5	112.9
Softwood	1.02	(a)	725	265,959	30.8	135.6
				TOTAL	46.2	203.4

Notes:
ADTUBP = Air Dried Tons of Unbleached Bleached Pulp
Note:
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.

O2 Delignification:

Hardwood: O2 delig. System design is 20 lb O2/ADTUBP / 0.94 / 0.90 = 23.6 lb O2/ODTBP = 1.2%
Interpolating from Figure 5: CO = 0.07 lb/ODTBP / 0.90 = 0.063 lb/ADTBP

Softwood: O2 delig. System design is 50 lb O2/ADTUBP / 0.94 / 0.90 = 61.1 lb O2/ODTBP = 3.0%
Using NCASI equation for softwood (Figure 5): CO = (0.232 x %O2) - 0.13 lb/ODTBP
CO = 0.57 lb/ODTBP x 0.90 = 0.51 lb/ADTBP

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 = 1,116 ADTBP/day (bleached pulp = 94% of unbleached pulp)
Softwood - 797 ADTUBP/day = 725 ADTBP/day (bleached pulp = 91% of unbleached pulp)

(c) 355 day/yr operation.

Table A-10a. Estimated TRS and SO_2 Emission Rates for the Proposed Thermal Oxidizer, Stone Container Corporation, Panama City, Florida

NCG Source	Process Rate		TRS Emission	Uncontrolled TRS Emissions	Uncontrolled SO_2 Emissions (4)	SO_2 Control Efficiency	Controlled SO_2 Emission Rate	
	tons ADUP/hr	tons ADUP/yr	Factor and Applicable Units	(lb/hr)	(lb/hr)	(%)	lb/hr	TPY
OPERATING SCENARIO 1: DESTRUCTION OF STRIPPER NCGS AND NO LVHC SYSTEM NCGS (8,760 hr/yr)								
Condensate Stripper Overhead Gases	120	781,000	1.43 lb/ton ADUP (7)	171.6	240.24	92	19.22	62.54
OPERATING SCENARIO 2: DESTRUCTION OF CONDENSATE STRIPPER NCGS (8,760 hr/yr) AND LVHC SYSTEM NCGS (2,190 hr/yr)								
Condensate Stripper Overhead Gases	120	781,000	1.43 lb/ton ADUP (7)	171.6	240.24	92	19.22	62.54
Existing LVHC NCG Gases								
Batch Digester Blow Heat Recovery	120	781,000	1.5 lb/ton ADUP (1)	180.0	252.0	92	20.16	22.08
Nos. 1-3 Multiple Effect Evaporators	120	781,000	1 lb/ton ADUP (1)	120.0	168.0	92	13.44	14.72
Turpentine Condenser	120	781,000	0.5 lb/ton ADUP (2)(5)	60.0	120.0	92	9.60	10.51
Turpentine Decanter	--	--	0.053 lb/hr/tank (3)	0.053	0.07	92	0.0059	0.0065
Note:								
Turpentine Storage Tank (6)	--	--	0.053 lb/hr/tank (3)	0.053	0.074	92	0.0059	0.0065
New Foul Condensate Tank	--	--	0.053 lb/hr/tank (3)	0.053	0.074	92	0.0059	0.0065
Total				531.76	780.46		62.44	109.87

Footnotes:
(1) Kraft Pulping- Control of TRS Emissions From Existing Mills, Guideline Series, Table 5-1. EPA-450/2-78-003b, March 1979.
(2) NCASI Technical Bulletin No. 469, pgs. 20 and 32.
(3) NCASI Technical Bulletin 701; Table 7: Summary of Air Toxic Emissions from Weak Black Liquor Storage Tanks.
(4) Assumes that 70% of TRS is sulfur.
(5) As sulfur.
(6) This is an existing, but uncontrolled, source. Part of the proposed project is to control emissions from this source.
(7) Based on sum of average emission factors for reduced sulfur compounds (dimethyl sulfide and methyl mercaptan) in NCASI Technical Bulletin No. 701: Compilation of Air Toxic and Total Hydrocarbon Emission Data for Sources at Chemical Wood Pulp Mills, October 1995, Table 6.

Table A-10b. Maximum Emissions of Other Pollutants From Proposed Thermal Oxidizer, SCC Panama City

Regulated Pollutant	Natural Gas Burning				Methanol Burning				Total
	Emission Factor	Ref.	Activity Factor	Annual Emissions (TPY)	Emission Factor	Ref.	Activity Factor (5)	Annual Emissions (TPY)	Total Annual Emissions (TPY)
Particulate Matter (PM)	7.6 lb/MMscf	2	89.35 MMscf/yr	0.34	0.6 lb/1000 gal	4	1,061,818 gal/yr	0.32	0.66
Particulate Matter (PM10)	7.6 lb/MMscf	2	89.35 MMscf/yr	0.34	0.6 lb/1000 gal	4	1,061,818 gal/yr	0.32	0.66
Nitrogen oxides	280 lb/MMscf	2	89.35 MMscf/yr	12.5	19 lb/1000 gal	4	1,061,818 gal/yr	10.1	22.6
Carbon monoxide	84 lb/MMscf	2	89.35 MMscf/yr	3.8	3.2 lb/1000 gal	4	1,061,818 gal/yr	1.7	5.5
Sulfuric acid mist	4 % of SO2	3	109.9 TPY SO2	5.4	--- included in natural gas ---				5.4

References:

1. Based on testing of existing incinerator and considering new wet scrubber.
2. AP-42 factors for natural gas firing (Section 1.4).
3. Based on AP-42 factors for fuel oil combustion (Section 1.3), as SO3, and converting to H2SO4.
4. AP-42 factors for LPG combustion (Section 1.5).
5. Based on 800 lb methanol/hr and 6.6 lb/gal methanol.

APPENDIX B

BASELINE EMISSION AND STACK PARAMETERS

Stack Parameters for 1974 Baseline Sources, Stone Container Panama City Mill - May 1999

Source	Stack Height (ft)	Stack Diameter (ft)	Stack Temp. (oF)	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	8.50	440	164,000	48.2	1/12/71 Application
No. 4 Bark Boiler w/ mech. Collectors	150	7.34	470	154,000	60.6	1/12/71 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

		input	Short-Term Emissions SO2 (lb/hr)	PM (lb/hr)	PM10 (lb/hr)			Input	Annual Average Emissions 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
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
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		

* Both Bark Boilers were equipped with mechanical cyclones and had fly ash reinjection in 1974.

* Note: Total BBLS fuel oil = 440,094. (total bbls)*(42 gal/bbls)
Each boiler ratio is 1:1:2.5 bassed on heat input.

APPENDIX C

BUILDING DOWNWASH PROCESSING

[redacted]

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

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```
  -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
1
'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
```

BEST AVAILABLE COPY

'SDT1 '	0.0	71.0	0.80	-5.45
'PB2 '	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:
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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

PIP 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

BEST AVAILABLE COPY

```
' SCC Building Locations, 1974 Baseline Panama City, M,TN 6/6/99'
'ST'
'[redacted]ETERS' 1.0
'[redacted]TMN' 0.
13
'[redacted]ecovBlr' 1 0
4[redacted] 60.3504
   19.03              19.84
   45.65              -2.50
   14.79             -39.27
  -11.82             -16.94
'PB6 Build' 1 0
4[redacted] 45.7
   64.35             -12.22
   71.11              -4.16
   58.85              58.85
   52.09              -1.93
'tier #1'  1 0
4[redacted] 72.8472
    6.96             -20.16
   -1.10             -13.40
    2.43              -9.20
   10.48             -15.96
'[redacted]ier #2'  1 0
4  72.8472
   13.13             -12.81
    5.07              -6.05
    8.60              -1.84
   16.65              -8.60
[redacted]ier #3'  1 0
4  72.8472
   19.89              -4.75
   11.83               2.01
   15.36               6.21
   23.41              -0.55
[redacted]ier #4'  1 0
[redacted] 72.8472
   25.76               2.25
   17.71               9.01
   21.24              13.22
   29.29               6.46
'BleachPlt' 1 0
[redacted] 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
[redacted]152.07            -220.35
[redacted]115.63            -176.92
 -113.88            -178.39
  -88.60            -148.27
  -77.40            -157.68
 -139.11            -231.22
'[redacted]upt OffSt'  1 0
[redacted] 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
2 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
1
'LKILN'    0.0      18.6   163.79   -35.97
'LSKR '    0.0      17.1    41.47  -147.60
'[illegible]B1   '    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
'[illegible]DT2 '    0.0      71.0    13.73     9.96
'[illegible]B3   '    0.0      45.7   -28.16    17.66
'BB4  '    0.0      45.7   -33.45    11.35
'[illegible]LEACH'    0.0      21.9    61.52  -209.78
'[illegible]B4/5 '    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

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BPIP PROCESSING INFORMATION:

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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

PIP 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
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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

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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
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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
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	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
SO	BUILDWID	PB45b	48.01	53.31	56.99	58.94	59.10	42.57
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
SO	BUILDWID	PB45b	48.01	53.31	56.99	58.94	59.10	42.57
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	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

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
SO	BUILDWID	PB6b	54.09	49.07	42.55	49.90	42.56	49.07
SO	BUILDWID	PB6b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	PB6b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDWID	PB6b	54.09	49.07	42.55	49.90	42.56	49.07
SO	BUILDWID	PB6b	54.10	57.48	59.11	58.95	57.00	53.31
SO	BUILDWID	PB6b	48.01	53.31	56.99	58.94	59.10	57.47
SO	BUILDLEN	PB6b	58.95	57.00	53.31	50.91	53.31	56.99
SO	BUILDLEN	PB6b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	PB6b	34.75	42.56	49.07	54.10	57.48	59.11
SO	BUILDLEN	PB6b	58.95	57.00	53.31	50.91	53.31	56.99
SO	BUILDLEN	PB6b	58.94	59.10	57.47	54.09	49.07	42.55
SO	BUILDLEN	PB6b	34.75	42.56	49.07	54.10	57.48	59.11
SO	XBADJ	PB6b	-50.68	-54.99	-57.63	-5.95	-63.67	-66.87
SO	XBADJ	PB6b	-68.05	-67.16	-64.23	-59.35	-52.66	-44.37
SO	XBADJ	PB6b	-34.75	-32.40	-29.06	-24.84	-19.86	-14.28
SO	XBADJ	PB6b	-8.27	-2.00	4.32	-44.96	10.36	9.88
SO	XBADJ	PB6b	9.11	8.06	6.76	5.26	3.60	1.82
SO	XBADJ	PB6b	0.00	-10.16	-20.01	-29.26	-37.62	-44.83
SO	YBADJ	PB6b	32.30	28.13	23.10	4.37	11.12	4.52
SO	YBADJ	PB6b	-2.21	-8.88	-15.28	-21.21	-26.50	-30.98
SO	YBADJ	PB6b	-34.52	-37.01	-38.38	-38.58	-37.61	-35.49
SO	YBADJ	PB6b	-32.30	-28.13	-23.10	-4.37	-11.12	-4.52
SO	YBADJ	PB6b	2.21	8.88	15.28	21.21	26.50	30.98
SO	YBADJ	PB6b	34.52	37.01	38.38	38.58	37.61	35.49