4. EMISSIONS INVENTORY (REVISED SEPTEMBER 2004)

This section includes an overview of the emissions data developed and relied upon for this permit application. The procedures for developing project-related emissions were discussed during the December, 2002 meeting with IP and DEP and the techniques outlined in the meeting are summarized in this section. **In addition, Florida DEP requested that the original baseline period of 1998/1999 be updated.** A general overview of the calculation of the emissions increase associated with the project, including all affected emissions units, is provided in Section 4.1. Section 4.2 outlines the emission increases associated with the project. A detailed discussion of the netting analysis is provided in Section 4.3. In addition to the netting analysis to determine PSD applicability, IP developed several other inventories to support air quality modeling tasks that are presented in Section 4.4 and Section 4.5. A description of assumptions and notes on emission calculations pertaining to specific point and area sources is provided in Section 4.6. Supporting tables, emission factors and related emissions inventory documentation is provided in Appendix B and any additional information not provided in this application can be provided upon request by IP.

4.1 CALCULATION OF PROJECT EMISSIONS INCREASES

The emissions increase associated with a PSD project is the total emissions increase from all modified units and affected units. Modified units are defined as those emissions units that will undergo a "physical change", or a "change in the method of operation" resulting in an emission increase. Affected units are those units that are impacted by the proposed changes and will experience an emissions increase as a result of a modification to an emissions unit located upstream or downstream (i.e., as a result of debottlenecking). The emission increase for a modified unit is calculated as the difference between the baseline and the proposed "potential to emit" (PTE), where the baseline is defined as the average actual emissions rate from the two years prior to the date of the permit application submittal. The emissions increase for affected units is calculated based on the incremental increase above the unit's current production capacity, taking into account the process bottlenecks that were in place prior to the modification.

Emission rates associated with the production rate increase were calculated based upon a combination of emission factors from Mill specific stack testing, the U.S. Environmental Protection Agency (EPA) document entitled *"AP-42: Compilation of Air Pollutant Emission Factors, Volume I, Stationary Sources, 5th Edition and Supplements"*, National Council of Air and Stream Improvement (NCASI) technical bulletins, and existing regulatory limits or operating emission limits. Unit-specific emission factors, and their origin, are presented in Appendix B. These factors are consistent with those reported by IP in the Electronic Annual Operating Report (EAOR) that is submitted each year except where noted in Section 4.3. Production increases were converted from an ADTBP/day basis to the applicable units of measure associated with the emission factor for a given emission unit. The Mill utilizes the following mill-specific relationships:

1 ADTBP = 3,600 lb BLS = 700 lb CaO

The incremental emissions were then calculated using the planned production increase and the appropriate emission factor. Emission rates were also calculated on a short-term basis for use in the air quality impacts analysis.

Emission rates were calculated for all PSD regulated pollutants for the modified and affected units. Existing emission limits and proposed operating and/or emission limits (including BACT limits) were included in developing the baseline and PTE scenarios.

4.1.1 Calculation Methodology for "Modified" Emission Units

Emissions from "modified" emission units were calculated by subtracting the difference between future PTE emissions and past actual baseline average emissions. The future PTE values were established through a BACT analysis for the following modified units:

- Causticizing Operations

- A and B Bleach Plant Lines (E.U. 050 and 051)
- Kamyr Digester System (E.U. 063)
- No. 2 Multiple Effect Evaporator Set (E.U. 055)
- No. 1 Recovery Furnace (E.U. 030)
- No. 2 Recovery Furnace (E.U. 029)
- Lime Kiln/Mud Dryer (E.U. 028)
- Lime Slaker (E.U. 046)
- Post O_2 Press (new unit)

Baseline actual emissions were calculated by taking the average of emissions from 2002 and 2001. Initially, the 1998/1999 baseline period was selected. Subsequent to 1998/1999 the downturn in the economy and the overall lack of demand of paper did not allow the Pensacola Mill to achieve production levels in the past several years that are representative of true baseline conditions. Due to delays in reviewing this PSD application, Florida DEP has requested that the baseline period include the five years from 2004. IP utilized the previously prepared EAOR submittals for 2002 and 2001 to develop the baseline emission inventory. Emission rates identified in these inventories were based on the best available data as described above.

4.1.2 Calculation Methodology for "Affected" Emission Units

Emissions from "affected" emission units were calculated by applying a percentage increase to past actual baseline average emissions. The percentage increase was developed independently for each emission unit, based on the difference between baseline production and potential post-project production. Post-project production was calculated using the following assumption:

- The total Mill production will be 1,650 ADTBP/day after the Phase I and Phase II activities and the operating schedule is 24 hours per day, 7 days per week, and 8,760 hours per year. Current Mill production is 1,500 ADTBP/day.

- Using the mill-specific relationships, maximum BLS processing will be 123,750 lb BLS/hr for each Recovery Furnace and lime production will be 24.06 tons CaO/hr.

4.2 DETERMINATION OF PROJECT EMISSION INVENTORY

The projected emissions increases associated with the Phase I and Phase II activities are summarized in Table 4-1. It is important to note that the future maximum emissions were based on BACT concentrations, multiplied by the maximum volumetric flow rate of the exhaust gases, for 8760 hours in a year, where appropriate. It is expected that the actual change in emissions will be only slightly more than the past actual baseline average emissions. Table 4-2 identifies the Project Emission Inventory for all of the modified and affected units, compared with the PSD significant increase threshold values. As shown in the table, the project, by itself and without considering contemporaneous emission increases and decreases, results in a significant emissions increases for PM/PM_{10}, CO, VOC, SO_2, NO_2, and TRS.

4.3 PSD NETTING ANALYSIS

Since the proposed project is considered a major modification to an existing major source, the PSD regulations allow the Mill to conduct a netting analysis, taking into account all contemporaneous emissions increases and decreases at the facility. The purpose of the netting analysis is to establish whether there have been sufficient emission reductions at the facility over the contemporaneous period such that the net increase in emissions is below the PSD applicability threshold level for a given regulated pollutant. The facility is required to examine all creditable emissions increases and decreases over the contemporaneous period in the netting analysis. The contemporaneous period is defined as the five-year period extending back from the expected date to commence construction. The Mill expects to commence construction of Phase I of this project during the 2005 outage; therefore, the contemporaneous period is defined as 2000 to 2005. The MACT-Regulated Gas Control System Project (Thermal Oxidizer project - 2001) and the shutdown of the existing 800 ADBTP/day Post O_2 Press (to be taken out of service when

TABLE 4-1 (Revised September 2004)
PROJECT EMISSIONS INVENTORY
MODIFIED AND AFFECTED UNITS 2002/2001 BASELINE YEARS
INTERNATIONAL PAPER COMPANY - PENSACOLA MILL

Mill Area	Emission Unit	PSD Pollutant Emission Increases (tons/yr)									
		PM	PM_{10}	SO_2	NO_x	CO	VOC	TRS	H_2SO_4	Pb	Hg
WOODYARD	Woodyard Activities [a]	3.23	3.23	--	--	--	--	--	--	--	--
	Pine Chip Thickness Screening System and New Pine Long Log Chipper	0.14	0.14	--	--	--	--	--	--	--	--
THERMAL OXIDIZER	Thermal Oxidizer	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	--	--
BLEACH PLANT	A-Line Bleach Plant Scrubber	--	--	--	--	39.89	0.26	--	--	--	--
	Methanol Storage Tank	--	--	--	--	--	0.53	--	--	--	--
RECOVERY	No. 1 Recovery Furnace	31.03	31.03	595.22	220.16	1102.74	36.61	12.66	0.82	0.0018	0.0061
	No. 2 Recovery Furnace	-5.29	-5.29	616.95	322.72	1388.15	44.40	16.20	0.81	0.0018	0.0060
	No. 1 Smelt Dissolving Tank	93.31	93.31	0.30	--	--	0.59	1.75	--	--	--
	No. 2 Smelt Dissolving Tank	93.69	93.69	0.32	--	--	0.55	3.92	--	--	--
LIME KILN	Lime Kiln/Mud Dryer	52.31	52.31	27.50	287.94	33.09	200.40	4.01	--	0.0047	0.0035
CAUSTICIZING	Lime Slaker	3.10	3.10	--	--	--	2.08	2.27	--	--	--
	New Causticizer	--	--	--	--	--	0.11	--	--	--	--
UNREGULATED EMISSIONS	No. 1 Brown Stock Washing	--	--	--	--	--	4.00	--	--	--	--
	A-Line O_2 Delignification	--	--	--	--	--	31.38	6.30	--	--	--
	Post O_2 Press	--	--	--	--	--	15.60	0.93	--	--	--
	Bleach Plant - Other Sources	--	--	--	--	--	4.35	--	--	--	--
	Digesters - Other Sources	--	--	--	--	--	2.22	3.33	--	--	--
	Evaps - Other Sources	--	--	--	--	--	9.14	2.12	--	--	--
	Lime Kiln/Mud Dryer - Other Sources	--	--	--	--	--	2.28	--	--	--	--
	Causticizing Area - Other Sources	--	--	--	--	--	9.45	--	--	--	--
	Converting Baghouse	0.41	0.41	--	--	--	--	--	--	--	--
	Waste Water Treatment	--	--	--	--	--	101.10	--	--	--	--
PAPER MACHINES	P5 Paper Machine	--	--	--	--	--	3.79	--	--	--	--
	P5 Paper Machine Starch Silos 1&2, Clay Silo Dust Collector, Dry Additives	0.32	0.32	--	--	--	--	--	--	--	--
	P5 Paper Machine Make-Down Area Vent	0.11	0.11	--	--	--	--	--	--	--	--
MISC.	Tall Oil Plant	--	--	--	--	--	--	--	--	--	--
	Roadways	9.34	9.34	--	--	--	--	--	--	--	--
	Totals	**281.71**	**281.71**	**1240.28**	**830.82**	**2563.88**	**468.84**	**53.48**	**1.62**	**0.008**	**0.016**

[a] - Woodyard Activities include the Pine Chip No. 1 Cyclone, Air Density Separator, Chip Piles, and wood handling emissions.

[b] - Emissions from the Thermal Oxidizer include the LVHC Handling System. Since components of the LVHC Handling System have been modified as part of this exercise and the full potential to emit for the Thermal Oxidizer was considered when quantifying emissions from a previous permitting exercise, the emissions from the Thermal Oxidizer have been included in the contemporaneous period.

TABLE 4-2 (Revised September 2004)
COMPARISON OF PROJECT EMISSION INVENTORY WITH PSD
SIGNIFICANT INCREASE THRESHOLD VALUES 2002/2001 BASELINE YEARS
INTERNATIONAL PAPER COMPANY - PENSACOLA MILL

Pollutant	Project-Related Emission Increase (tons/yr)	PSD Significance Levels (tons/yr)	PSD Significant
PM	281.71	25	Yes
PM_{10}	281.71	15	Yes
SO_2	1,240.28	40	Yes
NO_X	830.82	40	Yes
CO	2,563.88	100	Yes
VOC	468.84	40	Yes
TRS	53.48	10	Yes
H_2SO_4	1.62	7	No
Pb	0.01	0.6	No
Hg	0.02	0.1	No

the new Post O_2 Press is constructed as part of this permitting exercise) are the only projects that are considered to be in the contemporaneous period for PSD applicability purposes.

The Thermal Oxidizer project entailed the re-piping of regulated non-condensable gas (NCG) and regulated condensate streams in order to comply with the pulp and paper industry maximum achievable control technology (MACT) standards codified at 40 CFR 63, Subpart S. The Thermal Oxidizer was installed to effectively treat the low volume high concentration (LVHC) NCGs. The removal of the existing Post O_2 Press will be completed prior to bringing the proposed new Post O_2 Press on-line.

The emissions increases and decreases associated with the projects from the contemporaneous period described above are summarized in Table 4-3. A summary of the netting analysis associated with the project, including the contemporaneous period is provided in Table 4-4. The proposed project will only result in a significant emissions increase of PM/PM_{10}, CO, VOC, SO_2, NO_X, and TRS. Therefore, only these pollutants will be considered in the BACT and Ambient Air Quality Modeling Analyses.

Different emission inventories are required to determine the inputs for the Ambient Air Quality Modeling Analysis. Section 7 provides an overview of the initial screening and refined air quality modeling exercises. A summary of the data used to develop the modeling inputs and an overview of the calculation methodology is presented in Section 7.

4.4 SUMMARY OF EMISSION CALCULATION METHODS

The following subsections provide a brief overview of notable approaches followed for estimating emissions from each of the emission units at the Mill.

TABLE 4-3
PROJECT CONTEMPORANEOUS PERIOD EMISSIONS INCREASES/DECREASES

INTERNATIONAL PAPER COMPANY - PENSACOLA MILL

Mill Area	Emission Unit	PSD Pollutant Emission Increases/Decreases (tons/yr)									
		PM	PM_{10}	SO_2	NO_X	CO	VOC	TRS	H_2SO_4	Pb	Hg
Thermal Oxidizer	Thermal Oxidizer	4.40	4.40	25.00	39.90	29.80	4.80	2.20	2.50	--	--
Unregulated Emissions	Post O2 Press	--	--	--	--	--	-18.19	-1.09	--	--	--
	Totals	**4.40**	**4.40**	**25.00**	**39.90**	**29.80**	**-13.39**	**1.11**	**2.50**	**0.00**	**0.00**

(a) - Emssions from the Thermal Oxidizer include the LVHC Handling System. Since components of the LVHC Handling System have been modified as part of this exercise and the full potential to emit for the Thermal Oxidizer was considered when quantifying emissions from modified units in the pplicability determination, the emissions from the Thermal Oxidizer have not been included in the contemporaneous period.

TABLE 4-4 (Revised September 2004)
PROJECT NETTING ANALYSIS INCLUDING
CONTEMPORANEOUS PERIOD EMISSIONS AND 2002/2001 BASELINE YEARS
INTERNATIONAL PAPER COMPANY - PENSACOLA MILL

Pollutant	Project-Related Emission Increase (tons/yr)	PSD Significance Levels (tons/yr)	PSD Significant
PM	286.11	25	Yes
PM_{10}	286.11	15	Yes
SO_2	1,265.28	40	Yes
NO_X	870.72	40	Yes
CO	2,593.68	100	Yes
VOC	455.45	40	Yes
TRS	54.59	10	Yes
H_2SO_4	4.12	7	No
Pb	0.01	0.6	No
Hg	0.02	0.1	No

4.4.1 Point Sources

Emissions from the majority of the point sources at the Mill are calculated based upon the current emission factor reported to DEP in the EAOR multiplied by the incremental increase in production, converted into the emission factor's units of measure. However, certain sources are based on either updated factors or the emissions calculations require further explanation. These sources are discussed in the following subsections.

4.4.1.1 Nos. 1 and 2 Smelt Dissolving Tanks

IP calculated the projected related emissions associated with these units using the difference between the 2002/2001 baseline period and the PTE for the units. While these units are not being modified and qualify as affected units, IP used this approach because the units will receive their input stream (smelt) directly from the modified Nos. 1 and 2 Recovery Furnaces. This estimation approach is extremely conservative and represents worst-case project emissions.

4.4.1.2 Thermal Oxidizer

IP calculated the project related emissions associated with these units using the difference between the 2002/2001 baseline period and the PTE for the unit. Since the Thermal Oxidizer was constructed in 2001, the full PTE was considered in the PSD applicability analysis for this emission unit. The Thermal Oxidizer receives LVHC gases from numerous emission units; however, the Kamyr Digester System and the No. 2 Multiple Effect Evaporator Set represent a substantial component of this LVHC stream and IP believes that the proposed calculation approach represents worst-case project emissions.

4.4.2 Unregulated Emissions Units

Emissions from units that have not been regulated under the Title V permit, and are not required to be included in the EAOR, have been included in the PSD applicability analysis. Most of these units qualify as affected units and the calculation approach outlined in Section 4.1.2 has been utilized.

4.4.3 Fugitive Emissions

Sources of fugitive emissions affected by the proposed project include the plant roadways, chip storage piles at the woodyard, and emissions generated from dropping chips onto the piles. Fugitive emission calculations are summarized in tabular form in Appendix C. Emission calculations for each of these sources are discussed below.

4.4.3.1 Plant Roadways

Plant roadway and storage pile emissions associated with the project were determined using the incremental change in the woodyard emissions over baseline woodyard emissions and applying the incremental percentage change to the annual truck traffic and storage pile emissions. Although some of the truck traffic and the pile emissions are not associated with the woodyard operations, the use of the woodyard incremental percentage change is conservative with respect to the other operations at the Mill.

Fugitive particulate matter emissions from paved and unpaved roadways were calculated using the methods developed by EPA and published in AP-42, Chapter 13. The incremental emission increase was calculated using a mean vehicle weight for each segment of roadway and the expected increase in average daily truck traffic for each type of truck. A silt loading based on the EPA default value was used in the roadway calculations and was justified based on observations of the Mill roads.

4.4.3.2 Wood Chip Storage Piles

PM_{10} emissions from storage piles were calculated using the methodology for the particulate matter calculations described in AP-42 Chapter 13.2.5 Industrial Wind Erosion. Data requirements for the calculation include fastest mile wind speed (this data was unavailable –

instead the fastest observed one minute from the 1999 monthly Local Climatic Data summaries for Pensacola, Florida was used), threshold friction velocity based on pile type, number of disturbances of the pile, pile height, pile width, pile length, pile shape (for the calculation of pile area), and percentage of pile disturbed per wind erosion event. The method utilizes fastest wind mile data to calculate a friction velocity. A constant threshold friction velocity was determined based on the storage pile material (no data was available for wood chips or dust, therefore a conservative default – "fine coal dust on a concrete pad" was used). From the friction velocity and threshold friction velocity, an actual erosion potential was calculated. The actual erosion potential, the number of times the pile is typically disturbed, and a default particle size multiplier for PM_{10} were used to calculate an emission rate. The calculations were performed for each month conservatively assuming that the maximum fastest one-minute wind speed was comparable to the fastest one mile (i.e., the wind speed could be sustained for one mile in length) and the maximum for the month occurred each day of the month. The monthly calculations were summed to determine the annual emission factor in $g/m^2/yr$. The emission factor was applied to the average disturbed surface area of the pile and used to generate a total annual PM_{10} emission rate.

4.4.3.3 Wood Chip Pile Material Loading

PM_{10} emissions from load-out of the wood chip and bark storage piles were calculated using the methodology for the particulate matter calculations described in AP-42 Chapter 13.2.4 Material Handling. Data requirements for the calculation include average wind speed and material moisture content. The algorithm produces an emission factor in lb/ton material throughput. This factor was applied to the estimated incremental increase in wood chip and bark production, respectively, to estimate the potential PM_{10} emissions increase.

4.4.4 Secondary Emissions

Secondary emissions are those emissions that are not emitted from the source or facility itself, but are emitted from an off-site source as a direct result of the PSD project. Secondary emissions may only occur from sources that would not have realized an emissions increase but for the construction or modification of the stationary source submitting the application. Secondary emissions do not include emissions from a mobile source which come directly from the tailpipe of a motor vehicle or from the propulsion of a train or vessel. Secondary emissions are excluded from the potential emissions estimates developed for applicability determination but must be included in the PSD analysis if PSD review is required for the pollutant.

IP evaluated the potential for secondary emissions as a result of the proposed project. The only secondary emissions that will occur are a result of the increase in delivery truck traffic to the Mill. IP has assumed that the incremental increase in truck traffic to the Mill will also result in a corresponding increase on the roads leading to the Mill. As explained in the above paragraph, only fugitive emissions generated by the truck traffic on the road should be considered and emissions produced by the vehicles engines are excluded from the definition of secondary emissions.

IP does not believe that a detailed analysis of secondary emissions is required. PM_{10} is the only pollutant that would be impacted and IP believes that the impact of these emissions would be negligible. The Pensacola Mill is located right on Highway 29 which is a major north/south thoroughfare. As a result, the percentage of Mill traffic (and more importantly, incremental Mill traffic that would be attributed to this project) on the surrounding roads is negligible with respect to normal commuter and highway traffic.

7. AIR QUALITY MODELING ANALYSIS (REVISED SEPTEMBER 2004)

As indicated in previous sections of this application, IP is proposing to make changes at the Pensacola, Florida Mill that will qualify as "major modifications" as described in the PSD regulations. Since the changes are "major modifications" and will result in a significant increase in emissions above current baseline emission levels, an air quality modeling study has been performed. The air quality modeling study was conducted to demonstrate that emissions from the Mill will not result in a violation of the NAAQS, Florida air quality standards, and PSD increments and will not adversely impact air quality related values (AQRVs) at the Breton Wilderness Class I area or at Class II areas surrounding the Mill.

As part of the air quality modeling study, IP prepared an air quality modeling protocol to document the air quality modeling approach and technical information that were part of the air quality modeling effort. Additionally, IP contacted Florida DEP and EPA Region IV air quality modeling personnel to discuss various aspects of the air quality modeling approach. The Federal Land Manager for the Breton Wilderness area was also contacted to review which AQRVs were critical to the Breton Class I area.

The air quality modeling study is described in detail in the following subsections. Specifically, information concerning the Mill's background, the emissions inventories, technical air quality modeling approach, air quality modeling results, Class I AQRV analysis, and Class II impacts are provided as outlined.

Section 7.1	Background Information for the Mill
Section 7.2	Project, Mill-Wide, and Local Emissions Inventories
Section 7.3	Air Quality Modeling Approach and Technical Information
Section 7.4	Significance, NAAQS and PSD Air Quality Modeling Results
Section 7.5	Class I AQRV Analysis
Section 7.6	Class II Impacts

7.1 BACKGROUND INFORMATION FOR THE MILL

The Mill is being modified to realize pulping capability that the Mill currently has, but is not able to achieve due to limitations with selected process units. The production of additional pulp will allow the Mill to make more paper. In order to produce more paper, several emission units at the Mill will need to be modified. Specifically, the No. 1 and No. 2 Recovery Furnaces at the Mill will be modified as part of the proposed project. Other Mill emission units may also be modified including the No. 2 Evaporator Set, the Lime Kiln/Lime Mud Dryer, Continuous Digester System, Lime Slaker, Bleach Plant System and other minor process equipment. In addition, a new Causticizer may be installed as a result of the proposed project.

7.1.1 Mill History

The Pensacola Mill was built in 1941 by the Pensacola Pulp and Paper Company. The Mill was subsequently purchased by St. Regis Paper Company and then by Champion International Corporation. In 2000, IP purchased Champion International Corporation. The Mill has undergone many modifications over the years. In July 1979, the first PSD permit for the Mill was submitted and involved a mill expansion that was projected to result in a significant increase in particulate matter emissions. In October 1979, another PSD permit was submitted that involved the No. 4 Power Boiler. The submittal of the 1979 PSD applications triggered the minor source baseline date for SO_2, and PM/PM_{10}. In February 1991, the Mill submitted a PSD application for a natural gas-fired boiler that established the minor source baseline date for NO_2. The most recent PSD projects at the Mill were the Lime Kiln/Mud Dryer project and the Alkaline Conversion project that were constructed in 1993 and 1998, respectively. During the past five years there has been one minor NSR permitting project that included the installation of the Thermal Oxidizer which qualified as a pollution control project.

The Pensacola Mill is in the Mobile, AL; Pensacola-Panama City, FL; Southern MS Interstate Air Quality Control Region (AQCR). Within this AQCR, Escambia County is in attainment or unclassifiable/attainment for all criteria pollutants including ozone as designated in the July 2002

Code of Federal Regulations.

7.2 SUMMARY OF THE PROJECT, MILL-WIDE, AND LOCAL EMISSIONS INVENTORIES

The air quality modeling analysis required the development of multiple emissions inventories. These emission inventories included project-only emissions, mill-wide permitted and PTE emissions, mill-wide PSD increment consuming emissions, local source permitted and PTE emissions, and local source PSD increment consuming emissions. In addition to the emissions inventory, an inventory of the physical characteristics for the stack sources and fugitive emission sources at the Mill was developed. A description of each emissions inventory is provided in the following subsections.

7.2.1 Project-Only Emissions Inventory

As a part of the PSD project evaluation, the emission increases associated with the project were determined. The project-specific emissions inventory was used to determine if the emissions from the proposed project resulted in ambient air concentrations above the PSD significance levels. The project-specific emission inventory was used for the Class I AQRV analysis and for the assessment of the additional Class II impacts (e.g., acidification of soil and rainfall, effects on vegetation, etc.). As part of the project-specific emission inventory, emissions from the Thermal Oxidizer pollution control project, which was a contemporaneous project, were also included.

The project emission inventory represents the change in emissions associated with the project. To determine the change in emissions, baseline emissions and future emissions were determined and the differences calculated. Baseline emissions were determined using Mill production data for the January 2001 through December 2002 period. The project emission inventory includes "modified" emission units (emission units that will be physically modified or experience a change in the method of operation) and "affected" emission units (emission units that will not be physically modified or experience a change in the method of operation but that will see a change in emissions due to higher process throughput or utilization).

For sources that are modified, the project emissions represent the difference between the January 2001 through December 2002 actual emissions and the proposed or existing PTE for the modified emission unit. This difference was calculated on an annual averaging basis as well as a short-term basis. Emission units that are "affected" will experience an incremental change in emissions above the baseline emissions as a result of the project. For example, the increase in BLS firing at the No. 1 and No. 2 Recovery Furnaces will result in an increased pulping capacity for the Mill and will increase the wood/chip throughput in the woodyard. Mill engineering studies were used to determine the percentage increase at the woodyard above current actual emissions. The incremental changes in emissions for affected emissions units were included as project emissions. The proposed approach to calculating project-related emissions was reviewed and approved by Florida DEP air quality engineers.

The annual and short-term project related emission increases from modified and affected emission units are summarized in Table 7-1. Also shown in Table 7-1 are the PSD significant annual emission increase levels. According to Table 7-1, the Mill will experience a significant emissions increase for PM_{10}, NO_X, SO_2, CO. Therefore "significance" air quality modeling was performed for these four pollutants. The results of the significance analysis are discussed in Section 7.4.

Emissions of TRS, H_2SO_4, and VOC were not evaluated with air dispersion models since there are either no applicable ambient air quality standards (i.e., TRS and H_2SO_4) or acceptable air quality modeling techniques (i.e., VOC). Project-related VOC emissions were semi-quantitatively evaluated for their potential impact on ozone levels using the method developed by Scheffe and described in Section 7.6.3.

In the course of calculating the PM_{10} emissions due to the project, there are instances where PM_{10} emission data were not available and thus all particulate matter was assumed to be PM_{10}. This assumption results in a conservative estimate of the actual PM_{10} emissions and resulting ambient air concentrations.

Table 7-1
Project Related Emissions
(Revised September 2004)
IP Mill
Pensacola, Florida

Source	Short-Term and Long-Term Project Related Emission Rates						
	SO_2 lb/hr and tpy		NO_X tpy	CO lb/hr and tpy		PM_{10} lb/hr and tpy	
Lime Mud Dryer	3.89	27.50	287.94	(a)	33.09	11.94	52.31
No. 1 Recovery Furnace	33.10	595.22	220.16	5.44	1102.7	18.06	31.03
No. 2 Recovery Furnace	33.10	616.95	322.72	5.44	1388.2	0.56	-5.29
No. 1 Smelt Tank	0.04	0.30	na	na	na	6.64	93.31
No. 2 Smelt Tank	0.04	0.32	na	na	na	4.79	93.69
Lime Slaker	na	na	na	na	na	0.71	3.10
A-Line Bleach Plant	na	na	na	9.11	39.89	na	na
No. 1 and 2 Starch Silo/Clay Silo/Converting Baghouse/Makedown	na	na	na	na	na	0.158	0.69
Dry Additives	na	na	na	na	na	0.034	0.15
Woodyard	na	na	na	na	na	3.19	12.70
Project Totals		**1240.29**	**830.82**		**2,563.9**		**281.69**
Thermal Oxidizer [(b)]	5.71	25.0	39.9	6.80	29.78	1.00	4.4
Contemporaneous Project Total		**25.0**	**39.9**		**29.78**		**4.4**
PSD Significance Levels		**40 tpy**	**40 tpy**		**100 tpy**		**15 tpy**

(a) No short-term emission increase is projected over the baseline peak short-term emissions

(b) The emissions from the thermal oxidizer are reflective of the pollution control project, which is a contemporaneous project. The thermal oxidizer emissions represent the permitted emission rates for this emissions unit.

(c) Emission rate is in units of tons per year.

na = not applicable

7.2.2 Mill-Wide Emission Inventory

As detailed in Section 7.4.1, emissions from the proposed project will result in ambient air concentrations that are greater than the PSD ambient air significance levels for SO_2, PM_{10}, and NO_2. Consequently, a mill-wide emission inventory was developed for these three pollutants. The mill-wide emission inventory was used to demonstrate compliance with the NAAQS, Florida air quality standards, and PSD increments for the applicable pollutants.

For the NAAQS and Florida air quality standards analyses, maximum short-term emission rates were used to demonstrate compliance with short-term air quality standards and the maximum annual emission rates were used for demonstrating compliance with the annual air quality standards. Maximum emission rates were based on permit limits or an emissions unit's maximum capacity and a worst-case emission factor. A summary of the permitted or maximum PTE emission rates for all of the emission units at the Mill is provided in Tables 7-2, 7-3, and 7-4 for SO_2, PM_{10}, and NO_X respectively.

For the PSD increment analysis, PSD emission rates were used for each emission unit. The PSD emission rate reflects the difference in emission levels from the minor source baseline dates (December 27, 1977 for SO_2 and PM_{10} and March 28, 1988 for NO_2) and the actual current emissions during the 2001 and 2002 period. For emission units that will have new permitted emission rates as a result of the project, the PSD emission rate is the difference between the baseline emission rate and the new permitted emission rate. It should be noted that based on statements in the October 1979 PSD application, the Mill believes that there were no increases in actual SO_2 or PM_{10} emission resulting from Mill construction projects between the major source baseline date (January 6, 1975) and the dates that the two 1979 PSD permit application were submitted. Similarly, the Mill believes that there was no increase in NO_X emissions due to construction projects between the major source NO_2 baseline date and the minor source baseline date. The Mill PSD increment consuming emission rates are provided in Table 7-5.

Table 7-2
SO_2 NAAQS Emission Rates for Sources at the International Paper Company Pensacola, Florida

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Emission Unit	ISCST3 Modeling ID	SO_2 Emission Rate (g/sec)	Basis for Emission Rate
No. 3 Power Boiler	BOILER3	25.043	.75 lb/MMBtu & 268 MMBtu/hr
No. 4 Power Boiler	BOILER4	37.838	.55 lb/MMBtu & 546 MMBtu/hr
No. 5 Power Boiler	BOILER5	0.0147	0.0006 lbs/MMBtu & 195 MMBtu/hr
No. 6 Power Boiler	BOILER6	0.0633	0.00094 lbs/MMBtu & 533 MMBtu/hr
Thermal Oxidizer	INCIN	0.7182	5.7 lb/hr permit limit
Lime Mud Dryer	LMUDDRY	0.8177	6.49 lb/hr permit limit
No. 1 Recovery Furnace	RECVRY1	19.02	151 lb/hr permit limit
No. 2 Recovery Furnace	RECVRY2	19.02	151 lb/hr permit limit
No. 1 Smelt Tank	SMELT1	0.0468	0.006 lb/ton BLS & 61.875 tons BLS/hr
No. 2 Smelt Tank	SMELT2	0.0468	0.006 lb/ton BLS & 61.875 tons BLS/hr

Note: The No. 3 and No. 4 Power Boiler SO_2 emissions rates are new, proposed emission rates. The lb/MMBtu and MMBtu/hr factors are provided for reference purposes only and are not intended to represent limits.

Table 7-3
PM_{10} NAAQS Emission Rates for Sources
at the International Paper Company
Pensacola, Florida

Emission Unit	ISCST3 Modeling ID	PM_{10} Emission Rate (g/sec)	Basis for Emission Rate
No. 3 Power Boiler	BOILER3	4.372	0.1 lbs/MMBtu & 347 MMBtu/hr
No. 4 Power Boiler	BOILER4	8.392	0.1 lbs/MMBtu & 666 MMBtu/hr
No. 5 Power Boiler	BOILER5	0.1852	0.0075 lbs/MMBtu & 195 MMBtu/hr
No. 6 Power Boiler	BOILER6	0.3364	0.005 lbs/MMBtu & 533 MMBtu/hr
Thermal Oxidizer	INCIN	0.126	1.0 lb/hr permit limit
Lime Mud Dryer	LMUDDRY	1.633	12.96 lb/hr permit limit
No. 1 Recovery Furnace	RECVRY1	3.697	0.021 grains/dscf & 163,000 dscf/min
No. 2 Recovery Furnace	RECVRY2	4.012	0.021 grains/dscf & 176,900 dscf/min
No. 1 Smelt Tank	SMELT1	1.559	.2 lb/ton BLS & 61.875 tons BLS/hr
No. 2 Smelt Tank	SMELT2	1.559	.2 lb/ton BLS & 61.875 tons BLS/hr
Pine Chip Fines Cyclone	CYCLON1	0.07938	permit limit
Pine Chip No. 1 Cyclone	CYCLONFI	0.00076	permit limit
Air Density Separator	AIRSEP	0.02646	permit limit
Lime Slaker	SLAKVENT	0.2003	1.59 lbs/hr permit limit
No. 1 Starch Silo	STSILO	0.00857	permit limit
No. 2 Starch Silo	STSILO2	0.00857	permit limit
Coal Crusher Vent	CRUSHVNT	0.045	Title V emission rate
Coal Bunker	CBUNKER	0.1449	Title V emission rate
Dry Additive	DRYADD	0.1336	0.05 grains/dscf & 2475 dscf/min
Clay Silo	CLAYSILO	0.00857	permit limit
Chip Pile	PINECHIP	0.203	AP-42 calculations
	HARDCHIP	0.0547	AP-42 calculations
Coal Pile	COALPIL1	0.342	AP-42 calculations
	COALPIL2	0.396	AP-42 calculations
Ash Pile	ASHPILE	0.487	AP-42 calculations
Bark Pile	WASTEWD	0.0769	AP-42 calculations
Roadways	R1-R321	1.111	AP-42 calculations for paved/unpaved roads

Table 7-4
NO_X NAAQS Emission Rates for Sources at the International Paper Company Pensacola, Florida

Emission Unit	ISCST3 Modeling ID	NO_X Emission Rate (g/sec)	Basis for Emission Rate
No. 3 Power Boiler	BOILER3	23.69	.7 lb/MMBtu & 236 MMBtu/hr
No. 4 Power Boiler	BOILER4	48.13	.7 lb/MMBtu & 546 MMBtu/hr
No. 5 Power Boiler	BOILER5	2.46	0.1 lb/MMBtu & 195 MMBtu/hr
No. 6 Power Boiler	BOILER6	4.03	0.06 lb/MMBtu & 533 MMBtu/hr
Thermal Oxidizer	INCIN	1.147	9.1 lb/hr permit limit
Lime Mud Dryer	LMUDDRY	6.212	49.30 lb/hr permit limit
No. 1 Recovery Furnace	RECVRY1	16.184	110 ppm & 163,000 dscf/min
No. 2 Recovery Furnace	RECVRY2	17.56	110 ppm & 176,900 dscf/min

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Table 7-5
PSD Increment Emission Rates for Sources
at the International Paper Company
Pensacola, Florida

Emission Unit	ISCST3 Modeling ID	PM_{10} Increment Emission Rate (g/sec)	SO_2 Increment Emission Rate (g/sec)	NO_x Increment Emission Rate (g/sec)
No. 3 Power Boiler	BOILER3	2.029	20.682	0.000
No. 4 Power Boiler	BOILER4	6.136	12.623	0.000
No. 5 Power Boiler	BOILER5	0.033	0.015	0.219
No. 6 Power Boiler	BOILER6	0.015	0.063	0.938
Thermal Oxidizer	INCIN	0.126	0.630	1.147
Lime Mud Dryer	LMUDDRY	1.633	0.818	4.386
No. 1 Recovery Furnace	RECVRY1	3.698	19.030	6.350
No. 2 Recovery Furnace	RECVRY2	4.012	19.030	9.395
No. 1 Smelt Dissolving Tank	SMELT1	1.559	0.047	na
No. 2 Smelt Dissolving Tank	SMELT2	1.559	0.047	na
Pine Chip Fines Cyclone	CYCLONF1	0.07938	na	na
Pine Chip No. 1 Cyclone	CYCLON1	0.00076	na	na
Air Density Separator	AIRSEP	0.02646	na	na
Lime Slaker	SLAKVENT	0.2003	na	na
No. 1 Starch Silo	STSILO	0.00857	na	na
No. 2 Starch Silo	STSILO2	0.00857	na	na
Coal Crusher Vent	CRUSHVNT	0.045	na	na
Coal Bunker	CBUNKER	0.1449	na	na
Dry Additive	DRYADD	0.1336	na	na
Clay Silo	CLAYSILO	0.00857	na	na
Baseline No. 3 Power Boiler	EBOILER3	0.000	-3.682	na
Baseline No. 1 Recovery Furnace	ERECVRY1	-4.406	-14.570	0.000
Baseline No. 2 Recovery Furnace	ERECVRY2	-3.75	-14.194	0.000
Decommissioned No. 1 Boiler	BOILER1	-0.058	-0.109	0.000
Decommissioned No. 2 Boiler	BOILER2	-0.039	-0.007	0.000
Decommissioned Calciner	CALCIN	-0.282	-0.022	0.000
Decommissioned Lime Kiln	LIMEKILN	0.000	-0.054	0.000
Baseline No. 1 Smelt Tank	ESMELT1	-2.243	0.000	na
Baseline No. 2 Smelt Tank	ESMELT2	-1.373	0.000	na

Note: The No. 3 and No. 4 Power Boilers have not undergone any changes since the 1988 major source NO_2 baseline date and thus the actual emissions from these two sources are esentially the same and do not consume any NO_2 increment.

As shown in Table 7-5, there are several emission units that are increment expanding sources. The shutdown of the No. 1 and No. 2 boilers and the Lime Kiln and Calciner at the Mill resulted in a net decrease in actual SO_2, PM_{10}, and NO_X emissions. Additionally, the No. 1 Recovery Furnace will lower actual PM_{10} emissions relative to the minor source baseline date. The Mill also estimates that actual levels of fugitive PM_{10} emissions have decreased due to improved dust suppression activities as well as paving of previous unpaved road. No credit for the decrease in actual fugitive emissions has been included in the PM_{10} increment analysis.

7.2.3 Physical Emission Characteristics

A listing of the physical emission characteristics for all of the Mill emissions units is provided in Table 7-6. Physical emission characteristics have been summarized for stack sources as well as fugitive emission sources. Physical stack characteristics include such information as source location, release height, stack temperature, stack diameter and stack exit velocity. Any stacks that are inverted or have a raincap were evaluated with a 0.01 meter per second (m/sec) exit velocity. Fugitive emission sources have been characterized differently than the stack sources as described below.

Fugitive emission sources at the Mill include roadways and storage piles. Since all of the fugitive emission sources have an initial dispersion associated with them (e.g., wakes created by trucks result in an initial dispersion of emissions), the fugitive emission sources were characterized as volume sources. EPA guidance contained in Section 1.2.2 of the "Industrial Source Complex (ISC) Model User's Guide – Volume II" (USEPA 1995) was used to determine the appropriate variables to characterize the volume sources.

There are several types of storage piles at the Mill including chip piles, coal piles, and ash piles. For these storage piles the sigma y (σ_y) and the sigma z (σ_z) values were based on the actual dimensions of respective pile. The σ_y values were based on the lateral dimensions divided by 4.3 if the pile was represented by a single volume source or 2.15 if the pile was represented by

Table 7-6
Summary of Physical Stack Characteristics and Volume Source Characterizations
International Paper Company
Pensacola, FL

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Source	ISCST3 Stack ID	Stack Location (UTM Coordinates NAD 27)		Stack Elevation (meters)	Stack Height (meters)	Stack Exit Velocity (meters/sec)	Stack Temperature (degrees K)	Stack Diameter (meters)
No. 3 Power Boiler	BOILER3	469,182	3,385,726	42.7	65.00 [(a)]	7.620	335.8	2.44
No. 4 Power Boiler	BOILER4	469,236	3,385,715	42.7	67.36	10.210	335.2	3.66
No. 5 Power Boiler	BOILER5	469,199	3,385,809	42.7	14.33	26.270	533.0	1.22
No. 6 Power Boiler	BOILER6	469,148	3,385,726	42.7	38.10	14.420	449.8	2.59
Coal Bunker	CBUNKER	469,235	3,385,760	42.7	10.67	0.001	298.0	1.01
Coal Crusher Vent	CRUSHVNT	469,301	3,385,558	42.7	30.48	0.001	298.0	1.01
Pine Chip Fines Cyclone	CYCLON1	468,998	3,385,505	42.7	13.72	1.220	298.0	0.91
Pine Chip No. 1 Cyclone	CYCLONFI	468,998	3,385,532	42.7	9.14	4.910	298.0	0.61
Dry Additive	DRYADD	469,220	3,385,859	42.7	10.70	16.150	310.8	0.31
Lime Mud Dryer	LMUDDRY	469,280	3,385,515	42.7	41.45	8.750	342.3	1.98
No. 1 Recovery Furnace	RECVRY1	469,323	3,385,736	42.7	55.41	27.18	516.3	2.74
No. 2 Recovery Furnace	RECVRY2	469,303	3,385,721	42.7	55.41	27.18	499.7	2.74
Lime Slaker	SLAKVENT	469,228	3,385,592	42.7	27.43	15.240	360.8	0.70
No. 1 Smelt Tank	SMELT1	469,307	3,385,758	42.7	52.4	10.98	349.7	1.22
No. 2 Smelt Tank	SMELT2	469,286	3,385,743	42.7	52.4	10.60	355.2	1.22
No. 1 Starch Silo	STSILO	469,169	3,385,905	42.7	24.38	11.580	298.0	0.21
No. 2 Starch Silo	STSILO2	469,182	3,385,900	42.7	24.38	11.580	298.0	0.21
Clay Silo	CLAYSILO	469,172	3,385,888	42.7	24.38	11.580	298.0	0.21
Thermal Oxidizer	INCIN	469,294	3,385,689	42.7	30.48	8.130	319.3	0.91
Air Density Separator	AIRSEP	468,973	3,385,540	42.7	18.29	21.880	298.0	0.61
A-Line Bleach Plant	BPSTACKA	469,013	3,385,695	42.7	29.8	16.460	310.8	0.61
B-Line Bleach Plant	BPSTACKB	469,008	3,385,652	42.7	29.70	15.540	310.8	0.53

Source	ISCST3 Fugitive Source ID	Fugitive Source Location (UTM Coordinates NAD 27)	Source Elevation (meters)	Initial Sigma Z (meters)	Initial Sigma Y (meters)	Release Height (meters)
Roadways	Road 1-n	Multiple	42.7	1.42	11.34	1.52
Chip Pile	PINECHIP	Multiple	42.7	4.25	23.8	4.57
	HARCHIP	Multiple	42.7	7.09	10.6	7.62
Coal Pile	COALPIL1	Multiple	42.7	3.53	5.33	3.80
	COALPIL2	Multiple	42.7	3.53	5.33	3.80
Ash Pile	ASHPILE	Multiple	42.7	1.42	83.4	1.53
Bark Pile	WASTEWD	Multiple	42.7	1.42	47.7	1.53

[(a)] The No. 3 Power Boiler will experience an increase in stack height from 45.11 meters to 65 meters.

Table 7-7 (Revised September 2004)
Local SO_2 NAAQS and PSD Emissions Inventory Summary
International Paper Company
Pensacola, Florida

Sources [a]	ISC ID	UTM Easting (meters)	UTM Northing (meters)	Base Elevation (meters)	SO_2 NAAQS Emission Rate (g/sec)	SO_2 PSD [b] Emission Rate (g/sec)	Stack Height (meters)	Stack Temperature (degrees K)	Exit Velocity (meters/sec)	Stack Diameter (meters)
SOLUTIA INC.										
	SOL2	476,010	3,384,990	14.8	0.006 [c]	0	18.29	497.04	28.65	1.219
	SOL3_4	476,010	3,384,990	14.8	0.019	0.0142	38.1	383.15	10.36	3.658
	SOL5	476,010	3,384,990	14.8	0.0006 [c]	0.0006	38.1	428.15	5.49	0.823
	SOL7_13	476,010	3,384,990	14.8	3.28 [c]	3.28	38.1	428.15	6.1	0.823
	SOL14_16	476,010	3,384,990	14.8	230.9	28.682	45.72	455.37	10.67	3.048
	SOL32	476,010	3,384,990	14.8	0.402 [c]	0.402	30.48	422.04	22.86	4.572
	SOL75	476,010	3,384,990	14.8	0.02	0	38.1	428.15	8.53	0.823
	SOL76	476,010	3,384,990	14.8	0.143	0	38.1	343.15	31.68	1.067
GULF POWER COMPANY										
	GPC1_5	478,261	3,381,360	2.4	1366.1	241.26	130.53	416	16	5.49
	GPC6_7	478,270	3,381,360	2.4	5662.81	1,100.58	137.16	433	29.6	7.07
EXXON/MOBIL PRODUCTION COMPANY										
	EXM34	482,870	3,416,040	2.4	126.126	92.77	76.2	755.37	15	0.914
	EXM35	482,870	3,416,040	2.4	157.5	5.89	35.66	1273.15	40	0.914
	EXM38_44	482,870	3,416,040	2.4	1.98 [c]	1.98	9.14	699.82	24.11	0.305
ADEM Sources										
	502005	489,500	3,437,800	30.78	0.2	na	22.86	345.93	13.18	1.01
	502004	489,500	3,437,800	30.78	0.2	na	22.86	347.04	12.78	1.01
	50215E	489,500	3,437,800	30.78	38.71	38.71 [f]	64.92 [d]	500.93	15.79	2.29
	50215W	489,500	3,437,800	30.78	38.71	38.71 [f]	64.92 [d]	500.93	15.79	2.29
	50203S	489,500	3,437,800	30.78	8.08	na	64.92 [d]	487.59	11.67	2.38
	502001	489,500	3,437,800	30.78	139.53	11.51	64.92 [d]	424.82	19.43	3.66
	502002	489,500	3,437,800	30.78	205.18	na	64.92 [d]	412.59	9.85	3.66
	50203N	489,500	3,437,800	30.78	8.08	na	64.92 [d]	487.59	11.67	2.38
	502304A	475,000	3,432,500	71.63	0.83	0.83	9.75	722.04	12.52	0.46
	502304B	475,000	3,432,500	71.63	0.83	0.83 [f]	9.75	722.04	12.52	0.46
	502304C	475,000	3,432,500	71.63	0.83	0.83 (f)	9.75	722.04	12.52	0.46
	502F501	475,000	3,432,500	71.63	288.54	na	64.92 [d]	722.04	4.64	1.93
	502FL01	475,000	3,432,500	71.63	25.2	na	29.26	1255.37	121.94	0.36
	502PB1	475,000	3,432,500	71.63	7.4	na	10.97	644.26	17.52	1.58
	50271_4	465,300	3,436,400	79.25	195.56	97.78	9.14	574.82	14.38	0.46
	5027009	465300	3436400	79.25	na	-318.78 [e]	64.92 [d]	455.19	17.03	1.6
	5027010	465300	3436400	79.25	1607.76	1607.76 [f]	64.92 [d]	449.82	40.63	1.68

[a] Sources listed meet the 20D requirement (i.e., total facilty SO_2 emissions were greater than 20 times the distance between the source and the Pensacola Mill).

[b] PSD emission rates represent the maximum actual annual emissions reported in the 2000/2001 emissions inventory provided by Florida DEP. For the baseline sources (i.e., the sources operating before the minor source bsaeline date), the use of actual emission will conservatively over-estimate the PSD increment consumption since no credit is taken for baseline SO_2 emissions. The emissions inventory provided by Alabama DEM identified increment consumming emissions.

[c] NAAQS emission rate included actual emissions since the actual emissions are greater than the potential emissions listed or no potential/permitted emissions are provided.

[d] GEP stack height was used instead of actual height which is taller than GEP.

[e] PSD increment expansion.

[f] The PTE has been conservatively used for the PSD increment analysis.

Table 7-8 (Revised September 2004)
Local PM_{10} NAAQS and PSD Emissions Inventory Summary
International Paper Company
Pensacola, Florida

Sources [a]	ISC ID	UTM Easting (meters)	UTM Northing (meters)	Base Elevation (meters)	PM_{10} NAAQS Emission Rate (g/sec)	PM_{10} PSD [b] Emission Rate (g/sec)	Stack Height (meters)	Stack Temperature (degrees K)	Exit Velocity (meters/sec)	Stack Diameter (meters)
SOLUTIA INC.										
	SOL2	476,010	3,384,990	14.8	0.58 [c]	0.58	18.29	497.04	28.65	1.219
	SOL3_4	476,010	3,384,990	14.8	0.48 [c]	0.48	38.1	383.15	10.36	3.658
	SOL5_13	476,010	3,384,990	14.8	0.149	0.059	38.1	428.15	5.49	0.823
	SOL14_16	476,010	3,384,990	14.8	7.79 [c]	7.79	45.72	455.37	10.67	3.048
	SOL32	476,010	3,384,990	14.8	0.492 [c]	0.491	30.48	422.04	22.86	4.572
	SOL49	476,010	3,384,990	14.8	0.363 [c]	0.363	27.43	473.71	14.02	1.463
	SOL50_60	476,010	3,384,990	14.8	0.446 [c]	0.289	16.5	299.79	4.51	0.3
	SOL61_73	476,010	3,384,990	14.8	7.364	0.559	7.6	295.35	13.4	0.4
	SOL76	476,010	3,384,990	14.8	0.15	0	38.1	343.15	31.68	1.067
	SOL79	476,010	3,384,990	14.8	0.186	0.026	16.5	***298*** [e]	70.11	0.3
GULF POWER COMPANY										
	GPC1_5	478,161	3,381,360	2.4	14.408	1.994	130.53	416.48	15.85	5.486
	GPC6_7	478,270	3,381,360	2.4	22.441	8.912	137.16	433.15	29.57	7.071
	GPC9	478,270	3,381,360	2.4	2.146 [c]	0 [f]	***10***	***298*** [e]	***10***	***1***
	GPC11	478,270	3,381,360	2.4	0.021 [c]	0 [f]	***10***	*477.39*	***10***	***1***
	GPCA	478,270	3,381,360	2.4	56.51 [c]	0 [f]	16.71	306.5	38.79	12.8
	GPCB	478,270	3,381,360	2.4	50.23 [c]	0 [f]	18.39	305.9	38.79	12.06
	GPCC	478,270	3,381,360	2.4	69.07 [c]	0 [f]	18.39	305.9	38.79	14.15
AIR PRODUCTS AND CHEMICALS, INC.										
	APC1_3	487,000	3,383,400	0	0.736	0.088	12.5	394.14	7.9	1.5
	APC5	487,000	3,383,400	0	0.037	0	11	643.89	19.8	0.2
	APC6_7	487,000	3,383,400	0	0.019	0.0028	7.6	464.53	0.6	0.9
	APC8_10	487,000	3,383,400	0	0.536	0.453	25	435.77	29.6	1.1
	APC11	487,000	3,383,400	0	0.28 [c]	0.28	7.6	449.64	18.9	0.8
	APC14_16	487,000	3,383,400	0	20.937	0.408	15.8	312	11	1.5
	APC22	487,000	3,383,400	0	0.008	0	21.6	449.64	29.9	0.9
	APC23	487,000	3,383,400	0	0.005	0	28.7	444.09	28.7	0.8
	APC26_27	487,000	3,383,400	0	0.792	0.177	4.6	310.89	5.2	0.1
	APC63	487,000	3,383,400	0	5.58 [c]	5.58	***10***	***298*** [e]	***10***	***1***
ADEM Sources										
	ADEM1	489,500	3,437,800	30.78	15.4	na	64.92 [d]	487.59	11.67	2.38
	ADEM2	489,500	3,437,800	30.78	42.04	1.35 [g]	64.92 [d]	412.59	9.85	3.66
	ADEM3	489,500	3,437,800	30.78	1.93	na	64.92 [d]	332.59	5.74	1.52
	ADEM4	489,500	3,437,800	30.78	6.88	na	22.86	345.93	12.78	1.01
	ADEM5	489,500	3,437,800	30.78	2.75	na	33.53	340.37	9.8	0.76
	ADEM6	489,500	3,437,800	30.78	7.66	7.66	64.92 [d]	500.93	15.79	2.29

[a] Sources listed meet the 20D requirement (i.e., total facilty PM_{10} emissions were greater than 20 times the distance between the source and the Pensacola Mill).

[b] PSD emission rates represent the maximum actual annual emissions reported in the 2000/2001 emissions inventory provided by Florida DEP. For the baseline sources (i.e., the sources operating before the minor source bsaeline date), the use of actual emission will conservatively over-estimate the PSD increment consumption since no credit is taken for baseline PM_{10} emissions. The emissions inventory provided by Alabama DEM identified increment consumming emissions.

[c] NAAQS emission rate included actual emissions since the actual emissions are greater than the potential emissions listed or no potential/permitted emissions are provided.

[d] GEP stack height was used instead of actual height which is taller than GEP.

[e] No stack temperature was provided so a 298 degree K was assumed.

[f] Assumed to be baseline sources.

[g] This is a combined source and the increment consuming PTE PSD emissions are 1.35 grams per second.

Table 7-9 (Revised September 2004)
Local NO_X NAAQS and PSD Emissions Inventory Summary
International Paper Company
Pensacola, Florida

Sources [a]	ISC ID	UTM Easting (meters)	UTM Northing (meters)	Base Elevation (meters)	NO_X NAAQS Emission Rate (g/sec)	NO_X PSD [b] Emission Rate (g/sec)	Stack Height (meters)	Stack Temperature (degrees K)	Exit Velocity (meters/sec)	Stack Diameter (meters)
SOLUTIA INC.										
	SOL2	476,010	3,384,990	14.8	8.899 [c]	8.899	18.29	497.04	28.65	1.219
	SOL3_4	476,010	3,384,990	14.8	5.67	0.888	38.1	383.15	10.36	3.658
	SOL5_13	476,010	3,384,990	14.8	1.95	1.34	38.1	428.15	5.49	0.823
	SOL14_16	476,010	3,384,990	14.8	35.59	30.08	45.72	455.37	10.67	3.048
	SOL32	476,010	3,384,990	14.8	13.43	5.874	30.48	422.04	22.86	4.572
	SOL42	476,010	3,384,990	14.8	23.625	18.636	36.58	428.71	34.14	1.372
	SOL49	476,010	3,384,990	14.8	1.815	1.464	27.43	473.71	14.02	1.463
	SOL75	476,010	3,384,990	14.8	0.388	0.249	38.1	428.15	8.53	0.823
	SOL76	476,010	3,384,990	14.8	5.667	0	38.1	343.15	31.68	1.067
	SOL88	476,010	3,384,990	14.8	0.218 [c]	0.218	19.81	1088.7	40	1.402
GULF POWER COMPANY										
	GPC1_5	478,161	3,381,360	2.4	237.23	75.205	130.53 [d]	416.48	15.85	5.486
	GPC6_7	478,270	3,381,360	2.4	573.31	313.907	137.16	433.15	29.57	7.071
STERLING FIBERS, INC.										
	STERL4_9	489,200	3,380,200	0	20.16 [c]	18.382	15.24	444.3	13.2	1.524
AIR PRODUCTS AND CHEMICALS, INC.										
	APC1	487,000	3,383,400	0	30.279 [c]	29.939	7.62	449.8	0.61	0.244
	APC2	487,000	3,383,400	0	22.79	18.874	4.57	310.9	5.18	0.076
	APC3	487,000	3,383,400	0	14.34	2.896	10.97	394.3	7.92	0.244
	APC4	487,000	3,383,400	0	14.54	9.503	21.64	449.8	29.57	0.914
	APC5	487,000	3,383,400	0	11.13 [c]	9.694	27.43	435.9	30.78	0.762
EXXON/MOBIL PRODUCTION COMPANY										
	EXM37	482,870	3,416,040	0	1.512	0.322	10.67	699.82	17.95	0.762
	EXM38	482,870	3,416,040	0	0.63	0.608	9.14	699.82	24.12	0.305
	EXM40_42	482,870	3,416,040	0	3.805 [c]	3.805	18.29	338.7	*10*	0.61
	EXM43	482,870	3,416,040	0	10.405 [c]	10.405	9.14	338.7	*10*	3.81
	EXM44_46	482,870	3,416,040	0	36.25 [c]	36.25	6.71	338.7	*10*	0.305
SANTA ROSA ENERGY LLC										
	SREC1	488,970	3,381,530	0	26.78	26.78	60.96	369.26	19.23	5.79
GULF POWER COMPANY PEA RIDGE PLANT										
	GPCPR1	486,870	3,384,320	0	22.68	9.543	18.29	435.93	16.61	1.219
PENSACOLA CHRISTIAN COLLEGE										
	PCC	477,770	3,371,020	0	15.62	0 [e]	11.28	810.93	28.71	0.396
BOC GASES										
	BOC	476,000	3,385,000	0	1.436	1.436	*10*	*298*	*10*	*1*
FLORIDA GAS TRANSMISSION CO										
	FGT1_5	510,800	3,419,600	0	24.331	24.331	7.92	741.48	44.81	0.396
	FGT6	510,800	3,419,600	0	2.218	2.218	10.67	530.37	52.43	0.64
	FGT8	510,800	3,419,600	0	1.285	1.285	17.68	745.93	13.84	2.664
	FGT8	510,800	3,419,600	0	1.777	1.777	18.90	760.93	24.11	2.316
ADEM Sources										
	502005	489,500	3,437,800	30.78	1.89	na	22.86	345.93	13.18	1.01
	502004	489,500	3,437,800	30.78	1.89	na	22.86	347.04	12.78	1.01
	50215E	489,500	3,437,800	30.78	11.49	na	64.92	500.93	15.79	2.29
	50215W	489,500	3,437,800	30.78	11.49	na	64.92 [d]	500.93	15.79	2.29
	50203S	489,500	3,437,800	30.78	4.47	na	64.92 [d]	487.59	11.67	2.38
	502001	489,500	3,437,800	30.78	22.91	10.07 [f]	64.92 [d]	424.82	19.43	3.66
	502002	489,500	3,437,800	30.78	27.39	na	64.92 [d]	412.59	9.85	3.66
	50203N	489,500	3,437,800	30.78	4.47	na	64.92 [d]	487.59	11.67	2.38

[a] Sources listed meet the 20D requirement (i.e., total facilty NO_X emissions were greater than 20 times the distance between the source and the Pensacola Mill).

[b] PSD emission rates represent the maximum actual annual emissions reported in the 2000/2001 emissions inventory provided by Florida DEP. For the baseline sources (i.e., the sources operating before the minor source bsaeline date), the use of actual emission will conservatively over-estimate the PSD increment consumption since no credit is taken for baseline NO_X emissions. The emissions inventory provided by Alabama DEM identified increment consumming emissions.

[c] NAAQS emission rate included actual emissions since the actual emissions are greater than the potential emissions listed or no potential/permitted emissions are provided.

[d] GEP stack height was used instead of actual height which is taller than GEP.

[e] Assumed to be a baseline source

[f] ADEM provided a PTE emission rate of 10.07 grams per second for this increment consuming source.

multiple volume sources. In all instances involving volume sources that are rectangular in shape, the minimum lateral volume source dimension was used to calculate the σ_y. The minimum lateral dimension will result in a conservative estimate of the initial plume dispersion and result in higher downwind concentrations. The σ_z for storage piles was determined by taking the height of the pile and dividing by 2.15. The release height for each storage pile volume source was determined by multiplying the actual pile height by one-half.

Emissions from roadway sources were also represented as a volume sources. The initial σ_y of the roadway volume sources was based on the typical roadway width of 12.19 meters (40 feet). Multiple volume sources were used to represent the entire length of the roadway. In order to manage the number of roadway volume sources and still provide a spatial representation of the roadways, the roadway volume sources were spaced apart by 24.38 meters (i.e., twice the lateral dimension). The 24.38 meter distance was measured from the center of each volume source to the neighboring volume source. The initial σ_z was based on a truck height of 3.05 meters (10 feet). The release height of the roadway sources was one-half of the truck height or 1.52 meters (5 feet).

7.2.4 Local Emission Inventory

An emission inventory of local sources was required based on the outcome of the significance air quality modeling analyses. As documented in Section 7-4, emissions from the proposed project and the contemporaneous project cause ambient air concentrations that exceed the PSD ambient air significance levels for SO_2, PM_{10}, and NO_2. Florida DEP and Alabama Department of Environmental Management (ADEM) were contacted to obtain information on sources that have emissions of SO_2, PM_{10}, and NO_X and that are within the SIA plus a 50 kilometer buffer. The listings of emission sources provided by Florida DEP and ADEM are provided in Appendix D.

Since the local emission inventory included many small or distant facilities, a screening approach was used to eliminate these insignificant sources of emissions. A "20D" approach, which has been accepted by Florida DEP and EPA Region IV, was used to screen out small and distant facilities on a pollutant by pollutant basis. Facilities were excluded from the local source emission inventory if, for a particular pollutant, the annual permitted facility pollutant emissions are less than 20 times the distance between the source and the Pensacola Mill. For example, if a facility has total annual PM_{10} emissions of 150 tons per year (tpy) and the source was located 8 km from the Pensacola Mill, it will not be necessary to include the source since 20 times the distance between the sources is 160 km and the total annual emissions are only 150 tpy. It should be noted that any emission source that is located within the SIA for a particular pollutant was included in the local source emission inventory regardless of its annual emissions or distance from the Pensacola Mill. The summary of local emission sources that were included in the NAAQS, Florida air quality standards, and PSD increments air quality modeling analyses are provided in Tables 7-7, 7-8, and 7-9 for SO_2, PM_{10}, and NO_X respectively.

There are several items to note in these three tables concerning the physical emission characteristics as well as pollutant emission rates. Information for several emissions units at various facilities did not include all of the physical stack characteristics. Where stack information was missing, representative physical stack characteristics were employed in the air quality modeling analysis. These representative stack characteristics have been bolded in the tables. Additionally, for several emissions units listed in the Florida local emission inventory, PTE or permitted emission rates were not available and thus actual reported emission rates were used in the air quality modeling study. The highest actual emission rate for the two years of data provided (2000 and 2001) was used in the air quality modeling analysis.

Also to reduce the number of emission sources included in the air quality modeling analysis, similar emissions sources from a facility were often combined into a single, surrogate source. When multiple sources were combined, the pollutant emission rates were summed for the surrogate source. The stack characteristics for the surrogate source represented the worst case characteristics from all of the sources combined. For example, if four emission units were combined into a single source, the shortest stack height from the four sources was assigned to the surrogate source. Similarly, the lowest exit velocities and the smallest stack diameter were combined even though this combination would result in a conservative exhaust flow for the surrogate stack.

The ADEM emission inventory included information concerning the PSD increment consuming allowable emissions attributable to each emissions unit. For Florida, PSD increment consuming emission rates were not readily available. However, it was possible to confirm that the Gulf Power Crist Power Station was a baseline source for SO_2, PM_{10}, and NO_X. Additionally, Solutia, Inc. (formerly Monsanto) is also a baseline source for NO_X and likely for SO_2 and PM_{10} as well. Air Products and Exxon/Mobil were NO_X baseline sources. Although it was possible to determine which sources were baseline sources, the actual baseline emissions were typically only available for NO_2 sources. For SO_2 and PM_{10}, information concerning the difference between baseline emissions and current actual emissions had to be inferred. For example, in 1979 the Gulf Power Crist Station used a coal with an higher sulfur content than it currently uses; therefore, there should be no increase in actual SO_2 levels emitted (i.e., no PSD increment consumption) and likely an actual decrease. When it was *reasonably certain* that no increment consumption had occurred, this assumption was incorporated into the air quality modeling analysis. Where is was *not certain* that actual emissions had been unchanged since the appropriate PSD baseline data, the actual 2001 and 2000 emissions reported in the Florida DEP emissions inventory were conservatively used as the increment consuming emission. It should be noted that the use of 2001/2000 actual emissions will overstate the PSD increment consumption since baseline emissions, which were present, are not subtracted from the current emissions.

7.3 AIR QUALITY MODELING APPROACH AND TECHNICAL INFORMATION

This section of the air quality modeling report contains information on the technical approach that was followed in the air quality modeling study. The air dispersion model selection is discussed as well as the model options that were used. The supporting information that was used in the air quality modeling analysis is presented. The supporting information includes a land use determination, building downwash analyses, meteorological data, and terrain data. Whenever possible, the guidance provided in 40 CFR Part 51 Appendix W "Guideline on Air Quality Models" (USEPA 2001) was used to conduct the air quality modeling analyses. Additional guidance provided by Florida DEP, EPA Region IV, and the FLM were incorporated as appropriate.

7.3.1 Air Dispersion Model Selection

For the SIA, NAAQS, and PSD increment analyses, the current version of the Industrial Source Complex Short-Term 3 (ISCST3 Version 02035) air dispersion model was used. The ISCST3 air dispersion model is an Appendix A air dispersion model as noted in 40 CFR Part 51 Appendix W "Guideline on Air Quality Models". ISCST3 is recommended by EPA for estimating ground level concentrations in rural and urban areas and is capable of calculating short-term (i.e., 1-hour, 3-hour, 8-hour, 24-hour) and long-term (i.e., quarterly and annual) concentrations.

Some of the features to ISCST3 include the ability to incorporate building downwash as part of the concentration calculations by using the Schulman/Scire building downwash algorithms. ISCST3 also contains the COMPLEX1 complex terrain algorithms for predicting concentrations at receptor locations that have elevations higher than the stack height elevation or plume height elevation. The ISCST3 air dispersion model also contains options to scale emission rates by wind speed and stability. This ability is critical when evaluating the dispersion of fugitive emissions from storage piles.

The ISCST3 air dispersion model has various user selectable options that must be considered. EPA has recommended that certain options be selected when performing air quality modeling studies for regulatory purposes. The following regulatory default options were used in the ISCST3 air quality modeling study;

- Final Plume Rise
- Stack-Tip Downwash
- Buoyancy Induced Dispersion
- Model Accounts for Elevated Terrain Effects
- Calms Processing Routine Used
- No Exponential Decay for Rural Mode
- Upper Bound Value for "Supersquat" Buildings
- Missing Data Processing Used
- Default Wind Profile Exponents
- Default Vertical Potential Temperature Gradients

7.3.2 Topographic and Land Use Analysis

The Pensacola Mill is located in Cantonment which is approximately 20 kilometer (km) north, northwest of Pensacola, Florida. Situated in the central portion of Escambia County, the Mill is about 6.5 km from the Alabama and Florida border. A facility location map was provided in Figure 2-1. The geographical coordinates for the approximate center of the processing area of the Mill are:

- Universal Transverse Mercator (UTM) Easting: 469,000
- Universal Transverse Mercator (UTM) Northing: 3,386,000
- UTM Zone : 16
- North American Datum (NAD): 1927
- Longitude (degrees, minutes, seconds): 87° 19' 24.2"
- Latitude (degrees, minutes, seconds): 30° 36' 28.1"

The area surrounding the Pensacola Mill is generally flat with minor changes in elevation. The Mill elevation is 140 ft above mean sea level (amsl). Within a 5 km radius of the Mill the maximum elevation is 203 ft amsl. The elevations for the surrounding topography were obtained from United States Geological Survey (USGS) Digital Elevation Model (DEM) 1:24,000 data files.

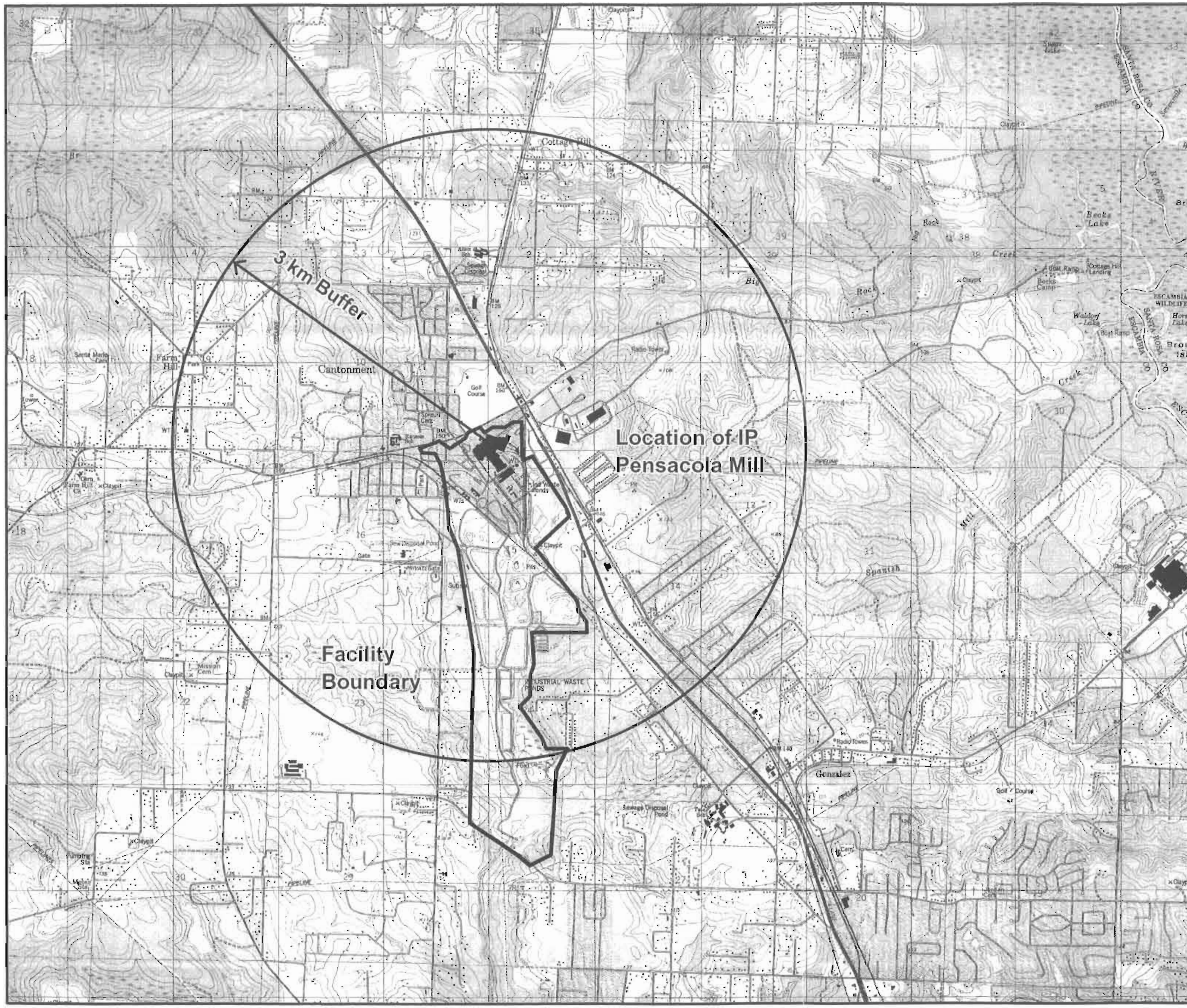
A land use analysis for the area surrounding the Pensacola Mill was compiled. The land use analysis was based on review of the USGS 7.5 minute topographic map for the area. Following EPA guidance (USEPA 2001), the land use designation was based on the land use typing scheme developed by Auer (Auer 1978). Using the Auer land use classifications, industrial, commercial, and residential areas are classified as urban land use while agricultural, undeveloped land, and common residential areas are considered to be a rural land use. If more than 50% of the land use within a 3 km radius of the facility is rural, then a rural designation should be used in the air dispersion model. A visual inspection of the USGS topographic map shows that within a 3 km radius of the Pensacola Mill, the land use is overwhelmingly rural, therefore the rural option was selected in the ISCST3 air dispersion model. The 3 km radius surrounding the Mill is shown in Figure 7-1.

7.3.3 Receptor Grid

The receptor grid for the ISCST3 analysis covered a 20-km square area that was centered on the Mill. All receptors were referenced to the UTM coordinate system, Zone 16, and using NAD 27 datum. Rectangular coordinates were used to identify each receptor location. The rectangular receptor grid was centered on 469,183 meters easting and 3,385,829 meters northing and included the following grid spacing;

- 100 meters out to ± 1 kilometer
- 200 meters out to ± 3 kilometers
- 500 meters out to ± 5 kilometers
- 1,000 meters out to ± 10 kilometers

The 10 km extent of the receptor grid was adequate to determine the radius of significant concentrations due to project-related emissions.



Source: Base map adapted from USGS 7.5 minute series, Camtonment, FLA Quadrangle, 1994.

Figure 7-1
Land-Use of Area Surrounding the IP Pensacola Mill

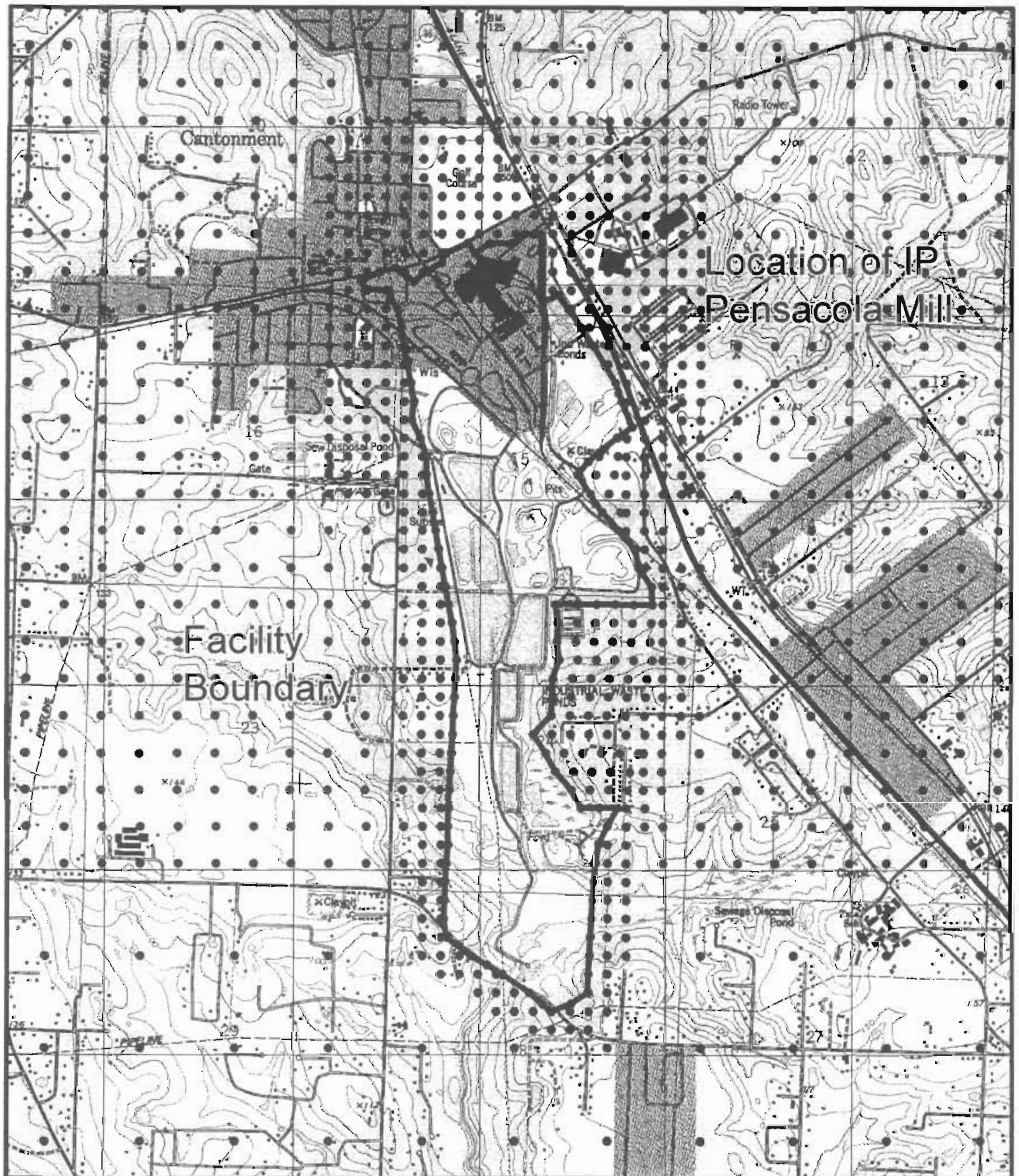
In addition to the main rectangular coordinate receptor grid, property line receptors were used in the air quality modeling analysis. The property line receptors were spaced approximately every 100 meters and included an additional buffer of receptors that followed the property line but were 100 meters from the edge of the property line. A plot of the inner portion of the receptor grid is shown in Figure 7-2.

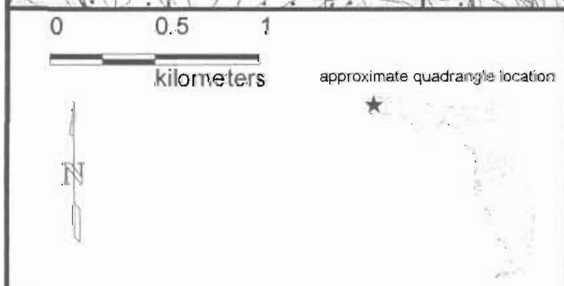
The main receptor grid was further supplemented as part of the NAAQS, Florida air quality standards, and PSD increment analyses. In several instances the peak modeled concentrations were predicted to occur in areas where the receptor spacing was in excess of 100 meters. Therefore, a refined receptor grid using 100 meter spacing and extending ±500 meters to the north, south, east, and west was centered over the receptors with peak modeled concentrations. The ISCST3 air dispersion model was then used to refine the concentration gradient in these selected areas.

Terrain elevations were assigned to all receptors. The AERMAP terrain preprocessor (Version 02222) and USGS 1:24,000 DEM Level I and II files were used to determine representative terrain elevations for all of the receptors. The AERMAP terrain preprocessor determines a receptor's elevation by choosing the highest terrain elevation from the four closest elevation nodes contained in the DEM files. Both Level I and Level II DEM files have elevation nodes every 30 meters.

7.3.4 Meteorological Data

The meteorological data for the ISCST3 air quality modeling study consisted of five years of National Weather Service (NWS) data. Meteorological data for the 1990 thru 1994 period were used. The surface NWS data were from the Pensacola, Florida Airport (surface station 13899) while the upper air NWS radiosonde data were from Slidell, Louisiana (upper air station 53813).





Source: Base map adapted from USGS 7.5 minutes series, Cantonment, FLA. Quadrangle, 1994.

FIGURE 7-2
INNER PORTION OF RECEPTOR GRID
INTERNATIONAL PAPER
PENSACOLA MILL
ESCAMBIA COUNTY, FLORIDA

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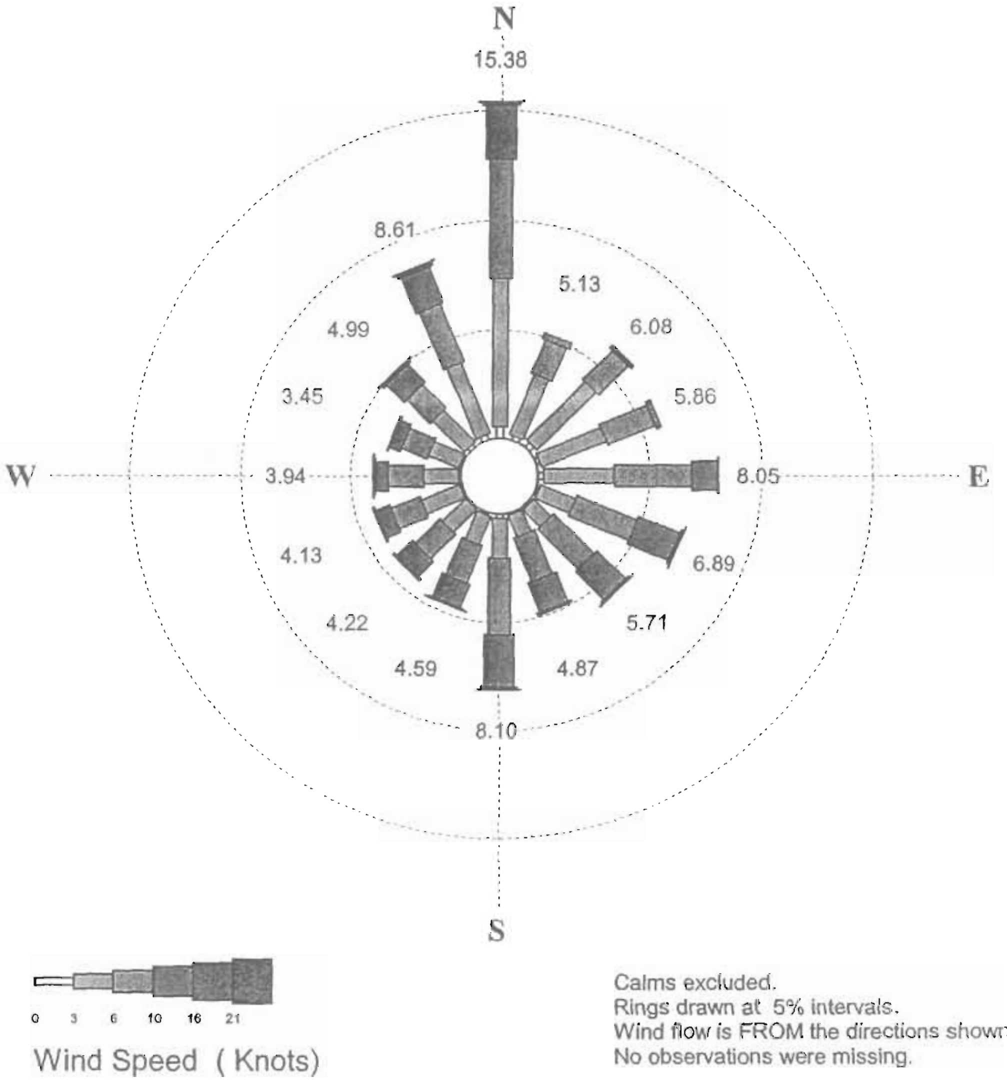
Both sets of meteorological data were obtained from the National Climatic Data Center (NCDC). The Pensacola NWS data can be considered representative of the meteorological conditions at the Pensacola Mill due to the close proximity of the two sites. Also there are no significant terrain features between the two sites. The Slidell upper air data, while located west of the Pensacola Mill, are representative of the general flow conditions along the Northern edge of the Gulf of Mexico. A five year wind rose (1990-1994) for the Pensacola NWS surface station meteorological data is shown in Figure 7-3. The wind data were collected at a 6.7 meter (22 ft) height.

The EPA meteorological preprocessor PCRAMMET (Version 99169) was used to format the Pensacola NWS and Slidell upper air data so that the data could be used with the ISCST3 air dispersion model. The Pensacola NWS were in Hourly United States Weather Observation (HUSWO) format while the Slidell upper air data were in Forecast Systems Laboratory (FSL) format. Missing surface meteorological data were replaced with the same values as the previous hour. Missing mixing heights were replaced by the average of the previous valid hour and the next, non-missing hour.

7.3.5 Good Engineering Practice (GEP) Stack Height Analysis

An analysis was conducted to determine the potential for building downwash at the Mill. Guidance contained in the EPA "Guideline for Determination of Good Engineering Practice (GEP) Stack Height (Revised)" (USEPA 1985) and the EPA Building Profile Input Program (BPIP, 95086) was followed. To perform the building downwash analysis, a facility plot plan showing the Mill buildings and stacks was digitized using geographical information system (GIS) software. The geographic coordinates of the corners of buildings and the heights of all the buildings that were digitized were used as input to BPIP. Round structures such as storage tanks were represented as a square structure. Buildings with multiple tiers were digitized as a single building with multiple tiers rather than multiple buildings with a single tier.

Figure 7-3
Wind Rose 1990 - 1994
Pensacola, Florida NWS



Calms excluded.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
No observations were missing.

PERCENT OCCURRENCE: Wind Speed (Knots)
LOWER BOUND OF CATEGORY

DIR	0	3	6	10	16	21
N	0.52	6.81	5.46	2.43	0.15	0.01
NNE	0.23	2.96	1.65	0.29	0.00	0.00
NE	0.28	3.76	1.86	0.18	0.00	0.00
ENE	0.18	3.14	2.29	0.24	0.00	0.00
E	0.25	3.16	3.45	1.14	0.04	0.00
ESE	0.11	1.72	2.92	2.00	0.13	0.01
SE	0.10	1.11	2.61	1.79	0.10	0.01
SSE	0.06	1.09	2.15	1.47	0.10	0.00

TOTAL OBS = 43820 MISSING OBS = 0

PERCENT OCCURRENCE: Wind Speed (Knots)
LOWER BOUND OF CATEGORY

DIR	0	3	6	10	16	21
S	0.18	1.84	3.53	2.41	0.13	0.01
SSW	0.11	1.40	1.87	1.14	0.06	0.01
SW	0.09	1.47	1.58	0.99	0.08	0.01
WSW	0.10	1.85	1.42	0.68	0.08	0.01
W	0.08	1.59	1.61	0.59	0.06	0.01
WNW	0.12	1.50	1.26	0.51	0.06	0.00
NW	0.18	2.03	1.50	1.11	0.12	0.04
NNW	0.27	3.50	2.89	1.76	0.18	0.01

CALM OBS = 3522

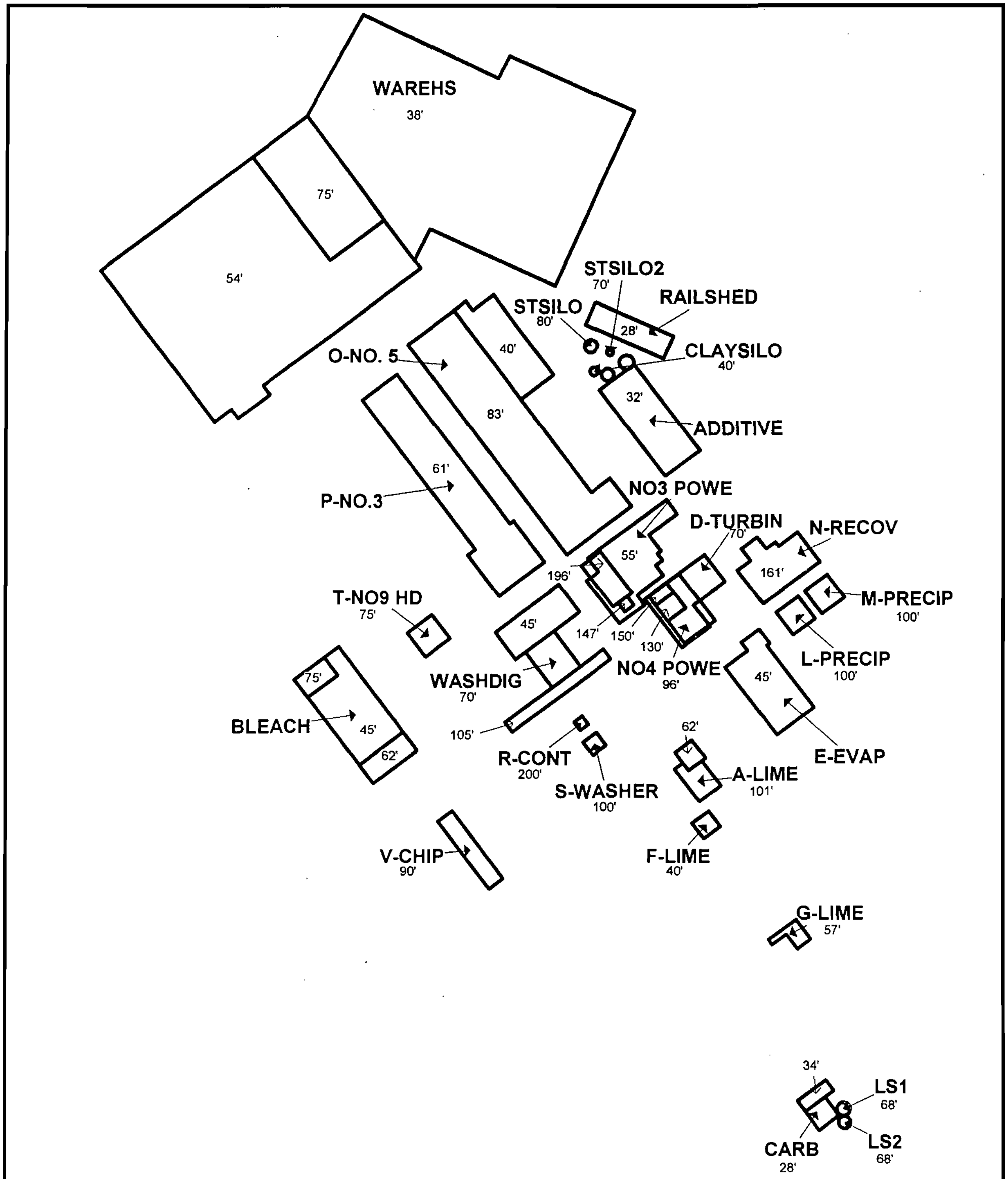
Professional judgment was used to exclude low height buildings from the analysis unless there was a stack within the influence area of the building. The result of the GIS digitization process is shown in Figure 7-4. A Mill plot plan is included for comparison purposes in Appendix D.

7.3.6 Background Ambient Air Data

Background ambient air quality data are required for the each pollutant for which an NAAQS or Florida air quality standards demonstration is necessary. The background concentration data should be representative of "background" sources or uninventoried pollutant sources that are not included in the air quality modeling study (e.g., small sources, area sources, mobile sources). The background data do not necessarily need to be from the same airshed as the Pensacola Mill, but may be from a more distant area that is still representative of the air quality in the area surrounding the Mill.

Background ambient air data were obtained from the Aerometric Information Retrieval System (AIRS) for the three most recently available years were reviewed. SO_2, PM_{10}, and NO_X ambient monitoring data are available from two monitoring sites in Escambia County. However, both of these sites are impacted by emissions from three of the large emission sources in the county, the IP Mill, Gulf Power, and Solutia, Inc. The Ellyson Industrial Park monitoring site is only 5.1 km southeast of the Gulf Power Crist facility and 14.3 km southeast of the IP Pensacola Mill. Additionally, a second Escambia County monitoring site at the University of Western Florida is only 2.6 km from Gulf Power and 12.2 km from the IP Pensacola Mill. For the SO_2 background concentration, it was necessary to account for the impact of these three sources especially for the 3-hour and 24-hour averaging periods. Florida DEP provided a revised set of 3-hour and 24-hour SO_2 background concentrations that were based on a previous analysis of 1999 monitoring data.

The revised background SO_2 data were based on 1999 concentrations for Escambia County that were adjusted to exclude periods when IP, Gulf Power, and Solutia, Inc. were impacting the monitoring site. By removing the contribution of the three nearby sources there would be no



N

0 50 100
meters

All Heights in Feet

Figure 7-4
Building Downwash Analysis
IP, Pensacola, Florida

c:\client files\ip pensacola\psd figures\figure 7-4.wor double-counting (i.e., modeling concentrations and background concentration data include emissions from the same sources) and the revised background SO_2 data would truly represent background SO_2 levels. However, since the background SO_2 data are 1999 and more recent data are available, the highest, second-highest SO_2 concentrations for the 2000-2002 period were used to rescale the 1999 data. The highest, second-highest 2000-2002 concentrations were divided by the 1999 highest, second-highest 3-hour and 24-hour concentrations. The resulting ratio was used to scale the 1999 adjusted data. The final result is that the 24-hour background SO_2 concentration that was used in the air NAAQS and Florida air quality standard demonstration is 29.2 $\mu g/m^3$ while the 3-hour background SO_2 concentration is 140.4 $\mu g/m^3$. No adjustment was made to the annual SO_2 background concentration since the variability of the wind direction reduces the magnitude of the impact from the three local sources.

It was only necessary to adjust the SO_2 short-term background concentrations, the annual SO_2, PM_{10}, and NO_2 and the 24-hour PM_{10} data were taken from the Ellyson Industrial Park. The background concentration data for the 2000 thru 2002 are listed in Table 7-10 with the actual concentrations that were used in the NAAQS and Florida air quality standards analyses bolded. Complete listings of the AIRS data are provided in Appendix D.

7.3.7 NO to NO_2 Conversion

A NO to NO_2 conversion factor was used to adjust all modeled annual NO_2 concentrations. The NO to NO_2 conversion factor accounts for the actual composition of the flue gas stream which is primarily NO but once emitted to the atmosphere will begin to convert to NO_2. The NO to NO_2 conversion rate is dependent on multiple variables including residence time, ozone levels, and solar intensity. An EPA recommended default value of 0.75 was used.

7.4 SIGNIFICANCE, NAAQS, AND PSD AIR QUALITY MODELING

This section presents the results of the air quality modeling analyses and demonstrates compliance with the applicable Class II air quality standards. Specifically the significance

Table 7-10
Background Concentration Levels
Highest, Second-Highest Short-Term and Highest Annual Values

Pollutant and Averaging Period	Monitored Value ($\mu g/m^3$) and Year			Monitor Location
SO_2	2002	2001	2000	
Annual	7.8	7.8	**10.4**	Pensacola, Escambia County
24-Hour [a]			**29.2**	Pensacola, Escambia County
3-Hour [a]			**140.4**	Pensacola, Escambia County
NO_2	2002	2001	2000	
Annual	13.4	17.2	**19.1**	Pensacola, Escambia County
PM_{10}	2002	2001	2000	
Annual	32	**37**	34	Pensacola, Escambia County
24-Hour	17	19	**21**	Pensacola, Escambia County
CO	2002	2001	2000	
8-Hour	3,777.8	3,777.8	**4,777.8**	Sarasota, Sarasota County
1-Hour	5,371.4	5,142.9	**7,542.9**	Sarasota, Sarasota County

Note: The highest of the second-highest monitored short-term values for each pollutant and short-term time period, which are highlighted in bold, were used as a background concentration for the short-term NAAQS and Florida air quality standards demonstrations. The highest annual values from the three years of data were used for the annual NAAQS demonstrations. All of the background data were selected from the Ellyson Industrial Park monitoring site except for CO which was selected from the Sarasota monitoring site. The Sarasota monitoring site is similar to the rural/urban setting of Pensacola and thus this site was selected for CO background concentrations.

[a] The 3-hour and 24-hour SO_2 background data were adjusted by Florida DEP to exclude the effect of SO_2 emissions from local sources including the IP Mill.

impact area modeling is presented as well as air quality modeling results that show the IP Mill is in compliance with the NAAQS, Florida air quality standards, and the PSD increments.

7.4.1 Significance Analysis

The air quality impact analysis evaluated all project-related emissions of SO_2, CO, PM_{10}, and NO_X at the Mill as well as emissions from the thermal oxidizer pollution control project, which is the only contemporaneous project that was undertaken during the past five years. The results of this air quality modeling analysis were compared to the PSD significance levels of:

- 1 μg/m^3 for annual average PM_{10} and NO_2, and SO_2
- 5 μg/m^3 for 24-hour average PM_{10} and SO_2
- 500 μg/m^3 for 8-hour average CO
- 25 μg/m^3 for 3-hour average SO_2
- 2,000 μg/m^3 for 1-hour CO

Based on the five years of meteorological data, the proposed changes at the Mill resulted in predicted PM_{10}, SO_2, and NO_2 concentrations that were greater than the PSD significance levels. The predicted CO concentrations were less than the significance levels; therefore, no further CO air quality modeling was required. The highest short-term and annual concentrations were used in the significance analyses. A summary of the significant impact analysis modeling results is provided in Table 7-11.

The significant impact area for SO_2, PM_{10}, and NO_X and for each averaging period was defined by a radius extending from the No. 5 Power Boiler stack out to the greatest distance where a receptor with a maximum concentration at or just below the respective significance level concentration existed. A summary of the SIA distances is included in Table 7-11.

Table 7-11 (Revised September 2004)
Results of Significant Impact Area Modeling Study
International Paper Company
Pensacola, FL
Peak Predicted Project-Related Concentrations at All Receptors

Pollutant and Averaging Period	PSD Significane Levels ($\mu g/m^3$)	De-Minimus Monitoring Levels ($\mu g/m^3$)	Modeled Concentration ($\mu g/m^3$)	Year [a]	UTM Coordinates [b] East (m)	North (m)	Relative Location [c] Dist. (m)	Dir. (deg)	Receptor Terrain Elevation (ft)	Type [d]
SO_2										
3-Hour	25	---	74.43	1994	469,483.0	3,386,129.0	428	42	158.20	Simple
24-Hour	5	13	30.75	1994	469,383.0	3,385,929.0	220	57	134.71	Simple
Annual	1	---	7.42	1994	469,383.0	3,385,929.0	220	57	134.71	Simple
PM_{10}										
24-Hour	5	10	75.23	1994	469,383.0	3,385,929.0	220	57	134.71	Simple
Annual	1	---	7.62	1994	469,383.0	3,385,929.0	220	57	134.71	Simple
NO_2		---								
Annual	1	14	5.92	1993	469,521.0	3,384,929.0	937	160	149.47	Simple
CO										
1-Hour [e]	2,000	---	206.01	1992	468,568.0	3,385,729.0	636	263	150.98	Simple
8-Hour [e]	500	575	43.82	1994	468,963.0	3,386,129.0	398	324	162.43	Simple

Receptors Defining Maximum Significant Impact Radius

Pollutant and Averaging Period	PSD Significane Levels ($\mu g/m^3$)	Modeled Concentration ($\mu g/m^3$)	Year [f]	UTM Coordinates East (m)	North (m)	Relative Location Dist. (m)	Dir. (deg)	Receptor Terrain Elevation (ft)	Type
SO_2									
3-Hour	25	27.70	1994	469,883.0	3,383,229.0	2,669	165	170.31	Simple
24-Hour	5	5.30	1990	470,183.0	3,381,329.0	4,587	168	148.42	Simple
Annual	1	1.05	1994	469,183.0	3,378,829.0	6,980	180	145.50	Simple
PM_{10}									
24-Hour	5	5.21	1993	469,183.0	3,379,829.0	5,980	180	109.81	Simple
Annual	1	1.07	1993	469,683.0	3,381,829.0	4,009	173	135.79	Simple
NO_2									
Annual	1	1.03	1994	469,683.0	3,380,829.0	5,003	174	127.76	Simple

11km Ok

5km

7.0

NOTES

[a] -- Peak concentration year from 5 years, 1990-1994 evaluated.

[b] -- Universal Transverse Mercator coordinates, North American Datum 1927, Zone 16

[c] -- Distance and compass direction from No. 5 Power Boiler stack location at UTM coordinates 469,198 m E, 3,385,689 m N.

[d] -- Terrain type classified relative to the No. 3 Power Boiler stack top elevation (213 ft stack height, plus 140 ft base elevation).

[e] -- The peak modeled concentration is less than the significance level, therefore no significant impact radius was calculated.

[f] -- Maximum Significant Impact Radius year from 5 years, 1990-1994 evaluated.

In addition to determining the SIA, the significance air quality modeling results were also compared to the ambient air de-minimus monitoring levels. The de-minimus evaluation was only conducted for SO_2, PM_{10}, NO_X, and CO. As shown in Table 7-11, the project-related NO_X and CO emissions result in concentrations that are less than the short-term de-minimus levels, while SO_2 and PM_{10} emissions result in concentrations above the de-minimus levels. It should also be noted that Florida DEP operates two ambient monitoring sites in Escambia County and the need to collect additional SO_2 and PM_{10} ambient air monitoring data is not warranted.

7.4.2 NAAQS and Florida Air Quality Standards Analyses

Since the significance impact area analysis determined that emissions from the proposed project would result in SO_2, PM_{10}, and NO_2 concentrations that were above the significance levels, NAAQS and Florida air quality standards analyses were required. The NAAQS and Florida air quality standards analysis included all SO_2, PM_{10}, and NO_X emissions units at the Mill as well as other background emission sources. As discussed in Section 7.2, the maximum permitted emission rates were used for all of the Mill sources. Additionally, for the background sources, a screening approach, described in Section 7.3, was used to exclude the small and distant emission sources from the NAAQS and Florida air quality standards analysis.

The highest, second-highest modeled concentrations of SO_2 and the highest, sixth-highest PM_{10} concentrations from the five years of air quality modeling were determined as well as the maximum annual SO_2, PM_{10}, and NO_X concentrations. Ambient air background concentrations were then added to the modeled concentrations. Summaries of the combined concentrations are shown in Tables 7-12, 7-13, and 7-14 for SO_2, PM_{10}, and NO_2 respectively. As shown in these tables, the modeled SO_2, PM_{10}, and NO_2 concentrations plus ambient air background levels are below the applicable NAAQS and Florida air quality standards. A 100 meter spacing was used to refine the peak modeled concentrations in several instances.

Table 7-12
Results of SO_2 NAAQS Air Quality Modeling Study
International Paper Company
Pensacola, FL

SO_2 Highest-Second Highest Short-Term and Maximum Annual Concentrations -- All Sources (1990-1994)

Pollutant and Averaging Period	Concentration (µg/m[3])	IP Contribution (µg/m[3])	UTM Coordinates [a] East (m)	UTM Coordinates [a] North (m)	Relative Location [b] Dist. (m)	Relative Location [b] Dir. (deg)	Receptor Terrain Elevation (ft)	Receptor Terrain Type [c]
Modeled SO_2 3-Hour Concentration	864.9	0.0	478,183.0	3,382,829.0	9,466	108	30	Simple
Background Concentration	140.4							
Total Concentration	1005.3							
NAAQS	1300							
Modeled SO_2 24-Hour Concentration	227.7	0.0	480,183.0	3,387,829.0	11,169	80	55	Simple
Background Concentration	29.2							
Total Concentration	256.9							
NAAQS	365							
Modeled SO_2 Annual Concentration	40.9	17.6	469,183.0	3,386,229.0	420	358	158	Simple
Background Concentration	10.4							
Total Concentration	51.3							
NAAQS	80							

NOTES

[a] -- Universal Transverse Mercator coordinates, North American Datum 1927, Zone 16

[b] -- Distance and compass direction from No. 5 Power Boiler stack location at UTM coordinates 469,199 m E, 3,385,809 m N.

[c] -- Terrain type classified relative to the No. 3 Power Boiler stack top elevation (213 ft stack height, plus 140 ft base elevation).

Note: The highest, second-highest 3-hour and 24-hour concentrations and the highest annual concentration occurred in 1993 and the annual occurred in 1990.

Table 7-13
Results of PM_{10} NAAQS Air Quality Modeling Study
International Paper Company
Pensacola, FL

PM_{10} Highest-Sixth Highest Short-Term and Maximum Annual Concentrations -- All Sources

Pollutant and Averaging Period	Concentration ($\mu g/m^3$)	IP Contribution ($\mu g/m^3$)	UTM Coordinates [a] East (m)	North (m)	Relative Location [b] Dist. (m)	Dir. (deg)	Receptor Terrain Elevation (ft)	Type [c]
Modeled PM_{10} 24-Hour Concentration	93.6	87.6	468,704.0	3,385,029.0	924	212	144	Simple
Background Concentration	37.0							
Total Concentration	130.6							
NAAQS	150							
Modeled PM_{10} Annual Concentration	24.7	24.7	468,704.0	3,385,029.0	924	212	144	Simple
Background Concentration	19.0							
Total Concentration	43.7							
NAAQS	50							

NOTES

[a] -- Universal Transverse Mercator coordinates, North American Datum 1927, Zone 16

[b]-- Distance and compass direction from No. 5 Power Boiler stack location at UTM coordinates 469,198 m E, 3,385,689 m N.

[c] -- Terrain type classified relative to the No. 3 Power Boiler stack top elevation (213 ft stack height, plus 140 ft base elevation).

Table 7-14 (Revised September 2004)
Results of NO_2 NAAQS Air Quality Modeling Study
International Paper Company
Pensacola, FL

NO_2 Maximum Annual Concentrations -- All Sources (1990-1994)

Pollutant and Averaging Period	Concentration (µg/m^3)	IP Contribution (µg/m^3)	UTM Coordinates [a] East (m)	UTM Coordinates [a] North (m)	Relative Location [b] Dist. (m)	Relative Location [b] Dir. (deg)	Receptor Terrain Elevation (ft)	Receptor Terrain Type [c]
Modeled NO_2 Annual Concentration	37.7	0.6	477,183.0	3,370,829.0	16,975	152	99	Simple
Adjusted by 0.75	28.3							
Background Concentration	19.1							
Total Concentration	56.8							
NAAQS	100							

NOTES

[a] -- Universal Transverse Mercator coordinates, North American Datum 1927, Zone 16

[b] -- Distance and compass direction from No. 5 Power Boiler stack location at UTM coordinates 469,199 m E, 3,385,809 m N.

[c] -- Terrain type classified relative to the No. 3 Power Boiler stack top elevation (213 ft stack height, plus 140 ft base elevation).

Note: Peak impact occurred in 1994, a summary of all five years is provided in Appendix D.

It should be noted that the modeled concentrations shown in Tables 7-12, 7-13, and 7-14 are only for time periods and receptor locations where the IP Mill contributes a significant concentration (i.e., the IP Mill has a concentration impact of more than 5 µg/m^3 for the 24-hour SO_2 and PM_{10} averaging period, more than 25 µg/m^3 for the 3-hour SO_2 averaging period, and more than 1.0 µg/m^3 for the annual SO_2, PM_{10}, and NO_2 averaging period). The SO_2 air quality modeling study has not been updated since the initial air quality modeling study, which identified elevated SO_2 concentrations from Gulf Power. Florida DEP has worked with Gulf Power to resolve the modeled SO_2 concentrations. Gulf Power has committed to a reduced SO_2 emission rate. Florida DEP has conducted an air quality modeling study that demonstrates that with the revised SO_2 emissions limits there are no issues with the 3-hour SO_2 NAAQS and the 24-hour SO_2 Florida air quality standard. IP is relying on the air quality modeling study conducted by DEP for this PSD application.

7.4.3 PSD Increment Analysis

The PSD minor source baseline date for NO_2, PM_{10}, and SO_2 has been triggered for the air quality control region in which the Pensacola Mill is located. Therefore, "actual" emission increases or creditable emission decreases from all sources potentially affect the amount of increment that is consumed. The PSD emission rates discussed in Sections 7.2.2 and 7.2.4 were used for the PSD analysis.

The PSD increment consumption due to PM_{10}, SO_2, and NO_X emissions from the Mill was determined. The highest, second-highest modeled short-term and the highest modeled annual concentrations were compared to the increment values and are summarized in Table 7-15. As shown in Table 7-15, the predicted concentrations are below the short-term and annual increment levels. Thus the project will not cause or contribute to an ambient air concentration that exceeds the applicable increment levels.

The peak predicted highest, second-highest 24-hour SO_2 concentration is 90.9 µg/m^3 and is a result of the conservative building downwash algorithms contained in the ISCST3 air dispersion

Table 7-15
Results of PSD Increment Air Quality Modeling Study (Revised September 2004)
International Paper Company
Pensacola, FL

Highest, Second-Highest Short-Term and Maximum Annual Concentrations

Pollutant and Averaging Period	Allowable PSD Increment ($\mu g/m^3$)	Peak Modeled Concentration ($\mu g/m^3$)	Period (yr/mo/day/hr)	UTM Coordinates [a] East (m)	UTM Coordinates [a] North (m)	Relative Location [b] Dist. (m)	Relative Location [b] Dir. (deg)	Receptor Terrain Elevation (ft)	Receptor Terrain Type [c]
PM_{10}									
24-Hour	30	26.39	94/08/18/24	469,383	3,386,229	459	24	149	Simple
Annual	17	3.29	1992	469,333	3,385,869	147	66	143	Simple
SO_2									
3-Hour	512	215.13	93/06/17/12	468,583	3,386,029	654	290	144	Simple
24-Hour	91	90.92	94/08/29/24	469,383	3,386,229	459	24	149	Simple
Annual	20	12.42	1994	469,383	3,386,229	459	24	149	Simple
NO_2									
Annual [d]	25	16.54	1991	484,183	3,382,829	15,278	101	0	Simple

22 X .75

NOTES

[a] -- Universal Transverse Mercator coordinates, North American Datum 1927, Zone 16

[b] -- Distance and compass direction from No. 5 Power Boiler stack location at UTM coordinates 469,199 m E, 3,385,809 m N.

[c] -- Terrain type classified relative to the No. 3 Power Boiler stack top elevation (213 ft stack height, plus 140 ft base elevation).

[d] -- The NO_2 concentration includes an NO to NO_2 adjustment factor of 0.75 per USEPA guidance.

model. The hybrid version of ISCST3 that contains the Plume Rise Model Enhancements (PRIME) building downwash algorithms was used to refine the concentrations predicted by the ISCST3 air dispersion model. Using the same emission information and the expanded BPIP analyses, the ISCPrime air dispersion model predicted a peak high, second-high SO_2 concentration of 82.0 $\mu g/m^3$. Since the ISCPrime air dispersion model is not currently an approved air dispersion model, the ISCPrime concentration is provided for reference purposes only.

7.5 CLASS I AIR QUALITY RELATED VALUES ANALYSIS

The Pensacola Mill is located within 200 km of the Breton Wilderness Area as shown in Figure 7-5. No other Class I areas are within 200 km of the Mill. Based on conversations with the FLM for Breton, visibility and ambient air concentrations are the only Class I AQRVs that need to be addressed. The following approach was used to evaluate the impact of the project-related emissions on the Breton Class I area.

7.5.1 Air Quality Model Selection

The CALPUFF air dispersion model and the CALPOST post processor were used to determine potential impacts on the AQRVs at the Breton Wilderness Area. The CALPUFF air dispersion model was used in a screening level mode following the guidance contained the "Inter-Agency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts" (USEPA 1998) and the "Federal Land Manager' Air Quality Related Values Workgroup (FLAG) Phase I Report (United States Forest Service et al. 2000). CALPUFF model option selections that are different from those recommended are presented in Table 7-16.

Since the CALPUFF air dispersion model was used in a screening mode, the maximum predicted impacts on visibility and ambient air concentration do not necessarily need to occur at the Class I area in order to be compared against FLM derived screening level criteria.