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February 6, 2001

9939503

North Pond Energy Park, LLC and South Pond Energy Park, LLC
111 Market Place, Suite 200
Baltimore, Maryland 21202

Attention: Mr. Richard L. Wolfinger, Vice President

RE: North Pond Energy Park and South Pond Energy Park
DEP File Nos. 0490045-001-AC (PSD-FL-307) and 0490046-001-AC (PSD-FL-306)
FDEP Request for Additional Information

Dear Rick:

Golder Associates Inc. (Golder) has performed the ambient air quality impact analysis for both the North Pond Energy Park and South Pond Energy Park as requested by the Florida Department of Environmental Protection (FDEP) in their December 8, 2000 correspondence. As requested by the FDEP, the ambient air impact analysis was conducted to determine the combined impacts of both facilities on the Prevention of Significant Deterioration (PSD) Class II areas in the vicinity of each plant and the Chassahowitzka PSD Class I Area. The impact analysis is attached. Under separate cover, Golder will submit the modeling documentation to Mr. Cleve Holladay, the FDEP meteorologist that reviews the impact analyses for projects.

The results of the analyses determined that the impacts of both projects are less than the PSD Class II Significant Impact Levels. In addition, the impacts of both projects are less than the EPA proposed PSD Class I Significant Impact Levels, except for the 24-hour SO₂ impacts when the combined cycle units and simple cycle units are operating. In this case, the combined impacts of both projects are slightly above the PSD Class I Significant Impact Levels (i.e., 0.22 µg/m³ compared to 0.2 µg/m³). The combined impacts of both projects are also slightly greater than the visibility impairment criteria of 5 percent in the PSD Class I Area. It should be noted that both the PSD Significant Impact Levels and visibility impairment criteria are appropriate modeling thresholds for individual projects and not the combination of two separate projects. The impact analyses included in the air permit and PSD applications for each project demonstrated conformance with these FDEP modeling thresholds. In addition, the impact analysis was based on the use of distillate fuel oil, which is the backup fuel for the each project. Thus, the impact analyses of both projects are inherently conservative (i.e., predicted impacts would be much greater than would actually occur during operation).

Please call if you have any questions.

Sincerely,

GOLDER ASSOCIATES INC.

A handwritten signature in black ink, appearing to read 'Kennard F. Kosky'.

Kennard F. Kosky, P.E.
Principal

KFK/jkw/jkw

Enclosures

cc: Steve Marks, Golder - Gainesville Office
Manitia Moultrie, Golder - Tampa Office

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COMBINED AIR QUALITY IMPACT ANALYSIS FOR CONSTELLATION NORTH POND ENERGY PARK AND SOUTH POND ENERGY PARK

AIR MODELING ANALYSIS APPROACH

The Florida Department of Environmental Protection (FDEP) has requested that an ambient air quality impact analyses be performed for the North Pond Energy Park and South Pond Energy Park as if they were a single facility. The North Pond Energy Park site is located approximately 6 miles due north of the South Pond Energy Park site. Both sites are located in Hardee County. For modeling purposes, model runs were performed using the ISCST3 to determine impacts in the vicinity of each site and the CALPUFF model was used to determine impacts in the Chassahowitzka Class I Area. In the modeling analyses originally performed for each facility and submitted with the air permit application, impacts were determined for both the primary fuel (i.e., natural gas) and the backup fuel (i.e., distillate fuel oil). The worst-case impacts from these analyses were determined to be when distillate oil is used since emissions of this backup fuel are higher than natural gas. For the modeling analysis of both facilities, it was assumed that each facility would be operating on the backup fuel (i.e., distillate fuel oil). A description of the models, source parameters, meteorological data, and procedures are described in the two separate air permit applications for each project. These applications are the *Air Permit Application and Prevention of Significant Deterioration Analysis for the South Pond Energy Park, Hardee County, Florida* and the *Air Permit Application and Prevention of Significant Deterioration Analysis for the North Pond Energy Park, Hardee County, Florida*.

RECEPTOR LOCATIONS

For determining impacts in the vicinity of each facility, fenceline receptors for both the North Pond Energy Park and South Pond Energy Park were included in the modeling analysis. Two polar receptor grids, with 10 degree spacing, were generated beyond the fenceline of each site. Each receptor grid included 36 receptors located on radials extending out from each proposed HRSG stack location. Along each radial, receptors were located at each project's fenceline and distances of 0.1, 0.2, 0.3, 0.5, 0.7, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 7.0, 10.0, 12.0, 15.0, 20.0, 25.0, and 30 kilometers (km) from each proposed HRSG stack location.

Modeling refinements were performed, as needed, by employing a polar receptor grid with a maximum spacing of 100 meters (m) along each radial and an angular spacing between radials of 2 degrees or less. For determining impacts from both facilities to the Chassahowitzka Class I Area, the same receptors identified in the air permit applications were used.

AIR MODELING RESULTS

For the area in the vicinity of each separate facility, the maximum impacts were previously determined to be a result of the combined cycle unit and peaking unit(s) operating on distillate oil. Table 6-2a presents the maximum impacts in the vicinity of either project when all five units are operating on distillate fuel oil. As shown in Table 6-2a, the maximum predicted pollutant impacts due to the proposed facilities are less than the significant impact levels for carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulate matter of 10 microns diameter or less (PM₁₀). Maximum predicted NO₂ concentrations were assumed as 75 percent of the total predicted NO₂ concentration as allowed by U. S. Environmental Protection Agency (EPA) guidance (EPA, 1995). The proposed facilities, when combined, will not have a significant impact on the air quality in the vicinity of either plant. A comparison of the maximum impacts to the PSD Class II Increments, Ambient Air Quality Standards, and Significant Impact Levels is shown in Table 6-3a.

Table 6-4a presents the maximum pollutant specific concentrations due to both the North Pond Energy Park and the South Pond Energy Park operating on distillate oil. Table 6-5a presents the maximum impacts compared to the EPA Class I Significant Impact Levels. The maximum predicted impacts are less than the EPA PSD Class I Significant Impact Levels for both facilities, with the exception of maximum 24-hour SO₂ concentrations predicted for three simple cycle units and two combined cycle units operating on distillate oil.

Table 7-5a presents highest predicted 24-hour visibility impairment at the Chassahowitzka PSD Class I Area for the South Pond Energy Park, the North Pond Energy Park, and both facilities. These predictions were based on distillate oil firing. As shown, the visibility

impairment of each individual facility is well within the Florida Wildlife Service/National Park Service (FWS/NPS) criteria of 5 percent. The combined impact of each separate facility is slightly higher than the FWS/NPS criteria.

It should be noted that the EPA PSD Class I and II Significant Impact levels and the visibility impairment criteria were established for individual projects. In that context, the previous modeling analyses presented in the air permit application demonstrated conformance with the applicable criteria. Moreover, the predicted impacts were based on both facilities firing distillate oil, which is the backup fuel for each project. The maximum distillate oil usage being requested for each project is only 720 hours per year or about 8.2 percent of the available hours in a year. In addition, the operation of peaking units is typically only during peak electric demand periods, which normally occur less than 12 to 14 hours per day (i.e., 7 a.m. to 9 p.m.). For the purpose of modeling it was assumed that all units operate for 24-hours a day at 100-percent load. When these facts are taken together, the predicted impacts for both facilities are extremely conservative.

Table 6-2a. Maximum Predicted Pollutant Concentrations for the North Pond Energy Park and South Pond Energy Park Projects Compared to the EPA PSD Class II Significant Impact Levels

Pollutant	Averaging Time	Maximum Predicted Concentrations ($\mu\text{g}/\text{m}^3$) by Operating Load and Air Inlet Temperature ^a									EPA Class II Significant Impact Levels ($\mu\text{g}/\text{m}^3$)
		Base Load			75% Load			50% Load			
		32°F	59°F	95°F	32°F	59°F	95°F	32°F	59°F	95°F	
Simple/Combined Cycle Operation ^b											
SO ₂	Annual	0.217	0.216	0.204	0.213	0.215	0.197	0.185	0.178	0.163	1
	24-Hour	2.18	2.29	2.22	2.52	2.82	3.30	3.46	3.37	3.24	5
	3-Hour	7.1	16.5	16.3	18.5	19.0	17.9	16.2	15.5	14.5	25
PM ₁₀	Annual	0.147	0.150	0.151	0.159	0.164	0.155	0.152	0.150	0.141	1
	24-Hour	1.53	1.62	1.73	1.92	2.64	3.07	3.31	3.28	3.24	5
NO ₂ ^c	Annual	0.881	0.881	0.879	0.879	0.879	0.877	0.877	0.876	0.875	1
CO	8-Hour	76	76	76	76	76	76	76	76	76	500
	1-Hour	208	208	208	208	208	208	208	208	208	2,000

^a Concentrations are based on highest predicted concentrations using five years of meteorological for 1987 to 1991 of surface data from the National Weather Service stations at the Tampa International Airport and upper air data from Ruskin.

^b Modeled worst case scenario consisting of two combined cycle and three simple cycle combustion turbines using fuel oil and two natural gas fired auxiliary boilers.

^c NO₂ concentrations derived from the ozone limiting method as described in Section 6-4.

Table 6-3a. Maximum Predicted Pollutant Concentrations for the North Pond Energy Park and the South Pond Energy Park Projects Compared to the EPA Class II Significant Impact Levels, PSD Class II Increments, and AAQS

Pollutant	Averaging Time	Maximum Predicted Concentration ($\mu\text{g}/\text{m}^3$)	Receptor Location		Time Period (YYMMDDHH)	EPA Class II Significant Impact Levels ($\mu\text{g}/\text{m}^3$)	PSD Class II Increments ($\mu\text{g}/\text{m}^3$)	AAQS ($\mu\text{g}/\text{m}^3$)
			Direction (degree)	Distance (m)				
<u>Simple/Combined Cycle Operation</u>								
SO ₂	Annual	0.217	305	9279	91123124	1	25	60
	24-Hour	3.46	120	200	91021524	5	91	260
	3-Hour	19.0	350	8762	91031009	25	512	1,300
PM ₁₀	Annual	0.164	10	1900	89123124	1	17	50
	24-Hour	3.31	120	200	91021524	5	30	150
NO ₂	Annual	0.881	120	200	87123124	1	25	100
CO	8-Hour	76	120	200	90040424	500	NA	10,000
	1-Hour	208	120	190	91112321	2,000	NA	40,000

Note: NA = Not Applicable
YYMMDDHH = Year,Month,Day,Hour Ending

Table 6-4a. Maximum Predicted Concentrations due to North Pond Energy Park and the South Pond Energy Park at the Chassahowitzka National Wilderness Area Class I Area

Pollutant	Concentrations ^a ($\mu\text{g}/\text{m}^3$) for Averaging Times				
	Annual	24-Hour	8-Hour	3-Hour	1-Hour
<u>Distillate Fuel Oil - 3SC Units and 2CC Units at Two Facilities</u>					
Sulfur Dioxide (SO ₂)	0.011	0.22	0.424	0.632	0.728
Nitrogen Dioxide (NO ₂)	0.007	0.294	0.776	1.14	1.42
Particulates (PM ₁₀)	0.006	0.125	0.238	0.329	0.37
Carbon Monoxide (CO)	0.014	0.199	0.316	0.519	0.637
<u>Distillate Fuel Oil - 5 SC Units at Two Facilities</u>					
Sulfur Dioxide (SO ₂)	0.01	0.191	0.435	0.663	0.79
Nitrogen Dioxide (NO ₂)	0.009	0.316	0.911	1.47	1.73
Particulates (PM ₁₀)	0.003	0.043	0.094	0.148	0.185
Carbon Monoxide (CO)	0.013	0.205	0.351	0.539	0.724

^a Impacts predicted with the CALPUFF model using 1990 windfield data and a Central Florida model created with CALMET.

Note: SC = Simple Cycle Operation
CC = Combined Cycle Operation

Table 6-5a. Summary of Maximum Pollutant Concentrations Predicted Using CALPUFF for North Pond Energy Park and South Pond Energy Park Compared to the EPA Class I Significant Impact Levels and PSD Class I Increments

Pollutant	Averaging Time	Maximum Predicted Concentration ($\mu\text{g}/\text{m}^3$)	EPA Class I Significant Impact Levels ($\mu\text{g}/\text{m}^3$)	PSD Class I Increments ($\mu\text{g}/\text{m}^3$)
<u>Distillate Fuel Oil Firing in 3 SC Units and 2 CC Units</u>				
SO ₂	Annual	0.0110	0.1	2
	24-Hour	0.22	0.2	5
	3-Hour	0.63	1.0	25
PM ₁₀	Annual	0.0060	0.2	4
	24-Hour	0.13	0.3	8
NO ₂	Annual	0.007	0.1	2.5
<u>Distillate Fuel Oil Firing in 5 SC Units</u>				
SO ₂	Annual	0.0100	0.1	2
	24-Hour	0.191	0.2	5
	3-Hour	0.66	1.0	25
PM ₁₀	Annual	0.003	0.2	4
	24-Hour	0.04	0.3	8
NO ₂	Annual	0.009	0.1	2.5

Table 7-5a. Predicted Visibility Impairment^a (%) at the Chassahowitzka PSD Class I Area - South Pond Energy Park, North Pond Energy Park, and Both Facilities

	South Pond Energy Park		North Pond Energy Park		Both Facilities	
	2SC/1CC	3SC	1SC/1CC	2SC	3 SC/2 CC	5 SC
Oil-Firing	3.26	3.71	2.2	2.76	5.38	6.36
Criteria	5.0	5.0	5.0	5.0	5.0	5.0

^a Predicted with CALPUFF Version 5.4 with a Central Florida CALMET Wind Field, 1990. Impairment predicted using CALPOST with hourly RH data and background extinctions provided by FWS/NPS (8/00).

Note: SC = Simple Cycle CT operation.
CC = Combined Cycle CT operation.