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January 27, 1989

MEMORANDUM

SUBJECT: Review of Craven County Wood Energy Project

FROM: Allen C. Basala, Chief
Economic Analysis Section, ASB (MD-12)

TO: Bruce P. Miller, Chief
Air Programs Branch, Region IV

We reviewed the documentation on the subject project regarding its economic viability with non-catalytic ammonia reduction of NOx controls. We find the arguments neither unique nor convincing.

In reaching this conclusion, we had no quarrel with the analytical framework. The discounted cash flow methodology is in our judgement appropriate. However, sensitivity analysis on the revenue and fuel cost assumptions together with interest rate and leverage factors (e.g., debt/equity mix and depreciation schedules) resulted in findings counter to those in the applicant's analysis. In particular, the project could under certain yet undramatic conditions be economically viable with the NOx controls. Resolution of course requires verification/validation of the plausibility of applicant's assumptions regarding the aforementioned variables.

To not burden the applicant nor the State permitting authority, we provided a list of contacts who could provide unbiased evidence regarding those variables.

Frank Bunyard of my staff performed our analysis and helped develop the list of contacts. His attached memo provides further details of the analysis and the list of contacts.

Attachment

cc: W. Aronson
J. Calcagni
B. Jordan
G. McCutchen
P. Wilms (NCDNR-Archdale Building)

January 27, 1989

MEMORANDUM

SUBJECT: Discounted Cash Flow (DCF) Analysis for Craven County
Project New Source Review

FROM: Frank L. Bunyard
Economic Analysis Section, ASB, AQMD (MD-12)

TO: Allen C. Basala, Chief
Economic Analysis Section, ASB, AQMD (MD-12)

Per your request, I have reviewed the DCF submitted with the permit application for New Source Review under the Prevention of Significant Deterioration regulations.

I have conducted a partial sensitivity analysis to test assumptions on selected key variables. One of the important results was that allowing for constant revenues over 15 years does make the project with thermal deNOx feasible for both target rate of return and debt service coverage.

The most important factors subject to scrutiny are concerned with the following:

- * The revenue stream over the project life, particularly the assumed rates for the years 2001 through 2005.
- * The escalation rate for wood waste prices (i.e., wood waste price of \$11 per ton rises to \$21/ton in 2005).
- * The depreciation schedule assumed for the analysis (i.e., write-off of equipment in 5 years.)
- * The inconsistent cost of capital for base plant (7.5%) and thermal deNOx (11.5%).

To reiterate our teleconference discussion, there are two points regarding the analysis that seem to be counter intuitive with reality. I do not believe the project is viable that shows declining revenues with rising fuel costs over time, the thermal deNOx controls notwithstanding. Secondly, we do not believe that prices for waste wood would escalate at the rate as assumed. Given that wood wastes represent an undesirable commodity, namely the worst part of the tree, we would think that prices for residual wood (chips and saw dust) would continue to be relatively flat in the Southeast U.S., as they have been historically.

I would recommend the following contacts for providing accurate answers to interject a more realistic scenario in the analysis:

- (a) North Carolina Utilities Commission, Electric Division for renegotiation of utility rates on rate schedules (e.g., CSP-6c). Phone (919) 733-2267
- (b) Phillip Badgev (TVA), Southeast Biomass Program, Mussel Shoals, Alabama for information on costs and availability for wood wastes. Phone (205) 386-3086.

Also, Robert Brooks (TVA), Norris, Tennessee. Project manager for a computer model of availability and costs for forest resources for the Southeast. Phone (615) 632-1513.

Also, Fred Allen, Georgia Forestry Commission, Macon, Georgia. Phone (912) 744-3357.

- (c) Refer to the 1986 IRS (or later years) Tax Code for depreciation schedules.

I have followed up on some of these contacts listed herein and have found that the Craven Project assumptions on revenues and fuel costs are very pessimistic or conservative. It would appear that the scenario portrayed in the Craven County project shows that the thermal deNOx represents the knife-edge for project feasibility.

In conclusion, I would recommend that the documentation for the Craven County Project provide more substantive justification for the assumptions concerning the key variables discussed in this analysis. As the analysis stands, the findings are not convincing as a test of infeasibility.