FINAL DETERMINATION

Air Construction Permit
Jacksonville Lime, LLC
Lime Manufacturing Facility
DEP File No. 0310583-001-AC (PSD-FL-426)

PERMITTEE

Jacksonville Lime, LLC
Post Office Box 37
Saginaw, AL 35137

PERMITTING AUTHORITY

Florida Department of Environmental Protection (Department)
Division of Air Resource Management
Office of Permitting and Compliance (OPC)
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

PROJECT

DEP File No. 0310583-001-AC
Jacksonville Lime, LLC
Lime Manufacturing Facility
Duval County

Jacksonville Lime, LLC (Carmeuse Lime & Stone and Keystone Properties Joint Venture) will construct and operate a lime manufacturing facility, which will be located in Duval County at 1915 Wigmore Street in Jacksonville, Florida.

The project consists of the construction of two vertical lime kilns and associated material and fuel handling equipment. Each kiln will have a maximum lime production rate of 396 tons per day and will be fueled with natural gas, coal, petroleum coke, and wood chips.

A Prevention of Significant Deterioration (PSD) review and determinations of Best Available Control Technology (BACT) were required for the following pollutants pursuant to the Rule 62-212.400, Florida Administrative Code (F.A.C.): carbon monoxide (CO), nitrogen oxides (NO_X), sulfur dioxide (SO_2), particulate matter (PM), PM with a mean particle diameter of 10 microns or less (PM_{10}) and PM with a mean particle diameter of 2.5 microns or less ($PM_{2.5}$). Details of the project are provided in the application and the Department's Technical Evaluation and Preliminary Determination.

The project is subject to 40 Code of Federal Regulation Part 63 (40 CFR 63) Subpart AAAAA – National Emissions Standards for Hazardous Air Pollutants (NESHAP) - Lime Manufacturing Plants. NESHAP Subpart AAAAA The project is subject to 40 CFR 60 Subpart OOO – Standards of Performance for New Stationary Sources (NSPS) - Non-Metallic Mineral Processing Plants. Link to NSPS Listing

NOTICES AND PUBLICATION

The Department distributed a major stationary source air construction (PSD) draft permit package on December 31, 2013. Link to Project Documents Jacksonville Lime published notice of the Department's Intent to Issue Air Permit in The Florida Times Union on January 3, 2014. Published Notice

On January 14 Jacksonville Lime, LLC requested an extension of time to file a petition for an administrative hearing. According to the request, Jacksonville Lime *"reviewed the intent to issue the construction permit as well as the proposed conditions of the permit and is currently working with the staff at FDEP to resolve several issues regarding rule applicability to some nuisance source dust collectors to be constructed on site"*. Petition Extension Request No issues were identified regarding the lime kilns; the key emissions units that triggered PSD review for NO_X, SO_2, CO and the condensable fractions of PM_{10} and $PM_{2.5}$. On February 19, the Department's order (granting the extension request) expired and Jacksonville Lime did not request further extension. Order Granting Request

No requests for administrative hearings or requests for extensions of time to file a petition for administrative hearing were received from the public.

COMMENTS

On January 9 Jacksonville Lime submitted preliminary comments regarding the various materials handling emission points and requesting clarification in the permit as to rule applicability. Jax Lime Comments 01-09 On January 13 Jacksonville Lime submitted drawings to clarify the purpose and location of each collector and control. Jax Lime Drawings On January 23 Jacksonville Lime submitted final comments summarizing their overall requests. Jax Lime Comments 01-23 The focus was on the nuisance dust collectors and overall requests (for clarity) to identify (assign emissions unit identification numbers) to the emissions points within the limestone handling process and to separate those emissions units according to process. No comments were submitted regarding the kilns.

On January 31 Alpha Three Consulting, LLC (Alpha3) submitted comments "on behalf of the interested party that Alpha Three Consulting, LLC represents". Link to Alpha3 Comments The comments also included a request to the Department to reissue the permit as a draft, require another public notice and hold a public meeting.

No other comments were received, including EPA Region 4, who were provided with the draft permit package and had previously reviewed with the Department the modeling submitted by the applicant. For reference, the EPA Region 4 office has been reviewing a greenhouse gas (GHG) PSD permit application for the same project since June 2012 and is very familiar with the project details. Link to EPA Jax Lime

The comments of Jacksonville Lime and Alpha3 are addressed below in the order received.

I. REVIEW OF COMMENTS FROM JACKSONVILLE LIME

The key Jacksonville Lime, LLC comments from the 1/09, 1/13 and 1/23 submittals are paraphrased *(in italics)* below and followed by the Department's response.

A. COMMENTS IN SUBMITTAL FROM JACKSONVILLE LIME DATED JANUARY 9, 2014

A.1. Draft Permit, Section 3.B., Specific Condition 15, Bag Leak Detector System. *As previously requested, please remove reference to the Bag Leak Detector System (BLDS), as Jacksonville Lime has opted to use differential pressure as continuous parametric monitoring.* Jax Lime Comments 01-09

Department Response. The Department notes that none of the applicant's comments relate to emissions from the key lime kiln stacks (Emissions Units (EU) 001 and 002), which are the main sources of emissions. For example, in the case of the kilns, the permit required a continuous opacity monitoring system (COMS) in lieu of a BLDS as provided by NESHAP Subpart AAAAA. Virtually all requested changes relate to PM emissions from fuel, stone and product handling operations.

The Department restructured the fuel and material handling portions of the permit according to the key applicable regulation. The previous emissions Units (EU 003 - 016) have been renumbered and redefined by specific operation and function as EU 003 - 022.

Where allowed by the raw material handling provisions of NSPS Subpart OOO or NESHAP Subpart AAAAA, the Department has clarified that quarterly visible emission testing is required for Limestone Material handling Operations. EPA Method 22 – Fugitive Opacity shall be used to demonstrate compliance with a standard of 5 percent (%) opacity. This applies to EU 003 to 011 in the final permit.

As requested and as allowed by NESHAP Subpart AAAAA, the Department will replace the BLDS requirement with a differential pressure monitoring system (DPMS). This applies to the four lime product baghouses now listed as EU 012 – 015 which handle emissions from the drag chain, bucket elevator, lime bins, lime screen, lime screw conveyors, kiln reject bins and belt conveyor.

Similarly, the Department will replace the BLDS requirement with DPMS requirements for all baghouses associated with wood fuel and coal/coke handling operations now listed as EU 016 – 022.

A.2. Sources Subject to NESHAP Subpart AAAAA. *(Besides the lime kilns) the following sources are subject to NESHAP Subpart AAAAA and applicable requirements for Processed Stone Handling (PSH) as identified in each of the corresponding tables from the regulation.*

LIMESTONE HANDLING & PROCESSING					
ID	**Description**	**Capacity**	**Emissions**	**Federal Requirements**	**Control Device**
LB-232	Charging Bin	120 tons	Enclosed	63 Subpart AAAAA	DC-904
LB-233	Charging Bin	120 tons	Enclosed	63 Subpart AAAAA	DC-904
BC-225	Belt Conveyor 225	150 tons/hour		63 Subpart AAAAA	DC-904
BC-230	Belt Conveyor 230	150 tons/hour		63 Subpart AAAAA	DC-904
SK-240	Skip Hoist 240	150 tons/hour		63 Subpart AAAAA	DC-904
SK-250	Skip Hoist 250	150 tons/hour		63 Subpart AAAAA	DC-904
SB-241	Kiln #1 Surge Bin		Enclosed	63 Subpart AAAAA	
SB-244	Surge Bin 244	20 tons	Enclosed	63 Subpart AAAAA	
SB-245	Surge Bin 245	20 tons	Enclosed	63 Subpart AAAAA	
SB-251	Kiln #2 Surge Bin		Enclosed	63 Subpart AAAAA	
SB-254	Surge Bin 254	20 tons	Enclosed	63 Subpart AAAAA	
SB-255	Surge Bin 255	20 tons	Enclosed	63 Subpart AAAAA	

Department Response. The table is very useful in helping to provide a method to consolidate numerous emission points into a single EU where feasible. For example, the first six rows represent six limestone handling emission points that vent into a single dust collector, which in turn comprises EU 006 that is subject NESHAP Subpart AAAAA. Similarly, surge bins described as SB-241, SB-244 and SB-245 are grouped and now identified as EU 004 – Kiln No. 1 Surge Building. SB-251, SB-254 and SB-255 are grouped and now identified as EU 005 – Kiln No. 2 Surge Building. EU 004 and 005 are enclosed and wet dust suppression is applied within the enclosures.

A.3. Sources Subject to NSPS Subpart OOO. *The following sources are subject to NSPS Subpart OOO and applicable requirements as identified below in each of the corresponding tables from the regulation.*

LIMESTONE HANDLING & PROCESSING					
ID	**Description**	**Capacity**	**Emissions**	**Federal Requirements**	**Control Device**
BC-110	Belt Conveyor 110	3500 tons/hour	Fugitive	NSPS Subpart OOO	
BC-125	Belt Conveyor 125	3500 tons/hour	Fugitive	NSPS Subpart OOO	
BC-120	Belt Conveyor 120	3500 tons/hour	Fugitive	NSPS Subpart OOO	
BC-200	Belt Conveyor 200	100 tons/hour	Fugitive	NSPS Subpart OOO	

Department Response. BC-110 conveys raw material from a stacker conveyor. The raw material is then diverted straight to a pile or onto BC-125 or BC-120. Two of the streams are conveyed by BC-125 and BC-120 to other live piles. BC-200 conveys raw material through a reclaim tunnel, past a belt scale and to EU 006. The four belt conveyors identified in the table will each be assigned EU 007, 008, 009 and 010, respectively. The Department concurs they are subject to NSPS Subpart OOO and not subject to NESHAP Subpart AAAAA.

A.4. Remaining Sources Not Subject to NESHAP AAAAA or NSPS OOO. *The remaining emissions sources and dust collection devices (listed below) are not subject to any federal requirement. Given that these sources are low volume high-efficiency dust collectors, it would seem that routine emissions testing of these units would not be warranted, so long as routine visible emissions observations are conducted and the maintenance records for each dust collector are maintained. In review of Florida Administrative Code 62-297.620 (4), it appears that this criteria is/can be considered in the determination of routine compliance demonstration.* Link to 62-297, F.A.C.

Consistent with the stipulations of this provision, all of the nuisance sources are subject to a 5% visible emissions standard, and none of these sources has a potential to emit significant volumes of particulate matter. The spreadsheet below projects the emissions from each individual emissions source.

Source EU ID	Item #	Dust Collector (Source Controlled)	Filtered Material	PM Emissions	PM-10 Emissions	PM-2.5 Emissions
BM-3	FA-716	Wood Chip Raw Storage Collector	Wood Dust	0.57	0.57	0.29
BM-4	FA-726	Wood Chip Process Dust Collector Stack	Wood Dust	1.89	1.89	0.95
BM-6	FA-736	Dosing Bin #1	Coke/Wood Dust	1.88	1.88	0.94
BM-7	FA-906	Dosing Bin #2	Coke/Wood Dust	1.88	1.88	0.94
BM-9	FA-411	Lime Handling under Kilns	Lime Dust	3.75	3.75	1.88
BM-11	FA-436	Lime Crusher Bldg.	Lime Dust	1.31	1.31	0.66
BM-12	FA-451	Top of Lime Silos/Screening	Lime Dust	2.44	2.44	1.22
BM-13	FA-471B	Lime Silo Truck Loadout Spouts	Lime Dust	0.07	0.07	0.04
BM-14	FA-472B	Lime Silo Truck Loadout Spouts	Lime Dust	0.07	0.07	0.04
BM-15	FA-473B	Lime Silo Truck Loadout Spouts	Lime Dust	0.07	0.07	0.04
BM-16	FA-474B	Lime Silo Truck Loadout Spouts	Lime Dust	0.07	0.07	0.04
BM-17	FA-486	Reject Bin Top	Lime Dust	0.33	0.33	0.16
BM-21	FA-480B	Lime Reject Bin Loadout	Lime Dust	0.14	0.14	0.07
BM-23	FA-416	Stone Bin Reject Bin Loadout	Limestone Dust	0.14	0.14	0.07
BM-27	FA-606	Coke Conveyor Belt Transfer	Coke Dust	0.22	0.22	0.11
BM-28	FA-609	Coke Raw Storage Bin	Coke Dust	0.16	0.16	0.08
BM-30	FA-631	Coke Process Dust Collector/FD Stack	Coke Dust	2.54	2.54	1.27
BM-31	FA-903B	Lime Railcar Loadout	Lime Dust	0.14	0.14	0.07
BM-32	FA-905	Stone Feed Reject Bin	Limestone Dust	1.88	1.88	0.94

Department Response. The Department concurs that the collectors listed in the table are not subject to NSPS Subpart OOO or to NESHAP Subpart AAAAA. The existence of such collectors is acknowledged in the permit table (pages 3-4) that lists EUs, but the collectors are not actually assigned EU numbers. The Department will include a list of the collectors in a new Appendix G – Nuisance Dust Collectors.

A.5. *The following emissions sources do not operate sufficient time to perform emissions testing:*

BM-13	Lime Silo Truck Loadout Spouts
BM-14	Lime Silo Truck Loadout Spouts
BM-15	Lime Silo Truck Loadout Spouts
BM-16	Lime Silo Truck Loadout Spouts
BM-17	Reject Bin Top
BM-21	Lime Reject Bin Loadout
BM-27	Coke Conveyor Belt Transfer
BM-28	Coke Raw Storage Bin
BM-31	Lime Railcar Loadout
BM-32	Stone Feed Reject Bin

Department Response. The Department concurs and will include these points in the referenced Appendix G – Nuisance Dust Collectors.

A.6. Sources Subject to NESHAP Subpart AAAAA and NSPS Subpart OOO. *A specific comment was not submitted. However a table was attached that, among other things, isolated eight emission points that are vented through Baghouse DC-904. The emission points include Multiple Belt Conveyors, Charging Bins and Skip Hoists located between the reclaim tunnel and the Kiln 1 and Kiln 2 surge buildings (EU 004 and 005). Two of the emission points are subject to NSPS Subpart OOO and six are subject to NESHAP Subpart AAAAA.*

LIMESTONE HANDLING & PROCESSING					
ID	**Description**	**Capacity**	**Emissions**	**Federal Requirements**	**Control Device**
BC-205	Belt Conveyor 205	100 tons/hour	Fugitive	NSPS Subpart OOO	DC-904
SN-210	Screen 210	100 tons/hour	Enclosed	NSPS Subpart OOO	DC-904
LB-232	Charging Bin	120 tons	Enclosed	63 Subpart AAAAA	DC-904
LB-233	Charging Bin	120 tons	Enclosed	63 Subpart AAAAA	DC-904
BC-225	Belt Conveyor 225	150 tons/hour		63 Subpart AAAAA	DC-904
BC-230	Belt Conveyor 230	150 tons/hour		63 Subpart AAAAA	DC-904
SK-240	Skip Hoist 240	150 tons/hour		63 Subpart AAAAA	DC-904
SK-250	Skip Hoist 250	150 tons/hour		63 Subpart AAAAA	DC-904

Department Response. The eight emission points will be assigned to EU 006. EU 006 will be subject to a visible emission standard of 5% opacity to simultaneously comply with the BACT determination, requirements of NSPS Subpart OOO, NESHAP AAAAA and the PM Reasonable Available Control Technology (RACT) standards at Sections 62-296.711 and 62-296.712, F.A.C., applicable in the general area of the Port of Jacksonville.

A.7. Wood Chip Processing and Handling and Processing. *A specific comment was not submitted. However, a table was attached to the comments received January 9, 2014 that identified three separate dust collectors, each of which controls emissions from several emission points.*

WOOD CHIP PROCESSING & HANDLING					
ID	**Description**	**Capacity**	**Emissions**	**Federal Requirements**	**Control Device**
SC-701	Screw Conveyor 701				DC-715
HC-705	High Angle Conveyor				DC-715
BN-710	Raw Storage Bin 710	168 tons			DC-715
DB-718	Drag Chain Conveyor		Enclosed		DC-725
HM-722	Wood Grinding Mill		Enclosed		DC-725
BL-730	Pneumatic Conveyor Blower		Enclosed		DC-725
PC-730	Pneumatic Conveyor	6.5 tons/hour			DC-735
BN-720	Wood Chip Storage Bin	50 tons			DC-735
RB-901	Ribbon Mixer 901				DC-735
DB-901	Dosing Bin				DC-735
BL-917	Pneumatic Conveyor Blower				DC-735

Department Response. The Department assigned EU 016 to the stack ST-901 associated with Baghouse 725 that controls emissions from drag chain conveyor DB-718, wood grinding mill HM-722 and pneumatic conveyor blower BL-730. EU 017 is assigned to Baghouse DC-715 that controls emissions from screw conveyor SC-701, high angle conveyor HC-705 and raw storage bin BN-710. EU 018 is assigned to Baghouse DC-735 that controls pneumatic conveyor PC-730, wood chip storage bin BN-720, ribbon mixer RB-901, dosing bin DB-901 and pneumatic conveyor blower BL-917.

EUs 016 - 018 are subject to the Department's BACT determinations. EUs 017 and 018 are also subject to the RACT rules at Sections 62-296.700 and 711, F.A.C. The requirements include a visible emissions standard of 5% opacity and a $PM/PM_{10}/PM_{2.5}$ emission standard of 0.032 grams per dry standard cubic meter (g/dscm), which equals 0.014 grains per dry standard cubic foot (gr/dscf).

A.8. Coal/Coke Processing and Handling. *A specific comment was not submitted. However, a table was attached that identified four separate dust collectors, each of which controls emissions from several emission points.*

COAL / COKE PROCESSING & HANDLING					
ID	**Description**	**Capacity**	**Emissions**	**Federal Requirements**	**Control Device**
BE-901	Bucket Elevator 901	50 tons/hour	Enclosed		DC-605
BC-807	Belt Conveyor 807	50 tons/hour	Enclosed		DC-605
SH-901	Dump Hopper				DC-605
BN-910	Coal/Coke Bin 910	500 tons	Enclosed		DC-608
BF-614	Weigh Belt Feeder	8 tons/hour	Enclosed		DC-608
BM-901	Bowl Mill 901		Enclosed		DC-630
CFR-820	Classifier 820		Enclosed		DC-630
AL-727	Pneumatic Feeder 727		Enclosed		DC-630
BL-901	Pneumatic Conveyor		Enclosed		DC-630

COAL / COKE PROCESSING & HANDLING					
ID	**Description**	**Capacity**	**Emissions**	**Federal Requirements**	**Control Device**
SC-835	Screw Conveyor 835	8 tons/hour	Enclosed		DC-635
BN-911	Coal / Coke Storage Bin	50 tons			DC-906
RB-901	Ribbon Mixer				DC-906
DB-902	Dosing Bin				DC-906
BL-925	Pneumatic Conveyor Blower				DC-906
HR-641	Coal / Coke Heater		Enclosed		

Department Response. The Department assigned EU 019 to the stack ST-901 associated with Baghouse DC-630 that controls emissions from bowl mill BM-901, classifier CFR-820, pneumatic feeder AL-727 and pneumatic conveyor BL-901. The Department assigned EU 020 to Baghouse DC-605 that controls emissions from bucket elevator BE-901, belt conveyor BC-807 and dump hopper SH-901. EU 021 is assigned to Baghouse 608 that controls emissions from coal/coke bin BN-910 and weigh belt feeder BF-614. EU 022 is assigned to Baghouse DC-906 that controls emissions from coal/coke storage bin BN-911 and ribbon mixer RB-901.

B. COMMENTS IN SUBMITTAL FROM JACKSONVILLE LIME DATED JANUARY 13, 2014

B.1. Process Flow diagrams. *The attached flow diagrams reflect the plant configuration. These are all of the sources that were modeled and are referenced in Part 2 of the PSD permit application that was submitted in October 2013.* Jax Lime Drawings

Department Response. The Department reviewed the drawings and used them with the tables attached to the submittal of January 9 to update the descriptions of the emission units that emit PM. Since the modeling submitted in October 2013 was performed in accordance with the configurations in the drawings, there is no effect on the ambient impacts due to the update of the descriptions.

C. COMMENTS IN SUBMITTAL FROM JACKSONVILLE LIME DATED JANUARY 23, 2014

C.1. PM RACT. *Section 62-296.700(2)(f), F.A.C. exempts the following sources from RACT. The section states "any moveable drop transfer point where the discharge point and receiving point of the materials being handled must be moved in relationship to each other, either continuously or intermittently, such that enclosure of the drop transfer point with a device to control emissions of PM is not practicable".*
Jax Lime Comments 01-23 Link to 62-296, F.A.C.

BM-13	FA-471B	Lime Silo Truck Loadout Spouts
BM-14	FA-472B	Lime Silo Truck Loadout Spouts
BM-15	FA-473B	Lime Silo Truck Loadout Spouts
BM-16	FA-474B	Lime Silo Truck Loadout Spouts
BM-21	FA-480B	Lime Reject Bin Loadout
BM-31	FA-903B	Lime Railcar Loadout

Department Response. Department concurs that the sources listed in the foregoing table are not subject to the PM RACT rules.

C.2. Limestone Handling Process. *For clarity, please identify emission points in the limestone handling process.*

Department Response. The emission points in the limestone handling process have been identified in the final permit.

C.3. Categorization of Emissions Units. *For clarity, please separate emissions units according to process.*

Department Response. The emission points have been separated according to process. The original permit had only two process sections. One covered the kilns and the other covered all material and fuel handling operations. The final permit has four sections covering: Limestone Calcination; Limestone Material Handling Operations; Lime Material Handing Operations; and Fuel Handling Operations. Additionally, the nuisance collectors were addressed in Appendix G as well as the small sources not subject to the PM RACT rule.

II. REVIEW OF COMMENTS FROM ALPHA THREE CONSULTING, LLC

The reader is referred to the following link for the entire submittal by Alpha Three Consulting, LLC (Alpha3). Link to Alpha3 Comments Abbreviated and paraphrased comments from the submittal are provided *(in italics)* below and followed by the Department's response.

A. COMMENTS IN COVER LETTER DATED JANUARY 31, 2014 SUBMITTED BY ALPHA3.

A.1. New Notice and Comment Period. *The purpose of this letter is to formally request that FDEP notice and schedule a new public comment period for the proposed permit on behalf of the interested party that Alpha Three Consulting, LLC represents.*

Department Response. A new public notice and comment period will not be required since the comments received will not result in a significant change to the draft permit as discussed further below.

A.2. Public Meeting Request. *We respectfully request a public meeting on behalf of the interested party that we represent to allow an adequate opportunity to address deficiencies in the Draft Permit and potential adverse impacts on ambient air quality, Class I areas, and human health.*

Department Response. The Department disagrees with the comment that the Draft Permit is deficient. Improvements have been made following the input of the applicant who requested a logical reorganization of material handling sections by applicable standards. The result is that the permit is easier for the operator to understand and for Department compliance inspector to perform their functions. The Final Permit provides greater clarity by defining each dust collector and its function.

The modeling and technical analysis conducted by the Department clearly indicate that the project will not cause or contribute to a violation of an ambient air quality standard or allowable increment.

As detailed in the Department's Technical Evaluation and Preliminary Determination (TEPD) document, the relatively small increases from the project occur within a steady trend of thousands of tons/year of emissions reductions in the county, hundreds of thousands of tons/year in statewide reductions and millions of tons/year reductions in the Southeast U.S. The Department applied the requirements of BACT as required by its rules.

The trend of improvements in ambient ozone, $PM_{2.5}$, nitrogen dioxide (NO_2) and SO_2 (as documented by the extensive monitoring system in Duval County) will not be interrupted, let alone reversed, by the relatively small emissions increases from the project.

The TEPD provides ample discussion leading to the conclusion that there will not be adverse impacts on Class I areas. The National Ambient Air Quality Standards (NAAQS) are protective of human health. The ambient air quality is and will remain in attainment with the recent and very stringent

NAAQS for such pollutants as 1-hour SO_2, 1-hour NO_2, ozone and $PM_{2.5}$. The extensive monitoring system will continue to document this finding.

The Department is not aware of actual interest in a public meeting except by Alpha3's anonymous client. The Department has determined that it is sufficient to address the comments in this Final Determination and that it is not necessary to hold a public meeting.

A.3. Draft Permit not Representative of Final Permit. *The Draft Permit available for public review is not representative of the permit FDEP intends to issue to Jacksonville Lime as during the comment period, FDEP has been making significant revisions to the Draft Permit that have not been made available for public review and comment.*

For reference, the changes made between the draft and final permits relate to clarification of the distribution of approximately 20 tons/year of material and product handling dust emissions among the numerous emissions points and emissions units described in the responses to Jacksonville Lime's comments addressed in the previous section. By contrast, the kilns are the source of approximately 1,000 tons/year and are the sources that actually subjected the project to PSD review. Alpha3 is not claiming that the Department is making any changes to the key emissions units.

The improvements made to the permit are not significant changes. The only changes (improvements) made to the sections that include the two vertical lime kilns are being made after reviewing the changes suggested by Alpha3. Total project emissions will not increase compared with the estimates given in the application or in the draft permit or the values used by the applicant for modeling impacts.

B. COMMENTS IN THE ENCLOSURE PROVIDED WITH THE COVER LETTER.

B.1. Significant Revisions to Permit's Section Related to Material Handling Sources. *FDEP has indicated that the Department is re-writing the Draft Permit, specifically the sections related to the Materials Handling Sources, Subpart OOO and Subpart AAAAA. The Draft Permit fails to present sufficient information to demonstrate that the EPA Top-Down BACT Procedures were followed for establishing emission limits for the Material Handling Sources. Further, the Draft Permit does not sufficiently identify the individual emission sources and specific emission limits that are to be enforceable in a manner that allows for review of such emission limits during the Public Comment period. As a result of these significant deficiencies, the Draft Permit is not "complete"; and therefore, another Public Notice and Comment Period. The public should have an opportunity to review and provide comments on any significant changes to the Draft Permit.*

Department Response. Refer to responses to comments A.1, A.2 and A.3 above.

B.2. PSD Permit Issuance without Addressing GHG Emissions. *The Draft Permit does not address GHG emissions…… It is not clear in the Draft Permit how the Permit will be affected in the event that EPA does not agree with the process as presented in the Draft Permit, or if there are other factors that may change or affect the information presented in the Draft Permit. The Public Notice and Comment Period and the public meeting should be scheduled after GHG emissions are incorporated into the Draft Permit……. The public should have an opportunity to provide comments on the proposed GHG BACT determination and any other changes to the Draft Permit or Facility operations that may result from the GHG BACT.*

Department Response. EPA Region 4 lists seven GHG applications in its docket available at Link to Region 4 GHG Docket. Recently, EPA issued Final GHG Permits to FPL Port Everglades, TECO Polk Power, and Shady Hills Power Company. Each was issued after the Department had already issued air construction permits for the same project to control emissions of other pollutants. There have been no problems coordinating the efforts of the Department and EPA. Few changes have been required in any Department final permit to comport with EPA's GHG permits.

The Department's actions on the present PSD permit follow its rules and timelines. The Department is confident that the public will have an opportunity to comment on a (future) GHG BACT determination. The public will also have the opportunity to comment on future modifications, if any, of the Department's final permit that might arise from the GHG BACT.

B.3. Commencement of Construction. *According to the EPA's Request for Additional Information (RAI) letter dated April 17, 2013, the following information should be relied upon for clarification of when construction may begin: § 52.21 (a)(2)(iii) ……Issuance of the Permit prior to the GHG emissions being permitted by EPA will start the (18 month) timeline on the construction phase of the project; however, according to the EPA, the Facility will not be able to begin construction until the GHG emissions are permitted. The Permit should include an enforceable permit limit that identifies when commencement of construction may begin from the GHG BACT.*

Department Response. Permit Appendix B, Condition 3 states "issuance of this (Department) permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in this permit".

The applicant applied to the Department for a permit to construct a source, but the applicant clearly won't construct until it obtains all permits. Permit Section B, Condition 8, Source Obligation, includes the Department's enforceable condition requiring commencement of construction within 18 months following receipt of the permit. The requirements in this final PSD permit can be fully reconciled with the requirements of a future GHG PSD permit during or following the issuance of the latter permit. No change is yet indicated or required in the Department's present permit.

B.4. Draft Permit Emissions Standards for the Vertical Lime Kilns (EU 001 and EU 002). *The Emissions Standards presented in Section 3 of the Draft Permit do not specifically limit emissions on a pound per hour (lb/hour) basis for NO_X, SO_2 and CO or on a 24-hour basis for PM_{10}/$PM_{2.5}$……..The emission limits for point sources may also be represented as a concentration limit but only if an associated maximum flow rate for each source is included as an enforceable condition of the Permit. Without short-term emissions limits for each pollutant, there is no way of ensuring protection of the NAAQS and PSD Increment limits.*

Department Response. The enforceable concentration-based limits in mass per unit volume at standard conditions, coupled with fuel and limestone characteristics and enforceable lime production limitations also practicably limit lb/hour emissions. The Department is confident that the project will not cause or contribute to a violation of NAAQS and PSD increments.

B.5. PM_{10} and $PM_{2.5}$ Condensable Emissions Standards. *(Per Department rules) the Permit should include both filterable and condensable particulate matter in the BACT limits in Section 3. The Permit should also specify appropriate emissions test methods to measure both components.*

The rationale provided by Alpha3 is as follows: The Draft Permit does indicate that "NO_X is a precursor of the condensable portions of PM_{10} and $PM_{2.5}$. Therefore, the NO_X BACT determination is part of the BACT for PM_{10} and $PM_{2.5}$" and "Most condensable PM_{10} and $PM_{2.5}$ emissions from the Jacksonville Lime project will be caused by SO_2 conversion to sulfur trioxide (SO_3) in an excess air environment and then to sulfuric acid mist (SAM)…". These two pollutants do not account for the entire condensable portion, which is comprised of compounds such as ammoniated chlorides, sulfates, nitrates, volatile organic compounds (VOC) and other such species condensing at low temperature.

Department Response. The Department required testing for PM at two different temperatures from the kilns. The higher temperature will capture discrete, direct filterable PM (including PM_{10} and $PM_{2.5}$). The lower temperature test will capture the same filterable PM and virtually all of the "species

condensing at low temperature" from the lime process. Ammonium chloride (NH_4Cl) formation would require presence of ammonia (NH_3) and hydrogen chloride (HCl). The applicant will not use NH_3 for NO_X control. HCl would be thoroughly scrubbed by lime, limestone and lime kiln dust.

The Department's determination for $PM/PM_{10}/PM_{2.5}$ from the kiln was described in the Technical Evaluation as follows:

- Efficient parallel flow regenerative (PFR) kiln design to minimize pounds per ton (lb/ton) of lime;
- The (filterable) BACT PM limit of 10 milligrams per normal cubic meter at 10% oxygen (mg/Nm^3), approximately ~0.05 lb/ton, referenced to measurement at 160 $\pm$ 14 degrees Celsius (°C) to reduce direct emissions of filterable PM_{10} and $PM_{2.5}$;
- Use of a BLDS or PM detector alarm or opacity monitor and their respective criteria (leakage, alarm or opacity). (Note: The applicant selected a continuous opacity monitoring system)
- Low NO_X and SO_2 BACT determinations to minimize emissions of $PM_{10}/PM_{2.5}$ condensable species precursors; and
- Continuous Emission Monitoring System (CEMS) for SO_2 and NO_X to provide reasonable assurance of continuous low emissions of the condensable $PM_{10}/PM_{2.5}$ precursors.

The Department was able to find PM data based on both high and low temperature sampling. However, the Department was unable to find actual $PM_{10}/PM_{2.5}$ data, including condensables, or examples of commercial guarantees. The described BACT and continuous monitoring requirements for precursor NO_X and SO_2 are more logical than the implied alternative, which would be to conduct once per year measurement of PM_{10} and $PM_{2.5}$, including condensables.

B.6. Exclusion of Direct Condensable PM in Modeling. *$PM_{2.5}$ also includes secondary particulates that are formed in the complex interaction of gases, particles and the atmosphere itself to form secondary particles. PM condensable should be treated the same as direct PM_{10} and $PM_{2.5}$ filterable emissions for the purposes of demonstrating compliance with the applicable NAAQS and PSD Increment.*

Department Response. The Department has reviewed its modeling and has determined that condensable PM was sufficiently accounted for in the original estimate of direct PM used in the modeling demonstration.

Besides the Department analysis, the applicant actually followed the procedure described by Alpha3. Condensable PM was included in the modeling for the $PM_{2.5}$ and PM_{10} NAAQS and the PM increment analyses. Condensable PM would only be present in the kiln and the fuel dryer exhausts.

The filterable BACT $PM/PM_{10}/PM_{2.5}$ limit is 10 mg/Nm^3 (equivalent to approximately 0.9 lb/hour/kiln). The value modeled was 5.0 lb/hour/kiln which easily accounts for any reasonable estimate of condensable $PM_{10}/PM_{2.5}$. The modeled $PM_{2.5}$ rate was adjusted downward to account for the fraction of total PM that is controlled by fabric filters (Refer to Appendix B2 of AP-42 for calcinations and other heat reaction processes including kilns). The kiln was not a significant contributor to the receptors exceeding the significant impact level (SIL). The location of these receptors was within several hundred meters of the facility, and primarily impacted by the other material handling sources.

The fuel dryer is a very small source at 3.5 million Btu per hour heat input (lb/MMBtu). It is part of a larger coke/coal processing unit, which exhausts through the coke/coal process stack BM-30. This source will be equipped with a fabric filter. The exhaust temperature is considered to be ambient (i.e., 70 degrees Fahrenheit (°F), and the flow rate is relatively high at 11,000 standard cubic feet per minute (scfm).

The PM emissions for the fuel dryer, which include condensable and filterable particulates, are small based on AP-42 Table 1.4-2. The uncontrolled rate was estimated to be 0.0259 lb/hour. The controlled rate was estimated to be only 0.000259 lb/hour conservatively based on 99% control efficiency.

The modeled emission rate of 0.377 lb/hour was based on the filter performance specification of 0.004 gr/dscf. Since the exhaust is at ambient temperature, all of the condensables should be collected on the filter. Also, since the fuel dryer will be fired exclusively with clean natural gas, the formation of condensable particulates (ammoniated sulfates, nitrates, chlorides) would be practically nil. The total particulate emissions from the fuel heater are insignificant in comparison to the modeled emission rate.

The following graph illustrates the downward trend of ambient $PM_{2.5}$ measurements at nearby locations. This improving trend was attained concurrently with the steady trend of thousands of tons/year of precursor emissions reductions in the county, hundreds of thousands of tons/year in statewide reductions and millions of tons/year reductions in the Southeast U.S. The trend of improvements in ambient $PM_{2.5}$ as documented by the nearby monitors will not be interrupted, let alone reversed, by the relatively small emissions increases of precursors from the project.

Based on the Department's analysis and the continuation of $PM_{2.5}$ modeling at nearby locations, the Department is confident that the expectation of continued attainment of the $PM_{2.5}$ NAAQS has been thoroughly demonstrated.

B.7. Start-Up, Shutdown and Malfunction Emissions Standards. *The Permit should define the terms start-up, shutdown and malfunction (SSM) within the context of each emissions standard……. The Permit should specify for all BACT emissions standards an alternative BACT limit that applies during SSM. BACT emission limits apply at all times and may not be waived during periods of SSM……. the TESD (the Technical Evaluation) …… should contain an analysis of whether compliance with normal BACT limits is feasible during SSM. To establish a work practice standard as BACT, the TESD should identify technical or economical constraints on the application of a measurement methodology that would make the imposition of an emissions standard infeasible during SSM and provide a rationale why the control methodologies and work practices were selected.*

Department Response. The Department's general SSM requirements are contained in Section 62-210.700 (Excess emissions), F.A.C., which states: "Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration".

For this particular project, excess emissions will be included within the data used to demonstrate compliance with the BACT determinations using the NO_X and SO_2 CEMS as well as the visible emissions CEMS.

Kiln particulate emissions will be controlled by baghouses that operate at all time. This is superior to the alternative use of electrostatic precipitators (ESPs) that must be energized to work and which can trip if there are excessive CO emissions.

Cold startups occur infrequently. However, the Department will include a requirement to use only natural gas during cold kiln startups. Such startups occur over a period of several days while the brickwork within the kiln is gradually heated to the point where limestone feeding can occur. At that point, the gas burners can shut down if petcoke, coal or wood are to be used as the calcination.

Most routine maintenance can be accomplished while the kiln is in an idled or very low production mode with enough fuel use to keep the kiln hot. During such times, the emissions are likely to be less than emissions during full load operation.

The permit includes the SSM and Operation and Maintenance Plans (OMP) provisions contained in NESHAP Subpart AAAAA applicable to lime manufacturing plants. The plans will amplify the short discussion given above.

B.8. Plant Haul Road Emissions Standards. *The permit application claims that the plant haul roads will be paved. This could be considered BACT since fugitive emission sources must be included in the Permit; therefore, the Permit should at a minimum require that all in-plant haul roads be paved and swept or watered with a specified frequency and that adequate records are maintained to demonstrate compliance with these permit conditions. The Permit should also include maintenance requirements for all roads on plant property to ensure that the integrity of the roads is preserved and that fugitive emissions of PM, PM_{10} and $PM_{2.5}$ from all roads on plant property is minimized.*

Department Response. The plant roads will be paved. The Department will include a condition that requires paving and maintenance of access roadways, parking areas, manufacture area, and fuel storage yard within the lime plant boundary. The condition will be included in a new Section 3.D., Unconfined Emissions of Particulate Matter. The new section also includes the measures previously described in Section 2, Administrative Requirements, Condition 12., Emissions of Unconfined Particulate Emissions.

B.9. Modeling Fugitive Sources. *The applicant claimed that "Plant roadways will be paved. Accordingly, fugitive $PM_{10}/PM_{2.5}$ emissions due to vehicle travel on the plant roadways will be negligible, and, therefore, not included in the modeling analyses. Per FDEP recommendations, fugitive sources of $PM_{10}/PM_{2.5}$ were not included in the modeling." Review of the modeling indicates that only the following sources were included in the $PM_{10}/PM_{2.5}$ air dispersion modeling: (refer to table given in Applicant's Comment 7. above). The exclusion of fugitive sources from the ambient air quality dispersion modeling analysis is inappropriate for lime manufacturing facilities. Fugitive PM emissions in such operations are significant and have the potential to cause or contribute to exceedances of the NAAQS and PSD Increment limits. FDEP should include all fugitive emission sources of PM_{10} and $PM_{2.5}$ in the SIL, NAAQS and PSD Increment modeling.*

Department Response. The plant roads will be paved as required per new Section 3.D. The Department is satisfied that all reasonably quantifiable fugitive $PM_{10}/PM_{2.5}$ emission sources (18) were included by the applicant in the original modeling. The omitted fugitive sources referenced in the application include only haul roads. These sources will be minimized through permit conditions in response to Comment B.8 above.

B.10. Modeled Source Parameters. *Stack parameters for all equipment, including but not limited to stack heights, stack diameters, exhaust temperatures, emission rates, and exit velocities, should be included as enforceable permit conditions. These conditions are necessary to ensure protection of the NAAQS and PSD Increment limits. If significant changes are made, or modeling parameters are not representative of site conditions, the Facility should be expressly required in the Permit to document compliance with the NAAQS and PSD Increment prior to making such changes*.

Department Response. The Department will include the stack height of approximately 213 feet in height and approximately 4.8 feet in diameter in the permit. The design operating temperature is approximately 294°F. The kiln exhaust temperature tends to be relatively high for kilns that process large stone as planned by Jacksonville Lime. The exhaust temperature will vary during operation with the height of stone in the preheater operation. It will also oscillate as the two shafts are alternately loaded with stone and alternatively serve as calciner and preheat shafts. The Department has reasonable assurance that the dispersion characteristics of the stack and exhaust are sufficient to comply with the NAAQS without adding more enforceable limits such as temperature, velocity and flow rate. The Department does not typically make these parameters enforceable limitations.

B.11. Confirmation of NO_2/NO_X Ratio. *Dispersion modeling for the 1-hour NO_2 NAAQS was approved by EPA to use an NO_2/NO_X ratio of 0.14 for the vertical lime kilns. The Permit should include a requirement to confirm this value as part of the Performance Testing requirements.*

Department Response. The in-stack NO_2/NO_X value approved by EPA was conservative based on more recent information provided by the applicant and combustion principles suggesting a lower one. The Department will not include a permit requirement to confirm the value. However, the Department will obtain the NO_2/NO_X data during the annual CEMS calibration tests and will provide the information to EPA web sites that have been set up to assist permitting agencies.

B.12. Reduced Load Operations. *The ambient air dispersion modeling did not address reduced load operations. Reduced load operations generally result in lower emissions; however, the stack parameters may change (i.e. reduced flow rate), which can affect plume rise and dispersion of the pollutants, thereby increasing ground level concentrations. Exceedances of the NAAQS and PSD Increment limits may occur when stack exit velocities are reduced even with a reduced emission rate.*

Department Response. There is only one stack serving the two kilns and the applicant modeled with one kiln operating and also with two kilns operating. The Department is confident that the reasonable real-world worst case modeling scenarios were assessed were captured by the applicant when performing the modeling. The Department is confident that no exceedances of the NAAQS and PSD increments will occur during low load operation.

B.13. Modeled Facility Fence Line and Ambient Air Receptors. *The attached figure depicts the extracted the source and receptor coordinates that were analyzed in the models. These points were overlain over an aerial of the facility to confirm the UTM datum used and position of the fence line with respect to the Facility and ambient air. As shown on the figure, the eastern "fence line" is offshore up to 67 meters (220 feet) in the southeast corner of the Facility. The Technical Evaluation does not address the placement of receptors beyond the Facility's fence line; therefore, it appears that ambient air along the east property boundary was not adequately evaluated in the modeling completed. Fence line receptors should be placed along the Facility's property boundary in accordance with EPA*

modeling procedures. As discussed in the April 30, 1987 Ambient Air Memorandum published by the EPA OAQPS, air over a river is ambient air if it is not controlled by the source. EPA further states that the river does indeed form a sufficient natural boundary/barrier and that fencing is not necessary, since the ambient air policy requires a fence or other physical barrier. However, the following conditions should be met:

- *The riverbank must be clearly posted and regularly patrolled by plant security.*
- *It must be very clear that the area is not public. Any areas where there is any question (i.e., grassy areas, etc.) should be fenced and marked, even if there is a very remote possibility that the public would attempt to use this property.*

Using this memorandum as guidance, FDEP should have included as ambient air in the dispersion modeling analysis, any part of the eastern waterway not controlled by the Facility. The FDEP should also include in the Permit, an enforceable permit condition requiring control of the shore at the Facility based on the conditions presented in the EPA's April 30, 1987 memorandum.

Department Response. The combined port and owner measures in place or that will be in place are enough to thoroughly discourage if not directly prevent members of the public from exposing themselves to the theorized circumstances described by Alpha3. It is not necessary or productive for the Department to impose further measures on this security-conscious zone.

B.14. $PM_{10}/PM_{2.5}$ Modeling Results. *Due to the inadequate description of sources and applicable BACT limits in the Draft Permit and Technical evaluation for the sources at the facility other than the vertical lime kilns (stack BM-19); it is not possible to confirm the emission rates that should have been relied upon for the $PM_{10}/PM_{2.5}$ air dispersion modeling. Concerns and deficiencies with the $PM_{10}/PM_{2.5}$ modeling are listed below: (refer to listing in pages 5-7 of Alpha3 submittal).*

Department Response. The Department is satisfied with the modeling for the project and is confident that the project will not cause or contribute to a violation of any of the $PM_{10}/PM_{2.5}$ NAAQS or PSD increments caused by PM emissions as limited by the permit. Nevertheless, the concerns expressed by Alpha3 were addressed with a new round of PM modeling. The changes for all modeling analyses were:

- Emission rates for all quantifiable fugitive sources were set to the correct estimates provided by the applicant (all discrepancies noted by Alpha3 were accounted for);
- The PM_{10} emission rate provided by the applicant (5.0 lb/hour/kiln) was verified to include an estimate of condensable PM emissions.
- The $PM_{2.5}$ emission rate for the lime kilns was verified to include an estimate of condensable $PM_{2.5}$ (0.85 lb/hour/kiln). However, due to the draft permit limit of ~0.9 lb/hour/kiln a conservative emission rate of 4.5 lb/hour/kiln was modeled. This emission rate assumes 100% of PM emitted consists of $PM_{2.5}$ and an additional 300% of condensable PM is emitted.
- Exhaust temperatures for fugitive sources were set to ambient so that the model would adjust the exit temperature based on actual ambient temperatures as suggested;
- Processed with updated grid of receptors that exceeded the SIL based on these adjustments.

Modeling was then performed for the $PM_{10}/PM_{2.5}$ 24-hour and annual NAAQS and PSD increments. The results from this updated round of modeling did not differ significantly from the original modeling.

The source of confusion with respect to the fugitive source emission rates is that the final adjustment made to the lime handling sources for the $PM_{2.5}$ modeling did not make it into Table 7.3 of the application. Except for BM-6, which correctly rounded should be 0.0023; sources BM-9, BM-11 to 17, BM-21, and BM-31 are lime handling processes.

As explained in Section 7.10.1 on page 7-18 of Volume 2 of the Application, the $PM_{2.5}$ fraction for fabric filter control was assumed to be 0.25 for lime processes based on EPA tests. These adjusted values were used for the $PM_{2.5}$ SIL, the cumulative NAAQS, and increment model runs. The truck loadout was conservatively modeled for PM_{10} by modeling the total emissions from all loadout spouts as though they were emitted from each end of the lime silo loadout structure (i.e., these emissions were double counted). However, it was later confirmed that only one truck would be loaded at a time, so the emissions from one loadout spout was distributed to the volume source representing each end of the silo structure for the $PM_{2.5}$ modeling. In addition, the daily hours that some of the particulate sources would operate was not taken into account. Instead, the maximum hourly emission rate was assumed to occur for the entire 24-hour period. Since only a third of the sources are expected to operate continuously, impacts will be lower than predicted.

The method used to select the modeled value for comparison to the PM_{10} 24-hour NAAQS was updated. The correct method differed slightly from the one used by the applicant and also from the one recommended by Alpha3.

B.15. <u>NO_2 Modeling Results</u>. *Concerns and deficiencies with the NO_2 modeling are listed below: (refer to listing in pages 7-9 of Alpha3 submittal).*

<u>Department Response</u>. The Department is satisfied with the modeling for the project and is confident that the project will not cause or contribute to a violation of the NO_2 NAAQS or PSD increment caused by NO_X emissions as limited by the permit. However, the concerns expressed by Alpha3 were addressed with a new round of NO_2 modeling. The changes for each modeling analysis were:

a. NO_2 1-hour SIL
   - Changed the Kiln (BM-19) emission rate from 10.4 to 11.0 grams/second (g/s) as suggested;
   - Corrected the in-stack ratio for the Dryer (BM-30) from 0.05 to 0.5; and
   - Verified that it contained the full set of 2,478 receptors.

b. NO_2 1-hour Cumulative NAAQS
   - Processed with the full set of 2,478 receptors rather than only SIL exceeded; and
   - Changed the Kiln (BM-19) emission rate from 10.4 to 11.0 g/s as suggested.

c. NO_2 1-hour Cumulative NAAQS – Nested Grid
   - Changed the Kiln (BM-19) emission rate from 10.4 to 11.0 g/s as suggested.

d. NO_2 Annual Cumulative NAAQS
   - Processed with the full set of 2,478 receptors rather than only SIL exceeded;
   - Processed for the full five year span (2006-2010); and
   - Changed the Kiln (BM-19) emission rate from 10.4 to 11.0 g/s as suggested.

e. NO_2 Annual PSD Increment
   - Processed with the full set of 2,478 receptors rather than only SIL exceeded;
   - Processed for the full five year span (2006-2010); and
   - Changed the Kiln (BM-19) emission rate from 10.4 to 11.0 g/s as suggested.

The results from this updated round of modeling did not differ significantly from the original modeling. Reporting discrepancies about which Alpha3 commented were the result of Alpha3 assuming a Tier 1 approach for annual NO_2 modeling while a Tier 2 approach was actually utilized.

B.16. <u>SO_2 Modeling Results</u>. *Concerns and deficiencies with the 1-hour, 3-hour, 24-hour and annual SO_2 modeling are listed below: (refer to listing on page 9 of Alpha3 submittal).*

Department Response. The Department is satisfied with the modeling for the project and is confident that the project will not cause or contribute to a violation of the SO_2 NAAQS or PSD increment caused by SO_2 emissions as limited by the permit. However, the comments of Alpha3 were addressed with a new round of SO_2 modeling. The changes for each modeling analysis were:

a. SO_2 1-hour, 3-hour, 24-hour, and Annual SIL
   - Changed the Kiln (BM-19) emission rate from 4.51 to 4.59 g/s as suggested.

b. SO_2 1-hour Cumulative NAAQS
   - Processed with the full set of 2,478 receptors rather than only SIL exceeded; and
   - Changed the Kiln (BM-19) emission rate from 4.51 to 4.59 g/s as suggested.

c. SO_2 24-hour Increment
   - Changed the Kiln (BM-19) emission rate from 4.51 to 4.59 g/s as suggested;
   - Processed with an updated SIL exceeded receptor set (52 receptors); and
   - Processed for the full five year span (2006-2010).

The results from this updated round of modeling did not differ significantly from the original.

Alpha3 also requested that a modeling run be performed with "a refined receptor grid in the area of concern where the (1-hour) NAAQS is exceeded and the Facility's contribution is within 10% of the SIL." Utilizing the full receptor grid of 2,478 receptors placed this area within the densest grid (100 m spacing) of receptors within 2,000 meters of the facility thereby satisfying this request without an additional modeling run.

Finally, the inherent SO_2 scrubbing afforded by the raw material (limestone), product (lime) and intimate long duration contact between solids and gases will overwhelm potential SO_2 emissions and almost always likely result in actual emissions much less than projected.

B.17. Cumulative PM Modeling for Wood and Coke Scenarios. *The cumulative modeling for PM_{10} and $PM_{2.5}$ included two different operating scenarios:*

- *Combusting wood in the vertical lime kilns and*
- *Combusting coal in the vertical lime kilns.*

Because the two different scenarios presented sources with emissions rates set to zero (0.0) to indicate those sources would not be operating during the given scenario, the Permit should include an enforceable permit condition prohibiting the use of those sources to the specific scenario modeled. Fugitive dust emission sources such as stockpiles are always subject to wind erosion and should not be set at zero at any time.

Likewise, if any of the fuels will be fired in combination, the emission rates for any one fuel handling system cannot be set to zero. If the Facility requires the operational flexibility to work various fuel equipment when a certain fuel is being combusted, then the modeling should not set fuel-specific equipment to zero.

Department Response. The Department performed a new round of $PM_{10}/PM_{2.5}$ modeling with all sources (including all fuel handling equipment) set to their maximum emission rates. The results from this updated round of modeling did not differ significantly from the original.

B.18. Class I SIL Modeling. *Class I SIL modeling files were not reviewed (by Alpha3); however, due to the significant comments related to the Class II modeling presented herein, it is apparent that the Class I SIL modeling emissions rates should be reviewed by FDEP to ensure the emission rates are consistent*

with the BACT emissions limits presented in the Draft Permit. Further, the PM_{10} and $PM_{2.5}$ emission rates used in the Class I SIL modeling should include fugitive emission sources and condensable PM.

Department Response. The Class I modeling indicated air quality impacts at the nearest Class I area, Okefenokee NWA, to be orders of magnitude less than the SIL for each pollutant. The Department is satisfied with the level of analysis performed and is confident that the project will not cause or contribute to a violation of Class I PSD increments or impact any air quality related values (AQRV). Additionally, the project met the criteria specified by the Federal Land Managers for review of AQRV with respect to low total annual emissions to minimum distance ratio (Q/d) of 10 or less. The updated Q/d values based on emission limits in the draft permit are significantly less than those originally calculated by the applicant.

B.19. BACT Using Natural Gas as Baseline Fuel. *The Facility has proposed natural gas, petroleum coke, coal and wood chips as alternative fuels for the kilns. The BACT analysis for SO_2 and NO_X should evaluate natural gas as the baseline fuel. Increased emissions of CO, NO_X and SO_2 associated with the proposed alternative fuels (wood chips, coal and petroleum coke) should be compared against baseline emissions from natural gas. The BACT should compare the costs of control ($/ton of pollutant removed) assuming natural gas as the baseline fuel with coal, coke and wood chips as the alternative fuels.*

The natural gas cost estimates included in the BACT analysis are higher than supported by past, current and forecast prices. In the period January 1, 2010 through December 13, 2013, actual, delivered natural gas prices in Jacksonville have averaged $5.22 per MMBtu according to Schneider Electric, an energy consulting firm. Furthermore, natural gas prices are projected to remain low due to the significant increases in production across the U.S. The natural gas pricing presented in the application was an average price of $7.70 per MMBtu, an inflation of 47% over actual natural gas prices. For purposes of the Facility's BACT analysis, natural gas should be considered as the BACT baseline fuel. The emission increases associated with the alternative fuels proposed should be evaluated through EPA's "top-down" BACT approach.

Department Response. The Department correctly specified BACT for each type of fuel. The Department is confident that alternative approaches conducted in accordance with the Department's definition of BACT will lead to the same BACT controls for each fuel used as required in the permit. Refer to the response to Comment B.21 below for further information (derived from a source cited by Alpha3) regarding the cost-effectiveness of emissions reductions based on natural gas use.

B.20. Selective Catalytic Reduction Control (SCR) for NO_X. *The application indicates the cost of SCR is ~$9,900/ton of NO_X removed (not incremental). Review of PSD permits issued in other states indicate that this economic justification would not have been determined to be infeasible and add-on control would have been required at a cost of only $9,900/ton of pollutant removed. SCR and selective non-catalytic reduction (SNCR) control should be reviewed again using the EPA's "top-down" BACT approach and representative cost values for emission controls and alternative fuels.*

Department Response. The Department does not agree that $9,900/ton NO_X justifies installing SCR as BACT in general and for this industry at the given location in particular. The Department was unable to find any lime kiln in the world that employs SCR to control NO_X.

B.21. SO_2 BACT Analysis. *After review of the RACT/BACT/LAER Clearinghouse database information for SO_2 provided in the application, much lower SO_2 limits for inherent dry scrubbing on coal/coke fired kilns were observed than the 1.10 lb SO_2/ton lime in the permit. The newest kiln in Illinois at Mississippi Lime for two 1200 tons/day kilns was 0.65 lb/ton lime based on a 24-hour average.*

The Technical Evaluation focuses on European data for establishing the BACT limit (over 90% of the PFR kiln SO_2 measurements were less than 50 mg/Nm^3, thus FDEP used 50 mg/Nm^3 (~4.2 lb/hour) as

the limit for natural gas and wood combustion. The selection of 200 mg/Nm^3 for petroleum coke and coal seems to come from Figure 12 of the Technical Evaluation, which shows no PFR kilns with SO_2 emissions greater than 200 mg/Nm^3 (18.2 lb/hour)). The BACT costs presented were incremental for SO_2 control, but the FDEP indicated in the Technical Evaluation that it didn't necessarily agree with the cost assessment.

Proposed emissions for SO_2 should be reviewed again based on the EPA's "top-down" BACT approach using a thorough cost evaluation to determine what controls are not technically and/or economically feasible. Further, incorporation of regarding assumptions for natural gas pricing should be considered in the BACT analysis for this pollutant.

Department Response. The Mississippi Lime PSD permit mentioned by Alpha3 was appealed and in 2011 was remanded by the U.S. EPA back to the Illinois EPA. There has been no action on the permit since 2011. Thus, it is certainly not "the newest kiln". Interestingly, the technical discussions accompanying the touted Mississippi Lime permit states:

"Assuming that use of natural gas would reduce emissions of SO_2 to essentially zero, the accompanying reduction in SO_2 emissions would be 283 tons per year. This results in a cost-effectiveness from the use of natural gas that would be about $40,000 per ton of SO_2 controlled ($11,560,000/year ÷ 283 tons/year = $40,847/ton)".

Thus, the Mississippi Lime project rejected use of natural gas. By contrasts the Jacksonville Lime project provides for natural gas with a SO_2 BACT emission limit of 50 mg/Nm^3 (equivalent to 0.05 SO_2/ton) in addition to the BACT emission limit when firing coal or petcoke of 200 mg/Nm3 (~1.1 lb/ton).

Not all measurements at tests conducted at PFR kilns were less than 200 mg/Nm^3. A closer inspection of the Figure 12 reveals some tests results for the PFR design in the 300-400 and the 600-700 mg SO_2/Nm^3 brackets.

The PFR design is a technology that reflects BACT for lime kilns. The inherent SO_2 scrubbing afforded by the raw material (limestone), product (lime) and intimate long duration contact between solids and gases will insure low SO_2 emissions.

The Department is confident that the values of 50 mg SO_2/Nm^3 while burning natural gas or wood and 200 mg SO_2/Nm^3 using coal or coke represent BACT for this project. At the BACT emissions limit of 200 mg SO_2/Nm^3 (using coal or coke as fuel) further controls have not been shown to be cost-effective. Both values are significantly less than the single value (equivalent to approximately 272 mg/Nm^3) originally proposed by the applicant. The applicant accepted the Department's review that the lower values represent BACT and the Department has reasonable assurance that the project will be able to continuously comply with the BACT determination.

B.23. CO BACT Analysis. *The establishment of a CO BACT limit of 200 mg/Nm^3 instead of 100 mg/Nm^3 for natural gas does not seem justified since the PFR kiln is supposed to be more efficient and operated in such a manner to reduce CO emissions. The use of 400 mg/Nm^3 for the solid fuels appears to be the high end of expected emissions range. The proposed BACT values for this pollutant seem higher than what the unit is capable of readily achieving and a review of the established values should be performed to ensure BACT guidelines are being met. The comment concerning natural gas price assumptions should be considered in the BACT analysis for this pollutant.*

Department Response. The Department agrees that the PFR kiln is more efficient. Nevertheless, Figure 13 of the Technical Evaluation includes a few examples of PFR kilns that exhibited emissions between 400 and 2,500 mg/Nm^3. According to the Department's Technical Evaluation, "for PFR kilns, very short CO peaks appear at the beginning a cycle. At the end of the cycle, fuel injection is stopped in the shaft where burning is occurring. Before reversal to preheat mode, only air is injected for a time to ensure all the fuel is burned. A small quantity of fuel may remain under the lances. After reversal, it completes combustion while in the preheat mode producing a 'peak' concentration of CO".

The Department's BACT determinations are at once restrictive but at the same time are values with which the applicant can comply. Use of the PFR design and the results obtained at existing PFR kilns provide the Department with reasonable assurance of compliance as required for issuance of the permit.

For reference, the Department's CO BACT determinations are less than proposed by the applicant and also less than the value determined as BACT by Illinois EPA for the Mississippi Lime project cited by Alpha3 in a previous comment.

B.24. Continuous Emissions Monitoring for CO. *Continuous emissions monitoring for CO should be required for the vertical lime kilns exhaust. Because CO has a BACT limit based on a concentration of 400 mg/Nm^3 when combusting coal, petroleum coke and wood chips; and 200 mg/Nm3 when combusting natural gas, the BACT limit should be monitored at all times to ensure proper combustion and tuning of the system.*

Department Response. At the permitted limit, the maximum 1-hour CO concentration on the ground will be approximately 44 micrograms per cubic meter (µg/m^3) compared with the applicable NAAQS of 10,000 µg/m^3. There are no PSD increments for CO.

The Department requires CEMS for SO_2 and NO_X and a COMS for visible emissions and requires periodic stack testing for CO. The Department has reasonable assurance that the applicant will comply with the CO BACT and does not require a CO CEMS to demonstrate proper combustion and for tuning. The applicant will undoubtedly have process CO monitors at key points in the process to ensure proper combustion for many reasons including minimization of fuel use and maintenance of product quality. An additional CEMS is not justified based on the comment by Alpha3.

B.25. Emissions Testing for VOC, HCl and HF. *The Permit should include performance testing requirements for the following pollutants: VOC, lead, mercury, HCl and hydrogen fluoride (HF). The application indicated that the facility would not exceed the PSD significant emission rate (SER) threshold of 40 tons/year of VOC or 3 tons/year of total fluorides. Because the proposed vertical lime kilns are a newer technology, the VOC emissions should be confirmed for purposes of comparison to the PSD SER. Further, the application indicated that the potential total fluoride emissions were 2.7 tons/year, which is within 10% of the PSD SER for this pollutant. HCl is a hazardous air pollutant (HAP), and is emitted in quantities large enough to result in the facility being classified as a major source of HAPs.*

Department Response. As a major source of HAP, the project is subject to NESHAP Subpart AAAAA, which is intended to regulate emissions of HAP. NESHAP Subpart AAAAA does not specify additional controls for or require measurement of HCl. Measurement would be useful if a particular facility was trying to determine if it is subject to the regulation.

Regardless, a PFR lime kiln is a large and very effective scrubber of both HF and HCl. The PSD program does not regulate HAP already regulated under Section 112 of the Clean Air Act (CAA). There is insufficient reason to require HCl and HF testing under a PSD permit.

In the case of mercury, the Department rules require a BACT determination for emissions equal to or greater than 200 lb/year. The expected emissions of mercury are between one and two orders of magnitude less than the PSD threshold. The Department will not require mercury emission performance testing for the project.

The PSD threshold of 3 tons fluoride/year refers to forms of fluoride other than HF. The Department has reasonable assurance that fluoride emissions will be adequately controlled by the PM control measures and will be substantially less than 3 tons/year. Performance testing is not required to confirm this conclusion.

There are few, if any, readily available data from PFR kilns operating in the U.S. with respect to VOC emissions. However, data are available from some European kilns for Total Organic Compounds. VOC emissions in Europe are typically measured as total organic carbon (TOC). Analysis of the components indicates that part of the TOC is due to methane (not a VOC). Typical emissions of TOC from different types of lime kilns, including PFR kilns, are shown in the following figure.

Most of the kilns tested exhibited TOC concentrations less than 10 mg/Nm^3. VOC concentrations would be even less (after subtraction of methane, which is not a VOC). The Department is confident that the project will not trigger PSD for VOC and a performance test is not required to confirm this conclusion.

B.26. Request for Public Meeting. *A Public Meeting is requested to allow for the public to review and comment on the above written comments, as well as any changes made to the Draft Permit prior to the issuance of the Final Permit. Serious deficiencies in the application, Draft Permit and Technical Evaluation combined with the potential impacts on the nearby residential neighborhood make a public meeting appropriate.*

Department Response. Refer to the response given to comment II.A.2.

CONCLUSION

The final action of the Department is to issue the final permit with changes from the draft permit as discussed above.