

ATTACHMENT A
Buckeye Egg Farm - Emission Controls

1. Defendants shall implement the requirements of this Attachment A to the Consent Decree between the United States and Defendants in accordance with the schedules provided herein at each layer barn at Buckeye's Croton, Marseilles and Mt. Victory Locations.

a. Nothing in this Attachment shall be deemed to prevent the re-opening of currently closed layer barns at the Marseilles Location pursuant to the permits issued by ODA on February 2, 2004, but the operation of such re-opened barns shall thereafter be subject to this Attachment. All requirements of this Attachment A are subject to the Consent Decree, including, without limitation, provisions relating to the submission of documents requiring EPA approval, notice, and stipulated penalties, unless otherwise specified in this Attachment.

b. Nothing in the Consent Decree or this Attachment shall be deemed to preclude, be deemed inconsistent with, or be deemed as an adverse admission with respect to Buckeye's, or any successor's, right to assert that various sites at the Croton Location constitute separate facilities or separate emission sources for purposes of calculating emissions from the stationary sources or in determining the applicability of any requirements under the federal Clean Air Act, in connection with any action other than an action brought pursuant to this Consent Decree. Nothing in the Consent Decree or this Attachment shall preclude the United States from asserting in any such action that various sites at the Croton Location constitute only one facility or emission source for purposes of calculating emissions or in determining the applicability of any requirement under the Clean Air Act.

2. Defendants have proposed a system for controlling particulate matter (PM) emissions from layer barns at the Croton, Marseilles and Mt. Victory Locations using new controls or adaptations of controls used elsewhere. Similarly, Defendants propose the use of enzyme additive products to control ammonia emissions. This Attachment provides a protocol for testing the PM emission controls or adaptations of controls used elsewhere and enzyme additive product, and for implementing or altering the approaches proposed by Defendants based on the data collected.

I. PARTICULATE MATTER CONTROLS

A. System Design

3. By March 15, 2004, Defendants shall submit to EPA for review and approval a Proposed PM Control Design and Implementation Plan ("PM Plan") for a system of weighted plastic sheeting and impaction media, and/or other emission controls, to be installed and operated alongside the exhaust fans in its layer barns as provided in Section I.C , below, to reduce PM emitted via the fans into the ambient air (the "Particulate Impaction System" or "System"), consistent with the System outlined in Exhibit 1 hereto. The PM Plan shall include:

a. A description of the proposed Particulate Impaction System;

- b. An explanation of the Particulate Impaction System design and installation procedures;
- c. A summary of the estimated costs associated with the construction, installation, implementation and/or operation of the proposed Particulate Impaction System, including any estimated cost savings associated with the use of the System;
- d. A description of the expected PM emission reductions and reasons for the reductions expected to result from the use of the proposed Particulate Impaction System. This description must include any reasonably available data that substantiates the expected emission reductions from the Defendants' barns, as well as other locations where the Defendants are aware that the Particulate Impaction System has been or is expected to be installed;
- e. A schedule for reviewing any bids associated with the construction and installation of the Particulate Impaction System, purchasing all relevant equipment, construction/installation of the Particulate Impaction System, start-up of the Particulate Impaction System, and time necessary to adjust the System for optimum performance;
- f. Proposed reporting and record-keeping requirements that will allow EPA to track Defendants' progress toward installing, completing and operating the proposed Particulate Impaction System; and
- g. A description of any other emissions or waste streams expected to result from the use of the Particulate Impaction System that could have adverse effects on the environment, public health or welfare, and a description of how such emissions or waste streams will be managed.

4. The PM Plan shall also propose a protocol for testing the Particulate Impaction System consistent with the requirements outlined in Section I.B , below.

5. Defendants may include in the PM Plan additional or alternative emission controls or proposed alterations to the Particulate Impaction System outlined in Exhibit 1 , or to the testing requirements set forth in Section I.B , infra, based on Defendants' and EPA's evaluation of the Particulate Impaction System and any other potential emissions control devices, systems or operational restrictions. EPA's approval of control systems, operational restrictions, testing conditions and/or schedules in the PM Plan that depart from the requirements of this Attachment shall be deemed an amendment of this Attachment. Any such approval must be in writing. If EPA does not approve such proposed alterations, then the requirements of this Attachment shall apply. EPA's decision to approve or disapprove any alterations to the Particulate Impaction System or to the testing requirements set forth in this Attachment shall not be subject to the Dispute Resolution provisions of the Consent Decree, and shall only be subject to review by the United States District Court if Defendants can establish on the administrative record that EPA's decision was arbitrary and capricious, pursuant to the Administrative Procedures Act, 5 U.S.C. § 706(2)(A).

6. Defendants shall provide copies of the PM Plan to the Ohio Environmental Protection Agency (“OEPA”) and the Ohio Department of Agriculture (“ODA”).

B. Testing

1. Marseilles/Mt. Victory Locations

7. Within thirty (30) days of receipt of EPA’s approval of the PM Plan, Defendants shall install the approved Particulate Impaction System, and other PM emission control measures in the approved PM Plan, at one fan in a layer barn with a deep-pit manure management system at the Mt. Victory Location, in accordance with the approved PM Plan.

8. Within thirty (30) days of the installation of the Particulate Impaction System, pursuant to Paragraph 7, above, Defendants shall complete a test at the selected fan to measure PM and PM-10 concentrations to determine the control efficiency of the Particulate Impaction System. The test will be conducted using the following protocol, to be further developed in accordance with Paragraph 4: On the inlet side of the Particulate Impaction System, install a TEOM 1400A PM-10 sampling head and microbalance, and a gravimetric TSP device. Such devices will also be installed at the outlet side, between the Particulate Impaction System and the ventilation fan. The fan shall be operated continuously and measurements shall be conducted such that any difference between inlet and outlet TSP and PM-10 concentrations can be quantitatively determined to derive the PM control efficiency of the Particulate Impaction System. The sample integration time for the PM-10 analyzer shall be thirty (30) minutes, and the integration time for the TSP samplers shall be daily, or as determined on-site by filter loading. It is anticipated that the test will be conducted for approximately seven (7) days to assess any variability in control efficiency as the Particulate Impaction System accumulates PM. A temporary shelter shall be stationed next to the layer barn to house the TEOM control units and to provide space for the transfer of gravimetric filters to containers for off-site laboratory analysis.

9. Within fourteen (14) days of completion of the tests required in Paragraph 8, supra, Defendants shall submit the test results to EPA. Within twenty-one (21) days of completion of these tests, Defendants shall also submit any proposed changes to the PM Plan to increase the efficacy of the Particulate Impaction System, for EPA's review and approval in accordance with Paragraphs 3,4, 5, and 6, supra.

10. Within forty-five (45) days of EPA’s approval of any changes to the PM Plan, or written confirmation that no changes are required, Defendants shall commence installation of the Particulate Impaction System at all fans throughout one layer barn at the Mt. Victory Location, as selected in the PM Plan, in accordance with the schedule set forth in the approved PM Plan.

11. Within one hundred eighty (180) days of completion of installation of the Particulate Impaction System at all fans in one barn, as required in Paragraph 10, supra, Defendants shall commence emissions testing at that barn using the secondary testing method described in Exhibit 2 hereto, for a period of six (6) continuous months that shall include the month of

August 2004. Defendants shall simultaneously commence emissions testing using the secondary method at a control barn at Mt. Victory selected in the PM Plan of comparable design, age, chicken population, and other relevant parameters. A summary of the validated data, in spreadsheet format, obtained during the secondary emission testing shall be electronically submitted to EPA on a monthly basis throughout the emission testing period, or on such other periodic basis as may be agreed to by the parties. This test may be conducted at the same time as the testing required in Paragraph 29, infra.

12. Within sixty (60) days of completion of the secondary method emissions testing required in Paragraph 11, supra, Defendants shall submit the final month of validated test data, and within thirty (30) days thereafter shall submit their conclusions regarding the annual emission rate to EPA. Defendants shall also submit at this time any proposed changes to the PM Plan to increase the efficacy of the Particulate Impaction System, for EPA's review and approval in accordance with Paragraphs 3,4, 5, and 6, supra.

2. Croton Location

13. At the Croton Location, Defendants are currently effecting a change in bird variety and feed that Defendants believe will substantially reduce particulate emissions. Defendants also will be commencing the use of a manure enzyme additive at the layer barns at the Croton Location. These changes and any other operational changes that Defendants believe will reduce PM emissions shall be included by Defendants in the PM Plan for the Croton Location submitted to EPA for approval pursuant to Paragraphs 3 4, 5 and 6.

14. By May 15, 2004, Defendants shall complete either a Method 5 or 17 PM emissions test over a five (5) day period on a belt battery barn containing chickens of the new variety and consuming the new feed, for comparison with the Method 17 testing on a belt battery barn conducted in August/September 2003. Defendants shall propose in the PM Plan a barn to be tested for this purpose, to most closely approximate conditions in the barn tested in August/September 2003.

15. Within thirty (30) days of completion of the Method 5 or 17 test required in Paragraph 14, supra, Defendants shall submit the test results to EPA, together with any proposed changes to the PM Plan for the Croton Location to further decrease PM emissions, for EPA's review and approval in accordance with Paragraphs 3,4, 5, and 6, supra. Any proposed changes to the PM Plan for the Croton Location shall also include a proposed protocol and schedule for testing and implementing the proposed changes.

16. Within forty-five (45) days of EPA's approval of the test results obtained under Paragraph 14 and approval of any modification of the PM Plan for the Croton Location, Defendants shall commence emission testing at a barn at the Croton Location with the new bird variety and feed and with a belt battery manure handling system, using the secondary testing method described in Exhibit 2 hereto, for a period of six (6) continuous months that shall include the month of August 2004. A summary of the validated data, in spreadsheet format, obtained during the secondary emission testing shall be electronically submitted to EPA on a monthly

basis throughout the emission testing period, or on such other periodic basis as may be agreed to by the parties.

17. Within sixty (60) days of completion of the secondary method emissions testing required in Paragraph 16, supra, Defendants shall submit the final month of validated test data, and within thirty (30) days thereafter shall submit their conclusions regarding the annual emission rate to EPA. Defendants shall also submit at this time any proposed changes to the PM Plan to further reduce PM emissions at the Croton Location, for EPA's review and approval, in accordance with Paragraphs 3, 4, 5, and 6, supra. Any proposed changes to the PM Plan for the Croton Location shall also include a proposed protocol and schedule for testing and implementing the proposed changes.

C. Implementation

18. Within sixty (60) days of Defendants' receipt of EPA's analysis of the test results obtained pursuant to Paragraphs 11 and 16, respectively, or any subsequent testing following EPA's approval of any changes to the PM Plan, Defendants shall commence installation of PM emission control measures under Section I.C.1 or I.C.2, infra, as applicable.

1. Marseilles/Mt. Victory Locations

a. Emissions Less than 250 tpy

19. If EPA determines that test results obtained, pursuant to Paragraph 11, supra, using the methodology set forth in Exhibit 3, indicate that PM emissions using the Particulate Impaction System and any other PM emission control measures approved in the PM Plan will be less than 250 tons per year ("tpy") per Location for either or both the Marseilles and Mt. Victory Locations, then Defendants shall, within sixty (60) days of the EPA determination, commence installation of the Particulate Impaction System in all the layer barns at the Location(s) satisfying this condition, and shall complete the installation within a year of EPA's determination, or in accordance with any modified schedule set forth in the approved PM Plan, but shall not be obligated under the Consent Decree to develop or install additional PM emission controls. Defendants shall not be obligated to submit applications for any applicable federally enforceable permits that may be triggered by emissions less than 250 tpy until one hundred twenty (120) days following receipt of EPA's analysis of the results of tests conducted under Paragraph 11 and reported under Paragraph 12, or any subsequent testing following EPA's approval of any changes to the PM Plan.

20. Defendants shall continue to operate the Particulate Impaction System installed in each layer barn at the Marseilles and Mt. Victory Locations in accordance with Paragraph 19, supra, until one of the following conditions is met:

a. EPA approves in writing an alternative PM control system to be implemented in lieu of or in addition to the Particulate Impaction System and any other PM emissions controls approved in the PM Plan; or

b. A layer barn is closed and no longer houses poultry. Any such layer barn closure must be completed in accordance with all applicable federal, state and local requirements. If Defendants at any time intend to reopen or replace one or more closed barns, they must notify EPA, ODA and OEPA in writing of this plan prior to reopening, and may not reopen any of the closed barns or construct replacement barns until the approved Particulate Impaction System or other PM emission controls approved by EPA are installed therein, or one of the other conditions of Paragraph 20 are met. This provision does not apply to temporary barn closures of less than twelve (12) weeks in duration due to normal operational practices, such as replacement of old layers, routine maintenance and repair, replacement of equipment, clean-out, disease, or infection;

c. The Consent Decree is terminated in accordance with the provisions thereof; or

d. Federally-enforceable permit(s) is/are issued that:

1. imposes operational controls under the synthetic minor permit requirements of the Ohio State Implementation Plan (see Ohio Administrative Code ("OAC") Rules 3745-31-02 and 3745-31-05); or

2. includes PM emission control requirements that equal or exceed those required by this Attachment.

e. A federal agency determines that the operation of the Particulate Impaction System may be harmful to human health, worker safety, the environment, or the poultry, and that the Particulate Impaction System should no longer be operated. Within thirty (30) days of such a determination, Defendants shall submit a proposed alternative PM Plan, in accordance with Paragraphs 3, 4, 5, and 6, supra.

b. Emissions Greater than 250 tpy

21. If EPA determines that test results obtained pursuant to Paragraph 11, supra, using the methodology set forth in Exhibit 3, indicate that PM emissions using the Particulate Impaction System and any other PM emission controls in the approved PM Plan will be greater than 250 tpy at either or both the Marseilles and the Mt. Victory Locations, then, within sixty (60) days of this determination, Defendants shall elect between the following options:

a. Defendants shall propose alternative or additional controls to further reduce PM emissions at the affected Location(s), subject to EPA review and approval, in accordance with Paragraphs 3, 4, 5, and 6, supra. Any such proposal must also include further testing requirements and a proposed schedule for implementation of the alternative or additional controls at all Locations where PM emissions are calculated to exceed 250 tpy. Defendants shall implement the testing protocol and install the alternative or additional controls following EPA's written approval, in accordance with the approved testing protocol and implementation schedule,

and shall comply with Paragraph 20, supra. If EPA does not approve the proposed alternative or additional controls, then Defendants shall comply with Paragraph 21.b , infra;

or

b. Defendants shall apply for a federally enforceable permit to include particulate emission control requirements that equal or exceed those required by this Attachment, and shall comply with all other applicable requirements of the Clean Air Act.

2. Croton Location

a. Emissions Less than 250 tpy

22. If EPA determines that the secondary test method, described in Exhibit 2 hereto, test results, and/or any subsequent test results, compiled pursuant to Paragraphs 16 and 17, indicate that PM emissions from the Croton Location following the conversion to belt battery systems and using the new bird variety and feed approved in the PM Plan for the Croton Location will be less than 250 tpy, then Defendants shall not be required to install the Particulate Impaction System, and/or any other PM emission controls approved in the PM Plan, at the Croton Location, but shall continue to comply with the approved PM Plan for the Croton Location until terminated in accordance with the requirements of Paragraph 20, supra. Should Defendants wish to make further changes in poultry variety or feed or other measures submitted in the approved PM Plan to control PM emissions, it may do so upon a demonstration satisfactory to EPA, and confirmed by EPA in writing, that such changes will not increase emissions above the 250 tpy level. Defendants shall not be obligated to submit applications for any applicable federally enforceable permits that may be triggered by emissions less than 250 tpy until one hundred twenty (120) days following receipt of EPA's analysis of the results of tests conducted under Paragraph 16 and reported under Paragraph 17, or any subsequent testing following EPA's approval of any changes to the PM Plan.

b. Emissions Greater than 250 tpy

23. If EPA determines that the secondary test method, described in Exhibit 2 hereto, test results, and any other test results, compiled pursuant to Paragraphs 16 and 17, indicate that PM emissions from the Croton Location will exceed 250 tpy, then within sixty (60) days of EPA's determination Defendants shall:

a. Submit to EPA for review and approval, in accordance with Paragraphs 3, 4, 5, and 6, a schedule to install the Particulate Impaction System (or other PM emission controls approved in the PM Plan) at all high rise layer barns operating at the Croton Location that are not converted to belt battery manure handling systems before December 31, 2005. Defendants shall operate the Particulate Impaction System or other approved PM controls at each such layer barn until it is converted to belt battery manure handling systems as required under the ODA permits issued on December 23, 2003, or modified or re-issued thereafter; and

b. Submit to EPA for review and approval, in accordance with Paragraphs 3, 4, 5, and 6, a proposal to test and install PM emission controls on the Croton Location layer barns following their conversion to belt battery systems as required under the ODA permits issued on December 23, 2003, or modification or reissuance thereafter. This proposal may consist of:

1. A modified version of the Particulate Impaction System suited to the design of the renovated barns; or

2. A proposed modification of the PM Plan for the Croton Location designed to reduce PM emissions from the converted layer barns through other means.

Defendants shall implement the testing protocol and install the modified, alternative, or additional controls following EPA's written approval, in accordance with the approved testing protocol and implementation schedule, and shall comply with Paragraph 20, supra. If EPA does not approve the proposed alternative or additional controls, then Defendants shall comply with Paragraph 24.b, infra.

24. If EPA determines that test results at the Croton Location obtained pursuant to Paragraph 23.b indicate that PM emissions from the Croton Location will be less than 250 tpy as a result of the modified PM Plan, then Defendants shall comply with Paragraph 22, supra. If EPA determines that test results for any proposed modification of the PM Plan for the Croton Location pursuant to Paragraph 23.b indicate that PM emissions from the Croton Location will continue to exceed 250 tpy, then, within sixty (60) days of this determination, Defendants shall elect between the following options:

a. Defendants shall propose alternative or additional controls to reduce PM emissions at the Croton Location below 250 tpy, subject to EPA review and approval, in accordance with Paragraphs 3, 4, 5, and 6, supra. Any such proposal must also include further testing requirements and a proposed schedule for implementation of the alternative or additional controls. Defendants shall implement the testing protocol and install the alternative or additional controls, following EPA's written approval, in accordance with the approved testing protocol and implementation schedule, and shall comply with Paragraph 20, supra. If EPA does not approve the proposed alternative or additional technology, then Defendants shall comply with Paragraph 24.b, infra;

or

b. Defendants shall apply for a federally enforceable permit for the Croton Location to include particulate emission control requirements that equal or exceed those required by this Attachment, and shall comply with all other applicable requirements of the Clean Air Act.

II. AMMONIA CONTROLS

A. Croton Location

25. Defendants shall convert the barns at the Croton Location to belt battery manure handling systems, in accordance with the permits issued by ODA on December 23, 2003, or as modified or re-issued thereafter.

26. Each barn at the Croton Location not converted by December 31, 2004 to a belt battery manure handling system shall be included in the testing and implementation plans required under Section II.B , infra, until such time as it is converted to a belt battery manure handling system.

B. Enzyme Additive System

27. By March 1, 2004, Defendants shall submit to EPA for review and approval a Proposed Ammonia Emissions Control Design and Implementation Plan (“Ammonia Plan”) for application of an enzyme additive at all layer barns at the Marseilles and Mt. Victory Locations and at all Croton Location barns subject to Paragraph 26, supra, to control ammonia emissions. The Ammonia Plan shall include:

- a. A description of the proposed enzyme additive product or system;
- b. An explanation of the enzyme additive application or other operational procedures;
- c. A summary of the estimated costs associated with the purchase and application of the proposed enzyme additive product or system, including any estimated cost savings associated with the use of this product or system;
- d. A description of the expected emission reductions and reasons for the reductions resulting from the proposed enzyme additive product or system. This description must include any reasonably available data that substantiates the expected emission reductions obtained from the Defendants' barns as well as other locations where the Defendants are aware the enzyme additive product or system has been or is expected to be installed or applied;
- e. A schedule for reviewing any bids associated with the purchase of the enzyme additive product or system, purchasing all relevant product and equipment, any construction necessary for the application or operation of the product or system, start-up of the enzyme additive application process, and time necessary to adjust the enzyme application system for optimum performance;
- f. Proposed reporting and record-keeping requirements that will allow EPA to track Defendants progress toward implementing, completing and operating the proposed enzyme additive application process; and

g. A description of any other emissions or waste streams expected to result from the use of the enzyme additive product or system that could have adverse effects on the environment, public health or welfare, and a description of how such emissions or waste streams will be managed.

The Ammonia Plan shall also propose a protocol for testing the enzyme additive product or system consistent with the requirements outlined in Paragraphs 28 and 29, infra.

28. Within thirty (30) days of EPA's approval of the Ammonia Plan, Defendants shall commence bench scale testing of the enzyme additive product or system, in accordance with the approved Ammonia Plan. Within fifteen (15) days of completion of the bench scale testing of the enzyme additive product or system, Defendants shall submit the test results to EPA. If EPA determines that the bench scale tests indicate that the enzyme additive will reduce ammonia emissions by less than 50%, then Defendants shall submit for EPA's review and approval proposed changes to the Ammonia Plan to increase the efficacy of the enzyme additive product or system, or to test alternative products or systems for reducing ammonia emissions by 50% or more. These proposals shall be submitted for EPA's review and approval, in accordance with Paragraphs 27, 4, 5, and 6, supra, and any approved proposal for achieving the required ammonia emission reduction, where appropriate, shall again be bench scale tested under this Paragraph.

29. Within sixty (60) days of EPA's approval of any revisions to the Ammonia Plan, or EPA's written confirmation that no changes are required, Defendants shall commence application of the enzyme additive product or system in one layer barn with a deep-pit manure management system as selected in the approved Ammonia Plan, and shall commence emissions testing at that layer barn using the secondary testing method described in Exhibit 2 hereto, for a period of six (6) continuous months that shall include the month of August 2004. Defendants shall simultaneously commence emission testing using the secondary method at a control barn selected in the Ammonia Plan of comparable design, age, chicken population, and other relevant parameters. A summary of the validated data, in spreadsheet format, obtained during the secondary emission testing shall be electronically submitted to EPA on a monthly basis throughout the emission testing period. This testing may be conducted at the same time as the testing required in Paragraph 11.

30. Within sixty (60) days of completion of the secondary method emissions testing required in Paragraph 29, supra, Defendants shall submit the test results to EPA. Defendants shall also submit at this time any proposed changes to the Ammonia Plan to increase the efficacy of the enzyme additive products or controls or to propose alternative ammonia controls and testing protocols for EPA's review and approval, in accordance with Paragraphs 27, 4, 5, and 6, supra.

31. Within sixty (60) days of EPA's approval of any revisions to the Ammonia Plan or EPA's written confirmation that no changes are required, Defendants shall commence use of the approved ammonia emissions products or controls at all operational layer barns subject to this Section II.B, in accordance with the approved Ammonia Plan and applicable manufacturer instructions and guidelines for the use of such products or controls, and shall continue the use of

such products or controls at all operational layer barns at those locations until one of the following conditions is met:

- a. EPA approves in writing an alternative ammonia control system to be implemented in lieu of the previously approved ammonia controls ;
 - b. A layer barn is closed and no longer houses poultry. Any such closure must be completed in accordance with all applicable federal, state and local requirements. If Defendants at any time intend to reopen or replace one or more closed barns, they must notify EPA, ODA and OEPA in writing of this plan prior to reopening, and may not reopen any of the closed barns or construct replacement barns without use of the ammonia control system approved by EPA. This provision does not apply to temporary barn closures of less than twelve (12) weeks in duration due to normal operational practices, such as replacement of old layers, routine maintenance and repair, replacement of equipment, clean-out, disease, or infection;
 - c. The Consent Decree is terminated in accordance with the provisions thereof;
- or
- d. A federal agency determines that the operation of the enzyme additive products or controls may be harmful to human health, worker safety, the environment, or the poultry, and that the enzyme additive products or controls should no longer be used. Within thirty (30) days of such a determination, Defendants shall submit a proposed alternative Ammonia Plan, in accordance with Paragraphs 27, 4, 5, and 6, supra.

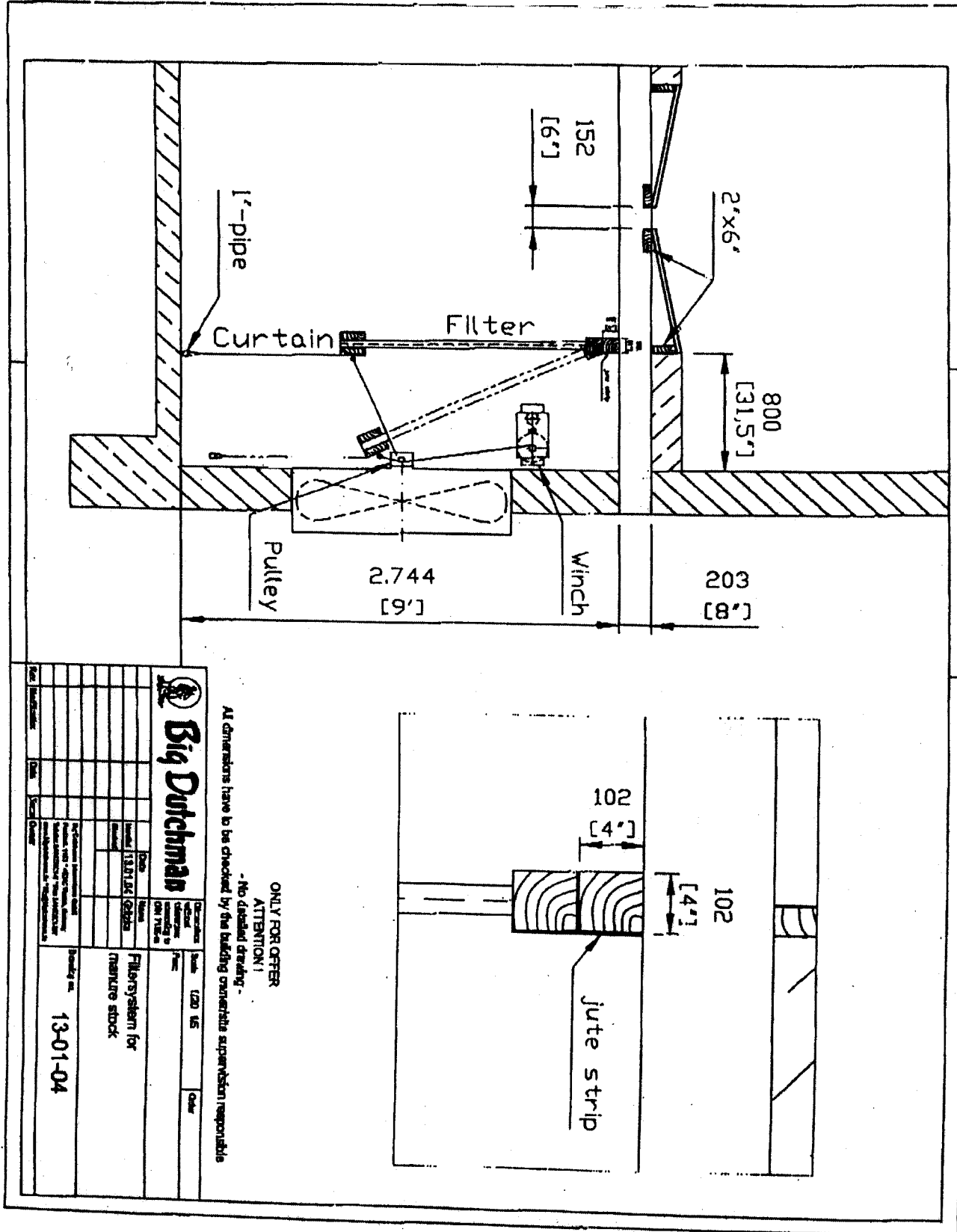
III. REPORTING OBLIGATIONS

32. Defendants must submit quarterly progress reports to EPA beginning April 30, 2004, or such later date as agreed by EPA in writing. Quarterly progress reports must then be submitted in accordance with Section VII of this Consent Decree no later than thirty (30) days after the end of any given quarter (quarters shall end on December 31, March 31, June 30, and September 30 of each year). Each quarterly progress report shall include, at a minimum, the following information, unless otherwise agreed in writing by EPA:

- a. Identification of any operational layer barns to be closed at any of the Croton, Mt. Victory and Marseilles Locations in the following quarter, including the anticipated date of closure, and actions to be taken prior to and during the closure process to control and/or minimize PM and ammonia emissions;
- b. Identification of any layer barns at the Croton Location to be converted to belt battery manure handling systems during the next quarter, pursuant to the permits issued by ODA on December 23, 2003 or modified or re-issued thereafter, including the anticipated date of conversion, and actions to be taken prior to and during the conversion process to control and/or minimize PM and ammonia emissions;

- c. Particulate Impaction System installation schedule for each Location for the following quarter;
- d. Particulate Impaction System visual inspection and dust removal frequency;
- e. Particulate Impaction System dust removal and disposal practices;
- f. Particulate Impaction System maintenance, repairs, and/or replacement;
- g. Impacts of Particulate Impaction System on building ventilation;
- h. Any building fan operation data collected by Defendants;
- i. Changes in chicken populations over the prior quarter (including the number of barns converted to new variety and/or feed);
- j. Use of additional PM reduction practices, if any, in combination with the Particulate Impaction System; and
- k. Dates of use of enzyme additive to control ammonia emissions in each operational layer barn, and the amounts used during each application.

Exhibit 1
General Particulate Impaction System Design



ONLY FOR OFFER
 ATTENTION!
 - No detailed drawing -
 All dimensions have to be checked by the building contractor's supervision responsible

Big Dutchman

Ordercode	Order	Draw	Date	Scale	Rev.
13-01-04	Filter system for measure stock				

No.	Revision	Date	By	Checked

Project no.		13-01-04
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Exhibit 2

General Quality Assurance Project Plan

Project Description

This sampling entails an approach to measure pollutant emissions directly at the source. It will use a dust sampling system to monitor the concentrations of PM and PM₁₀ in the exhaust fans and the air inlets of a large caged-hen laying house.

PM and PM₁₀ will be sampled using a vacuum pump, 10 critical orifices each and, for PM₁₀, 10 PM₁₀ preseparator/cassette filter holder assemblies. The samples will be weighed using standard protocol for gravimetric analysis.

In addition, concentrations of carbon dioxide (CO₂) will be measured using a 0-5,000 ppm photoacoustic infrared carbon dioxide analyzer. The accuracy of this analyzer will be ±100 ppm. The measurement range will be set at 0-5,000 ppm. The measurement of CO₂ is intended to obtain data that will be useful to monitor the mass (gas) transportation and (spatial and temporal) distribution in the building, to study the indoor air quality and to validate the measurement of PM₁₀.

The airflow rates of selected ventilation fans will be estimated by using a portable fan test chamber. The building ventilation rate will be obtained by monitoring the operation of all the fans and the airflow rate of a single fan, since all the ventilation fans are identical. The PM emission rates will be calculated by multiplying the measured concentrations by the airflow rates.

Finally, concentrations of ammonia will be measured using a chemiluminescence ammonia analyzer or similar instrumentation. The ammonia analyzer's measurement range will be set at representative concentrations (ppm), depending on the levels in the building. It will have a lower detectable limit of 1 ppm. Its precision will be 2.0% or better of full scale and the 0 to 90% response time will be 120 s with 10 s averaging.

Quality Objectives and Criteria for Measurement Data

The overall data quality objective is to generate data of sufficient quality to satisfy the objectives of the project stated above. Data will undergo quality assurance review which will assess, among other things, representativeness, completeness, comparability, and accuracy and precision.

Data representativeness will be assured by the overall sampling design, which includes high frequency and multi-location sampling and a week-long measurement period.

Data completeness will be achieved by assuring that valid data obtained from the measurement system will be no less than 90 percent of the scheduled sampling.

Data comparability will be maintained by consistent use of the same analytical methods used in recent studies in confined swine facilities.

Accuracy and precision for the PM and PM₁₀ measurement will be assessed in accordance with the equipment manufacturer's instructions included with required equipment. The filter weighing balance must be calibrated at least annually.

Accuracy and precision for the carbon dioxide measurement will be assessed by challenging the measurement system with zero air and a known concentration of carbon dioxide (CO₂) span gas. Carbon dioxide concentration measurement will be performed in accordance with the equipments instruction manual.

Accuracy and precision of the NH₃ measurement will be assessed by challenging the measurement system with zero air, a known concentration of NH₃ span gas (dual-certified by NIST-traceable gravimetric formulation and analysis based on vendor reference standard), and a known concentration of NIST-traceable nitric oxide (NO) span gas. Ammonia concentration measurement will be performed in accordance with the instrument manufacturer's recommendations.

Failure to achieve any of the acceptance criteria will trigger an immediate examination of sampling and/or analytical practices in order to correct the problem before the next round of scheduled sampling.

Documents and Records

Field logs will be maintained and include, but not be limited to, site drawings, daily notes, monitoring notes, results of in-field quality control checks, and any deviations from this quality assurance project plan.

Field test documentation and electronic data storage will be maintained in accordance with the standard operating procedures.

Records resulting from this project will be retained for a period of not less than three years.

MEASUREMENT DATA ACQUISITION

Sampling Process Design (Experimental Design)

Measurements of ammonia and CO₂ will be conducted sequentially at multiple locations to obtain gas emission rates, and temporal and spatial variations of gas concentrations. A gas sampling system will be constructed to allow automatic sequential air sampling from three groups of sampling locations. Teflon tubes (1/4" ID) will be used to transport air from nine exhaust locations (Group 1 - four fans on the west side of the building and Group 2 - five fans on the east side of the building) and four air inlets (Group 3) in the ceiling. A filter will be installed at the opening head of each gas sampling line at the sampling location to remove particulate. The selected gas stream will pass through Teflon sampling manifolds.

A vacuum pump (P1) will pull air from the sampling locations to the concentration analyzers. The sample gas stream from each group will be measured continuously for 10 minutes before switching to another sampling group. The first nine minutes of gas concentration data will be ignored to allow the measurement system to equilibrate. The measurement of the three groups of sampling locations will need 30 minutes. Thus, 48 CO₂ measurements will be obtained daily for each group. These data with 30 minute time resolution will allow analyzing the temporal variations of the gas concentrations. Gas emission rates will be calculated using concentration differences between groups (Group 1 vs Group 3 and Group 2 vs. Group 3) combined with ventilation rate.

A second set of gas analyzers will be set up to focus on spatial variations of gas concentrations. The measurement will be divided into two periods. At the first period, it will be measuring each of the 12 sampling locations (excluding one fan in Group 2) measured by the first set of analyzers. The 12 locations will be measured sequentially. Measurement at each location will take 10 minutes and it will need two hours to measure all locations. Thus, 12 concentration readings will be obtained daily. The data will be used to study the concentration variations within each group of sampling locations to validate the selection of these locations.

At the second period, the second set of gas analyzers will be measuring only two locations to determine both spatial and temporal variations. Some of these locations will be at the floor to determine the portion of air pollutants produced by the birds on the second floor as compared to the manure stored on the first floor. The selection of the two locations will be determined upon the completion of the first measurement period and based on the data at hand at that time.

PM and PM₁₀ will be sampled once every day for 24 hours at eight exhaust fans, side by side with continuous emissions monitoring system (CEMS) sampling points, and one incoming air location using a nine-port manifold connected to a vacuum pump system. The sampling location will be 10 centimeters adjacent to the CEMS sampling location to ensure free flow of air around the sampling head. A fractionating inlet will be utilized at each point.

Twelve semiconductor sensors will be used to measure temperatures at the gas and dust sampling locations (eight exhaust fans and four air inlets). The sensors will be calibrated prior to use and recalibrated at the conclusion of the test. An electronic relative humidity/temperature probe will monitor outdoor relative humidity and air temperature. Another relative humidity/temperature probe will be used to monitor indoor relative humidity and an additional air temperature at the center of the manure pit. Building static pressure will be monitored at four locations representing east, west, north and south sides of the building.

The wall fans will be tested with a portable fan test chamber to determine their actual airflow rates at different static pressures. Their operation will be monitored with voltage-sensing relays.

Sample Handling and Custody

PM and PM₁₀ filter samples will be taken using 47-mm filter cassettes. The filters will be equilibrated at a set temperature (20±1°C) and relative humidity (50±5%) for at least 24 hours prior to pre-and post-weighing, and weighed using standard protocol for gravimetric analysis.

Samples will be labeled and logged in on standard field data sheets at the time of placing and collecting the samples. The samples will then be transferred directly to the laboratory for weighing or stored for later weighing. Information on the data sheets includes date, time of day, personnel, sampling location, airflow rate, sampling start time, sampling stop time, temperature, any unusual conditions or observations, weight of pre-sampling, weight of post-sampling, and PM concentration. All field data will be recorded and checked for completeness and accuracy before leaving the site. Laboratory data sheets will be prepared and signed as samples are processed. The samples remain in the custody of sampling personnel at all times precluding the need for chain of custody documentation.

All other measurement will be taken in-situ in the buildings and no sample custody will be involved.

Analytical Methods

Approved analytical methods will be used in all experiments. Analytical data will be generated in accordance with the standard operating procedures and instrument manufacturer's manuals.

The sampling team will undertake corrective actions for gas and particulate concentration measurement. Corrective action will be necessitated by any deviation from published procedure or instruction manual direction.

Quality Control

Quality assurance and quality control at all facilities includes the use of properly maintained and reliable instrumentation, approved analytical methodologies and standard operating procedures, external validation of data, well-trained analysts, electrical backups, audits, and documentation. When appropriate, published EPA analytical methodologies will be used. Logs will be maintained for each instrument.

Quality control procedures will include the following:

- Calibrations of ammonia and carbon dioxide analyzers will be conducted regularly.
- On-line results of all the continuous measurement variables will be displayed on a PC screen. Sampling personnel will check the on-line display daily by either remote or on-site access.
- Logged data files in the PC in the previous day will be checked the next business day to find and correct any problem with the system.
- Experienced analysts will run all equipment.
- Internal performance and system audits will be performed.

- A measurement of inlet clean air will be included as a field blank for gas concentration measurement.
- An uninterrupted power system will be used to prevent equipment damage in case of power failure.

Instrument/Equipment Calibration and Frequency

Gas concentration analyzers will be calibrated in accordance with the manufacturer's instruction manuals. Certifications for calibration gases will include two analyses at least one week apart. The certified calibration gases will consist of zero air and a representative upper limit concentration for ammonia gases as well as carbon dioxide in nitrogen. Calibrations of ammonia and carbon dioxide analyzers will be conducted weekly.

Gas airflows of the PM and PM₁₀ samplers will be calibrated using precision airflow calibrators (0.020-6 Lpm and 2-30 Lpm flow rates). Calibration frequency will be determined in accordance with the manufacturer's instructional manual.

Calibration records will be maintained in accordance with the applicable standard operating procedure or instrument manufacturer's operation manuals.

Inspection/Acceptance of Supplies and Consumables

All atmospheric gaseous measurement will be traceable to dual-analyzed and certified standards from a reputable supplier. No additional requirements are applicable.

Data Management

Instrumental data will be collected and stored in accordance with the applicable standard operating procedure or instrument manufacturer's operations manual. Raw data will be saved as tab delimited ASCII files.

All temperature and relative humidity data will be electronically stored and compiled in a manner that will facilitate computation of 30-minute and daily averages.

Sampling personnel will keep the following logs: daily notes including site drawings, deviations from QA, and other notations. The logs will contain measurement activities and monitoring notes. A third party witness will sign and date all log notes. All notes will be contained in a centralized notebook. All necessary records for additional monitoring instruments will also be kept.

A large portion of the data will also be maintained electronically in the form of spreadsheets. Electronic raw data and computer records will be backed-up weekly on a network drive (backed-up daily) with copies stored at the laboratory. In addition to computer storage, raw tables or graphs will be printed out and stored in a loose-leaf notebook in the laboratory.

Assessments and Response Actions

Sampling personnel will be responsible for evaluating the data and assessing the data in accordance with validation procedures. They will assess the data for their representativeness, completeness, comparability, and accuracy and precision as outlined in a previous section.

Sampling personnel will also be responsible for preparing the portions of a report concerning the results from their respective instrumentation. They will integrate the data and jointly prepare a draft measurement report for review.

Reports to be Submitted

The draft and final project reports will contain all valid monitoring data expressed as 30-minute and daily values. The report will incorporate graphical representations of the location of all measurements taken. The report will also contain the numerical and qualitative results of all quality control measures on all measurement systems and will compare them to the applicable acceptance criteria. In the event that data must be invalidated, the reason for data invalidation shall be identified with the resultant corrective action.

Review drafts and final reports will be distributed to, at least:

Kevin Vuilleumier	U.S. EPA, R5
Cary Secrest	U.S. EPA, HQ OECA
Isaac Robinson	OEPA, CDO
Don Waltermeyer	OEPA, NWDO

Data Review, Verification, and Validation

All data generated under this QAPP will be reviewed and validated by sampling personnel. Data quality assessment will be performed by sampling personnel.

Raw data review will be done within two business days after the data were recorded from measurement. Verification of the measurement data will be done during initial processing each week using appropriate software.

Validation and Verification Methods

Data will be validated and verified by comparison with instrumental performance parameters as identified in the applicable standard operating procedure or instrument operation manual. Data validation and verification will also be performed by checking the recorded test activity and change of the building environment. Data will be evaluated for compliance with stated objectives for representativeness, precision, and accuracy. However, the evaluation process used to find and correct an error may not be defined in this QAPP because not all possible errors and corrections can be anticipated.

Reconciliation with User Requirements

Any data not meeting the data quality objectives as outlined above will be flagged as invalid for comparison to screening level criteria.

Exhibit 3

Determination of Annual Emissions

This Exhibit provides a summary of the methodology proposed for determining annual emissions from the Mt. Victory Location and the Croton Location. The data obtained at the Mt. Victory Location will also be extrapolated to determine annual emissions from the Marseilles Location. The methodology provided below is only a representative summary. This summary may be modified based on any final proposal submitted under Attachment A. Any modifications are subject to EPA approval.

Emission data will be collected over a period of six months between August 1, 2004 and February 1, 2005 at two layer barns at the Mt. Victory Location, one with the Particulate Impaction System and/or any other approved PM control system and the enzyme additive system and one without any PM control system and without the enzyme additive system. Bird inventories should remain similar between the control (with Particulate Impaction System and/or any other approved PM control system and enzyme additive system) and uncontrolled (without any PM control system and without enzyme additive system) barns to minimize livestock-related variables. Manure pH, moisture, and any other relevant characteristics will be measured and evaluated for representativeness.

Emission data will also be collected over a period of six months between August 1, 2004 and February 1, 2005 at one layer barn at the Croton Location. This Croton Location barn will be fully converted to a belt battery manure handling system that is in place and operating as well as the new bird variety and feed as provided in the approved PM Plan for the Croton Location. Manure pH, moisture, and any other relevant characteristics will be measured and evaluated for representativeness.

Emission data will be collected in accordance with the secondary method set forth in Exhibit 2 and used to calculate daily average PM and ammonia emission rates. Daily average emission rates will be based on the sum of all emissions calculated for that day. Daily average temperature will be calculated by summing all temperatures for that day obtained by direct readings. Regression analysis (using standard statistical and regression analysis methodology) will then be performed on the daily average emission rates and daily average temperatures calculated above. This analysis will provide the basis for a regression model which shows a relationship between ambient temperature and emission rates for each pollutant. Using the

daily mean temperature determined from historical data recorded at Mansfield, Ohio, the sum of the daily emission rates will provide the annual emissions estimate.

With a sampling period between August 1, 2004 and February 1, 2005 the average monthly temperature of the six month sampling period may be near the expected average monthly temperature of a typical year. Some differences between the actual and historical temperatures are expected, and adjustments will be made using the temperature-emissions correlation.

Fan Curves will be calculated and used to determine airflow based on the length of time fans are operating on a per minute basis. Operation will be monitored through static pressure and recording of each fan operating that minute. Total ventilation for which the fan is capable will be determined using a portable test chamber unit, as set out in Attachment A. The PM and ammonia emission rates shall be calculated, as follows.

Air Flows_{fan-minute} = (fan operating time in percentage of 60-sec operation) X (fan airflow based on derated fan curve and measured static pressure)

PM (NH₃) ER_{minute} = (Average PM (NH₃) Concentration_{minute} lb/dscf) X (summed air flow_{fan-minute} dscf/minute of each fan)

PM (NH₃) ER_{daily} = Summation of PM (NH₃) ER_{minute}

PM (NH₃) ER_{monthly} = Average PM ER_{daily}

Average temperature_{daily} = summation of temperature_{minute}

PM (NH₃) ER_{daily} and average temperature_{daily} recorded at the measurement site will be incorporated in a regression model to extrapolate emissions based on the mean daily temperatures. The model will assume that emission rate is dependent on ambient temperature. A non-linear relationship between temperature and emission rate may exist, thus the sum of the mean daily temperature is preferred to maximize the temporal resolution of the regression model.