San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

OCT 19 2011

Dave Duke
Foster Farms, Sperry Ranch
P O Box 831
Livingston, CA 95334

Re: Notice of Preliminary Decision - Authority to Construct
Project Number: N-1103801

Dear Mr Duke

Enclosed for your review and comment is the District's analysis of Foster Farms, Sperry Ranch's application for an Authority to Construct for the reconstruction of a turkey ranch to replace 24 old turkey houses with 12 new houses of equal total surface area, at 5001 N Sperry Road in Denair

The notice of preliminary decision for this project will be published approximately three days from the date of this letter Please submit your written comments on this project within the 30-day public comment period which begins on the date of publication of the public notice

Thank you for your cooperation in this matter If you have any questions regarding this matter, please contact Mr Jonah Aiyabei of Permit Services at (559) 230-5910

Sincerely,

David Warner
Director of Permit Services

DW JKA

Enclosures

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel (209) 557-6400 FAX (209) 557-6475

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2700 M Street, Suite 275
Bakersfield, CA 93301-2373
Tel (661) 326-6900 FAX (661) 326-6985

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

OCT 19 2011

Mike Tollstrup, Chief
Project Assessment Branch
Stationary Source Division
California Air Resources Board
PO Box 2815
Sacramento, CA 95812-2815

Re: Notice of Preliminary Decision - Authority to Construct
Project Number: N-1103801

Dear Mr Tollstrup

Enclosed for your review and comment is the District's analysis of Foster Farms, Sperry Ranch's application for an Authority to Construct for the reconstruction of a turkey ranch to replace 24 old turkey houses with 12 new houses of equal total surface area, at 5001 N Sperry Road in Denair

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Modesto Bee
Modesto Bee

NOTICE OF PRELIMINARY DECISION
FOR THE PROPOSED ISSUANCE OF
AN AUTHORITY TO CONSTRUCT

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Unified Air Pollution Control District solicits public comment on the proposed issuance of Authority to Construct to Foster Farms, Sperry Ranch for the reconstruction of a turkey ranch to replace 24 old turkey houses with 12 new houses of equal total surface area, at 5001 N Sperry Road in Denair

The analysis of the regulatory basis for this proposed action, Project #N-1103801, is available for public inspection at http.//www valleyair.org/notices/public_notices_idx htm and the District office at the address below. Written comments on this project must be submitted within 30 days of the publication date of this notice to **DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT, 1990 EAST GETTYSBURG AVENUE, FRESNO, CA 93726.**

San Joaquin Valley Air Pollution Control District
Authority to Construct
Reconstructed Turkey Ranch

Facility Name.	Foster Farms, Sperry Ranch	Date:	September 21, 2011
Mailing Address:	P O Box 831 Livingston, CA 95334	Engineer:	Jonah Aiyabei
		Lead Engineer.	Martin Keast
Location:	5001 N Sperry Road Denair		
Contact Person	Dave Duke		
Telephone	(209) 394-5343		
Application #(s)	N-5577-4-0 and 5-0		
Project #	N-1103801		
Deemed Complete	January 25, 2011		

I. Proposal

The primary business of Foster Farms, Sperry Ranch is the raising of turkeys to provide meat for human consumption Foster Farms, Sperry Ranch has requested Authority to Construct (ATC) permits for the construction of 12 new naturally/mechanically ventilated turkey houses for 156,000 turkeys (13,000 turkeys/house) at 5001 N Sperry Rd in Denair. The 12 new houses will replace 24 existing houses that have reached the end of their useful life The total square footage and housing capacity of the new houses is the same as the total square footage and housing capacity of the existing houses

Since the proposed project involves replacing the entire housing capacity of the ranch with new units, the capital cost of the replacement will be greater than 50% of the capital cost of a similar new facility. As a result of this replacement, therefore, the facility becomes a reconstructed source Reconstructed sources are treated as new sources and are subject all New Source Review requirements such as Best Available Control Technology (BACT)

Foster Farms, Sperry Ranch is an agricultural operation that raises fowl for human consumption. Pursuant to Senate Bill (SB) 700, all agriculture operations, including Confined Animal Facilities (CAF), with emissions greater than ½ the major source emissions threshold levels (5 tons/year of NO_X or VOC), are required to obtain a District permit The existing 168,000 turkey operation has emissions exceeding the 5 tons-VOC/year threshold and is classified as a large CAF by the California Air Resources Board (ARB) The facility has already received a District Permit to Operate for the existing operation.

Since the turkey operation is subject to permitting requirements and the construction of the new houses will result in VOC, NH_3 and PM10 emissions exceeding the BACT threshold of 2.0 lb/day for each house; BACT is required for VOC, NH_3 and PM10 emissions

II. Applicable Rules

Rule 1070 Inspections (12/17/92)
Rule 2010 Permits Required (12/17/92)
Rule 2201 New and Modified Stationary Source Review Rule (4/21/11)
Rule 2520 Federally Mandated Operating Permits (6/21/01)
Rule 4101 Visible Emissions (2/17/05)
Rule 4102 Nuisance (12/17/92)
Rule 4550 Conservation Management Practices (8/19/04)
Rule 4570 Confined Animal Facilities (10/21/10)
CH&SC 41700 Health Risk Assessment
CH&SC 42301.6 School Notice
California Senate Bill 700 (SB 700)
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

This facility is located at 5001 N. Sperry Road in Denair The District has verified that there are no schools located within 1,000 feet of the project site; hence the public notification requirement of California Health and Safety Code 42301.6 is not applicable.

IV. Process Description[1]

Turkeys are produced to meet specific requirements of the customer, which can be a retail grocery store, fast-food chain, or an institutional buyer. Turkey production is very similar to broiler production, which is divided into two phases: brooding and grow-out. The main difference between turkey and broiler production is the size of bird produced and the length of the grow-out cycle. Due to the longer grow-out cycle for turkeys, there typically are only two or possibly three grow-out cycles per year versus five to six for broilers. The brooding phase of a poult (young turkey) is from 1 day old to about 6-8 weeks. During this time, the poults need supplemental heat. Brooder heaters are used to keep the ambient temperature at 90 to 95_F when the poults arrive. Thereafter, the producer decreases the temperature by 5 °F for the next 3 weeks until the temperature reaches 75 °F. Brooding can occur either in a partitioned area of the house called the brooding chamber or in an entirely separate house. Separate poult housing is more prevalent in larger operations for purposes of disease control.

The grow-out phase starts after the brooding phase. Depending on the sex of the birds, the grow-out phase typically lasts up to 21 weeks, resulting in a live slaughter weight of between 30 and 37 pounds. Typically, two flocks of turkeys are produced annually because of the longer grow-out cycle and the somewhat seasonal demand for turkey. As the demand for turkey has increased and become somewhat less seasonal, a third flock may be started with

[1] http·//www.epa gov/ttn/chief/ap42/ch09/draft/draftanimalfeed.pdf

grow-out completed in the following year. Turkeys are fed primarily corn-soybean based diets, which also may include various cereal grains and a variety of other ingredients. The proposed Sperry Ranch will be used as a grow-out ranch. It will receive only turkeys that have been raised at a brooder ranch up to a weight of about 4 lb, and raise them for another 3 - 4 months until they attain the desired market weight. Sperry Ranch will be able to raise 3 – flocks per year.

Turkey Confinement Practices

Essentially all turkey production occurs in partially or totally enclosed facilities divided into two or three chambers. Newly hatched turkeys are placed in a brood chamber. As with broiler chickens, the second, or second and third chambers, are opened to provide more floor space per bird as the birds grow. In cold weather, some heat may be provided throughout the grow-out cycle.

Some turkey producers use separate brood and growing houses and move birds from the brooding house to the growing house after about six to eight weeks. Another production practice is to use the brood chamber in a house exclusively for brooding and use the remainder of the house for grow-out after the birds reach the age of six to eight weeks. These management systems are known as two-age management systems.

Confinement facilities for turkeys are similar to those used for broilers typically being 40 feet wide but usually only 300 to 400 feet in length. They also may be totally enclosed or partially enclosed with partially open, screened sidewalls that can be closed using curtains. Size of sidewall opening depends on climate and may be as much as 4 to 5 feet high in warm climates. Partially enclosed facilities are more common in warmer climates such as the South and Southeast whereas totally enclosed facilities are more common in the north. As with broilers and laying hens, totally enclosed facilities generally have automatic delivery and mechanical ventilation. Negative pressure ventilation is the principal method of ventilation used. The proposed Foster Farms facility will use houses that are 500 feet by 52 feet each. The houses will be partially enclosed with sidewall curtains that can be lowered or raised depending on weather conditions. The primary method of ventilation will be natural, but the houses are equipped to provide supplemental mechanical ventilation by use of fan if needed. The type of housing proposed by Foster Farms is typical in the San Joaquin Valley due to the mild weather conditions, and also due to the fact that turkeys, unlike chickens, are naturally hardy and are capable of withstanding more extreme weather conditions without much effect on their weight gain or other production factors

Turkey Manure Management

Turkeys are raised on litter, typically sawdust or wood shavings. Total cleanout of brood chambers and brood houses after each flock is common. In growing chambers or houses, cake is removed between flocks and a total clean-out occurs annually. Other aspects of turkey manure handling are similar to broiler operations. After removal from the housing facilities, manure can be directly applied to the land (if available), stored in covered or uncovered stock piles prior to land application, or pelletized and bagged for use as commercial fertilizer. In the turkey sector, the use of litter sheds to store cake and little from total clean-outs is emerging.

However, storage of these materials in uncovered piles continues to be a common practice. As part of BACT, Foster Farms has proposed to limit complete litter change-outs to only the optimum number, which is about one change-out per four flocks, in order to limit PM10 emissions that would otherwise result from movement of new and used litter during change-outs. Litter/manure stockpiles will also be covered. For reduction of VOC and NH3 emissions, the litter will be maintained in as dry a condition as possible, will be treated with acidifying litter amendments, and replaced every four flocks.

V. Equipment Listing

C-5577-4-0: 156,000 TURKEY RANCH CONSISTING OF TWELVE NATURALLY/MECHANICALLY VENTILATED TURKEY HOUSES WITH ELECTRIC FANS TOTALING 120 HP (RECONSTRUCTED SOURCE).

C-5577-5-0: MANURE HANDLING SYSTEM CONSISTING OF LITTER HAULED OFF-SITE (RECONSTRUCTED SOURCE).

VI. Emission Control Technology Evaluation

The facility will feed their poultry according to National Research Council (NRC) guidelines. Feeding according to the NRC guidelines is a feed formulation practice used to improve animal health and productivity. These guidelines aim to provide only the optimum nutritional requirements for the animal, with the effect that excess nutrients being excreted in the manure will be reduced as much as possible. Since VOC and NH3 emissions generally result from biodegradation of nutrients in the manure, reducing these nutrients consequently reduces VOC and NH3 emissions.

Additional control of VOC, NH3 and PM10 will be achieved through the use of permanent housing structures and various management practices. Permanent housing structures limit wind movement over the poultry housing areas, thus reducing the entrainment of PM10 into the air. Permanent structures also enable the management of litter/manure under dry conditions throughout the year. Dry manure/litter management reduces VOC and NH3 emissions since there emissions are driven by microbial activity, which in turn thrives in moist conditions.

Litter will be replaced after optimal use (estimated to be after four flocks), rather than annually. This reduces PM10 emissions from litter movement. Any manure/litter stockpiles stored at the site will also be covered to reduce PM10 emissions due to wind action during dry weather and VOC and NH3 emissions due to moisture infiltration during wet weather.

Within the houses, the litter will be maintained in as dry a condition as possible, and treated with acidifying litter amendments to limit VOC and NH3 emissions. Water pipes and drinkers will be inspected daily and any leaks repaired promptly, and mortality will be removed and disposed off daily to prevent any elevated microbial activity that may result in increase VOC and NH3 emissions.

VII. General Calculations

A. Assumptions

- Potential to Emit and Actual emissions will be calculated based on the maximum number of turkeys at the ranch.
- Emissions from solid manure handling outside of the housing will not be included in the Major Source determination calculation because these emissions are considered fugitive.
- Achieved in practice BACT is assumed to have a control efficiency of 19% for VOC emissions, 55% for NH3 emissions, and 5% for PM10 emissions.

B. Emission Factors

Turkey Emission Factors				
	(lb-VOC/hd-yr) [2]	(lb-NH_3/hd-yr) [3]	(lb-PM_{10}/hd-yr) [4]	Source
Turkey	0.1	0.3832	0.3	See Footnotes

Solid Manure Handling

Emissions from the storage of solid manure outside of the housing have not yet been fully established and will not be calculated in this evaluation. Subsequently, although emissions reductions from the proposed mitigation measures are expected, they will not be quantified at this time

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[2] Turkey VOC emissions have not been quantified, however an emission factor can be estimated by using the data from a broiler study entitled "Quantification of Gaseous Emissions from California Broiler Production Houses" – May 2005 and scaling the VOC emission factor based on the amount of manure generated by the turkeys Since turkeys produce approximately 4 times the manure than a broiler does, the emission factor will be scaled up to 0 1 lbs/hd-yr (0 025 lbs/hd-yr x 4)

[3] Similarly, the ammonia emissions will also be scaled up by 4 times to (0 0958 lbs/hd-yr x4) = 0 3832 lbs/hd-yr

[4] Measured PM10 Concentration in Turkey Barns = 1 mg/m^3 (http //win tiho-hannover de/einricht/itt/allgemein/257 abstract update pdf) Estimated average airflow rate per bird = 15 cfm per bird (The following documents listed airflow rates from 0 2 cfm per bird to 32 cfm per bird depending on the season and the age and weight of the turkeys
Pg 43 of http //www valleyair org/Workshops/postings/2006/06-15-06-4/R4570 report PHrev pdf,
Pg 1 of http //extension usu edu/files/publications/factsheet/Ag poultry Vent 02 pdf,
Pg 65 of
http //www conservationbureau on ca/Storage/14/1993 Market Profiles and Conservation Opportunities Assessment for Agricultural Operations in Ontario pdf)

Turkey PM10 Emission Factor = 1 mg/m^3 x 1 lb/453,592 mg x 1 m^3/35 3147 ft^3 x 15 ft^3/min x 60 min/hr x 24 hr/day = 0 001 lb-PM10/bird-day x 300 day/yr = 0 3 lb-PM10/bird-yr

C. Calculations

1. Pre Project Potential to Emit (PE1)

Since this facility is a reconstructed source, which is treated a new source for all NSR purposes, PE1 = 0 for all pollutants

2. Post Project Potential to Emit (PE2)

Post-Project Potential to Emit (PE2) for the turkey houses (PTO N-5577-4-0) will be calculated below based on the maximum number of birds per house and the estimated control efficiency for achieved in practice BACT, and the total number of houses

$PE2_{PM10}$ = (13,000 Turkeys x 0 3 lb-PM_{10}/bird-year x (1 - 0 05))/house x 12 houses
= 3,705 lb-PM_{10}/year/house x 12 houses
= 44,460 lb-PM_{10}/year

$PE2_{PM10}$ = (3,705 lb-PM_{10}/year)/house – (365 day/year) x 12 houses
= 10 2 lb-PM_{10}/day/house x 12 Houses
= 122 4 lb-PM_{10}/day

$PE2_{VOC}$ = (13,000 Turkeys x 0 1 lb-VOC/bird-year x (1 - 0 19))/house x 12 houses
= 1,053 lb-VOC/year/house x 12 houses
= 12,636 lb-VOC/year

$PE2_{VOC}$ = (1,053 lb-VOC/year)/house – (365 day/year) x 12 houses
= 2 9 lb-VOC/day/house x 12 Houses
= 34 8 lb-VOC/day

$PE2_{NH3}$ = (13,000 Turkeys x 0 3832 lb-NH3/bird-yr x (1 - 0 55))/house x 12 houses
= 2,242 lb-NH3/year/house x 12 houses
= 26,904 lb-NH3/year

$PE2_{NH3}$ = (2,242 lb-NH3/year)/house – (365 day/year) x 12 houses
= 6 1 lb-NH3/day/house x 12 Houses
= 73 2 lb-NH3/day

Pollutant	Daily Emissions Per House (lb/day)	Total Daily Emissions (lb/day)	Total Annual Emissions (lb/year)
NO_X	0	0	0
SO_X	0	0	0
PM_{10}	10 2	122 4	44,460
CO	0	0	0
VOC	2 9	34 8	12,636
NH_3	6 1	73 2	26,904

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to Section 4 9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site

Since this facility is a reconstructed source, which is treated as a new source for all NSR purposes, SSPE1 = 0 for all pollutants

4. Post Project Stationary Source Potential to Emit (SSPE2)

Pursuant to Section 4 10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site

The SSPE2 is as summarized in the following table

Post Project Stationary Source Potential to Emit [SSPE2] (lb/year)						
	NO_X	SO_X	PM_{10}	CO	VOC	NH_3
N-5577-4-0 (12 Turkey Houses)	0	0	44,460	0	12,636	26,904
N-5577-5-0 (Manure Handling System)	0	0	0	0	0	0
Post Project SSPE (SSPE2)	0	0	44,460	0	12,636	26,904

5. Major Source Determination

Pursuant to Section 3 25 of District Rule 2201, a major source is a stationary source with post-project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the threshold values shown in the following table Section 3 25 2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site

This facility does not have any banked ERCs, hence the major source determination is based on the SSPE without adjustment, as summarized in the following table

Major Source Determination (lb/year)					
	NO_X	SO_X	PM_{10}	CO	VOC
Pre-Project SSPE (SSPE1)	0	0	0	0	0
Post Project SSPE (SSPE2)	0	0	44,460	0	12,636
Major Source Threshold	20,000	140,000	140,000	200,000	20,000
Major Source?	No	No	No	No	No

As seen in the table above, the facility is not an existing Major Source and also is not becoming a Major Source as a result of this project

6. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed pollutant-by-pollutant for each unit within the project, to calculate the QNEC and if applicable, to determine the amount of offsets required

BE = Pre-project Potential to Emit for

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3 23

As shown in Section VII C 5 above, the facility is not a major source for any affected pollutant Therefore Baseline Emissions (BE) are equal to the Pre-Project Potential to Emit (PE1)

7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51 165 as "*any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act*"

As discussed in Section VII C 5 above, the facility is not a major source for any pollutants, therefore, the project does not constitute a SB 288 Major Modification for any pollutants

8. Federal Major Modification

District Rule 2201, Section 3 17 states that Federal Major Modifications are the same as "Major Modification" as defined in 40 CFR 51 165 and part D of Title I of the CAA As shown above, this project does not constitute a Major Modification for any pollutants Therefore, in accordance with District Rule 2201, Section 3 17, this project does not constitute a Federal Major Modification for any pollutants

9. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen Detailed QNEC calculations are included in Appendix B

VIII. Compliance

Rule 1070 Inspections

This rule applies to any source operation, which emits or may emit air contaminants This rule allows the District to perform inspections for the purpose of obtaining information necessary to determine whether air pollution sources are in compliance with applicable rules and regulations The rule also allows the District to require record keeping, to make inspections and to conduct tests of air pollution sources Therefore, the following conditions will be listed on Permit C-5439-1-1 to ensure compliance

- {3215} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to enter the permittee's premises where a permitted source is located or emissions related activity is conducted, or where records must be kept under condition of the permit [District Rule 1070]

- {3216} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit [District Rule 1070]

Rule 2010 Permits Required

The provisions of this rule apply to any person who plans to or does operate, construct, alter, or replace any source operation, which may emit air contaminants or may reduce the emission of air contaminants

Pursuant to Section 4 0, a written permit shall be obtained from the APCO No Permit to Operate shall be granted either by the APCO or the Hearing Board for any source operation described in Section 3 0, constructed or installed without authorization as required by Section 3 0 until the information required is presented to the APCO and such source operation is altered, if necessary, and made to conform to the standards set forth in Rule 2070 (Standards for Granting Applications) and elsewhere in these rules and regulations

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following*

a Any new emissions unit with a potential to emit exceeding two pounds per day,

b The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,

c Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or

d Any new or modified emissions unit, in a stationary source project, which results in an SB 288/Federal Major Modification

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO

a. New emissions units – PE > 2 lb/day

As seen in Section VII C 2 of this evaluation, the applicant is proposing to install 12 new naturally/mechanically ventilated turkey houses

Each individual turkey house operates independently and has separate exhaust ventilation, therefore, each house is a distinct emissions unit As shown in the table below, each of the proposed new turkey houses will result in a PE > 2 lb/day for VOC, NH_3, and PM10 Therefore, BACT is triggered for VOC, NH_3, and PM10 emissions

BACT Applicability for New Turkey House for 13,000 Birds				
Pollutant	Daily Emissions for unit (lb/day)	BACT Threshold (lb/day)	SSPE2 (lb/yr)	BACT Triggered?
NO_x	0 0	> 2 0	n/a	No
SO_x	0 0	> 2 0	n/a	No
PM_{10}	10 2	> 2 0	n/a	Yes
CO	0 0	> 2 0 and	0	No

BACT Applicability for New Turkey House for 13,000 Birds				
Pollutant	Daily Emissions for unit (lb/day)	BACT Threshold (lb/day)	SSPE2 (lb/yr)	BACT Triggered?
		SSPE2 ≥ 200,000 lb/yr		
VOC	2 9	> 2 0	n/a	Yes
NH_3	6 1	> 2 0	n/a	Yes

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another, therefore BACT is not triggered for relocation

c. Modification of emissions units – AIPE > 2 lb/day

There are no modified emissions units associated with this project, therefore BACT is not triggered for modification

d. SB 288/Federal Major Modification

As discussed in Section VII C 7 above, this project does not constitute a SB 288 and/or Federal Major Modification for any pollutants, therefore BACT is not triggered major modification

2. BACT Guideline

The SJVUAPCD BACT Clearinghouse did not contain a BACT guideline for this category of source Therefore, a new BACT analysis (See Appendix C) has been performed to evaluate BACT for the new turkey houses

3. Top-Down BACT Analysis

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule

Pursuant to the attached Top-Down BACT Analysis (see Appendix C), BACT has been satisfied with the following

VOC All animals fed in accordance with National Research Council (NRC) or other District accepted guidelines utilizing routine nutritional analysis for rations, AND turkey house design and management practices including (a) weatherproof housing, (b) dry manure/litter management, (c) daily inspection of water pipes and drinkers and prompt repair of any leaks, (d) daily removal of mortality, and (e) Application of acidifying litter amendments per manufacturer guidelines

NH_3 All animals fed in accordance with National Research Council (NRC) or other District accepted guidelines utilizing routine nutritional analysis for rations,

AND turkey house design and management practices including (a) weatherproof housing, (b) dry manure/litter management, (c) daily inspection of water pipes and drinkers and prompt repair of any leaks, (d) daily removal of mortality, and (e) Application of acidifying litter amendments per manufacturer guidelines

PM10 Turkey house design and management practices including (a) weatherproof housing, (b) optimum use of litter before replacement, and (c) covering litter/manure stockpiles

The following conditions will be listed on the ATC to ensure compliance

- All birds shall be housed in permanent weatherproof housing with a dry manure/litter management system [District Rule 2201]
- All birds shall be fed in accordance with the National Research Council (NRC) guidelines [District Rule 2201]
- Water pipes and drinkers in each house shall be inspected at least daily Repairs of any leaks and adjustment of drinkers shall be made promptly [District Rule 2201]
- All houses shall be inspected for mortality at least daily Mortality shall be removed for proper disposal immediately after detection [District Rule 2201]
- Litter in the houses shall be treated with an acidifying litter amendment in accordance with manufacturer's recommendations [District Rule 2201]
- Any manure/litter stockpiles stored outside the houses shall be covered using a weatherproof tarp, or equivalent method [District Rule 2201]

B. Offsets

Sources that are subject to federal NSR are required to offset the emissions they increase by providing emission reductions This is generally done with emission reduction credits, or ERCs There are strict federal requirements for ERCs that can be used to offset emissions increases under NSR The emission reductions must be (1) real, (2) permanent, (3) quantifiable, (4) enforceable, and (5) surplus Over time, EPA policies and court determinations have established fairly rigorous definitions and tests for each of these terms

For certain agricultural operations, it is difficult to demonstrate that emission reductions are real, permanent, quantifiable, enforceable, and surplus – *as those terms are defined by EPA and case law* Under SB 700, the air districts are prohibited from requiring offsets for sources for which the above demonstration cannot be made These sources may include, for example, crop farm fugitive dust, agricultural burning, and non-equipment operations at CAFs When it becomes possible to demonstrate that emissions (increases and reductions) are real, permanent, quantifiable, enforceable,

and surplus, ERCs may be granted and offsets required A program to allow this would have to include a regulation that is approved by EPA and incorporated into the State Implementation Plan (SIP) Such regulations specify appropriate quantification methodologies, and other provisions that ensure the reduction meet all the applicable tests, and the regulatory process allows for public review and comment

To date, California air districts have not succeeded in gaining EPA approval to issue ERCs for agricultural activities This has been the case even for reductions from on-the-farm equipment that is similar to traditional stationary sources Therefore, ERCs will not be granted, nor will offsets be required for agricultural sources until the District has adopted the needed regulations, and EPA has approved those regulations and incorporated them into the SIP

C. Public Notification

1. Applicability

Public noticing is required for

a New Major Sources, Federal Major Modifications, and SB288 Major Modifications,

b Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,

c Any project which results in the offset thresholds being surpassed, and/or

d Any project with an SSIPE of greater than 20,000 lb/year for any pollutant

a. New Major Sources, Federal Major Modifications, and SB288 Major Modifications

New Major Sources are new facilities, which are also Major Sources As shown in Section VII C 5 above, the SSPE2 is not greater than the Major Source threshold for any pollutant Therefore, public noticing is not required for this project for new Major Source purposes

b. PE > 100 lb/day

Applications which include a new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements As seen in Section VII C 2 above, this project does not include a new emissions unit which has daily emissions greater than 100 lb/day for any pollutant, therefore public noticing for PE > 100 lb/day purposes is not required

c. Offset Threshold

The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project

Offset Threshold				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO_X	0	0	20,000 lb/year	No
SO_X	0	0	54,750 lb/year	No
PM_{10}	0	44,460	29,200 lb/year	Yes
CO	0	0	200,000 lb/year	No
VOC	0	12,636	20,000 lb/year	No
NH_3	0	26,904	NA	No

As demonstrated above, the offset threshold was surpassed for PM_{10} due to this project, therefore public noticing is required for surpassing the PM_{10} offset threshold

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i e SSIPE = SSPE2 – SSPE1 The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4 9 and 4 10, respectively

The SSIPE is compared to the SSIPE Public Notice thresholds in the following table

Stationary Source Increase in Permitted Emissions [SSIPE] – Public Notice					
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO_x	0	0	0	20,000 lb/year	No
SO_x	0	0	0	20,000 lb/year	No
PM_{10}	44,460	0	44,460	20,000 lb/year	Yes
CO	0	0	0	20,000 lb/year	No
VOC	12,636	0	12,636	20,000 lb/year	No
NH_3	26,904	0	26,904	20,000 lb/year	Yes

As demonstrated above, the SSIPE for NH_3 and PM10 was greater than 20,000 lb/year, therefore public noticing for SSIPE purposes is required

2. Public Notice Action

As discussed above, public noticing is required for this project for facility-wide PM_{10} emissions surpassing the offset threshold, and a SSIPE greater than 20,000 lb/year for NH_3 and PM10 emissions Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATCs in this project

D. Daily Emission Limits (DELs)

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3 17 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity Per Sections 3 17 1 and 3 17 2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis DELs are also required to enforce the applicability of BACT

For the proposed turkey ranch, the DEL is satisfied based on the maximum number of turkeys that can be housed in each house at the ranch The number of turkeys is listed on the permit equipment description (Permit N-5577-4-0)

The following condition will be added to the permit to limit the number of birds housed at the ranch

- Each turkey house located at this ranch shall not house or be constructed to house more than 13,000 birds [District Rule 2201]

E. Compliance Assurance

1. Source Testing

Pursuant to District Policy APR 1705, source testing is not required to demonstrate compliance with Rule 2201

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offsets, public notification and daily emission limit requirements of Rule 2201 Therefore, the following conditions will be listed on the ATCs to ensure compliance

- Permittee shall maintain records of (1) the number of turkeys in each house during each growout period, (2) the date that each growout period begins, (3) the nutritional analysis of the feed, (4) a log of inspections and repairs performed on the water pipes and drinkers, (5) a log of removal of mortality, (6) log of application of acidifying litter amendments per manufacturer recommendations, and (7) log of complete litter removal [District Rule 2201]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201

F. Ambient Air Quality Analysis

Section 4 14 2 of this Rule requires that an ambient air quality analysis (AAQA) be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard The Technical Services Division of the SJVAPCD conducted the required analysis

The proposed location is in an attainment area for NO_X, CO, and SO_X Modeling results indicated that the proposed equipment will not cause a violation of an air quality standard for NO_X, CO, or SO_X

The proposed location is in a non-attainment area for PM_{10} Modeling results indicated that the calculated increase in the ambient PM_{10} concentration due to the proposed equipment will exceed the EPA significance level as given in 40 CFR Part 51 165 (b)(2)

Section 4 14 1 of District Rule 2201 states

> Emissions from a new or modified Stationary Source shall not cause or make worse the violation of an Ambient Air Quality Standard In making this determination, <u>the APCO shall take into account the increases in minor and secondary source emissions as well as the mitigation of emissions through offsets obtained pursuant to this rule</u>

To mitigate potential adverse affects to Ambient Air Quality, Foster Farms has proposed to provide sufficient SOx (as a substitute for PM_{10}) Emission Reduction Credits (ERCs) to reduce the project's impact below the significance threshold Pursuant to the AAQA summary in Appendix D, a total of 0 55 tons/yr (1,100 lb/yr) of ERCs must be surrendered in mitigation The facility has identified certificate # S-3670-5 as the source of the ERCs to be surrendered Based on the site of reductions listed on this certificate, the ERCs will be surrendered at a Distance Offset Ratio of 1 5, in accordance with District Rule 2201 The interpollutant offsets ratio is 1 0 Thus, the final quantity of offsets required is 1,650 lb/yr

The following condition will be placed on the ATC for construction of the new turkey houses (N-5577-4-0) to ensure that adequate offsets are surrendered prior to operating the units approved in this project

- Prior to operating equipment authorized under this Authority to Construct, the permittee shall surrender SOx (as a substitute for PM10) Emission Reduction Credits (ERC) for a total of 1,650 lb/yr The ERC quantity stated includes an interpollutant offset ratio of 1 0, and a distance offset ratio of 1 5 as specified in Table 4-2 of Rule 2201 (as amended 4/21/11) [District Rule 2201]

- ERC Certificate #S-3670-5 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued administratively specifying the new offsetting proposal Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct [District Rule 2201] N

Rule 2520 Federally Mandated Operating Permits

Since this facility's potential emissions do not exceed any major source thresholds of Rule 2201, this facility is not a major source, and Rule 2520 does not apply

Rule 4101 Visible Emissions

Rule 4101 states that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity

Pursuant to Section 4 12, emissions subject to or specifically exempt from Regulation VIII (Fugitive PM10 Prohibitions) are considered to be exempt

Pursuant to District Rule Section 4 1, on-field agricultural sources are exempt from the requirements of Regulation VIII

An on-field agricultural source is defined in Rule 8011, Section 3 35 as the following

- Activities conducted solely for the purpose of preparing land for the growing of crops or ***the raising of fowl or animals***, such as brush or timber clearing, grubbing, scraping, ground excavation, land leveling, grading, turning under stalks, disking, or tilling,

Therefore, activities conducted solely for the purpose of raising fowl or animals are exempt from the requirements of Regulation VIII and Rule 4101

Rule 4102 Nuisance

Rule 4102 states that no air contaminant shall be released into the atmosphere which causes a public nuisance

This project involves proposed mitigation measures that are expected to reduce overall emissions at the Poultry Ranch Therefore, this poultry ranch is expected to comply with this rule

California Health & Safety Code 41700 (Health Risk Analysis)

District Policy APR 1905 – Risk Management Policy for Permitting New and Modified Sources specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite

An HRA is not required for a project with a total facility prioritization score of less than 1 0 According to the Technical Services Memo for this project (Appendix D), the total facility prioritization score including this project was greater than 1 0 Therefore, a health risk assessment was required to determine the short-term acute and long-term chronic exposure from this project The cancer risk for this project is shown in the following table

HRA Summary		
Unit	Cancer Risk	T-BACT Required
N-5577-4-0	2 24 per million	Yes

T-BACT

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds 1 0 in one million As demonstrated above, T-BACT is required for this project because the HRA indicates that the risk is above the District's thresholds for triggering T-BACT requirements

For this project T-BACT is satisfied with BACT for VOC, NH_3 and PM_{10} and (see Appendix C), which includes emission-limiting house design and management practices, feeding poultry in accordance with NRC guidelines, and application of acidifying litter amendments Compliance with the District's Risk Management Policy is expected

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District's significance levels (i e acute and/or chronic indices greater than 1 0 and a cancer risk greater than 10 0 in a million) As outlined by the HRA Summary in Appendix D of this report, the emissions increases for this project was determined to be less than significant

Rule 4550 Conservation Management Practices (CMP)

This rule applies to agricultural operation sites located within the San Joaquin Valley Air Basin The purpose of this rule is to limit fugitive dust emissions from agricultural operation sites

Pursuant to Section 5 1, effective on and after July 1, 2004, an owner/operator shall implement the applicable CMPs selected pursuant to Section 6 2 for each agricultural operation site

Pursuant to Section 5 2, an owner/operator shall prepare and submit a CMP application for each agricultural operation site to the APCO for approval

The facility received District approval for its current CMP plan on February 23, 2009 Continued compliance with the requirements of District Rule 4550 is expected

Rule 4570 Confined Animal Facilities (CAF)

This rule applies to Confined Animal Facilities (CAF) located within the San Joaquin Valley Air Basin The purpose of this rule is to limit emissions of Volatile Organic Compounds (VOC) from Confined Animal Facilities (CAF)

Section 5.0 Requirements

Pursuant to Section 5 1 1, owners/operators of any CAF shall obtain a Permit to Operate for each Confined Animal Facility

Pursuant to section 5 1 3, the owner/operator shall submit a facility emission mitigation plan as part of the Permit-to-Operate application or Authority-to-Construct application The mitigation plan shall contain the following information

- The name, business address, and phone number of the owners/operators responsible for the preparation and the implementation of the mitigation measures listed in the mitigation plan

- The signature of the owners/operators attesting to the accuracy of the information provided and adherence to implementing the activities specified in the mitigation plan at all times and the date that the application was signed

- A list of all mitigation measures chosen to comply with Rule 4570 requirements The mitigation measures shall be chosen from the applicable portions of Sections 5 5 or 5 6

Pursuant to section 5 1 4, the application shall include the maximum number of animals at the facility in each production stage (facility capacity), and any other information necessary for the District to prepare an emission inventory of all regulated air pollutants emitted from the facility, as determined by the APCO

Pursuant to Section 5 4, an owner/operator may temporarily suspend use of mitigation measure(s) provided all of the following requirements are met

- It is determined by a licensed veterinarian, certified nutritionist, CDFA, or USDA that any mitigation measure being suspended is detrimental to animal health,

- The owner/operator notifies the District, within forty-eight (48) hours of the determination that the mitigation measure is being temporarily suspended, the specific health condition requiring the mitigation measure to be suspended, and the duration that the measure must be suspended for animal health reasons,

- The emission mitigation measure is not suspended for longer than recommended by the licensed veterinarian or certified nutritionist for animal health reasons,

- If such a situation exists, or is expected to exist for longer than thirty (30) days, the owners/operators shall, within that thirty (30) day period, submit a new emission mitigation plan designating a mitigation measure to be implemented in lieu of the mitigation measure that was suspended, and

- The APCO, ARB, and EPA approve the temporary suspension of the mitigation measure for the time period requested by the owner/operator

The following condition will be placed on each permit

- {3508} If a licensed veterinarian or a certified nutritionist determines that any VOC mitigation measure will be required to be suspended as a detriment to animal health, the owners/operators must notify the District in writing within forty-eight (48) hours of the

determination including the duration and the specific health condition requiring the mitigation measure to be suspended If the situation is expected to exist longer than a thirty-day (30) period, the owner/operator shall submit a new emission mitigation plan designating a mitigation measure to be implemented in lieu of the suspended mitigation measure [District Rule 4570] N

Section 7.0 Recordkeeping Requirements

Pursuant to Section 7 2 2, the owner/operator shall maintain records of the number of animals of each species and production group at the facility on a quarterly basis Examples of records that may be used include, but are not limited to, Dairy Herd Improvement Association records and animal inventories done for financial purposes

Pursuant to Section 7 2 3, the owner/operator shall maintain records sufficient to demonstrate compliance with all applicable mitigation measures

Pursuant to Section 7 9, owners/operators of a CAF subject to the requirements of Section 5 0 shall keep and maintain the records required in Sections 7 1 through 7 8 4, as applicable, for a minimum of five (5) years and the records shall be made available to the APCO and EPA upon request

The following condition will be placed on the permit to ensure compliance

- Owners/Operators shall maintain a record of the number of birds at the facility and shall maintain quarterly records of any changes to this information [District Rule 4570] N

- {3657} Owners/Operators shall keep and maintain all records for a minimum of five (5) years and shall be made available to the APCO, ARB and EPA upon request [District Rule 4570] N

Specific recordkeeping and monitoring conditions are shown below under the appropriate mitigation measures

Foster Farms, Sperry Ranch has chosen the following mitigation measures The conditions shown under each measure will be added to the permit to ensure compliance

Pursuant to section 8 2, owners/operators of new or modified facilities that become subject to the Regulatory Threshold requirements of this rule under Table 2 (100,000 turkeys) shall comply with the Phase II requirements of Section 5 6

Pursuant to section 5 6 6, an owner/operator of a chicken broiler, duck, or turkey CAF shall comply with the Phase II mitigation measures in Table 4 6

<u>Feed Mitigation Measures</u>

Feed according to National Research Council (NRC) guidelines

- {3511} Permittee shall feed all animals according to National Research Council (NRC)

guidelines [District Rule 4570] N

- {3512} Permittee shall maintain records of feed content, formulation, and quantity of feed additive utilized, to demonstrate compliance with National Research Council (NRC) guidelines Records such as feed company guaranteed analyses (feed tags), ration sheets) [District Rule 4570] N

Housing Mitigation Measures

Use a dry housing cleaning method at all times, except when a wet cleaning method is required for animal health or biosecurity issues

- {3675} Permittee shall use a dry housing cleaning method at all times, except when a wet cleaning method is required for animal health or biosecurity issues [District Rule 4570] N

- {3676} Permittee shall maintain records to demonstrate that a dry housing cleaning method is maintained For times when a wet cleaning method is required, the reason should be included as part of the records [District Rule 4570] N

Use drinkers that do not drip continuously

- The facility shall be equipped with drinkers that do not drip continuously [District Rule 4570] N

Inspect drinkers at least every 7 days and adjust the height, volume, and location of drinkers if necessary

- Permittee shall inspect drinkers at least once every 7 days and adjust the height, volume, and location of drinkers if necessary [District Rule 4570] N

- Permittee shall maintain record of the dates inspections and adjustments were made to the height, volume, and location of drinkers [District Rule 4570] N

Inspect water pipes and drinkers and repair leaks at least once daily

- Permittee shall inspect water pipes and drinkers and repair leaks at least once daily [District Rules 2201 and 4570] N

- Permittee shall maintain records of the dates that water pipes and drinkers are inspected and leaks are repaired [District Rules 2201 and 4570] N

Solid Manure Mitigation Measures

Remove all litter/manure from the facility within 72 hours of removal from housing

- Permittee remove all litter/manure from the facility within 72 hours of removal from housing [District Rule 4570] N

- Permittee shall maintain records to demonstrate removal of litter/manure from the facility within 72 hours of removal from housing [District Rule 4570] N

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school Therefore, pursuant to California Health and Safety Code 42301 6, a school notice is not required

California Senate Bill 700 (SB 700)

Foster Farms, Sperry Ranch is an agricultural operation that raises turkeys to provide meat for human consumption Pursuant to Senate Bill (SB) 700, all agriculture operations, including Confined Animal Facilities (CAF), with emissions greater than ½ the major source emissions threshold levels (5 tons/year of NO_X or VOC), are required to obtain a District permit

The pre-existing 168,000 bird turkey ranch had VOC emissions exceeding the previous permit requirement threshold of 12 5 tons/yr The facility previously received a District permit for the pre-existing ranch operation on March 12, 2007 The reconstructed source continues to be subject to permit requirements under the new permit requirement threshold of 5 tons VOC/year, and will be issued with and ATC prior to construction Compliance with the requirements of SB 700 is expected

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001 The basic purposes of CEQA are to

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities
- Identify the ways that environmental damage can be avoided or significantly reduced
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved

Greenhouse Gas (GHG) Significance Determination

It is determined that no other agency has or will prepare an environmental review document for the project Thus the District is the Lead Agency for this project

The District's engineering evaluation (this document) demonstrates that the project will not result in an increase in project specific greenhouse gas emissions The project

involves reconstruction of an existing turkey ranch to operate with modern energy efficient structures and equipment In addition, emission controls will be required on the reconstructed ranch, and the capacity of the operation will be reduced by 12,000 birds The District therefore concludes that the project will have a less than cumulatively significant impact on global climate change

District CEQA Findings

The District performed an Engineering Evaluation (this document) for the proposed project and determined that the project consists of the replacement of existing structures at an existing facility The project is located on the same site as existing structures and will be constructed to the same size, purpose and capacity and does not involve expansion of the existing use The project includes the replacement of existing turkey houses with newer housing facilities of the same total square footage and housing capacity as the existing houses Furthermore, the District determined that the project will not have a significant effect on the environment The District finds that the project is categorically exempt from the provisions of CEQA pursuant to CCR §15302 (Replacement or Reconstruction), and finds that the project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CCR §15061(b)(3)) The issuance of the Authority to Construct (ATC) constitutes the final decision to approve the project Pursuant to CCR §15061(d) and §15062(c) a Notice of Exemption will be filed after the issuance of the ATC

IX. Recommendation

Compliance with all applicable rules and regulations is expected Issue Authority to Construct N-5577-4-0 and 5-0 subject to the permit conditions listed on the attached drafts

X. Billing Information

Annual Permit Fees			
Permit Number	**Fee Schedule**	**Fee Description**	**Fee**
N-5577-4-0	3020-01-D	Housing – Electric Motors (120 HP)	$314 00
N-5577-5-0	3020-06	Manure Handling - Miscellaneous	$105 00

XI. Appendices

A Current PTOs N-5577-2-0 and 3-0
B Quarterly Net Emissions Change
C BACT Analysis
D HRA and AAQA Summary
E Draft ATCs N-5577-4-0 and 5-0

Appendix A

Current PTOs N-5577-2-0 and 3-0

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: N-5577-2-0 **EXPIRATION DATE:** 12/31/2011

EQUIPMENT DESCRIPTION:
168,000 TURKEY RANCH CONSISTING OF TWENTY-FOUR NATURALLY VENTILATED TURKEY HOUSES

PERMIT UNIT REQUIREMENTS

1. Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to enter the permittee's premises where a permitted source is located or emissions related activity is conducted, or where records must be kept under condition of the permit. [District Rule 1070]
2. Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit [District Rule 1070]
3. This permit does not authorize the violation of any conditions established for this facility in the Conditional Use Permit (CUP), Special Use Permit (SUP), Site Approval, Site Plan Review (SPR), or other approval documents issued by a local, state, or federal agency [District Rules 2070 and 2080, and Public Resources Code 21000-21177· California Environmental Quality Act]

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: N-5577-3-0

EXPIRATION DATE: 12/31/2011

DRAFT

EQUIPMENT DESCRIPTION:
MANURE HANDLING SYSTEM CONSISTING OF LITTER HAULED OFF-SITE

PERMIT UNIT REQUIREMENTS

1. Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to enter the permittee's premises where a permitted source is located or emissions related activity is conducted, or where records must be kept under condition of the permit. [District Rule 1070]
2. Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit [District Rule 1070]
3. This permit does not authorize the violation of any conditions established for this facility in the Conditional Use Permit (CUP), Special Use Permit (SUP), Site Approval, Site Plan Review (SPR), or other approval documents issued by a local, state, or federal agency. [District Rules 2070 and 2080, and Public Resources Code 21000-21177· California Environmental Quality Act]

Appendix B

Quarterly Net Emissions Change (QNEC)

QNEC Calculations

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database The QNEC shall be calculated as follows

QNEC = PE2 - PE1, where

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr
PE2 = Post-Project Potential to Emit for each emissions unit, lb/qtr
PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr

Since the units in this project are being permitted as new units, PE1 = 0 lb/qtr for all pollutants, hence QNEC = PE2 – 0 = PE2 for all pollutants

Using the PE2 (lb/yr) values calculated in Section VII C 2, Quarterly PE2 is calculated as follows

$PE2_{quarterly}$ = PE2 (lb/yr) – 4 quarters/year

QNEC (Unit N-5577-4-0)[5]		
Pollutant	PE2 Total (lb/yr)	QNEC = Quarterly PE2 (lb/qtr)
NO_X	0	0 0
SO_X	0	0 0
PM_{10}	44,460	11,115 0
CO	0	0 0
VOC	12,636	3,159 0
NH3	26,904	6,726 0

[5] As previously explained, since there are currently no emission factor for manure handling and storage (N-5577-5-0), all emissions, including QNEC, as assigned to the poultry housing permit unit (N-5577-4-0)

Appendix C

BACT Analysis

San Joaquin Valley Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline X.XX*

Emission Unit: Turkey House

House Size: n/a

Pollutant	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
VOC	19% control - 1 Feeding animals in accordance with applicable NRC guidelines, AND 2 House design and management practices including (a) weatherproof housing structure (b) dry manure/litter management (c) daily inspection of water pipes and drinkers, and (d) daily removal of mortality, AND 3 Use of acidifying litter amendments per manufacturer recommendations	1 98% control (Capture and Thermal Incineration) 2 95% control (Capture and Catalytic Incineration) 3 95% control (Capture and Carbon Adsorption) 4 80% control (Capture and Biofiltration)	
NH_3	55% control – 1 Feeding animals in accordance with applicable NRC guidelines, AND 2 House design and management practices including (a) weatherproof housing structure (b) dry manure/litter management (c) daily inspection of water pipes and drinkers, and (d) daily removal of mortality, AND 3 Use of acidifying litter amendments per manufacturer recommendations	80% control (Capture and Biofiltration)	
PM10	5% control – 1 House design and management practices including (a) weatherproof housing structure (b) minimum disturbance of litter/manure (c) covering litter/manure stockpiles	1 98% control (Capture and cyclones followed by electrostatic precipitator) 2 95% control (Capture and cyclones followed by baghouse) 3 80% control (Capture and cyclones followed by wet scrubber) 4 50% control (Capture and cyclones)	

BACT is the most stringent control technique for the emissions unit and class of source Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan

***This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)**

San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline X-XX

Emission Unit: Turkey House

Equipment Rating: 13,000 birds/house

Facility: Foster Farms, Sperry Ranch

References: ATC # N-5577-4-0
Project # N-1103801

Location: 1324 South Sperry Ave
Tranquility, CA

Date of Determination:

Pollutant	BACT Requirements
NO_X	
SO_X	
PM_{10}	
CO	
VOC	19% control (1 Feeding animals in accordance with applicable NRC guidelines, AND 2 House design and management practices including (a) weatherproof housing structure (b) dry manure/litter management (c) daily inspection of water pipes and drinkers, and (d) daily removal of mortality, AND 3 Use of acidifying litter amendments per manufacturer recommendations) (Achieved in Practice)
NH_3	55% control (1 Feeding animals in accordance with applicable NRC guidelines, AND 2 House design and management practices including (a) weatherproof housing structure (b) dry manure/litter management (c) daily inspection of water pipes and drinkers, and (d) daily removal of mortality, AND 3 Use of acidifying litter amendments per manufacturer recommendations) (Achieved in Practice
PM10	5% control (House design and management practices including (a) weatherproof housing structure (b) minimum disturbance of litter/manure (c) covering litter/manure stockpiles) (Achieved in Practice)

BACT Status: X Achieved in practice ___ Small Emitter __T-BACT
__ Technologically feasible BACT

___ At the time of this determination achieved in practice BACT was equivalent to technologically feasible BACT
___ Contained in EPA approved SIP
___ The following technologically feasible options were not cost effective
___ Alternate Basic Equipment
___ The following alternate basic equipment was not cost effective

Mail to CAPCOA BACT Clearinghouse Project Assessment Branch P O Box 2815 Sacramento, CA 95812	For CAPCOA use only Record No ,Form No · ,BLIS District Code Codes - EPA Source ,SCAQMD ;EPA ID No . ARB Sc ,Ctrl ,BLIS Process ,AIRS Facility No

CAPCOA BACT DETERMINATION REPORTING FORM

Instructions: Complete this form when issuing an authority to construct Please use on form per determination (i e pollutant) Please use one form per determination (i e pollutant) Section A need only be completed on one form in the case of a source with multiple determinations See the reverse side for descriptions of the field identifiers used below Please attach a copy of the permit or permit conditions if practical Please call (916)327-5601 for clarification of any questions (1/5/94)

SECTION A. Source Information

Company and Project Name Foster Farms, Sperry Ranch

Facility Address P O Box 831, Livingston, CA 95334 SIC Code 0253

Application No N-1103801 , Authority to Construct No N-5577-4-0 Authority to Construct Issue Date TBD

District SJVUAPCD , District Contact Seyed Sadredin, Phone No . (559) 230-5900

Est Startup Date TBD , Today's Date Sept 21, 2011, Permit Unit Status *New/Reconstruced*

Basic Equip /Process (include make and model) Turkey Ranch Consisting of 12 Turkey Houses, Each Housing 13,000 Birds

Rated Capacity· 13,000 Birds/House, Output N/A , SCC Code

Fuel Type n/a , Backup Fuel(s) N/A , Project Cost $ N/A

SECTION B. Control Data Pollutant VOC

Control Equip none

Emissions Uncontrolled 3 7 lbm/day Controlled Limit 2 9 lbm/day

Enforceable Permit Emissions Limit(s) 13,000 Birds/House

Emission Type point, Cost of Control Equipment N/A

Regulatory Requirement *District-Defined BACT* *District-Defined LAER* *Other* N/A

BACT/LAER Specification Reference or Basis SJVUAPCD

Mass Emission Rate N/A , Destruction efficiency 19%

Normalized Mass Emission Rate N/A lbm/MMBtu, N/A g/bhp-hr, N/A lbm per ton input

Emission Concentration N/A

Other Feeding animals in accordance with applicable NRC guidelines, House design and management practices including (a) weatherproof housing structure (b) dry manure/litter management (c) daily inspection of water pipes and drinkers, and (d) daily removal of mortality, AND Use of acidifying litter amendments per manufacturer recommendations

Method of Compliance Verification Reordkeeping, District Inspection

Other Relevant Permit Limits Time of Operation N/A

Fuel use Percent Capacity/Use
Throughput N/A
Other N/A

Remarks N/A

SECTION B Control Data Pollutant NH3

Control Equip none

Emissions Uncontrolled 13 6 lbm/day Controlled Limit 6 1 lbm/day

Enforceable Permit Emissions Limit(s) 13,000 Birds/House

Emission Type point, Cost of Control Equipment N/A

Regulatory Requirement *District-Defined BACT* *District-Defined LAER* *Other* N/A

BACT/LAER Specification Reference or Basis SJVUAPCD

Mass Emission Rate N/A , Destruction efficiency 55%

Normalized Mass Emission Rate N/A lbm/MMBtu, N/A g/bhp-hr, N/A lbm per ton input

Emission Concentration N/A

Other Feeding animals in accordance with applicable NRC guidelines, House design and management practices including (a) weatherproof housing structure (b) dry manure/litter management (c) daily inspection of water pipes and drinkers, and (d) daily removal of mortality, AND Use of acidifying litter amendments per manufacturer recommendations

Method of Compliance Verification Reordkeeping, District Inspection

Other Relevant Permit Limits Time of Operation N/A

Fuel use Percent Capacity/Use
Throughput N/A
Other N/A

Remarks N/A

SECTION B. Control Data Pollutant PM10

Control Equip none

Emissions Uncontrolled 10 6 lbm/day Controlled Limit 10 2 lbm/day

Enforceable Permit Emissions Limit(s) 13,000 Birds/House

Emission Type point, Cost of Control Equipment N/A

Regulatory Requirement *District-Defined BACT* *District-Defined LAER* *Other* N/A

BACT/LAER Specification Reference or Basis SJVUAPCD

Mass Emission Rate N/A , Destruction efficiency 5%

Normalized Mass Emission Rate N/A lbm/MMBtu, N/A g/bhp-hr, N/A lbm per ton input

Emission Concentration N/A

Other House design and management practices including (a) weatherproof housing structure (b) minimum disturbance of litter/manure (c) covering litter/manure stockpiles

Method of Compliance Verification Reordkeeping, District Inspection

Other Relevant Permit Limits Time of Operation N/A

Fuel use Percent Capacity/Use
Throughput N/A
Other N/A

Remarks N/A

BACT CLEARINGHOUSE

--Submission Form--

Category

Source Category

Turkey Ranch

SIC Code	0253	View SIC Code List
NAICS Code	112330	View NAICS Code List

Emission Unit Information

Manufacturer	N/A
Type	N/A
Model	N/A
Equipment Description	Turkey house
Capacity/Dimensions	13,000 birds
Fuel Type	N/A
Multiple Fuel Types	N/A
Operating Schedule	Non-seasonal
Function of Equipment	Housing turkeys

Facility/District Information

Facility Name	Foster Farms, Sperry Ranch
Facility County	Stanislaus
Facility Zip Code	95334
District Contact	David Warner, San Joaquin Valley Air Pollution District
District Contact Phone	(559) 230-5900
District Contact E-mail	dave warner@valleyair org

Project/Permit Information

Application or Permit Number	ATC N-5577-4-0	
New Construction/Modification	Reconstructed source	
ATC Date (mm-dd-yyyy)		Example 03-29-2008
PTO Date (mm-dd-yyyy)		
Startup Date (mm-dd-yyyy)		
Technology Status		
Source Test Available		
Source Test Results		

BACT Information

Pollutant Limit(s) and Control Method(s) – Please include proper units

NOx	Limit N/A Units Averaging Time Control Method Type Control Method Description
CO	Limit N/A Units Averaging Time Control Method Type Control Method Description
VOC	Limit N/A Units Averaging Time Control Method Type Control Method Description
PM	Limit N/A Units Averaging Time Control Method Type Control Method Description
PM 2.5	Limit N/A Units Averaging Time Control Method Type Control Method Description
PM 10	Limit N/A Units Averaging Time Control Method Type Control Method Description
SOx	Limit N/A Units Averaging Time Control Method Type Control Method Description
Pb	Limit N/A Units Averaging Time Control Method Type Control Method Description
Other	Limit N/A Units Averaging Time Control Method Type Control Method Description

TOP-DOWN BACT ANALYSIS
Turkey Houses

Facility Name:	Foster Farms, Sperry Ranch	**Date:**	Sept 21, 2011
Mailing Address:	P O Box 831 Attn Environmental Affairs Livingston CA, 95334	**Reviewing Engineer:**	Jonah Aiyabei
		Lead Engineer:	Carlos Garcia
Contact Person:	Dave Duke		
Telephone:	(209) 394-5343		
Application #:	N-5577-4-0		
Project #:	N-1103801		
Deemed Complete:	January 25, 2011		

I. PROPOSAL:

The primary business of Foster Farms, Sperry Ranch is the raising of turkeys to provide meat for human consumption Foster Farms, Sperry Ranch has requested Authority to Construct (ATC) permits for the construction of 12 new naturally/mechanically ventilated turkey houses for 156,000 turkeys (13,000 turkeys/house) at 5001 N Sperry Rd in Denair The 12 new houses will replace 24 existing houses that have reached the end of their useful life The total square footage and housing capacity of the new houses is the same as the total square footage and housing capacity of the existing houses

Since the proposed project involves replacing the entire housing capacity of the ranch with new units, the capital cost of the replacement will be greater than 50% of the capital cost of a similar new facility As a result of this replacement, therefore, the facility becomes a reconstructed source Reconstructed sources are treated as new sources and are subject to all New Source Review requirements such as Best Available Control Technology (BACT)

Foster Farms, Sperry Ranch is an agricultural operation that raises fowl for human consumption Pursuant to Senate Bill (SB) 700, all agriculture operations, including Confined Animal Facilities (CAF), with emissions greater than ½ the major source emissions threshold levels (5 tons/year of NO_X or VOC), are required to obtain a District permit The existing 168,000 turkey operation has emissions exceeding the 5 tons-VOC/year threshold and is classified as a large CAF by the California Air Resources Board (ARB) The facility has already received a District Permit to Operate for the existing operation

Since the turkey operation is subject to permitting requirements and the construction of the new houses will result in VOC, NH_3 and PM10 emissions exceeding the BACT threshold of 2 0 lb/day for each house, BACT is required for VOC, NH_3 and PM10 emissions

II. PROCESS DESCRIPTION[1]:

Turkeys are produced to meet specific requirements of the customer, which can be a retail grocery store, fast-food chain, or an institutional buyer Turkey production is very similar to broiler production, which is divided into two phases brooding and grow-out The main difference between turkey and broiler production is the size of bird produced and the length of the grow-out cycle Due to the longer grow-out cycle for turkeys, there typically are only two or possibly three grow-out cycles per year versus five to six for broilers The brooding phase of a poult (young turkey) is from 1 day old to about 6-8 weeks During this time, the poults need supplemental heat Brooder heaters are used to keep the ambient temperature at 90 to 95 °F when the poults arrive Thereafter, the producer decreases the temperature by 5 °F for the next 3 weeks until the temperature reaches 75 °F Brooding can occur either in a partitioned area of the house called the brooding chamber or in an entirely separate house Separate poult housing is more prevalent in larger operations for purposes of disease control

The grow-out phase starts after the brooding phase Depending on the sex of the birds, the grow-out phase typically lasts up to 21 weeks, resulting in a live slaughter weight of between 30 and 37 pounds At the end of the production cycle, the house is completely cleaned out Typically, two flocks of turkeys are produced annually because of the longer grow-out cycle and the somewhat seasonal demand for turkey As the demand for turkey has increased and become somewhat less seasonal, a third flock may be started with grow-out completed in the following year Turkeys are fed primarily corn-soybean based diets, which also may include various cereal grains and a variety of other ingredients

Turkey Confinement Practices

Most turkey production occurs in partially enclosed facilities divided into two or three chambers Newly hatched turkeys are placed in a brood chamber The second, or second and third chambers, are opened to provide more floor space per bird as the birds grow

Some turkey producers use separate brood and growing houses and move birds from the brooding house to the growing house after about six to eight weeks Another production practice is to use the brood chamber in a house exclusively for brooding and use the remainder of the house for grow-out after the birds reach the age of six to eight weeks These management systems are known as two-age management systems

Confinement facilities for turkeys are structurally similar to those used for broilers, typically being 40 feet wide but usually only 300 to 400 feet in length However, because turkeys are generally more resistant to weather conditions (both hot and cold extremes), turkey houses are usually only partially enclosed with partially open, screened sidewalls that can be closed using curtains The size of sidewall opening depends on climate and may be as much as 4 to 5 feet high in warm climates Natural ventilation is usually the primary method of ventilation used, but some house designs, such as those proposed by Sperry Ranch, also include the use of mechanical ventilation on supplemental basis

[1] Emissions From Animal Feeding Operations – Draft, US EPA – Emissions Standards Division, August 15, 2001, pgs 6-16 to 6-22

Turkey Manure Management

Turkeys are raised on litter, typically sawdust or wood shavings Total clean-out of brood chambers and brood houses after each flock is common In growing chambers or houses, cake is removed between flocks and a total clean-out occurs annually Other aspects of turkey manure handling are similar to broiler operations After removal from the housing facilities, manure can be directly applied to the land (if available), stored in covered or uncovered stock piles prior to land application, or pelletized and bagged for use as commercial fertilizer In the turkey sector, the use of litter sheds to store cake and litter from total clean-outs is emerging However, storage of these materials in uncovered piles continues to be a common practice

Factors that affect emissions from turkey litter storage are moisture content and length of storage High moisture content will lead to the development of anaerobic conditions and the production of hydrogen sulfide and other reduced sulfur compounds, VOC and methane, and will facilitate further mineralization of organic nitrogen to ammonia As the time of storage increases, the opportunity for the generation and emission of these compounds increases

Emissions from turkey Litter

The principal pollutants emitted from turkey houses are Volatile Organic Compounds (VOC) and ammonia (NH_3) A small amount of particulate matter (PM) is also emitted through the ventilation system Factors that affect emissions from turkey houses include the moisture content of the litter, the pH, the ventilation rate, the temperature, and the amount of manure and length of the time the manure is present in the turkey house

Manure as excreted by the birds has a high water content, most of which evaporates, emitting ammonia as the manure dries out Ideally, litter in the turkey houses should contain no more than 20-25% moisture [2] High moisture content in the litter will lead to the development of anaerobic conditions and the production of hydrogen sulfide and other reduced sulfur compounds High moisture content in the litter will also lead to greater production of VOCs and methane and will facilitate the further conversion of organic nitrogen to ammonia Additionally, the greater the moisture content the more favorable the environment for microbes responsible for emissions of ammonia and volatile organic compounds (VOC), which increases the likelihood that these compounds will be emitted Moisture inside the turkey houses is controlled by adequate ventilation and regular maintenance of waterers to ensure that there are no leaks

The ventilation rate affects the amount of ammonia, VOC, and particulate matter carried out of the turkey house During the growth of the flock, continuous airflow removes ammonia and other gases and reduces the moisture content of freshly excreted manure The constant volatilization and removal of ammonia from the turkey houses results in lower nitrogen content of the litter

The potential for gaseous emissions, such as ammonia and VOCs, increases with greater manure storage time and greater manure accumulation in the houses [3] The amount of manure and length of the time the manure is present in the house is determined by the number of flocks

[2] Lesson 11 Using Dietary and Management Strategies to Reduce the Nutrient Excretion of Poultry, Paul Patterson

[3] EPA Document "Emissions from Animal Feeding Operations" (Draft, August 15, 2001), Section 2 3 – Factors Affecting Emissions

that are raised on the litter before a complete cleanout Fresh litter will have negligible emissions Litter that has been reused for several flocks may have considerable emissions because of the accumulation of manure As stated above, turkey houses are typically completely cleaned out after at least six flocks have been raised but the litter in the proposed houses will be completely cleaned after only four flocks have been raised

VOC Emissions

Volatile organic compounds are formed as intermediate metabolites in the degradation of organic matter in manure Under aerobic conditions, any VOC formed are rapidly oxidized to carbon dioxide and water Under anaerobic conditions, complex organic compounds are microbially decomposed to volatile organic acids and other volatile organic compounds, which in turn are mostly converted to methane and carbon dioxide by methanogenic bacteria When the activity of the methanogenic bacteria is not inhibited, virtually all of the VOC are metabolized to simpler compounds, and the potential for VOC emissions is minimized However, the inhibition of methane formation results in a buildup of VOCs in the litter and ultimately to volatilization to the air VOC emissions will vary with temperature because the rate of VOC formation, reduction to methane, and volatilization varies with temperature[4]

Control of VOC Emissions

In comparison to the research on ammonia emissions from broiler houses, little research has been performed on the methods to reduce VOC emissions from turkey houses Most of the research to this point has focused specifically on odor reduction However, since VOC and ammonia emissions are the result of a similar microbial process, some of the methods that have been proven to reduce ammonia emissions are also expected to reduce VOC emissions In addition to thermal incineration and carbon adsorption, other possible controls include biofiltration, diet manipulation, the use of acidifying litter amendments such as Alum (aluminum sulfate), Poultry Litter Treatment (PLT, sodium bisulfate), Poultry Guard (clay material containing sulfuric acid), phosphoric acid, etc , litter management practices and turkey house construction, and the use of certain probiotics

A biofilter is a device for removing contaminants from a gas in which the gas is passed through a media that supports the microbial activity by which the pollutant is degraded One type of biofilter involves a porous medium (typically soil, compost.or wood chips - green waste) that contains large populations of microbes This type of biofilter system can be used to control the VOC emissions in the exhaust of the turkey house

Nutritional management of poultry feed is routinely practiced to improve meat production and bird health The potential for VOC emissions can be reduced by reducing the quantity of undigested nutrients in the litter Many of the VOCs emitted from Confined Animal Facilities, including poultry houses and piggeries, originate from the decomposition of undigested protein from which ammonia is also a byproduct [5] In the absence of any evidence to the contrary, it is also assumed that some of the VOCs emitted from turkey houses are also the result of

[4] EPA Document "Emissions from Animal Feeding Operations" (Draft, August 15, 2001), pg 2-10

[5] "Emissions of Volatile Organic Compounds Originating from UK Livestock Agriculture", Hobbs, P J 2004 – Journal of the Science of Food and Agriculture

decomposition of undigested protein The level of microbial action in the litter corresponds to the level of organic nitrogen content in the litter, the lower the level of nitrogen the lower the level of microbial action and the lower the production of ammonia and VOC

A diet that is formulated to feed proper amounts of protein will result in improved nitrogen utilization by the animal and corresponding reduction in uric acid, organic nitrogen content of litter, and VOC and ammonia production Nitrogen excretion can be reduced by replacing crude protein in turkey diets with the specific amino acids required It is possible to reduce crude protein levels by 3-4%, which will result in reductions of 13-22% in nitrogen without detriment to bird performance [6] Enzymes and feed additives are also commonly used in conjunction with certain feeds to increase nutrient digestibility and nitrogen retention [5] Studies on the digestibility of protein and amino acids in turkey chickens fed a corn and soybean diet showed the supplementation of the enzyme phytase resulted in increased weight gain and digestibility of most amino acids [7] The latest National Research Council (NRC) guidelines for the selection of an optimal poultry diet should be followed to the maximum extent possible The diet recommendations made in this publication seek to achieve the maximum uptake of protein by the bird and the minimum carryover of nitrogen into the litter

Acidifying litter amendments such as Alum (aluminum sulfate), Poultry Litter Treatment (PLT, sodium bisulfate), Poultry Guard (clay material containing sulfuric acid), phosphoric acid, etc are commonly used in poultry houses to reduce ammonia concentrations in the house during the critical first few weeks of bird development Acidifying litter amendments are available in both granular and solution form, depending on the needs of the grower Preliminary results of studies performed by Frank Mitloehner, Ph D of UC Davis indicate that these litter amendments also result in lower VOC emissions[8] Unlike a biofilter where microorganisms aerobically decompose pollutants after they have been formed, the reduction in VOC emissions may be related to the inhibition of the growth of anaerobic microbes responsible for decomposition of nutrients in the litter Inhibition of anaerobic microbes prevents the anaerobic decomposition that results in VOC emissions It has been demonstrated that sufficient application of acidifying litter amendments to floor of a poultry house can reduce the total bacterial count by more than 99 99%[9] The application of PLT to litter resulted in significant reductions of total bacterial count for 21 days as compared to control[10] At an application rate of 100 lb per 1,000 ft^2 of poultry house floor space, granulated sulfuric acid and sodium bisulfate reduced bacterial pathogen levels There have been several studies that show that acidifying litter amendments such as alum reduce the levels of bacterial pathogens, such as *Salmonella* and *Campylobacter* in the litter and on bird carcasses[11] Since bacteria are responsible for VOC and ammonia production, this inhibition of microbial action translates into a reduction in VOC and ammonia emissions More information about acidifying litter amendments is given under ammonia control options

Poultry house construction and management practices are another method to reduce VOC emissions The proposed houses are weatherproof structures, which will facilitate the use of dry

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[6] Lesson 11 Using Dietary and Management Strategies to Reduce the Nutrient Excretion of Poultry, Paul Patterson

[7] "Apparent Digestibility of Protein and Amino Acids in Turkey Chickens Fed a Corn-Soybean Diet Supplemented with Microbial Phytase" Sebastian, 1997 Poultry Science 76 1760-1769

[8] Preliminary results of study performed on Poultry Litter Treatment in 2005 (Mitloehner)

[9] "Litter Amendments as a Tool for Optimizing Poultry House Clean Out", Avian Advice, Summer 2003, Vol 5, No 2

[10] Dr Richard Chin, California Veterinary Diagnostic Laboratory, Fresno - Final Bacteriological Results July 31, 1995

[11] Dr Philip Moore, Jr , USDA/ARS, Fayetteville, Arkansas

manure management methods The houses will mostly be naturally ventilated, with minimal use of evaporative cooling pads during hot weather Water pipes and drinkers will be inspected daily and repaired as necessary to avoid wet spots in the litter Anaerobic microbial activity that results in VOC and NH3 emission occurs primarily under moist conditions Dry manure management practices reduce VOC and NH3 emissions by limiting the prevalence of wet anaerobic conditions in the litter In addition, the litter will be completely cleaned out after a maximum of four flocks to avoid any excessive buildup that could accelerate emissions

Probiotics are microorganisms with beneficial characteristics These microorganisms are usually the viable microbial cultures or their fermentation products Most probiotics work through competitive exclusion, meaning that they cause a shift in the bacterial population from less desirable species to more desirable species Probiotics have many of the advantages of antibiotics without the drawback of possibly creating antibiotic resistant pathogens Bacterial enzymes in probiotics also promote the digestion of protein, lipids, and carbohydrates[12], which will cause less of these nutrients to be excreted Probiotics are used extensively in the poultry industry to promote animal health The introduction of certain probiotics to poultry feed and litter has potential to reduce VOC and ammonia emissions Recently, they have been used in Taiwan's animal farming industry to address concerns about the environmental impact of the animal farming In one experiment, the introduction of Ecozyme©, a lactobacilli containing probiotic, to poultry feed reduced the pH and moisture content of the litter and resulted in greater than 90% reductions in malodorous VOC compounds[13] The results of the study were confirmed by the Malaysian Animal Research Institute The use of probiotics to control emissions is a developing area and more research is needed to quantify all potential reductions Non-pathogenic bacteria can also be introduced into the litter in order to speed the oxidation of ammonia to nitrate and nitrite[14]

Ammonia Emissions

Ammonia in the presence of sulfur dioxide and nitrogen oxides is a precursor for the secondary formation of $PM_{2.5}$ in the atmosphere Ammonia reacts with sulfuric and nitric acids, which are produced from sulfur dioxide and nitrogen oxides in the ambient air, to form ammonium sulfate, ammonium nitrate, and other fine particulates[15] Exposure to high levels of ammonia can cause irritation to the skin, throat, lungs, and eyes

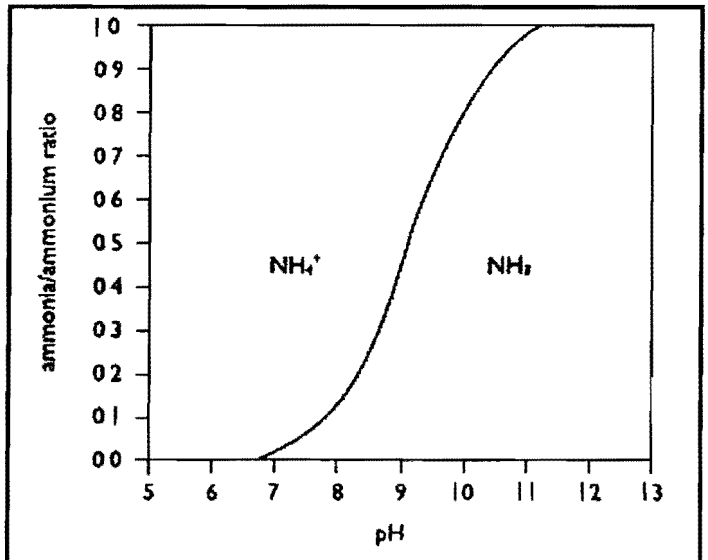
Ammonia volatilization is the result of the microbial decomposition of nitrogenous compounds in poultry litter The primary nitrogenous compound in poultry litter is uric acid, but nitrogenous compounds also occur in the form of undigested organic nitrogen in poultry feces Whenever uric acid comes in contact with the enzyme urease, which is excreted in animal feces, the uric acid will hydrolyze rapidly to form ammonia and this ammonia will be emitted soon after The formation of ammonia will continue more slowly (over a period of months or years) with the microbial breakdown of organic nitrogen in the litter The rate of ammonia volatilization is influenced by a number of factors including the concentrations of nitrogenous compounds in the litter, temperature, air velocity, surface area, and moisture

[12] 'Nutrition and Feeding of Poultry", Larbier and Leclercq, 1994
[13] M H Chang and T C Chen, International Journal of Poultry Science 2 (5) 313-317, 2003
[14] "Litter Treatment", Martine Boulianne, University of Montreal
[15] Workshop Review Draft for EPA Regional Priority AFO Science Question Synthesis Document - Air Emission Characterization and Management, pg 2

Control of Ammonia Emissions

Many of the VOC control strategies mentioned above are also effective in controlling ammonia emissions Of these strategies much research has confirmed the ability of acidifying litter amendments such as Alum (aluminum sulfate), Poultry Litter Treatment (PLT, sodium bisulfate), Poultry Guard (clay material containing sulfuric acid), phosphoric acid, etc to reduce ammonia volatilization

Ammonia emissions are greatly influenced by litter pH Once formed, the ammonia will be in one of two forms as the uncharged form of ammonia (NH_3) or the ammonium ion (NH_4+), which is nonvolatile Ammonia is also less soluble in water than the ammonium ion Under acidic conditions (pH values of less than 7 0) ammonium is the predominate species, and ammonia volatilization occurs at a lower rate than at higher pH values However, some ammonia volatilization occurs even under moderately acidic conditions Volatilization of ammonia increases with increasing pH Uric acid decomposition occurs most rapidly under alkaline (pH>7) conditions Uricase, the enzyme that catalyzes uric acid breakdown, has maximum activity at a pH of 9 One principal ureolytic bacterium, *Bacillus pasteuri,* cannot grow at neutral pH, but thrives in litter above pH 8 5 [16] The litter pH in poultry houses can range between 8 5 and 10 0, which results in fairly rapid ammonia volatilization



The dependence of the ammonia/ammonium (NH_3/NH_4^+) ratio as a function of pH

All acidifying litter amendments work in a similar manner The free hydrogen ions (H+) that exist under acidic conditions react with ammonia to form nonvolatile ammonium ions The ammonium then reacts with sulfate ions to form ammonium sulfate ($(NH_4)_2SO_4$), a water-soluble fertilizer Because of these reactions, the amount of ammonia emitted from the litter will be reduced and the nitrogen (N) content of the litter will increase, which may make it more valuable as a fertilizer

[16] Alabama Cooperative Extension, ANR-1199 April 2001

Acidifying litter amendments are generally most effective the first three weeks after application Since poultry manure is alkali, the continual addition of more manure to the litter will counteract the acidifying affect of the amendments, eventually raising the pH above neutral Although these products are typically only applied at the beginning of the grow-out cycle, it is possible to reapply some acidifying litter amendments such as PLT (a non-toxic product) to reduce pH and provide further ammonia control after the birds have been placed Dry alum activates more quickly if sufficient moisture is present (>18%) Because of this more growers are currently using liquid alum (which doesn't need moisture to activate) than dry alum[17]

Research has shown that alum can be used to reduce ammonia emissions by 70%[16] A flux chamber study by Moore, USDA (1997b) demonstrated the use of alum reduced ammonia emissions by 97% during the 1st four weeks of grow-out and 75% for the full 6 weeks These results were confirmed by Brewer in 1998 (1999 Poultry Science Journal 78 692-698) McWard and Taylor found that all acidifying litter treatments worked to reduce ammonia emissions for up to four weeks and found little difference in the effectiveness of the treatments that they tested (alum, sodium bisulfate, and acidified clay) (2001 Journal of Applied Poultry Research Vol 9, No 4) A study by Moore, Daniel, Edwards, and Miller on the "Effect of Chemical Amendments on Ammonia Volatilization from Poultry Litter" showed that alum reduced ammonia volatilization by up to 99% vs untreated litter (American Society of Agronomy, Mar/Apr 1995 v 24(2) pg 293-300) Terzich (1998) reported that sodium bisulfate significantly reduced litter pH and ammonia emissions

PM10 Emissions

PM10 emissions consist of microscopic particles (with aerodynamic diameter of 10 microns or less) generated from dust, dry manure and litter, as well as poultry feathers and skin These particles are generated when larger pieces of material break down under friction or other abrasive forces, and are subsequently entrained into the ambient air due to air and wind movements PM10 emissions are harmful to animals and humans as some of the microscopic particles and inhaled deep into the lungs during breathing, causing respiratory illnesses Particles that are small enough to pass into the bloodstream from the respiratory system have also been known to cause cardiovascular illnesses In addition, PM10 emissions are also associated with the spread of odor and pathogenic agents such as bacteria and viruses, since odor molecules and microbes are often attached to particulate matter

Control of PM10 Emissions

There are no PM10 control measures that are specific to poultry operations, but it is possible various control methods that have been used in other industrial operations could be adapted for use At a minimum, poultry house design and management practices can be employed to limit generation and dispersion of PM10 Such a design includes permanent housing structures to limit windblown particulate matter, minimal disturbance of poultry litter (e g by removing litter only after several flocks rather than after every flock), and covering any litter/manure stockpiles that will be stored on-site for more than 72 hours[18] Industrial-style PM10 controls will generally involve complete enclosure of the poultry houses, capture of the ventilation air stream and

[17] Dr Philip Moore, Jr , USDA/ARS, Fayetteville, Arkansas
[18] Following precedence established in Rule 4570, Confined Animal Facilities

removal of the PM10 from the captured airstream using standard PM10 removal devices such as cyclones, electrostatic precipitators, baghouses, and wet scrubbers

Operating Schedule:

The typical operating schedule for the facility is 24 hours per day, 7 days per week, and 12 months per year

III. EQUIPMENT LISTING:

12 new mechanically/naturally ventilated turkey houses for 156,000 birds (13,000 birds/house) (120 total combined hp)

Each House

500' L x 52' W naturally/mechanically ventilated turkey house with capacity for 13,000 birds, with ten ventilation exhaust fans (1 hp each)

Post Project Equipment Description

N-5577-4-0 156,000 TURKEY RANCH CONSISTING OF TWELVE NATURALLY/MECHANICALLY VENTILATED TURKEY HOUSES WITH ELECTRIC FANS TOTALING 120 HP (RECONSTRUCTED SOURCE)

VI. EMISSION CONTROL TECHNOLOGY EVALUATION

A. BACT Applicability

Pursuant to District Rule 2201, Sections 4 1 1 and 4 1 2, BACT shall be applied to a new, relocated, or modified emissions unit if the new or relocated unit has a Potential to Emit (PE) exceeding two pounds in any one day or the modified emissions unit results in an Adjusted Increase in Permitted Emissions (AIPE) exceeding 2 lb/day for NO_X, SO_X, PM_{10}, CO, VOC, or NH_3 For CO emissions, the CO Post-project Stationary Source Potential to Emit (SSPE2) must also exceed 200,000 lb/year to trigger BACT

As shown in section VII C 2 of the engineering evaluation and the table below, each of the proposed new turkey houses will result in a PE > 2 lb/day for VOC, NH_3, and PM10 Therefore, BACT is triggered for VOC, NH_3 and PM10 emissions

Post Project Potential to Emit (PE2) (lb/day)						
	NO_X	SO_X	PM_{10}	CO	VOC	NH_3
New Turkey House for 13,000 birds	0	0	10 2	0	2 9	6 1
BACT triggered?	No	No	Yes	No	Yes	Yes

B. BACT Policy

Per District Policy BACT APR 1305-1, Section IX, "A top-down BACT analysis shall be performed as a part of the Application Review for each application subject to the BACT requirements pursuant to the District's NSR Rule " For source categories or classes covered in the BACT Clearinghouse, relevant information under each of the steps may be simply cited from the Clearinghouse without further analysis

C. Achieved in Practice Determination

The U S Environmental Protection Agency (USEPA) RACT/BACT/LAER Clearinghouse, the California Air Pollution Control Officers Association (CAPCOA) BACT Clearinghouse, the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) BACT Clearinghouse, the Bay Area Air Quality Management District (BAAQMD), and the South Coast Air Quality Management District (SCAQMD) BACT Guidelines were reviewed to determine potential control technologies for this class and category of operation No BACT guidelines were found for this class and category of source

D. Best Available Control Technology (BACT) Analysis for Permit Unit N-5577-4-0

BACT Analysis for VOC Emissions:

Step 1 - <u>Identify All Possible Control Technologies</u>

The control technology options include

Option 1	Emissions from Turkey House controlled by Carbon Adsorption
Option 2	Emissions from Turkey House controlled by Thermal Incineration
Option 3	Emissions from Turkey House controlled by Catalytic Incineration
Option 4	Emissions from Turkey House controlled by a Biofilter capable of achieving 80% control
Option 5	Animals fed in accordance with National Research Counsel (NRC) or other District accepted guidelines utilizing routine nutritional analysis for rations
Option 6	Turkey House Design and Management Practices 1 Weatherproof housing 2 Dry manure/litter management 3 Water pipes and drinkers inspected daily 4 Mortality removed daily
Option 7	Use of probiotics
Option 8	Acidifying Litter Amendments[19]

Step 2 – <u>Eliminate Infeasible Options</u>

Option 7 (use of probiotics) will be eliminated from consideration at this time Although this method shows some promise, more research is needed to verify the emission reductions Probiotics are living organisms and their ability to inhibit emissions is likely to be affected by many variables These variables have not yet been identified to an extent

[19] Amendments are generally applied between flocks (while house is empty), if litter is to be re-used for a new flock

that would ensure that emissions would be decreased in cases in which probiotics are used

There are no other technologically infeasible options to eliminate from step 1

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Control Technologies for VOC

VOC Emission Control Technology Rankings		
Rank	Control Efficiency	Status
1) Thermal Incineration	98% [20]	Technologically Feasible
2) Catalytic Incineration	95% [21]	Technologically Feasible
3) Carbon Adsorption	95% [22]	Technologically Feasible
4) Biofiltration	80%[23]	Technologically Feasible
5) Turkey House Design and Litter Management Practices & Feeding in accordance with NRC guidelines	19%[24]	Achieved in Practice
6) Acidifying Litter Amendments & Feeding in accordance with NRC guidelines	19%[24]	Achieved in Practice
7) Turkey House Design and Litter Management Practices	15%[25]	Achieved in Practice
8) Acidifying Litter Amendments	15%[26]	Achieved in Practice
9) Animals fed in accordance with National Research Counsel (NRC) or other District accepted guidelines utilizing routine nutritional analysis for rations	5%[27]	Achieved in Practice

Step 4 - Cost Effectiveness Analysis

Options 1 through 4 require that the turkey house be completely enclosed and equipped with mechanical ventilation capacity in order that the exhaust air can be captured and treated A completely enclosed mechanically ventilated house is generally not an industry

[20] OAQPS Control Cost Manual, 4th Edition, EPA 450/3-90-006, January 1990, page 3-8

[21] EPA-456/R-95-003, Survey of Control Technologies for Low Concentration Organic Vapor Gas Streams, Control Technology Center, May 1995, section 2 1, Catalytic Incineration, pages 13-16 The 95% value used is based upon EPA permit No 23GS-93-OT-1 for 3M Company in St Paul for an ARI, Econ-Abator catalytic oxidizer, Emission Point No 2

[22] EPA-456/R-95-003, Survey of Control Technologies for Low Concentration Organic Vapor Gas Streams, Control Technology Center, May 1995, Section 3, Adsorption, pages 45 - 46

[23] According to the SCAQMD Rule 1133 2 final staff report (page 18) "Technology Assessment Report states a well designed, well operated, and well-maintained biofilter is capable of achieving 80% destruction efficiency for VOC and NH_3 "

[24] Total control efficiency of management practices and feeding with NRC guidelines = 1-[(1-0 15) x (1-0 05)] = 19%

[25] Conservative estimate based on CARB source test results for enclosed, mechanically ventilated turkey houses Test results indicate that no VOCs were emitted from the litter when no birds were present Lower emissions may result from the ability of the mechanically ventilated turkey houses to maintain lower litter moisture, which inhibits microbial action leading to VOC emissions

[26] Preliminary results of study on performed on Poultry Litter Treatment in 2005 (Mitloehner) – VOC reductions may be the result of the ability of lower pH to inhibit microbial action leading to emissions

[27] Assuming that undigested protein in bird excrement, which emits VOCs during decomposition, can be reduced by feeding with NRC guidelines

requirement for turkey operations since the birds in questions are hardy enough to resist both cold and hot weather extremes The completely enclosed house is therefore not expected to provide any added benefit or economic advantage, but will result in significant additional capital and operation costs The added capital costs will come from more elaborate electrical wiring, larger capacity fans, and ducting In addition, since the birds in a fully enclosed house will become dependent on mechanical ventilation, each house will require a backup generator in the event of utility power failure

The applicant estimates that the additional capital cost for completely enclosed housing with mechanical ventilation is $869,673 for the proposed twelve houses ($72,473 per house) (See Appendix A) This is the additional cost for the design and construction of the houses alone, without consideration of ducting exhaust into a control device, cost of the control device, and operating costs for the control device

The applicant has further estimated that the additional cost of electricity for operating a mechanically ventilated house is approximately $25,000 per year (See Appendix B)

The additional capital cost for the design and construction of a fully enclosed mechanically ventilated house is annualized as follows

$$A = [P \times i(I+1)^n]/[(I+1)^n-1]$$

Where	A	=	Annual Cost
	P	=	Present Value
	I	=	Interest Rate (10%)
	N	=	Equipment Life (10 years)

$$A = [\$72{,}473 \times 0\ 1(1\ 1)^{10}]/[(1\ 1)^{10}-1]$$
$$= \mathbf{\$11{,}794/year}$$

The total additional annual cost for a fully enclosed mechanically ventilated house = annualized additional capital cost + additional operation cost = $11,794 + $25,000 = $36,794

Since this control would apply equally to VOC and PM10 control, the cost must be compared to the Multi-Pollutant Cost Effectiveness Threshold (MCET), as determined below

Total uncontrolled VOC emissions from each house = 13,000 birds x 0 1 lb VOC/bird/yr = 1,300 lb VOC/yr

Assuming the fully enclosed mechanically ventilated house was subsequently connected to a control device and an overall VOC control efficiency of 93% was realized (representing 95% capture efficiency and 98% destruction efficiency), the quantity of VOC controlled would be 93% x 1,300 lb/yr = 1,209 lb/yr, or 0 6045 ton/yr

Total uncontrolled PM10 emissions from each house = 13,000 birds x 0 3 lb PM10/bird/yr = 3,900 lb PM10/yr

Assuming the fully enclosed mechanically ventilated house was subsequently connected to a control device and an overall PM10 control efficiency of 93% was realized (representing 95% capture efficiency and 98% destruction efficiency), the quantity of PM10 controlled would be 93% x 3,900 lb/yr = 3,627 lb/yr, or 1 8135 tons/yr

The control reduces 0 6045 ton/yr of VOC and 1 8135 tons/yr of PM10

The cost effectiveness threshold for VOC = $17,500/ton

The cost effectiveness threshold for PM10 = $11,400/ton

MCET = (0 6045 tons VOC/yr) * ($17,500/ton VOC) +
(1 8135 tons PM10/yr) * ($11,400/ton PM10)
= $31,253 per year

Since the additional capital and operation costs of a fully enclosed mechanically ventilated house ($36,794/yr) exceed the MCET ($31,253/yr) even before the capital and operation costs of the control devices are considered, all options that require the turkey house to be fully enclosed and mechanically ventilated (options 1 through 4) will not be cost effective and may be eliminated from consideration

Step 5 - <u>Select BACT</u>

The remaining control options are generally considered Achieved In Practice for poultry operations and are therefore selected as BACT since, pursuant to District BACT policy, no cost effectiveness analysis is required for Achieved In Practice measures

1 Feeding animals in accordance with applicable NRC guidelines
2 House design and management practices including (a) weatherproof housing structure (b) dry manure/litter management (c) daily inspection of water pipes and drinkers, and (d) daily removal of mortality
3 Use of acidifying litter amendments per manufacturer recommendations

BACT Analysis for NH_3 Emissions:

Step 1 - <u>Identify All Possible Control Technologies</u>

The control technology options include

Option 1 Emissions from Turkey House controlled by Carbon Adsorption
Option 2 Emissions from Turkey House controlled by Thermal Incineration
Option 3 Emissions from Turkey House controlled by Catalytic Incineration
Option 4 Emissions from Turkey House controlled by a Biofilter capable of achieving 80% control
Option 5 Animals fed in accordance with National Research Counsel (NRC) or other District accepted guidelines utilizing routine nutritional analysis for rations
Option 6 Turkey House Design and Management Practices
1 Weatherproof housing

2 Dry manure/litter management
3 Water pipes and drinkers inspected daily
4 Mortality removed daily

Option 7 Acidifying Litter Amendments

Step 2 – Eliminate Infeasible Options

Option 1 (Emissions from Turkey House controlled by Carbon Adsorption) will be eliminated from consideration at this time Although this option is technologically feasible, no uses of carbon adsorption to control turkey house ammonia emissions were identified Since a cost effectiveness threshold has not been established for ammonia, only achieved-in-practice options will be considered for ammonia at this time

Option 2 (Emissions from Turkey House controlled by Thermal Incineration) and Option 3 (Emissions from Turkey House controlled by Catalytic Incineration) will be eliminated from consideration at this time Although these options are technologically feasible, no uses of thermal or catalytic incineration to control turkey house ammonia emissions were identified Since a cost effectiveness threshold has not been established for ammonia, only achieved-in-practice options will be considered for ammonia at this time It should also be noted that incineration is an oxidation process The most likely by product of the oxidation of ammonia would be NO_X The following equation demonstrates the likely reaction

$$NH_3 + 2\ 5O_2 \rightarrow NO_2 + 3H_2O$$

The molecular weights of NH_3 and NO_2 are 17 and 46, respectively, therefore, for every pound of ammonia eliminated there is potential to produce up to 2 7 pounds of NO_X (a precursor for ozone, and according to modeling results, a more significant precursor of PM_{10} and $PM_{2\ 5}$ than NH_3) This is an additional reason to eliminate incineration as a control for ammonia

Option 4 (Emissions from Turkey House controlled by a Biofilter) will be eliminated from consideration at this time Biofiltration is widely used to control emissions from enclosed buildings where pigs are raised and have been used in Minnesota to control emissions from enclosed cow housing areas and composting facilities At West Virginia University in 2003, a bench scale biofilter for 33 birds was evaluated for removal of ammonia from poultry house exhaust The biofilter provided 95% control of ammonia emissions[28] However, biofilters have not yet been used for poultry facilities on a large scale and although this option is technologically feasible, no uses of biofiltration to control turkey house ammonia emissions were identified Since a cost effectiveness threshold has not been established for ammonia, only achieved-in-practice options will be considered for ammonia at this time

[28] http //www ncbi nlm nih gov/entrez/query fcgi?cmd = Retrieve&db = PubMed&list uids = 12602826&dopt = Abstract

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

NH_3 Emission Control Technology Rankings		
Rank	Control Efficiency	Status
1) Turkey House Design and Litter Management Practices & Feeding in accordance with NRC guidelines	55%[29]	Achieved in Practice
2) Acidifying Litter Amendments & Feeding in accordance with NRC guidelines	55%[33]	Achieved in Practice
3) Acidifying Litter Amendments	50%[30]	Achieved in Practice
4) Turkey House Design and Management Practices	50%	Achieved in Practice
5) Animals fed in accordance with National Research Counsel (NRC) or other District accepted guidelines utilizing routine nutritional analysis for rations	10%[31]	Achieved in Practice

Step 4 - Cost Effectiveness Analysis

All of the options above are achieved-in-practice, therefore a cost effectiveness analysis is not required

Step 5 - Select BACT

The facility is proposing the following Achieved In Practice control measures, which are selected as BACT for NH_3

1 Feeding animals in accordance with applicable NRC guidelines
2 House design and management practices including (a) weatherproof housing structure (b) dry manure/litter management (c) daily inspection of water pipes and drinkers, and (d) daily removal of mortality
3 Use of acidifying litter amendments per manufacturer recommendations

BACT Analysis for PM10 Emissions:

Step 1 - Identify All Possible Control Technologies

The control technology options include

Option 1 Emissions from Turkey House controlled by Cyclone and Electrostatic precipitator
Option 2 Emissions from Turkey House controlled by Cyclone and Baghouse

[29] Total control efficiency of management practices and feeding with NRC guidelines = 1-[(1-0 50) x (1-0 10)] = 55%
[30] (a)Alabama Cooperative Extension, Agronomy Series – Alum in Poultry Litter (May, 2005) (b) U S Water News Online – Aluminum Sulfate found to reduce ammonia, phosphorus in Poultry litter (February 2002) (c) McWard, G W and D R Taylor, Acidified Clay Litter Amendment, Journal of Applied Poultry Research (2000)
[31] Assuming that nitrogen excretion, which leads to ammonia volatization, can be reduced by 10% by feeding with NRC guidelines

Option 3 Emissions from Turkey House controlled by Cyclone and Wet Scrubber
Option 4 Emissions from Turkey House controlled by Cyclone
Option 5 Turkey House Construction and Management Practices
1 Weatherproof housing
2 Minimum disturbance of litter/manure
3 Covering litter/manure stockpiles

Step 2 – Eliminate Infeasible Options

There are no other technologically infeasible options to eliminate from step 1

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

PM10 Emission Control Technology Rankings		
Rank	Control Efficiency	Status
1) Cyclone and Electrostatic Precipitator	98%	Technologically Feasible
2) Cyclone and Baghouse	95%	Technologically Feasible
3) Cyclone and Wet Scrubber	80%	Technologically Feasible
4) Cyclone	50%	Technologically Feasible
5) Turkey House Design and Management Practices	5%	Achieved in Practice

Step 4 - Cost Effectiveness Analysis

As previously demonstrated under the VOC cost effectiveness analysis, the additional capital and operation costs of a fully enclosed mechanically ventilated house ($36,794/yr) exceed the MCET ($31,253/yr) even before the capital and operation costs of the control devices are considered, hence all options that require the turkey house to be fully enclosed and mechanically ventilated (options 1 through 4) will not be cost effective and may be eliminated from consideration

Step 5 - Select BACT

The remaining control options are generally considered Achieved In Practice for poultry operations and are therefore selected as BACT since, pursuant to District BACT policy, no cost effectiveness analysis is required for Achieved In Practice measures

- Turkey House Design and Management Practices Including (1) Weatherproof housing (2) Minimum disturbance of litter/manure, and (3) Covering litter/manure stockpiles

Appendix A

Additional Capital Costs for Fully Enclosed Mechanically Ventilated Houses

Sperry 50' x 500' Tunnel Only	Qnty	Labor	Material	Equipt	Other	Total
Concrete						
Cool cell pads	12				32,856	32,856
Generator Pad	1				1,675	1,675
Electrical						
350 KW generator w/fuel cell	1				69,900	69,900
Main Service/Transfer Switch	1				35,000	35,000
Equipment (Includes install labor)						
Cool cell kit (64' x 4')	12			93,297		93,297
Cool cell linear lift (48")	12			11,592		11,592
Tunnel Door & hardware	12			93,282		93,282
Tunnel Door Linear Lift	12			10,141		10,141
Vent board linear lift (26") - equipment	12			11,153		11,153
Vent boards - equipment (72 per house)	12			31,104		31,104
Vent system hardware	12			11,819		11,819
Water meters	12			2,963		2,963
Roofs/Sidewalls/Endwalls						
Sidewalls/cool cell/fans/fasteners/insulation	12		134,496			134,496
Construct Cool Cells	12	96,900				96,900
Install plywood on interior walls & metal	12	74,400				74,400
Install cool cell/doors inside cool cell/suspension	12				36,624	36,624
Exterior side wall metal	12				122,472	122,472
Sub-Total		$171,300	$134,496	$265,350	$298,527	$869,673

Appendix B

Additional Electricity Costs for Fully Enclosed Mechanically Ventilated Houses

Explanation of Electricity Cost Data

The first three sheets titled 'Cressey 1' through 'Cressey 3' show electricity charges (based on attached PG&E Records) for the past three years for the three poultry ranches located at Foster Farm's Cressey Ranch Complex Ranches 1 and 2 are naturally ventilated and Ranch 3 is totally enclosed and mechanically ventilated Each ranch is metered separately

The 'Summary' sheet shows the difference in electricity costs between Ranch 3 and the average of the other two ranches The last column on this sheet shows the sum of the cost differences for each year for the most recent three years

The average of the annual cost differences is around $19,000 per year Cressey Ranch 3 contains 229,000 square feet of poultry housing The proposed Sperry design contains 312,000 square feet of housing, about 36% more The expected difference in electricity cost is therefore scaled up by 36%, giving $25,000 per year

Cressey 1 (Natural Ventilation)						
Service ID	From	To	Days	Rate Schedule	Electric Charges	Electric Usage
9887160535	4/19/2011	5/17/2011	28	AG5B	$1,717 74	12,840
9887160535	3/18/2011	4/19/2011	32	AG5B	$1,761 91	18,840
9887160535	2/15/2011	3/18/2011	31	AG5B	$1,326 55	14,280
9887160535	1/15/2011	2/15/2011	31	AG5B	$1,998 34	23,040
9887160535	12/16/2010	1/15/2011	30	AG5B	$1,206 59	13,800
9887160535	11/17/2010	12/16/2010	29	AG5B	$1,870 18	21,600
9887160535	10/18/2010	11/17/2010	30	AG5B	$1,385 56	13,560
9887160535	9/17/2010	10/18/2010	31	AG5B	$3,345 11	20,880
9887160535	8/17/2010	9/17/2010	31	AG5B	$1,667 14	9,480
9887160535	7/17/2010	8/17/2010	31	AG5B	$4,111 74	28,080
9887160535	6/17/2010	7/17/2010	30	AG5B	$2,493 85	11,880
9887160535	5/19/2010	6/17/2010	29	AG5B	$3,693 81	23,760
9887160535	4/20/2010	5/19/2010	29	AG5B	$1,694 44	12,120
9887160535	3/19/2010	4/20/2010	32	AG5B	$2,077 95	23,640
9887160535	2/16/2010	3/19/2010	31	AG5B	$913 88	8,880
9887160535	1/14/2010	2/16/2010	33	AG5B	$1,758 31	20,880
9887160535	12/15/2009	1/14/2010	30	AG5B	$1,221 73	14,280
9887160535	11/13/2009	12/15/2009	32	AG5B	$1,491 36	18,480
9887160535	10/14/2009	11/13/2009	30	AG5B	$1,747 15	11,040
9887160535	9/16/2009	10/14/2009	28	AG5B	$2,225 56	15,240
9887160535	8/15/2009	9/16/2009	32	AG5B	$3,392 57	22,200
9887160535	7/17/2009	8/15/2009	29	AG5B	$2,304 58	9,600
9887160535	6/17/2009	7/17/2009	30	AG5B	$3,599 39	22,800
9887160535	5/19/2009	6/17/2009	29	AG5B	$1,439 06	9,000
9887160535	4/18/2009	5/19/2009	31	AG5B	$2,121 62	13,080
9887160535	3/18/2009	4/18/2009	31	AG5B	$983 72	11,640
9887160535	2/17/2009	3/18/2009	29	AG5B	$1,064 81	12,360
9887160535	1/15/2009	2/17/2009	33	AG5B	$829 79	9,960
9887160535	12/16/2008	1/15/2009	30	AG5B	$1,597 51	19,920
9887160535	11/14/2008	12/16/2008	32	AG5B	$816 77	9,120
9887160535	10/15/2008	11/14/2008	30	AG5B	$1,521 15	11,640
9887160535	9/16/2008	10/15/2008	29	AG5B	$1,698 06	11,040
9887160535	8/15/2008	9/16/2008	32	AG5B	$3,082 48	19,800
9887160535	7/18/2008	8/15/2008	28	AG5B	$1,733 69	6,600
9887160535	6/17/2008	7/18/2008	31	AG5B	$3,333 66	21,120
9887160535	5/16/2008	6/17/2008	32	AG5B	$1,658 78	7,560
9887160535	4/17/2008	5/16/2008	29	AG5B	$2,208 36	17,880

Cressey 2 (Natural Ventilation)						
Service ID	From	To	Days	Rate Schedule	Electric Charges	Electric Usage
9887160530	4/19/2011	5/17/2011	28	AG5B	$1,757 21	14,400
9887160530	3/18/2011	4/19/2011	32	AG5B	$1,890 96	20,280
9887160530	2/15/2011	3/18/2011	31	AG5B	$1,187 13	12,720
9887160530	1/15/2011	2/15/2011	31	AG5B	$1,956 79	22,800
9887160530	12/16/2010	1/15/2011	30	AG5B	$1,278 87	14,760
9887160530	11/17/2010	12/16/2010	29	AG5B	$1,970 60	23,520
9887160530	10/18/2010	11/17/2010	30	AG5B	$1,621 62	16,680
9887160530	9/17/2010	10/18/2010	31	AG5B	$3,337 68	21,360
9887160530	8/17/2010	9/17/2010	31	AG5B	$1,797 49	11,760
9887160530	7/17/2010	8/17/2010	31	AG5B	$5,069 75	34,560
9887160530	6/17/2010	7/17/2010	30	AG5B	$3,041 88	14,640
9887160530	5/19/2010	6/17/2010	29	AG5B	$4,109 11	27,000
9887160530	4/20/2010	5/19/2010	29	AG5B	$2,120 06	15,360
9887160530	3/19/2010	4/20/2010	32	AG5B	$2,230 90	25,920
9887160530	2/16/2010	3/19/2010	31	AG5B	$1,145 31	11,280
9887160530	1/14/2010	2/16/2010	33	AG5B	$1,970 74	23,520
9887160530	12/15/2009	1/14/2010	30	AG5B	$1,442 32	16,680
9887160530	11/13/2009	12/15/2009	32	AG5B	$1,680 95	20,520
9887160530	10/14/2009	11/13/2009	30	AG5B	$1,830 41	11,400
9887160530	9/16/2009	10/14/2009	28	AG5B	$2,075 17	13,680
9887160530	8/15/2009	9/16/2009	32	AG5B	$3,496 03	23,880
9887160530	7/17/2009	8/15/2009	29	AG5B	$2,275 89	9,720
9887160530	6/17/2009	7/17/2009	30	AG5B	$3,500 81	22,920
9887160530	5/19/2009	6/17/2009	29	AG5B	$1,475 79	9,480
9887160530	4/18/2009	5/19/2009	31	AG5B	$2,367 53	16,200
9887160530	3/18/2009	4/18/2009	31	AG5B	$1,032 18	12,120
9887160530	2/17/2009	3/18/2009	29	AG5B	$1,213 90	14,160
9887160530	1/15/2009	2/17/2009	33	AG5B	$957 55	11,760
9887160530	12/16/2008	1/15/2009	30	AG5B	$1,636 89	20,640
9887160530	11/14/2008	12/16/2008	32	AG5B	$723 29	7,920
9887160530	10/15/2008	11/14/2008	30	AG5B	$1,023 21	8,160
9887160530	9/16/2008	10/15/2008	29	AG5B	$1,423 77	9,120
9887160530	8/15/2008	9/16/2008	32	AG5B	$3,109 59	19,800
9887160530	7/18/2008	8/15/2008	28	AG5B	$1,721 76	5,160
9887160530	6/17/2008	7/18/2008	31	AG5B	$3,070 63	18,360
9887160530	5/16/2008	6/17/2008	32	AG5B	$1,852 27	7,680
9887160530	4/17/2008	5/16/2008	29	AG5B	$1,965 19	14,400

Cressey 3 (Mechanical Ventilation)						
Service ID	From	To	Days	Rate Schedule	Electric Charges	Electric Usage
9887160540	4/19/2011	5/17/2011	28	AG5B	$2,625 35	19,040
9887160540	3/18/2011	4/19/2011	32	AG5B	$3,227 21	34,880
9887160540	2/15/2011	3/18/2011	31	AG5B	$1,532 89	17,120
9887160540	1/15/2011	2/15/2011	31	AG5B	$2,647 24	30,880
9887160540	12/16/2010	1/15/2011	30	AG5B	$1,652 15	18,880
9887160540	11/17/2010	12/16/2010	29	AG5B	$2,291 20	26,720
9887160540	10/18/2010	11/17/2010	30	AG5B	$1,918 22	16,640
9887160540	9/17/2010	10/18/2010	31	AG5B	$7,040 40	47,040
9887160540	8/17/2010	9/17/2010	31	AG5B	$4,167 99	20,160
9887160540	7/17/2010	8/17/2010	31	AG5B	$8,530 98	60,480
9887160540	6/17/2010	7/17/2010	30	AG5B	$5,504 23	31,840
9887160540	5/19/2010	6/17/2010	29	AG5B	$6,824 28	42,720
9887160540	4/20/2010	5/19/2010	29	AG5B	$2,852 50	22,880
9887160540	3/19/2010	4/20/2010	32	AG5B	$2,734 70	29,280
9887160540	2/16/2010	3/19/2010	31	AG5B	$2,038 56	21,920
9887160540	1/14/2010	2/16/2010	33	AG5B	$2,264 30	26,880
9887160540	12/15/2009	1/14/2010	30	AG5B	$2,008 09	24,000
9887160540	11/13/2009	12/15/2009	32	AG5B	$1,812 16	23,200
9887160540	10/14/2009	11/13/2009	30	AG5B	$3,374 47	24,480
9887160540	9/16/2009	10/14/2009	28	AG5B	$4,321 31	17,440
9887160540	8/15/2009	9/16/2009	32	AG5B	$6,865 33	47,040
9887160540	7/17/2009	8/15/2009	29	AG5B	$4,591 52	25,440
9887160540	6/17/2009	7/17/2009	30	AG5B	$7,389 49	51,040
9887160540	5/19/2009	6/17/2009	29	AG5B	$3,103 07	17,440
9887160540	4/18/2009	5/19/2009	31	AG5B	$4,669 23	37,440
9887160540	3/18/2009	4/18/2009	31	AG5B	$1,213 26	13,920
9887160540	2/17/2009	3/18/2009	29	AG5B	$2,050 91	23,680
9887160540	1/15/2009	2/17/2009	33	AG5B	$1,321 62	14,080
9887160540	12/16/2008	1/15/2009	30	AG5B	$1,942 38	23,680
9887160540	11/14/2008	12/16/2008	32	AG5B	$1,135 64	12,800
9887160540	10/15/2008	11/14/2008	30	AG5B	$3,383 48	25,440
9887160540	9/16/2008	10/15/2008	29	AG5B	$1,836 00	12,160
9887160540	8/15/2008	9/16/2008	32	AG5B	$6,126 46	43,200
9887160540	7/18/2008	8/15/2008	28	AG5B	$4,224 78	19,520
9887160540	6/17/2008	7/18/2008	31	AG5B	$6,677 86	49,440
9887160540	5/16/2008	6/17/2008	32	AG5B	$3,261 23	17,120
9887160540	4/17/2008	5/16/2008	29	AG5B	$3,888 74	32,480

Summary				
Ranch 1	Ranch 2	Ranch 3	Ranch 3 Minus Average of Ranch 1 & 2	12 month Electricity Cost Difference
Electric Charges	Electric Charges	Electric Charges		
1717 74	$1,757 21	$2,625 35	$887 88	
1761 91	$1,890 96	$3,227 21	$1,400 78	
1326 55	$1,187 13	$1,532 89	$276 05	
1998 34	$1,956 79	$2,647 24	$669 68	
1206 59	$1,278 87	$1,652 15	$409 42	
1870 18	$1,970 60	$2,291 20	$370 81	
1385 56	$1,621 62	$1,918 22	$414 63	
3345 11	$3,337 68	$7,040 40	$3,699 01	
1667 14	$1,797 49	$4,167 99	$2,435 68	
4111 74	$5,069 75	$8,530 98	$3,940 24	
2493 85	$3,041 88	$5,504 23	$2,736 37	
3693 81	$4,109 11	$6,824 28	$2,922 82	$20,163 34
1694 44	$2,120 06	$2,852 50	$945 25	
2077 95	$2,230 90	$2,734 70	$580 28	
913 88	$1,145 31	$2,038 56	$1,008 97	
1758 31	$1,970 74	$2,264 30	$399 78	
1221 73	$1,442 32	$2,008 09	$676 07	
1491 36	$1,680 95	$1,812 16	$226 01	
1747 15	$1,830 41	$3,374 47	$1,585 69	
2225 56	$2,075 17	$4,321 31	$2,170 95	
3392 57	$3,496 03	$6,865 33	$3,421 03	
2304 58	$2,275 89	$4,591 52	$2,301 29	
3599 39	$3,500 81	$7,389 49	$3,839 39	
1439 06	$1,475 79	$3,103 07	$1,645 65	$18,800 32
2121 62	$2,367 53	$4,669 23	$2,424 66	
983 72	$1,032 18	$1,213 26	$205 31	
1064 81	$1,213 90	$2,050 91	$911 56	
829 79	$957 55	$1,321 62	$427 95	
1597 51	$1,636 89	$1,942 38	$325 18	
816 77	$723 29	$1,135 64	$365 61	
1521 15	$1,023 21	$3,383 48	$2,111 30	
1698 06	$1,423 77	$1,836 00	$275 09	
3082 48	$3,109 59	$6,126 46	$3,030 43	
1733 69	$1,721 76	$4,224 78	$2,497 06	
3333 66	$3,070 63	$6,677 86	$3,475 72	
1658 78	$1,852 27	$3,261 23	$1,505 71	$17,555 55
2208 36	$1,965 19	$3,888 74	$1,801 97	

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Billing History

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Customer Profile

Name	FOSTER FARMS INC	Service ID	9887160535	Premise ID	3168524200
Address	1502 CRESSEY WAY CRESSEY 3 RANCH	Old Account	TTR8311081	Status	1
City	ATWATER	Account ID	9887160083	Rate Schedule	AG5B
Business Desc	665315-C309	Meter No.	92R461	Voltage	SECONDARY

Export

Export the billing history data to a spreadsheet.

Billing History

FROM	TO	Days	Rate Schedule	Electric Charges	Electric Usage	Billing Load Demand	Maximum Demand	On Demand	Part Demand	Off Demand	On kWh	Part kWh	Off kWh
04/19/11	05/17/11	28	AG5B	$1,717.74	12,840	79	56	49	26	56	1,320	1,440	10,080
03/18/11	04/19/11	32	AG5B	$1,761.91	18,840	74	73	0	73	65	0	7,680	11,160
02/15/11	03/18/11	31	AG5B	$1,326.55	14,280	74	55	0	55	47	0	5,640	8,640
01/15/11	02/15/11	31	AG5B	$1,998.34	23,040	74	70	0	65	70	0	8,400	14,640
12/16/10	01/15/11	30	AG5B	$1,206.59	13,800	74	41	0	41	38	0	5,520	8,280
11/17/10	12/16/10	29	AG5B	$1,870.18	21,600	74	74	0	64	74	0	7,920	13,680
10/18/10	11/17/10	30	AG5B	$1,385.56	13,560	79	55	26	55	48	360	4,200	9,000
09/17/10	10/18/10	31	AG5B	$3,345.11	20,880	79	77	77	0	74	4,200	0	16,680
08/17/10	09/17/10	31	AG5B	$1,667.14	9,480	79	47	41	0	47	1,440	0	8,040
07/17/10	08/17/10	31	AG5B	$4,111.74	28,080	79	77	71	0	77	7,200	0	20,880
06/17/10	07/17/10	30	AG5B	$2,493.85	11,880	79	79	71	0	79	2,280	0	9,600
05/19/10	06/17/10	29	AG5B	$3,693.81	23,760	78	78	72	0	78	5,520	0	18,240
04/20/10	05/19/10	29	AG5B	$1,694.44	12,120	78	62	41	53	62	1,560	1,800	8,760
03/19/10	04/20/10	32	AG5B	$2,077.95	23,640	65	65	0	65	64	0	9,120	14,520
02/16/10	03/19/10	31	AG5B	$913.88	8,880	56	55	0	55	49	0	3,480	5,400
01/14/10	02/16/10	33	AG5B	$1,758.31	20,880	56	56	0	56	52	0	7,800	13,080
12/15/09	01/14/10	30	AG5B	$1,221.73	14,280	53	52	0	49	52	0	4,800	9,480
11/13/09	12/15/09	32	AG5B	$1,491.36	18,480	55	52	0	52	49	0	6,480	12,000
10/14/09	11/13/09	30	AG5B	$1,747.15	11,040	78	67	67	16	67	2,040	480	8,520
09/16/09	10/14/09	28	AG5B	$2,225.56	15,240	78	54	52	0	54	1,800	0	13,440
08/15/09	09/16/09	32	AG5B	$3,392.57	22,200	78	76	72	0	76	4,680	0	17,520
07/17/09	08/15/09	29	AG5B	$2,304.58	9,600	82	72	71	0	72	2,880	0	6,720
06/17/09	07/17/09	30	AG5B	$3,599.39	22,800	82	78	76	0	78	5,760	0	17,040
05/19/09	06/17/09	29	AG5B	$1,439.06	9,000	86	41	34	0	41	960	0	8,040
04/18/09	05/19/09	31	AG5B	$2,121.62	13,080	86	77	72	66	77	2,280	2,760	8,040
03/18/09	04/18/09	31	AG5B	$983.72	11,640	55	41	0	41	40	0	4,320	7,320
02/17/09	03/18/09	29	AG5B	$1,064.81	12,360	55	53	0	53	50	0	4,440	7,920

01/15/09	02/17/09	33	AG5B	$829.79	9,960	58	35	0	35	32	0	3,360	6,600
12/16/08	01/15/09	30	AG5B	$1,597.51	19,920	58	55	0	53	55	0	6,720	13,200
11/14/08	12/16/08	32	AG5B	$816.77	9,120	62	38	0	36	38	0	3,240	5,880
10/15/08	11/14/08	30	AG5B	$1,521.15	11,640	86	65	50	36	65	840	480	10,320
09/16/08	10/15/08	29	AG5B	$1,698.06	11,040	86	49	49	0	47	1,080	0	9,960
08/15/08	09/16/08	32	AG5B	$3,082.48	19,800	86	82	80	0	82	4,800	0	15,000
07/18/08	08/15/08	28	AG5B	$1,733.69	6,600	86	68	67	0	68	1,920	0	4,680
06/17/08	07/18/08	31	AG5B	$3,333.66	21,120	86	86	83	0	86	6,000	0	15,120
05/16/08	06/17/08	32	AG5B	$1,658.78	7,560	82	64	61	0	64	1,200	0	6,360
04/17/08	05/16/08	29	AG5B	$2,208.36	17,880	82	71	67	68	71	2,640	4,080	11,160

Report prepared by **Rate Data Analysis**. Please contact *Lee and Simon* if you have any questions.

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Billing History

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Customer Profile

Name	FOSTER FARMS INC	Service ID	9887160530	Premise ID	3168523157
Address	1552 CRESSEY WAY CRESSEY 2 RANCH	Old Account	TTR8310761	Status	1
City	ATWATER	Account ID	9887160083	Rate Schedule	AG5B
Business Desc	665315-C310	Meter No.	92R459	Voltage	SECONDARY

Export

Export the billing history data to a spreadsheet.

Billing History

FROM	TO	Days	Rate Schedule	Electric Charges	Electric Usage	Billing Load Demand	Maximum Demand	On Demand	Part Demand	Off Demand	On kWh	Part kWh	Off kWh
04/19/11	05/17/11	28	AG5B	$1,757.21	14,400	91	46	43	29	46	1,440	1,560	11,400
03/18/11	04/19/11	32	AG5B	$1,890.96	20,280	74	74	0	74	62	0	9,000	11,280
02/15/11	03/18/11	31	AG5B	$1,187.13	12,720	62	48	0	48	40	0	5,280	7,440
01/15/11	02/15/11	31	AG5B	$1,956.79	22,800	66	60	0	60	59	0	9,120	13,680
12/16/10	01/15/11	30	AG5B	$1,278.87	14,760	66	41	0	41	41	0	6,000	8,760
11/17/10	12/16/10	29	AG5B	$1,970.60	23,520	67	61	0	61	59	0	9,120	14,400
10/18/10	11/17/10	30	AG5B	$1,621.62	16,680	91	48	31	44	48	480	4,560	11,640
09/17/10	10/18/10	31	AG5B	$3,337.68	21,360	91	76	73	0	76	4,200	0	17,160
08/17/10	09/17/10	31	AG5B	$1,797.49	11,760	91	43	38	0	43	1,800	0	9,960
07/17/10	08/17/10	31	AG5B	$5,069.75	34,560	91	91	90	0	91	9,240	0	25,320
06/17/10	07/17/10	30	AG5B	$3,041.88	14,640	91	91	91	0	91	3,000	0	11,640
05/19/10	06/17/10	29	AG5B	$4,109.11	27,000	85	85	83	0	85	5,760	0	21,240
04/20/10	05/19/10	29	AG5B	$2,120.06	15,360	82	82	50	70	82	1,920	3,240	10,200
03/19/10	04/20/10	32	AG5B	$2,230.90	25,920	67	62	0	62	60	0	9,720	16,200
02/16/10	03/19/10	31	AG5B	$1,145.31	11,280	67	66	0	66	65	0	4,800	6,480
01/14/10	02/16/10	33	AG5B	$1,970.74	23,520	67	62	0	61	62	0	8,760	14,760
12/15/09	01/14/10	30	AG5B	$1,442.32	16,680	67	67	0	67	62	0	5,520	11,160
11/13/09	12/15/09	32	AG5B	$1,680.95	20,520	64	64	0	64	56	0	7,440	13,080
10/14/09	11/13/09	30	AG5B	$1,830.41	11,400	77	73	73	29	71	2,040	360	9,000
09/16/09	10/14/09	28	AG5B	$2,075.17	13,680	77	55	48	0	55	1,560	0	12,120
08/15/09	09/16/09	32	AG5B	$3,496.03	23,880	77	74	72	0	74	4,800	0	19,080
07/17/09	08/15/09	29	AG5B	$2,275.89	9,720	85	71	71	0	71	2,640	0	7,080
06/17/09	07/17/09	30	AG5B	$3,500.81	22,920	85	77	72	0	77	5,160	0	17,760
05/19/09	06/17/09	29	AG5B	$1,475.79	9,480	85	40	36	0	40	960	0	8,520
04/18/09	05/19/09	31	AG5B	$2,367.53	16,200	85	74	70	66	74	2,880	2,880	10,440
03/18/09	04/18/09	31	AG5B	$1,032.18	12,120	59	43	0	43	43	0	4,800	7,320
02/17/09	03/18/09	29	AG5B	$1,213.90	14,160	59	59	0	59	56	0	5,280	8,880

PG&E Bill Usage History Results for Service ID =9887160530

01/15/09	02/17/09	33	AG5B	$957.55	11,760	53	38	0	37	38	0	3,840	7,920
12/16/08	01/15/09	30	AG5B	$1,636.89	20,640	53	53	0	53	53	0	6,840	13,800
11/14/08	12/16/08	32	AG5B	$723.29	7,920	65	36	0	36	34	0	2,760	5,160
10/15/08	11/14/08	30	AG5B	$1,023.21	8,160	85	52	17	30	52	240	360	7,560
09/16/08	10/15/08	29	AG5B	$1,423.77	9,120	85	41	41	0	40	960	0	8,160
08/15/08	09/16/08	32	AG5B	$3,109.59	19,800	85	85	83	0	85	4,560	0	15,240
07/18/08	08/15/08	28	AG5B	$1,721.76	5,160	84	76	76	0	73	1,320	0	3,840
06/17/08	07/18/08	31	AG5B	$3,070.63	18,360	84	84	80	0	84	5,520	0	12,840
05/16/08	06/17/08	32	AG5B	$1,852.27	7,680	84	78	72	0	78	960	0	6,720
04/17/08	05/16/08	29	AG5B	$1,965.19	14,400	86	79	76	50	79	2,160	2,880	9,360

Report prepared by **Rate Data Analysis**. Please contact *Lee and Simon* if you have any questions.

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Billing History

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Customer Profile					
Name	FOSTER FARMS INC	Service ID	9887160540	Premise ID	3168525243
Address	1674 CRESSEY WAY CRESSEY #3 RANCH	Old Account	TTR8311401	Status	1
City	ATWATER	Account ID	9887160083	Rate Schedule	AG5B
Business Desc	665315-C339	Meter No.	92R114	Voltage	SECONDARY

Export

Export the billing history data to a spreadsheet.

Billing History

FROM	TO	Days	Rate Schedule	Electric Charges	Electric Usage	Billing Load Demand	Maximum Demand	On Demand	Part Demand	Off Demand	On kWh	Part kWh	Off kWh
04/19/11	05/17/11	28	AG5B	$2,625.35	19,040	157	131	67	131	96	2,720	2,400	13,920
03/18/11	04/19/11	32	AG5B	$3,227.21	34,880	131	131	0	131	96	0	14,880	20,000
02/15/11	03/18/11	31	AG5B	$1,532.89	17,120	122	54	0	53	54	0	6,720	10,400
01/15/11	02/15/11	31	AG5B	$2,647.24	30,880	122	88	0	88	86	0	11,520	19,360
12/16/10	01/15/11	30	AG5B	$1,652.15	18,880	122	58	0	58	56	0	7,840	11,040
11/17/10	12/16/10	29	AG5B	$2,291.20	26,720	122	86	0	86	80	0	10,080	16,640
10/18/10	11/17/10	30	AG5B	$1,918.22	16,640	157	61	61	51	48	960	4,320	11,360
09/17/10	10/18/10	31	AG5B	$7,040.40	47,040	157	142	142	0	142	10,720	0	36,320
08/17/10	09/17/10	31	AG5B	$4,167.99	20,160	157	122	122	0	94	4,640	0	15,520
07/17/10	08/17/10	31	AG5B	$8,530.98	60,480	157	157	152	0	157	13,760	0	46,720
06/17/10	07/17/10	30	AG5B	$5,504.23	31,840	149	136	136	0	134	7,200	0	24,640
05/19/10	06/17/10	29	AG5B	$6,824.28	42,720	149	149	149	0	138	9,600	0	33,120
04/20/10	05/19/10	29	AG5B	$2,852.50	22,880	146	122	50	122	122	1,600	5,600	15,680
03/19/10	04/20/10	32	AG5B	$2,734.70	29,280	122	122	0	117	122	0	11,520	17,760
02/16/10	03/19/10	31	AG5B	$2,038.56	21,920	88	88	0	85	88	0	9,600	12,320
01/14/10	02/16/10	33	AG5B	$2,264.30	26,880	104	80	0	80	78	0	9,280	17,600
12/15/09	01/14/10	30	AG5B	$2,008.09	24,000	104	80	0	80	78	0	8,320	15,680
11/13/09	12/15/09	32	AG5B	$1,812.16	23,200	104	51	0	51	51	0	8,160	15,040
10/14/09	11/13/09	30	AG5B	$3,374.47	24,480	146	109	109	37	107	4,480	1,440	18,560
09/16/09	10/14/09	28	AG5B	$4,321.31	17,440	146	144	142	0	144	4,480	0	12,960
08/15/09	09/16/09	32	AG5B	$6,865.33	47,040	146	144	142	0	144	9,760	0	37,280
07/17/09	08/15/09	29	AG5B	$4,591.52	25,440	146	114	114	0	106	7,040	0	18,400
06/17/09	07/17/09	30	AG5B	$7,389.49	51,040	146	146	146	0	146	11,680	0	39,360
05/19/09	06/17/09	29	AG5B	$3,103.07	17,440	146	80	80	0	80	4,000	0	13,440
04/18/09	05/19/09	31	AG5B	$4,669.23	37,440	146	112	112	104	112	6,080	6,080	25,280
03/18/09	04/18/09	31	AG5B	$1,213.26	13,920	104	58	0	51	58	0	5,600	8,320
02/17/09	03/18/09	29	AG5B	$2,050.91	23,680	104	104	0	104	80	0	9,760	13,920

PG&E Bill Usage History Results for Service ID =9887160540

01/15/09	02/17/09	33	AG5B	$1,321.62	14,080	106	94	0	61	94	0	4,960	9,120
12/16/08	01/15/09	30	AG5B	$1,942.38	23,680	106	75	0	72	75	0	8,640	15,040
11/14/08	12/16/08	32	AG5B	$1,135.64	12,800	106	54	0	54	45	0	4,640	8,160
10/15/08	11/14/08	30	AG5B	$3,383.48	25,440	146	107	107	91	94	4,480	4,000	16,960
09/16/08	10/15/08	29	AG5B	$1,836.00	12,160	146	43	42	0	43	2,880	0	9,280
08/15/08	09/16/08	32	AG5B	$6,126.46	43,200	146	146	146	0	144	9,920	0	33,280
07/18/08	08/15/08	28	AG5B	$4,224.78	19,520	146	146	146	0	144	6,080	0	13,440
06/17/08	07/18/08	31	AG5B	$6,677.86	49,440	152	146	146	0	144	11,520	0	37,920
05/16/08	06/17/08	32	AG5B	$3,261.23	17,120	152	107	106	0	107	4,160	0	12,960
04/17/08	05/16/08	29	AG5B	$3,888.74	32,480	152	120	114	106	120	5,120	5,120	22,240

Report prepared by **Rate Data Analysis**. Please contact *Lee and Simon* if you have any questions.

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Appendix D

HRA and AAQA Summary

San Joaquin Valley Air Pollution Control District
Risk Management Review

To	Jonah Aiyabei – Permit Services
From	Cheryl Lawler – Technical Services
Date	May 13, 2011
Facility Name	Foster Farms, Sperry Ranch
Location	5001 N Sperry Road, Denair
Application #(s)	N-5577-4-0
Project #	N-1103801

A. RMR SUMMARY

RMR Summary			
Categories	**New Turkey Houses (Unit 4-0)**	**Project Totals**	**Facility Totals**
Prioritization Score	2 68	2 68	>1 0
Acute Hazard Index	0 27	0 27	0 27
Chronic Hazard Index	0 17	0 17	0 17
Maximum Individual Cancer Risk	**2.24E-06**	2 24E-06	2 24E-06
T-BACT Required?	**Yes**		
Special Permit Conditions?	**No**		

B. RMR REPORT

I. Project Description

Technical Services performed an Ambient Air Quality Analysis and a Risk Management Review (RMR) for an existing turkey ranch proposing to change its turkey housing configuration The ranch is proposing the construction of 12 new naturally/mechanically ventilated turkey houses for 156,000 turkeys The 12 new houses will replace 24 existing houses that have reached the end of their useful life

II. Analysis

For the RMR, Technical Services performed a prioritization using the District's HEARTs database Emissions were calculated using District approved emission factors for chicken broilers (poultry farm area sources) In accordance with the District's *Risk Management Policy for Permitting New and Modified Sources* (APR 1905-1, March 2, 2001), risks from the proposed project were prioritized using the procedures in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEART's database

The prioritization score was greater than one, therefore, a refined health risk assessment was required and performed for the project AERMOD was used, with area source parameters and meteorological data from Modesto to determine maximum dispersion factors at the nearest on-site residential and off-site receptors These dispersion factors were input into the HARP model to calculate the chronic and acute hazard indices and the carcinogenic risk for the project

The following parameters were used for the review

Analysis Parameters N-5577-4-0			
Total Number of Turkeys		156,000	
Daily PM10 Emission Rate (lbs)	122 4	**Daily NH3 Emission Rate (lbs)**	73 2
Hourly PM10 Emission Rate (lbs)	5 1		

In addition to the RMR, Technical Services performed modeling for the criteria pollutant PM_{10} using AERMOD The emission rate used was 5 1 lb PM_{10}/hour The results from the Criteria Pollutant Modeling are as follows

PM_{10} Pollutant Modeling Results*
Values are in $\mu g/m^3$

Category	24 Hours
Proposed Turkey Ranch Impact	23 69
District Interim Significance Level	10 4[1]
Results	Pass[2]

[1]The District has decided on an interim basis to use a threshold for fugitive dust sources of 10 4 $\mu g/m^3$ for the 24-hour average concentration

[2]The source has proposed to offset emissions (0 55 tons per year) to a level that will not cause or contribute to an exceedance of an air quality threshold

III. Conclusions

The ambient air quality impacts from PM_{10} emissions at the turkey ranch do not exceed the District's 24-hour interim threshold for fugitive dust sources, because the source has proposed to offset emissions (0 55 tons per year) below the District's Interim Significance Level

The acute and chronic indices are below 1 0, and the maximum individual cancer risk associated with the project is **2.24E-06**, which is greater than the 1 in a million threshold In accordance with the District's Risk Management Policy, the project is approved **with** Toxic Best Available Control Technology (T-BACT)

These conclusions are based on the data provided by the applicant and the project engineer Therefore, this analysis is valid only as long as the proposed data and parameters do not change

Appendix E

Draft ATCs N-5577-4-0 and 5-0

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO. N-5577-4-0 **ISSUANCE DATE** DRAFT

LEGAL OWNER OR OPERATOR: FOSTER FARMS, SPERRY RANCH
MAILING ADDRESS: ATTN ENVIRONMENTAL AFFAIRS
P O BOX 831
LIVINGSTON, CA 95334

LOCATION. 5001 SPERRY ROAD
DENAIR, CA 95316

EQUIPMENT DESCRIPTION:
156,000 TURKEY RANCH CONSISTING OF TWELVE NATURALLY/MECHANICALLY VENTILATED TURKEY HOUSES WITH ELECTRIC FANS TOTALING 120 HP (RECONSTRUCTED SOURCE)

CONDITIONS

1 {3215} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to enter the permittee's premises where a permitted source is located or emissions related activity is conducted, or where records must be kept under condition of the permit [District Rule 1070]

2 {3216} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit [District Rule 1070]

3 Each turkey house located at this ranch shall not house or be constructed to house more than 13,000 birds [District Rule 2201]

4 All birds shall be housed in permanent weatherproof housing with a dry manure/litter management system A wet cleaning method may only be used when required for animal health or biosecurity reasons [District Rules 2201 and 4570]

5 Permittee shall maintain records to demonstrate that a dry manure/litter management system is maintained For times when a wet cleaning method is required, the reason should be included as part of the records [District Rules 2201 and 4570]

6 All birds shall be fed in accordance with the National Research Council (NRC) guidelines [District Rules 2201 and 4570]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT This is NOT a PERMIT TO OPERATE Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment

Seyed Sadredin, Executive Director/APCO

DRAFT

DAVID WARNER, Director of Permit Services
N 5577-4-0 Sep 21 2011 9 42AM – AIYABEIJ Joint Inspection Required with AIYABEIJ

7 Permittee shall maintain records of feed content, formulation, and quantity of feed additive utilized, to demonstrate compliance with National Research Council (NRC) guidelines Records such as feed company guaranteed analyses (feed tags), ration sheets, or feed purchase records may be used to meet this requirement [District Rules 2201 and 4570]

8 The facility shall be equipped with drinkers that do not drip continuously [District Rule 4570]

9 Permittee shall inspect drinkers at least once every 7 days and adjust the height, volume, and location of drinkers if necessary [District Rule 4570]

10 Permittee shall maintain records of the dates inspections and adjustments were made to the height, volume, and location of drinkers [District Rule 4570]

11 Water pipes and drinkers in each house shall be inspected at least daily Repairs of any leaks and adjustment of drinkers shall be made promptly [District Rules 2201 and 4570]

12 Permittee shall maintain records of the dates that water pipes and drinkers are inspected and leaks are repaired [District Rules 2201 and 4570]

13 All houses shall be inspected for mortality at least daily Mortality shall be removed for proper disposal immediately after detection [District Rule 2201]

14 When used for multiple flocks, litter in the houses shall be treated with an acidifying litter amendment during the intervals between flocks The amendments shall be applied in accordance with the manufacturer's recommendations [District Rule 2201]

15 {3508} If a licensed veterinarian, a certified nutritionist, the California Department of Food and Agriculture (CDFA), or the United States Department of Agriculture (USDA) determines that any VOC mitigation measure (with a Rule 4570 reference) is detrimental to animal health and needs to be suspended, the Permittee must notify the District in writing within forty-eight (48) hours of the determination including the duration and the specific health condition requiring the mitigation measure to be suspended If the situation is expected to exist longer than a thirty-day (30) period, the owner/operator shall submit a new emission mitigation plan designating a mitigation measure to be implemented in lieu of the suspended mitigation measure [District Rule 4570]

16 Permittee shall maintain records of (1) the number of turkeys in each house during each growout period, (2) the date that each growout period begins and ends, (3) a log of removal of mortality, (4) log of application of acidifying litter amendments per manufacturer recommendations, and (5) a log of complete litter removal [District Rules 2201 and 4570]

17 All records shall be kept and maintained for a minimum of five (5) years and shall be made available to the APCO, ARB and EPA upon request [District Rules 2201 and 4570]

18 Prior to operating equipment authorized under this Authority to Construct, permittee shall surrender SOx (as a substitute for PM10) Emission Reduction Credits (ERC) for a total of 1,650 lb/yr The ERC quantity stated includes an interpollutant offset ratio of 1 0, and a distance offset ratio of 1 5 as specified in Table 4-2 of Rule 2201 (as amended 4/21/11) [District Rule 2201]

19 ERC Certificate #S-3670-5 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued administratively specifying the new offsetting proposal Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct [District Rule 2201]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO. N-5577-5-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: FOSTER FARMS, SPERRY RANCH
MAILING ADDRESS: ATTN ENVIRONMENTAL AFFAIRS
P O BOX 831
LIVINGSTON, CA 95334

LOCATION: 5001 SPERRY ROAD
DENAIR, CA 95316

EQUIPMENT DESCRIPTION:
MANURE HANDLING SYSTEM CONSISTING OF LITTER HAULED OFF-SITE (RECONSTRUCTED SOURCE)

CONDITIONS

1 {3215} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to enter the permittee's premises where a permitted source is located or emissions related activity is conducted, or where records must be kept under condition of the permit [District Rule 1070]

2 {3216} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit [District Rule 1070]

3 Permittee remove all litter/manure from the facility within 72 hours of removal from housing [District Rule 4570]

4 Permittee shall maintain records to demonstrate removal of litter/manure from the facility within 72 hours of removal from housing [District Rule 4570]

5 Any manure/litter stockpiles stored outside the houses for more than 72 hours shall be covered using a weatherproof tarp, or equivalent method [District Rule 2201]

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Seyed Sadredin, Executive Director/APCO

DRAFT

DAVID WARNER, Director of Permit Services
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