**SACRAMENTO METROPOLITAN**
**AIR QUALITY MANAGEMENT DISTRICT**

# STAFF REPORT

## Rule 496, LARGE CONFINED ANIMAL FACILITIES

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**BACKGROUND**

Ground level ozone is a secondary pollutant formed from photochemical reactions of nitrogen oxides (NOx) and volatile organic compounds (VOCs) in the presence of sunlight. Ozone is a strong irritant that adversely affects human health and damages crops and other environmental resources. As documented by the U.S. Environmental Protection Agency (EPA) in the most recent Criteria Document for ozone (U.S. EPA 2006), both short-term and long-term exposure to ozone can irritate and damage the human respiratory system, resulting in:

- decreased lung function;
- development and aggravation of asthma;
- increased risk of cardiovascular problems such as heart attacks and strokes;
- increased hospitalizations and emergency room visits; and
- premature deaths.

The District is currently designated as a "serious" nonattainment area for both the state and federal ozone standards. Since VOCs are a precursor to ozone, one of the strategies to control ozone pollution is to reduce VOC emissions from existing stationary sources.

Senate Bill 700 (SB 700, Chapter 479, Florez, Statutes of 2003) made all agricultural sources of air pollution subject to air quality permitting requirements. Additionally, SB 700 outlines specific requirements for districts to permit and mitigate emissions from large confined animal facilities (CAFs), which can be significant sources of VOC emissions.

As required by SB 700, the Air Resources Board (ARB) adopted a definition for a large CAF on June 23, 2005. As defined by ARB, in Title 17, Division 3, Chapter 1, Subchapter 2.7 of the California Code of Regulations, a large CAF is, in any area designated as a federal ozone nonattainment area for ozone as of January 1, 2004, any confined animal facility that maintains on any one day:

- 1,000 or more milk-producing cows;
- 3,500 or more beef cattle;
- 7,500 or more calves, heifers, or other cattle;
- 100,000 or more turkeys;
- 650,000 or more chickens other than laying hens
- 650,000 or more laying hens;
- 3,000 or more swine;
- 15,000 or more sheep, lambs, or goats;
- 2,500 or more horses;
- 650,000 or more ducks;
- 30,000 or more rabbits or other animals.

SB 700 requires all districts that are within federal nonattainment areas for ozone to adopt and implement a rule for large CAFs by July 1, 2006. The rule must contain provisions requiring a large CAF to obtain a district permit to reduce, to the extent feasible, the emissions from the facility. Rule 496, LARGE CONFINED ANIMAL FACILITIES, is being proposed to meet these requirements of SB 700.

## LEGAL MANDATES

**Federal Mandate:** The District is designated as a serious nonattainment area for the federal 8-hour ozone standard (69 FR 23858, April 30, 2004). U.S. EPA's Phase 2 Rule (70 FR 71611, Nov. 29, 2005), to implement the 8-hour ozone standard, requires the District to submit a state implementation plan by June 15, 2007 that demonstrates attainment by 2013. Rule 496 will achieve reductions in VOC emissions that will be necessary to help the Sacramento area attain the 8-hour ozone standard.

**State Mandates:**

SB 700 Requirements: SB 700 added Section 40724.6 to the California Health and Safety Code (HSC), which requires permitting and reduction of air emissions from large CAFs. Section 40724.6 requires the following:

(1) ARB must develop the definition of a large CAF on or before July 1, 2005.
(2) Each district must adopt a rule or regulation, no later than July 1, 2006, requiring large CAFs to obtain a permit to reduce, to the extent feasible, emissions of air contaminants from the facility.
(3) The owner/operator of a large CAF must submit an application for a permit no later than six months after the rule adoption date. The permit application must contain:
    (A) Information that the district determines necessary to prepare an emissions inventory of all regulated air pollutants emitted from the operation.
    (B) An emissions mitigation plan that demonstrates that the facility will use reasonably available control technology (RACT) in moderate and serious nonattainment areas, and best available retrofit control technology (BARCT) in severe and extreme nonattainment areas, to reduce emissions of pollutants that contribute to the nonattainment of any ambient air quality standard, and that are within the district's regulatory authority.
(4) The district must act on the application for permit within six months of a completed application.
(5) Upon approval of the permit application, the district must create an implementation schedule that shall not take more than one year to complete.
(6) The approved emission mitigation plan is effective for a reasonable period determined by the district of not more than three years.
(7) At the end of the reasonable or maximum three year period the district must reevaluate the emission mitigation plan and update it to reflect changes in the operation or feasibility of the mitigation measures.

The proposed Rule 496 meets the requirements of HSC Section 40724.6.

Serious Nonattainment Plan Requirements: The District is designated as a serious nonattainment area for the state ozone standard. The California Clean Air Act requires areas with this designation to adopt control measures required in sections 40913, 40914, and 40919 of the California HSC:

- HSC Section 40913 requires districts to develop a plan to achieve California's ambient air quality standards by the earliest practicable date.

- HSC Section 40914(b)(2) requires every nonattainment district which cannot achieve a reduction of 5% or more per year in district wide emissions to adopt "every feasible measure" to reduce the emission of nonattainment pollutants and their precursors. South Coast Air Quality Management District (SCAQMD) Rule 1127, which regulates emissions from large dairies, qualifies as a "feasible measure." Rule 496 will require equivalent emission mitigation techniques for large dairies.
- HSC Section 40919(a)(3) requires districts with serious nonattainment for ozone to adopt BARCT for all existing permitted sources. Rule 496 will require BARCT for permitted CAFs.

Transport Mitigation Emission Control Requirements: Districts within the areas of origin of transported air pollutants, as identified in section 70500(c), shall include sufficient emission control measures in their attainment plans for ozone adopted pursuant to Part 3, Chapter 10 (commencing with Section 40910) of Division 26 of the Health and Safety Code, to mitigate the impact of pollution sources within their jurisdictions on ozone concentrations in downwind areas commensurate with the level of contribution. An upwind district shall comply with the transport mitigation planning and implementation requirements set forth in this section regardless of its attainment status, unless the upwind district complies with the requirements of section 70601. At a minimum, the attainment/transport mitigation plans for districts within the air basins or areas specified below shall conform to the following requirements:

(1) Broader Sacramento Area (as defined in section 70500(b)(3)) shall:
  (A) require the adoption and implementation of all feasible measures as expeditiously as practicable.
  (B) require the adoption and implementation of best available retrofit control technology, as defined in Health and Safety Code section 40406, on all existing stationary sources of ozone precursor emissions as expeditiously as practicable.
  (C) require the implementation, by December 31, 2004, of a stationary source permitting program designed to achieve no net increase in the emissions of ozone precursors from new or modified stationary sources that emit or have the potential to emit 10 tons or greater per year of an ozone precursor.
  (D) include measures sufficient to attain the state ambient air quality standard for ozone by the earliest practicable date within the Upper Sacramento Valley and that portion of the Mountain Counties Air Basin north of the Calaveras- Tuolumne County border and south of the Sierra-Plumas County border, except as provided in Health and Safety Code section 41503(d), during air pollution episodes which the state board has determined meet the following conditions:

    (i) are likely to produce a violation of the state ozone standard in the Upper Sacramento Valley or that portion of the Mountain Counties Air Basin north of the Calaveras-Tuolumne County border and south of the Sierra-Plumas County border; and

(ii) are dominated by overwhelming pollutant transport from the Broader Sacramento Area; and

(iii) are not measurably affected by emissions of ozone precursors from sources located within the Upper Sacramento Valley or that portion of the Mountain Counties Air Basin north of the Calaveras-Tuolumne County border and south of the Sierra-Plumas County border.

Proposed Rule 496 is based on all feasible control measures and BARCT requirements, and therefore complies with this section.

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## SUMMARY OF PROPOSED REQUIREMENTS

Rule 496 applies to large CAFs as defined by ARB. The owner/operator of a large CAF will be required to obtain a permit pursuant to Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND AGRICULTURAL NEW SOURCE REVIEW. The permit will include an emissions mitigation plan that implements BARCT to reduce VOC emissions.

Within 180 days of the date of adoption of Rule 496, the owner/operator of a large CAF will be required to submit a permit application that includes:

- the average number of animals of each type for the previous 12-month period;
- the maximum number of animals of each type for any given day during the previous 12-month period; and
- an emissions mitigation plan that meets the requirements of BARCT. For dairies and poultry ranches, the rule contains lists of specific measures that must be included in the initial mitigation plan unless an alternative plan, capable of achieving equal or greater reductions, is created. Appendix D includes tables showing the specific mitigation measures and their associated monitoring and recordkeeping requirements for dairies and poultry ranches.

Once a permit has been approved, the owner/operator must implement the emission mitigation plan according to a schedule outlined by the district, which will require complete implementation no later than one year from the date the permit is issued. The permit, including emission mitigation plan, will be valid for a total of three years, after which the mitigation plan will be updated to reflect changes in operation or the availability/feasibility of emission control technology.

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## GENERAL DESCRIPTION OF CAF OPERATIONS

The agricultural industry is instrumental in California's economy. The output produced from California's farms far exceeds that of any other state in the nation. One of the largest areas of agriculture is the livestock industry. In fact, the dairy industry is the single largest source of revenue for the California agricultural community. Although Sacramento contains some confined animal facilities, it holds a small percentage based on numbers for the entire state. For example, the District holds less than 1% of dairies with over 500 head of milking cows in California.

Dairies, chicken broiler ranches, and turkey broiler ranches in the District have been identified by Staff. An overview of these types of confined animal facilities is given below.

Dairies: Every dairy is unique and is operated according to the local environment, economy, and operator preferences. Generally, for larger dairies the milking cows will be housed in free stalls. Housing is typically set up in a long covered building with free stalls near the outside walls and a feed lane in the middle. Each free stall is large enough for a single cow and contains some form of bedding so the cows can rest. The stalls are called "free" because they are open, allowing the cows to freely access the food troughs. The cows may or may not be allowed access to an open corral. Typically, most of the manure is produced at the feed lanes while the cows are eating. Manure is removed from the feed lanes by either scraping, flushing or vacuuming. Vacuuming is not commonly used because of high costs. In the District, flushing is commonly used at larger dairies because of its low labor requirement.

With a flush system, the housing area will typically be sloped and at the higher end of the slope, a large amount of water will be "flushed" through the feed lane, washing all the manure to a collection system. The combination of manure and water will commonly be sent to a solids separation system where large particles of manure and bedding can be removed from the liquid. The liquid is then piped to a lagoon or storage pond where it will be later used for crop irrigation or be recycled for further flushing.

When scraping is the manure removal technique, a large blade will be mechanically dragged across the floor of the feed lanes while the cows are out of the free stalls being milked. The manure collected is used on cropland or is dried and reused as bedding in the free stalls.

In order to produce milk, cows need to give birth to calves. After a cow is bred, a calf is born about nine months later. The cow is usually rebred about four months after giving birth. After a calf is born, a cow can usually produce milk for a period of ten months, followed by a two month dry period where the cow can physiologically prepare for another calf birthing. During the period of lactation, a cow is milked on average twice a day and produces on average 17,000 pounds of milk a year. The cows are usually milked in a separate building called the milking parlor.

Because calves are constantly being born on dairies, a large part of a dairy operation is dedicated to handling calves, heifers and other support stock. Support stock typically composes about 50% of the total cattle on a dairy, although many larger dairies are sending calves and heifers to special farms in order to focus solely on milk producing cows.

Chicken Broiler Ranches: Chicken broiler ranches are where chickens are raised for the production of meat. Typically, houses where the chickens are raised are, on average, 400 by 50 feet, designed to contain 25,000 to 30,000 chickens at a time. New chicks first undergo a brooding period, where chicks are placed in a heated section of the broiler house. As the chicks get older, the temperature is gradually reduced. Chickens are then raised in the houses for a period of 45 days until they reach the ideal market weight. After this growth period the chickens are taken off site for processing, and there is a period of 10 days to allow for diseases to pass, cleaning, and preparation for the next flock.

Typically, broiler houses are completely enclosed and use a temperature controlled ventilation system because of the sensitivity of chickens to the outside temperatures. In some environments where weather is not too extreme, the long walls of the broiler house are replaced with curtains. Most broiler houses in California's central valley are completely enclosed due to extreme heat in the summer. The houses have earthen floors covered by a litter material, such as rice hulls, wood shavings, or straw, to collect manure.

Concentrated manure that builds up around the feeder and drinkers is called cake, and is commonly cleaned out after ever every flock. The litter, which contains most of the manure, is used for multiple flocks and is cleaned out on average once or twice a year. When the litter is removed, the broiler house is disinfected to help prevent disease exposure for the next flocks. Prevention of disease is a very important factor for chicken ranchers. The houses are inspected every day, and dead birds are removed and are properly stored and disposed. In order to prevent the spread of disease used litter, cake, and dead birds are not kept on the property for long periods of time.

Turkey Broiler Ranches: Turkey broiler ranches have similar procedures to those of chicken broiler houses. One of the main differences in the turkey industry is the physical characteristics of the turkey compared to the chicken. First, turkeys grow to be much larger than chickens. The growth periods for turkeys can last up to 21 weeks, making it possible to have only two to three flocks per year. Because the turkeys are larger, more manure is produced, leading to more emissions. The other major difference is turkeys are less sensitive to weather, and therefore are typically housed in partially enclosed houses where the side walls are replaced by curtains. Because the houses are only partially enclosed, the interior of the houses are more susceptible to moisture.

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**EMISSIONS MITIGATION TECHNIQUES**

Depending on the type of animal housed at a facility, conditions and operations can vary significantly. There are also significant differences between facilities that house the same types of animals. For example, the methods that dairies use to remove manure from the feed lanes can be dry (scraping) or wet (flushing) technique. The technique makes a significant difference in further manure handling procedures due to differences in moisture content. To accommodate the variations in operating methods, proposed Rule 496 allows the owner/operator of a large CAF to develop an emission mitigation plan that is appropriate for each specific facility.

Many of the mitigation measures proposed in Rule 496 are designed to reduce the VOC emissions from manure. The biological breakdown of manure can occur either in the presence of oxygen (aerobic) or the absence of oxygen (anaerobic). Aerobic processes produce much lower VOC emissions than anaerobic processes. If particles of manure are exposed to oxygen, aerobic decomposition by bacteria will convert the organic material in the manure primarily to carbon dioxide and water. If the manure particles are not in contact with a sufficient amount of oxygen, anaerobic bacteria will convert the organic material mainly to VOCs and hydrogen sulfide. If anaerobic digestion takes place in a controlled environment, such as a digester, the VOCs can be biologically converted further to methane. The methane produced from a digester can be later burned and used for heating

or other energy. Mitigation measures that involve increased manure processing times and moisture reduction can delay and reduce the anaerobic decomposition times. Additionally, providing oxygen to the waste encourages aerobic decomposition instead of anaerobic decomposition, and therefore reduces overall VOC emissions.

Many current studies are targeted at estimating emission factors from feed and silage. Preliminary research (Schmidt 2005) has shown that VOCs emitted from the feed may constitute over 50% of the total VOC emissions from a CAF. Techniques such as keeping silage covered and reducing wet feed can potentially reduce VOC emissions. Additionally, feeding the animals food that will result in more complete digestion can reduce VOC emissions directly from the animal and the waste.

The emission mitigation measures listed in Sections 303.1 and 303.2 of Rule 496 are based upon the measures presented for dairies and poultry ranches in the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) draft Rule 4570. Currently, all identified CAFs are located in the southern portion of Sacramento County, which, when compared to other areas in the US, has a similar environment to San Joaquin Valley. Due to the similarities in the environment, CAFs in Sacramento County are operated in a similar fashion to those in the San Joaquin Valley and the District finds it reasonable that the same mitigation options be applied to CAFs within the District.

Except as noted, the emission reductions listed in the following table are based on emission reduction values and assumptions used in the SJVUAPCD (Final Draft SJVUAPCD Rule 4570 Staff Report.) Because mitigation measures performed in the same emission area of a dairy will overlap, it was necessary to predict what the owner/operator of the CAF would choose as mitigation measure in order to estimate overall reduction. We assume the CAF owners will pick the mitigation measures with the lowest costs. The table below lists the most likely mitigation options and the estimated emission reductions.

**DAIRY EMISSION MITIGATION MEASURES**

| # | Mitigation Measure | Estimated VOC Reduction |
|---|---|---|
| *Feed Measures (4)* | | |
| 1 | Feed according to National Research Council guidelines specified in "Nutrient Requirements of Dairy Cattle: Seventh Revised Edition, 2001," or a more recent edition. | 10% |
| 2 | Store grain in a weatherproof storage structure from October through May. | 0.3% |
| 3 | At least once every 14 days, remove feed from the area where animals stand to eat feed. | 0.2% |
| 4 | At least once every 14 days, remove spilled feed from the area where equipment travels to place feed in the feed bunks. | 0.2% |
| *Silage Measures (1)* | | |
| 1 | Cover the horizontal surface of silage piles, except for the area where feed is being removed from the silage pile. | 0.3% |

| # | Mitigation Measure | Estimated VOC Reduction |
|---|---|---|
| *Milking Parlor Measures (1)* | | |
| 1 | Flush or hose milking parlor immediately prior to, immediately after, or during each milking. | 0%* |
| *Freestall Measures (2)* | | |
| 1 | Flush freestalls more frequently than the milking schedule. | 6%** |
| 2 | Use non-manure-based bedding for at least 90% of the bedding material, by weight, for freestalls (e.g. rubber mats, almond hulls, sand, or waterbeds). | 2%** |
| *Corral Measures (6)* | | |
| 1 | Clean concrete areas such that the depth of animal waste does not exceed twelve inches at any point or time, except for in-corral mounding. | 0.1% |
| 2 | Manage corrals such that the animal waste depth in the corral does not exceed twelve inches at any point or time, except for in-corral mounding. | 0.1% |
| 3 | Knock down fence line animal waste build-up prior to it exceeding a height of twelve inches at any point or time. | 0.1% |
| 4 | Scrape or flush feed aprons in corrals at least once every seven days. | 0.1% |
| 5 | Maintain corrals to ensure drainage and to prevent water from standing more than 48 hours. | 0.1% |
| 6 | Inspect water pipes and troughs and repair leaks at least once every day. | 0.1% |
| *Solid Animal Waste/ Separated Solids Measures (2)* | | |
| 1 | Cover dry animal waste piles outside of the corrals with a waterproof covering from October through May, except for times, not to exceed 24 hours, when wind removes the covering. | 0.1% |
| 2 | Cover dry separated solids outside the corrals with a waterproof covering from October through May, except for times, not to exceed 24 hours, when wind removes the covering. | 0.1% |
| *Liquid Animal Waste Measures (1)* | | |
| 1 | Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon. | 6% |
| *Land Application Measures (2)* | | |
| 1 | Apply and manage the liquid animal waste so it stands in the fields no more than 24 hours after application. | 5% |
| 2 | Apply no solid animal waste that has a moisture content of more than 50%. | 5% |
| TOTAL | | 35.8% |

*Flushing or hosing the milking parlor is considered standard practice and included in the dairy VOC emission factor, therefore no emission reduction can be assumed from this practice.

**Reduction calculated by SMAQMD Staff; see Appendix C.

The following table lists maximum emission reductions that could be achieved from implementing mitigation measures not listed in the table above. These reductions are listed at the maximum value, and as more mitigation measures are implemented in the same area, the emissions reduction potential of an individual measure decreases. Like the previous table, the reductions are based on emission reduction values and assumptions used in the SJVUAPCD.

**OTHER DAIRY MITIGATION MEASURES**

| **Mitigation Measures** | **Maximum Estimated VOC Reduction** |
|---|---|
| Feed animals high moisture corn or steam-flaked corn and not feed animals dry rolled corn. | 10% |
| Each class one feed measure not listed. | 0.3% |
| Vacuum or scrape freestall flush lanes immediately prior to, immediately after, or during each milking. | 6%* |
| Each class one freestall measure not listed. | 2% |
| Each class one corral measure not listed. | 0.1% |
| Each class one solid animal waste/ separated solid measure not listed. | 0.1% |
| Each class one liquid animal waste measure not listed. | 5% |
| Each class one land application measure not listed. | 6% |

*Staff assumed similar reduction to flushing measure listed in previous table.

The lone large turkey ranch within the District is currently utilizing totally enclosed houses with mechanical tunnel ventilation. This class two measure should be utilized in the emission mitigation plan as well as other mitigation measures to comply with BARCT. With the currently available research the District is unable to estimate emission reduction potential from poultry ranches mostly due to the nature of the emission factor used. The poultry emission factor used for calculating inventories was determined from a poultry ranch already implementing BARCT mitigation; therefore, no emission reductions for poultry ranches are assumed.

Class Two Mitigation Measures: The measures listed above are considered class one measures based on the current state of research and technology. Also available are several other control technologies exceeding what would be considered BARCT. Such technologies include the use of anaerobic digester, aerobic lagoons, aerated static piles, biofilters, other VOC control devices, and temperature controlled ventilation systems. Large CAFs will not be required, but may choose, to include measures that exceed BARCT in their mitigation plans by selecting them in the list of mitigation options provided in Rule 496 Sections 303.1 and 303.2. Because most of these technologies are new and just beginning to reach commercial use the emission reduction potentials are unknown. If one of these measures is chosen in an emission mitigation plan, Staff will use source testing and manufacturers data to estimate the emission reductions.

**EMISSIONS IMPACT**

According to the USDA 2002 census, 76 dairy farms and a total of 18,337 dairy cows were identified in the District. The total number of farms has decreased from the 1997 census, which reported 83 farms with a total of 18,911 cows. This shows that the number of farms is decreasing at a greater percentage than the number of cows, and therefore the average existing dairy is larger. Increasing development of suburban communities in the Galt and Elk Grove areas and decreasing market prices could cause a greater percentage of dairies to leave the district. According to the USDA 2002 census, 30 chicken broiler ranches and a total of 486,017 broiler chickens were identified in the District. The number of ranches declined from the 1997 census, when 40 such ranches were reported (the total number of chickens in 1997 was not disclosed). Also, the USDA 2002 census identified 32 turkey broiler ranches in the District, with an undisclosed number of broiler turkeys. The number of ranches increased from the 1997 census, when 24 such ranches and a total of 771,689 broiler turkeys were reported. Including other types of animals like beef cattle, swine, and horses, the current emission inventory estimates a total of 1.545 tons of VOC per day from livestock husbandry, which includes both large and small facilities.

Staff identified three large confined animal facilities operating within the District. Two facilities are dairies with slightly over 1,000 milking cows and the third is a farm with approximately 350,000 turkeys at any one time. A broiler chicken facility is located within the District, but the maximum amount of chickens the facility is capable of holding is only 550,000 at any one time, making it fall below the definition of a large CAF. The maximum for this broiler chicken operation was verified by the owner, the company they grow for, and based on average chicken capacity per square feet of housing. Total emissions of VOC from large CAFs within the District are estimated to be 33.5 tons/year. Emissions were calculated using the emission factors that are recommended by ARB, and includes all primary and support stock at the facilities. Actual emissions reductions from these three facilities are estimated to be 8.2 tons/year of VOC.

Research and technology related to CAF emissions is limited, although more recent research has been initiated in response to the adoption of SB 700. A major area of research is the development of more accurate emission factors for dairies. Groups from UC Davis, Fresno State, Texas A & M, and some independent organizations are actively conducting research in this area. The current dairy emission factor of 12.8 lb VOC/head/year, recommended by ARB, was derived from a 1938 study by Ritzman and Benedict. In this study, methane emissions were measured from dairy cows in holding cells. This emission factor poses many problems because (1) VOC emissions were not measured directly but were derived from methane measurements and (2) emissions directly from liquid handling, manure storage systems, or silage/feed were not taken into account. Current studies indicate that because of these problems, the emission factor for a dairy may be significantly larger. The 12.8 lb VOC/head/year factor is also applied to dairy support stock, including dry cows, heifers, and calves, which do not produce the same quantity of manure as a milk-producing cow. Because current research is either preliminary or incomplete, the ARB recommended emission factor will be used until the current research is complete. ARB has reported that a new dairy emission factor is currently under review, but approval and recommendation could be up to a year away.

The emission factors used for poultry are based on a 2005 study done by Matthew

Summers. In this study, ammonia and VOC emissions were measured from a broiler chicken house that was equipped with a temperature-controlled ventilation system, for a full production cycle (55 days). The data collected from this study were used to determine an emission factor for broiler chickens. When determining the emission factor for laying hens, ARB assumed similar emissions to the broiler chickens and therefore used the same factor. The turkey emission factor was derived by using the broiler chicken emission factor and increasing it by the ratio of manure output.

Even though these emission factors are the best to date, they still have serious limitations. On average, broiler houses remove litter once every five to six flocks. Summers' study was conducted on only the second use of the litter, which would represent average emissions for a house that is completely cleaned every third flock. Also, the assumption that this emission factor can be applied to turkeys is unsupported.

The turkey growers industry maintains that turkey houses should not be represented by broiler chicken houses. Turkeys grow to be larger in size and grow out periods are much longer than for chickens. On average, only two to three turkey flocks are grown ever year, compared to five or six in the broiler chicken industry. Additionally, the temperature-controlled ventilation systems and completely enclosed houses that are common in the broiler chicken industry are not commonly used for turkeys. Turkeys are less sensitive to temperature extremes and therefore the houses are usually open, where the long walls of the house are replaced with curtains. This makes the interior of a turkey house more susceptible to moisture, which leads to increased emissions. The SJVUAPCD estimates, in their draft top-down BACT analysis of broiler chicken houses, that the use of a temperature-controlled ventilation system can reduce VOC emissions by up to 15%.

Due to the nature of the study done on the poultry emission factors, Staff will not estimate benefits from BARCT measures for any poultry facility.

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**COST AND COST EFFECTIVENESS**

Cost information for these mitigation measures is extremely limited and variable. Many of the mitigation measures are already being used and represent reasonable practices for good CAF management. More accurate cost effectiveness would be determined for each individual CAF based on their current operations. In order to estimate cost effectiveness Staff is basing their calculations on assumptions used in the SJVUAPCD Rule 4570 Final Draft Staff Report and knowledge of current operations performed at the affected sources.

The following table summarizes the costs for this rule based on current practices already being performed at affected sources, SJVUAPCD Rule 4570 estimates, and research from the University of Missouri Extension. Due to limited cost information, Staff was only able to estimate costs for the mitigation measures in the following table. Staff assumes that similar emission mitigation plans set up based on the guidelines in Rule 496, Section 303.1 will result in similar costs. There will only be costs for the two dairies affected due to the turkey ranch already being in compliance.

**OPERATIONAL COMPLIANCE COSTS FOR RULE 496**

| # | Mitigation Measure | Annual Cost Per Cow | Total Annual Cost | Comment |
|---|---|---|---|---|
| *Feed Measures (4)* | | | | |
| 1 | Feed according to National Research Council guidelines specified in "Nutrient Requirements of Dairy Cattle: Seventh Revised Edition, 2001," or a more recent edition. | $0 | $0 | Already Implemented |
| 2 | Store grain in a weatherproof storage structure from October through May. | $0 | $0 | Already Implemented |
| 3 | At least once every 14 days, remove feed from the area where animals stand to eat feed. | $5.30 | $11,660[a] | SJVUAPCD estimate |
| 4 | At least once every 14 days, remove spilled feed from the area where equipment travels to place feed in the feed bunks. | | | |
| *Silage Measures (1)* | | | | |
| 1 | Cover the horizontal surface of silage piles, except for the area where feed is being removed from the silage pile. | $0 | $0 | Already Implemented |
| *Milking Parlor Measures (1)* | | | | |
| 1 | Flush or hose milking parlor immediately prior to, immediately after, or during each milking. | $0 | $0 | Already Implemented |
| *Freestall Measures (2)* | | | | |
| 1 | Flush freestalls more frequently than the milking schedule. | $0.44 | $967[a] | See Appendix C |
| 2 | Use non-manure-based bedding for at least 90% of the bedding material, by weight, for freestalls (e.g. rubber mats, almond hulls, sand, or waterbeds). | $0 | $0 | Already Implemented |
| *Corral Measures (6)* | | | | |
| 1 | Clean concrete areas such that the depth of animal waste does not exceed twelve inches at any point or time, except for in-corral mounding. | $4.24 | $5,893[b] | SJVUAPCD estimate |
| 2 | Manage corrals such that the animal waste depth in the corral does not exceed twelve inches at any point or time, except for in-corral mounding. | | | |
| 3 | Knock down fence line animal waste build-up prior to it exceeding a height of twelve inches at any point or time. | | | |
| 4 | Scrape or flush feed aprons in corrals at | | | |

| # | Mitigation Measure | Annual Cost Per Cow | Total Annual Cost | Comment |
|---|---|---|---|---|
| | least once every seven days. | | | |
| 5 | Maintain corrals to ensure drainage and to prevent water from standing more than 48 hours. | | | |
| 6 | Inspect water pipes and troughs and repair leaks at least once every day. | | | |
| *Solid Animal Waste/ Separated Solids Measures (2)* | | | | |
| 1 | Cover dry animal waste piles outside of the corrals with a waterproof covering from October through May, except for times, not to exceed 24 hours, when wind removes the covering. | $3.65 | $13,104[c] | SJVUAPCD estimate |
| 2 | Cover dry separated solids outside the corrals with a waterproof covering from October through May, except for times, not to exceed 24 hours, when wind removes the covering. | | | |
| *Liquid Manure Measures (1)* | | | | |
| 1 | Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon. | $0 | $0 | Already implemented |
| *Land Application Measures (2)* | | | | |
| 1 | Apply and manage the liquid animal waste so it stands in the fields no more than 24 hours after application. | $0 | $0 | No cost to implement |
| 2 | Apply no solid animal waste that has a moisture content of more than 50%. | $0 | $0 | No cost to implement |
| TOTAL | | | $31,624 | |

[a] based on 2200 milk-producing cows at regulated dairies in District.
[b] based on 1390 support stock cattle at regulated dairies in District.
[c] based on both milk-producing cows and support stock.

In order to estimate total compliance cost, Staff assumed that monitoring, testing, and recordkeeping costs will be 10% of the above annual operating costs. Staff also used permitting fees listed in Rule 310, PERMIT FEES – AGRICULTURAL EMISSION UNIT assuming two hours will be spent on each emission mitigation plan update and a worst case scenario of having to apply for a permit modification every three years. The table below summarizes the total compliance cost.

**RULE 496 COMPLIANCE COST**

| Category | Annual Cost |
|---|---|
| Operating Costs | $31,624 |
| Monitoring/Recordkeeping Cost | $3,163 |
| Plan Update Cost (once every 3 years) | $246 |
| Permit Modification Fee (once every 3 years) | $589 |
| Notification Fee (once every 3 years) | $400 |
| TOTAL | $36,022 |
| **Cost Effectiveness (per ton VOC reduced)** | **$4,393** |

Anaerobic digesters are considered to be a class two mitigation measure at this time due to high cost effectiveness. At the 2004 AgStar conference, Don Wichert presented the average cost of a plug flow digester for a large dairy to be $738 per cow. For a dairy with 1,000 milk-producing cows, annual costs for a plug flow digester come to $120,000. Using a conservatively high estimate of 80% control of non-feed lane emissions, with a reduction potential of 2.24 tons/year, the cost effectiveness is estimated to be $53,500 per ton of VOC reduced.

In the SJVUAPCD draft top-down BACT analysis of broiler poultry houses, the use of biofilters on ventilated chicken broiler houses was examined. They estimated cost effectiveness of the biofilters to be $16,870 per ton of VOC reduced. It can be assumed that use of lagoon covers with biofilters for dairies would result in similar or even higher cost effectiveness.

Additional cost information of other class two mitigation measures is unknown at this time due to the relative newness of the technology. Staff is assuming that class two mitigation measures will not be chosen, unless they are already being implemented at the facility, due to the high potential costs.

**Cost to District:** The proposed rule is not estimated to result in any significant additional workload. Permitting and ongoing inspection time FTE is covered in the Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND NEW AGRICULTURAL PERMIT REVIEW Staff Report. The cost of administering the large confined animal facility permitting program and the emission mitigation updates will be recovered through Rule 310, PERMIT FEES – AGRICULTURAL SOURCES.

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## SOCIOECONOMIC IMPACT ANALYSIS

HSC Section 40728.5 requires a district to perform an assessment of the socioeconomic impacts before adopting, amending, or repealing a rule that will significantly affect air quality or emission limitations. The District Board is required to actively consider the socioeconomic impacts of the proposal and make a good faith effort to minimize adverse socioeconomic impacts.

HSC Section 40728.5 defines “socioeconomic impact” to mean the following:

1. The type of industry or business, including small business, affected by the proposed rule or rule amendments.
2. The impact of the proposed rule or rule amendments on employment and the economy of the region.
3. The range of probable costs, including costs to industry or business, including small business.
4. The availability and cost-effectiveness of alternatives to the proposed rule or rule amendments.
5. The emission reduction potential of the rule or regulation.
6. The necessity of adopting, amending, or repealing the rule or regulation to attain state and federal ambient air standards.

**Type of industry or business, including small business, affected by the proposed rule:** Rule 496 applies to the livestock industry, specifically large confined animal facilities as defined in California Code of Regulations Title 17, Division 3, Chapter 1, Subchapter 2.7. Staff has identified three stationary agricultural sources that fit the definition of a large confined animal facility. Two of these sources are dairies with over 1000 milk-producing cows and the other is a poultry facility with over 100,000 turkeys. Information used to locate the large CAFs was obtained through dairy permitting information collected by the Central Valley Regional Water Quality Control Board, industrial representatives, and the facilities previous interactions with SMAQMD.

**Impact on employment and economy in the district of the proposed rule:** Most of the measures require some additional labor and therefore it is not assumed that Rule 496 will have a negative impact on employment. Currently, the two affected dairies have 9 to 10 employees each, which is consistent with the California Department of Food and Agriculture estimate of one employee per every 103 milking cows. The SJVUAPCD estimates that their proposed rule will require at least an additional 0.20 hrs/cow/year of labor, which would require an extra work load of 0.1 full time equivalents for each dairy. In agricultural operations, product price is not determined by the individual operation but by the market and therefore added costs cannot be passed onto the customers. It is assumed that the facility will have to absorb the costs of permitting and mitigation measures. SJVUAPCD has calculated that the costs associated with this rule are 9.6% of net profits. CARB uses a threshold of 10% change in return on equity for a finding of no significant, adverse impact on either competitiveness or jobs. The District has used this analysis in the past to evaluate previous rules, and based on available information, finds this determination reasonable.

**Range of probable costs, including costs to industry or business, including small business, of the proposed rule:** Because some of the mitigation techniques are already in place, annual costs for a dairy could range from $14,900 to $20,750 per year. It is known that the turkey ranch has completely enclosed houses with recently installed temperature-controlled ventilation systems and is implementing enough mitigation measures to meet the requirements of the rule, and therefore the only incurred costs will be associated with recordkeeping and permitting.

**Availability and cost effectiveness of alternatives to the proposed rule:** Staff is proposing the new Rule 496 in order to comply with the requirements of state law (SB 700). The rule is structured to give owner/operators of large CAFs multiple mitigation techniques to choose from so they can find the most cost effective and practical emission mitigation

plan for their CAF. One option is not to comply with state law. This may result in ARB establishing a program or exercising any of the powers of the District to achieve and maintain the ambient air quality standards (HSC Sections 41504 and 41505). Another option would be to require measures that are more stringent than the ones proposed. For example, if anaerobic digesters were required for dairies, the cost effectiveness would increase from $4,393 (the cost effectiveness of the currently proposed rule) to $53,500 per ton of VOC reduced. Similarly, if VOC control devices were required for poultry houses, the cost effectiveness would increase to $16,870 per ton of VOC reduced.

**Emission reduction potential of the proposed rule:** Emission reduction is dependant on which mitigation measure(s) the large CAFs choose to implement. Emission reductions were estimated to be 8.2 tons VOC/year, based on optimum use of mitigation measures for large CAFs in the District, and subject to the uncertainties described previously in the Emissions Impact section of this report.

**Necessity of adopting the rule:** Staff proposes new Rule 496 to comply with state law (SB 700), Health and Safety Code Section 40724.6.

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## PUBLIC COMMENTS

Staff held a public workshop to discuss proposed Rule 496 on July 6, 2006. The meeting was held in the evening and at a location that was more accessible to the affected sources. Staff received and addressed comments and questions at the workshop. Staff made the appropriate changes to the rule and Staff Report based on some of the comments received. Additionally, Staff met individually will all affected sources to tour their facilities and discuss the requirements of the rule. All associated comments and responses have been included in Appendix E of this Staff Report.

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## ENVIRONMENTAL REVIEW AND COMPLIANCE

The District's environmental coordinator has determined that proposed Rule 496 is subject to the provisions of the California Environmental Quality Act (CEQA). Pursuant to section 15063 of the state CEQA Guidelines, the District conducted an initial study to determine if the project may have a significant adverse effect on the environment. Based on the findings of the initial study, the District's Environmental Coordinator has determined that the proposed rule will not have a significant effect on the environment. A Negative Declaration was prepared for this rule. A notice was published in the Sacramento Bee for a thirty-day comment period regarding the adoption of the Negative Declaration and Staff received no comments during this period.

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## TABLE OF FINDINGS

Health and Safety Code (HSC) Division 26, Air Resources, requires local Districts to comply with a rule adoption protocol as set forth in Section 40727 of the Code. This section has been revised through legislative mandate to contain six findings that the

District must make when developing, amending, or repealing a rule. These findings, effective January 1, 1992, and their definitions are listed in the table below.

| FINDING | FINDING DETERMINATION |
|---|---|
| **Authority:** The District must find that a provision of law or of a state or federal regulation permits or requires the District to adopt, amend, or repeal the rule. | The District is authorized to adopt rules and regulations by Health & Safety Code Sections 40001, 40702, 41010, 40919, 42301.16, and 42300 et. seq. [HSC Section 40727(b)(2)]. |
| **Necessity:** The District must find that the rulemaking demonstrates a need exists for the rule, or for its amendment or repeal. | It is necessary for the District to adopt a Rule 496 to comply with Health and Safety Code Section 40724.6. [HSC Section 40727(b)(1)]. |
| **Clarity:** The District must find that the rule is written or displayed so that its meaning can be easily understood by the persons directly affected by it. | The District has reviewed the proposed rule and determined that it can be understood by the affected parties. In addition, the record contains no evidence that people directly affected by the rule cannot understand the rule. [HSC Section 40727(b)(3)]. |
| **Consistency:** The rule is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations. | The District has found that the proposed rule does not conflict with, and is not contradictory to, existing statutes, court decisions, or state or federal regulations. [HSC Section 40727(b)(4)]. |
| **Non-Duplication:** The District must find that either: 1) The rule does not impose the same requirements as an existing state or federal regulation; or (2) that the duplicative requirements are necessary or proper to execute the powers and duties granted to, and imposed upon the District. | The District has found this proposed rule does not duplicate any existing state or federal regulations [HSC Section 40727(b)(5)]. |
| **Reference:** The District must refer to any statute, court decision, or other provision of law that the District implements, interprets, or makes specific by adopting, amending or repealing the rule. | In adopting the proposed rule, the District is implementing the requirements of Health and Safety Code Section 40724.6. [HSC Section 40727(b)(6)]. |
| **Additional Informational Requirements:** In complying with HSC Section 40727.2, the District must identify all federal requirements and District rules that apply to the same equipment or source type as the proposed rule or amendments. | The matrix attached (Appendix B) contains a comparison of Rule 496 to other District rules that apply. There are no federal requirements that apply to these sources. [HSC Section 40727.2]. |

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# APPENDIX A
## SUMMARY OF PROPOSED AMENDMENTS

| NEW SECTION NUMBER | EXISTING SECTION NUMBER | PROPOSED CHANGES |
|---|---|---|
| 101 | N/A | Sets the purpose of the rule to provide a mechanism for reducing VOC emissions from large CAFs. |
| 102 | N/A | Sets the applicability limits of the rule to large confined animal facilities, consistent with Health and Safety Code (HSC) Section 40724.6. Also sets applicability to feed suppliers who contractually obligate a source to use a proprietary feed as stated in Section 303.2(a) of this rule. |
| 103 | N/A | Sets the severability language of the rule consistent with existing language in Rule 202, NEW SOURCE REVIEW. |
| 200 | N/A | States any definitions not listed are defined in Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND NEW AGRICULTURAL PERMIT REVIEW, consistent with existing rule language in Rule 202, NEW SOURCE REVIEW. |
| 201 | N/A | Defines “aerated static pile” consistent with SJVUAPCD proposed Rule 4570. |
| 202 | N/A | Defines “aerobic lagoon” consistent with SJVUAPCD proposed Rule 4570. |
| 203 | N/A | Defines “anaerobic digester” according to NRCS California Field Office Technical Guide Codes 365 and 366 that give standards for anaerobic digesters. |
| 204 | N/A | Defines “anaerobic lagoon” consistent with SJVUAPCD proposed Rule 4570. |
| 205 | N/A | Defines “animal housing” as anywhere livestock live or roam except for the milking parlor. |
| 206 | N/A | Defines “animal waste” consistent with SJVUAPCD proposed Rule 4570. |
| 207 | N/A | Defines “Best Available Retrofit Control Technology (BARCT)” consistent with HSC Section 40406. |
| 208 | N/A | Defines “calf” based on information from the 2001 EPA document “Emissions From Animal Feeding Operations, Draft.” |
| 209 | N/A | Defines “capture efficiency” consistent with District Rule 463, WOOD PRODUCTS COATINGS. |
| 210 | N/A | Defines “class one mitigation measures” consistent with SJVUAPCD proposed Rule 4570. |
| 211 | N/A | Defines “class two mitigation measures” consistent with SJVUAPCD proposed Rule 4570. |
| 212 | N/A | Defines “combined capture and control efficiency” based on the individual capture efficiency and control efficiency. |
| 213 | N/A | Defines “confined animal facility (CAF),” consistent with HSC Section 39011.5. |

| NEW SECTION NUMBER | EXISTING SECTION NUMBER | PROPOSED CHANGES |
|---|---|---|
| 214 | N/A | Defines “control efficiency” consistent with District Rule 463, WOOD PRODUCTS COATINGS. |
| 215 | N/A | Defines “corral” consistent with SJVUAPCD proposed Rule 4570 and also includes drylots, pens, loafing barns, and open lots. |
| 216 | N/A | Defines “dairy” consistent with SJVUAPCD proposed Rule 4570. |
| 217 | N/A | Defines “dry animal waste/dry separated solids” consistent with SJVUAPCD proposed Rule 4570. |
| 218 | N/A | Defines “dry cow” as a cow that has already given birth to a calf but is not producing milk. |
| 219 | N/A | Defines “emission mitigation plan” as a plan outlining steps to reduce air emissions from a large CAF. |
| 220 | N/A | Defines “feed apron” consistent with the April 12, 2006 SJVUAPCD draft Rule 4570. |
| 221 | N/A | Defines “feed bunk” consistent with SJVUAPCD proposed Rule 4570. |
| 222 | N/A | Defines “freestall” consistent with SJVUAPCD proposed Rule 4570. |
| 223 | N/A | Defines “heifer” based on information from the EPA document “Emissions From Animal Feeding Operations, Draft.” |
| 224 | N/A | Defines “high moisture corn” based on a document from North Dakota State University titled “High Moisture Corn.” |
| 225 | N/A | Defines “in-corral mounds” consistent with SJVUAPCD proposed Rule 4570. |
| 226 | N/A | Defines “lagoon” consistent with SJVUAPCD proposed Rule 4570. |
| 227 | N/A | Defines “land incorporate” consistent with SJVUAPCD proposed Rule 4570. |
| 228 | N/A | Defines “large confined animal facility” consistent with California Code of Regulations Title 17, Division 1, Chapter 3, Subchapter 2.7, Section 86500. |
| 229 | N/A | Defines “leak” consistent with District Rule 443, LEAKS FROM SYNTHETIC ORGANIC CHEMICAL AND POLYMER MANUFACTURING. |
| 230 | N/A | Defines “milking parlor” as a structure specifically used for milking dairy cows. |
| 231 | N/A | Defines “mitigation measure” consistent with SJVUAPCD proposed Rule 4570. |
| 232 | N/A | Defines “NRCS” as the National Resources Conservation Service operated under the United States Department of Agriculture. |
| 233 | N/A | Defines “pen” consistent with the definition for “corral.” |

| NEW SECTION NUMBER | EXISTING SECTION NUMBER | PROPOSED CHANGES |
|---|---|---|
| 234 | N/A | Defines "phototropic lagoon" consistent with SJVUAPCD proposed Rule 4570 and most recent NRCS guidelines. As of now there are no standard guidelines for phototropic lagoons but Staff was informed that a NRCS code for phototropic lagoons will be published by the end of the year. This will meet timelines of the rule due to mitigation measures not being required to be implemented until 2 years after the rule adoption date. |
| 235 | N/A | Defines "poultry" consistent with SJVUAPCD proposed Rule 4570. |
| 236 | N/A | Defines "separated solids" consistent with SJVUAPCD proposed Rule 4570. |
| 237 | N/A | Defines "silage" as food for livestock processed through acid fermentation. |
| 238 | N/A | Defines "solid separator system" consistent with SJVUAPCD proposed Rule 4570. |
| 239 | N/A | Defines "steam-flaked corn" as corn that has been cooked with steam and flaked by rollers. |
| 240 | N/A | Defines "storage pond" consistent with SJVUAPCD proposed rule 4570. |
| 241 | N/A | Defines "VOC control device" consistent with SJVUAPCD proposed rule 4570. |
| 242 | N/A | Defines "weatherproof covering/storage structure" consistent with SJVUAPCD proposed Rule 4570. |
| 301 | N/A | Sets the requirement for a person operating a large CAF to implement an emission mitigation plan using the requirements set forth in Sections 302, 303, and 304. Specified that the emission mitigation plan must cover all animals whose numbers equal or exceed the threshold for a large CAF, and their associated support stock, feed, and waste. |
| 302 | N/A | Sets the requirement for the emission mitigation plan to include measures that meets the requirements of BARCT. It also states that for the initial emission mitigation plan, BARCT shall be achieved through Section 303. |
| 303 | N/A | Sets lists of mitigation measures for dairies and poultry ranches for each potential emission point. Also requires all other CAFs to create an emission mitigation plan demonstrating BARCT according to Section 302. |
| 303.1 | N/A | Lists mitigation measures for an owner/operator of a dairy to choose from, in order to meet the requirements of Sections 301 and 302. The measures listed are consistent with SJVUAPCD proposed Rule 4570. |
| 303.1 (a) | N/A | Requires the owner/operator to choose four out of seven feed mitigation measures. |
| 303.1 (b) | N/A | Requires the owner/operator to choose one out of three silage mitigation measures. |
| 303.1 (c) | N/A | Requires the owner/operator to choose one out of two milking parlor |

| NEW SECTION NUMBER | EXISTING SECTION NUMBER | PROPOSED CHANGES |
|---|---|---|
| | | mitigation measures. |
| 303.1 (d) | N/A | Requires the owner/operator of a large dairy to choose two out of nine freestall mitigation measures if animals are housed in freestalls. |
| 303.1 (e) | N/A | Requires the owner/operator of a large dairy to choose six out of twelve corral mitigation measures if animals are housed in corrals. |
| 303.1 (f) | N/A | Requires the owner/operator of a large dairy to choose two of seven mitigation measures if solid animal waste or separated solids are handled. |
| 303.1 (g) | N/A | Requires the owner/operator of a large dairy to choose one out of eight mitigation measures if animal waste is handled as a liquid. |
| 303.1 (h) | N/A | Requires the owner/operator of a large dairy to choose two out of four mitigation measures if dry or liquid animal waste is applied to cropland on the facility. |
| 303.2 | N/A | Lists mitigation measures for an owner/operator of a poultry ranch to choose from in order to meet the requirements of Sections 301 and 302. The measures listed are consistent with SJVUAPCD proposed Rule 4570. |
| 303.2 (a) | N/A | Requires the owner/operator to choose five out of nine feed mitigation measures. For poultry ranches that are contractually obligated to use proprietary feed, the suppliers of the feed must provide the facility with quarterly certifications and also provide 90 day notice to the owner/operator of any changes in the feed that would compromise an emission mitigation plan. If the supplier fails to provide this information then they would be responsible for any resulting violations. Once the owner/operator is notified of any changes made to the feed compromising the emission mitigation plan they must contact the District and complete a permit modification application. |
| 303.2 (b) | N/A | Requires the owner/operator to choose four out of sixteen housing mitigation measures. |
| 303.2 (c) | N/A | Requires the owner/operator to choose one out of five mitigation measures if solid animal waste or separated solids are stored. |
| 303.2 (d) | N/A | Requires the owner/operator to choose one out of eight mitigation measures if animal waste is handled as a liquid. |
| 303.3 | N/A | Requires any CAF not mentioned in Sections 303.1 and 303.2 to create an emission mitigation plan that is compliant with BARCT. Based on language in the SJVUAPCD proposed Rule 4570. Requires emission mitigation plan to achieve equal or greater percent emission reduction as the minimum amount a facility would achieve by complying with Sections 303.1 or 303.2. The mitigation plan must be approved by the APCO, CARB, and EPA. |
| 303.4 | N/A | Allows substitution of mitigation measures from different categories listed in Sections 303.1 and 303.2 if the substitution results in greater than or equal emission reduction. Based on language in the SJVUAPCD proposed Rule 4570. The measure substitution must be |

| NEW SECTION NUMBER | EXISTING SECTION NUMBER | PROPOSED CHANGES |
|---|---|---|
| | | approved by the APCO, CARB, and EPA. |
| 304 | N/A | Allows the owner/operator of a large CAF listed in sections 303.1 or 303.2 to create an alternative emission mitigation plan in lieu of complying with Section 303 if it can be shown that emission reductions are equal to or greater than ones that would be gained by complying with Section 303. All alternative plans must be approved through the APCO, CARB, and EPA. |
| 305 | N/A | Requires the owner/operator of a large CAF using an aerobic lagoon, anaerobic lagoon, mechanically aerated lagoon, anaerobic digester, phototropic lagoon, solid separator system, or weatherproof coverings/storage structures as part of a mitigation measure to follow the most applicable NRCS California Field Office and Technical Guide Code. Also requires the owner/operator to operate and maintain a VOC control device according to the manufacturer's specifications. |
| 401 | N/A | Sets the requirement for a person operating a large CAF to apply for a permit pursuant to Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND NEW AGRICULTURAL PERMIT REVIEW, within 180 days from the rule adoption date. |
| 401.1 | N/A | Sets the requirement to contain, in the permit application, the average number of each type of animal in large CAF over the last 12 months. |
| 401.2 | N/A | Sets the requirement to contain, in the permit application, the maximum number of each type of animal in the large CAF on any given day within the last 12 months. |
| 401.3 | N/A | Sets the requirement to contain an emission mitigation plan in the permit application. |
| 402 | N/A | Sets the requirement, upon approval of the permit application, for a person operating a large CAF to follow the implementation schedule, outlined by the APCO, for the emission mitigation plan. It also sets the limit of one year to completely implement the emission mitigation plan. |
| 403.1 | N/A | Sets the requirement for a person operating a large CAF to submit an emission mitigation plan update no later than 27 months after the permit was approved. Subsequent updates will be submitted no later than 27 months after acceptance of the previous update or permit modification. Timeframe was determined by allowing the District enough time to process the update before the end of the three year limit set by HSC Section 40724.6. Incorporated application completeness language from Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND NEW AGRICULTURAL PERMIT REVIEW. |
| 403.2 | N/A | Sets the approval process for emission mitigation updates which includes an evaluation and a written notice to the owner/operator. |

| NEW SECTION NUMBER | EXISTING SECTION NUMBER | PROPOSED CHANGES |
|---|---|---|
| | | The approval timeframe was determined by the maximum allowable time for action taken in the case where the owner/operator must apply for a permit modification. The section also sets the requirements that an update shall be approved or denied based on BARCT requirements at the time and permit compliance. Requires that a changed emission mitigation plan must achieve equal to or greater percent reduction than the previous plan. Incorporated application acceptance language from Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND NEW AGRICULTURAL PERMIT REVIEW. |
| 403.3 | N/A | Sets the requirements for public notice of emission mitigation plan updates. The update will be noticed in a newspaper of general circulation, and transmitted to the California Air Resources Board and any party that requests the information. The notice will invite written public comments for a 30-day period. This has been required due to the requirement in HSC 40724.6 for public notice on CAF permits and because this relates to the update or altering of such permit. Incorporated public notice language from Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND NEW AGRICULTURAL PERMIT REVIEW. |
| 403.4 | N/A | Sets the requirements for a written final notice where public notice has been required. Incorporated final public notice language from Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND NEW AGRICULTURAL PERMIT REVIEW. |
| 403.5 | N/A | Sets the requirement for the APCO to notify an owner/operator in writing if an update is denied. The notification must include the reasons for denying the update. Also, requires an owner/operator to submit a permit modification application upon denial of the update. Incorporated denial of application language from Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND NEW AGRICULTURAL PERMIT REVIEW. |
| 403.6 | N/A | Sets the appeal process for an owner/operator when an emission mitigation plan update is denied. Incorporated appeal language from Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND NEW AGRICULTURAL PERMIT REVIEW. |
| 404.1 | N/A | Sets a method for determining the percent of animal waste sent to an anaerobic digester on a dairy by dividing the total mass of animal waste sent to the digester by the total animal waste produced by the dairy on a daily basis and multiplying by 100. The total animal waste produced by the dairy is calculated by multiplying the head of milk-producing cows, dry cows, heifers, and calves by an average of daily manure output. These averages were taken from CARB May 2005 Staff Report. |

| NEW SECTION NUMBER | EXISTING SECTION NUMBER | PROPOSED CHANGES |
|---|---|---|
| 404.2 | N/A | Sets a method for determining the percent of animal waste sent to an anaerobic digester on a poultry ranch by dividing the total rate of animal waste sent to the anaerobic digester by the total amount of animal waste produced by the poultry ranch on a per housecleaning basis. |
| 501 | N/A | Sets monitoring and recordkeeping requirements for mitigation measures. |
| 501.1(a) | N/A | Sets the requirement to keep records of each type of animal at the facility. |
| 501.1(b) | N/A | Sets the requirement for an owner/operator to keep records of any information provided by the manufacturer regarding any product used in the implementation of a mitigation measure. |
| 501.1(c) | N/A | Sets the requirement for an owner/operator to keep any information regarding the design specifications of anything built or created specifically for the facility in order to implement a mitigation measure |
| 501.1(d) | N/A | Sets the requirement for an owner/operator to keep all test records. |
| 501.1(e) | N/A | Sets the requirement for an owner/operator to test for any other parameters that the APCO determines is necessary to demonstrate the implementation of a mitigation plan. |
| 501.1(f) | N/A | Sets the requirement for an owner/operator to keep any additional information that the APCO determines is necessary to demonstrate the implementation of a mitigation plan. |
| 501.2(a) | N/A | Sets the requirement for any owner/operator who implements a mitigation measure which requires periodic action must keep a record of those actions and when they were performed. |
| 501.2(b) | N/A | Sets the requirement for an owner/operator who is using a VOC control device to conduct an initial source test within 12 months after the date of installation, and at least once every 12 months thereafter. This requirement is consistent with SJVUAPCD proposed Rule 4570. |
| 501.2(c) | N/A | Sets the requirement for an owner/operator who is using an anaerobic digester regarding a mitigation measure to keep any information showing compliance with the standards set forth in NRCS California Field Office Technical Guide Code 365 or 366. This requirement is consistent with SJVUAPCD proposed Rule 4570. |
| 501.3 | N/A | Sets the requirements for an owner/operator to monitor and keep records related to certain feed mitigation measures. Recordkeeping and monitoring is required is necessary to show implementation of the mitigation plans. For facilities that are contractually obligated to use proprietary feed they must keep all certification showing feed meets the selected emission mitigation measures. The supplier of the feed will be required to supply feed information on request by the APCO. |

| NEW SECTION NUMBER | EXISTING SECTION NUMBER | PROPOSED CHANGES |
|---|---|---|
| 501.4 | N/A | Sets the requirements for an owner/operator to monitor and keep records related to certain animal housing mitigation measures. Recordkeeping and monitoring is required is necessary to show implementation of the mitigation plans. |
| 501.5 | N/A | Sets the requirements for an owner/operator to monitor and keep records related to certain solid animal waste and separated solids mitigation measures. Recordkeeping and monitoring is required is necessary to show implementation of the mitigation plans. |
| 501.6 | N/A | Sets the requirements for an owner/operator to monitor and keep records related to certain liquid animal waste mitigation measures. Recordkeeping and monitoring is required is necessary to show implementation of the mitigation plans. |
| 501.7 | N/A | Sets the requirements for an owner/operator to monitor and keep records related to certain land application mitigation measures. Recordkeeping and monitoring is required is necessary to show implementation of the mitigation plans. |
| 502 | N/A | Sets the test methods to follow to determine compliance with applicable emission mitigation measures. |
| 502.1 | N/A | Sets the requirement to test biological oxygen demand according to EPA Method 405.1. |
| 502.2 | N/A | Sets the requirement to test dissolved oxygen content according to EPA Method 360.1 or 360.2. |
| 502.3 | N/A | Sets the requirement to test pH by EPA Method 150.1 or ASTM Method D4980-89. |
| 502.4 | N/A | Sets the requirement to test moisture content by the difference from the percent residue using EPA Method 160.3. |
| 502.5 | N/A | Sets the requirement to test for organic loading by Standard Methods for the Examination of Water and Wastewater Method 2540 G – Solids. |
| 502.6 | N/A | Sets the requirement to test phototropic lagoons according to the most recent NRCS guidelines. |
| 502.7 | N/A | Sets the requirement to test VOC emission by EPA Method 25 or 25A. If EPA Method 25A is used, EPA Method 18 shall be used to determine methane content. |
| 502.8 | N/A | Sets the requirement to determine traverse points and flow rates for source tests using EPA Methods 1 or 1A and 2 or 2C, as applicable. |
| 502.9 | N/A | Sets the requirement to determine capture efficiency consistent with District Rule 463, WOOD PRODUCTS COATINGS. |

## Appendix B

## 40727.2 Matrix for Proposed New Rule 496, Large Confined Animal Facilities

| Elements of Comparison | Specific Provisions | Rule 496, Large Confined Animal Facilities | Rule 201, General Permit Requirements and Rule 215, Ag Permits | Rule 411, Boiler NOx | Coating Operations, Rules 442, 451, 459, 460 | Solvent Cleaning Operations, Rules 454, 466 |
|---|---|---|---|---|---|---|
| Exemptions | Permitting/Rule applicability | None | 1. Specified low emitting equipment consistent with Rule 201 | 1. <1 mmBTU/hr input rating<br>2. Electric Utility Boilers<br>3. Process heaters, kilns and furnaces where products of combustion are in direct contact with material heated | 1. Aerosol<br>2. Specific operations by rule | 1. Aerosol in small containers<br>2. Specific operations by rule |
| | BACT/Emission Limitations | Not applicable | 1. New nonroad engines and equipment that is newly subject | 1. Low fuel Usage<br>2. Standing Pilot Flame Burner | 1. Low usage | 1. Nozzle tips of automated spray equipment |
| | Offset Requirements | Not applicable | 1. Newly subject equipment<br>2. Replacement equipment | Not Applicable | Not applicable | Not applicable |
| Averaging Provisions | | Not applicable | Averaging provisions will be specified in the Permit depending on the emissions from the emissions unit. | One hour average | Not applicable | Not applicable |
| Units | | None | lbs/day; lbs/quarter, ppm, grams/liter | ppm | Grams/liter; Composite partial pressure | Grams/liter; Composite partial pressure |

| Elements of Comparison | Specific Provisions | Rule 496, Large Confined Animal Facilities | Rule 201, General Permit Requirements and Rule 215, Ag Permits | Rule 411, Boiler NOx | Coating Operations, Rules 442, 451, 459, 460 | Solvent Cleaning Operations, Rules 454, 466 |
|---|---|---|---|---|---|---|
| Emissions Limits | Emissions Reduction | VOC Content BARCT Limits | BACT and Emissions offset | NOx BARCT limits | VOC Content BARCT Limits | VOC Content BARCT Limits |
| | Compliance Alternatives | None | Interpollutant Emission Offsets | Emission Reduction Credits | Emission Reduction Credits; add-on control | Emission Reduction Credits; add-on control |
| Operating Parameters | | Operating Parameters will be specified in the emission mitigation plan | Operating Parameters will be specified in permit as applicable | Monitor emissions; record- keeping for hours of operations, throughput, and emissions. | O & P Plan for those that use add-on control | O & P Plan for those that use add-on control |
| Work Practice Requirements | | Work Practices will be specified in the emission mitigation plan | Work Practices will be specified in permit as applicable | Monitor emissions; record- keeping for hours of operations throughput, and emissions. | Closed containers for storage; application methods | Cleaning methods; closed containers |
| Monitoring/ Records | Recordkeeping | Number of each type of livestock on large CAF; information verifying emission mitigation plan | Inventory Statements for sources exempt pursuant to Section 111 | Hours of operations, fuel use, CEM records, source test records. | List of Materials; Product Information Sheets, Usage records | List of Materials; Product Information Sheets, Usage records |
| | Frequency | Variable | Annual | Annual | Monthly | Monthly |
| Monitoring/ Testing | Test Methods | Monitoring and testing is dependent on the emission mitigation measure chosen. | Specifies testing provisions for initial boiling point and vapor pressure. Other monitoring/ testing provisions will be specified in permit as applicable | Continuous emission monitoring (CEM); testing to verify compliance with emission limits. | Determination of VOC Content, exempt materials, and metallic content | Determination of VOC Content, exempt materials, and metallic content |

| Elements of Comparison | Specific Provisions | Rule 496, Large Confined Animal Facilities | Rule 201, General Permit Requirements and Rule 215, Ag Permits | Rule 411, Boiler NOx | Coating Operations, Rules 442, 451, 459, 460 | Solvent Cleaning Operations, Rules 454, 466 |
|---|---|---|---|---|---|---|
| | Frequency | Variable | | Continuous for CEM; Annual or biennial depending on size for source testing. | | |

# APPENDIX C
## Control and Cost Calculations

### Increased Flushing Frequency

This calculation is modeled after a similar technique used in the DPAG report for increasing flushing frequency.

Assumptions:
- The total dairy emission factor of 12.8 lb VOC/head/year will be used, based on recommendations from ARB.
- DPAG reports that dairies flush, on average, twice per day.
- An emission factor of 2.5 lb VOC/head/year will be used for excreta in the feed lanes. This number comes from a report presented at the January 26, 2005 Livestock Emission Research Symposium by Frank Mitloehner.
- VOC emissions from fresh excreta will be a linear function of time.
- Emissions caused from the act of flushing are assumed to be negligible.
- The annual operating cost for lagoon recycle flush systems is $967 for a dairy with 1000 milking cows (Bennett et al.)
- Only costs for increased flushing is operational costs.

Emission Reduction Calculations:
Subtract reductions gained from feeding to NRC guidelines:

2.5 lb VOC/head/year * (1 – 0.1) = 2.25 lb VOC/head/year

Emissions generated in between flushes with two flushes: $E_n = n_f \varepsilon$

$\varepsilon$ = Emissions generated between flushes in lb VOC/head/year

$n_f$ = Number of flushes per day

$E_n$ = Emissions from feed lanes, in lb VOC/head/year, based on $n$

$E_2 = 2.25 = 2\varepsilon \qquad \varepsilon = 1.12$

Determining VOC linear relationship: $\varepsilon = \int_0^T A t dt$

$A$ = Linear equivalence factor in lb VOC/head-year-hr

$t$ = Time manure has been sitting on floor since last flush in hours

$T$ = Maximum time in between flushes in hours (24 hours per day divided by $n$)

$$1.12 = \int_0^{12} A t dt = \frac{A}{2}(12^2)$$

$$A = 0.0156$$

Increase to three flushes per day:

$$\varepsilon = \int_0^T A t dt = \int_0^8 0.0156 t dt = \frac{0.0156}{2}(8^2) = 0.500$$

$$E_3 = 0.50 * 3 = 1.5$$

$D$ = Emission factor for entire dairy in lb VOC/head/year

Reduction for increasing from 2 to 3 flushes per day:

$$\frac{E_2 - E_3}{D} * 100\% = \frac{2.25 - 1.5}{12.8} * 100\% = 6\%$$

Cost Calculations:
If dairies are increasing from two to three flushes per year then operational costs should increase by half of the current costs.

$$\frac{\$967}{2} = \$483.50 \text{ per dairy}$$

**NON-MANURE-BASED BEDDING**

Assumptions based on SJVUAPCD Rule 4570 Final Draft Staff Report

- Actual control effectiveness is unknown and will therefore assume 10% reduction in VOC.
- Assume 24% of dairy VOC emission comes from housing.
- Assume 10% overall reductions by feeding according to NRC guidelines.
- Assume 6% reduction from housing by increasing flushing frequency.

Emission Reduction Calculation
Emissions from housing
= 12.8 lb VOC/head/year * 24% = 3.07 lb VOC/head/year
Emissions after feed and flushing measures
= 3.07 * (1 – 0.1) * (1 – 0.06) = 2.6 lb/head/year
Emissions reduced from non-manure-based bedding
= 2.6 * 0.1 = 0.26 lb/head/year
Percent Reduction = $\frac{0.26}{12.8} * 100\% = 2\%$

**PLUG FLOW ANAEROBIC DIGESTERS**

Assumptions:

- At the 2004 AgStar conference, Don Wichert presented the average cost of a plug flow digester for a large dairy (1000 cows) to be $738 per cow.
- Equipment lifetime estimated to be 10 years.
- Interest rate assumed to be 10% annually.
- Assume benefits generated from electricity can offset operating costs
- Assume a plug flow digester has 80% control efficiency
- A plug flow digester can control all emissions from wastes that would have been used on croplands as shown above (43.7% of entire dairy emissions).

Cost Effectiveness Calculations:

Annual Costs: $A = \frac{P * i(i+1)^n}{(i+1)^n - 1}$

$A$ = Annual cost in dollars
$P$ = Present (initial capital) costs in dollars
$i$ = Interest rate compounded annually
$n$ = Compounded periods (in this case years)

$$A = \frac{(738 * 1000) * 0.1 * (0.1+1)^{10}}{(0.1+1)^{10} - 1} \approx 120000$$

Annual emission reduction = 12.8 lb/head/year * 0.437 * 0.80 * 1000 cows
= 4475 lb/year
= 2.24 ton/year

Cost Effectiveness = $\frac{\$120000 / year}{2.24 ton / year} \approx \$53500 / ton\ VOC\ reduced$

# APPENDIX D

**Mitigation Measure/Monitoring and Recordkeeping Reference Tables**

## Table D-1 Dairy Measures

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| **Section 303.1(a) - FEED MEASURES *(Choose four of the following measures)*** | |
| ☐ 1. Feed according to National Research Council guidelines specified in "Nutrient Requirements of Dairy Cattle: Seventh Revised Edition, 2001," or a more recent edition. | 1. Keep records of feed content, formulation, supplements and/or quantity of feed additive utilized, as applicable. (Section 501.3(a))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 2. Feed animals high moisture corn or steam-flaked corn and not feed animals dry rolled corn. | Keep records of feed content, formulation, supplements and/or quantity of feed additive utilized, as applicable. (Section 501.3(a)) |
| ☐ 3. At least once every 14 days, remove feed from the area where animals stand to eat feed. | Keep a log of when actions were performed. (Section 501.2(a)) |
| ☐ 4. At least once every 14 days, remove spilled feed from the area where equipment travels to place feed in the feed bunks. | Keep a log of when actions were performed. (Section 501.2(a)) |
| ☐ 5. Remove uneaten wet feed from feed bunks within 24 hours of feed becoming wet due to rain. | Record when any wet feed was removed. (Section 501.3(c)) |
| ☐ 6. Feed or dispose of rations within 48 hours of grinding or mixing rations. | Keep a log of when feed is processed and when that processed feed is either fed to the animals or disposed. (Section 501.3(b)) |
| ☐ 7. Store grain in a weatherproof storage structure from October through May. | No associated monitoring or recordkeeping. |
| **Section 303.1(b) - SILAGE MEASURES *(Choose one of the following measures)*** | |
| ☐ 1. Cover the horizontal surface of silage piles, except for the area where feed is being removed from the silage pile. | No associated monitoring or recordkeeping. |
| ☐ 2. Collect leachate from silage piles and send it to a waste treatment system such as a lagoon at least once every 24 hours. | If the owner/operator is actively collecting the leachate must keep a log of the date and the manner in which the leachate was collected. (Section 501.3(d)) |
| ☐ 3. Choose one of the following: | |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| ☐ a. Enclose silage in a bag and vent to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%, or | 1. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b))<br>3. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ b. Enclose silage in a weatherproof structure and vent to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%, or | 1. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b))<br>3. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ c. Eliminate silage from animal diet. | Keep records of feed content, formulation, supplements and/or quantity of feed additive utilized, as applicable. (Section 501.3(a)) |
| **Section 303.1(c) - MILKING PARLOR MEASURES *(Choose one of the following)*** | |
| ☐ 1. Flush or hose milking parlor immediately prior to, immediately after, or during each milking. | No associated monitoring or recordkeeping. |
| ☐ 2. Enclose and vent the milk parlor to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80% when animals are in the parlor. | 1. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b))<br>3. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| **Section 303.1(d) - FREESTALL MEASURES *(Choose two of the following)*** | |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| ☐ 1. Vacuum or scrape freestall flush lanes immediately prior to, immediately after, or during each milking. | Keep a log of when actions were performed. (Section 501.2(a)) |
| ☐ 2. Inspect water pipes and troughs and repair leaks at least once every day. | Keep a log of when inspections took place and a description of any repairs that took place. (Section 501.4(b)) |
| ☐ 3. Use non-manure-based bedding for at least 90% of the bedding material, by weight, for freestalls (e.g. rubber mats, almond hulls, sand, or waterbeds). | No associated monitoring or recordkeeping. |
| ☐ 4. Remove animal waste that is not dry from individual cow freestall beds at least once every 14 days. | Keep a log of when actions were performed. (Section 501.2(a)) |
| ☐ 5. Rake, harrow, scrape, or grade bedding in freestalls at least once every 14 days. | Keep a log of when actions were performed. (Section 501.2(a)) |
| ☐ 6. Use a dry animal waste handling system, such as scraping, instead of a liquid animal waste handling system such as a flush system. | No associated monitoring or recordkeeping. |
| ☐ 7. Have no animals in corrals at any time. | No associated monitoring or recordkeeping. |
| ☐ 8. Flush freestalls more frequently than the milking schedule. | Keep a log of when actions were performed. (Section 501.2(a)) |
| ☐ 9. Vacuum animal waste instead of flushing or scraping and apply animal waste directly to land either through injection or incorporation within 72 hours of removal from animal housing or vacuum truck. | Keep records of the date, location, and quantity of animal waste that is applied to the land. In addition. In addition, a record of when solid animal waste is removed from animal housing shall be kept. (Section 501.7(a)) |
| **Section 303.1(e) - CORRAL MEASURES *(Choose six of the following)*** | |
| ☐ 1. Choose one of the following: | |
| ☐ a. Clean animal waste from corrals at least four times per year with at least 60 days between cleanings, or | Keep a log of when actions were performed. (Section 501.2(b)) |
| ☐ b. Clean corrals at least once between April and July and at least once between October and December, or | Keep a log of when actions were performed. (Section 501.2(b)) |
| ☐ c. Clean concrete areas such that the depth of animal waste does not exceed twelve inches at any point or time, except for in-corral mounding. | Record when the animal waste is cleaned from the area. (Section 501.4(c)) |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| ☐ 2. Manage corrals such that the animal waste depth in the corral does not exceed twelve inches at any point or time, except for in-corral mounding. | Record when the animal waste is cleaned from the area. (Section 501.4(c)) |
| ☐ 3. Knock down fence line animal waste build-up prior to it exceeding a height of twelve inches at any point or time. | Record when the animal waste is cleaned from the area. (Section 501.4(c)) |
| ☐ 4. Scrape or flush feed aprons in corrals at least once every seven days. | Keep a log of when actions were performed. (Section 501.2(b)) |
| ☐ 5. Slope the surface of the corrals at least 3% where the available space for each animal is 400 square feet or less. Slope the surface of the corrals at least 1.5% where the available space for each animal is more than 400 square feet per animal. | No associated monitoring or recordkeeping. |
| ☐ 6. Choose one of the following: | |
| ☐ a. Maintain corrals to ensure drainage and to prevent water from standing more than 48 hours, or | No associated monitoring or recordkeeping. |
| ☐ b. Maintain corrals so that there are not indentations in the surface where standing water may form and remain for more than 48 hours. | No associated monitoring or recordkeeping. |
| ☐ 7. Install floats on the troughs or use another method approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency to ensure that the water in the troughs does not intentionally or unintentionally overflow or spill onto an earthen ground. | 1. Keep any information provided by the manufacturer. (Section 501.1(b))<br>2. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ 8. Inspect water pipes and troughs and repair leaks at least once every day. | Keep a log of when inspections took place and a description of any repairs that took place. (Section 501.4(b)) |
| ☐ 9. Harrow, rake, or scrape corrals sufficiently to maintain a dry surface. | No associated monitoring or recordkeeping. |
| ☐ 10. Install no shade structures in the corrals. | No associated monitoring or recordkeeping. |
| ☐ a. Install shade structures such that they are constructed with a light permeable roofing material, or | Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ b. Install all shade structures uphill of any slope in the corral. | Keep any design specifications related to anything built or created specifically for the |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| | facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ 11. Choose one of the following: | |
| ☐ a. Use lime or a similar absorbent material in the corrals according to the manufacturer's recommendations to minimize moisture in the corrals, or | 1. Keep records of amount, date and location of where material was applied. (Section 501.4(e))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ b. Apply thymol to corral soil in accordance with the manufacturer's recommendation. | 1. Keep records of amount, date and location of where material was applied. (Section 501.4(e))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 12. House animals in an enclosure vented to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%. | 1. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b))<br>3. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| **Section 303.1(f) - SOLID ANIMAL WASTE/SEPARATED SOLIDS MEASURES *(Choose two of the following)*** | |
| ☐ 1. Cover any dry animal waste piles outside of the corrals with a waterproof covering from October through May, except for times, not to exceed 24 hours, when wind removes the covering. | No associated monitoring or recordkeeping. |
| ☐ 2. Cover any dry separated solids outside the corrals with a waterproof covering from October through May, except for times, not to exceed 24 hours, when wind removes the covering. | No associated monitoring or recordkeeping. |
| ☐ 3. Remove animal waste from the facility within 72 hours of removal from the corrals. | Record when the animal waste or separated solids were removed from the animal housing or the solids separator, when they were removed from the facility or sent to the lagoon, and the amount removed. (Section 501.5(a)) |
| ☐ 4. Choose one of the following: | |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| ☐ a. Remove separated solids from the facility within 72 hours of separation with a solid separation system, or | Record when the animal waste or separated solids were removed from the animal housing or the solids separator, when they were removed from the facility or sent to the lagoon, and the amount removed. (Section 501.5(a)) |
| ☐ b. Store no separated solids outside of anaerobic digesters. | Keep records of the pounds of solid animal waste and separated solids being sent to the digester. Additionally, records will be kept to show the digester meets the specifications listed in the NRCS California Field Office Technical Guide Code 365 or 366 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.2(c)) |
| ☐ 5. Compost animal waste removed from corrals with an aerated static pile vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%. | 1. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b))<br>3. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ 6. Store all removed animal waste in an enclosure vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%. | 1. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b))<br>3. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ 7. Send at least 51% of the animal waste removed from animal housing to an anaerobic digester, with a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%. | 1. Keep records of the pounds of solid animal waste and separated solids being sent to the digester. Additionally, records will be kept to show the digester meets the specifications listed in the NRCS California Field Office Technical Guide Code 365 or 366 or other |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| | applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.2(c))<br>2. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>3. Keep any information provided by the manufacturer. (Section 501.1(b))<br>4. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| **Section 303.1(g) - LIQUID ANIMAL WASTE MEASURES *(Choose one of the following)*** | |
| ☐ 1. Manage the facility such that there are no lagoons at the facility. | No associated monitoring or recordkeeping. |
| ☐ 2. Choose one of the following: | |
| ☐ a. Use phototropic lagoons, or | Test and record the lagoon for bacteria concentration, bacteriochlorophyll *a* concentration, or a surrogate parameter according to the most recent NRCS guidelines no later than twelve months after issuance of the permit and at least once every twelve months thereafter. (Section 501.6(a)) |
| ☐ b. Use an anaerobic lagoon. | Keep all information showing compliance with the standards in the NRCS California Field Office Technical Guide Code 359 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.6(c)) |
| ☐ 3. Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon. | 1. Keep all information showing compliance with the standards set forth in the NRCS California Field Office Technical Guide Code 632 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.6(d))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| ☐ 4. Maintain lagoon with a pH between 6.5 and 7.5. | Test and record the lagoon for pH no later than twelve months after issuance of the permit and at least once every three months thereafter. (Section 501.6(f)) |
| ☐ 5. Choose one of the following: | |
| ☐ a. Use an aerobic lagoon, or | Test and record the lagoon for dissolved oxygen content no later than twelve months after the date of issuance of the permit, and at least once every three months thereafter. All information must be kept showing compliance with the standards in the NRCS California Field Office Technical Guide Code 359 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.6(b)) |
| ☐ b. Use a lagoon that is mechanically aerated. | 1. Test and record the lagoon for biological oxygen demand within twelve months after the date of issuance of the permit and at least once every twelve months thereafter. All information must be kept showing compliance with the standards in the NRCS California Field Office Technical Guide Code 359 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.6(e))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 6. Maintain organic loading in the lagoon such that the total solids is less than 3.5 mg (dry weight)/mL. | Test and record the organic content of the lagoon no later than twelve months after issuance of the permit and at least once every three months thereafter. |
| ☐ 7. Use additional non-standard equipment or chemicals on the solid separator system, such as a roller or screw presses or chemical coagulants and flocculants, that increase the percent of solid separation achieved by the separator and is approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. | 1. Keep any information provided by the manufacturer. (Section 501.1(b))<br>2. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| ☐ 8. Cover the lagoon or storage pond and vent to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%. | 1. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b))<br>3. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| **Section 303.1(h) - LAND APPLICATION MEASURES *(Choose two of the following)*** | |
| ☐ 1. Land incorporate all solid animal waste within 72 hours of removal from animal housing. | Keep records of the date, location, and quantity of animal waste that is applied to the land. In addition. In addition, a record of when solid animal waste is removed from animal housing shall be kept. (Section 501.7(a)) |
| ☐ 2. Only apply solid or liquid animal waste that has been treated with an anaerobic or aerobic lagoon or an anaerobic digester system. | 1. Keep records of the date, location, and quantity of animal waste that is applied to the land. In addition. (Section 501.7(a))<br>2. Keep records according to where the animal waste is being treated. (Sections 501.6(b), 501.6(c), 501.2(c), 501.1(b), 501.1(c)) |
| ☐ 3. Choose one of the following: | |
| ☐ a. Apply and manage the liquid animal waste so it stands in the fields no more than 24 hours after application, or | Keep records of the date, location, and quantity of animal waste that is applied to the land. In addition. (Section 501.7(a)) |
| ☐ b. Apply no liquid animal waste. | No associated monitoring or recordkeeping. |
| ☐ 4. Choose one of the following: | |
| ☐ a. Apply no solid animal waste that has a moisture content of more than 50%. | No associated monitoring or recordkeeping. |
| ☐ b. Apply no solid animal waste. | No associated monitoring or recordkeeping. |

# Table D-2 Poultry Ranch Measures

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| **Section 303.2(a) - FEED MEASURES *(Choose five of the following)*** | |
| ☐ 1. Feed according to National Research Council guidelines specified in "Nutrient Requirements of Poultry: Ninth Revised Edition, 1994," or a more recent edition. | 1. Keep records of feed content, formulation, supplements and/or quantity of feed additive utilized, as applicable or keep feed mitigation certifications. (Section 501.3(a))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 2. Feed animals probiotics designed to improve digestion according to manufacturer recommendations. | 1. Keep records of feed content, formulation, supplements and/or quantity of feed additive utilized, as applicable or keep feed mitigation certifications. (Section 501.3(a))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 3. Feed animals an amino acid supplement diet to meet their nutrient requirements. | 1. Keep records of feed content, formulation, supplements and/or quantity of feed additive utilized, as applicable or keep feed mitigation certifications. (Section 501.3(a))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 4. Feed animals feed additives such as amylase, xylanase, and protease, designed to maximize digestive efficiency according to manufacturer recommendations. | 1. Keep records of feed content, formulation, supplements and/or quantity of feed additive utilized, as applicable or keep feed mitigation certifications. (Section 501.3(a))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 5. Use feed additives designed to reduce feed decomposition or oxidation. | 1. Keep records of feed content, formulation, supplements and/or quantity of feed additive utilized, as applicable or keep feed mitigation certifications. (Section 501.3(a))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 6. Remove spilled feed from animal housing at least once every seven days. | Keep a log of when actions were performed. (Section 501.2(a)) |
| ☐ 7. Enclose grain in a weatherproof storage structure from October through May. | No associated monitoring or recordkeeping. |
| ☐ 8. Feed or dispose of feed within 48 hours of grinding and mixing feed. | Keep a log of when feed is processed and when that processed feed is either fed to the animals or disposed. (Section 501.3(b)) |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| ☐ 9. Remove uneaten wet feed from the animal housing within 24 hours of feed becoming wet due to rain. | Record when any wet feed was removed. (Section 501.3(c)) |
| **Section 303.2(b) - HOUSING MEASURES *(Choose four of the following)*** | |
| ☐ 1. Remove caked animal waste at least once every 14 days. | Keep a log of when actions were performed. (Section 501.2(a)) |
| ☐ 2. Clean under poultry cages at least once every 14 days. | Keep a log of when actions were performed. (Section 501.2(a)) |
| ☐ 3. Use poultry litter additives designed to reduce air emissions or moisture content in litter, such as aluminum sulfate or sodium bisulfate, according to manufacturer recommendations. | Record the date and location of where the additive was applied and the quantity of additive applied. (Section 501.4(e)) |
| ☐ 4. Use a dry housing cleaning method at all times, except when a wet cleaning method is required for animal health or biosecurity issues. | No associated monitoring or recordkeeping. |
| ☐ 5. Use drinkers that do not have a drip system. | No associated monitoring or recordkeeping. |
| ☐ 6. Adjust the height, volume, and location of drinkers at least once every 14 days. | Keep a log of when actions were performed. (Section 501.2(a)) |
| ☐ 7. Use no foggers in the house. | No associated monitoring or recordkeeping. |
| ☐ 8. Only use fogger systems designed, operated and maintained according to manufacturer recommendations that provide water droplets with an average size of 50 microns or less. | Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 9. Slope the floor of the house 3%. | No associated monitoring or recordkeeping. |
| ☐ 10. Install mounds or berms up gradient to prevent the runoff of storm water into pens (only an option for animals allowed to freely move between indoor housing structures and outdoor pens). | No associated monitoring or recordkeeping. |
| ☐ 11. Inspect water pipes and drinkers and repair leaks at least once every day. | Keep a log of when inspections took place and a description of any repairs that took place. (Section 501.4(b)) |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| ☐ 12. Maintain the roof structure and manage roof runoff in accordance with the applicable standards in the NRCS Field Office Technical Guide Code 558 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. | Keep all information showing compliance with the standards in the NRCS Field Office Technical Guide Code 558 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.4(f)) |
| ☐ 13. Vent animal housing to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%. | 1. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b))<br>3. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ 14. Use a belt litter removal system that dries the litter. | No associated monitoring or recordkeeping. |
| ☐ 15. House animals in a tunnel ventilated house with mechanical ventilation. | 1. Keep any information provided by the manufacturer. (Section 501.1(b))<br>2. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ 16. Use a litter drying system, such as a flat bed drying system. | 1. Keep any information provided by the manufacturer. (Section 501.1(b))<br>2. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| **Section 303.2(c) - SOLID ANIMAL WASTE/SEPARATED SOLIDS MEASURES *(Choose one of the following measures)*** | |
| ☐ 1. Choose one of the following: | |
| ☐ a. Remove all animal waste from facility within 72 hours of removal from animal housing, or | Record when the animal waste or separated solids were removed from the animal housing or the solids separator, when they were removed from the facility or sent to the lagoon, and the amount removed. (Section 501.5(a)) |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| ☐ b. Send all animal waste to a lagoon within 72 hours of removal from animal housing. | Record when the animal waste or separated solids were removed from the animal housing or the solids separator, when they were removed from the facility or sent to the lagoon, and the amount removed. (Section 501.5(a)) |
| ☐ 2. Cover animal waste outside the animal housing with a waterproof covering from October through May, except for times, not to exceed 24 hours, when wind removes the covering. | No associated monitoring or recordkeeping. |
| ☐ 3. Use a solid animal waste handling system in housing, such as stockpiles, solid land application, or a thin bed animal waste drying system, instead of a liquid system such as flushing, animal waste storage ponds, or animal waste treatment lagoons. | No associated monitoring or recordkeeping. |
| ☐ 4. Send at least 51% of the animal waste removed from site to an anaerobic digester, with a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%. | 1. Keep records of the pounds of solid animal waste and separated solids being sent to the digester. Additionally, records will be kept to show the digester meets the specifications listed in the NRCS California Field Office Technical Guide Code 365 or 366 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.2(c))<br>2. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>3. Keep any information provided by the manufacturer. (Section 501.1(b))<br>4. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ 5. Compost animal waste removed from the animal housing with an aerated static pile vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%. | 1. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b))<br>3. Keep any design specifications related |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| | to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| **Section 303.2(d) - LIQUID ANIMAL WASTE MEASURES *(Choose one of the following)*** | |
| ☐ 1. Manage the facility such that there are no lagoons at the facility. | No associated monitoring or recordkeeping. |
| ☐ 2. Choose one of the following: | |
| ☐ a. Use phototropic lagoons, or | Test and record the lagoon for bacteria concentration, bacteriochlorophyll *a* concentration, or a surrogate parameter according to the most recent NRCS guidelines no later than twelve months after issuance of the permit and at least once every twelve months thereafter. (Section 501.6(a)) |
| ☐ b. Use an anaerobic lagoon. | Keep all information showing compliance with the standards in the NRCS California Field Office Technical Guide Code 359 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.6(c)) |
| ☐ 3. Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon. | 1. Keep all information showing compliance with the standards set forth in the NRCS California Field Office Technical Guide Code 632 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.6(d))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 4. Maintain lagoon with a pH between 6.5 and 7.5. | Test and record the lagoon for pH no later than twelve months after issuance of the permit and at least once every three months thereafter. (Section 501.6(f)) |
| ☐ 5. Choose one of the following: | |
| ☐ a. Use an aerobic lagoon, or | Test and record the lagoon for dissolved oxygen content no later than twelve months after the date of issuance of the permit, and at least once every three months thereafter. All information must be kept showing compliance with the standards in the NRCS California Field Office Technical Guide Code 359 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.6(b)) |

| Mitigation Measure | Monitoring and Recordkeeping |
|---|---|
| ☐ b. Use a lagoon that is mechanically aerated. | 1. Test and record the lagoon for biological oxygen demand within twelve months after the date of issuance of the permit and at least once every twelve months thereafter. All information must be kept showing compliance with the standards in the NRCS California Field Office Technical Guide Code 359 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. (Section 501.6(e))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b)) |
| ☐ 6. Maintain organic loading in the lagoon such that the total solids is less than 3.5 mg (dry weight)/mL. | Test and record the organic content of the lagoon no later than twelve months after issuance of the permit and at least once every three months thereafter. |
| ☐ 7. Use additional non-standard equipment or chemicals on the solid separator system, such as a roller or screw presses or chemical coagulants and flocculants, that increase the percent of solid separation achieved by the separator and is approved by the Air Pollution Control Officer, California Air Resources Board, and U.S. Environmental Protection Agency. | 1. Keep any information provided by the manufacturer. (Section 501.1(b))<br>2. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |
| ☐ 8. Cover the lagoon or storage pond and vent to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%. | 1. Conduct an initial source test of all VOC control devices not later than twelve months after the date of installation, and at least once every twelve months thereafter. All test records will be kept on site. (Section 501.2(b))<br>2. Keep any information provided by the manufacturer. (Section 501.1(b))<br>3. Keep any design specifications related to anything built or created specifically for the facility in order to implement an emission mitigation measure. (Section 501.1(c)) |

# APPENDIX E
**Public Comments**

**Public Workshop Comments (July 6, 2006)**

**Comment #1:** When will the rule be adopted?

**Response:** The proposed rule is scheduled to be considered for adoption by the Board of Directors at a public hearing on August 24, 2006, along with Rules 215, 310, and 201.

**Comment #2:** Can sources set up one-on-one meetings with District staff?

**Response:** Yes. We have contacted all of the affected sources, and visited all but two before the workshop, to discuss the specific requirements. We will arrange additional individual meetings if requested.

**Comment #3:** Are there more rules coming for agricultural sources?

**Response:** The District will be considering control measures that apply to emissions of particulate matter from agricultural practices such as tilling, disking, cultivation, and raising of animals. We are evaluating the San Joaquin Valley Rule 4550, CONSERVATION MANAGEMENT PRACTICES.

**Comment #4:** Are there plans to affect smaller CAF sources later?

**Response:** The proposed rule applies to large CAFs, which constitute a small percentage of the District's total emission inventory for all CAFs. Therefore, future ozone attainment plans will evaluate whether to require similar controls at smaller CAFs. That process will begin later this year.

**Comment #5:** There are a lot of recordkeeping requirements; how will farmers be able to keep track of what they need to record?

**Response:** Staff has created a table in Appendix D of the Rule 496 Staff Report that shows the required recordkeeping associated with each mitigation measure listed. Staff will also work with affected sources to create checklists to make recordkeeping more manageable.

**Comment #6:** We are all human and sometimes make mistakes and could forget recordkeeping if there are other more urgent matters that need to be attended. What will happen if an owner/operator at an affected

source forgets some recordkeeping?

**Response:** The District compliance staff can issue a Notice to Comply or a Notice of Violation, depending on the circumstances. Generally a Notice to Comply is issued for the first incident. Repeated violations generally trigger a Notice of Violation, which involves a financial penalty.

**New Hope Dairy (June 23, 2006, by phone)**

**Comment:** On page 8 of the Staff Report it states that southern Sacramento County and the San Joaquin Valley have similar environments and similar geographies and therefore it is not unreasonable for the same mitigation requirements to be applied here. But the two areas have different climates. The Sacramento Valley receives the delta breeze, which keeps temperatures cool. Additionally, there is not as big of a dust problem here as in the San Joaquin Valley. These differences make dairy farming much more favorable in Sacramento County as opposed to the San Joaquin Valley.

**Response:** When comparing environments and geographies the reference was meant in a relative sense. Sacramento and San Joaquin are similar when compared to East Cost dairies or even dairies in the South Coast Air District. The operating practices are usually similar between Sacramento and San Joaquin Dairies. Staff will clarify in the Staff Report to better reflect the intentions of the comparison.

**Foster Farms (June 29, 2006, by phone)**

**Comment:** In Section 501.1(a) it sounds like a real time record of animal head count needs to be kept. This is impossible for a poultry facility where close to 100 chickens can die per day.

**Response:** Staff has adjusted the requirement to say that animal head count only needs to be updated once per day if needed. Based on conversations with industry, poultry operations subject to the rule already keep these records.

**New Hope Dairy (June 29, 2006)**

**Comment #1:** Many of the mitigation measures, like inspecting for leaks or cleaning feed, only require action taken once every 14 days when our dairy performs these actions every day. How would we keep records in these situations?

**Response:** The recordkeeping requires recording when periodic actions are performed. Depending on the permit conditions, records need to show that the minimum requirements of the mitigation measures are being met.

**Comment #2:** The recordkeeping requirements look cumbersome and overwhelming. A dairy owner has many things to worry about including the health, production, and comfort of the animals not to mention the other everyday challenges of running a dairy. Marking down that a leak inspection was performed is not a high priority and could be forgotten. We would not want to be performing the mitigation but get violations for something as trivial as recordkeeping.

**Response:** Staff simplified the recordkeeping requirements while still trying to comply with U.S. EPA standards. Staff will work on creating some standard check lists for periodically performed mitigation measures to simplify recordkeeping. Staff will continue working with affected sources to see if records they are currently keeping will meet some of the recordkeeping requirements of Rule 496.

**Comment #3:** Over the years since farming as occurred in California, the population of dairy cows has not significantly increased. Why are VOCs from dairy cows all of a sudden a problem? Why not regulate more unnatural sources of air pollution such as automobiles?

**Response:** State law (SB 700) required removal of exemptions for agricultural operations from air quality permitting regulations and specifically requires this regulation for large CAFs. Sacramento County is currently designated as a serious nonattainment area for ozone, which is formed through the reaction of NOx and VOC in the presence of sunlight. Therefore, the pollutant primarily created by mobile sources, being NOx, is only part of problem. A large amount of VOCs generated in the District are created by confined animal facilities and as part of reaching those attainment goals VOC reduction from CAFs is a valid measure.

**Nilsen Farms (July 6 & 14, 2006)**

**Comment #1:** I receive my feed directly from Foster Farms and am contractually obligated to use their feed. Foster Farms does not send me

records of feed formulation or content therefore I do not know if I am completing many of the feed mitigation measures. Additionally, I have no control over content and formulation in the future if these measures are chosen.

**Response:** Staff contacted Foster Farms and found that the feed provided met two of the mitigation measures. Foster Farms claimed that the feed formulation was a trade secret and therefore could not be provided to the grower but could be provided to the District upon request. Staff adjusted the rule so if an owner/operator is contractually obligated to use a proprietary feed, then the supplier will need to provide quarterly certification and provide 90 days notice if feed will fail to meet mitigation measures. Also, Staff changed the applicability of the rule so if the supplier fails to do this they can be held responsible for resulting violations. If supplier changes feed to not meet mitigation measures and properly notifies the owner/operator, then the owner/operator must contact the district in order to modify the permit.

**Comment #2:** Can you split the poultry ranch feed mitigation measures section into two sections? One section would be for the owner/operator with housekeeping measures and the other for the feed supplier with feed content measures.

**Response:** Staff feels that dividing up the section would limit options for owner/operators who use their own feed. To make the rule more readable, Staff has grouped all feed content measures together (measures 1 through 5).

**Comment #3:** The measure in Section 303.2(c)(1)(a) related to removing all animal waste from a facility within 72 hours is unrealistic. The amount of time taken to remove the animal waste from the facility depends on fertilizer demands and the schedule of the person removing the feed from the facility.

**Response:** This measure may not work for all facilities but the District would like to give credit to the facilities that remove animal waste from the facility quickly.

**B & J Dairy (July 13, 2006)**

**Comment #1:** The smaller dairies are the ones who do not necessarily do these mitigation measures and therefore should be included in the regulation.

**Response:** The proposed rule was designed to meet the requirements of state law. Because the large CAFs only account for a small

percentage of livestock emissions, Staff will be looking at similar requirements for smaller CAFs. This evaluation will be included as part of the 8-hour ozone attainment plan.

**Comment #2:** Will there be more requirements if the number of animals on the CAF increases?

**Response:** The facility will be permitted for a maximum amount of animals and any increase in head count over this limit will require a permit modification but there will be no added requirements under Rule 496.

**U.S. ENVIRONMENTAL PROTECTION AGENCY (July 11, 2006)**

**Comment #1:** Section 303.1(d)(2) and wherever this language appears in the rule. We recommend requiring CAF operators to minimize liquid leaks as much as possible as soon as a leak is found. For example, South Coast Rule 223, Emission Reduction Permits for Large Confined Animal Facilities, requires leak inspections and repair every 24 hours instead of 14 days.

**Response:** Staff adjusted the requirement to increase the frequency of leak inspection from 14 days to every day. Based on conversations with affected sources, animal housing areas are inspected daily and any leaks found are repaired immediately.

**Comment #2:** Section 303.2(b)(1) & (2). More stringent manure and waste clean-up provisions appear in South Coast AQMD Rule 223 requiring daily disposal and clean-up. Please consider revising Rule 496 accordingly, or providing an explanation in the Staff Report as to why these provisions are not reasonable in the Sacramento area.

**Response:** From talks with stakeholders, affected sources, and the SJVUAPCD, Staff has found that increasing these requirements to daily instead of every 14 days to not be economically feasible due to the large increase in labor requirement for the required cleaning.

**Comment #3:** Section 303.2(b)(6) & (11). We recommend requiring CAF operators to minimize liquid leaks as much as possible as soon as the leak is found. For example, South Coast AQMD Rule 223 requires drinker rotation and leak inspection and repair every 24 hours instead of every 14 days.

**Response:** Staff adjusted Section 303.2(b)(11) to require leak inspections

every day instead of every 14 days (see response to comment #1). Section 303.2(b)(6) deals with adjusting the height, volume, and location of the drinkers. The purpose of this measure is to adjust the drinkers relative to the size of the birds to prevent spilling and allow litter under the drinkers time to dry. Staff feels that adjusting the height, volume, and location daily is excessive because the birds grow do not grow that fast.

**Comment #4:** Section 303.3. Executive Officer discretion is implied in evaluating the content and stringency of mitigation plans submitted under this section. Please consider adding an explicit emissions reduction requirement such as 30% requirement provided in San Joaquin Valley Unified APCD Rule 4570, Confined Animal Facilities.

**Response:** Due to the infancy of the research and continued development in emission factors for CAFs, specifying an exact percentage for other CAF emission mitigation plans to attain is uncertain and premature. Instead, Staff has included a requirement that the emission mitigation plan must give equal or greater reduction than the minimum achieved by a facility complying with either the dairy or poultry ranch mitigation requirements. This will enable any request to be evaluated based on the best science at the time. Based on this comment, the rule now requires approval by the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA) of mitigation plans for other types of large CAFs. It should also be noted that no large CAFs other than dairies and poultry ranches have been identified in the District.

**Comment #5:** Section 303.4. This section allows for Executive Officer discretion in approving emission factors and determining mitigation measure equivalency for substitutions. We recommend that SMAQMD develop emission calculation protocols to allow consistent comparisons between individual mitigation measures and mitigation measures grouped together in a mitigation plan. Without such guidance, we suggest requiring EPA concurrence with SMAQMD's equivalency determinations.

**Response:** Due to the uncertainty in emission factors and reduction potential Staff is unable to create a specific calculation protocol. The requirement has been changed to include the CARB and EPA in the approval process for the substitution of mitigation measures.

**Comment #6:** Section 304. Please consider adding an explicit emissions reduction requirement such as the 30% requirement provided in San Joaquin Valley Unified APCD Rule 4570, as well as, developing specific calculation protocols for CAF operators to use in developing and evaluating their emission reduction calculations.

**Response:** See the responses for EPA comments #4 & 5. Based on the visits to the affected facilities, we do not expect any sources to use this provision at this time. Additionally, should it become necessary, due to the limited number of large CAFs within the District, Staff will work closely with affected sources to develop alternative emission mitigation plans if needed. Section 304 requires an alternative emission mitigation plan to achieve equal or greater reductions than the minimum reductions achieved by dairies and poultry facilities in complying with the lists of mitigation measures. EPA and CARB approval is also required for these types of emission mitigation plans.

**Comment #7:** Section 401. If Rule 496 relies on provisions in SMAQMD Rule 215, Agricultural Permit Requirements and New Agricultural Permit Review, to develop permits and to determine BACT (Best Available Control Technology) for a given facility, please ensure that this rule is submitted to the EPA with Rule 496 if it is not already approved into the State Implementation Plan.

**Response:** Rule 215 will be submitted with Rule 496 for approval into the State Implementation Plan.

**Comment #8:** Section 403.2. These provisions contain instances of Executive Officer discretion in reviewing, approving, and granting time extensions for approval. For example, it appears the Executive Officer could relax the rule's definition of BARCT in contradiction of the Section 303 requirements. We suggest adding specific criteria for approving a mitigation plan and specific timelines for finding a plan complete and subsequently approving or amending it.

**Response:** Staff added Section 403.2(a)(2) that requires, if an emission mitigation plan update shows changes to the emission mitigation plan, then the new plan cannot result in less emission reduction potential than the previous plan. The timeframe is already outlined in the rule. Section 403.2(b) states if no changes are proposed in the update, then action will be taken no later than 90 days after a completed update is submitted. If changes are proposed in the update, then Section 403.2(a)(1) requires a permit modification application to be submitted according to the timeframes laid out in Rule 215, AGRICULTURAL PERMIT REQUIREMENTS AND NEW AGRICULTURAL PERMIT REVIEW.

**Comment #9:** Section 404.1. Please clarify in the rule that "%W" is the percent of animal waste sent to a digester on a daily basis. Similarly, please specify in the Staff Report that the average manure production factors in your equation are daily output factors.

**Response:** Staff revised the rule accordingly. The average manure production factors are specified as daily in the summary of changes in Appendix A of the Staff Report.

**Comment #10:** Section 404.2. Please explain why this calculation is done quarterly for poultry facilities as opposed to whenever waste is removed from the facility and sent to the digester, consistent with the requirement at Section 303.2(c)(4).

**Response:** Staff revised the requirement to be calculated on a per house cleaning basis.

**Comment #11** Section 502.2(a). This section should include mitigation measures 303.1(c)(1) and 303.1(d)(1) as these mitigation measures require actions that are done at least daily, if not multiple times a day.

**Response:** Staff revised rule to include recordkeeping requirements for Sections 303.1(d)(1) and 303.1(d)(8). Section 303.1(c)(1) refers to flushing or hosing the milking parlor before, after, or during each milking. From conversation with stakeholders and visits to the affected facilities Staff has found the process of flushing or hosing the milking parlor is nearly a continuous daily process. It is done to prevent contamination of milk and milking equipment, which is critically important to dairies. The amount of recordkeeping that would be associated with this measure would be unreasonable. This measure can be verified through the inspection process.

**Comment #12:** Section 501.2(b). In addition to the annual source test requirement, please add a requirement that CAFs properly operate and maintain their emission control devices at all times.

**Response:** Staff revised the rule to specify that VOC control devices should be maintained and operated according to the manufacturer's specifications, in Section 305.6.

**Comment #13:** Section 501.6. Please consider more frequent than annual testing for pH and oxygen content in waste lagoons to better ensure continuous compliance with the rule; especially since the testing requirement is relatively simple. Also, please require a periodic monitoring requirement for organic loading in a waste lagoon consistent with the 3.5 mg/ml requirement in section 301.1(g)(6).

**Response:** Staff revised the rule to require pH and dissolved oxygen content in waste lagoons to be tested every 3 months instead of every 12 months. Staff also added Section 501.6(g) to require periodic monitoring for organic loading into a waste lagoon.

**CALIFORNIA AIR RESOURCES BOARD (July 11, 2006)**

**Comment:** The Air Resources Board Staff has reviewed the rule and, based on the information available to us at this time, we have no comments.