



YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT
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SUPPLEMENTAL FORM 711
EMISSIONS MITIGATION PLAN (EMP) - DAIRY
VOLATILE ORGANIC COMPOUNDS (VOC)

Dairies that incorporate at least the minimum quantity of emission mitigation measures required shall satisfy the Volatile Organic Compounds (VOC) Emissions Mitigation Plan and Best Available Retrofit Control Technology (BARCT) requirements of District Rule 11.2 - Confined Animal Facilities Permit Program.

NOTE: Alternative mitigation measures are subject to District approval. All alternative mitigation measures proposed by the applicant must include separate pages containing the following:

1. Type of alternative mitigation measure (e.g. feed, corral, liquid waste, etc.).
2. Description of the proposed alternative mitigation measure including, but not limited to, the following information:
 - a. The overall process from which VOCs are emitted;
 - b. The sources of VOC emissions being controlled; and
 - c. The proposed performance or control efficiency.
3. Any available data that establishes how much control the proposed alternative mitigation measure will provide including, but not limited to, the following information:
 - a. Emissions data;
 - b. Source test data;
 - c. Other surrogate data.
4. Operating parameters and frequency necessary to achieve the proposed performance or control efficiency of the proposed alternative mitigation measure.
5. Maintenance requirements necessary to achieve the proposed performance or control efficiency of the proposed alternative mitigation measure (if applicable).
6. Verification requirements necessary to achieve the proposed performance or control efficiency of the proposed alternative mitigation measure (if applicable).

FEED MEASURES (select at least **four** of the following measures):

- 1. Feed according to National Research Council (NRC) guidelines.
- 2. Feed animals high moisture corn or steam-flaked corn and not feed animals dry rolled corn.
- 3. At least once every fourteen (14) days, remove feed from the area where animals stand to eat feed.
- 4. At least once every fourteen (14) days, remove spilled feed from the area where equipment travels to place feed in the feed bunks.
- 5. Remove uneaten wet feed from feed bunks within twenty-four (24) hours of feed becoming wet.
- 6. Feed or dispose of rations within forty-eight (48) hours of grinding or mixing rations.
- 7. Store grain in a weatherproof storage structure from October through May.
- 8. Alternative mitigation measure(s), subject to District approval.

SILAGE MEASURES (select at least **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.
- 2. Collect leachate from silage piles and send it to a waste treatment system such as a lagoon at least once every twenty-four (24) hours.
- 3. 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
- 4. 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
- 5. Eliminate silage from animal diet.
- 6. Alternative mitigation measure(s), subject to District approval.

MILK PARLOR MEASURES (select at least **one** of the following measures):

- 1. Flush or hose milking parlor immediately prior to, immediately after, or during each milking.
- 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.
- 3. Alternative mitigation measure(s), subject to District approval.

FREESTALL MEASURES (select at least **two** of the following measures):

- 1. Vacuum or scrape freestall flush lanes immediately prior to, immediately after, or during each milking.
- 2. Inspect water pipes and troughs and repair leaks at least once every seven (7) days.
- 3. Use non-animal waste-based bedding and non-separated solids based bedding for at least 90% of the bedding material, by weight, for freestalls (e.g. rubber mats, almond hulls, sand, or waterbeds).
- 4. Remove animal waste that is not dry from individual cow freestall beds at least once every fourteen (14) days.
- 5. Groom (rake, harrow, scrape, or grade) bedding in freestalls at least once every fourteen (14) days.
- 6. Use a dry animal waste handling system, such as scraping, instead of a liquid animal waste handling system, such as a flush system.
- 7. Have no animals in exercise pens, corrals, or drylots at any time.
- 8. Flush freestalls more frequently than the milking schedule.
- 9. Vacuum animal waste instead of flushing or scraping and apply animal waste directly to land either through injection or incorporation within seventy-two (72) hours of removal from animal housing or vacuum truck.
- 10. Alternative mitigation measure(s), subject to District approval.

CORRAL MEASURES (select at least **six** of the following measures):

- 1. Choose one (1) of the following measures:
 - a. Clean animal waste from corrals at least four (4) times per year with at least sixty (60) days between each cleaning; or
 - b. Clean corrals at least once between April and July and at least once between October and December; or
 - c. Clean concrete areas such that the depth of animal waste does not exceed twelve (12) inches at any point or time, except for in-corral mounding.
- 2. Manage corrals such that the animal waste depth in the corral does not exceed twelve (12) 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 (12) inches at any point or time.
- 4. Scrape or flush feed aprons in corrals at least once every seven (7) days.
- 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.
- 6. Choose one (1) of the following measures:
 - a. Maintain corrals to ensure drainage and to prevent water from standing for more than forty-eight (48) hours; or
 - b. Maintain corrals and drylots so that there are not indentations in the surface where standing water may form and remain for more than forty-eight (48) hours.
- 7. Install floats on the troughs or use another method approved by the APCO, ARB, and EPA to ensure that the water in the troughs does not intentionally or unintentionally overflow or spill onto an earthen ground.
- 8. Inspect water pipes and troughs and repair leaks at least once every seven (7) days.
- 9. Groom (harrow, rake, or scrape) corrals sufficiently to maintain a dry surface.
- 10. Choose one (1) of the following:
 - a. Install no shade structures in the corrals; or
 - b. Install shade structures such that they are constructed with a light permeable roofing material; or
 - c. Install all shade structures uphill of any slope in the corral.
- 11. Choose one (1) 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
 - b. Apply thymol to corral soil in accordance with the manufacturer's recommendation.

- 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%.
- 13. Alternative mitigation measure(s), subject to District approval.

SOLID ANIMAL WASTE/SEPARATED SOLIDS MEASURES (select at least **two** of the following measures):

- 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 twenty-four (24) hours, when wind removes the covering.
- 2. Cover any dry separated solids outside the corrals with a waterproof covering from October through May, except for times, not to exceed twenty-four (24) hours, when wind removes the covering.
- 3. Remove animal waste from the facility within seventy-two (72) hours of removal from the corrals.
- 4. Choose one (1) of the following measures:
 - a. Remove separated solids from the facility within seventy-two (72) hours of separation with a solid separation system; or
 - b. Store no separated solids outside of anaerobic digesters or aerobic lagoons.
- 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%.
- 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%.
- 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%.
- 8. Alternative mitigation measure(s), subject to District approval.

LIQUID ANIMAL WASTE MEASURES (select at least **one** of the following measures):

- 1. Manage the facility such that there are no lagoons at the facility.
- 2. Choose one (1) of the following measures:
 - a. Use phototropic lagoon(s); or
 - b. Use an anaerobic treatment lagoon designed according to NRCS guidelines.
- 3. Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon.
- 4. Maintain lagoon with a pH between 6.5 and 7.5.
- 5. Choose one (1) of the following measures:
 - a. Use an aerobic lagoon; or
 - b. Use a lagoon that is mechanically aerated.

- 6. Maintain organic loading in the lagoon such that the total solids is less than 3.5 mg (dry weight)/mL, or total volatile solids is less than 3.5 mg/mL.
- 7. Use additional non-standard equipment or chemicals on the solid separator system, such as 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.
- 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%.
- 9. Alternative mitigation measure(s), subject to District approval.

LAND APPLICATION MEASURES (select at least **two** of the following measures):

- 1. Land incorporate all solid animal waste within seventy-two (72) hours of removal from animal housing.
- 2. Only apply solid or liquid animal waste that has been treated with an anaerobic or aerobic lagoon or an anaerobic digester system.
- 3. Choose one (1) of the following measures:
 - a. Apply and manage liquid animal waste so it stands in the fields no more than twenty-four (24) hours after application; or
 - b. Apply no liquid animal waste.
- 4. Choose one (1) of the following measures:
 - a. Apply no solid animal waste that has a moisture content of more than 50%; or
 - b. Apply no solid animal waste.
- 5. Alternative mitigation measure(s), subject to District approval.