§ 98.364 Monitoring and QA/QC requirements.

(a) Perform an annual animal inventory or review of facility records (for static populations) or population calculation (for growing populations) to determine the average annual animal population for each animal type (see description in § 98.363(a)(1) and (2)).

(b) Perform an analysis on your operation to determine the fraction of total manure by weight for each animal type that is managed in each on-site manure management system component. If your system changes from previous reporting periods, you must reevaluate the fraction of total manure managed in each system component.

(c) The CH₄ concentration of gas from digesters must be determined using ASTM D1946-90 (Reapproved 2006) Standard Practice for Analysis of Reformed Gas by Gas Chromatography (incorporated by reference see § 98.7). All gas composition monitors shall be calibrated prior to the first reporting year for biogas methane and carbon dioxide content using ASTM D1946–90 (Reapproved 2006) Standard Practice for Analysis of Reformed Gas by Gas Chromatography (incorporated by reference see § 98.7) and recalibrated either annually or at the minimum frequency specified by the manufacturer, whichever is more frequent, or whenever the error in the midrange calibration check exceeds ±10 percent. All monitors shall be maintained as specified by the manufacturer.

(d) All temperature and pressure monitors must be calibrated using the procedures and frequencies specified by the manufacturer. All equipment (temperature and pressure monitors) shall be maintained as specified by the manufacturer.

(e) For digesters with gas collection systems, install, operate, maintain, and calibrate a gas flow meter capable of measuring the volumetric flow rate to provide data for the GHG emissions

Where:
Nₐₓ AT = Daily total nitrogen excreted per animal type, calculated using Equation JJ–14 of this section (kg N/day).
Nₐₓ,MMS = Fraction of the total manure for each animal type that is managed in MMS component MMS, assumed to be equivalent to the fraction of Nₐₓ in each MMS component.
Nₐₓ = Nitrogen removal through solid separation; if solid separation occurs prior to the MMS component, use a default value from Table JJ–4 of this section; if no solid separation occurs, this value is set to 0.
EFₐₓ,MMS = Emission factor for MMS component, as specified in Table JJ–7 of this section (kg N₂O-N/kg N).

\[ N_{ex\ AT} = \text{Population}_{AT} \times \text{TAM}_{AT} \times \frac{N_{AT}}{1000} \]  
(Eq. JJ-14)

Where:
Nₐₓ AT = Total nitrogen excreted per animal type (kg/day).
Population AT = Average annual animal population contributing manure to the manure management system by animal type (head) (see description in § 98.363(a)(1) and (2)).
TAM AT = Typical animal mass by animal type, using either default values in Table JJ–2 or farm-specific data.
Nₐₓ = Nitrogen excretion rate by animal type, using default values in Tables JJ–2 or JJ–3 of this section (kg N/day/1000 kg animal mass).

(d) Estimate the annual total facility emissions using Equation JJ–15 of this section.

\[ \text{Total Emissions (metric tons CO, CH} \text{ emissions)} = \left[ \text{CH}_4 \text{ emissions}_{\text{AD}} + \text{CH}_4 \text{ emissions}_{\text{MMSC}} \right] \times 21 \times \left[ \text{Direct N}_2\text{O emissions} \times 310 \right] \]  
(Eq. JJ-15)

Where:
CH₄ emissions AD = From Equation JJ–2 of this section.
CH₄ emissions MMSC = From Equation JJ–5 of this section.
21 = Global Warming Potential of CH₄.
Direct N₂O emissions = From Equation JJ–13 of this section.
310 = Global Warming Potential of N₂O.

§ 98.364 Monitoring and QA/QC requirements.

(a) Perform an annual animal inventory or review of facility records (for static populations) or population calculation (for growing populations) to determine the average annual animal population for each animal type (see description in § 98.363(a)(1) and (2)).

(b) Perform an analysis on your operation to determine the fraction of total manure by weight for each animal type that is managed in each on-site manure management system component. If your system changes from previous reporting periods, you must reevaluate the fraction of total manure managed in each system component.

(c) The CH₄ concentration of gas from digesters must be determined using ASTM D1946–90 (Reapproved 2006) Standard Practice for Analysis of Reformed Gas by Gas Chromatography (incorporated by reference see § 98.7). All gas composition monitors shall be calibrated prior to the first reporting year for biogas methane and carbon dioxide content using ASTM D1946–90 (Reapproved 2006) Standard Practice for Analysis of Reformed Gas by Gas Chromatography (incorporated by reference see § 98.7) and recalibrated either annually or at the minimum frequency specified by the manufacturer, whichever is more frequent, or whenever the error in the midrange calibration check exceeds ±10 percent. All monitors shall be maintained as specified by the manufacturer.

(d) All temperature and pressure monitors must be calibrated using the procedures and frequencies specified by the manufacturer. All equipment (temperature and pressure monitors) shall be maintained as specified by the manufacturer.

(e) For digesters with gas collection systems, install, operate, maintain, and calibrate a gas flow meter capable of measuring the volumetric flow rate to provide data for the GHG emissions

Where:
Nₐₓ = Nitrogen removal through solid separation; if solid separation occurs prior to the MMS component, use a default value from Table JJ–4 of this section; if no solid separation occurs, this value is set to 0.
EFₐₓ,MMS = Emission factor for MMS component, as specified in Table JJ–7 of this section (kg N₂O-N/kg N).

\[ N_{ex\ AT} = \text{Population}_{AT} \times \text{TAM}_{AT} \times \frac{N_{AT}}{1000} \]  
(Eq. JJ-14)
calculations, using the applicable methods specified in paragraphs (e)(1) through (e)(6) of this section or as specified by the manufacturer.


(f) If applicable, the owner or operator shall document the procedures used to ensure the accuracy of gas flow rate, gas composition, temperature, and pressure measurements. These procedures include, but are not limited to, calibration of fuel flow meters and other measurement devices. The estimated accuracy of measurements made with these devices shall also be recorded, and the technical basis for these estimates shall be provided.

(g) Each gas flow meter shall be calibrated prior to the first reporting year and recalibrated either annually or at the minimum frequency specified by the manufacturer, whichever is more frequent. Each gas flow meter must have a rated accuracy of ±5 percent or lower and be capable of correcting for the temperature and pressure and, if the gas composition monitor determines CH₄ concentration on a dry basis, moisture content.

§ 98.366 Data reporting requirements.

(a) In addition to the information required by §98.3(c), each annual report must contain the following information:

(1) List of manure management system components at the facility.

(2) Fraction of manure from each animal type that is handled in each manure management system component.

(3) Average annual animal population (for each animal type) for static populations or the results of Equation JJ–4 for growing populations.

(4) Average number of days that growing animals are kept at the facility (for each animal type).

(5) The number of animals produced annually for growing populations (for each animal type).

(6) Typical animal mass (for each animal type).

(7) Total facility emissions (results of Equation JJ–15).

(8) CH₄ emissions from manure management system components listed in §98.360(b), except digesters (results of Equation JJ–2).

(9) VS value used (for each animal type).

(10) Bₒ value used (for each animal type).

(11) Methane conversion factor used for each MMS component.

(12) Average ambient temperature used to select each methane conversion factor.