**Best Environmental Management Practices**

**Farm Animal Production**

**Comprehensive Nutrient Management Plans (CNMP)**

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**What is a CNMP?**

A Comprehensive Nutrient Management Plan (CNMP) is a total planning tool that details the animal production related activities for a specific farming operation. A CNMP describes a farm’s production practices, as well as the equipment and structures used. It combines conservation practices with management activities to create a system that addresses animal production operations, from feed inputs to the utilization of animal manure.

A CNMP can help farm managers comply with regulatory requirements as well as protect water quality, obtain more benefit from the animal manure and organic by-products of the operation, and minimize negative impacts to the environment and public health.

**CNMP Components**

A CNMP is a confidential document that allows livestock producers to develop a custom plan for the operation while complying with regulatory guidelines by addressing items such as manure management, field crop nutrients, and storm water runoff in a coordinated manner. Producers evaluate their whole farm through a CNMP, taking a comprehensive look at their entire operation. Producers can confidently make management decisions tailor-made for the operation with a well-documented plan in place. A CNMP includes a number of components, detailed below.

**Overview**

- A brief statement describing the overall farm operation, including enterprises, goals, and long-term plans for resource management.
- Crop and soil needs for manure nutrient application
- Manure P application rates
- Manure N application rates
- Manure K application rates
- Manure application method(s)
- Sensitive areas near application areas (sinkholes, streams, water bodies, wells, gullies/swales, tile inlets, drinking water sources, property boundaries, etc.)
- Conservation and management practices used for soil erosion control and drainage to control offsite transport of N, P, and other contaminants
- Maps of each field, showing sensitive areas, setbacks, and locations of specific practices/activities, and the areas where manure will be applied
- Land Application Management
- Nutrient budget for nitrogen, phosphorus, and potassium from all sources (include form, source, amount, timing and method of application)
- Calibration procedures for equipment
- Application schedule (estimated dates)
- N, P and K levels in the manure to be applied
- Manure application rates for each field, based on:
  - Crops to be grown
  - Realistic crop yield goals
  - Crop nutrient needs
  - Crop soil test results (within last three years)
  - Previous year’s crops and manure application to estimate N nutrient credits
- Manure and wastewater nutrient content
- Is N or P the limiting nutrient
- Winter spreading may require special provisions to control runoff. Check state requirements for applying manure on frozen or snow-covered areas
- At the time of application, consider field-specific conditions (wet, dry, frozen, etc.) and adjust application rates accordingly
- P build-up or removal, acres of land needed for sustainability

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**Farm Headquarters Map**

A site map showing the location of farm buildings, animal housing, manure storage structures, other sources of manure and wastewater, feed storage, farm house(s) and any other relevant physical features.

**Production**

- Species, weight, production level, etc. of livestock (herd/flock inventory)
- Amount, location and characteristics of all wastewater generated and any existing water control devices:
  - Manure and wastewater nutrient content and volume
  - Milkhouses and parlor wastewater
  - Water from milk plate coolers/ supplemental cooling systems
  - Runoff from feedlot/barnyard and stored manure areas
  - Leachate from silage storages
  - Animal mortalities management - i.e., compost, render, burial, incineration, etc.
  - Veterinary waste management
  - Volume of stored manure

**Manure Collection**

- Manure and wastewater collection method(s)
- Location of manure collection points
- Schedule of manure collection
- Equipment and/or structural facilities used for collection

**Manure Storage**

- Type, location and size (dimensions) of storage facility(s)
- Storage capacity:
  - Volume
  - Storage time available
- Site suitability for storage (existing and planned)
- Method of measuring freeboard, where applicable, for storage

**Manure Transfer**

- Method, frequency/schedule, structures, and equipment used for the movement of manure and wastewater between collection, storage, and utilization locations.

**Conservation Practices in Manure Application Areas**

- Evaluation of potential for nitrogen or phosphorus transport to surface and/or ground water. Provide a complete description of the following:
  - Soil in application areas
  - Manure and wastewater nutrient content and volume
  - Soil management group
  - Percent slope
  - Topography
  - Soil test P value (Bray P1 in lbs/ac)
  - Nitrogen leaching index for soil hydrologic group

- Water quality issues
  - Location of concentrated runoff flows or surface inlets to tile lines
  - Location of risers and outlets and monitoring outlets during and after manure application
  - Setback requirements from surface water, wells, etc.
  - Divert clean runoff from upslope areas and roof gutters to reduce the volume of contaminated material

- Surface cover in application areas
  - Residue cover/cover crops
  - Vegetative buffer width available

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**Manure Treatment (where applicable)**

- Type, function, capacity and location of any treatment facility or equipment

**Land Application Management**

- Sensitive areas near application areas (sinkholes, streams, water bodies, wells, gullies/swales, tile inlets, drinking water sources, property boundaries, etc.)
- Conservation and management practices used for soil erosion control and drainage to control offsite transport of N, P, and other contaminants
- Maps of each field, showing sensitive areas, setbacks, and locations of specific practices/activities, and the areas where manure will be applied
Maintenance and Application Records

- Records to be kept by field:
  - Soil test reports
  - Date(s) of manure/wastewater application(s)
  - Source and rate of manure/wastewater applied
  - Date and rate(s) of other nutrients applied
  - Method of application (e.g., surface applied, injected, incorporated, irrigated)
  - Acres used and area of field applied on
  - Weather conditions during application
  - Field conditions during application of manure (wet, dry, frozen, etc.)
  - N-credit from previous year’s manure application
  - Previous crops grown and yields
  - Recommended nutrient application rates, including procedures used to determine
  - Plant tissue sampling and testing reports (where applicable)
  - Pre-Sidedress Nitrate Test (PSNT) reports (where applicable)

- Other records:
  - Manure/wastewater quantities produced and nutrient analysis results
  - Inspection and maintenance records
  - Agreements for application of manure/wastewater on land not owned by the producer
  - Record of manure/wastewater sold or given away to other landowners
  - Location of drainage tile vents, streams, etc. with respect to spreading areas

Inputs to Animals

Describe the formulation and management of animal diets ideally, this should result in:
- Optimum production and/or animal health
- Best economical use of feed materials
- Reduced nutrient excess
- Minimized amount of (excreted) nutrients contained in manure

Alternative Utilization Activities (where applicable)

- Transport and off-site utilization
- Power generation (e.g., methane production, combustion for energy)
- Conversion to value-added products (e.g., compost, energy)

Inspections, Operation & Maintenance, Training

- Schedule used for inspection of structural and vegetative practices and equipment
- Operational and maintenance activities planned
- Plan to review the performance of animal production management practices/activities by a qualified third party to ensure proper implementation of CNMP
- Specific plans for training farm employees how to follow CNMP, including when training will be provided, such as procedures for:
  - New employees
  - New processes, procedures or equipment
  - Employee responsibilities

Schedule of CNMP Implementation

- Plans for annual review and update of the CNMP
- New components that are planned and the implementation schedule for each component
- Plan for addressing water quality concerns identified in the plan

Emergency Action Plan

- Actions to take in the event of a spill, discharge or failure of a collection, storage, treatment or transfer component
- Telephone numbers to report and seek assistance in the event of an emergency
- Show anticipated flow paths in the event of a spill, discharge or failure on a site map
- Plan should be readily available to all employees

References and Appendices

- Any publications or sources used for calculations or decisions made in the CNMP
- Crop advisors, engineers, and nutritionists, as well as some private business and agricultural agencies, may be certified to assist in writing and developing a CNMP