

Concentrated Livestock Area Guidance

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Applicability:

This guidance applies when planning concentrated livestock areas. Concentrated livestock areas can be found on any land use. Producers utilize these areas for feeding, watering, exercise, resting, breeding, rearing, handling, and other production purposes. Shaded, near-stream, and other areas where animals naturally congregate and loaf fit this category.

Unplanned livestock activity on these areas can create resource concerns and worsen existing problems. Some typical problems include:

- soil compaction
- increased runoff
- nutrient concentration,
- transport of contaminated sediments or dissolved nutrients to sensitive areas
- unacceptable air emissions
- degraded plant resources

In addition, every agricultural operation in the state is obligated to manage these areas according to a written plan in compliance with Pennsylvania regulatory authority.



Unplanned livestock activity can create resource concerns.

The purpose of this conservation planning and regulatory compliance guidance document is to help planners identify these areas, the problems they create, and to develop alternatives that are appropriate for customers' objectives, management ability, and economic means. When decisions are made to treat problems found on these areas, planners will offer appropriate technical and/or financial assistance to implement the changes needed.

Key Terms:

Terminology used by state and federal agencies can be confusing. Different terms may be used to describe the same or similar conditions. For example, the terms **Animal Concentration Area (ACA)** and **Animal Heavy Use Area (AHUA)** both refer to land areas used by livestock where neither vegetation nor post-harvest residues are sustained in the normal growing season. This guidance document refers to these areas as concentrated livestock areas. A concentrated livestock area may be evaluated and found to have no problems or, when problems are found, treated by a variety of alternative solutions suggested in this document. The Glossary of Key Terms at the end of this document defines commonly used and easily confused terms applicable to managing concentrated livestock areas.

Planning Procedure:

Resource Inventory and Analysis

A **Resource Inventory and Analysis** (steps 3 and 4 of the planning process), must be done to evaluate all applicable resource concerns and to develop feasible alternatives for areas with identified problems. Guidance for completing the Resource Inventory and Analysis is found in Exhibits 1-4 of this document and in the "CNMP Engineering Inventory Worksheet," located in Section III of the PA Field Office Technical Guide (FOTG).

- **Exhibit 1 – Resource Evaluation Procedure for Concentrated Livestock Areas**, provides step-by-step guidance for determining if problems exist for a spectrum of concentration areas presented in four main scenarios.
- **Exhibit 2 – Guidance for In-Field Evaluation of Concentrated Livestock Areas**, provides guidance for evaluating poorly or non-vegetated areas and offers simple alternatives to treat identified problems. The alternatives offered may solve a problem and not necessitate the implementation of a conservation practice. For operations that are not required to have a CNMP meeting regulatory requirements may be found here.
- **Exhibit 3 – CNMP Planning Considerations for Evaluating Concentrated Livestock Areas (ACAs)** is adapted from the Pennsylvania Nutrient Management Program Technical Manual and provides considerations for evaluating planning these areas to meet CNMP planning criteria.
- **Exhibit 4 – P-Index Ratings and Pasture Management Guidance** adapted from the Pennsylvania Nutrient Management Program Technical Manual provides management recommendations to improve the condition of pasture vegetation along the edge of receiving water. Attention to management in this area can lower the P-Index Ratings and provide nutrient management flexibility by mitigating risk associated with the pasture/receiving water interface.

Resource Inventory and Analysis documentation must be completed as part of the conservation plan and included in the case file. This documentation can include, but is not limited to, the “CNMP Engineering Inventory Worksheet,” the engineer’s trip report, RUSLE2, a nutrient management plan, the PA NRCS 528 Grazing Job Sheet, etc.

The Resource Inventory and Analysis must be documented by an individual with appropriate

experience and/or job approval authority, i.e., sufficient planning experience for the non-engineering practices and or Engineering Job Approval Authority for completing an Inventory and Evaluation (I&E) of engineering practices. For complex areas with multiple resource problems, assistance should be requested from a specialist, an individual with higher job approval authority, or a more experienced planner. Projects with roof alternatives must include assistance from the Technical Center staff.

A Resource Inventory and Analysis more than 1 year old should be reviewed to verify that it still reflects the agricultural operation and management style. If operational or management changes are identified, the Resource Inventory and Analysis must be reviewed and revised to reflect the new conditions. Following the Resource Inventory and Analysis, technical and financial assistance can only be provided for practices documented in the conservation plan.

The customer will be involved with the Resource Inventory by identifying the current land use and management system, and by identifying their goals and objectives for the area (rotational grazing system, exercise area, feeding area, etc.).

During the Resource Inventory and Analysis, identify all existing practices and proposed alternatives, including but not limited to:

- Prescribed Grazing (528)
- Heavy Use Area Protection (561)
- Pasture and Hayland Planting (512)
- Vegetated Treatment Area (635)
- Waste Storage Facility (313)
- Trails and Walkways (568)
- Stream Crossing (578)
- Roof Runoff Structure (558)
- Diversion (362)
- Structure for Water Control (587)
- Constructed Wetland (656)
- and all applicable component practices

Use of Planning Criteria:

During the **Resource Inventory and Analysis** and the **Formulate Alternatives** steps of the planning process, follow the criteria listed in the following Planning Criteria section. Typical resource concerns are described and minimum regulatory requirements are presented. Criteria are presented for Animal Feeding Operations (AFOs) and non-AFOs alike. Guidance is also provided for sizing heavy use areas, determining when roofs are appropriate, and identifying appropriate surface materials for concentrated livestock areas.

Planning Criteria:

Typical Resource Concerns

Concentrating livestock in an area may cause problems for a number of common resource concerns.

- Soil quality may become degraded resulting in on-site erosion or increased overland surface water flow and sediment transport. Increased overland surface water flow increases the risk of down-slope erosion and the sedimentation of receiving water bodies.
- Even without overland sediment transport, dissolved nutrients may be carried in the surface water runoff and increase the risk of degrading the quality of the receiving water bodies. Dissolved nutrients may also leach through the soil and either degrade ground water quality or be transported to surface water bodies through underground water flow paths.
- Excess nutrient and/or pathogen accumulation can lead to degraded plant conditions such as poor vegetative cover or an increase in undesirable vegetation.
- An increase in mastitis, hoof rot, calving problems, or poor body condition score can be signs of poor domestic livestock health caused by nutrient and/or pathogen accumulation in concentrated livestock areas.
- Accumulation of manure deposition increases the risk of unacceptable emissions of air pollutants such as excess ammonia. Manure accumulation may also degrade

plant and soil condition resulting in the release of excess carbon dioxide.

- Threatened and endangered species and/or the regeneration of forests or native plant communities may also be negatively impacted.

Water Quality Resource Concern

Due to the recent increase of regulatory requirements, the priority of this planning document is to address the water quality concern.

The water quality risk of a concentrated livestock area is directly related to its proximity to surface water bodies. Proximity to groundwater or sensitive areas, including poorly drained or excessively well drained soils, pose similar risks. Limiting livestock access during wet conditions, providing drainage and/or an impervious base or surface material, installing stabilized crossing areas, relocating concentrated livestock areas to appropriate locations, limiting livestock access to the area, and/or installing wastewater or manure collection systems may adequately treat water quality concerns.

Minimum Regulatory Requirements for all Concentrated Livestock Areas

To meet minimum PA regulations, concentrated livestock areas must be managed to meet conditions on the following list. Use Exhibit 2 as a field reference when evaluating concentrated livestock areas to determine if the following requirements are met:



1. Manage concentrated livestock areas to minimize accelerated erosion and sedimentation.
2. Divert clean water flow from upslope areas including fields and pastures, drainage ways, concentrated flow paths, driveways, barn roofs, etc., away from the concentrated livestock area.
3. Direct polluted runoff or allow it to flow from the concentrated livestock area to prevent direct runoff connectivity to sensitive areas (surface water bodies or ground water inlets). Runoff may be directed into a storage facility or best management practice such as a correctly sized and well maintained vegetative filter strip.
4. Limit animal access to surface waters to only properly implemented livestock crossings. Animals may not have free access to streams adjacent to or within concentrated livestock areas.
5. Minimize the size of denuded areas.
6. Keep areas where animals concentrate, such as feed racks and shade, as far away from a water body as practical.
7. Where appropriate, include relocation of movable structures that create concentrated livestock areas, such as hay rings, at least annually where practical to minimize development of denuded area and manure concentration.

8. Remove accumulated manure from concentrated livestock areas routinely, which may be generally four times a year, to minimize the potential for pollution discharges.

Concentrated Livestock Areas and Pastures on AFOs

A CNMP is required when NRCS provides technical or financial assistance to an AFO to address manure or wastewater handling, storage, or field application. All CNMPs require an Act 38-equivalent (content and format) nutrient management element. The Pennsylvania Nutrient Management Program Technical Manual is the definitive reference for planning pastures and concentrated livestock areas on AFOs. CNMP planning requires that all concentrated livestock areas must be addressed in a manner that eliminates the direct discharge of runoff from these areas from entering water. As a reference, Exhibit 3, “CNMP Planning Considerations for Evaluating Concentrated Livestock Areas (ACAs)” adapted from the PA Nutrient Management Program Technical Manual, is provided. CNMP planning requires P-Index risk assessment on all pastures. For each pasture, P-Index ratings determine maximum allowable nutrient application rates, including manure and fertilizer mechanically applied and direct deposits by grazing animals. Exhibit 4 summarizes pasture management guidance for different P-Index ratings.



Aerial view of an AFO with a concentrated livestock area connected to a prescribed grazing system.

Concentrated Livestock Areas on Headquarters and Access to Pastures

When livestock are completely confined to the headquarters, it is possible to treat a concentrated livestock area with Heavy Use Area Protection (561), a Waste Storage Facility (313), or Vegetated Treatment Area (635). These, along with other supporting practices, are commonly used to treat concentrated livestock areas that occur in the limited acreage near animal housing, feeding, or other production facilities.

However, many operations frequently allow unrestricted livestock movement between the headquarters and pasture which poses a risk to creating new concentrated livestock

areas. By considering the headquarters/pasture interface during the initial planning stages it is possible to minimize or eliminate their formation. During the development of alternatives for pasture use, determine whether the landowner plans to manage their livestock in total confinement or if they plan to allow access to the pasture. Typically, the proper installation of an Animal Trail and Walkway (575) connecting the headquarters to a pasture planned under Prescribed Grazing (528) will prevent new concentrated areas from forming.

Concentrated Livestock Areas on Pasture

Pasture is improved land, producing introduced or domesticated native forage species, managed to enhance forage quality and yields, and is harvested primarily by grazing livestock. Concentrated livestock areas are frequently located within pastures.

Pasture land must meet one of the following two criteria:

1. Have a grazing plan that meets at a minimum the criteria of the NRCS Prescribed Grazing (528) Standard and Specification for the purpose “To Improve or Maintain Surface and/or subsurface Water Quality and Quantity.”

- OR -
2. Be managed to maintain dense forage species throughout the grazing season. Dense



Implemented BMPs protecting a concentrated livestock area on headquarters.

vegetation means minimal denuded spots and an average vegetation height across the pasture maintained to at least 3 inches in height.

When the field unit does not meet either of the above criteria, the field cannot be considered as the pasture land use. The management of the field must either be changed to meet one of the criteria, or the field must be planned as headquarters with appropriate practices planned to treat existing problems. When an area within pasture land does not meet either of the above criteria, the area must be managed as a concentrated livestock area. Exhibit 1 can be used to determine the severity of problems caused by the concentrated



Potential concentrated livestock area on pasture.

livestock area located within pasture land. Management requirements for concentrated livestock areas in pasture must be addressed in the Grazing Contingency Plan portion of a (528) Prescribed Grazing Plan.

Winter Seasonal Concentrated Livestock Areas on Pasture

In addition to Exhibit 1, when a concentrated livestock area within a pasture is ever used in the winter* and vegetated in the summer, the following additional requirements apply to the area:

- Slope of site may not exceed 8%
- Site must be soil tested at least once every 3 years to verify that $P \leq 200$ ppm.
- For sites with a soil test $P \geq 200$ ppm, the concentrated livestock area must be rotated annually and used no more than once every 4 years
- Accumulated manure and feed must be removed from the area after each use and vegetation established for the next growing season
- Be located at least 100 feet away from an above ground inlet to an agricultural drainage system (such as inlet pipes to piped outlet terraces) if surface water flow is toward the above ground inlet.

*For purposes of this guidance, winter includes any one of the following:

- December 15 through February 28;
- or -
- Anytime the ground is frozen at least 4 inches;
- or -
- Anytime the ground is snow covered.

Space and Sizing

Plan to provide adequate space when designing concentrated livestock areas. Sizing depends on:

- The type, age, and size of livestock
- The intended use of the space
- The frequency and duration the livestock will be in the space

- The availability of feed and water in the area or accessibility to feed and water in the barn or elsewhere
- The surface material on which the livestock will be confined.

In addition, space must be provided for equipment access, traffic flow, feeding bunks, manure scraping maneuverability, and management and use of associated practices.

Exhibit 5 provides appropriate square footage for heavy use areas on paved and unpaved surfaces for various types of livestock. The square footage amounts allow for basic space requirements and can be adjusted to account for the factors described above. The square footage amounts do not include animal housing, and are assumed to be in addition to production practices like housing or shelter.

In all cases, the area to be treated should be minimized to limit the amount of stormwater captured and treated on the site.

Roofs and Covers

If a roof is planned for anything other than an Agrichemical Handling Facility (309), Waste Storage Facility (313) for stackable manure, or an Animal Mortality Facility (316), it must be compared to all other technically feasible alternatives. If there are no technically feasible alternatives, a description of the site specific conditions prohibiting all non-roofed alternatives must be documented in the case file for projects receiving financial assistance. In some cases, locations adjacent to sensitive areas and/or permit requirements may justify a roof.

Surface Materials

A combination of surface materials and pro-rated sizes can be used within concentrated livestock areas to transition from more intensely used areas found around feed and water sources to less intense exercise and loafing areas. For more information about surface material options, refer to the PA NRCS Heavy Use Area Protection (561) or Animal Trail and Walkways (575) Standards and Specifications.

Seasonal concentrated livestock areas in pasture systems, such as winter feeding areas, are

identified in the contingency plan developed for Prescribed Grazing (528). If the area becomes unstable, permanent, and/or requires surface improvement follow the criteria identified in 561.

Developing Alternatives:

When developing alternatives the following must be considered: customer's goals and objectives, regulatory requirements, location of sensitive areas, animal type(s) and numbers, livestock management system, available land and/or farmstead layout, soil properties, additional equipment needs, landowner's capability to manage the practice (including O&M) for the practice lifespan, and cost. Only alternatives that are technically feasible and suited to the customer's management ability are offered.

Decision Making and NRCS Assistance (TA and FA):

The selected (or preferred) alternative, and all associated practices, must be documented as the customer's decision in the conservation plan. These decisions may be impacted by farm economics and/or funding availability. When financial assistance is requested, program requirements must be considered. Refer to the current year program guidance for financial assistance guidance.

Often, conservation practices benefit both resource conservation and the productivity of the operation. However, items that are solely related to production are not eligible for NRCS financial assistance. Examples of ineligible items may include animal housing, equipment, operation expansion, etc.

A site specific Operation and Maintenance (O&M) plan explaining the performance expectations and necessary actions to assure the function of the practice(s) for the lifespan must be reviewed with and signed by the landowner. The O&M plan must include a provision that no new barnyard or concentrated livestock area be established outside the improved area identified in the conservation plan document and/or grazing contingency plan. Any expansion or relocation of the system must be implemented to the same degree of environmental protection.



Before: Existing concentrated livestock area.



After: Implemented roof and heavy use area.

Glossary of Key Terms:

This glossary defines terms that are associated with concentrated livestock areas. While this may not be a complete list of terms associated with concentrated livestock areas, the terms and definitions provided below are some of the most common. The terms listed below are used by NRCS, state, and/or federal regulation.

Animal Feeding Operation (AFO) – as defined by the Unified National Strategy for Animal Feeding Operations, USDA EPA 1999:

An AFO is a lot or facility where the following conditions are met:

- Animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in a 12-month period, AND
- Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.
- AFOs are agricultural operations where livestock are kept and raised in confined situations. AFOs generally congregate livestock, feed, manure, dead animals, and production operations on a small land area. Feed is brought to the livestock rather than the livestock grazing or otherwise seeking feed in pastures.

Operations with multiple animal groups are considered an Animal Feeding Operation if any one group meets the criteria.

Concentrated Animal Feeding Operations (CAFO) - AFOs that meet the regulatory definition of a CAFO may be regulated under the EPA NPDES permitting program. EPA counts the actual number of animals at the operation to define a CAFO. For example, an operation confining at least 700 mature dairy cattle is regulated as a CAFO and requires Pennsylvania Department of Environmental Protection (DEP) permitting. The PA DEP has delegated authority to administer EPA's NPDES permit regulations program in this Commonwealth.

Concentrated Animal Operations (CAO) - are defined as agricultural operations where the

animal density of all livestock on the farm exceeds two animal equivalent units* (AEUs) per acre on an annualized basis (PA Act 38, 2006).

*An AEU is 1,000 pounds of live animal weight on an annualized basis. Annualized means that if the animals are not present on an operation for a whole year, the animal units are adjusted for the proportion of time during the year the animals are present on the operation.

Animal Concentration Areas (ACA) - are barnyards, feedlots, loafing areas, exercise lots or other similar animal confinement areas that will not maintain a growing crop, or where deposited manure nitrogen is in excess of crop needs. ACAs are not areas managed as pasture or other cropland, nor are they pasture access ways, if they do not cause direct flow of nutrients to surface or groundwater (PA Act 38, 2006).

Animal Heavy Use Areas (AHUA) - are barnyards, feedlots, loafing areas, exercise lots or other similar areas on an agricultural operation where, due to the concentration of animals, it is not possible to establish and maintain vegetative cover of a density capable of minimizing accelerated erosion and sedimentation by usual planting methods. An AHUA does not include entrances, pathways and walkways between areas where animals are housed or kept in concentration (PA Clean Streams Law, Erosion and Sedimentation Control Requirements, Chapter 102.4(a)).

Comprehensive Nutrient Management Plans (CNMP) -are conservation plans for AFOs that:

- (1) Must include the following:
 - (i) The production area, including the animal confinement, feed and other raw materials storage areas, animal mortality facilities, and the manure handling containment or storage areas.
 - (ii) The land treatment area, including any land under control of the AFO owner or operator, whether it is owned, rented, or leased, and to which manure or process wastewater is, or might be, applied for crop, hay, pasture production, or other uses.

- (2) Meets NRCS Field Office Technical Guide (FOTG) Section III quality criteria for water quality (nutrients, organics, and sediments in surface and groundwater) and soil erosion (sheet and rill, wind, ephemeral gully, classic gully, and irrigation-induced natural resource concerns on the production area and land treatment area).
- (3) Mitigates, if feasible, any excessive air emissions and/or negative impacts to air quality resource concerns that may result from practices identified in the CNMP or from existing on-farm areas/activities.
- (4) Complies with Federal, State, Tribal, and local laws, regulations, and permit requirements; and Satisfies the owner/operator's production objectives.

References

Pennsylvania Nutrient Management Program Technical Manual (latest version) provides technical criteria for completing the nutrient management element of a CNMP http://panutrientmgmt.cas.psu.edu/main_technical_manual.htm

- Chapter 102 Regulations, <http://www.portal.state.pa.us/portal/server.pt?open=514&objID=554331&mode=2>
- CNMP Policy Title 190 Part 405