



**L**ivestock  
**I**ndustry  
**F**acilities &  
**E**nvironment

# ***Open Feedlot Runoff Control***

**a home study module**  
prepared as part of the

**“Managing Livestock for  
Competitiveness and Environmental  
Quality” Grant Project**





## ***Open Feedlots...Definition***

**As defined by the Iowa  
Department of Natural  
Resources....**

**Open feedlots are unroofed or partially  
roofed animal feeding operations in  
which no crop, vegetation or forage  
growth is maintained during the period  
that animals are confined in the  
operation**





# *Open Feedlot*





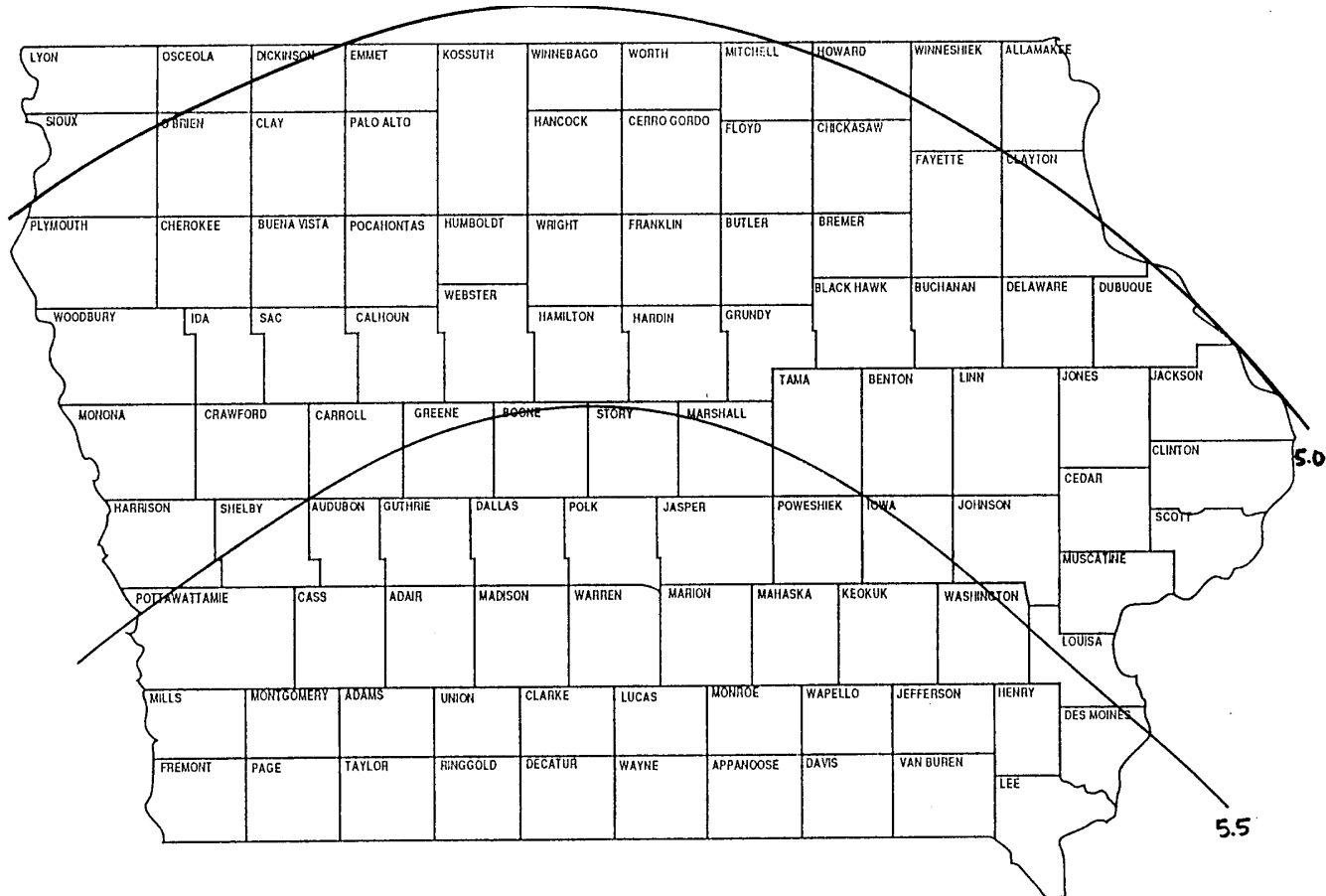
# ***Factors Affecting Feedlot Runoff***

- **Precipitation...intensity and duration**
- **Feedlot surface...paved or earthen**
- **Drainage area size**
- **Feedlot size**
- **Slope**



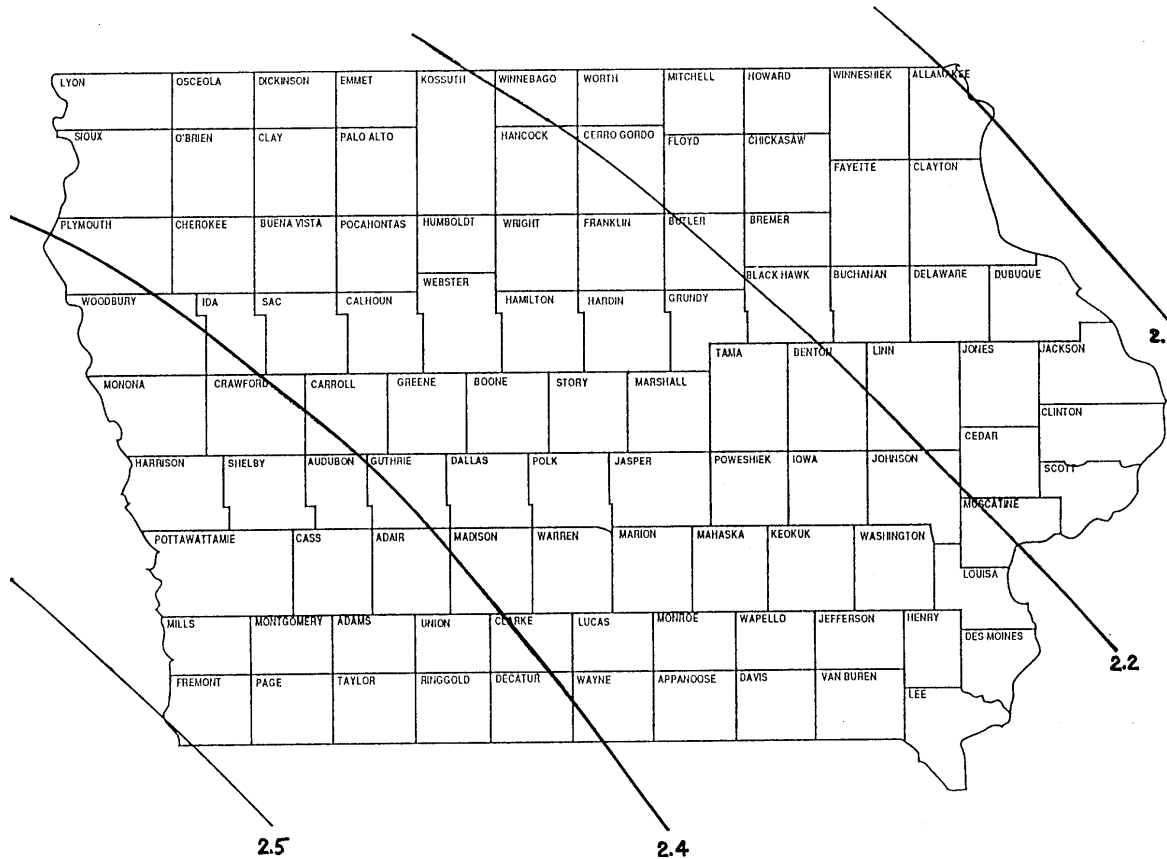


# 25-year, 24-hour storm inches





# *10-year, 1-hour storm inches (=inches per hour)*





# ***Design of Runoff Control Structures***

**Settling basins are used to settle solids  
prior to releasing feedlot runoff  
liquids**





# ***Concrete Settling Basin***





# *Settling Basin Design*

- **Design for 10-yr, 1-hr storm intensity**
- **Design for slow flow**
  - **0.5 foot-per-second velocity**
  - **minimum of 5 minutes**
- **Use concrete bottom at main settling area**
- **Use porous outlet to release liquids**





# *Design of Runoff Control Structures*

**Retention basins impound feedlot runoff liquid until it is pumped to crop fields**





# ***Retention Basin Design***

- **Designed to hold 25-yr, 24-hr storm,**
- **PLUS... Precipitation that accumulates between pumpouts**
  - **Paved lots - 53-57% of mean annual precipitation**
  - **Earth lots - 21-24% of mean annual precipitation**





## ***Open Feedlot Runoff Control***

**Open feedlot runoff control can be achieved with settling basins and infiltration areas for small lots. Large lots must capture runoff liquid and pump it back onto the land. With proper runoff control, water quality in Iowa can be protected.**

