

The Big Picture

Keeps Getting

bigger!



Robert E. Graves

**Department of Agricultural and Biological
Engineering**

PENNSTATE





WQ Situation

- Long term input of public and private resources
- Availability of resources is variable
- Water quality is not improving
- Many ask “Why not?”
- What is a reasonable time to see results?

Challenges for Scientists and Policy Makers



Complexities and linkages of natural, social and economic systems in and beyond watersheds

The Mid-Atlantic WQ Program has been a vehicle for observing the big picture

- Synergy, critical mass and resources
- Multiple points of view
- Varied expertise
- External contacts



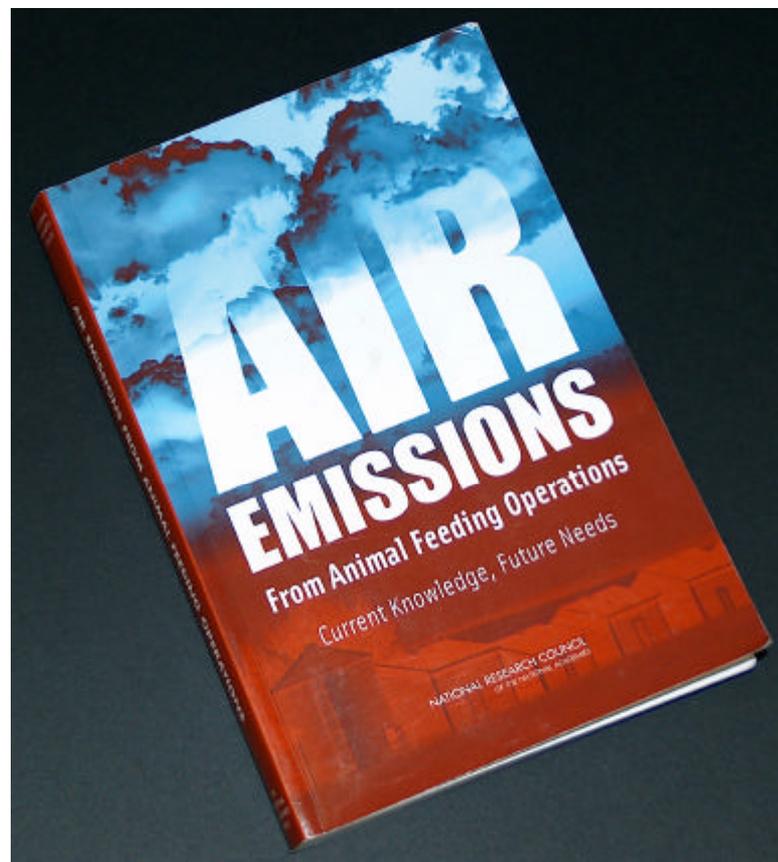
What influences water quality?

- watershed
- air shed
- federal government
- state governments
- local governments
- Midwest corn growers
- swine integrators
- Amish farmers
- Brazilian soybean growers



NAS Report - 2002

- Identified AFO emissions of greatest concern – ammonia, nitrogen dioxide, nitrogen oxides, methane
- Indicated insufficient science to regulate
- www.nap.edu



Air Quality Parameter

- NH_3 atmospheric, deposition, haze
- N_2O global climate change
- NO_x haze, atmospheric dep., smog
- CH_4 global climate change
- VOCs quality of human life
- H_2S quality of human life
- PM10 haze
- PM2.5 health, haze
- ODOR quality of human life

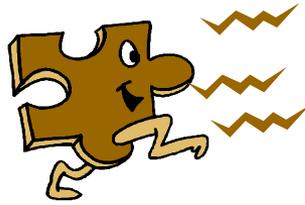


Emission Severity



GLOBAL

NH_3	Major
N_2O	Significant
NO_x	Significant
CH_4	Significant
VOCs	Insignificant
H_2S	Insignificant
PM10	Insignificant
PM2.5	Insignificant
ODOR	Insignificant



Consider the recent Air Quality Consent Agreement



AQCA and Water Quality

The Air Quality Compliance agreement represents the potential application of various federal air emissions related regulations on animal agriculture including reducing ammonia emissions from farmsteads. This activity appears to be operating with no coordination with other EQ regulations or programs.



Unintended Consequences

- A farm that has a manure storage will likely have **more** regulated ammonia emissions than one with daily haul.
- Nutrient management plans allow more manure to be spread if ammonia volatilization is encouraged.
- Is this consistent with our overall environmental quality goals?



Mid-Atlantic Ammonia Efforts

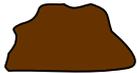
- Concern for atmospheric deposition in the bay
- Animal Feeding Operation Consent Agreement
- 3 ammonia forums over an 18 month period brought together diverse groups to explore this issue
- Print and web resources were produced and made available to the public
- A nutrition group has been formed and is executing programs



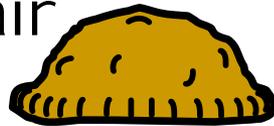
Everything has to be someplace

Manure Shell Game

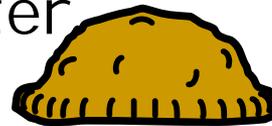
manure



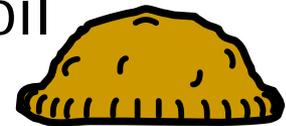
air



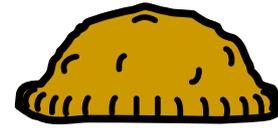
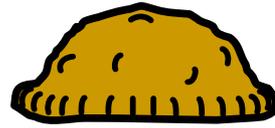
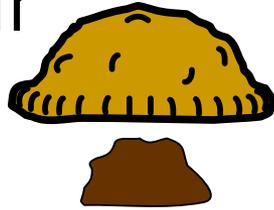
water



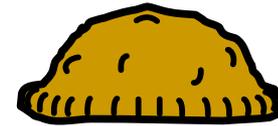
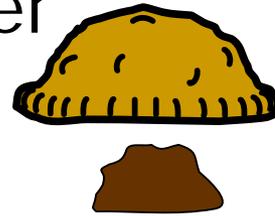
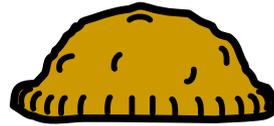
soil



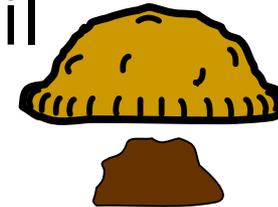
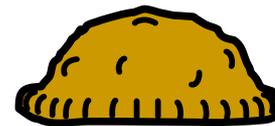
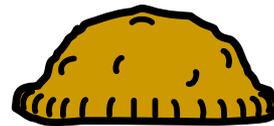
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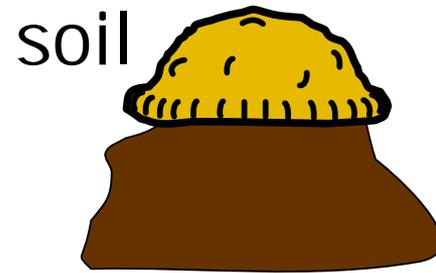
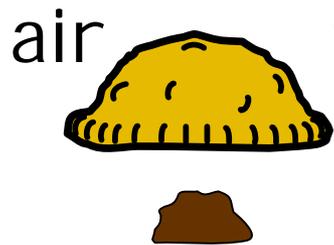
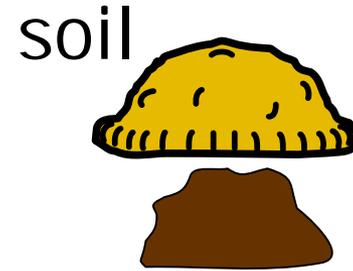
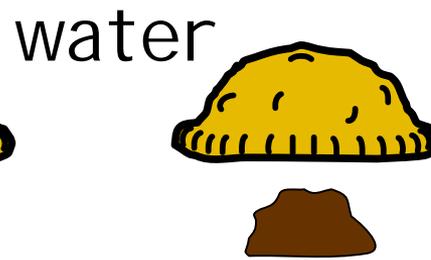
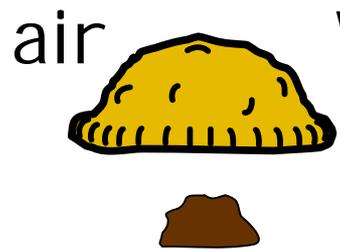
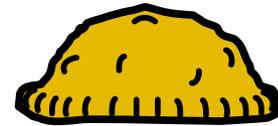
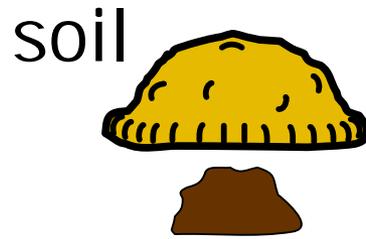


water



soil





What influences water quality?



- corporate board rooms
- kitchen table decisions
- union pension funds
- watermen
- politicians
- business school theories
- national food and transportation policy
- mushroom growers
- government programs



Government Programs

- Economic development programs may not consider impact on nutrient flow in a region
- Subsidized manure transportation may move manure to another region and compete for local manure markets



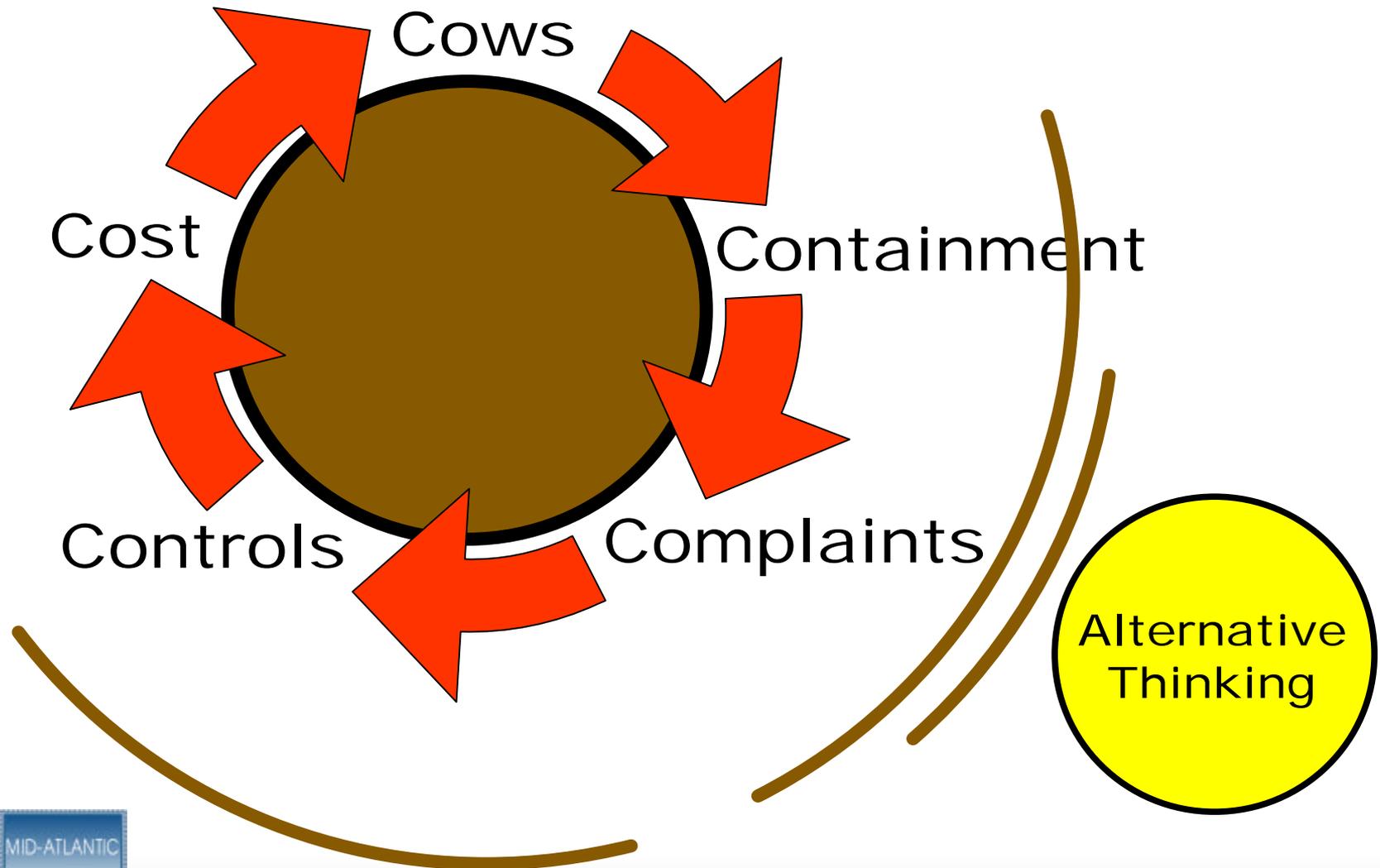


Mid-Atlantic Regional Nutrient Budgets

- A picture of nutrient flows and budgets at multi-state, state, county and watershed levels
- Expanded to include biosolids
- Point out conflicts from policy
- Can be an effective tool in guiding policy development



CIRCLE OF MORE



situation

- More part-time farms
- little farms are bigger
- medium sized farms are bigger
- large farms are bigger



situation

- Farms that are not profitable don't have resources to put towards environmental protection
- Farm profit and environmental quality are related



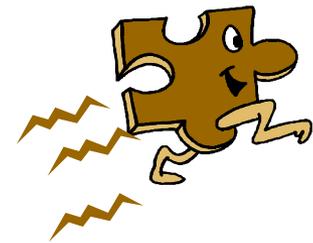
situation

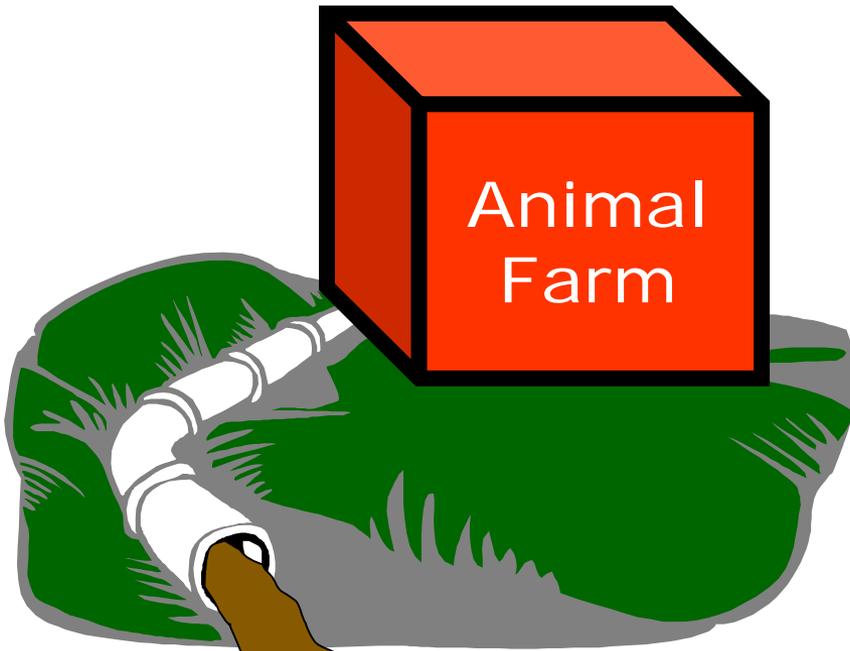
- Cost of living goes up for everyone, including farmers
- Multi-species farms often include a species working off the farm to help make ends meet



What influences water quality?

- township controls on farm size
- state regulations on sewage treatment plants
- on-lot septic regulations
- permit and record keeping requirements for AFOs, CAFOs, CAOs, EQIP farms
- Unit freight trains
- NRCS policy
- the green industry
- cost and quality of schools
- Midwest power plants



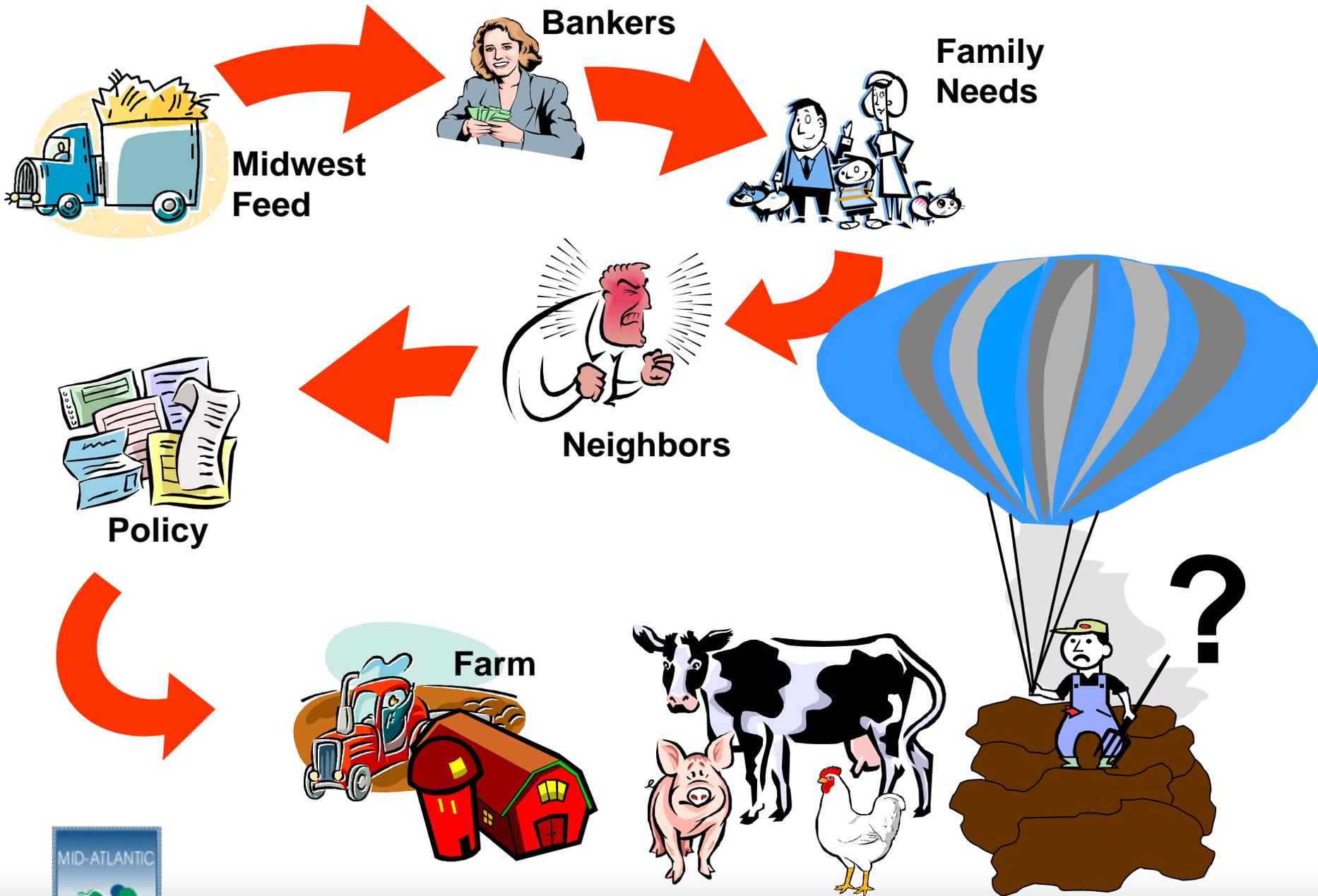


End of Pipe Thinking



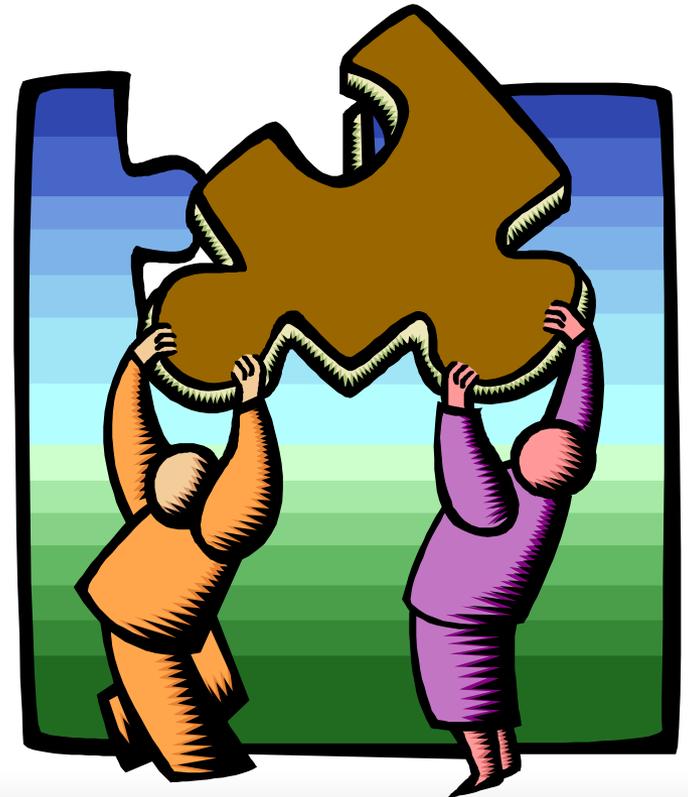
Solution





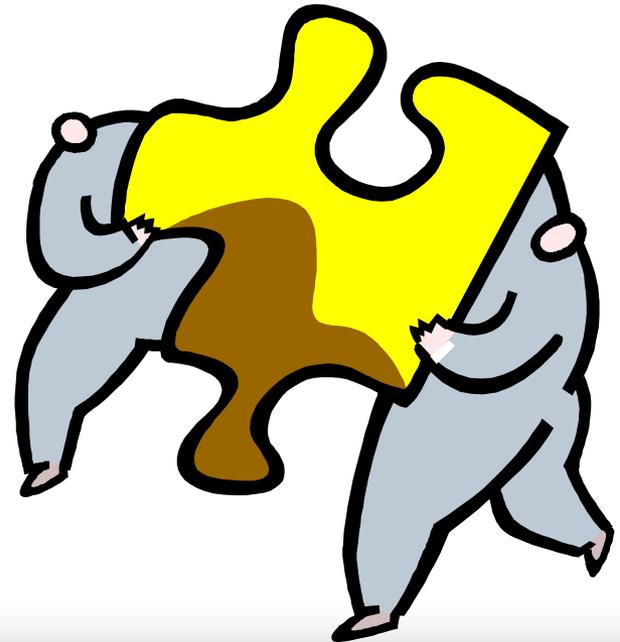
What is desirable land use in a watershed?

- open space – public or private
- residential development
- industrial development
- commercial development
- nature preserves



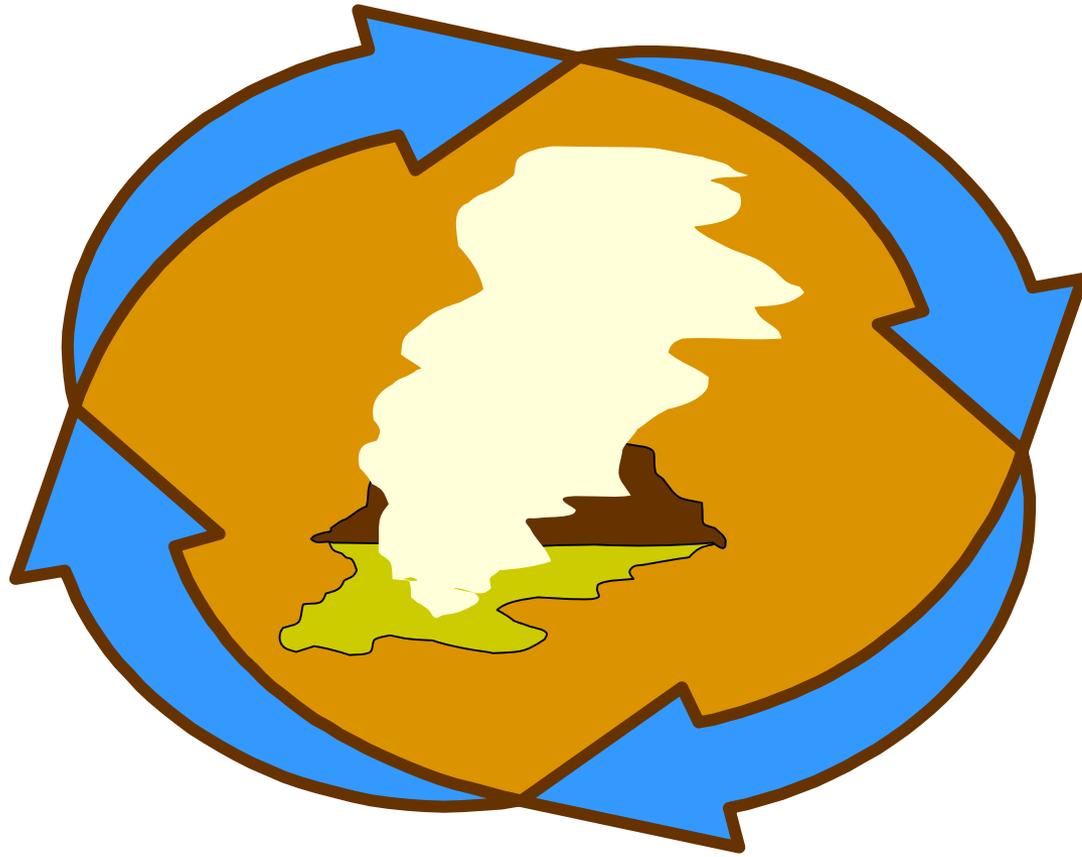
Question

- Can profitable livestock farming coexist with a healthy watershed?
- What land use will replace livestock farming?



More to manure than meets the eye

What goes around, comes around!





(of this)

