Potential for On-Site Water Quality Improvements for CAFO's

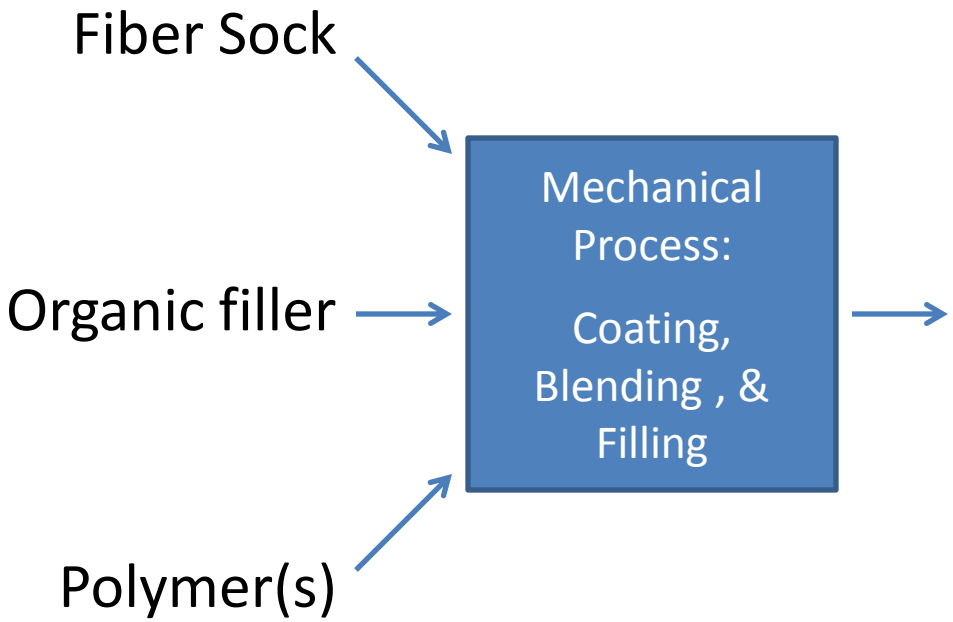
Proposed Pilot Study

Project Partners:

Delaware Department of Natural Resources and Environmental Control
Delaware Department of Agriculture
NRCS
University of Delaware
Envirotech

Organic-Based Filters

Organic-Based Filter Technology . . .



Palletized filter sock prior to installation

USDA TREXX

MIMIC NATURE™

Sediment Summary

% Reduction of TSS & Turbidity of Silt Fence, Filter Soxx, & Polymer

Treatment	TSS	Turbidity
Silt Fence	67	52
Filter Soxx	78	63
Filter Soxx + Polymer	97	98

* Based on rainfall of 3.0 in/hr for 30 min; runoff sediment concentration (sandy clay loam) of 70,000 mg/L.

Preliminary (Paper) Assessment for CAFO's

- Filtrexx™ among the most mature technologies in the marketplace.
- "Non-Ag" performance well documented.
- No data for agricultural applications.
- Need detailed, on-site pilot studies to quantify performance for CAFO businesses.

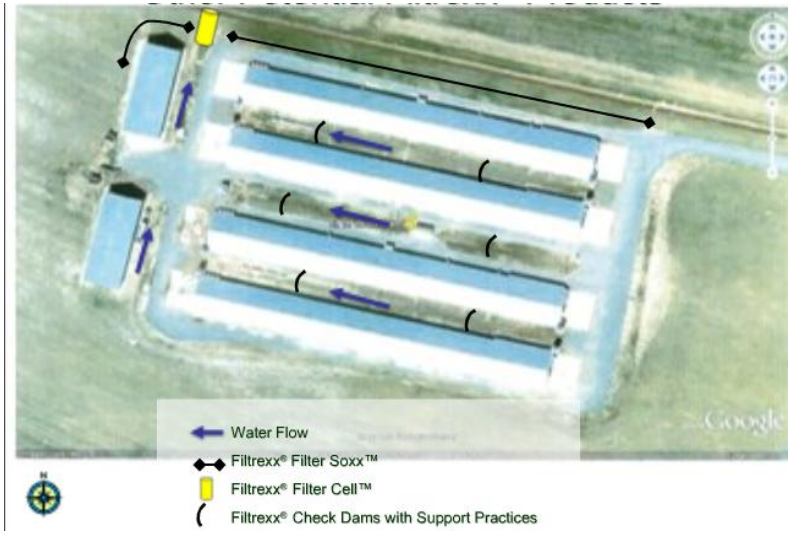
Tunnel ventilated poultry house


Water Flow
Filtrexx® Filter Soxx™
Filtrexx® Filter Cell™
Filtrexx® Check Dams with Support Practices
Google

Feasibility Study Objectives

Knowledge Gaps to be Filled

- Performance
  - N, P, and sediment reductions over time.
  - “Design Life” (i.e. frequency of replacement)
  - On-site management issues
- Cost
- Engineering/scientific basis for design and installation BMP’s.
  - New vs. old construction
  - Absorption capacities
  - Design criteria
  - Eligablity criteria (or not) for NRCS cost share



Four house poultry operation in Delaware

Feasibility Study Timeline
Tentative

- Site design & develop monitoring protocol — Oct 2010
- Pre-installation water samples — Oct 2010
- Installation of on-farm prototype — Nov 2010
- Identify and implement for new construction — Jan 2011
- Water quality sampling — Aug 2011
- Evaluate and report results — Sep 2011

Thank you.

Questions?

Filtrexx® and CAFO's

- Filtrexx® Filter Cell™ and Support Practices™ are directly applicable to CAFO's

- Filtrexx® Technologies the only peer reviewed, third party research showing the ability to reduce phosphorus, nitrogen, bacteria and sediment in effluent run-off

Filtrexx® and CAFO's

- Pilot Program has the potential to highlight Filtrexx® Technologies directly on a CAFO
- The Pilot Program can develop a standard and repeatable BMP that can be applied and tailored for each CAFO
- The range of Filtrexx® Technologies can be a benefit during construction and post-construction on CAFOs
- Post-construction Pilot Program:
  - EB Workman Farm; Bridgeville, DE

Filtrexx® and CAFO's

- Filter Cell™ exterior will be installed and vegetated
- Filter Cell™ baffles will be installed with Filtrexx® Support Practices™ :
  - PhosLoxx™
  - Nutrient Agent™
  - Silt Stop Polymer™
  - Bacteria Agent™
- Filter Cells™ become a "Treatment Train"

Filtrexx® and CAFO's

- Phosphorus Removal
  - Filtrexx® Filter Media™ Only:
    - Reduces Total P 65%
    - Reduces Soluble P 27%
  - Filtrexx® Filter Media™ & PhosLoxx™
    - Reduces Total P 65%
    - Reduces soluble P 92%

Filtrexx® and CAFO's

- Nitrogen Removal
  - Filtrexx® Filter Media™ Only:
    - Reduces NH_4 – N 15%
    - Reduces $N0_3$ – N 22%
  - Filtrexx® Filter Media™ & Nutrient Agent™
    - Reduces NH_y – N 33%
    - Reduces $N0_3$ – N 25%


Filtrexx® and CAFO's
• Sediment Removal
– Filtrexx® Filter Media™ Only:
• Reduces TSS 78%
• Reduces Turbidity 63%
– Filtrexx® Filter Media™ & Silt Stop Polymer™
• Reduces TSS 97%
• Reduces Turbidity 94%

Filtrexx® and CAFO's

- Bacteria Removal
  - Filtrexx® Filter Media™ Only:
    - Reduces E. Coli 73%
    - Reduces Total Coli form 71%
  - Filtrexx® Filter Media™ & Bacteria Agent™
    - Reduces E. Coli 99%
    - Reduces Total Coli form 99%

Filtrexx® and CAFO's

- Pilot Program Experimental design and Goal
  - Pre-test effluent run-off
  - Install Filter Cell™
  - Post-test effluent run-off
  - Demonstrate the applicability of Filtrexx® Technologies