**PA 12-155 Nonpoint Source Phosphorus Workgroup**

**Meeting notes from November 20, 2014, 10 a.m. meeting, DEEP Holcombe**

Co-Chairpersons:

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Introductions: Mike Jastremski, Virgil Lloyd, Chris Malik, Greg Bugbee, Steve Anderson, Jim Hyde, Rich Meinert, Joe Wetteman

Rich Meinert rewrote recommendations for animal waste management and shared with group.

Surplus manure figures are based on 2012 census for livestock operations.

Amount of material, area available, CAFO 2002, excess manure is a problem.

Surplus manure needs to be applied to lands that are not controlled by manure producers. Applying where corn, grain and other crops are grown could reduce demand to bring grain in from other states. Dryers to reduce mold might be needed.

G.A.P. Good Agricultural Practices and federal Food Safety Modernization Act http://www.fda.gov/food/guidanceregulation/fsma/default.htm "Rules" are now being implemented tightening regulations affecting time that raw manure must age before it is applied on vegetable crops. (USDA's National Organic Program (NOP) standards, which call for a 120-day interval between the application of raw manure and harvest for crops in contact with the soil and 90 days for crops not in contact with the soil. (This standard my not be protective enough)

Use manure for value added products. Maryland DoAg. promotes manure to energy/combustion with $970k grant, but brooders bedding is more easily burnable than egg layers. Ash could be sold as fertilizer ingredient. Maryland has environmental assistance program to support farmers. Would the CT sponsor agency be DEEP, DoAg, or DEEP Energy?

Network of regional anaerobic digestors for food waste. Encourage a process to combine Waste, Energy, P2, Climate Change, Water, interests to advance programs. Management-level promotion beneficial due to interagency coordination.

In previous attempts to meet with energy and farmers, was difficult to arrange. Timeline for products and plans, planning should include short, medium, and long

term planning with adequate staffing. RFPs for only shovel ready projects may not be productive, engineering and design take time, and are location specific.

Changes were made to CT Regs dealing with net metering and definition of class 1 renewables to include biomass projects. http://www.energizect.com/government-municipalities/programs/virtual-net-metering

http://www.cga.ct.gov/2013/ACT/PA/2013PA-00303-R00SB-01138-PA.htm

RFP was released **www.energizect.com/AD** , but nobody applied, Clean Energy Finance Investment Authority http://www.ctcleanenergy.com/

Anaerobic Digestion RFP is February 27, 2015
http://www.energizect.com/businesses/programs/Anaerobic-Digester-Projects

Millers Dairy farm had a food waste component. Shipping manure off of farm can be cost prohibitive. How do you treat liquid portion if no POTW available? Food waste more economically viable to truck than manure. German company doing design. $2-4 million project.

Stan Weeks NY consultant/designer with lots of experience.

Proposal in Bozrah to mix in 2/3 more wood chips and burn poultry manure. Provide refuse to a fertilizer company? Joe W. will find N-P-K specs for end products produced / ash. Broilers use bedding, egg layers don't. Demolition waste as C source is not clean enough to assure that ash would not be contaminated waste.

Subsidies for shipping costs, work with existing nutrient brokers to provide incentives to deliver manure or compost to Midwest agricultural areas, price supports to ensure market for compost. If egg production remains in Ct, there must be a solution to the nutrient waste generated.

Economics of producing fertilizer: Poultry manure is high in calcium (eggshell production) so is abrasive and will wear out dies used to make pellets. Quantities and P content make marketing difficult. Poultry manure could be collected and shipped.

Less than 20% of CT soils tested by CT Agricultural Experiment Station require P.

Investigate potential for loosening of P standard in organic fertilizers, if a value added product could be developed.

How to interest biosolids vendors? They already have excess nutrients, expanded market would be needed.

Horse manure disposal not well tracked. Sources are more diffuse than bovine or poultry, but overall quantity may be significant.

Regional facilities with technologies to either burn, compost, anaerobic digestion, P harvest or centrifuges for separation from cow manure. Could a grant program be established DEEP, Energy, or Ag.

Trading options for permit holders, is there economic cost-benefit feasibility?

Look at cost figures for North Canaan centrifuge, 10 tons removed. Laurel Brook Farm. 30% removal rates into solids, gross solids, fine solids.

If enough P is removed from liquid cow manure, liquid can be land–applied for N

Study transportation feasibility needs, look at other examples

Most projects are combined heat and power projects, so where demand for energy exists locally economics are more feasible. Gas or electricity. With net metering in place, feasibility should be enhanced.

Technology in use in Europe should be transferred. Higher fuel prices in Europe provide greater incentives.

Europe and California are technology leaders, CA driver is water conservation, gray water recycling in CA incentivizes.

Evaluate cost effectiveness of Ag NPS solutions.

Meinert summary has numbers. Conservative CT annual surplus 3 million pounds N, 3 million pounds P from livestock.

When soils saturated P becomes soluble, can be exported in runoff. UConn recommends 20 pounds per acre maximum. Some soils test at 1000 pounds per acre. These soils won't need P for 50 years. P saturation index https://www.soils.org/discover-soils/soils-in-the-city/green-infrastructure/important-terms/phosphorus-saturation-index

(note: there are several methods to determine "phosphorus saturation ratio" the simplest is P / Fe+Al )

If we had centrifuges on the 5 largest dairy farms in State how much P could we remove? Meinert will pursue this analysis. 5 farms represent ?% potential reduction. Statewide problem tht should be addressed if we want to continue Ag and protect water quality.

Small scale operations becoming more practicable see: China and Korea for examples. If there is demand for energy, benefits are more demonstrable.

CT D o Ag, feasibility of Environmental Assistance program. Farm transition grants, Energy involvement?

Community Investment Act, money exists, but not for these purposes, grants limited to $50k. Would other types of capital improvements on farms be feasible, Could a new grant program help get energy related programs off the ground?

Predecessor of CEFIA was a grant program enabled by legislative act, loan program followed. Revisit act?

How do existing USDA programs apply?

CAFO report 2012, Map of the State using 2007 data: yellow dots are livestock operations. Determine where to locate new regional digesters, watersheds where POTW P limits are strictest would be priorities.

4 areas with highest livestock populations: Franklin/Lebanon/Bozrah/Colchester (eggs), Woodstock dairy, Tolland County, NW Corner/ Canaan,

Poultry/Eggs major stakeholder CT – Maine: Moark

Organic waste recycling / discuss with P2, Energy Waste regarding P role and framework for large scale planning.

Revisit Public Act that funded digesters. Modify to make it work. Facility operation is complicated. Private / public investment, 3rd party operators?

Topics with significant work remaining:

CASE model, watershed modifier and impact modifier sections

Internal loading, stream channel erosion and bedload transport,

Urban BMPs yard waste and turf-lawn management, leaf and dust particles from impervious surfaces.

Stormwater banking Chesapeake CWP paper

Charles River residual designation phosphorus TMDL, BMP cost comparison studies and curves.

Next meeting will be scheduled.