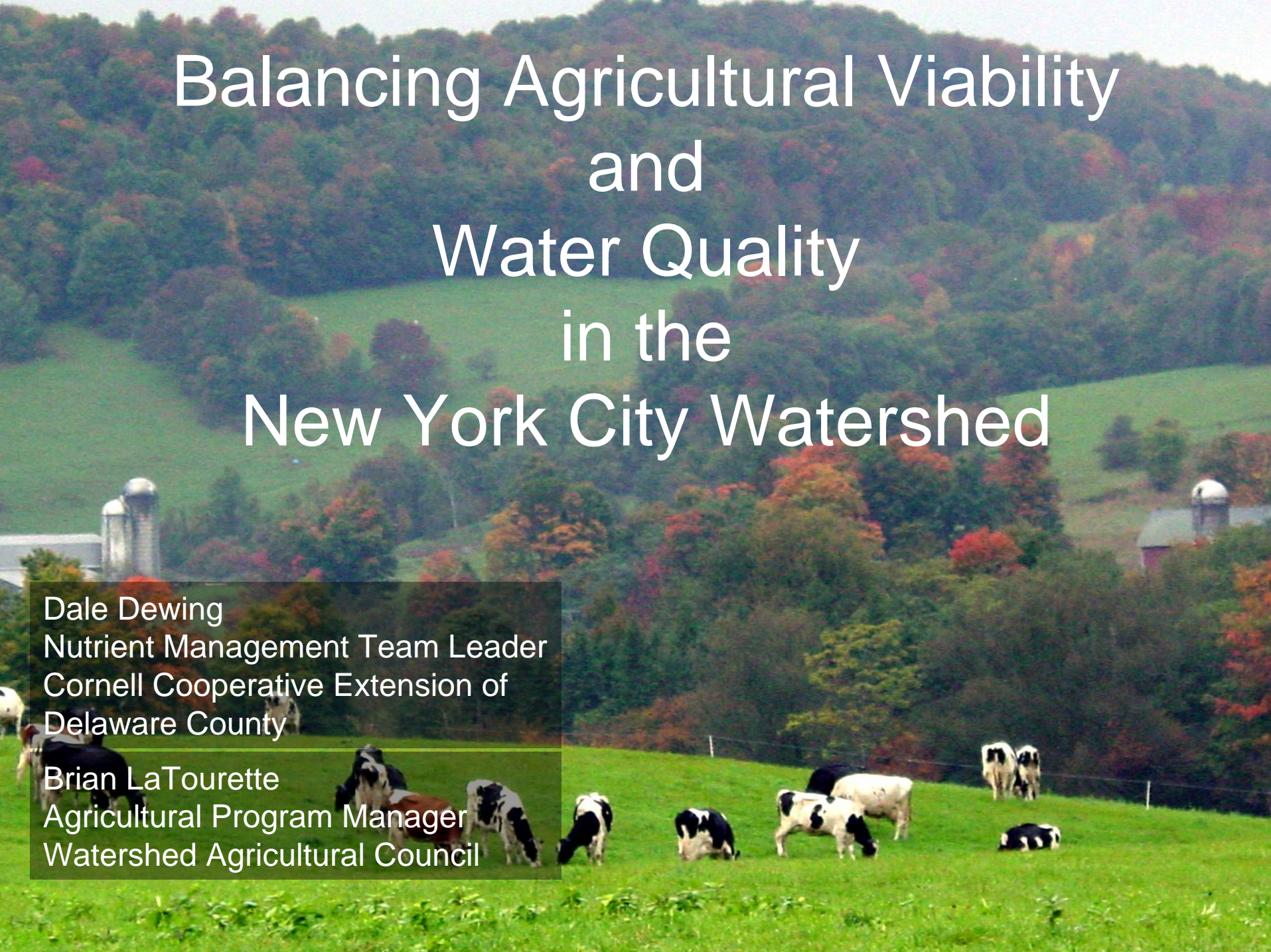
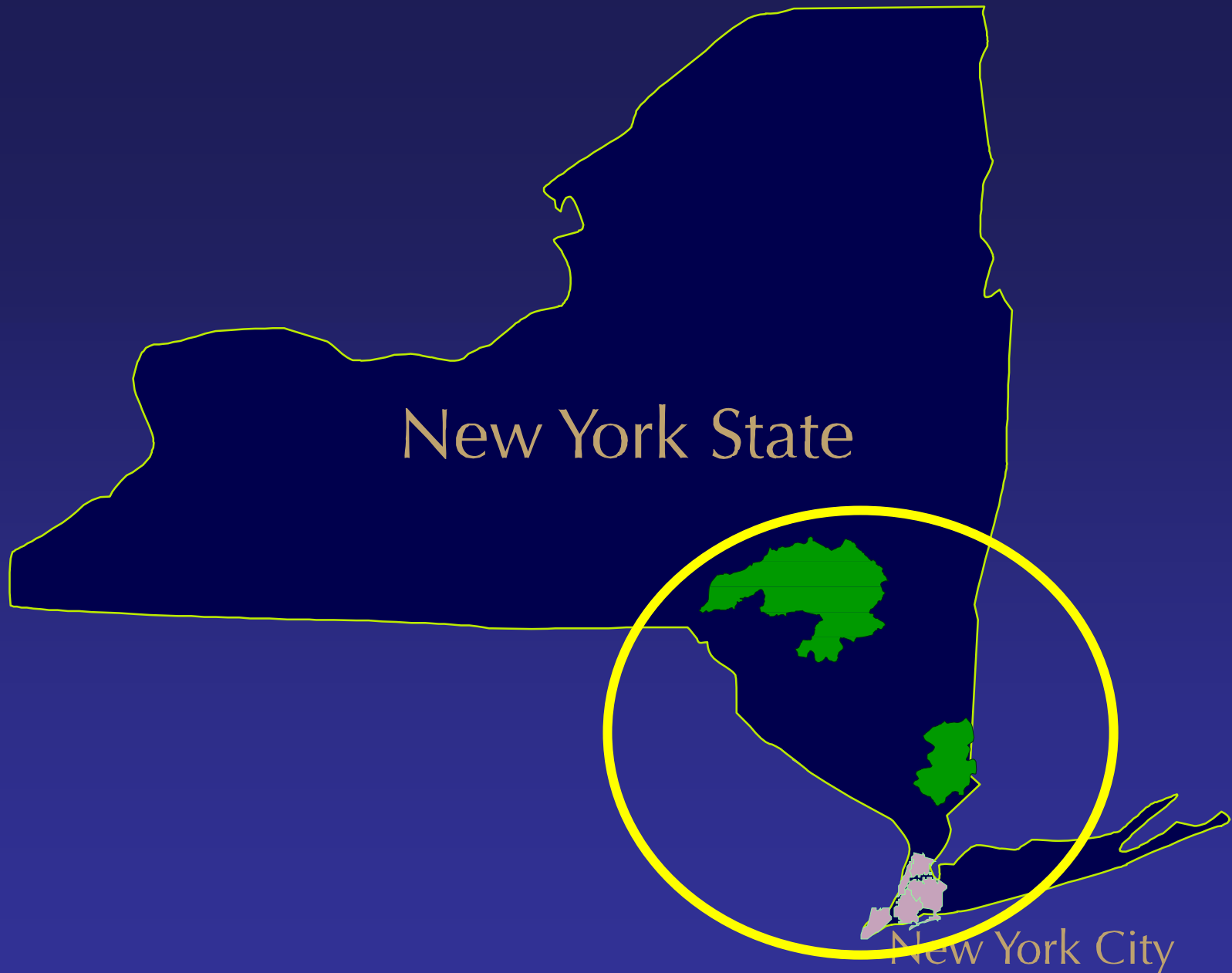


Balancing Agricultural Viability and Water Quality in the New York City Watershed

Dale Dewing
Nutrient Management Team Leader
Cornell Cooperative Extension of
Delaware County

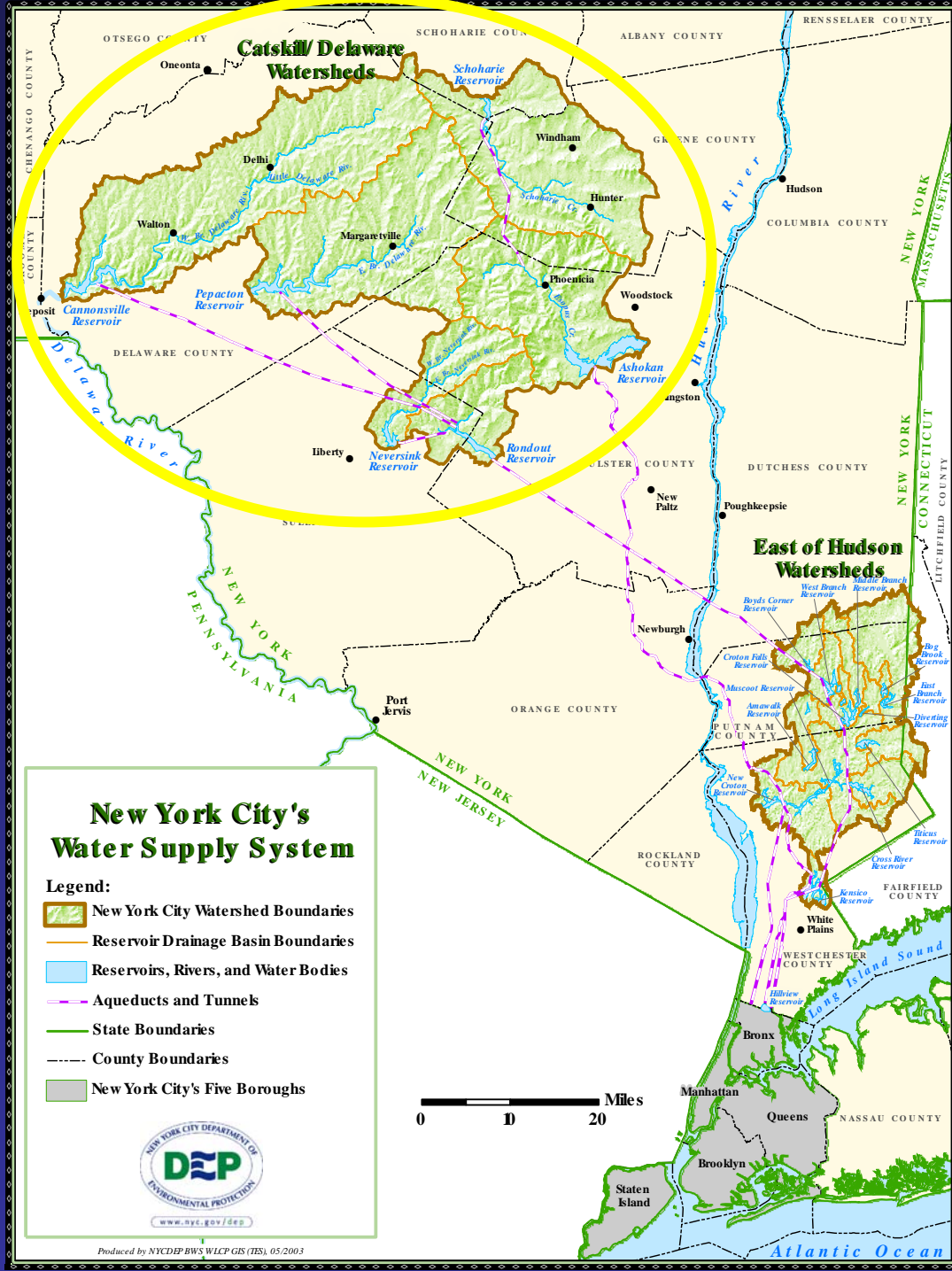
Brian LaTourette
Agricultural Program Manager
Watershed Agricultural Council





Cornell University
Cooperative Extension
of Delaware County



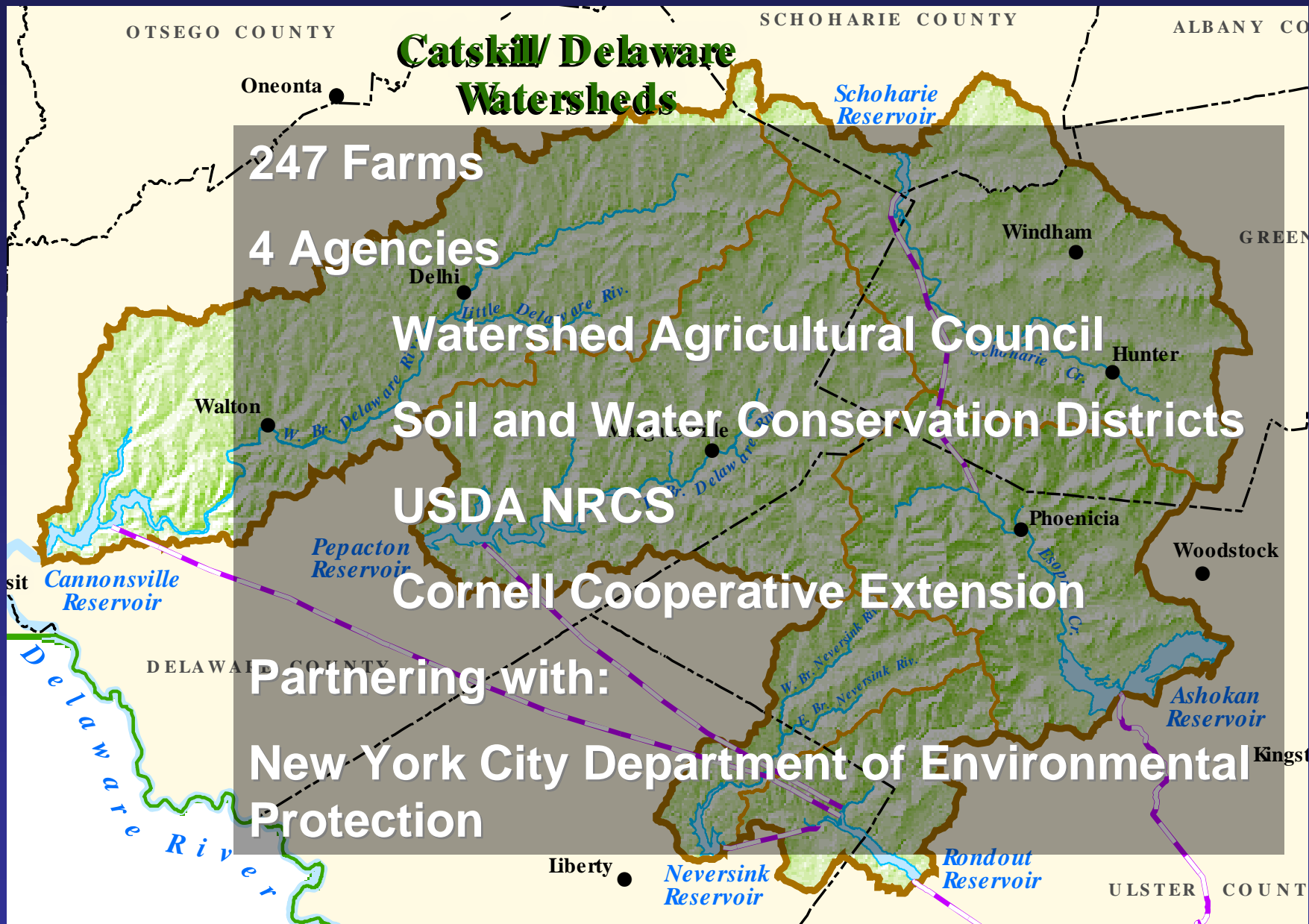


19 reservoirs

9 million people use
1.3 billion gallons daily

1,969 square mile
watershed – rural and
suburban

8 Counties, 60 Towns,
11 Villages



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of Delaware County



Mission

The Watershed Agricultural Council will support the economic viability of agriculture and forestry within the New York City Watershed region while protecting water quality and promoting land conservation.



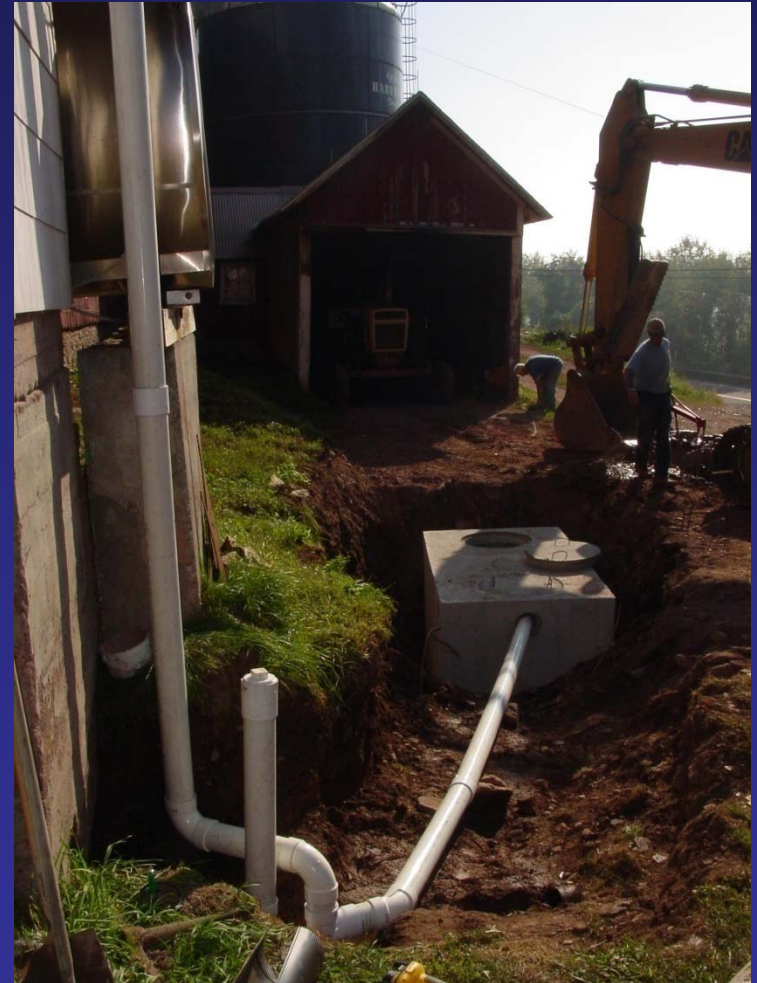
Whole Farm Planning

- Program staff develop CNMP with cooperating farms
- Identified BMPs are approved by WAC and funded by NYC
- Program staff design and supervise construction of practices
- Annual review of plan and operation and maintenance of practices.
- Plans revised as needed.



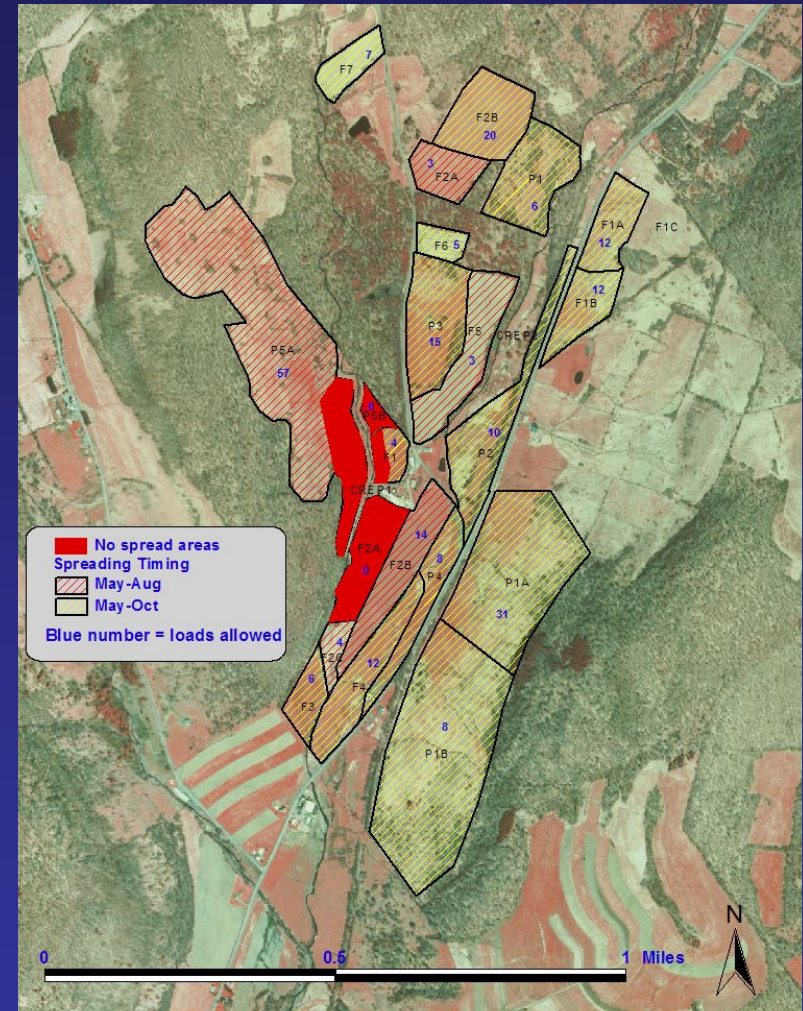
BMP Implementation

- BMPs designed according to NRCS standards and specifications
- Farm participates in planning and approves all designs
- BMPs constructed by local contractors



Nutrient Management Planning

- NMPs developed every three years
- Manure rates based on N need and P Index
- Plan presented with all needed information on a map
- Adjustments made as needed



Following a Nutrient Management Plan is:

- Inconvenient
- Expensive
- Requires additional management



Nutrient Management Credit

Farmers who closely follow their NMP receive financial incentive

- Farm submits manure application records annually
- Program staff review records and compare to the farm's NMP
- Peer Review Committee performs final review and certifies compliance



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The Overflowing Bath Tub Problem

1. Bath Tub will hold 50 gal
2. Water enters at 3 gal/min
3. Water slowly goes down the drain at $\frac{1}{2}$ gal/min.
4. How long can your teenager shower before the floor gets wet?



The Overflowing Phosphorus Problem

1. Soils can store a finite amount of P.

2. P is imported in purchased feeds, animals and fertilizers.

3. P is exported in milk, animals, and crops sold

4. How long before lakes downstream of the farm become eutrophic?

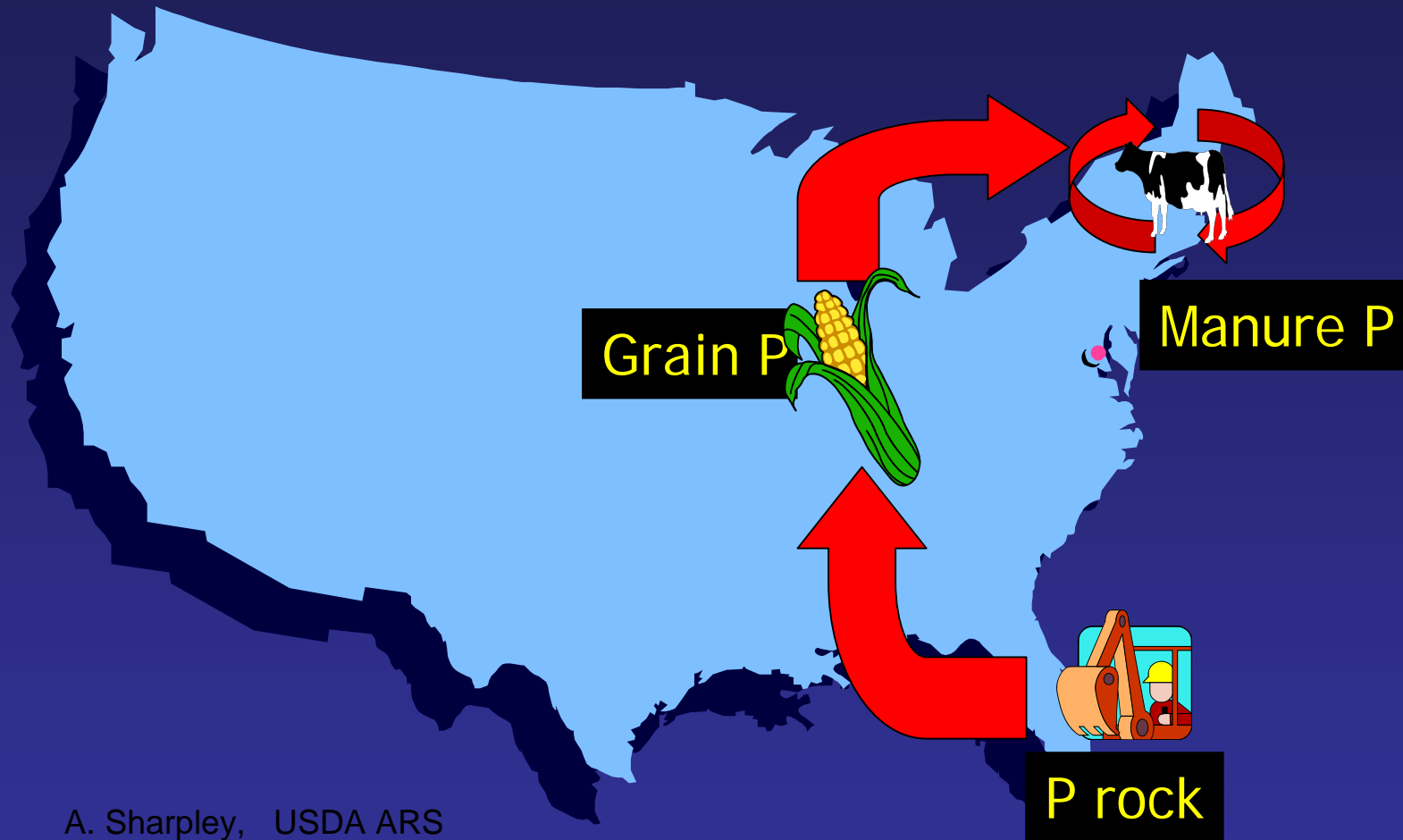


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Regional Translocation, Accumulation and Loss of Nutrients



A. Sharpley, USDA ARS



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Watershed Agricultural Council



Precision Feed Management

Precision Diet Formulation
& Delivery

Improved Homegrown
Forage Production

Reduced Nutrient
Overfeeding

Implementation of
High Forage Diets

- Reduced Purchased Feed Nutrient Imports -
- Reduced Manure Nutrient Excretions -
- Reduced Nutrient Accumulations -
- Improved Farm Viability -



Water Quality Impact

Farm scale

- 43% reduction in TDP
- 29% reduction in PP



(Bishop, Hively, Stedinger et al)



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Water Quality Impact

Watershed scale

(preliminary)

- 60% decrease in TDP loads from all sources
- 45% decrease in TDP due BMPs
- PP loads continue to increase

(Christine Shoemaker et al)



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Challenges

- Continuing high level of stewardship for the long-term after completion of first generation capital and management investments
- Cooperative conservation is only as strong as the weakest link in the chain of partnerships.



What Matters

- Relationship and Partnership
- Accountability
- Trust
- Technical Solutions



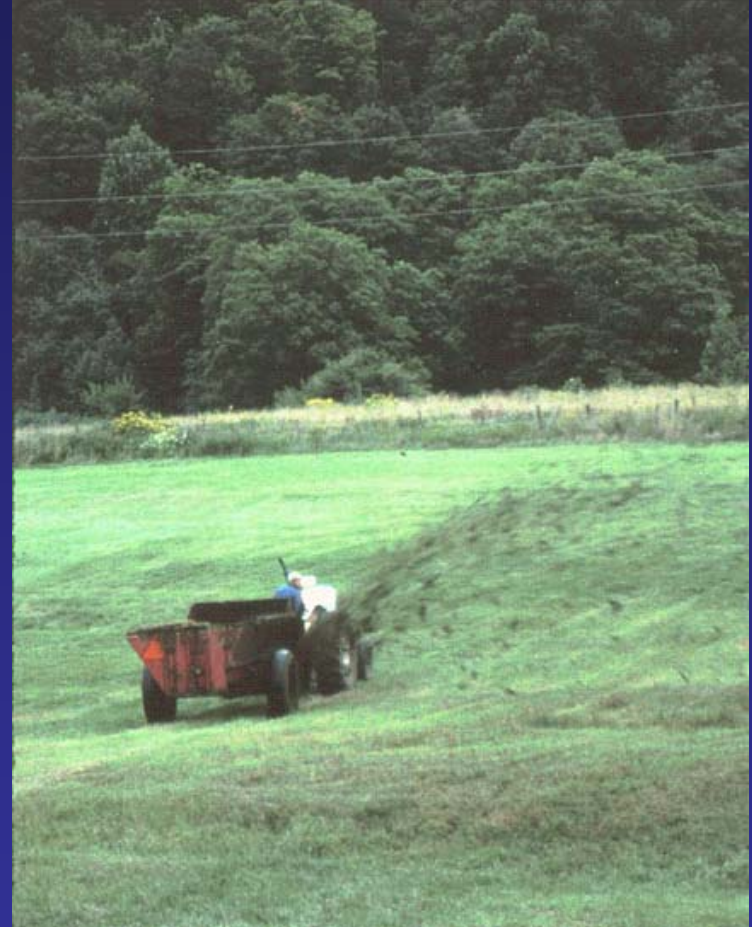
Relationships / Partnerships

- Upstate : Downstate
- Farmer : Agency
- Agency: Agency
- Program : Farmer : Contractor
- Program : Local Government
- Agriculturalist : Environmentalist



Accountability

- BMPs and O&M reviewed with each farm annually
- Manure application records are submitted and reviewed annually
- Farmers and Funders need confidence that only good stewardship is rewarded



Trust

- Program managed by local council of farmers peers
- Program delivered by local agencies farmers know and trust
- Nutrient Management Peer Review gives participants confidence



Technical Solutions

- Does it make sense?
- Does it work?
- Based on sound science
- Consistent with Standards and Procedures
- Effectively Operated and Maintained



What Matters

- Relationship and Partnership
- Accountability
- Trust
- Technical Solutions



Questions?

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