Bedded Pack Management System

John Thurgood

Sr. Whole Farm Planner

Cornell Cooperative Extension of Delaware County

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Watershed

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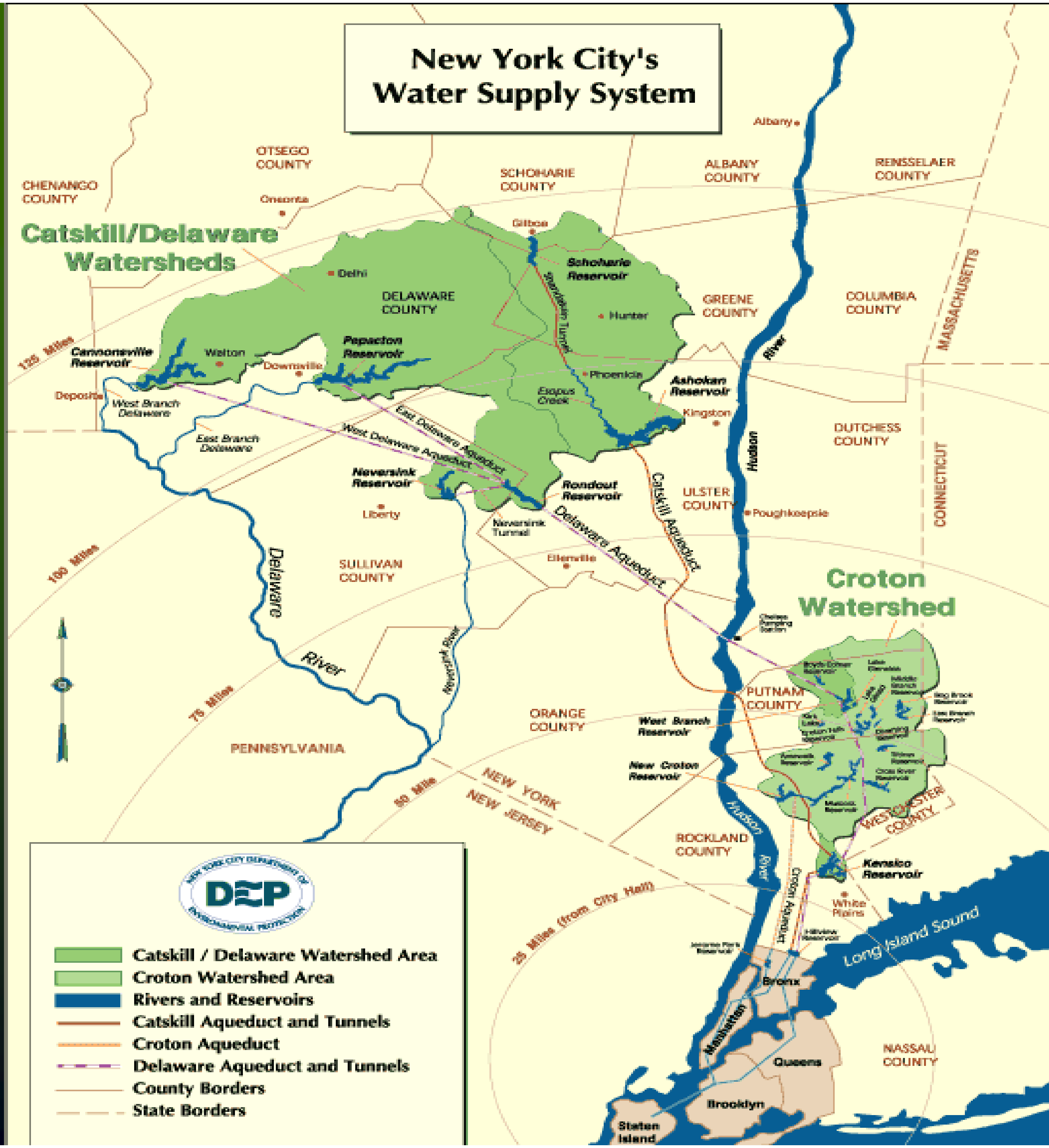
New York City's
Water Supply System
Catskill/Delaware
Watersheds
Croton
Watershed
CHENANGO COUNTY
OTSEGO COUNTY
SCHOHARIE COUNTY
ALBANY COUNTY
RENSSELAER COUNTY
DELAWARE COUNTY
GREENE COUNTY
COLUMBIA COUNTY
DUTCHESS COUNTY
ULSTER COUNTY
SULLIVAN COUNTY
ORANGE COUNTY
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Downsville
Deposit
Phoenicia
Kingston
Liberty
Ellenville
Poughkeepsie
White Plains
Schoharie Reservoir
Shandaken Tunnel
Cannonsville Reservoir
Pepacton Reservoir
Ashokan Reservoir
Neversink Reservoir
Rondout Reservoir
Neversink Tunnel
West Branch Delaware
East Branch Delaware
Esopus Creek
East Delaware Aqueduct
West Delaware Aqueduct
Delaware Aqueduct
Catskill Aqueduct
Croton Aqueduct
Delaware River
Neversink River
Hudson River
West Branch Reservoir
New Croton Reservoir
Kensico Reservoir
Long Island Sound
Bronx
Manhattan
Queens
Brooklyn
Staten Island
125 Miles
100 Miles
75 Miles
50 Miles
25 Miles (from City Hall)
DEP
Catskill / Delaware Watershed Area
Croton Watershed Area
Rivers and Reservoirs
Catskill Aqueduct and Tunnels
Croton Aqueduct
Delaware Aqueduct and Tunnels
County Borders
State Borders

What is a bedded pack management system?

- A non-traditional conservation practice
  - Covered barnyard
  - Feeding area, heavy use area protection
  - Manure storage
  - Straw bedding, unturned

Why consider a BPMS?

- Challenges with liquid storages and concrete barnyards on small farms
  - High cost of construction and maintenance
  - Concentrated labor required for unloading
  - Tractor limitations, horsepower
  - Equipment for liquid manure handling
  - Cost to spread collected rainwater
  - Odor, Odor, Odor, Odor, Odor
  - Catastrophic failure risk
  - Slippery footing on concrete barnyards

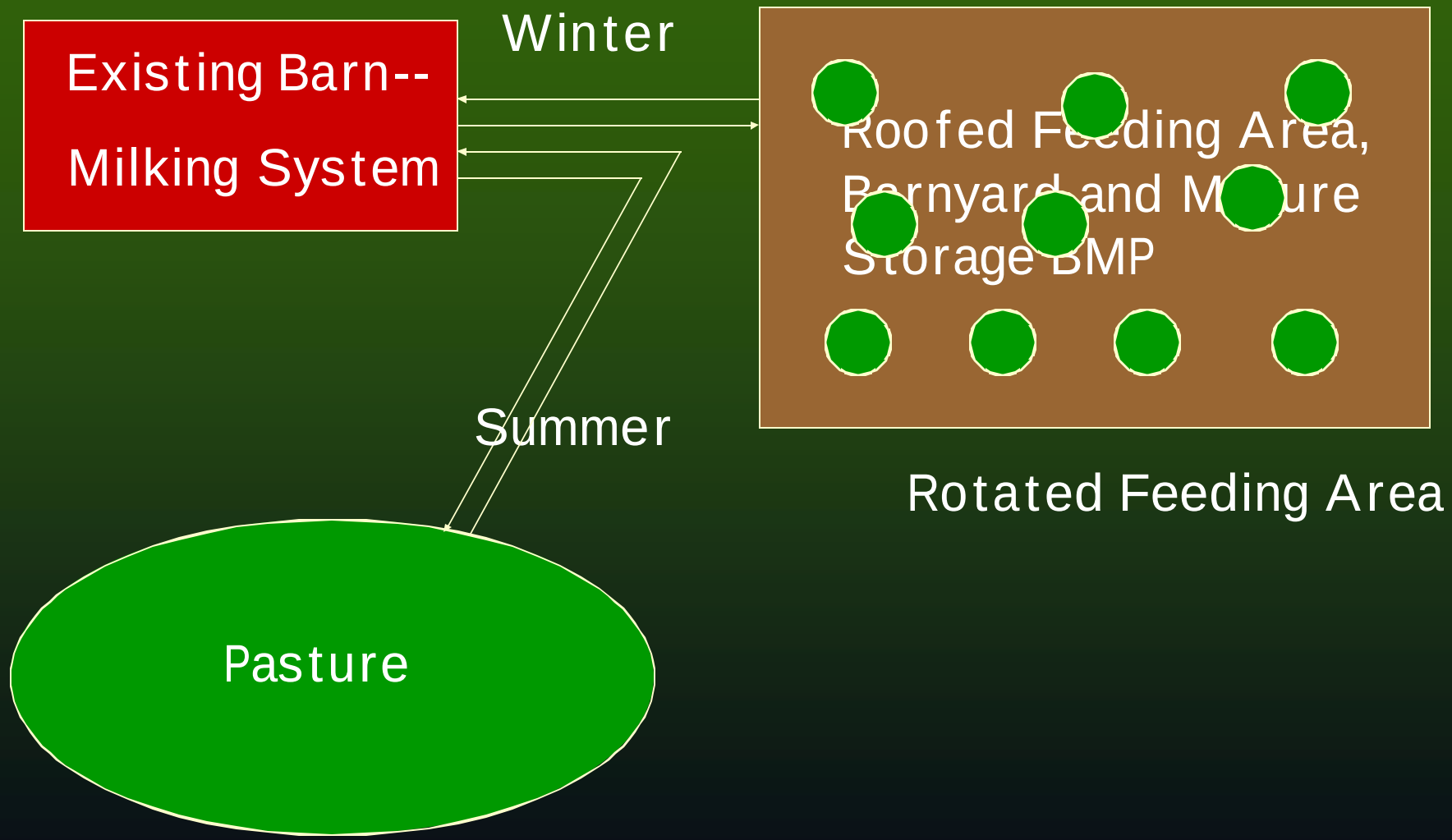
Opportunities with Pack BMP System BPMS

- Uses existing equipment
- Less odor
- Lower construction and maintenance cost
- Low risk of catastrophic failure
- More stable and compostable form of manure
- Excellent environment for cattle!

Opportunities with Pack BMP System BPMS with Grazing

- Lower labor requirement
- Less fuel and machinery usage
- Cattle not housed in barn for 6 months

Bedded Pack Management System



BPMS Case Study Description

- 34 cow mixed herd, 1,000# cows
- Graze 6 months of year
- Initially cows outside all year
- Milk in a parlor
- Farmstead runoff needed treatment
- Difficult to spread manure in winter

BPMS Case Farm

- Traditional solution:
  - Liquid manure storage
  - Barnyard water management system
  - Heavy use area protection- feeding area

BPMS Planning

- Design was 100 sq ft/ animal, 50' x 100' structure
  - NRAES> 125-150 sq ft per animal, feed alley
- Fabric covered steel hoops
- Wood sidewalls (locust posts and tamarac planks)
- Waterer designed to rise using flexible pipe, on cribbing

Farm in the Catskills

Farm in the Catskills

Northern Vermont Farm

Northern Vermont Farm

Northern Vermont Farm

BPMS Case Study Results

- System polluted eliminated runoff
- Held all manure and urine
- Comfortable environment, production up 2,000 per cow
- Somatic cell count unchanged at approx 200,000

BPMS Case Study Results

- Bedding when removed was very compostable
  60% moisture, good texture and C:N ratio
- Bedding usage avg 3,200 #/AU
- Bedding cost avg. $240 per cow, CDFBS- $35
  Cost per ton- avg $125
- No large labor saving advantages

Recommendations

- Reduce bedding cost:
  - Home grown bedding, less transport cost
  - Reduce the net bedding cost, sell compost
  - Continuous composting, roto-tilling
  - Include a concrete feed alley
  - Housing less than half of year is essential, only when not grazing

Recommendations

- Better fit for seasonal herds
  - more difficult to maximize dry matter intake on BPMS
    - Seasonal herds w/cows in later stages of lactation
    - Manure in more solid form, less bedding
- Herd health may prohibit use
- May help reduce hoof and leg problems

Recommendations

- More advantageous for organic farms
  - Reduced cost of fertilizers
  - More emphasis on soil health
  - Trend to producing small grains, red feed cost
- Housing two classes of animals in a BPMS leads to uneven elevations of the pack

Summary

- Evaluate specific farm characteristics
- Evaluate the Pros and Cons
- BPMS may be a great conservation practice for the farm!!!!!

Conclusion, Questions and Thank You!!!!!

I hope you found this presentation useful.

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Doug Flack Farm

Doug Flack Farm

Ted Yandow
Cimarron Farm

Cimarron Farm