

# Finding the Forest, the Trees & Success Farm-Based Nutrient Management



Steve Rowe, CEO  
Newtrient LLC

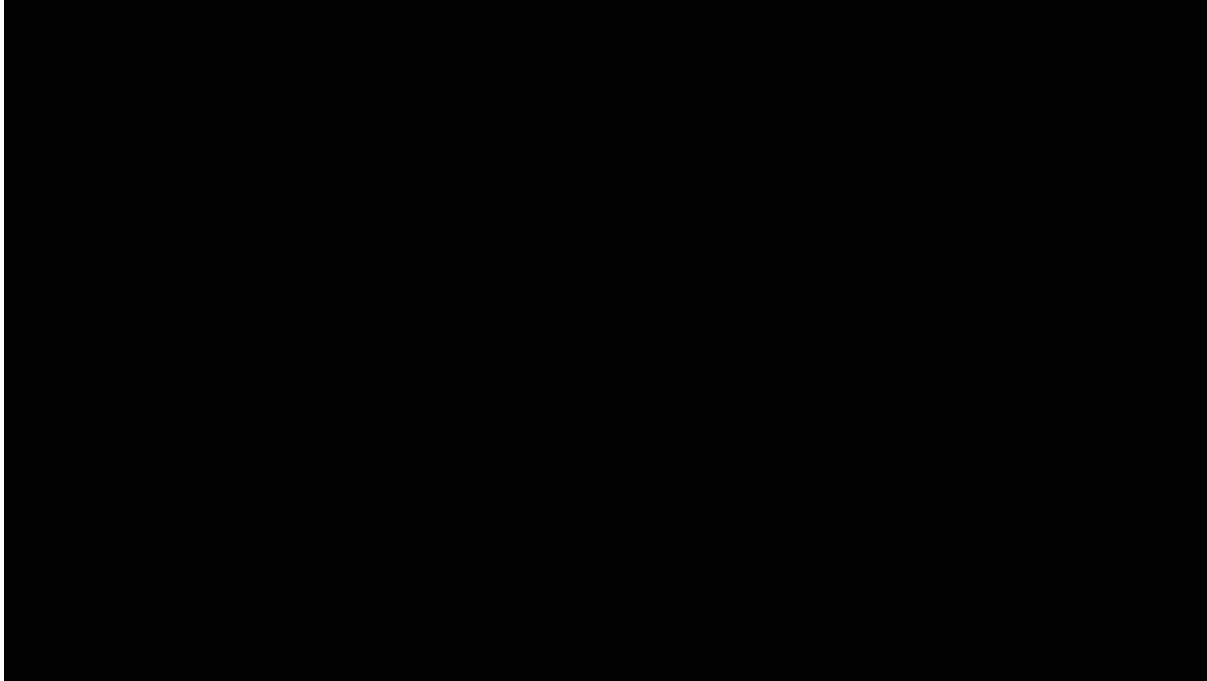




# Discussion Agenda

- I. **Newtrient: A New Kind of Company**
- II. The Newtrient Manure Technology Catalog: A Place to Consider Options
- III. Aligning Incentives for Improved Societal Results

# The Role of Farmers



# Current and Desired States

## Current State

1. Increasing regulatory, judicial and societal pressure around manure and agricultural by-products
2. Surface and ground water issues related to nitrogen and phosphorus
3. Erosion in consumer trust



## Desired State

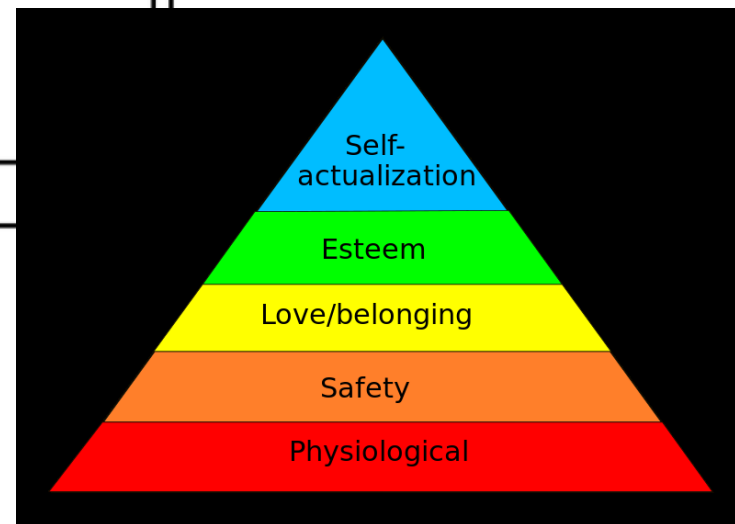
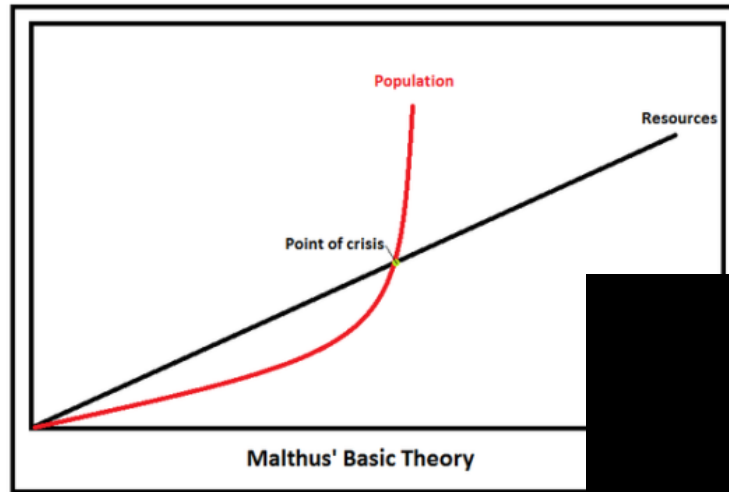
1. Farms help resolve societal issues related to water pollution and GHG emissions
2. Farmers realize economic benefits from voluntary actions
3. Farmers improve their social license to operate and increase consumer trust



# Dairy Leaders Taking An Entrepreneurial Approach



# Why? Thomas Malthus and Abraham Maslow



# A new kind of company/resource to the dairy industry

- An **entrepreneurial** organization, funded by **leaders in the dairy industry**.
- Focused on **reducing the environmental footprint** of dairy while making it **economically viable** to do so.
- Has conducted an **examination of all manure technologies** and is sharing the information with all stakeholders.
- Acting as an **accelerator/incubator** Newtrient advances the success of companies, technologies and manure-based products that improve the efficient use and marketability of manure's valuable components
- Actively designing and implementing markets that **allow dairy farmers to recover economic value for voluntarily assisting others** in achieving their pollution prevention obligations.

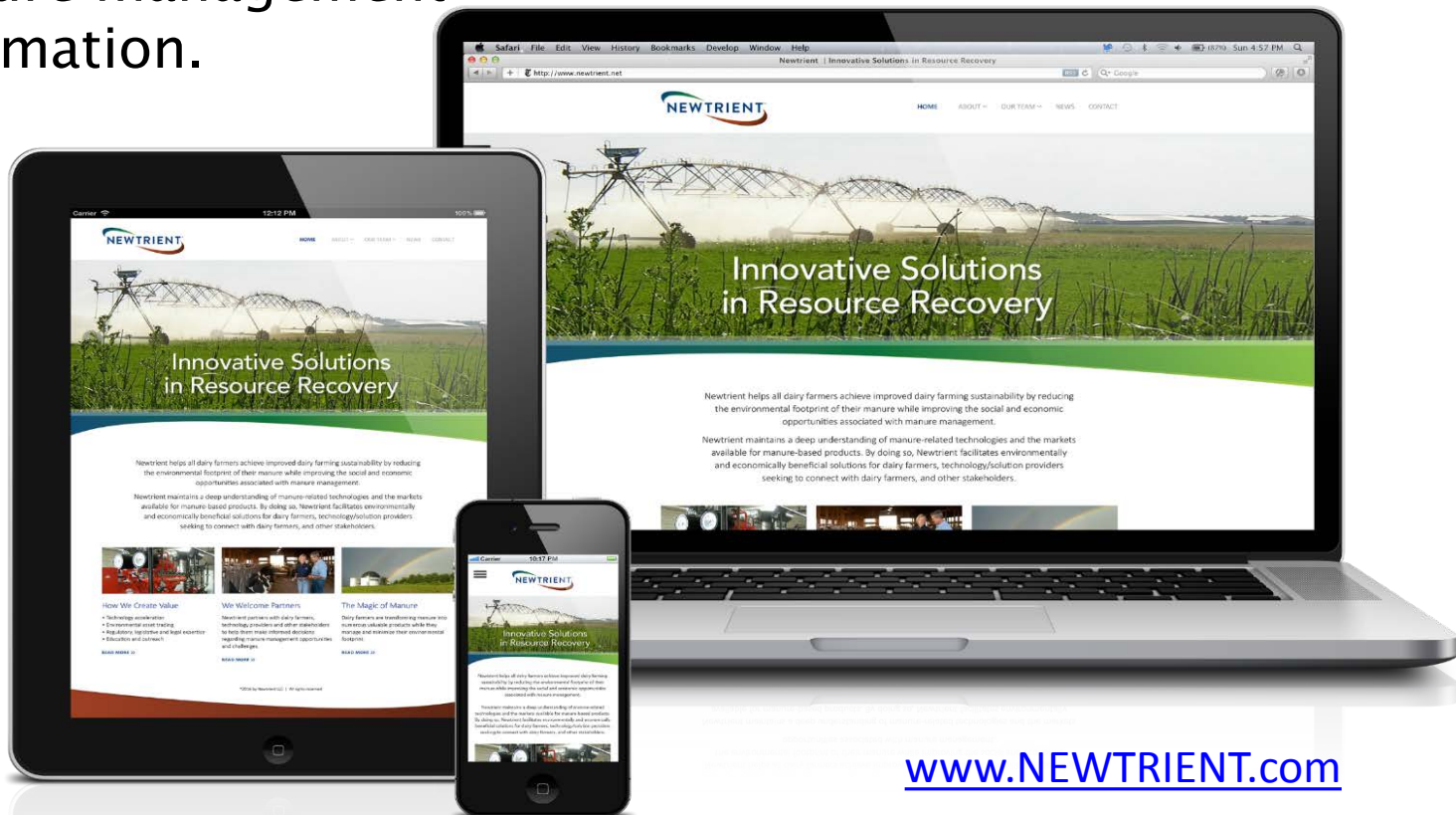


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Your source for state of the art  
manure management  
information.



[www.NEWTRIENT.com](http://www.NEWTRIENT.com)



# The Third Product – Milk, Meat & Manure

## Energy

- Electricity
- Heat
- Renewable Natural Gas
- Aviation Fuel
- Biodiesel
- Hydrogen
- Methanol
- Syngas

## Environmental Assets

- Carbon Credits
- Renewable Identification Numbers
- Low Carbon Fuel Std. Credits
- Renewable Energy Credits
- Nutrient trading: Water quality credits (N & P)

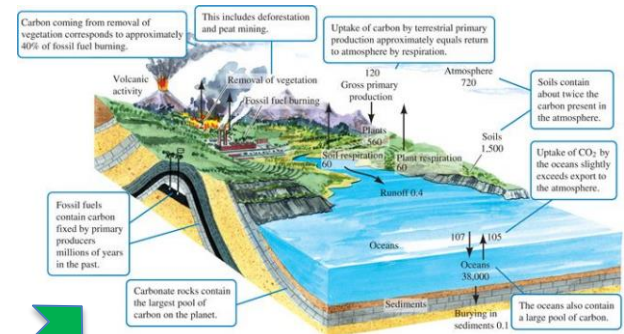
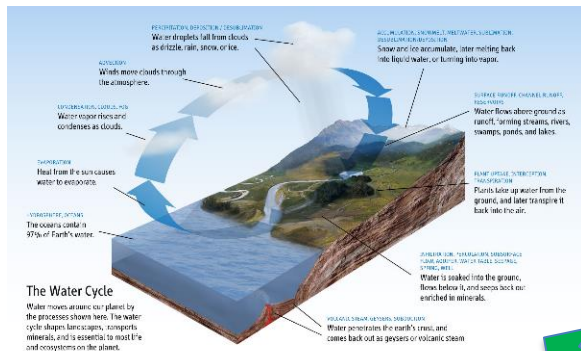
## Manure-Based Products

- N – Ammonium Nitrate, Ammonium Sulfate
- P – Ammonium Phosphate, Mono-ammonium Phosphate
- Compost
- Bedding
- Custom Fertilizer Products
- Worm Castings
- Biochar
  
- Water
- “Cow Pots” (fiber)
  
- “Magic Dirt” (fiber)
- Zeolite
  
- Struvite
- Digestate algae

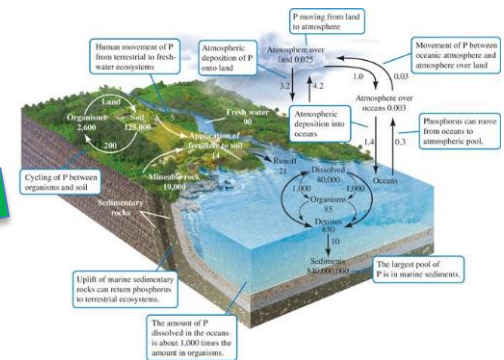
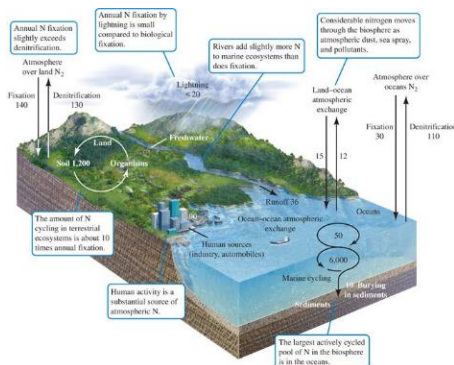
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# Meeting Agenda

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## CARBON CYCLE



## PHOSPHORUS CYCLE



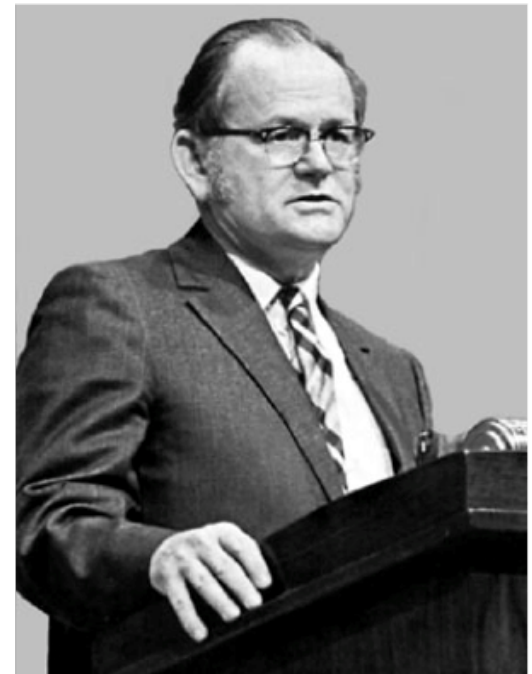
# The Modern Challenge of Internalizing External Environmental Costs

- We were all beginners when we began internalizing external environmental costs
- In the 1970s, we “punted” with non–point sources of pollution
- Regulatory development was far more focused on point sources
- EPA used to play a much larger role in policy development
- EPA has now limited its primary focus on enforcement
- Permits made it easier for manufacturers to keep their playing field level
- Traditional manufacturers are price makers (cost +)
- Food prices are not tied to costs of production (Most farmers are price takers)

**How do we create an economic model that incents the behavior we want?**

# The Roots of Modern Environmentalism

- How to “internalize external costs?”
- Garrett Hardin’s Tragedy of the Commons (1968)
- **NEGATIVE DRIVERS**
  - Regulation
  - Permits
  - Litigation
  - Citizen Enforcement





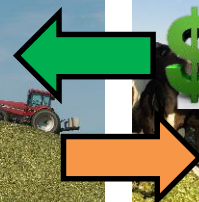
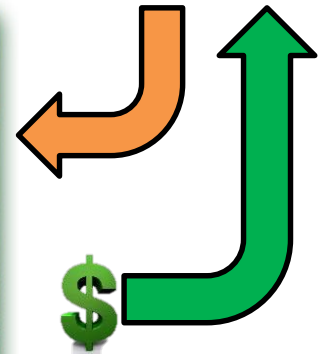
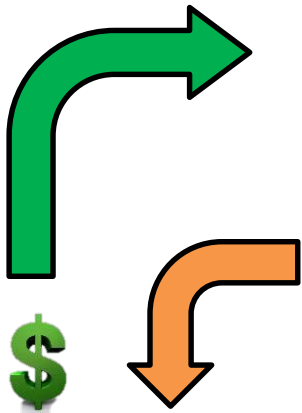
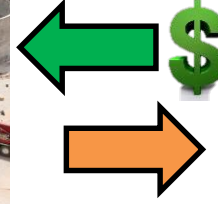
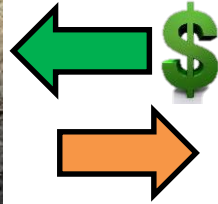


# Aligning Market Incentives With Desired Outcomes

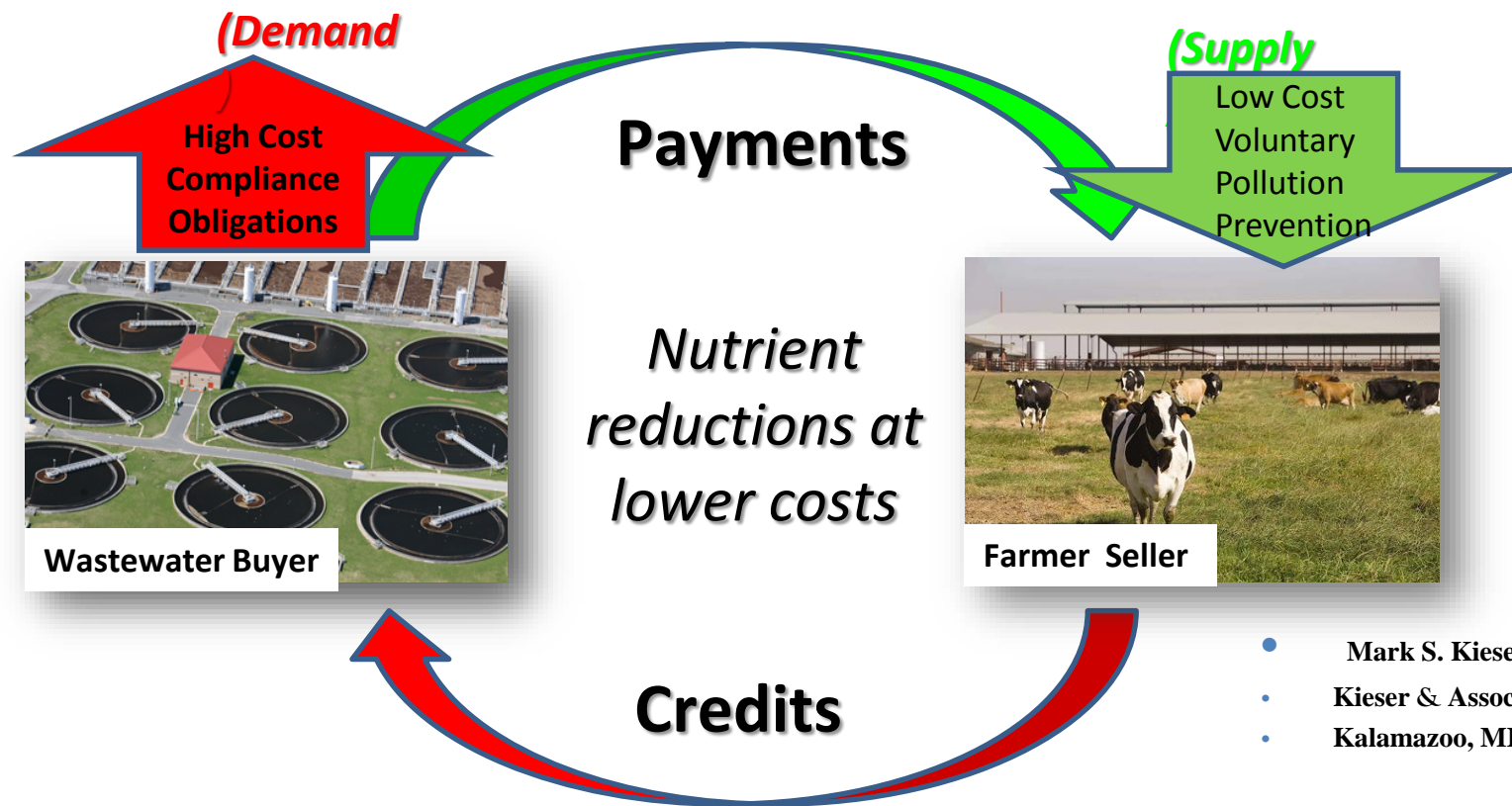
## POSITIVE DRIVERS

- Value Environmental Asset Services (e.g., phosphorous capture)
- Allow those responsible for higher cost pollution prevention obligations to purchase voluntary lower cost results
- Spread pollution prevention costs across larger population (e.g., entire supply chain)
- Nutrient Trading (e.g., water quality trading)
- Tonnage Fees
- Contaminant Bounties

Don't let the pursuit of perfection get in the way of progress!!

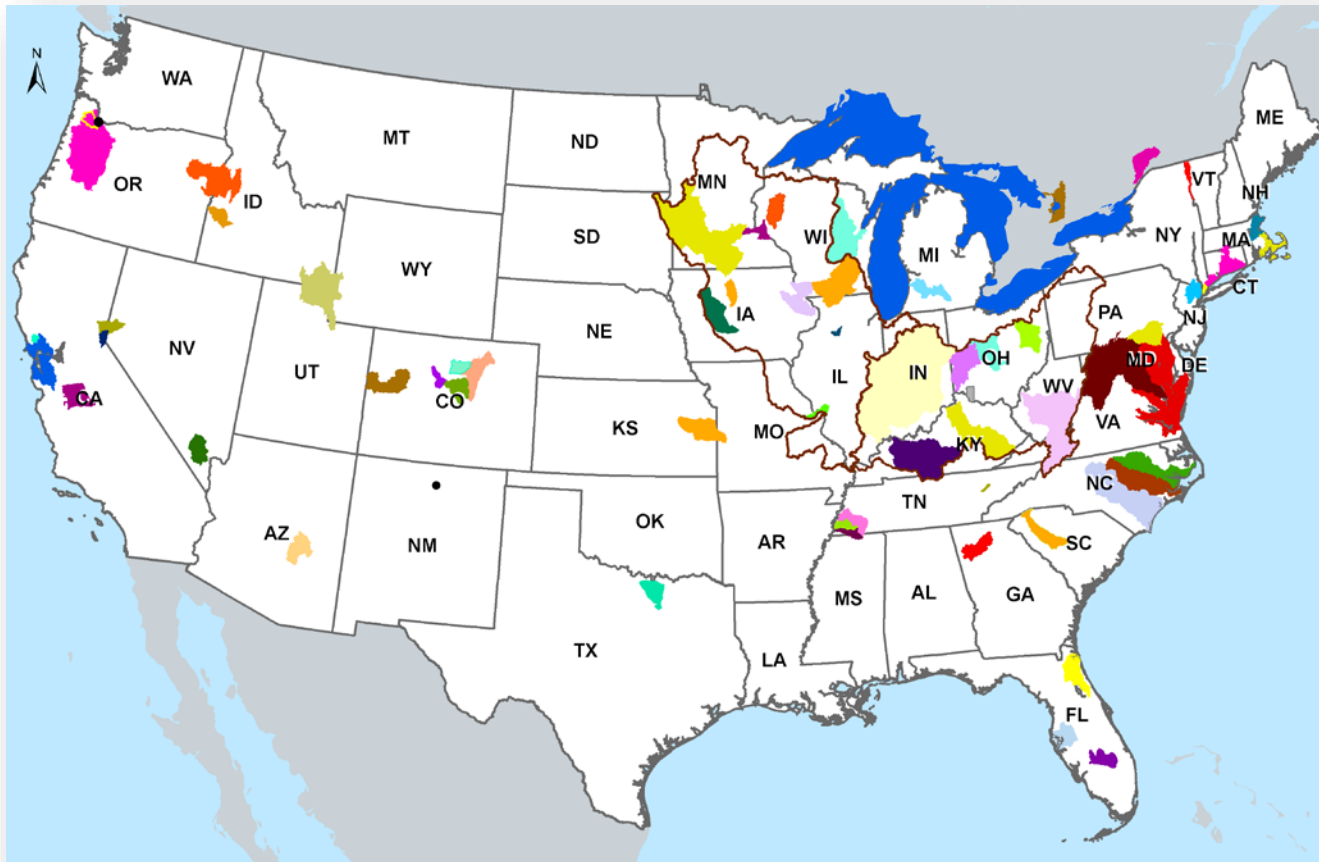


# Creating an Environmental Services Marketplace



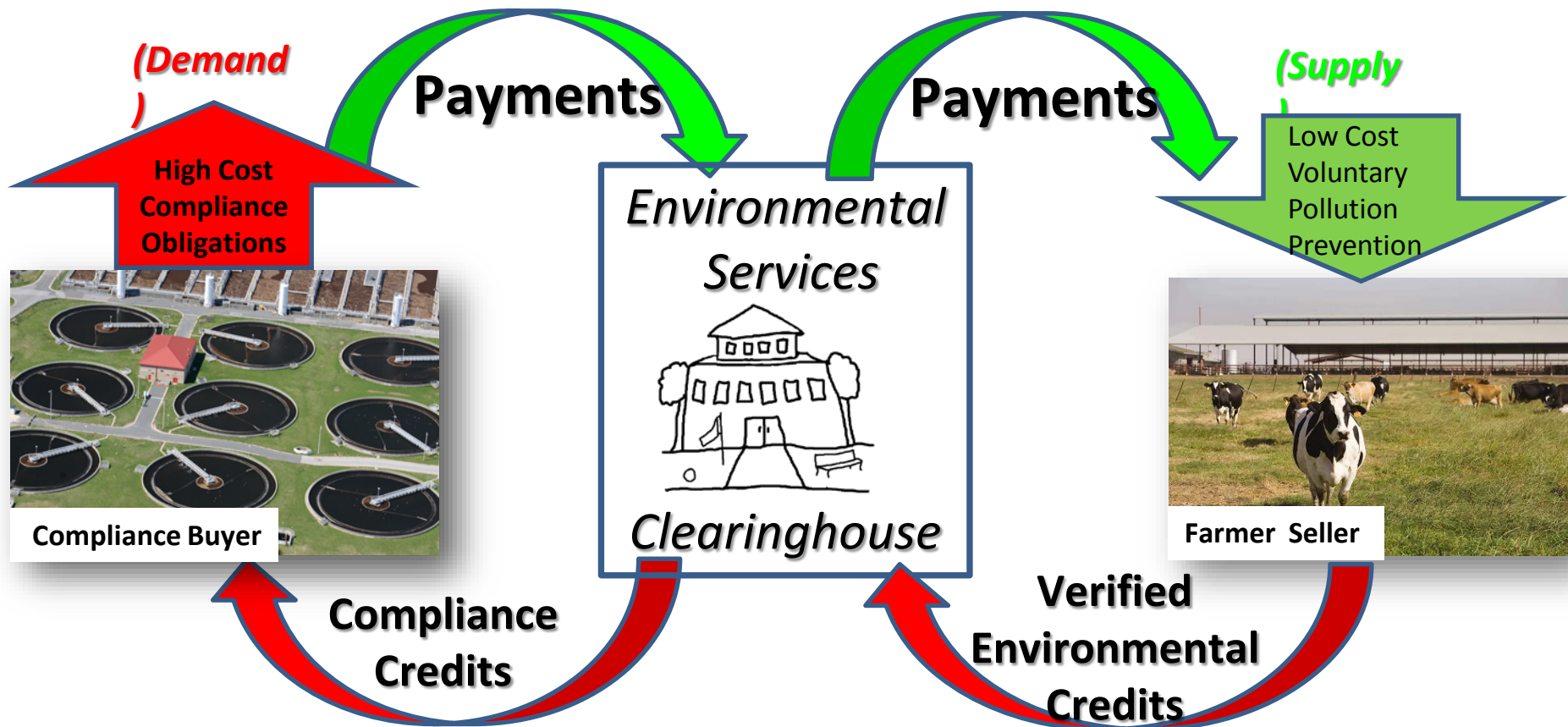
- Mark S. Kieser
- Kieser & Associates, LLC
- Kalamazoo, MI USA

# Watershed-scale Trading Programs





# Creating an Environmental Services Marketplace



# Key Takeaways

- Food and the environment is an “AND” obligation, not an “OR” choice
- Let natural science, social science and sound economics be our guide
- Any improvement is good – A lack of precision is okay so long as we are directionally correct
- Positive drivers drive fast change
- Newtrient understands the path and the dairy industry is committed to success



Ski the spaces . . .

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