SBX2 1 (2008, Perata)

UC Davis Report to State Water Board for its Report to the Legislature

ADDRESSING NITRATE IN CALIFORNIA'S DRINKING WATER,
TULARE LAKE BASIN AND SALINAS VALLEY

Legislative Briefing

March 13, 2012

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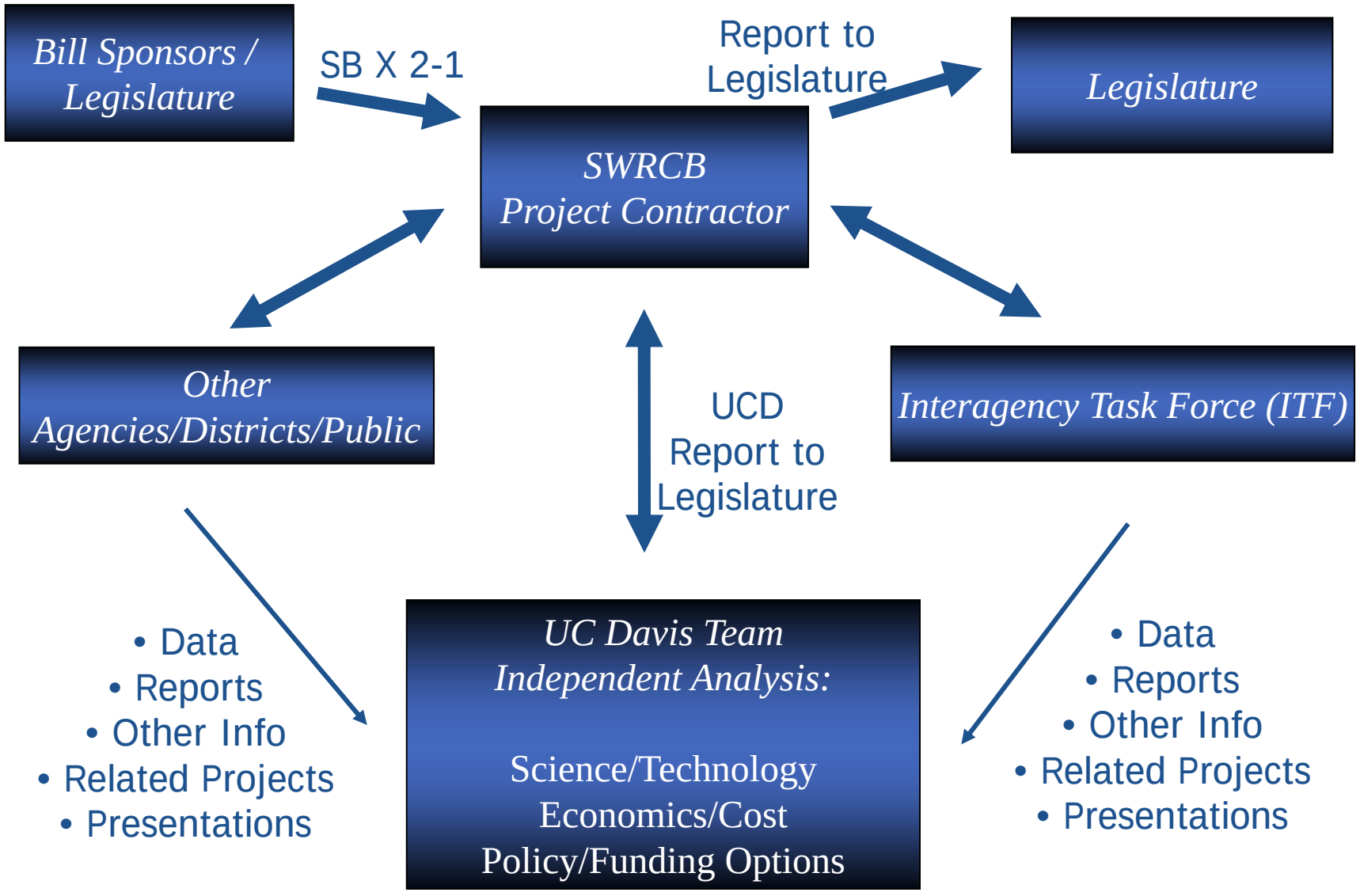
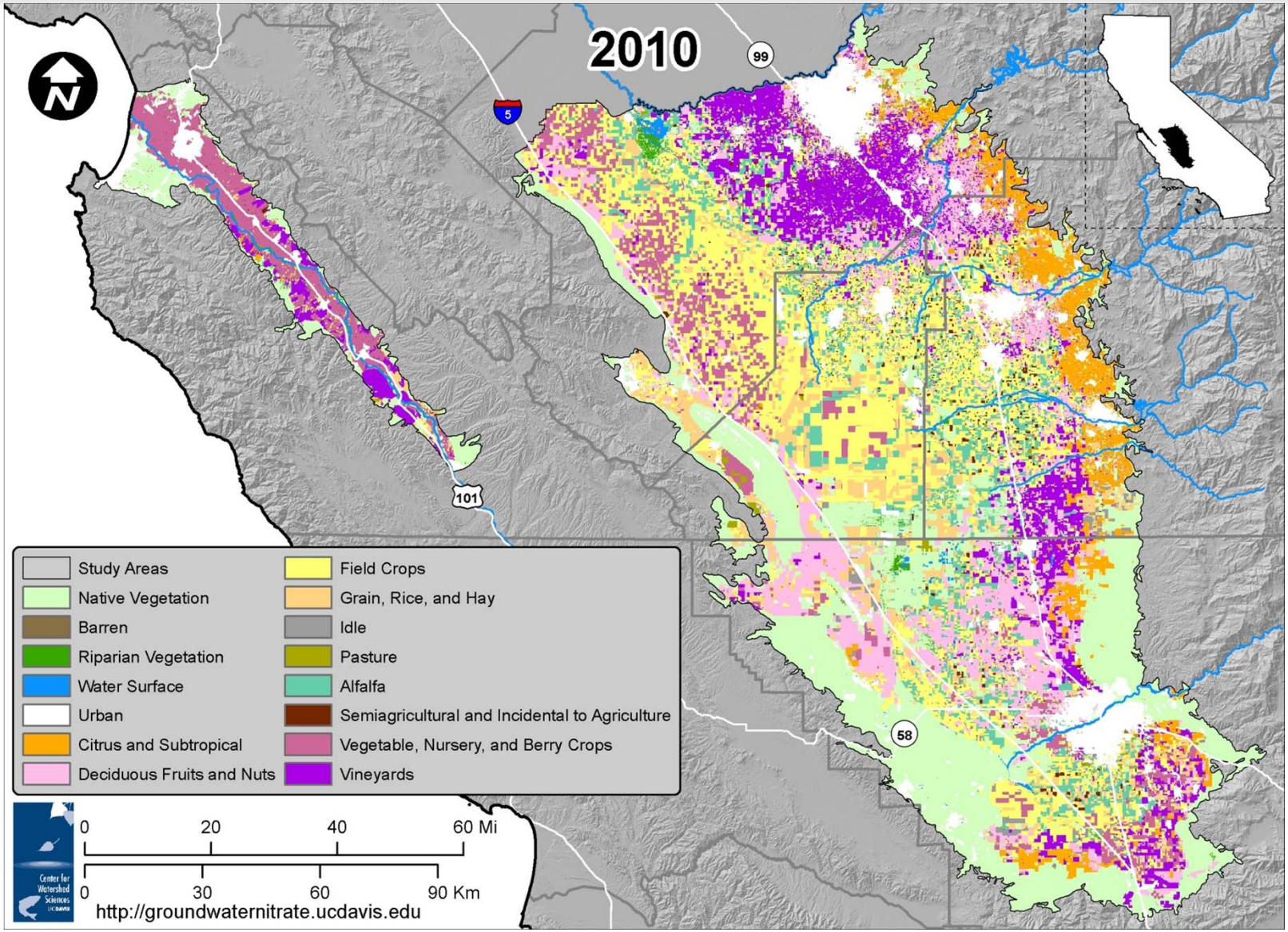
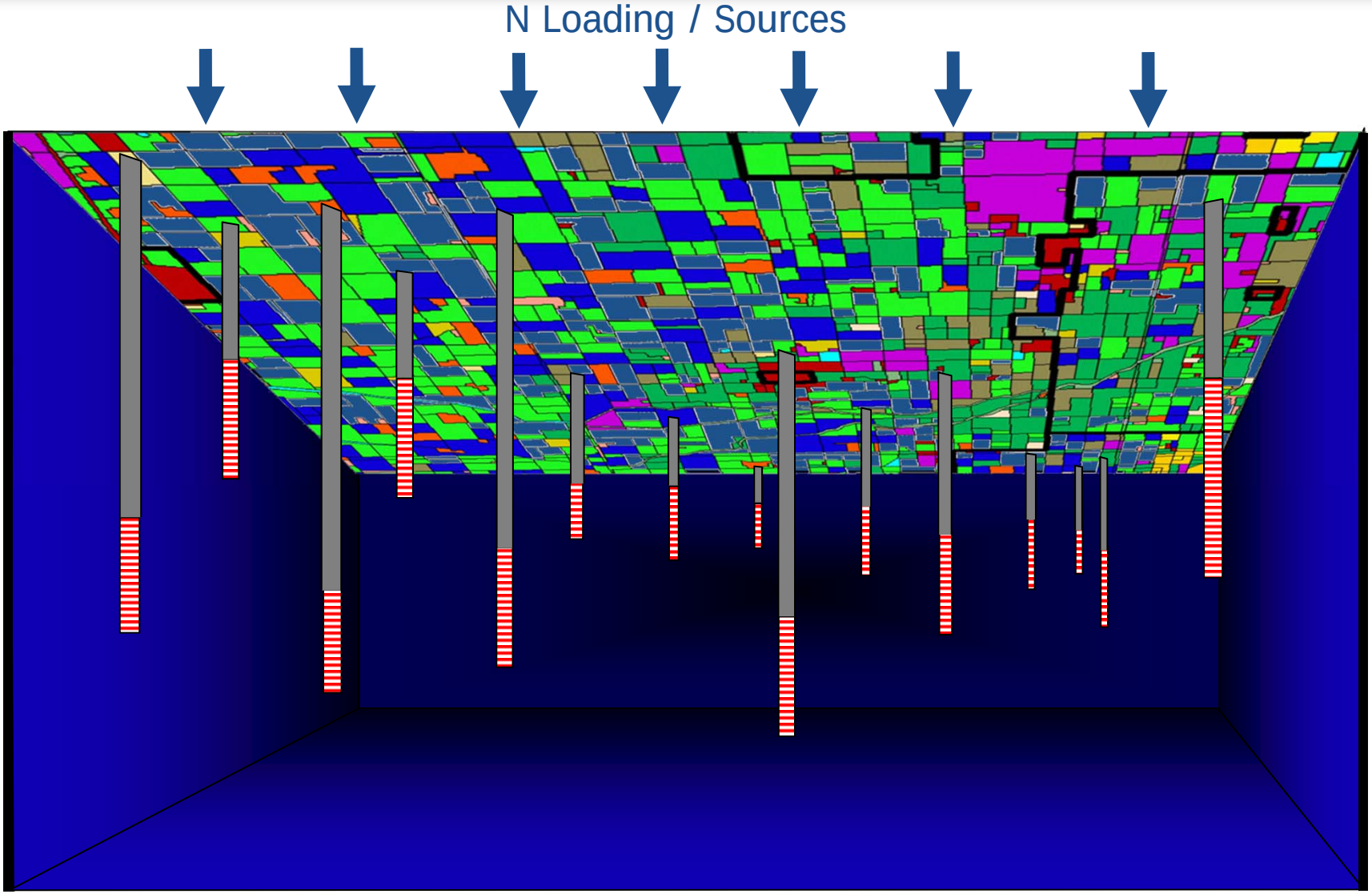
UC Davis Role



Nitrate Contamination Study Area

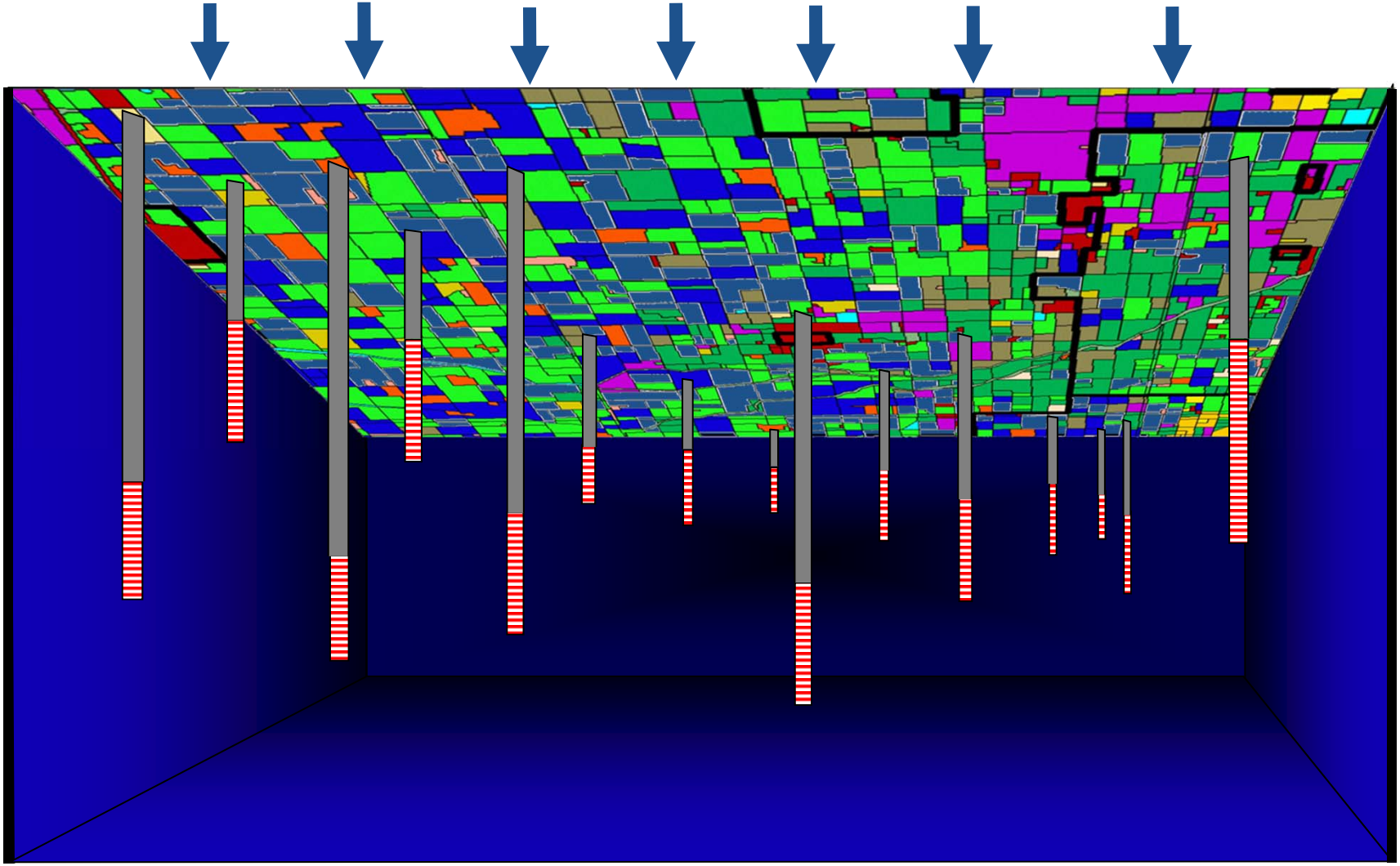


#1: Sources of Nitrate

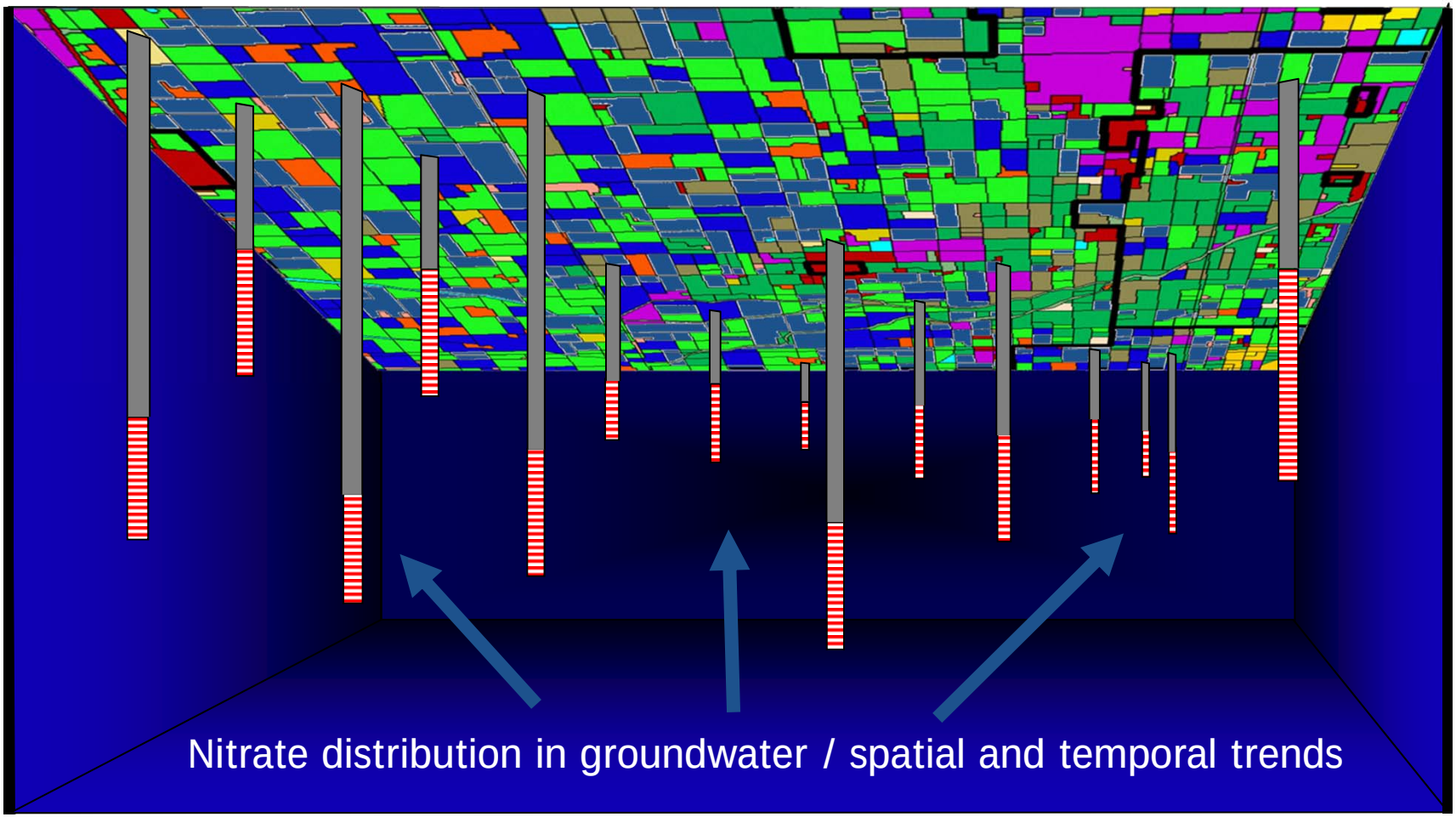


#2: Nitrate Source Reduction

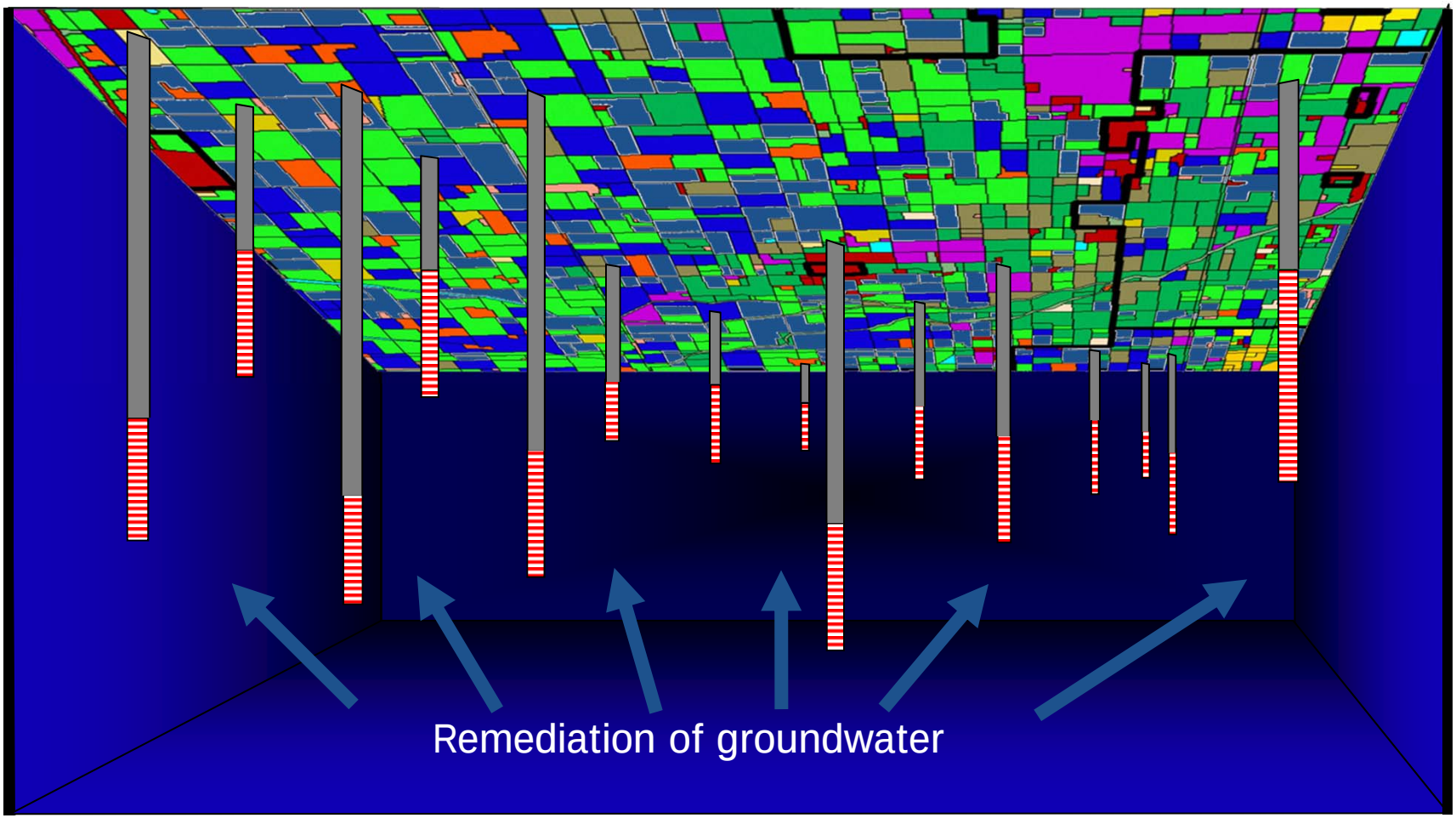
N Loading Reduction Options / Source Control



#3: Groundwater Nitrate

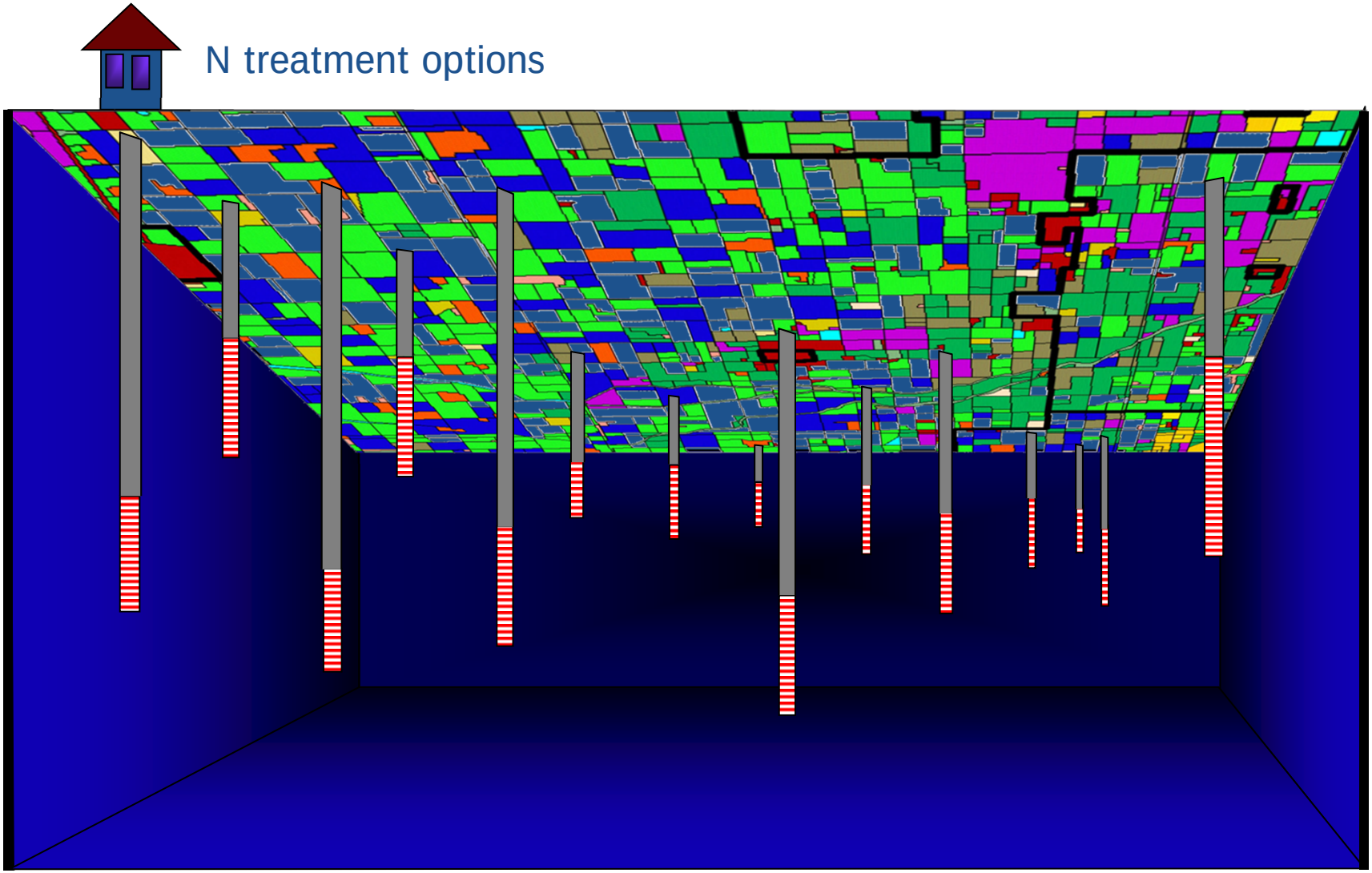


#4: Groundwater Remediation

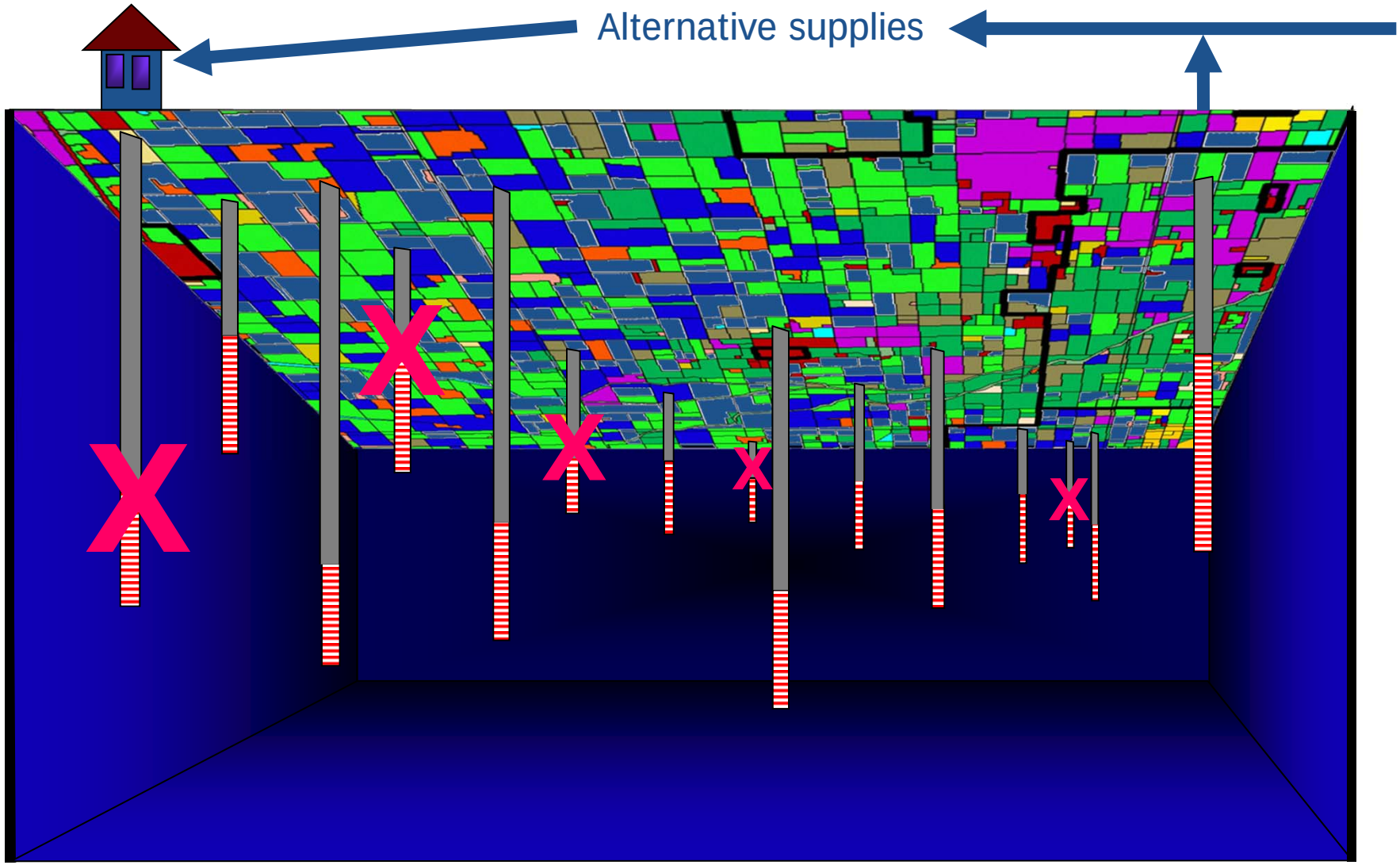


#5: Drinking Water Treatment

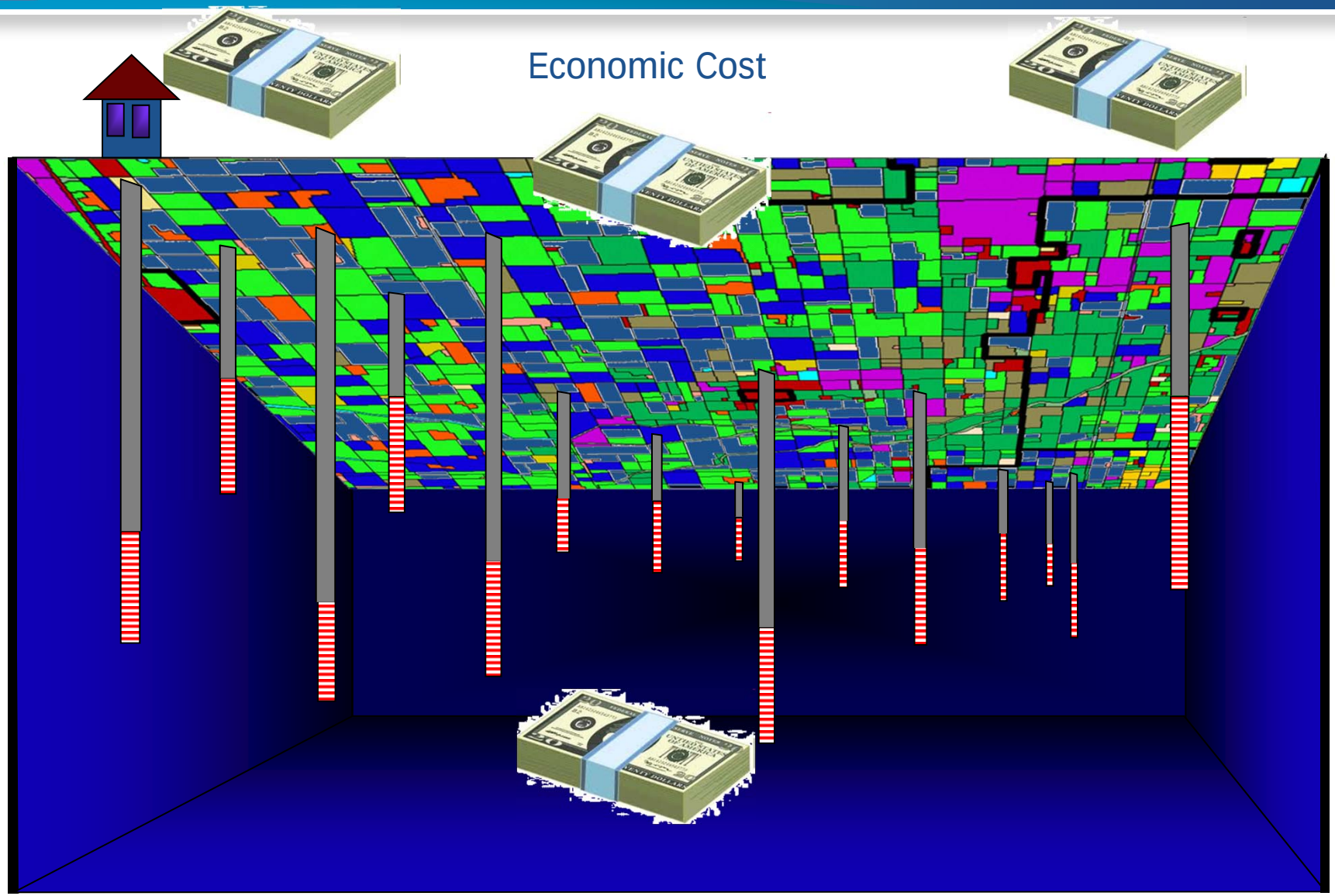
N treatment options



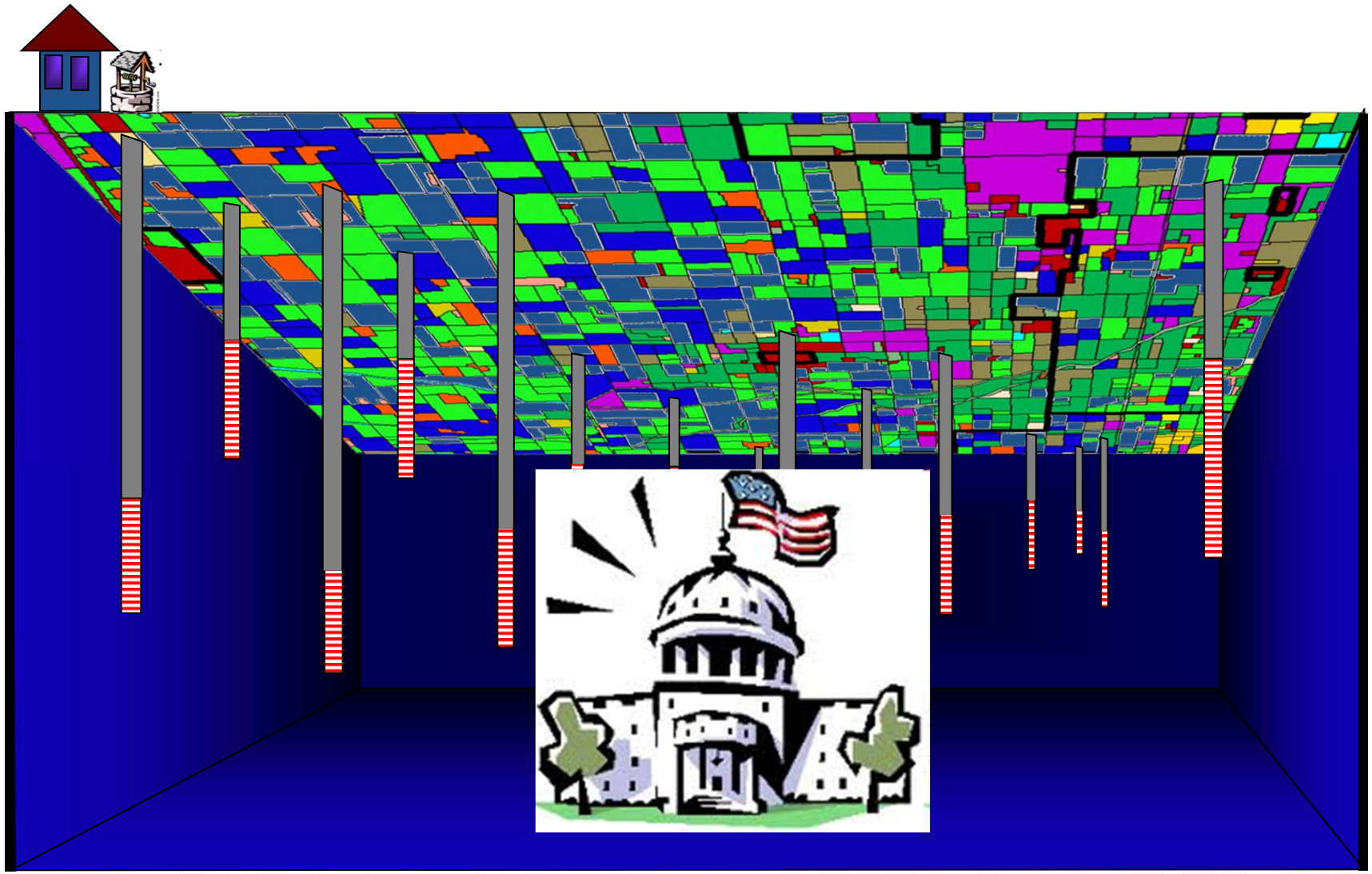
#6: Alternative Supplies



#7: Costs of Actions

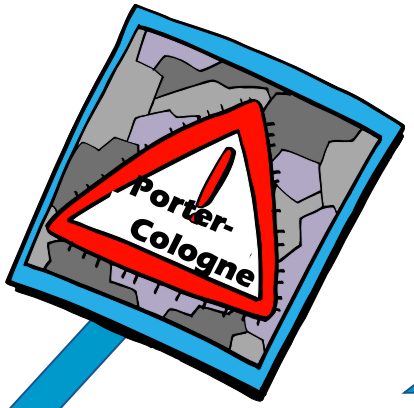


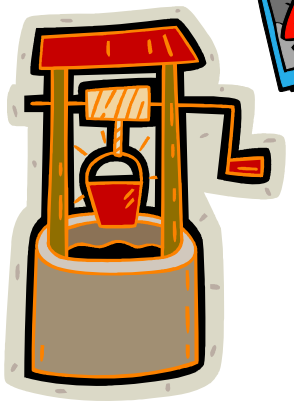
#8: Funding and Policy



Funding and Regulatory Framework

N Loading Reductions





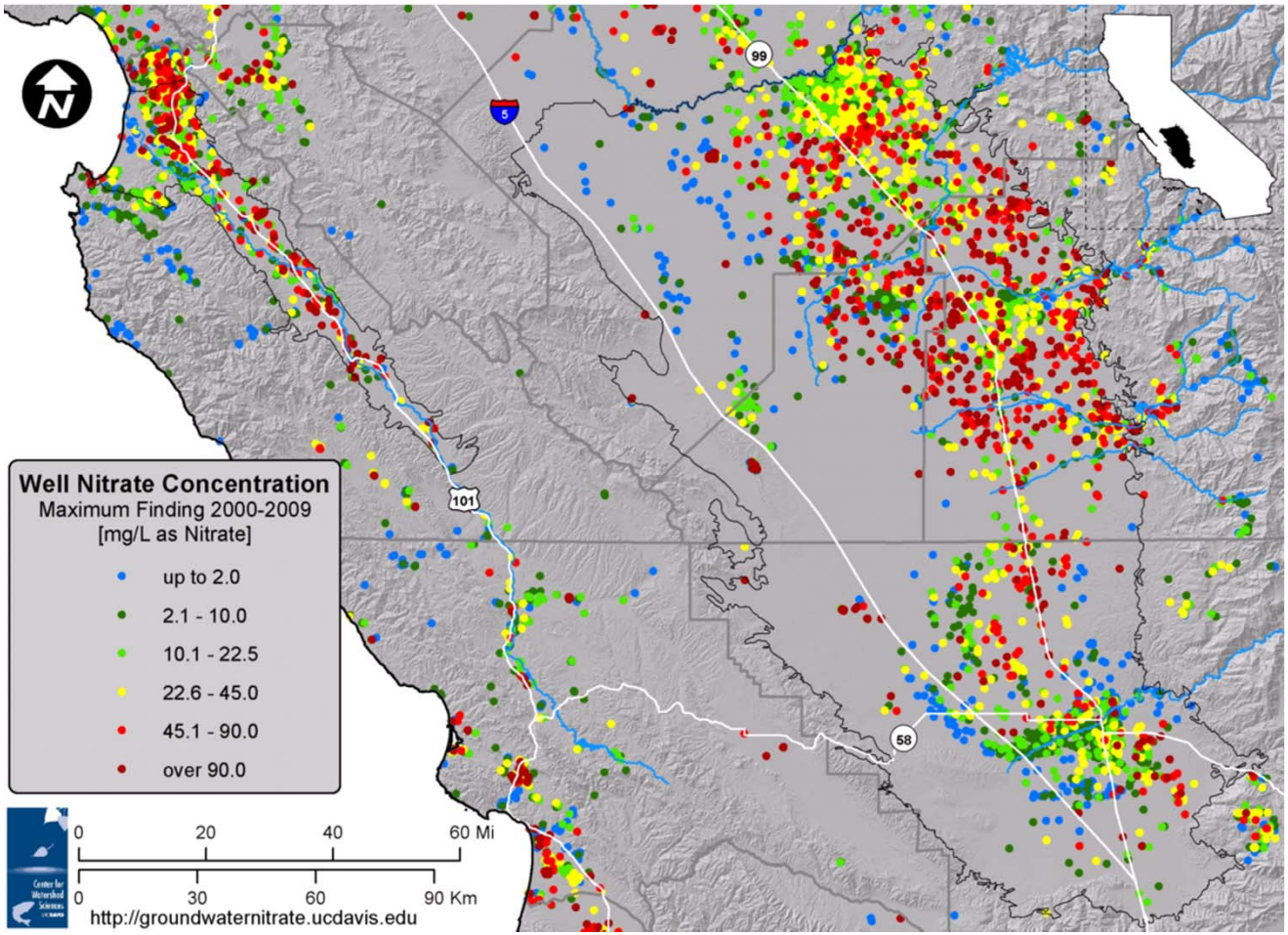
Treatment / Alternative Supply

Decade(s) later

Groundwater Remediation

KEY FINDINGS

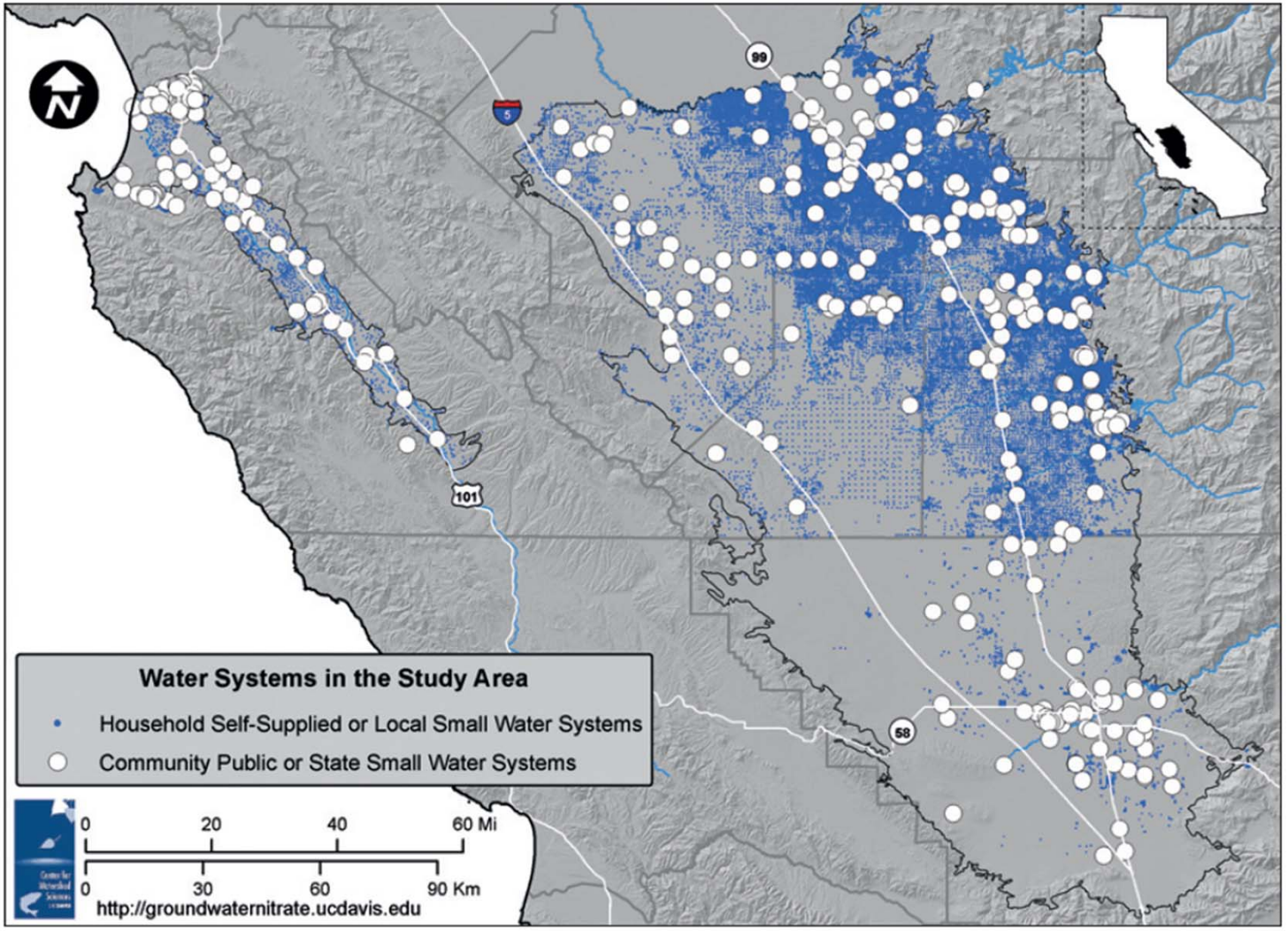
Nitrate Contamination Will Persist



- **Nitrate contamination will worsen for years/decades**
- **Direct remediation of groundwater is extremely costly**

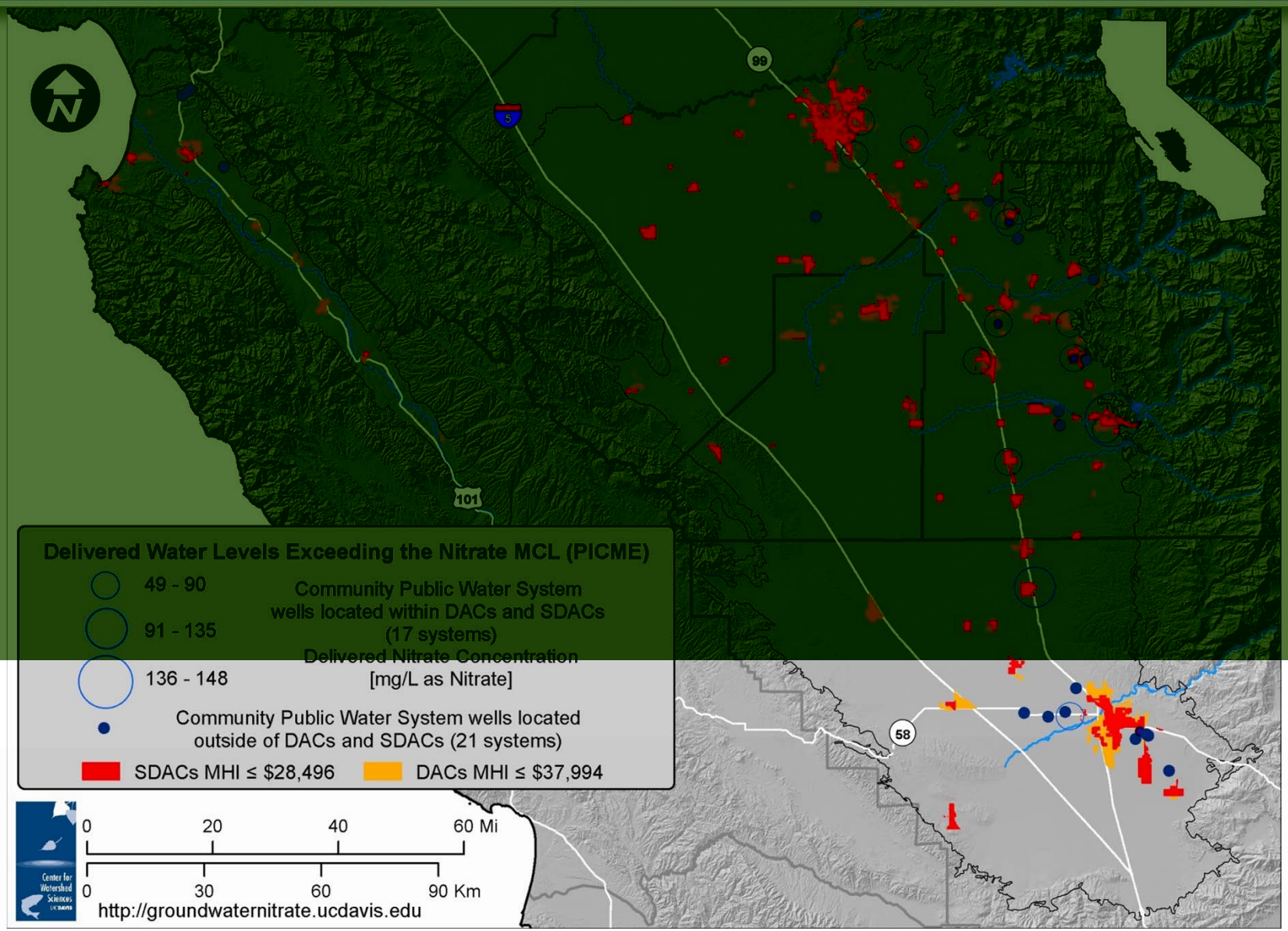
RED: ABOVE THE NITRATE MCL (45 mg/L)
DARK RED: ABOVE TWICE THE NITRATE MCL (90 mg/L)

All Water Systems

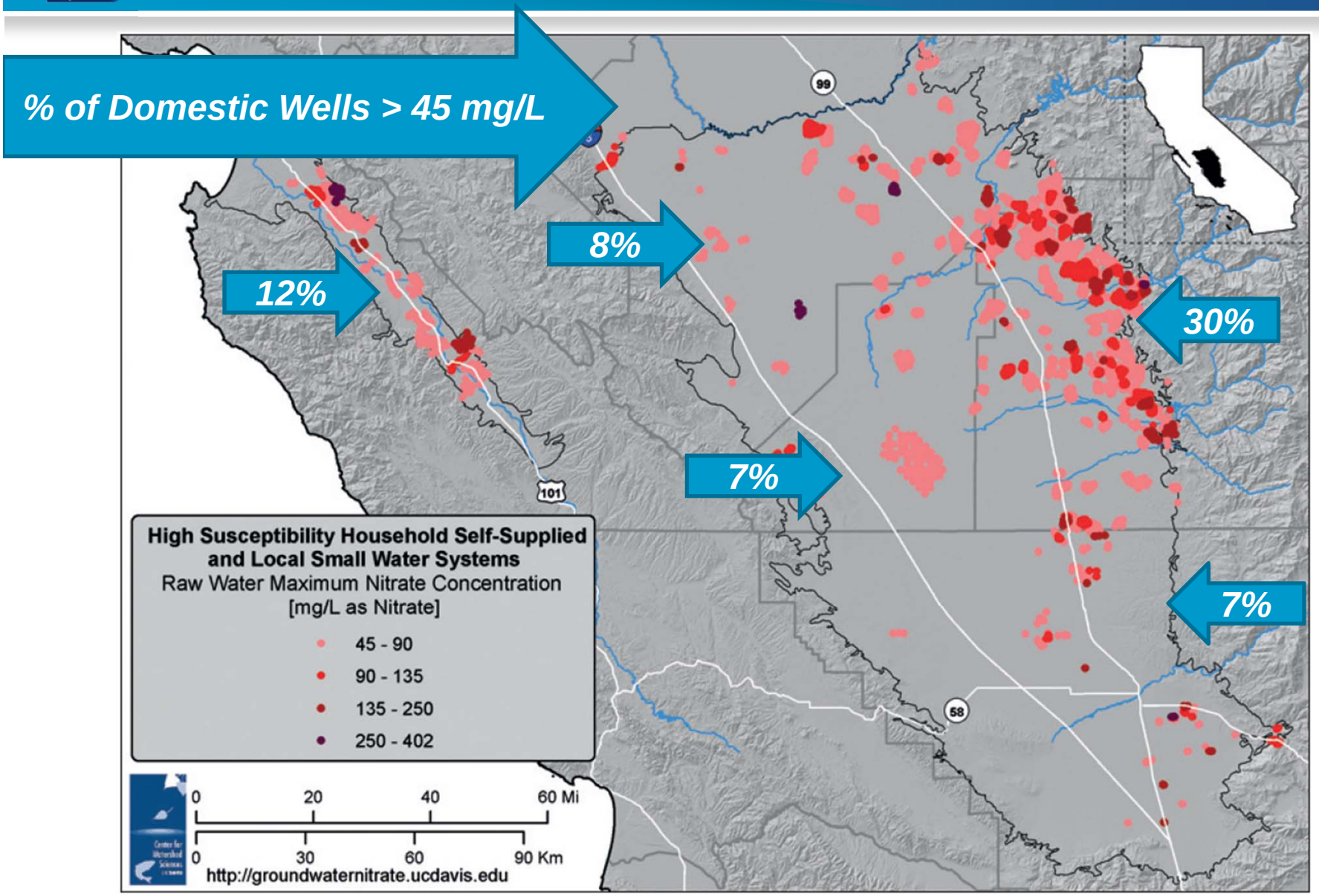


Estimated locations of the area's roughly 400 regulated community public and state-documented state small water systems and of 74,000 unregulated self-supplied water systems. Source: Honeycutt et al. 2012; CDPH PICME 2010.

DACs and Delivered Water Quality



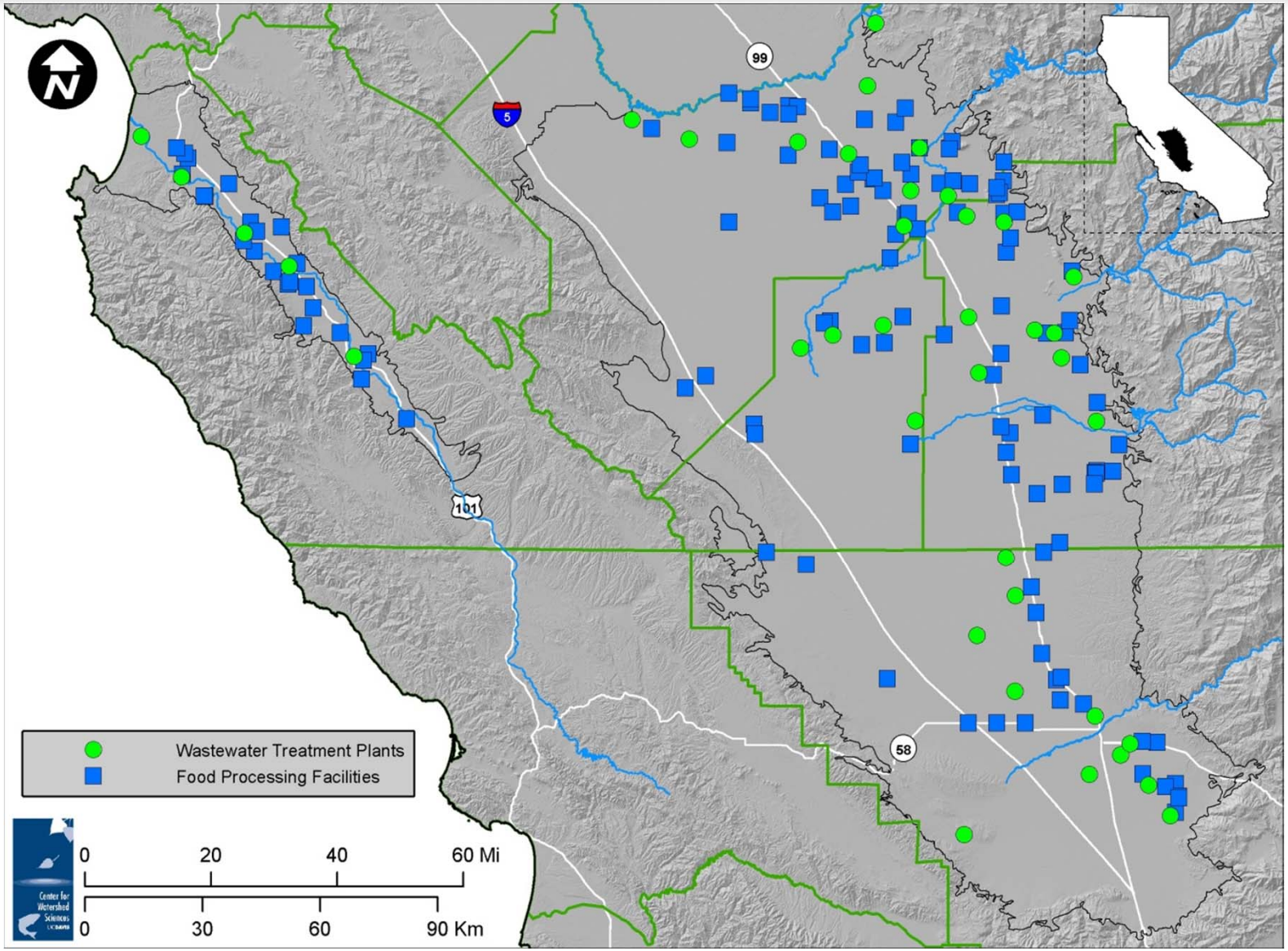
10,000 Affected Private Wells



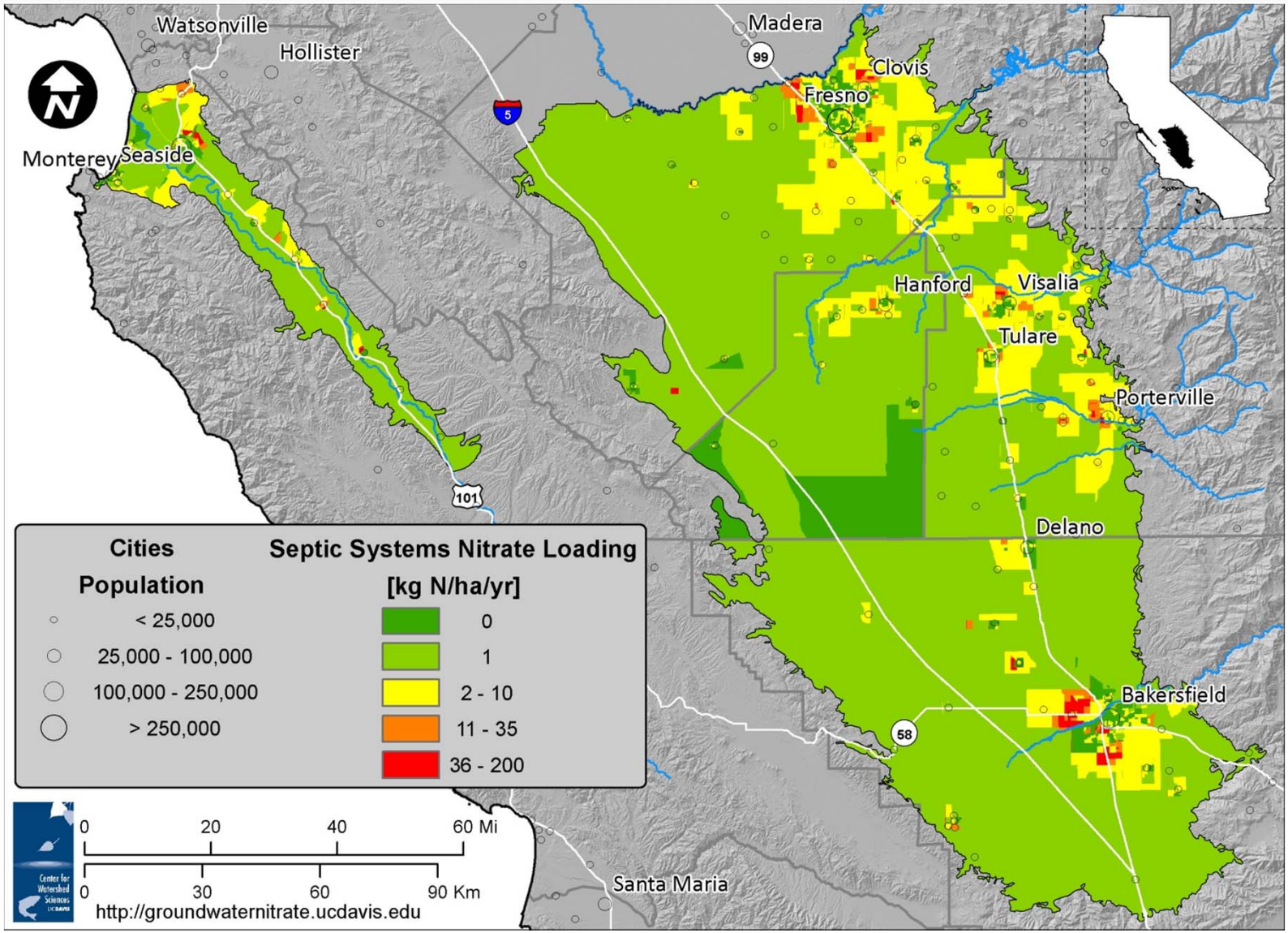
Cost of Safe Drinking Water: $20 - $36 Million / Year (Study Area)

- **Most cost-effective drinking water supply actions:**
  - Blending
  - Treatment (community, point-of-use)
  - Consolidation/regionalization
  - Other alternative supplies
- **Affordability difficult for small communities**
- **Promising revenue sources:**
  - Fee on nitrogen fertilizer use
  - Fee on water use
  - Local compensation under Section 13304 of CA Water Code

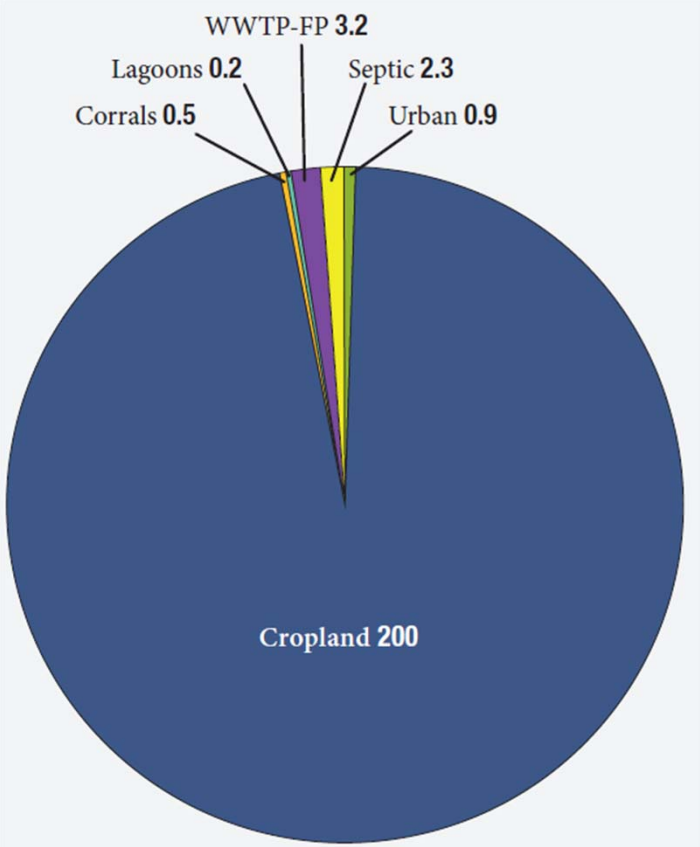
Wastewater Treatment Plants and Food Processors



Septic Systems



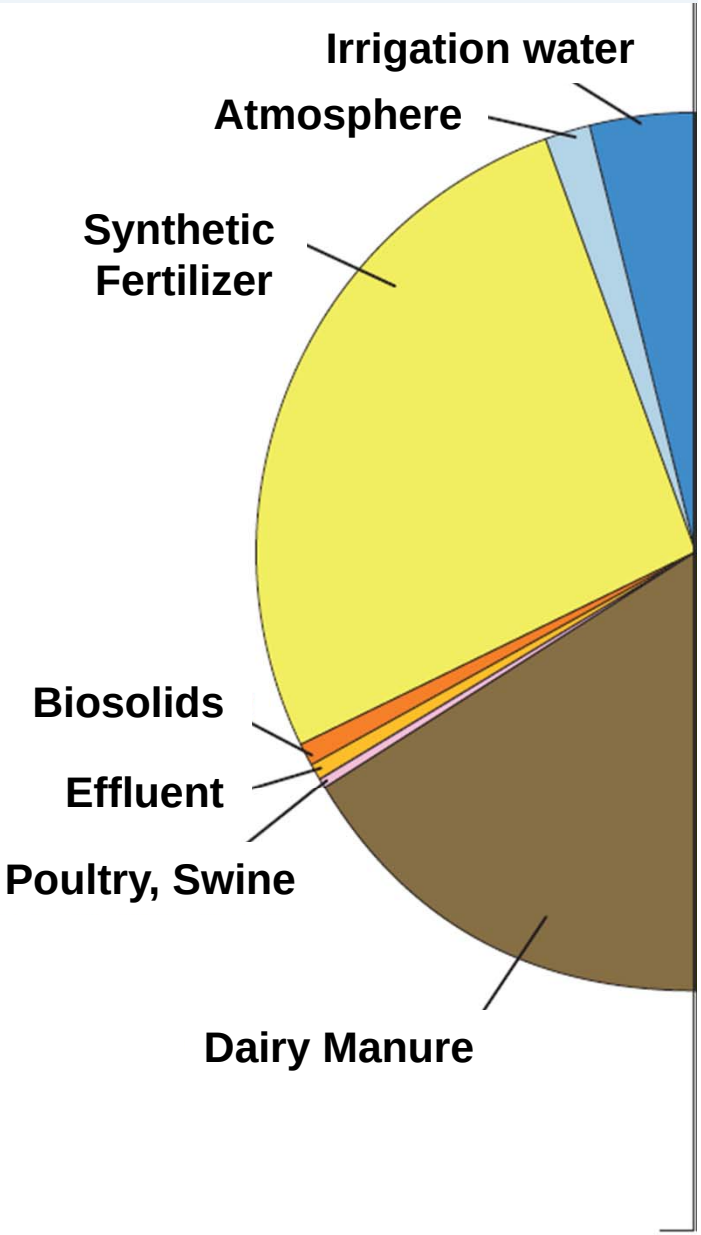
Largest Nitrate Source: Cropland

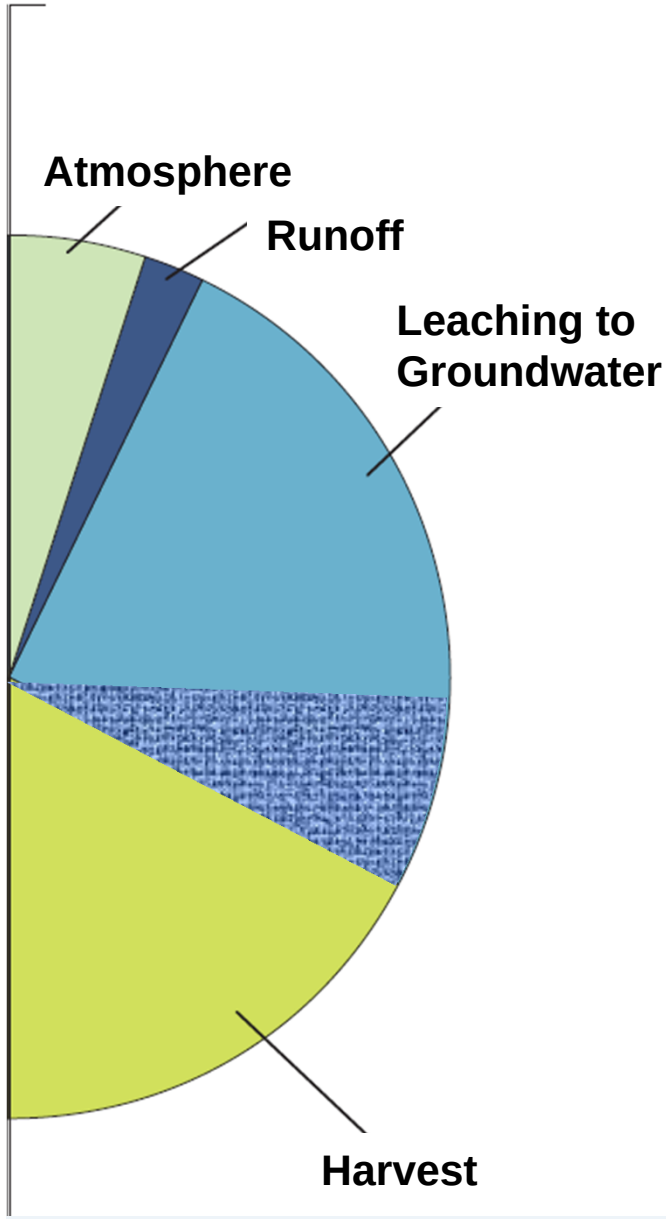


- Largest cropland nitrogen sources:
  - Synthetic fertilizer
  - Animal manure

- Nitrate loading reductions are possible

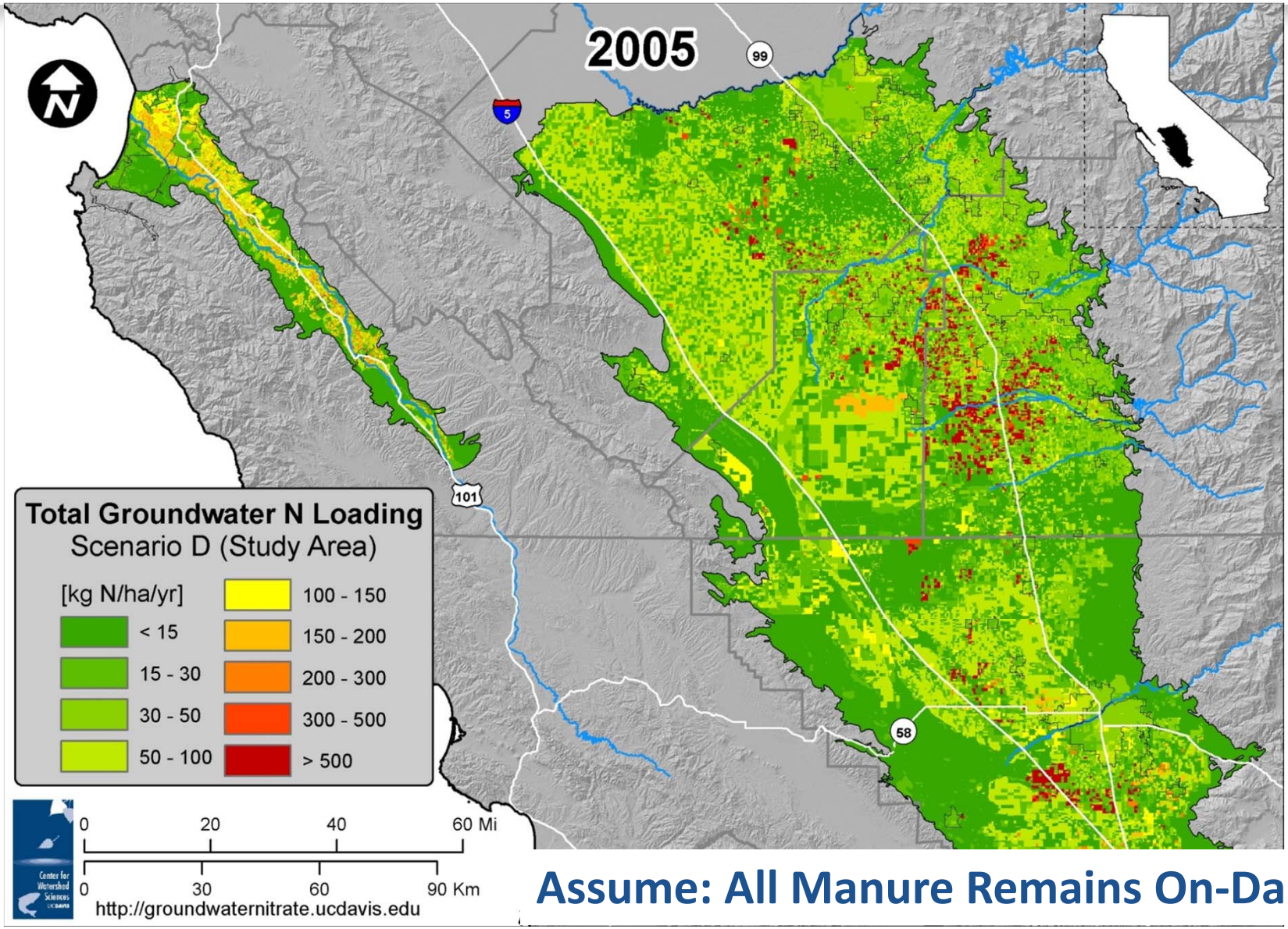
Total Nitrogen Inputs: 420,000 tons N/yr





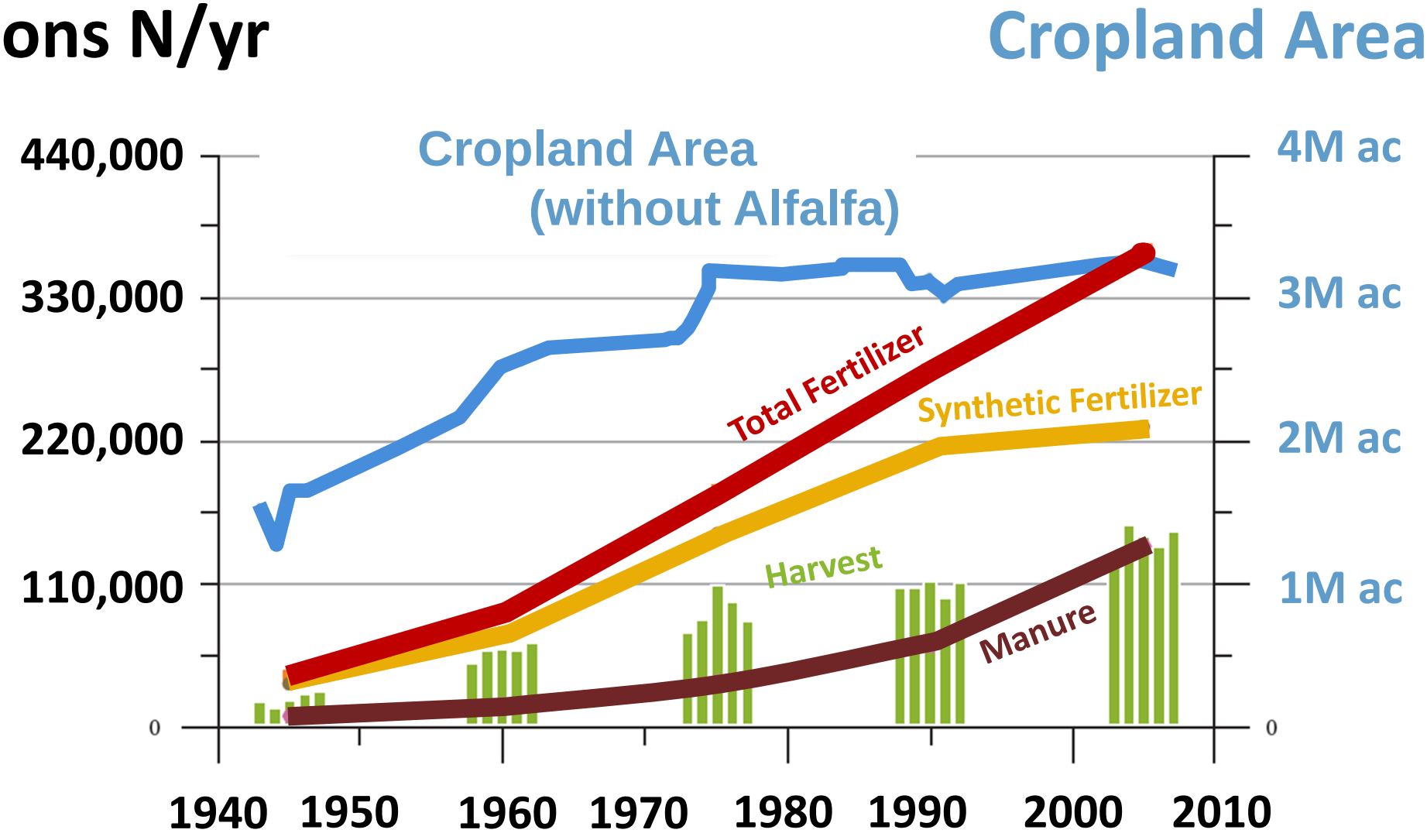
Total Nitrogen Outputs: 420,000 tons N/yr

Estimated Groundwater Nitrate Loading

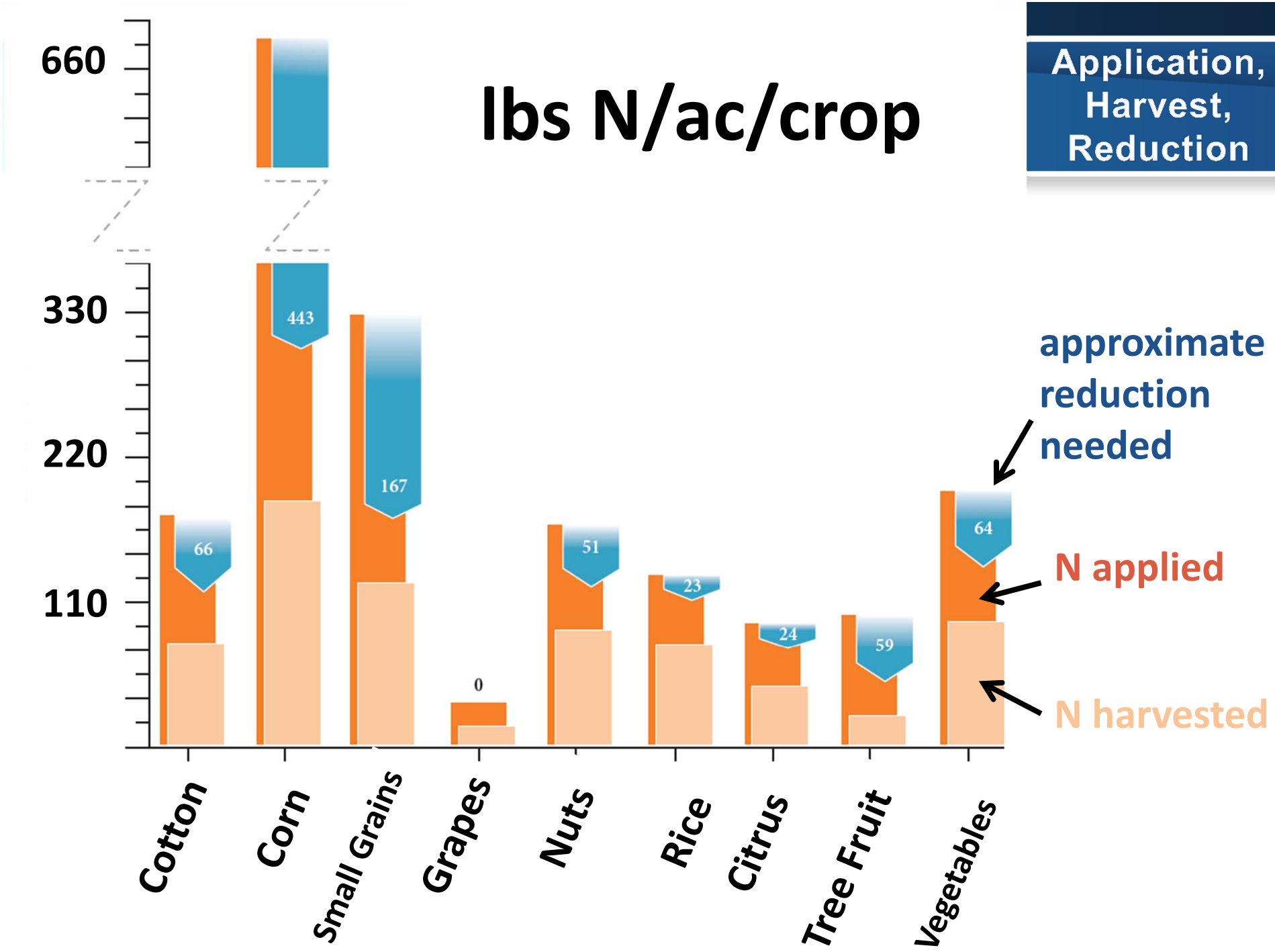


Assume: All Manure Remains On-Dairy

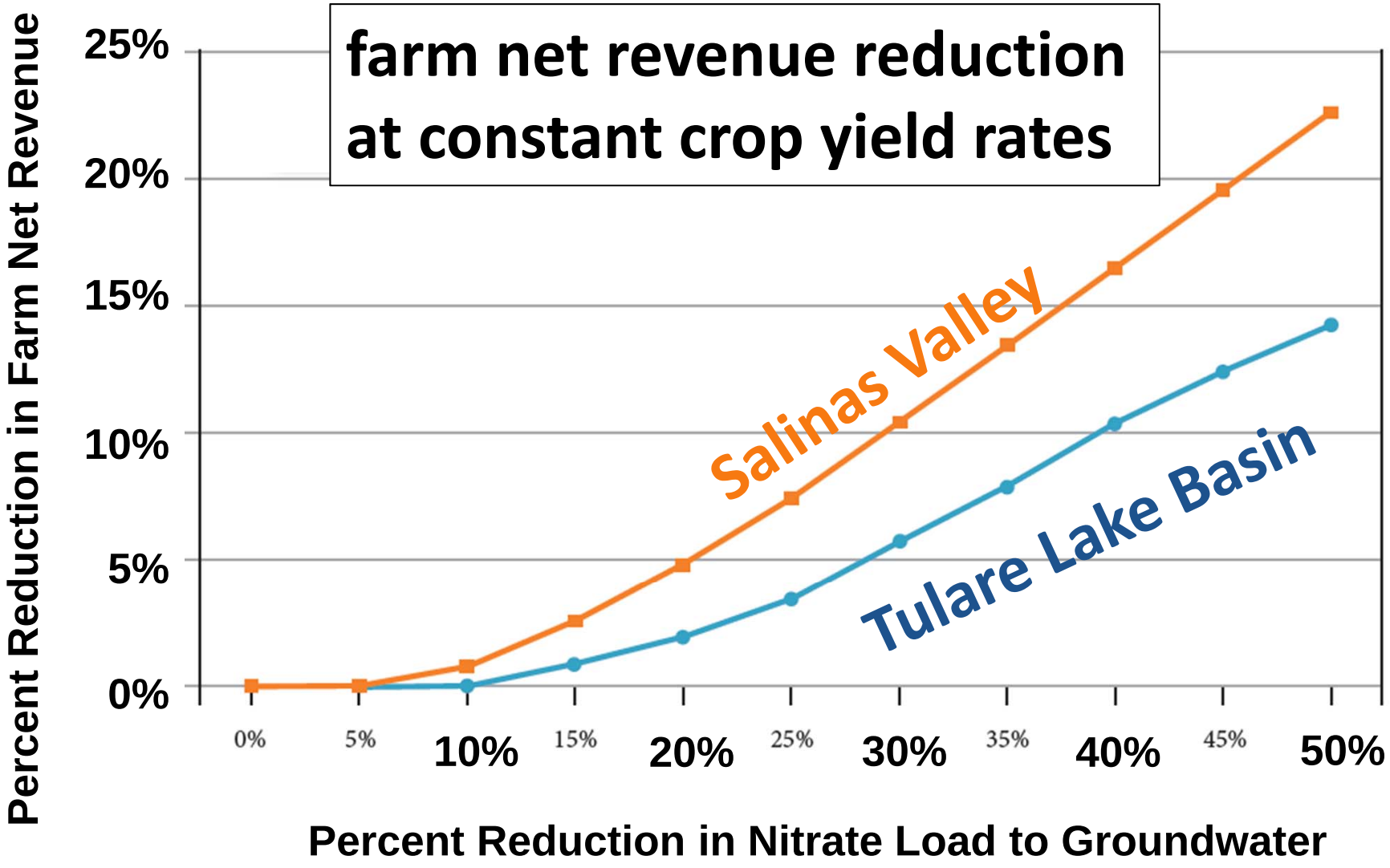
Historic Nitrogen Fluxes



lbs N/ac/crop

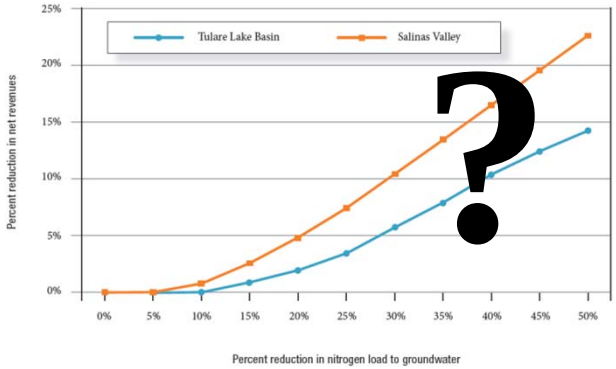

Application, Harvest, Reduction
660
330
220
110
443
167
66
51
23
24
59
64
0
approximate reduction needed
N applied
N harvested
Cotton
Corn
Small Grains
Grapes
Nuts
Rice
Citrus
Tree Fruit
Vegetables

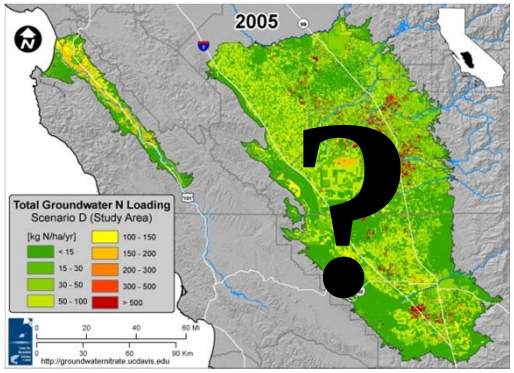
Economics of Source Reduction

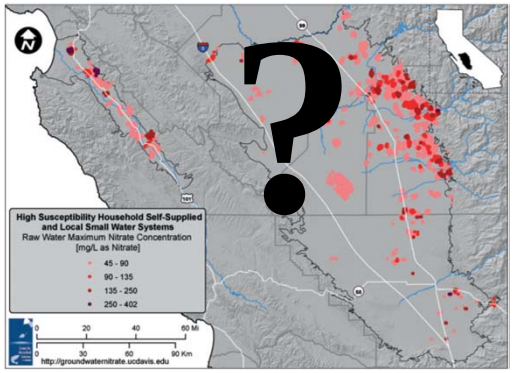


Data for Assessing Public Exposure and Nitrate Sources are Limited

- **Inconsistent, often inaccessible, gaps**
- **Agencies not organized to gather data or make effective use of data**







Key Take Home Messages

- Safe drinking water is the most pressing issue
  - Challenges: organization and funding
- Nitrate loading can be reduced, long-term
  - Challenges: training, research, investment, compliance, and funding
- State needs to collect and organize data to allow for better assessment
  - Challenges: institutional silos, organization, privacy issues/data security, and funding

Promising Actions

- See back page of the “Executive Summary”

Action	Safe Drinking Water	Groundwater Degradation	Economic Cost
No Legislation Required			
Safe Drinking Water Actions			
D1: Point-of-Use Treatment Option for Small Systems +	◆◆		low
D2: Small Water Systems Task Force +	◆		low
D3: Regionalization and Consolidation of Small Systems +	◆◆		low
Source Reduction Actions			
S1: Nitrogen/Nitrate Education and Research +		◆◆◆	low–moderate
S2: Nitrogen Accounting Task Force +		◆◆	low
Monitoring and Assessment			
M1: Regional Boards Define Areas at Risk +	◆◆◆	◆◆◆	low
M2: CDPH Monitors At-Risk Population +	◆	◆	low
M3: Implement Nitrogen Use Reporting +		◆◆	low
M4: Groundwater Data Task Force +	◆	◆	low
M5: Groundwater Task Force +	◆	◆	low
Funding			
F1: Nitrogen Fertilizer Mill Fee		◆◆◆	low
F2: Local Compensation Agreements for Water +	◆◆	◆	moderate
New Legislation Required			
D4: Domestic Well Testing *	◆◆		low
D5: Stable Small System Funds	◆		moderate
Non-tax legislation could also strengthen and augment existing authority.			
Fiscal Legislation Required			
Source Reduction			
S3: Fertilizer Excise Fee	◆◆	◆	moderate
S4: Higher Fertilizer Fee In Areas at Risk	◆	◆	moderate
Funding Options			
F3: Fertilizer Excise Fee	◆◆	◆◆	moderate
F4: Water Use Fee	◆◆	◆◆	moderate