ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Improving our water resources with collaboration and innovation

Illinois Department of Agriculture

Illinois Environmental Protection Agency

Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Photo: Layne Knoche

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# Key Points

- Overview of Illinois NLRS
- Gulf Hypoxia
- Nutrient Strategy Framework
- Illinois Process
  - Science Assessment
  - Policy Workgroup
  - Priorities & Approach
- Implementation of NLRS
- 2021 Biennial Report

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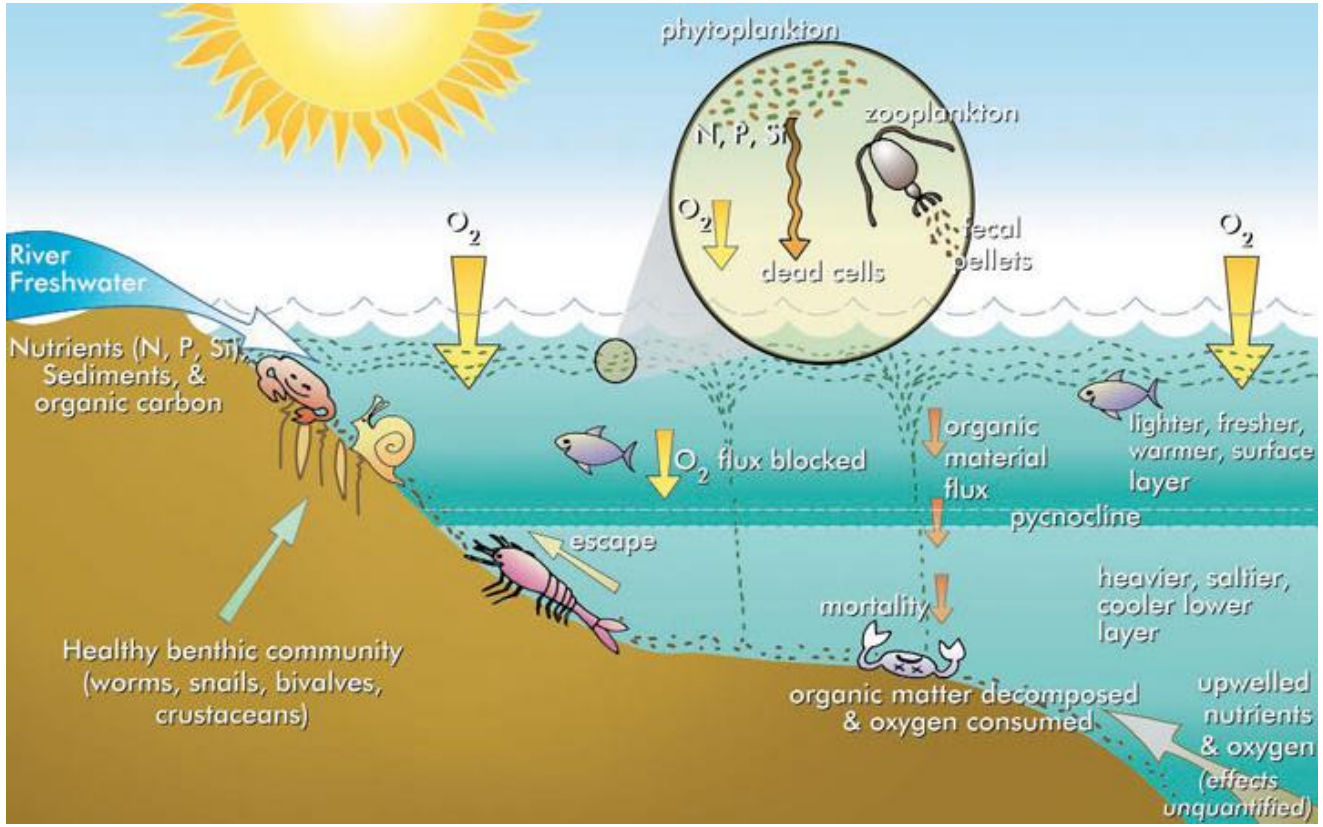
# What causes hypoxia?

- Freshwater discharge and nutrient loading of the Mississippi River
- Nutrient-enhanced primary production, or eutrophication
- Decomposition of biomass by bacteria on the ocean floor
- Depletion of oxygen due to stratification

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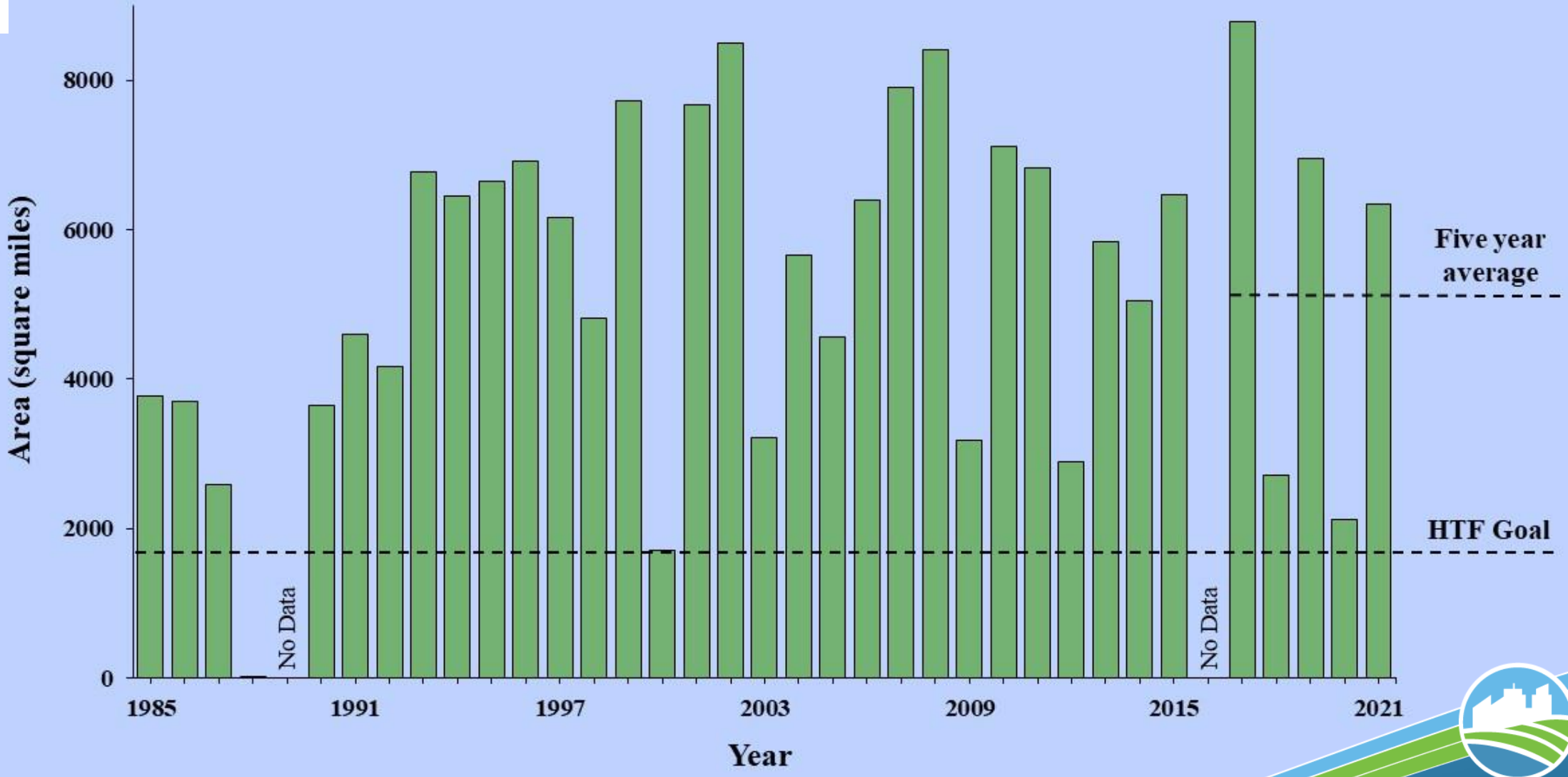
# Bottom-Water Area of Hypoxia 1985-2021

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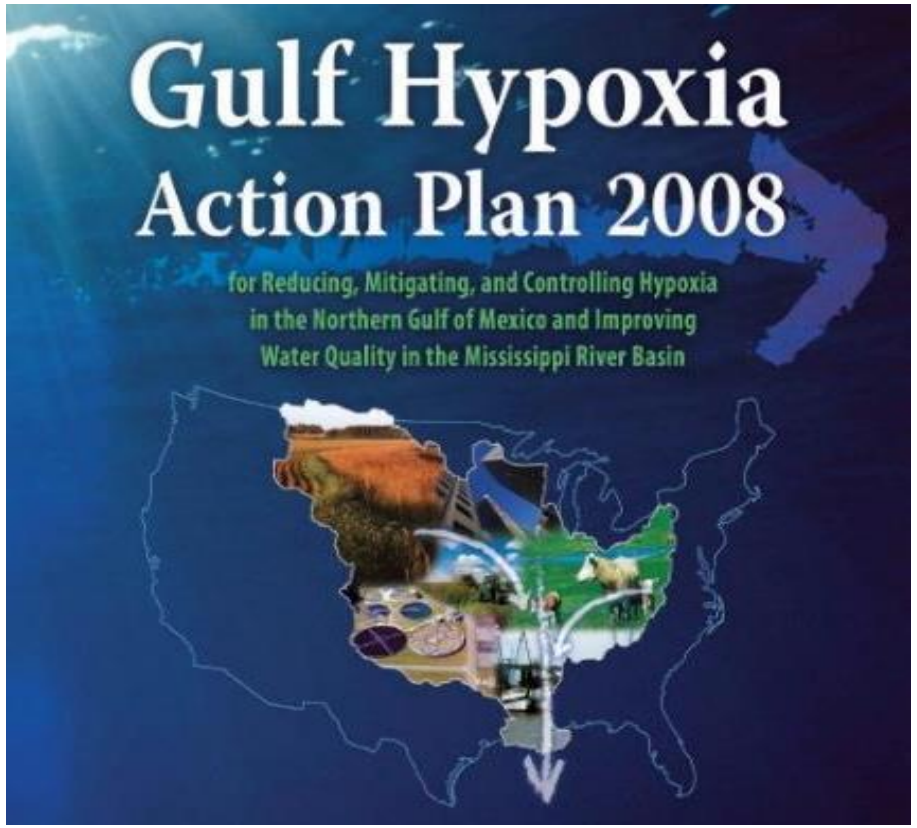
# Gulf Hypoxia Task Force Study

- **Goal:**
  - Reduce Hypoxic Zone 1,930 sq mi
  - Reduce Nutrient Loading to Gulf of Mexico
  - **Reduce Total Phosphorus and Total Nitrogen by 45%**
- **Plan was later amended**
  - 20% reduction by 2025
  - 45% reduction by 2035

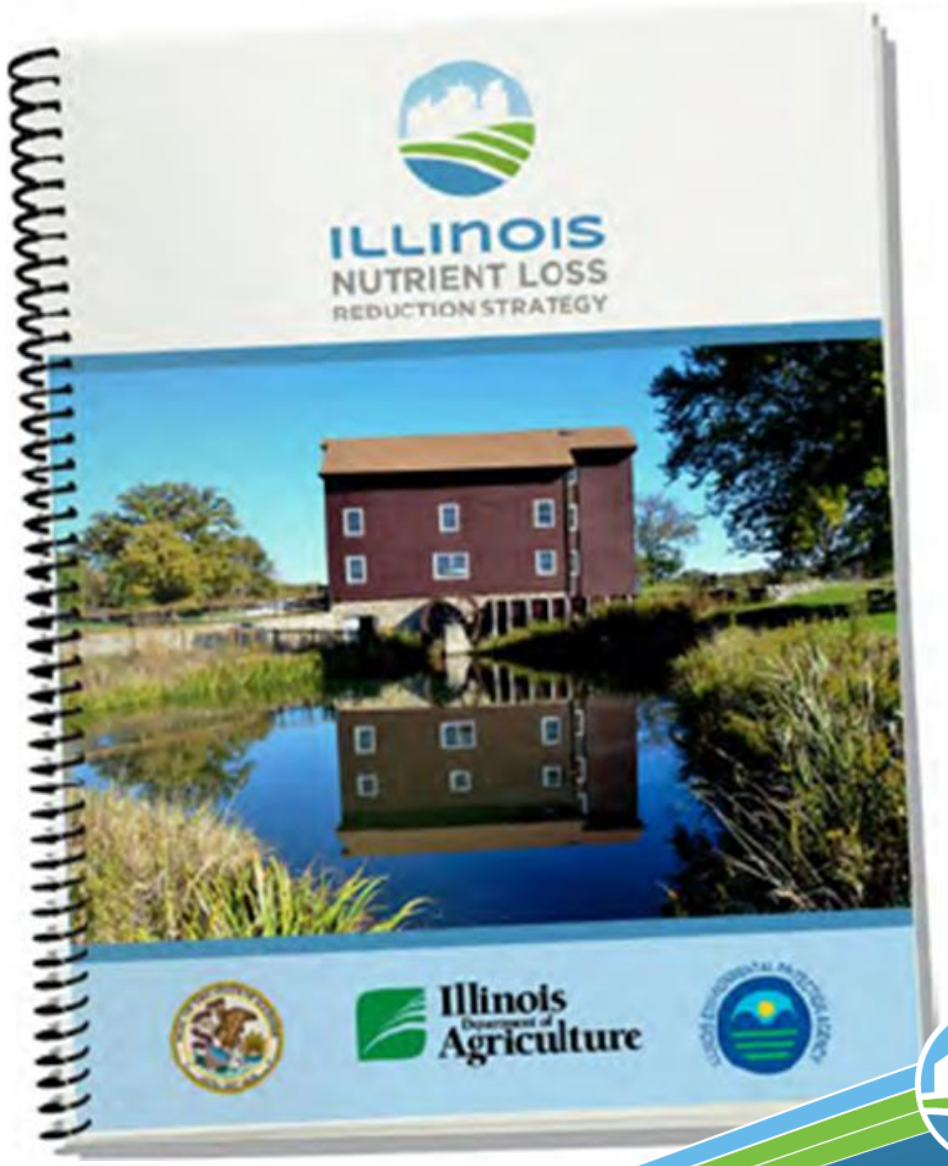


# USEPA Nutrient Strategy Elements

1. Prioritize watersheds for nitrogen and phosphorus loading reductions
2. Set watershed load reduction goals based upon best available information
3. Ensure effectiveness of point source permits in priority sub-watersheds
4. Agricultural Areas
5. Stormwater (non-MS4) and Septic Systems
6. Accountability and verification measures
7. Annual reporting of implementation and biennial reporting of load reductions
8. Develop work plan and schedule for numeric nutrient criteria development

# Illinois Nutrient Loss Reduction Strategy

**NLRS REPORT RELEASED JULY 2015**

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# Illinois Nutrient Loss Reduction Strategy

**GOALS**

Establishes 45% Reduction of Nitrogen and Phosphorus

**Interim Milestone—2025**

25% Reduction in Phosphorus Loads

15% Reduction in Nitrogen Loads

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# Illinois Nutrient Loss Reduction Strategy

Addresses nutrient loads from:

**Agriculture**

**Point Sources**
**(wastewater treatment facilities)**

**Urban Stormwater**

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# Illinois NLRS Science Assessment

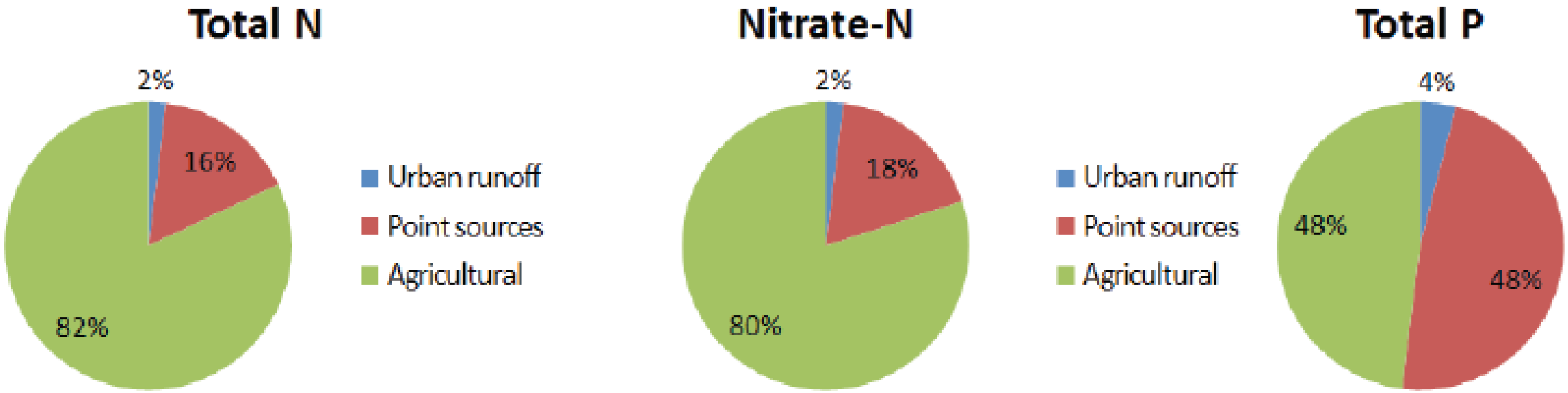


**Figure 2.1. The proportion of nitrate and total phosphorus lost to the Mississippi River by source.**

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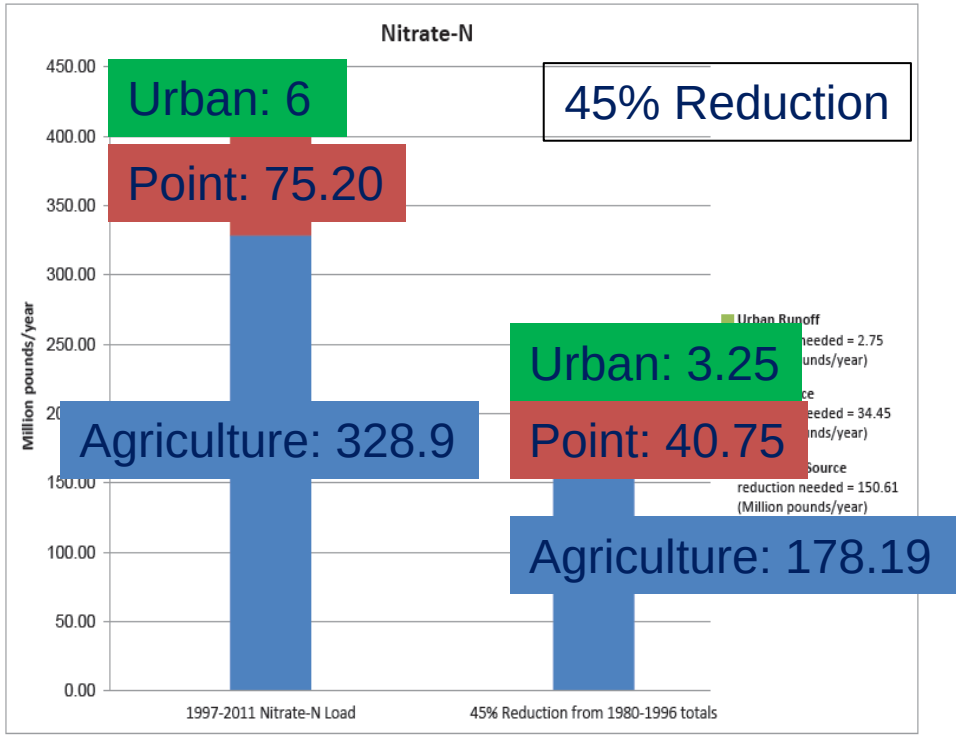
# Nutrient Sources (Million Pounds Per Year)

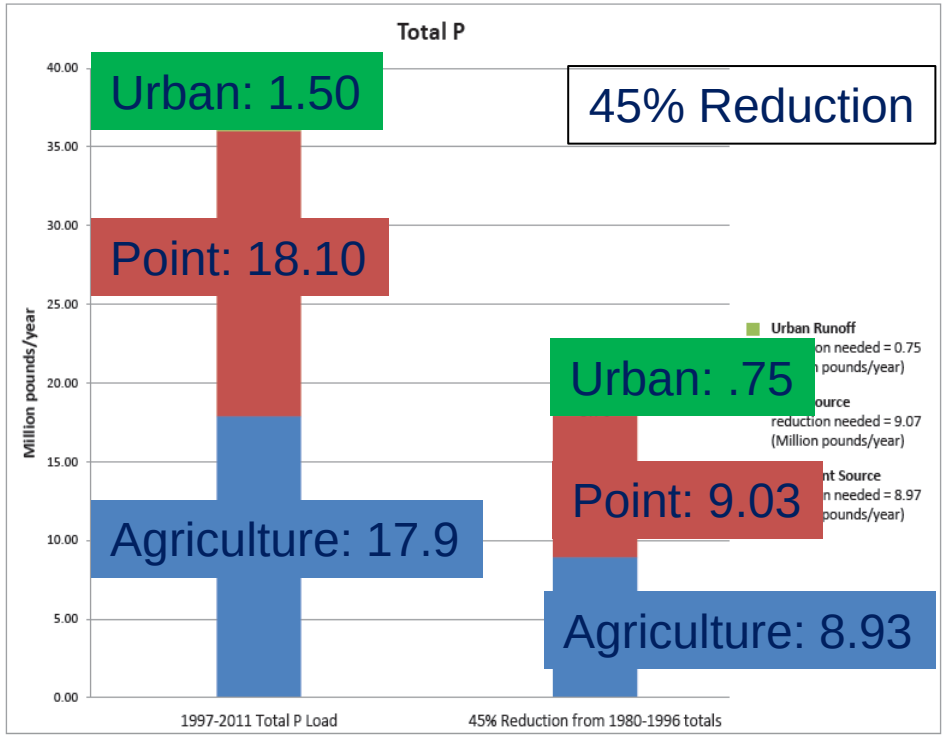



Total: 410 M lbs/yr

Baseline

Total: 222 M lbs/yr

Goal




Total: 37.5 M lbs/yr

Baseline

Total: 18.7M lbs/yr

Goal

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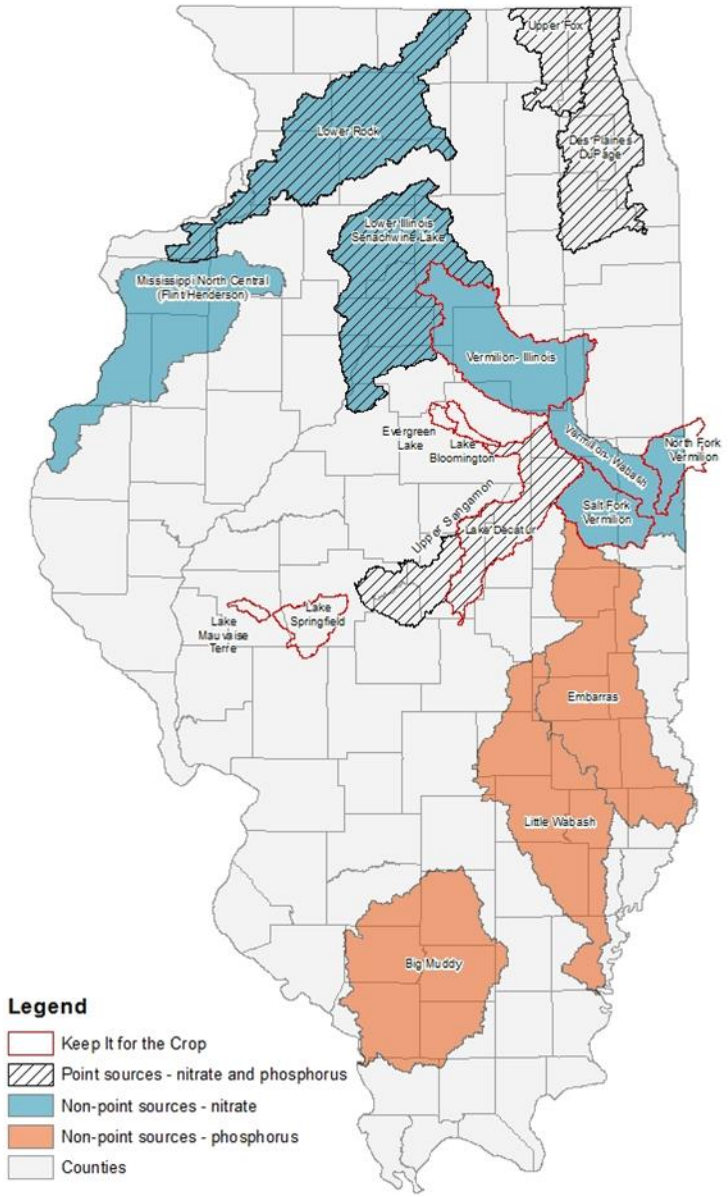
# NLRS- Priority Watersheds




Prioritized by:

- Total loads (N or P)
- Local water quality concerns
- Active watershed plans

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# Example Statewide Implementation Scenarios

| Name | Combined Practices and/or Scenarios | Nitrate-N (% reduction) | Total P (% reduction) | Cost of Reduction ($/lb) | Annualized Costs (million $/year) |
|---|---|---|---|---|---|
| NP1 | MRTN, fall to spring, bioreactors 50%, wetlands 25%, no P fert. on 12.5 million ac above STP maintenance, reduced till on 1.8 million ac conv. till eroding > T, buffers on all applicable lands, point source to 1.0 mg TP/L and 10 mg nitrate-N/L | 35 | 45 | ** | 383 |
| NP2 | MRTN, fall to spring, bioreactors 50%, no P fert. on 12.5 million ac above STP maintenance, reduced till on 1.8 million ac conv. till eroding > T, cover crops on all CS, point source to 1.0 mg TP/L and 10 mg nitrate-N/L | 45 | 45 | ** | 810 |
| NP3 | MRTN, fall to spring, bioreactors 15%, no P fert. on 12.5 million ac above STP maintenance, reduced till on 1.8 million ac conv. till eroding > T, cover crops on 87.5% of CS, buffers on all applicable lands, perennial crops on 1.6 million ac >T, and 0.9 million additional ac. | 45 | 45 | ** | 791 |
| NP4 | MRTN, fall to spring N, bioreactors 35%, no P fert. on 12.5 million ac above STP maintenance, reduced till on 1.8 million ac conv. till eroding > T, buffers on 80% of all applicable land | 20 | 20 | ** | 48 |
| NP5 | MRTN, fall to spring N, bioreactors 30%, wetlands 15%, no P fert. on 12.5 million ac above STP maintenance, reduced till on 1.8 million ac conv. till eroding > T, point source to 1.0 mg TP/L and 10 mg nitrate-N/L on 45% of discharge | 20 | 20 | ** | 66 |
| NP6 | MRTN, fall to spring N, no P fert. on 12.5 million ac above STP maintenance, reduced till on 1.8 million ac conv. till eroding > T, cover crops on 1.6 million ac eroding >T and 40% of all other CS | 24 | 20 | ** | 244 |

# NLRS Implementation Recommendations: Agriculture

| Practice Type | Nitrate | Total Phosphorus |
|---|---|---|
| In Field Practices | **Nitrogen Management** (MRTN, Inhibitors, Split Applications)<br>**Cover Crops** | **Reduced Tillage** (no-till, strip till)<br>**Nutrient Management**<br>**Cover Crops** |
| Edge of Field Practices | **Woodchip Bioreactors**<br>**Stream Buffers** (non-tile drained land)<br>**Constructed Wetlands** | **Stream Buffers** |
| Land Use Change | **Perennial/Energy Crops** | **Perennial/Energy Crops** |

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# NLRS Implementation Recommendations: Urban Stormwater

- Municipal Separate Storm Sewer System (MS4) Permits
- Prioritize Green Infrastructure
- Technical and Financial Assistance for Green Infrastructure
- Urban Streambank Stabilization and Restoration
- Encourage Stormwater Collaboratives

Photo: Forest Preserve District of DuPage County

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# NLRS Implementation Recommendations: Point Sources

- National Pollutant Discharge Elimination System (NPDES) Permits
- Administered by Illinois EPA
- Total Phosphorus limits for major (> 1 MGD) wastewater treatment facilities
- Feasibility and Optimization studies for nutrient removal
- Nutrient Assessment Reduction Plans
  - 1.0 mg/L total phosphorus
  - 0.5 mg/L total phosphorus
- Encourage Urban Watershed Planning Groups

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# NLRS Committee Structure

- Policy Working Group
- Communications Subgroup
- Agriculture Water Quality Partnership Forum
  - Technical Subgroup
- Urban Stormwater Working Group
  - Education Subgroup
  - Tracking Subgroup
- Performance Benchmark Working Group
- Nutrient Monitoring Council
- Nutrient Science Advisory Committee

  (Has completed its objective and no longer meets)

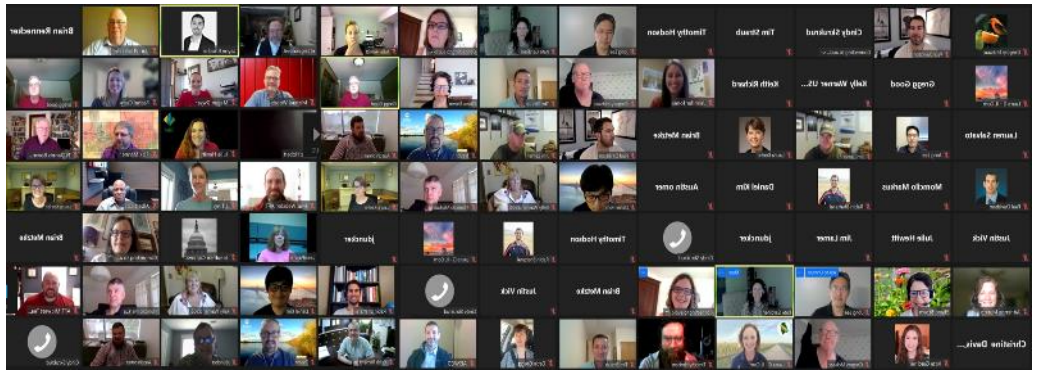

Photo: Kate Gardiner

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# Illinois NLRS Policy Working Group Participants

## Agriculture

Illinois Corn Growers Association

Illinois Farm Bureau. Farm. Family. Food.

Illinois Fertilizer & Chemical Association
Supply • Service • Stewardship

Illinois NREC

Illinois Pork Producers
Generations of Commitment

IADD

GROWMARK

## Point Source

Downers Grove Sanitary District

IERG

UCSD

American Bottoms PChem

Bloomington Normal Water Reclamation District

## Stormwater and Potable Water System

City Water, Light and Power Springfield, IL

The County of DuPage Wheaton, Illinois

## Government

Illinois Environmental Protection Agency

Illinois Department of Agriculture

Illinois Department of Natural Resources

University of Illinois Urbana-Champaign
Extension
Department of Agriculture
Department of Natural Resources

USDA Natural Resources Conservation Service

## Environment/Conservation

Sierra Club Illinois Chapter

Association of Illinois Soil & Water

The Nature Conservancy

prairierivers network

Environmental Law & Policy Center

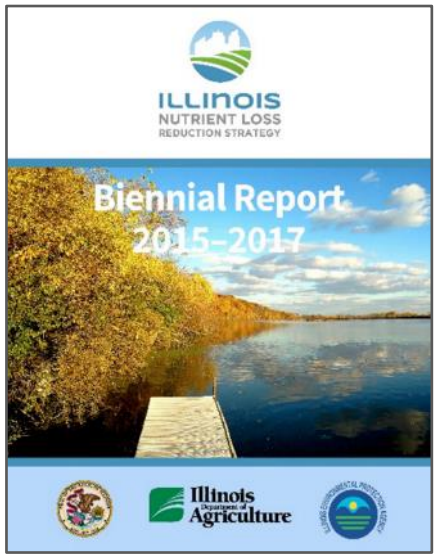
American Farmland Trust

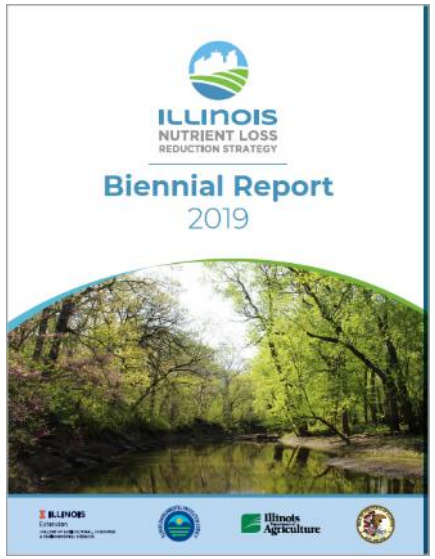
Mississippi River Collaborative

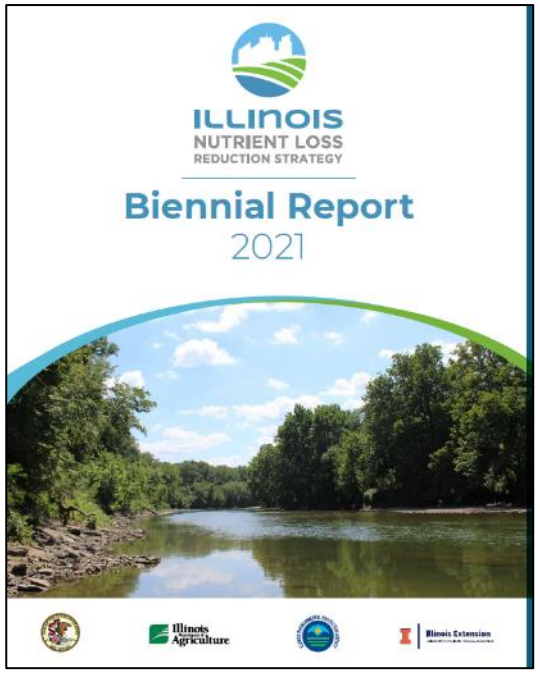
Illinois Nutrient Loss Reduction Strategy

# Biennial Reports

Every two years a Biennial Report will be written to document progress of implementing the NLRS.

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# Tracking Measures

Biennial Reports are structured to report data on these tracking measures by each sector.


*The NLRS Logic Model*

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# 2021 Biennial Report

(2019-2020 Reporting Years)

Released September 16, 2021

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# 2020 NLRS Biennial Report

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# CHAPTER 3
# SCIENCE ASSESSMENT UPDATE

Photo: USGS

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# Water Quality Goals: Baseline and Current Status

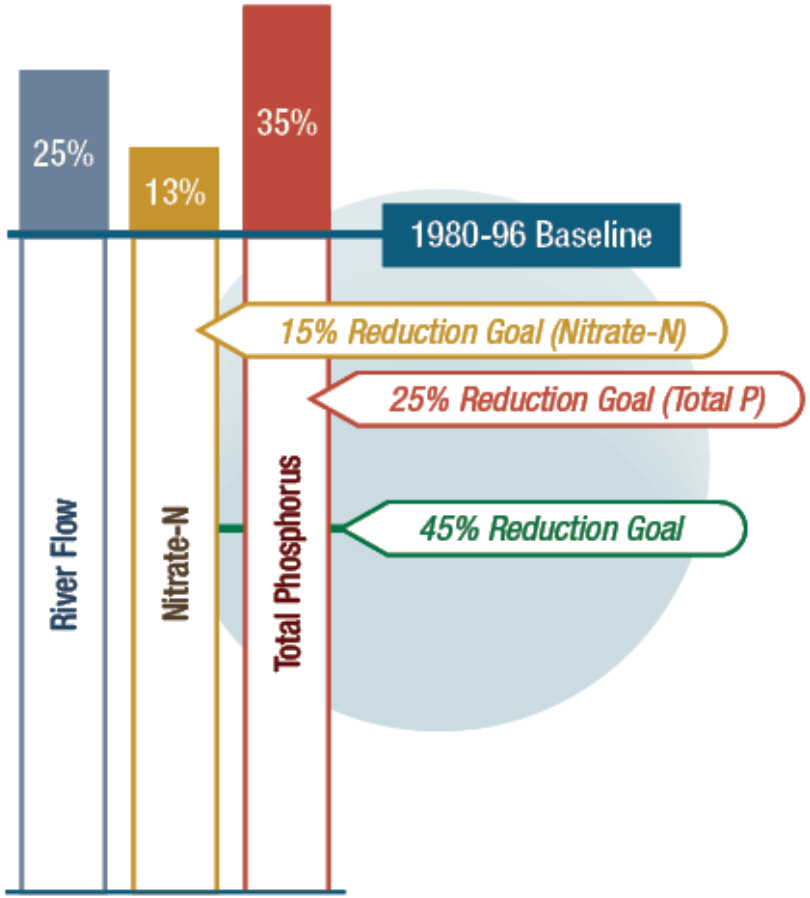
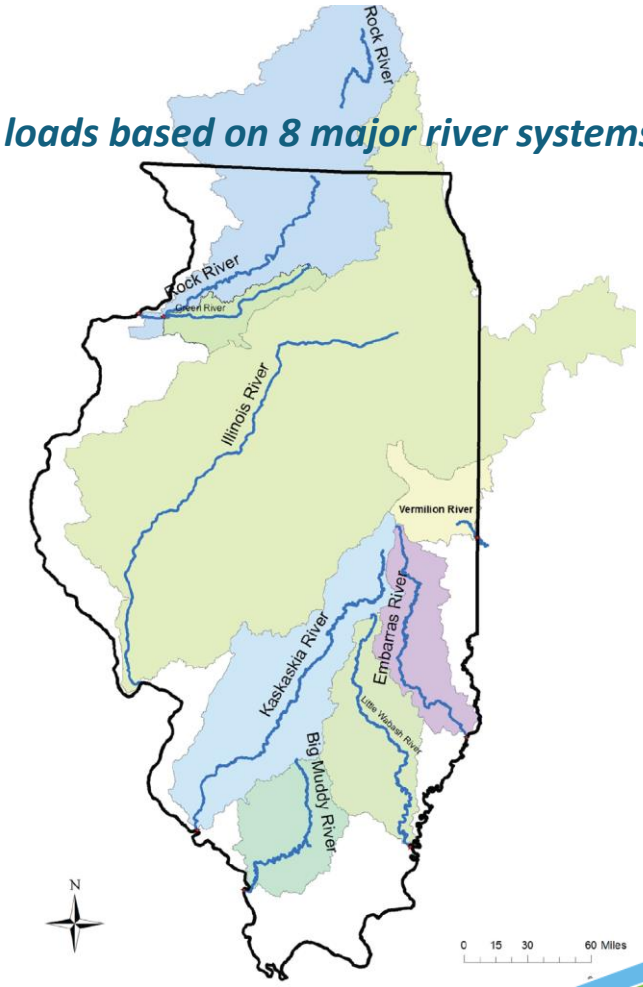



**Figure 1.1.** Percent increase from baseline to average 2015–19

***Statewide loads based on 8 major river systems***

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# Development of additional Implementation Scenarios

Scenario NP7 Interim Reduction Goals

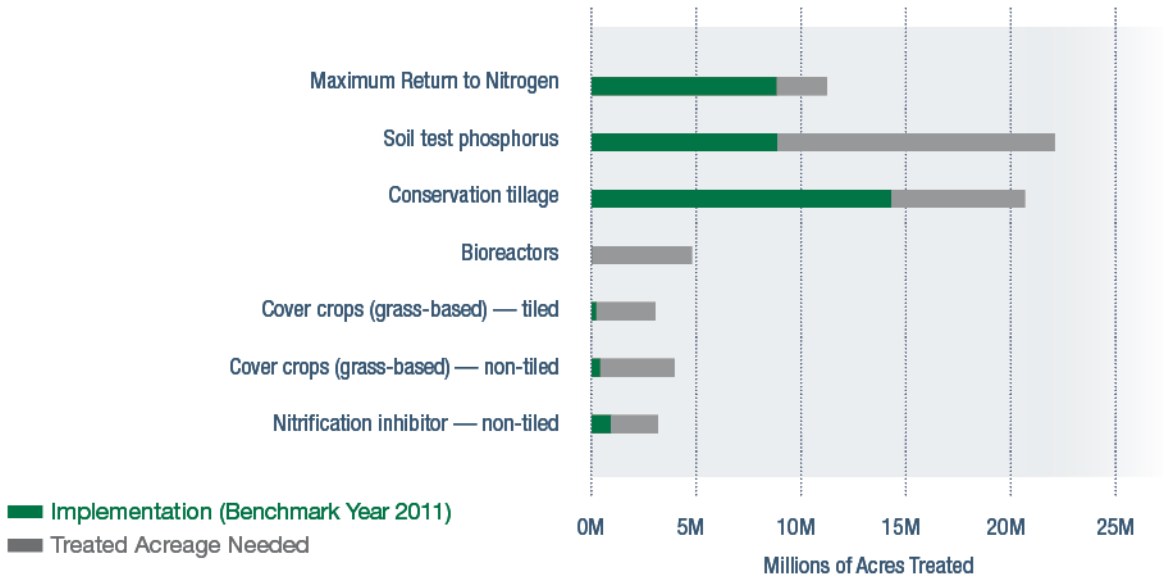


***Figure 3.10.*** *Interim combined nitrogen and phosphorus loss reduction scenario: acreage needed*

Scenario NP8 45% Reduction Goal

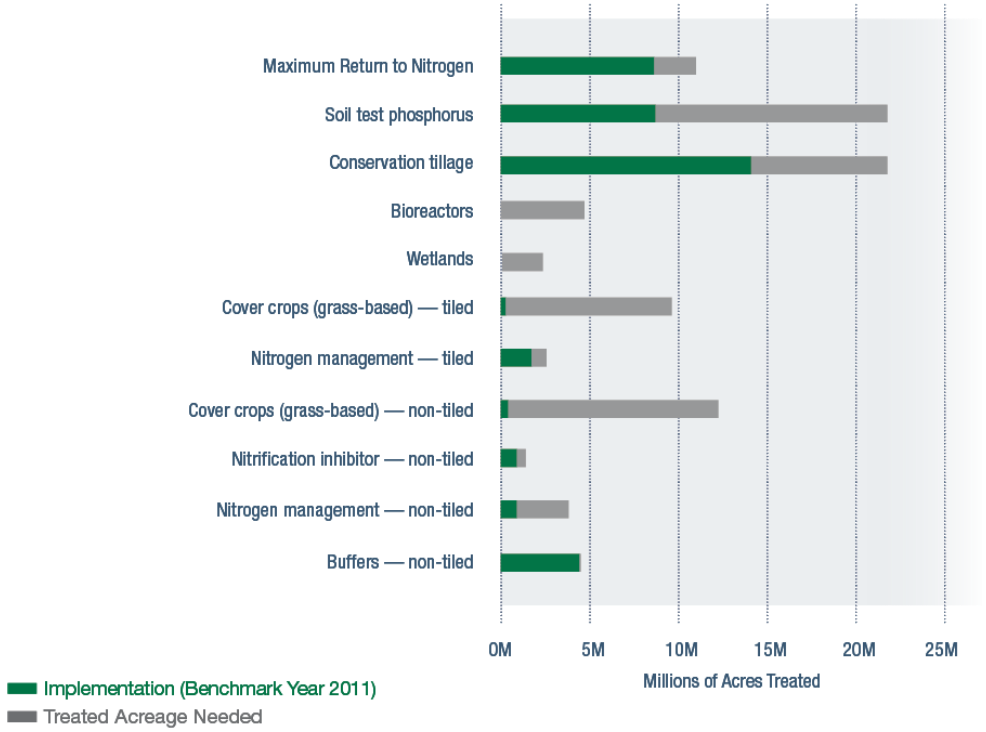


***Figure 3.11.*** *Full combined nitrogen and phosphorus loss reduction scenario: treatment area needed*

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# Addition of Conservation Practices

- The Science Team at the University of Illinois developed a process for adding new practices or updating practice performance.
- Two practices have been approved and added to the list of recommended conservation practices for reducing nitrogen and phosphorus.

- Saturated Buffers
  - 40% nitrate reduction
- Terraces
  - 40% phosphorus reduction

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# Statewide Nutrient Export Loading Network


| Stream Name | Location | Station Drainage Area in Illinois only, in mi² |
|---|---|---|
| Rock River | Joslin | 3,973 |
| Green River | Geneseo | 1,000 |
| Illinois River | Florence | 22,631 |
| Kaskaskia River | New Athens | 5,189 |
| Big Muddy River | Murphysboro | 2,168 |
| Vermilion River | Danville | 1,199 |
| Embarras River | Lawrenceville | 2,348 |
| Little Wabash River | Carmi | 3,102 |
| Des Plaines River | Joliet | 1,502 |

Basins cover almost 75% of the land area in the state

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

USGS science for a changing world

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# “Super Gages”

Parameters (measured every 15 minutes)

- Streamflow
- Nitrate
- Orthophosphate
- Turbidity
- Temperature
- Specific Conductance
- Dissolved Oxygen
- pH

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# Summary

- Statewide average riverine waterflow, nitrate-N load and TP load estimates 2015–2019 were 25%, 13%, and 35% greater than the 1980–96 baseline period.
- Point source 2019 estimated point TP and TN discharges were 18% and 1.7% lower than 2011 estimates.
- Point source 2020 estimated point TP and TN discharges were 16% and 4.7% lower than 2011 estimates.
- At the HUC 8 scale, nitrate and TP yields 2012–17 were generally similar to 1997-2011 values, with some exceptions:
  - TP load reductions in Chicago and Des Plaines
  - TP increases in the Upper Sangamon and elsewhere
  - Changes in nitrate-N load were correlated with changes in water flow for HUCs with high N yields
  - Nitrate-N reductions per unit of water yield in the Mackinaw, Spoon and Kaskaskia Rivers and Henderson Creek

# CHAPTER 4
# AGRICULTURAL SECTOR

Photo: Dennis Bowman

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***Table 4.1.*** *Funding resources in the agricultural sector*

| | 2019 | 2020 |
|---|---|---|
| Grants or Loans Received | $2,874,170 | $5,366,883 |
| Grants or Loans Given | $7,764,110 | $8,100,700 |
| Funded Programs | $426,206 | $514,477 |
| **Total** | **$11,064,486** | **$13,982,060** |

***Table 4.2.*** *Outreach Activities and associated attendance*

| | 2015-16 | | 2017-18 | | 2019-20 | |
|---|---|---|---|---|---|---|
| **Type of Outreach** | **Number of Events** | **Total Attendance** | **Number of Events** | **Total Attendance** | **Number of Events** | **Total Attendance** |
| Presentations | 457 | 16,000 | 602 | 38,155 | 724 | 47,375 |
| Field Days | 130 | 3,692 | 204 | 18,493 | 118 | 11,760 |
| Workshops | 607 | 12,695 | 423 | 18,478 | 132 | 8,322 |
| Conferences | 27 | 6,935 | 42 | 9,355 | 46 | 4,623 |
| **Total** | **1,221** | **39,322** | **1,271** | **84,481** | **1,020** | **72,080** |

# NLRS NASS Survey 2020

Based on 2019 Cropping Year

- Survey sent to a sample of farmers in Illinois.
- Statistical results extrapolated statewide.
- Survey questions gauge knowledge of nutrient loss issues and level of implementation of recommended agriculture conservation practices.
- Used to estimate implementation of agriculture conservation practices with or without enrollment in state or federal cost share programs.
- This is the third time the survey has been conducted.

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***Table 4.21.** General knowledge questions (percent reporting)*

| | | Not at All Knowledgeable | Slightly Knowledgeable | Somewhat Knowledgeable | Knowledgeable | Very Knowledgeable |
|---|---|---|---|---|---|---|
| 2020 | Nutrient Loss Reduction Strategy | 26.9% | 29.9% | 20.7% | 10.7% | 11.8% |
| | MRTN Strategy | 30.2% | 29.0% | 17.6% | 14.7% | 8.5% |
| | Woodchip Bioreactors | 54.7% | 17.2% | 14.4% | 11.5% | 2.2% |
| | Constructed Wetlands | 42.1% | 20.5% | 16.5% | 17.9% | 3% |
| | Cover Crop Management | 9.1% | 24.7% | 27.7% | 26.1% | 12.4% |
| 2019 | Nutrient Loss Reduction Strategy | 21% | 27% | 38.4% | 11.6% | 2% |
| | MRTN Strategy | 20.3% | 33.5% | 25.5% | 14.1% | 6.6% |
| | Woodchip Bioreactors | 53.8% | 23% | 15% | 5.5% | 2.7% |
| | Constructed Wetlands | 19.7% | 29.6% | 38% | 10.2% | 2.5% |
| | Cover Crop Management | 15.2% | 16.7% | 35.5% | 28.4% | 4.2% |

## *Table 4.13. Acres with a nitrogen management strategy*

| | Acres in 2011 | Acres in 2015 | Acres in 2017 | Acres in 2019 |
|---|---|---|---|---|
| Acres of corn planted | 12,600,000 | 11,700,000 | 11,200,000 | 10,500,000 |
| Acres where an MRTN strategy was used to determine application rates | 8,820,000 or 70% of planted acres | 9,430,000 or 81% of planted acres | 3,730,000 or 33% of planted acres | 3,700,000 or 33% of planted acres |
| Acres where other industry-approved technique was used to determine application rates | Not asked | Not asked | 7,750,000 or 69% of planted acres | 7,390,000 or 70% of planted acres |

**Table 4.14.** *Fertilizer application strategies for corn on tiled acres*

| | Acres in 2011 | Acres in 2015 | Acres in 2017 | Acres in 2019 |
|---|---|---|---|---|
| Acres of corn planted | 12,600,000 | 11,700,000 | 11,200,000 | 10,500,000 |
| Fall/winter nitrogen was applied with a nitrification inhibitor | 3,240,000 or 26% of planted acres | 2,970,000 or 25% of planted acres | 3,550,000 or 32% of planted acres | 1,460,000 or 14% of planted acres |
| Spring nitrogen was applied with a nitrification inhibitor | Not asked | Not asked | 2,790,000 or 25% of planted acres | 2,220,000 or 21% of planted acres |

**Table 4.15.** *Fertilizer application strategies for corn on non-tiled acres*

| | Acres in 2011 | Acres in 2015 | Acres in 2017 | Acres in 2019 |
|---|---|---|---|---|
| Acres of corn planted | 12,600,000 | 11,700,000 | 11,200,000 | 10,500,000 |
| Fall/winter nitrogen was applied with a nitrification inhibitor | Not asked | Not asked | 1,040,000 or 9% of planted acres | 540,000 or 5% of planted acres |
| Spring nitrogen was applied with a nitrification inhibitor | Not asked | Not asked | 1,040,000 or 9% of planted acres | 2,070,000 or 20% of planted acres |

***Table 4.16.*** *Fertilizer application strategies for corn on tiled acres*

| | Acres in 2011 | Acres in 2015 | Acres in 2017 | Acres in 2019 |
|---|---|---|---|---|
| Acres of corn planted | 12,600,000 | 11,700,000 | 11,200,000 | 10,500,000 |
| STRATEGY 1 – Fall/winter nitrogen was 50% or less of total nitrogen | 940,000 or 7% of planted acres | 950,000 or 8% of planted acres | 780,000 or 7% of planted acres | 330,000 or 3% of planted acres |
| STRATEGY 2 – Fall/winter nitrogen was 0% of total nitrogen (all spring applications) | 2,480,000 or 20% of planted acres | 2,660,000 or 23% of planted acres | 1,850,000 or 17% of planted acres | 1,720,000 or 16% of planted acres |
| STRATEGY 3 – Less than 50% fall/winter applications, with remaining nitrogen applications split between pre-plant and sidedress applications | 1,730,000 or 14% of planted acres | 2,220,000 or 19% of planted acres | 1,790,000 or 16% of planted acres | 1,930,000 or 18% of planted acres |

***Table 4.17.*** *Fertilizer application strategies for corn on non-tiled acres*

| | Acres in 2011 | Acres in 2015 | Acres in 2017 | Acres in 2019 |
|---|---|---|---|---|
| Acres of corn planted | 12,600,000 | 11,700,000 | 11,200,000 | 10,500,000 |
| STRATEGY 1 – Fall/winter nitrogen was 50% or less of total nitrogen | Not asked | Not asked | 340,000<br>or 3% of planted acres | 110,000<br>or 1% of planted acres |
| STRATEGY 2 – Fall/winter nitrogen was 0% of total nitrogen (all spring applications) | Not asked | Not asked | 1,250,000<br>or 11% of planted acres | 990,000<br>or 9% of planted acres |
| STRATEGY 3 – Less than 50% fall/winter applications, with remaining nitrogen applications split between pre-plant and sidedress applications | Not asked | Not asked | 930,000<br>or 8% of planted acres | 740,000<br>or 7% of planted acres |

***Table 4.20.** Cover crop questions for tiled and non-tiled acres*

| | Acres |
|---|---|
| Corn/soybean acres planted to cover crops after the 2019 crop season on tiled ground | 930,000 |
| Corn/soybean acres planted to cover crops after the 2019 crop season on non-tiled ground | 480,000 |
| Corn/soybean acres planted to cover crops after the 2017 crop season on tiled ground | 290,000 |
| Corn/soybean acres planted to cover crops after the 2017 crop season on non-tiled ground | 420,000 |
| Corn/soybean acres planted to cover crops after the 2015 crop season on tiled ground | 490,000 |
| Corn/soybean acres planted to cover crops after the 2015 crop season on non-tiled ground | 630,000 |
| Corn/soybean acres planted to cover crops after the 2011 crop season on tiled ground | 220,000 |
| Corn/soybean acres planted to cover crops after the 2011 crop season on non-tiled ground | 380,000 |

# Agriculture Sector:
# State and Federal Cost-Share Programs

| USDA FSA | USDA NRCS U.S. Department of Agriculture Natural Resources Conservation Service | Illinois Department of Agriculture | Illinois Environmental Protection Agency | Illinois Department of Natural Resources |
|---|---|---|---|---|
| Conservation Reserve Program | Conservation Stewardship Program<br>Environmental Quality Incentives program<br>Wetland Reserve Easement Program | Partners for Conservation<br>Cover Crop Premium Discount Program | 319 Nonpoint Source Grant Program | Conservation Reserve Enhancement Program |

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# Conservation Reserve Program

*Table 4.4. Acres in CRP wetlands and buffers*

| | 2011 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| CRP Wetlands | 57,463 | 45,790 | 27,616 | 43,826 | 55,716 | 55,536 | 57,867 |
| CRP Buffers | 145,813 | 279,534 | 197,442 | 270,002 | 265,753 | 257,047 | 250,784 |

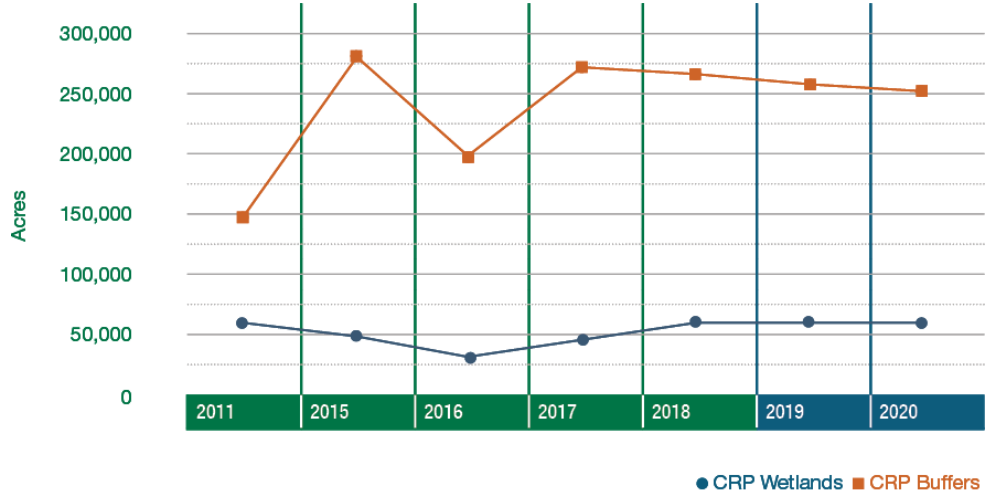
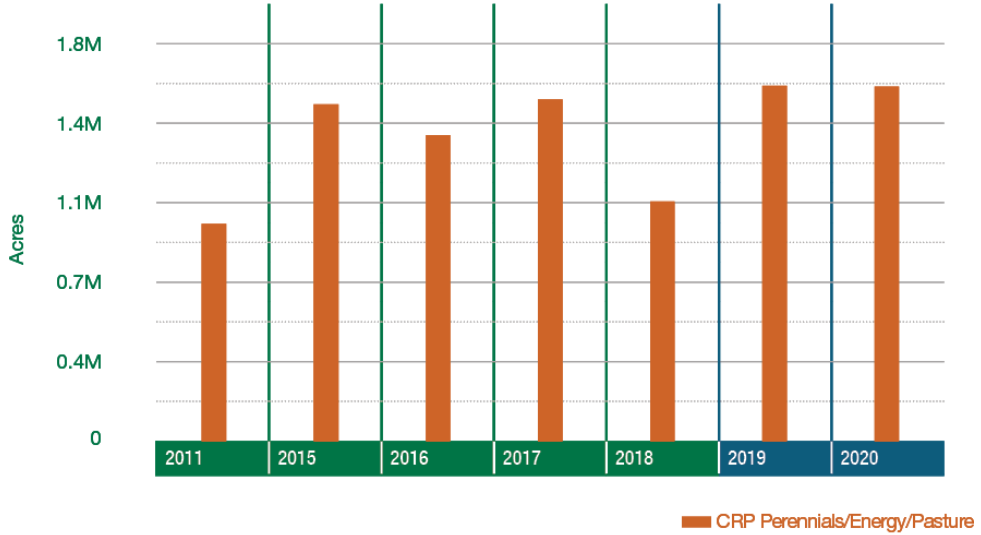



*Table 4.5. Acres in CRP perennials/energy/pasture*

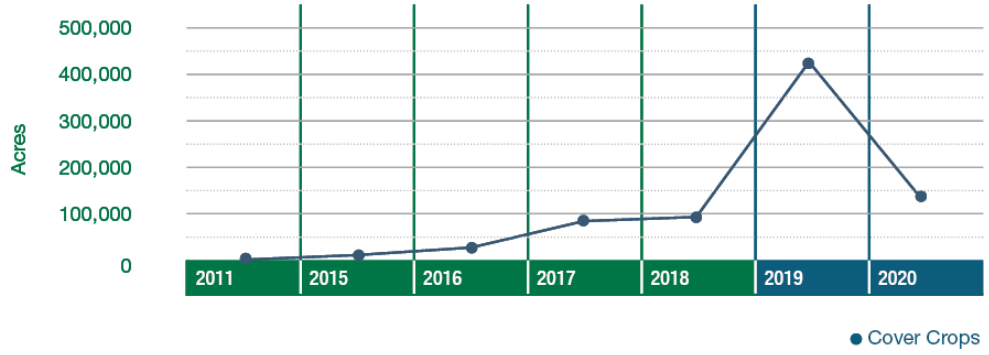
| | 2011 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| CRP Perennials/ Energy/Pasture | 985,531 | 1,524,379 | 1,386,378 | 1,547,612 | 1,086,474 | 1,606,621 | 1,586,263 |




# Cover Crops

*Table 4.6. Acres in cover crops reported by producers to FSA*

| | 2011 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| Cover Crops | 768 | 11,064 | 27,064 | 83,980 | 92,970 | 427,410 | 131,757 |




ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

# Environmental Quality Incentives Program

*Table 4.8. Acres implemented and dollars spent on nutrient conservation practices through EQIP*

| | 2019 Acres | 2019 Dollars | 2020 Acres | 2020 Dollars |
|---|---|---|---|---|
| Filter Strips (Buffers) | 23.1 | $12,718 | 0.4 | $243 |
| Nutrient Management | 997 | $14,089 | 5,931 | $90,326 |
| Conservation Tillage | 398 | $6,382 | 4,418 | $75,327 |
| Cover Crops | 7,147 | $432,242 | 4,400 | $245,247 |
| Perennials | 244 | $58,373 | 1,205 | $351,273 |
| Wetlands | 0 | $0 | 0 | $0 |

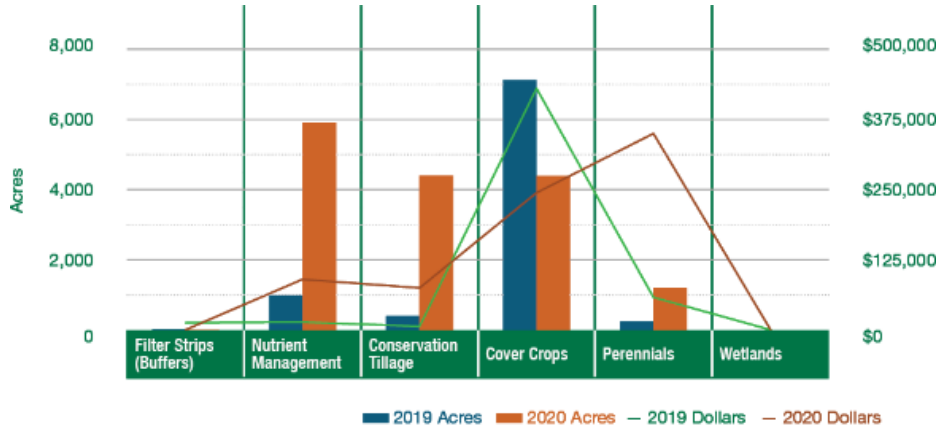



*Figure 4.5. Acres implemented and dollars spent on nutrient conservation practices through EQIP*

# Conservation Stewardship Program

*Table 4.9. New acres enrolled in CSP*

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| Acres per Year | 165,416 | 229,815 | 188,731 | 399,024 | 214,557 | 160,172 | 149,844 | 200,455 | 122,638 | 182,904 |
| Subtracting the 5-Year Drop-Off | 165,416 | 395,231 | 583,962 | 982,986 | 1,197,543 | 1,192,299 | 1,112,328 | 1,124,052 | 847,696 | 816,013 |
| Cumulative Acres | 165,416 | 395,231 | 583,962 | 982,986 | 1,197,543 | 1,357,715 | 1,507,559 | 1,708,014 | 1,830,652 | 2,013,556 |

Data source: NRCS At a Glance

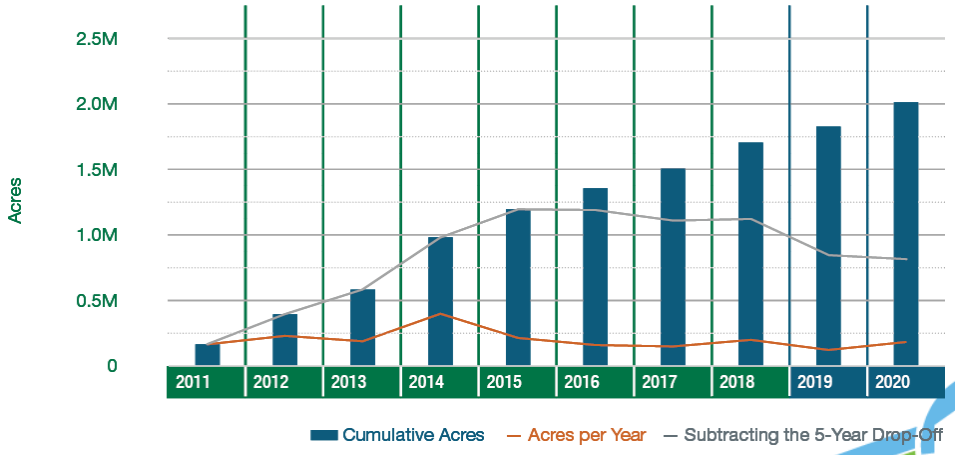



*Figure 4.6. Acres enrolled in CSP, 2011-20*

# Wetland Reserve Easement Program

***Table 4.11.*** *New wetland acres enrolled in WREP*

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| Acres per Year | 1,788 | 1,420 | 569 | 305 | 396 | 1,237 | 2,600 | 260 | 1,403 | 1,509 |
| Cumulative Acres | 1,788 | 3,208 | 3,777 | 4,082 | 4,478 | 5,715 | 8,315 | 8,575 | 9,978 | 11,487 |

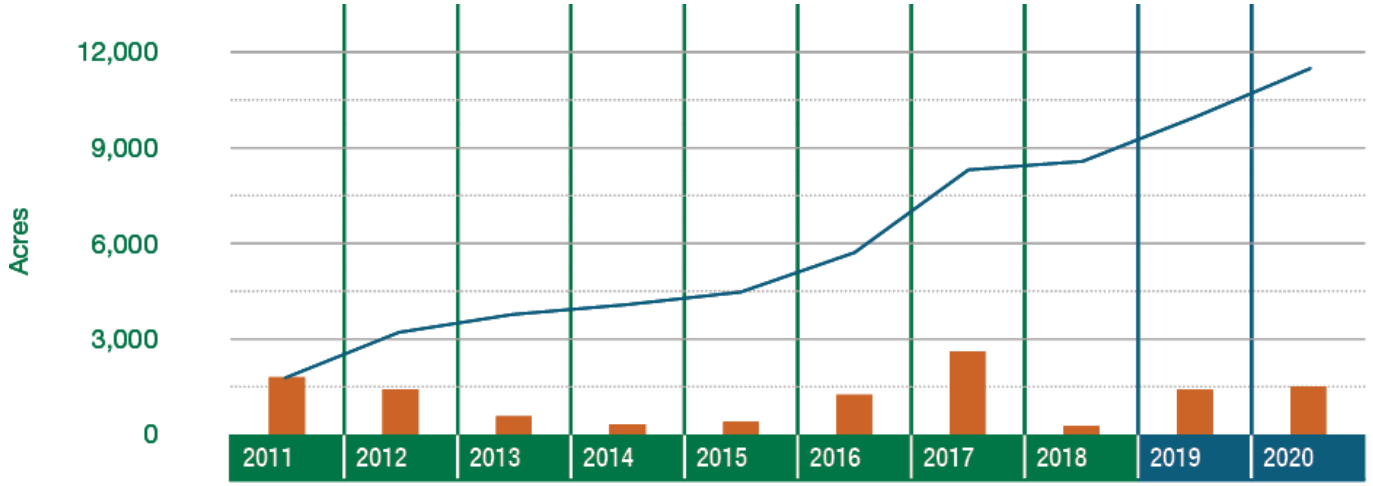



***Figure 4.8.*** *New wetland acres enrolled in WREP*

# Conservation Reserve Enhancement Program

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| Wetlands | 20 | 651 | 3,681 | 11,976 | 17,406 | 19,467 | 19,523 | 19,523 | 19,523 | 19,528 |
| Buffers | 526 | 1,324 | 2,720 | 5,467 | 8,768 | 13,568 | 13,764 | 13,850 | 13,855 | 13,855 |
| Perennials/ Energy | 0 | 7 | 84 | 1,622 | 2,107 | 4,395 | 4,670 | 4,718 | 4,726 | 4,726 |


***Figure 4.19.*** *Acres with Illinois CREP easements*

# Partners for Conservation

***Table 4.23.*** *Acres treated by and dollars spent on PFC in 2019 and 2020*

| | Bioreactors | Wetlands | Filter Strips | Tillage | Perennials | Cover Crops |
|---|---|---|---|---|---|---|
| 2019 Acres | 0 | 0 | 0 | 535.3 | 153.81 | 15,472.48 |
| 2019 Cost-Share Dollars | $0 | $0 | $0 | $2,219.20 | $14,560.85 | $347,678.85 |
| 2019 Land Owner Dollars | $0 | $0 | $0 | $1,249.84 | $10,927.59 | $294,069.77 |
| 2020 Acres | 0 | 0 | 0 | 4,045.56 | 443.36 | 17,945.38 |
| 2020 Cost-Share Dollars | $0 | $0 | $0 | $26,253.58 | $83,014.78 | $426,980.26 |
| 2020 Land Owner Dollars | $0 | $0 | $0 | $38,705.83 | $46,090.05 | $358,703.96 |

# 319 Nonpoint Source Grant Program

***Table 4.24.*** *Acres treated by agricultural practices installed under the Section 319 grant program 2011-20*

| | Conservation Tillage | Cover and Green Manure Crop | Filter Strip | Nutrient Management | Wetland Restoration | Total |
|---|---|---|---|---|---|---|
| 2011 | - | - | - | - | 24 | 24 |
| 2012 | 9,998 | - | - | - | 255 | 10,253 |
| 2013 | - | - | - | - | 380 | 380 |
| 2014 | - | 453 | - | - | 116 | 569 |
| 2015 | - | 2,544 | 8 | - | 164 | 2,716 |
| 2016 | - | 2,583 | 8 | 3,062 | 1 | 5,654 |
| 2017 | 151 | 3,978 | 3 | - | 1 | 4,133 |
| 2018 | - | 1,570 | 9 | 5,713 | 1 | 7,293 |
| 2019 | - | 1,151.34 | 0.5 | 6,521.5 | - | 7,673.34 |
| 2020 | - | 15 | - | - | - | 15 |

# University of Illinois

By the end of 2020,
**42** known Woodchip Bioreactors treating
**1,460 acres**

Photo: Janith Chandrasoma

# Partner Updates

ILLINOIS NREC

PCM Precision Conservation Management

SAVING TOMORROW'S S.T.A.R. AGRICULTURE RESOURCES

ILLINOIS SUSTAINABLE AG PARTNERSHIP

r4 nutrient stewardship KEEP IT 4R CROP IFCA Illinois Fertilizer & Chemical Association

4R4U

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ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

# CHAPTER 5
# POINT SOURCE SECTOR

Photo: Fox Metro Water Reclamation District

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# Point Source Updates

LAND AND FACILITIES

- 2019 and 2020 Nitrogen and Phosphorus loads
  - Municipal sewage treatment plants and Industrial facilities
  - Reductions compared to 2011 baseline loads
- Facilities with annual average concentrations
  - 1.0 mg/l
  - 0.5 mg/l
- Nutrient Assessment and Reduction Plans
- Optimization and Feasibility Plans for reducing phosphorus loads
- Watershed Planning group updates

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***Table 5.2.*** *2019-20 point source outreach activities reported by IAWA facilities and watershed groups*

| Type of Activity | Number of Events | Attendance |
|---|---|---|
| Field Days | 2 | 35 |
| Presentations | 9 | 2,228 |
| Workshops | 3 | 400 |
| **Total** | **14** | **2,663** |

***Table 5.1.*** *Funds supporting 2019-20 nutrient reduction-related activities in the point source sector for IAWA reporting agencies and watershed groups*

| Nutrient Reduction-Related Activity | 2019 Totals | 2020 Totals |
|---|---|---|
| Capital improvement | $60,175,432 | $181,581,773 |
| Operations and maintenance | $2,098,370 | $665,178 |
| Feasibility studies or permit-required projects | $279,723 | $253,056 |
| Staff | $2,357,845 | $2,521,000 |
| Other | $221,550 | $192,215 |
| **Total** | **$65,132,920** | **$185,213,223** |

# Point Source Updates

***Table 5.3.*** *Statewide total phosphorus loads from the point source sector in 2019*

| Point Source Sector | Total Phosphorus Load (million lb/yr) |
|---|---|
| **2011 Baseline** | **18.1** |
| **2019 Total Phosphorus Load** | **14.9** |
| › 210 Major Municipals | 12.1 |
| › Minor Municipals | 2.4 |
| › Major and Minor Industrials | 0.4 |
| **Reductions from 2011 Baseline** | **3.2 (18%)** |

***Table 5.4.*** *Statewide total phosphorus loads from the point source sector in 2020*

| Point Source Sector | Total Phosphorus Load (million lb/yr) |
|---|---|
| **2011 Baseline** | **18.1** |
| **2020 Total Phosphorus Load** | **15.2** |
| › 211 Major Municipals | 12.3 |
| › Minor Municipals | 2.4 |
| › Major and Minor Industrials | 0.5 |
| **Reductions from 2011 Baseline** | **2.9 (16%)** |

## 2020: 16% Total Phosphorus Reduction

# Point Source Updates

***Table 5.7.*** *Statewide total nitrogen loads from the point source sector in 2019 and 2020*

| Point Source Sector | Total Nitrogen Load (million lb/yr) | Reduction From Baseline Load (million lb/yr) |
|---|---|---|
| **2011 Baseline** | **87.3** | |
| **2019 Total Nitrogen Load**<br>› 210 Major Municipals<br>› Minor Municipals<br>› Major and Minor Industrials | **85.8**<br>80.7<br>3<br>2.1 | **1.5 (1.7%)** |
| **2020 Total Nitrogen Load**<br>› 211 Major Municipals<br>› Minor Municipals<br>› Major and Minor Industrials | **83.2**<br>78<br>3<br>2.2 | **4.1 (4.7%)** |

## 2020: 4.7% Total Nitrogen Reduction

# Top 10 Wastewater Treatment Facilities for Total Phosphorus Removal

*Table 5.5. 2020 top 10 major municipal facilities for total phosphorus loads*

| NPDES Permit | Facility Name | Baseline 2011 TP Load (lb/yr) | 2017 TP Load (lb/yr) | 2018 TP Load (lb/yr) | 2019 TP Load (lb/yr) | 2020 TP Load (lb/yr) | Change from 2011 |
|---|---|---|---|---|---|---|---|
| IL0028061 | MWRDGC – Calumet | 2,450,714 | 1,705,544 | 1,990,902 | 2,191,160 | 2,569,259 | 5% |
| IL0028053 | MWRDGC – Stickney | 2,351,312 | 1,288,296 | 707,230 | 2,164,828 | 2,435,218 | 4% |
| IL0028321* | Sanitary District of Decatur | 1,562,750 | 1,770,422 | 2,022,573 | 2,011,785 | 1,897,809 | 21% |
| IL0028088 | MWRDGC – O'Brien | 969,075 | 916,335 | 931,333 | 947,758 | 978,314 | 1% |
| IL0027201 | Rock River Water Reclamation District | 971,083 | 232,702 | 280,051 | 231,141 | 223,527 | -77% |
| IL0036340* | MWRDGC – Egan | 233,759 | 206,963 | 209,074 | 219,942 | 210,437 | -10% |
| IL0033481 | Granite City, City of | 126,431 | 133,683 | 330,034 | 86,593 | 180,081 | 42% |
| IL0028657 | Fox River Water Reclamation District | 171,050 | 184,605 | 171,000 | 187,850 | 173,032 | 1% |
| IL0034061 | Naperville, City of | 190,457 | 163,870 | 166,060 | 155,307 | 162,805 | -15% |
| IL0027731 | Bloomington/ Normal Water Reclamation District | 139,207 | 130,866 | 101,236 | 132,693 | 124,924 | -10% |

**Data provided by facility*

*Table 5.6. 2020 top 10 major municipal facilities' flow and total phosphorus concentrations*

| NPDES Permit | Facility Name | 2019 Avg Flow (MGD) | 2019 Avg TP Conc. (mg/L) | 2020 Avg Flow (MGD) | 2020 Avg TP Conc. (mg/L) |
|---|---|---|---|---|---|
| IL0028061 | MWRDGC – Calumet | 307 | 2.44 | 264 | 3.54 |
| IL0028053 | MWRDGC – Stickney | 816 | 0.95 | 688 | 1.21 |
| IL0028321* | Sanitary District of Decatur | 39 | 17.18 | 37 | 16.96 |
| IL0028088 | MWRDGC – O'Brien | 257 | 1.25 | 207 | 1.61 |
| IL0027201 | Rock River Water Reclamation District | 22 | 1.76 | 19 | 2.08 |
| IL0036340* | MWRDGC – Egan | 28 | 2.70 | 24 | 3.10 |
| IL0033481 | Granite City, City of | 19 | 1.52 | 15 | 5.07 |
| IL0028657 | Fox River Water Reclamation District | 20 | 3.15 | 18 | 3.37 |
| IL0034061 | Naperville, City of | 22 | 2.33 | 20 | 2.73 |
| IL0027731 | Bloomington/ Normal Water Reclamation District | 20 | 2.28 | 17 | 2.72 |

**Data provided by facility*

# Point Source Updates

**Optimization**

**14**
Permits to be issued requiring optimization study

**54**
Issued permits awaiting optimization study

**143**
Optimization studies submitted

**Feasibility**

**14**
Permits to be issued requiring feasibility study

**54**
Issued permits awaiting feasibility study

**143**
Feasibility studies submitted

*Figure 5.4. Feasibility studies and optimization studies submitted by major municipal facilities*

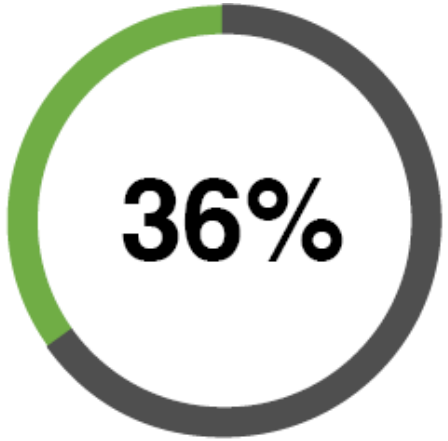


*Figure 5.3. Percentage of major municipal NPDES permits with total phosphorus limits statewide*

# Nutrient Assessment and Reduction Plan (NARP)

- IAWA and NGO Agreement for Major (>1 MGD) Facilities
- Special Condition in NPDES permits
- Required if facility is:
  - located upstream of a waterbody or stream segment that has been determined to have a phosphorus related impairment, or
  - determined to be at risk of eutrophication due to phosphorus levels in the waterbody.
  - Effluent limit of 0.5 mg/L Total Phosphorus 12 month rolling geometric mean by January 1, 2030 unless not technologically feasible or economically reasonable or meets one of the special circumstances
- Not an Effluent or Water Quality Standard

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# Nutrient Assessment and Reduction Plan (NARP)

- Developed and submitted to Illinois EPA by December 31, 2023 or 2024
- Supported by data and sound scientific rationale
- Must cooperate and work with other stakeholders in the watershed
- Target Levels –
  - Recommendations by the Nutrient Science Advisory Committee – Dec 2018
  - Develop its own watershed-specific target levels
- Identify phosphorus input reductions from point sources and non-point sources
- Schedule for implementation
- Provisions for water quality trading

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# CHAPTER 6
# STORMWATER SECTOR

Photo: Red Oak Rain Garden

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# Urban Stormwater Updates

RESOURCES

OUTREACH

***Table 6.1.** Resources reported by the stormwater sector*

| Nutrient Reduction-Related Activity | 2019 | 2020 |
|---|---|---|
| Grants or Loans Received | $981,932 | $1,095,454 |
| Grants Given | $1,266,898 | $731,925 |
| Funded Programs | $2,150 | $2,328 |
| Total | $2,250,980 | $1,829,707 |

***Table 6.3.** Outreach activities reported by the stormwater sector*

| Type of Activity | Number of Events | Attendance |
|---|---|---|
| Field Days | 26 | 2,535 |
| Presentations | 90 | 7,329 |
| Conferences | 14 | 2,489 |
| Workshops | 19 | 1,987 |
| **Total** | **149** | **14,340** |

# Urban Stormwater Updates

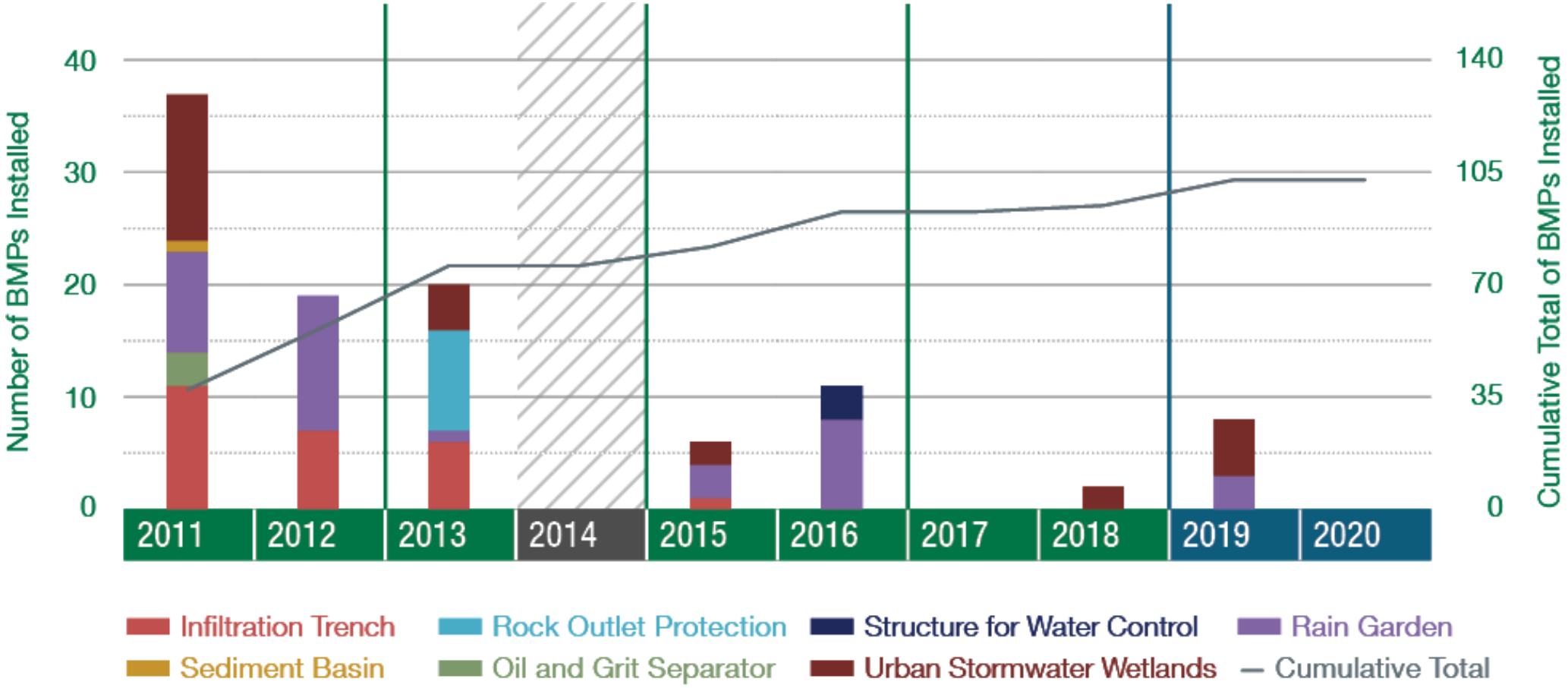


*Figure 6.1. Number of urban practices installed under Section 319 grant program 2011–20*

# Urban Stormwater Updates

LAND AND FACILITIES

- Summary of Municipal Separate Storm Sewer Systems (MS4) Annual Inspection Reports
- Illinois EPA 319 and Green Infrastructure Grant programs
- Metropolitan Water Reclamation District of Great Chicago's Green Infrastructure Program
- Partner updates on stormwater programs
  - Calumet Stormwater Collaborative
  - Conservation@Home
  - DuPage County programs
  - NGICP
  - Lawn to Lake
  - Rainscaping

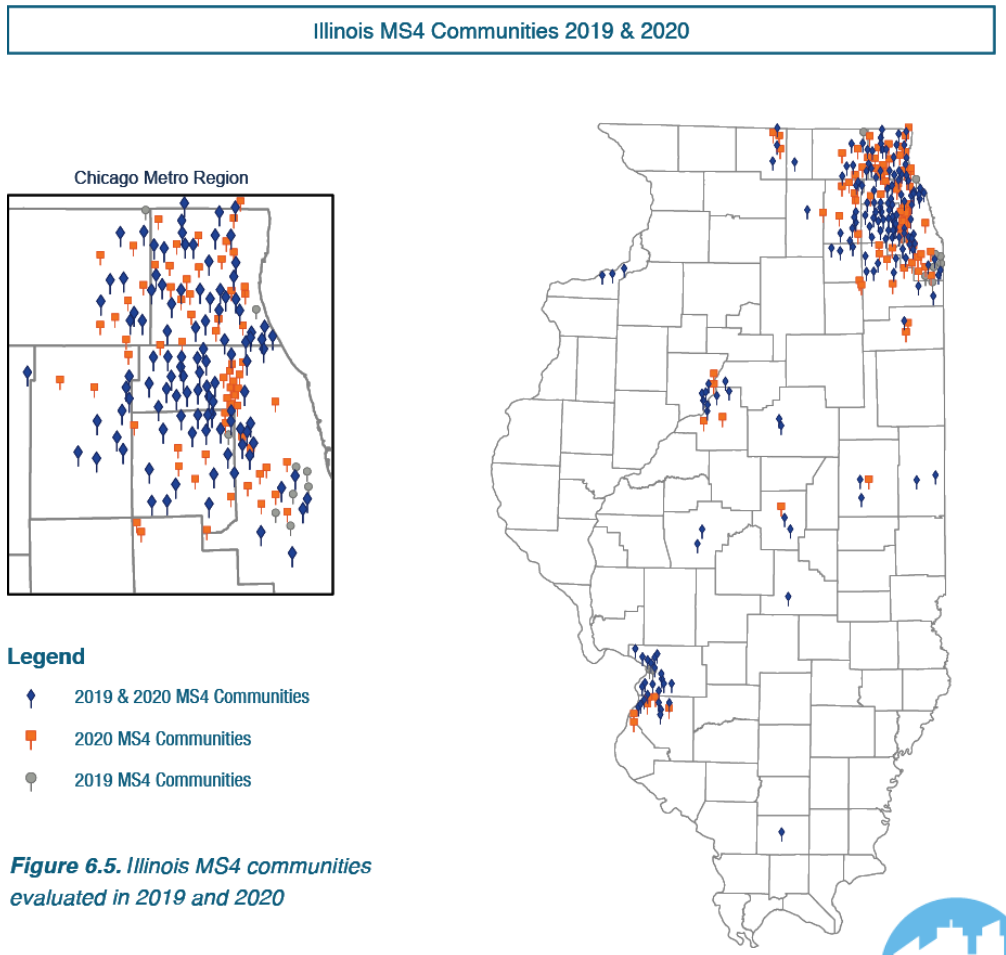


***Figure 6.5.** Illinois MS4 communities evaluated in 2019 and 2020*

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

CHAPTER 8

# ADAPTIVE MANAGEMENT AND MEASURING PROGRESS

Photo: Layne Knoche

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

# Nutrient Loads and Water Quality Goals

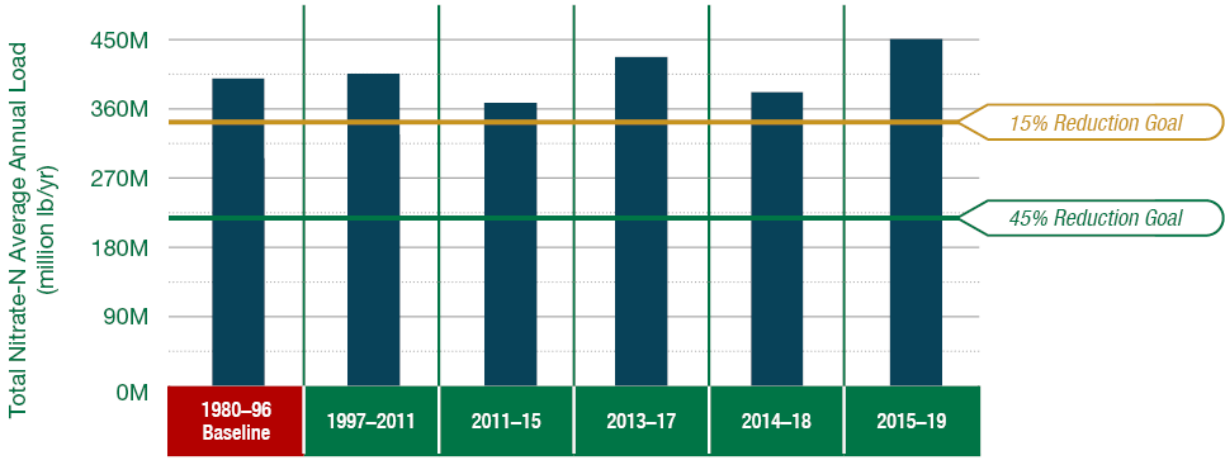


***Figure 8.1.*** *Illinois nitrate-nitrogen loads*

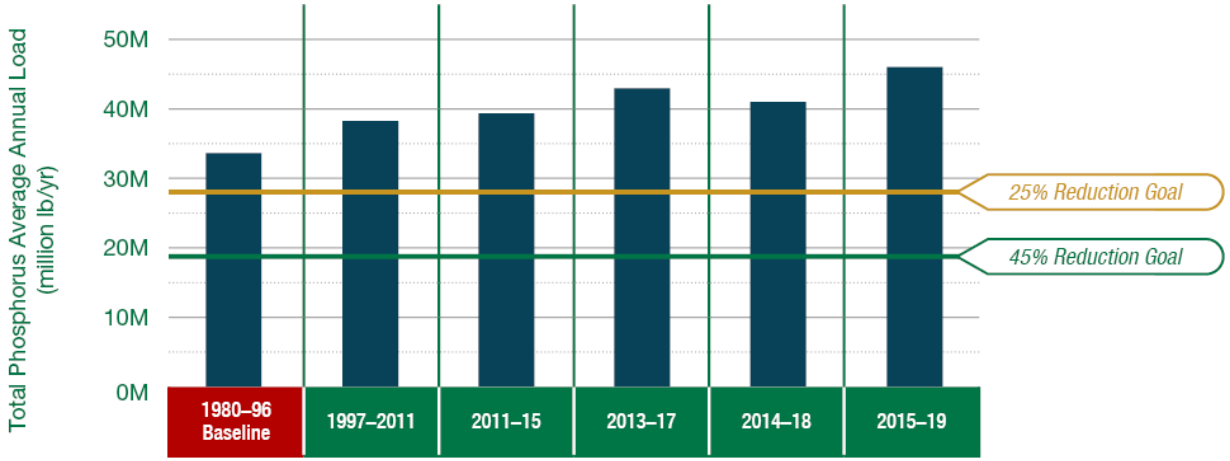


***Figure 8.2.*** *Illinois total phosphorus loads*

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# Implementation Scenarios

Scenario NP2

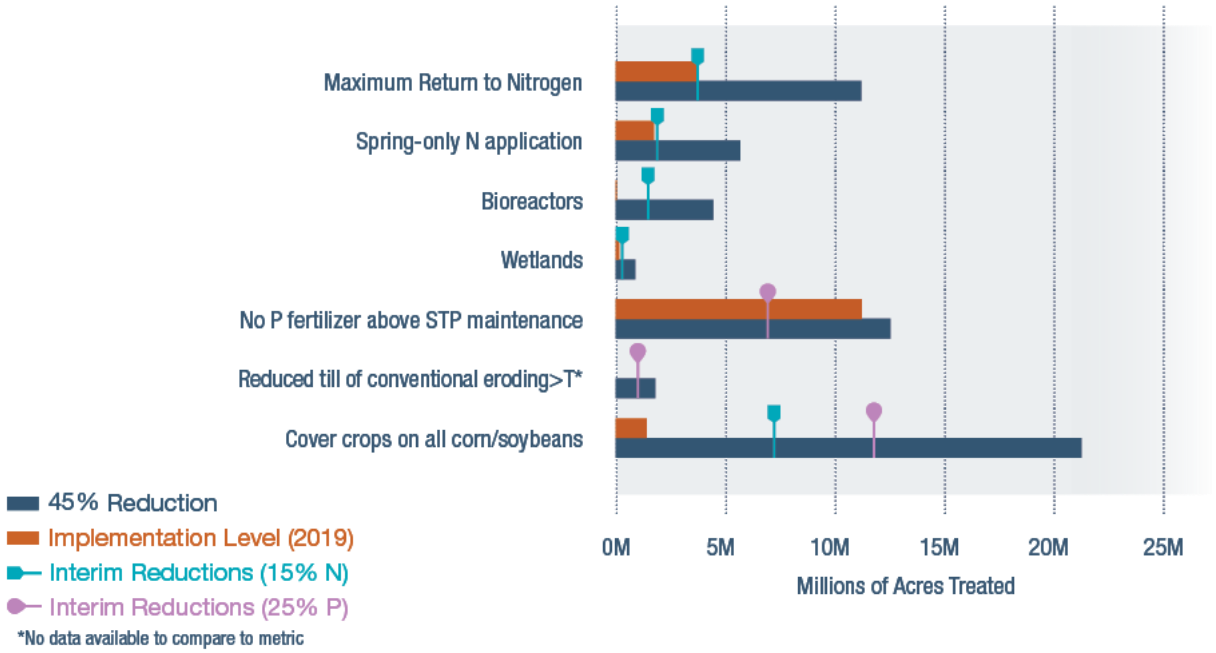


***Figure 8.3.*** *Agricultural implementation as compared with scenario NP2*

Scenario NP3

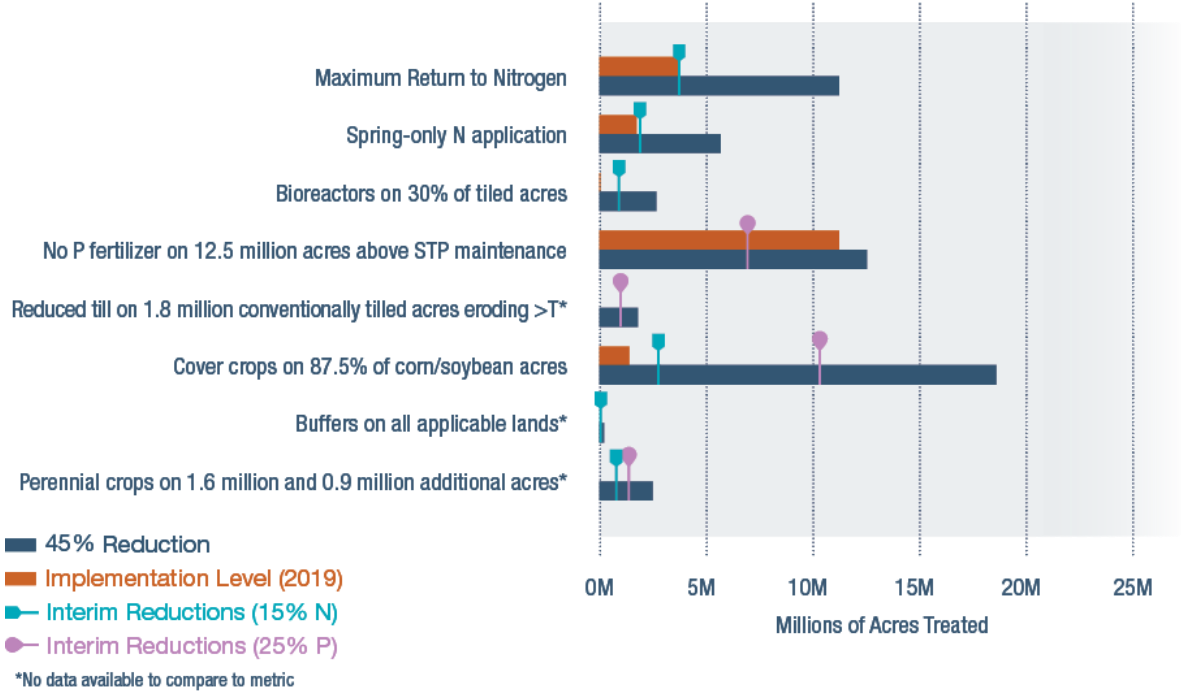


***Figure 8.4.*** *Agricultural implementation as compared with scenario NP3*

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

# Implementation Scenarios

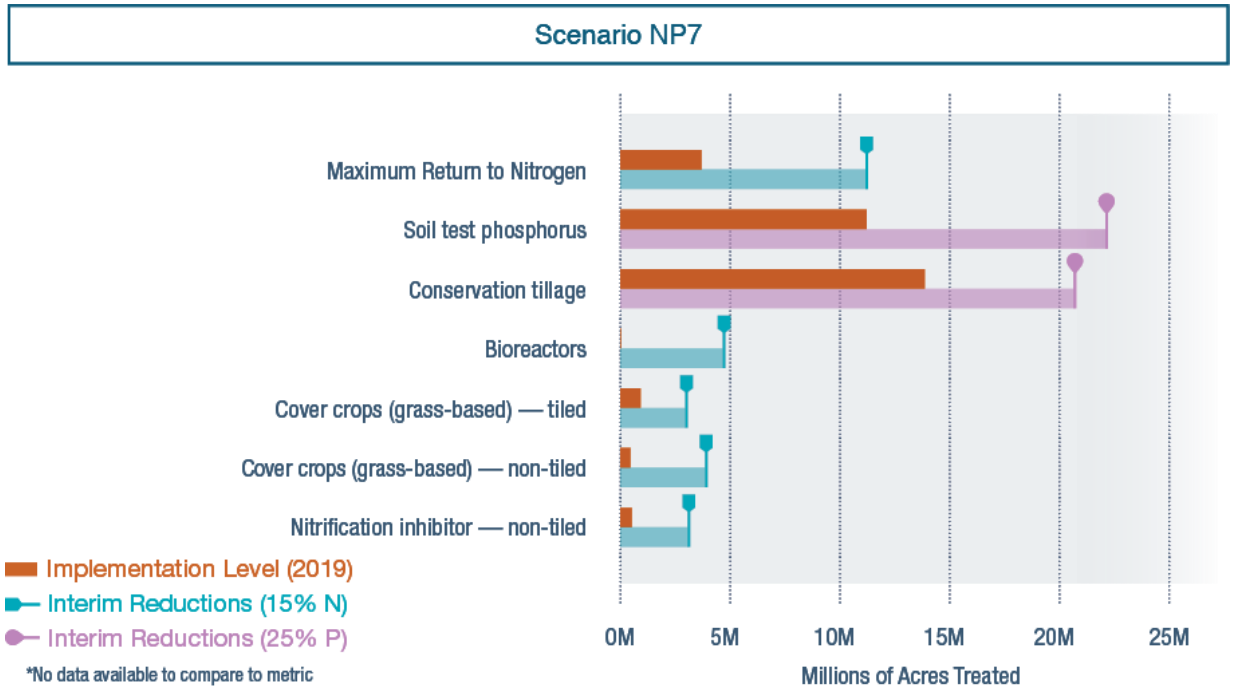


*Figure 8.5. Agricultural implementation as compared with scenario NP7 (which reflects interim goals)*

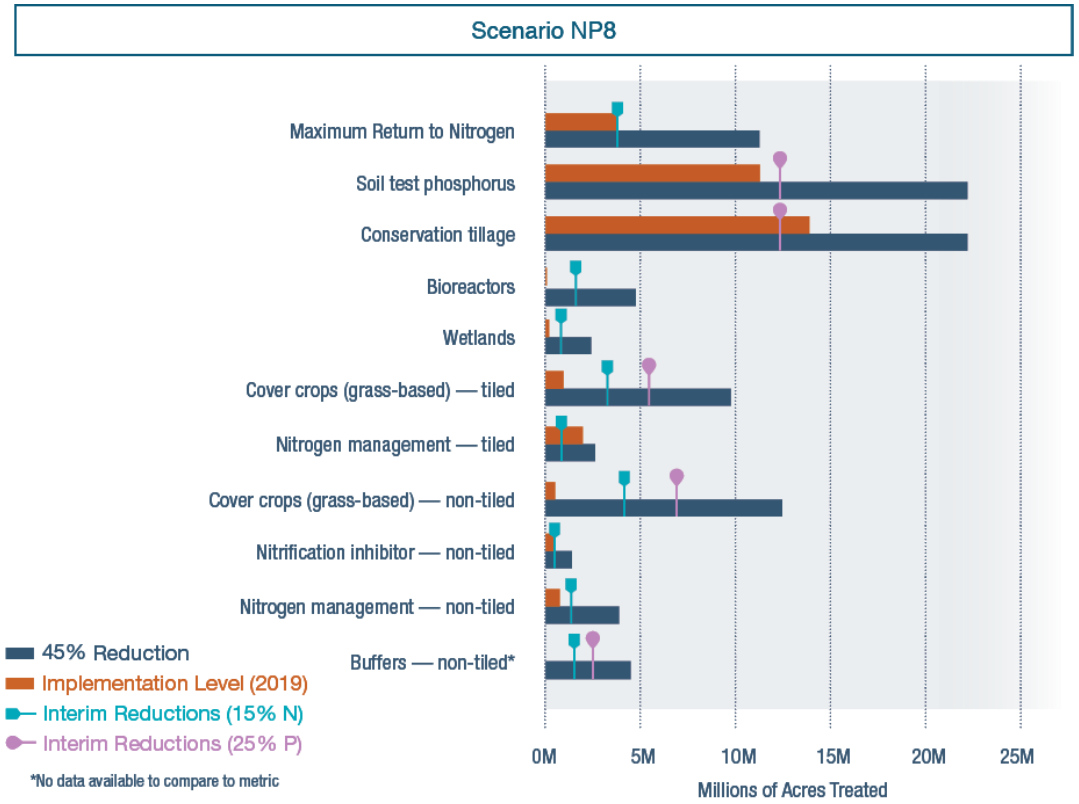


*Figure 8.6. Agricultural implementation as compared with scenario NP8*

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# Implementation Scenarios

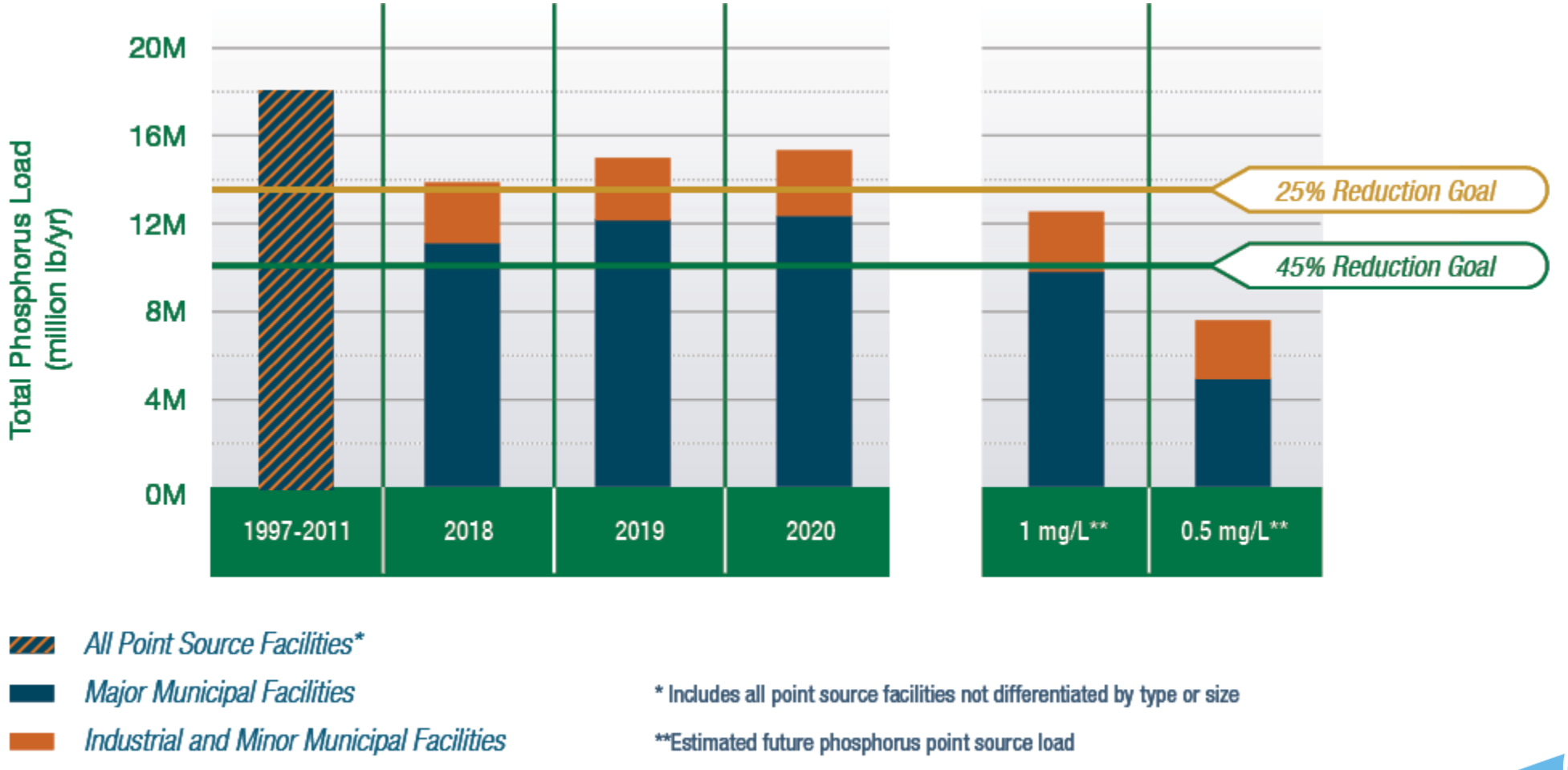


***Figure 8.7.*** *Total phosphorus point source load*

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# Moving Forward

- Policy Working Group and other workgroups and committees will continue to meet.
- Collaboration among agencies and organizations is encouraged to continue.
- Promote Planning and Implementation at the watershed scale.

Photo: Haley Haverback-Gruber

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# Contact Us

Visit the webpage at go.Illinois.edu/NLRS


Trevor Sample—Illinois Environmental Protection Agency

Trevor.Sample@Illinois.gov

Michael Woods—Illinois Department of Agriculture

Michael.Woods@Illinois.gov

Eliana Brown—University of Illinois Extension

brown12@Illinois.edu


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