



# Biennial Report 2015–2017 SUMMARY



The Illinois Nutrient Loss Reduction Strategy (Illinois NLRS or the strategy) lays out a plan to leverage existing programs to optimize nutrient loss reduction while promoting collaboration, research, and innovation among the private sector, academia, non-profits, wastewater treatment agencies, the agricultural sector, and state and local government. The primary strategy goals are to reduce annual loading of nitrate-nitrogen and total phosphorus to the Mississippi River and address the impacts of local water quality. The ultimate goal is to achieve 45 percent loss reductions in both nitrate-nitrogen and total phosphorus, with the interim loss reduction goals of 15 percent in nitrate-nitrogen and 25 percent total phosphorus by 2025.

This Biennial Report on the Illinois Nutrient Loss Reduction Strategy describes actions taken to achieve the goals since the document's release. Reflecting the strategy, efforts have been focused in three sectors that can play significant roles: agriculture, point source, and urban stormwater.

This report demonstrates that significant progress has been made towards reducing nutrient loads in Illinois rivers and streams since the strategy release in 2015. Many farmers are implementing best management practices (BMPs) and technologies for more efficient nutrient use. The large number of BMPs installed is an indication that this effort is making progress. In the point source sector, most major treatment plants have received permit updates and have facility upgrade plans in motion.

For the agriculture sector, the report is based on the premise that resources that fund and support outreach efforts lead to BMP implementation, which results in water quality improvements. The point source sector adoption of BMPs is primarily based on regulations and permit updates. The stormwater sector's improvements thus far are due to funding of state, community, and watershed projects.

Illinois has been able to make significant progress in many areas despite no new monies for implementation. Progress happened because of numerous partnerships that leveraged resources and retargeted efforts to nutrient loss reduction goals. As the program matures and more people and partners become involved, continuing and growing progress is expected.



## Agriculture

The Agriculture Water Quality Partnership Forum (AWQPF or the forum) works to implement agricultural policy and management decisions related to the strategy.

In 2016, 89 staff members were engaged in strategy outreach, implementation, or research for this sector. This number describes existing agency employees and AWQPF members working on nutrient loss reduction goals. Many people outside of AWQPF who are also involved in implementation, such as farmers and private contractors, are not reflected in this number.

Forum members reported that the agriculture sector invested nearly \$55 million in nutrient loss reduction research, outreach, implementation, and monitoring. This amount reflects contributions from AWQPF members and other organizations that conduct work towards Illinois NLRs goals. However, some dollars put towards strategy efforts are difficult to quantify because farmers are also implementing BMPs outside of state and federal cost-share programs.

As the figure below shows, AWQPF members reported extensive outreach efforts. In 2015, several agricultural groups proactively led efforts to inform

farmers, retailers, and certified crop advisers about the importance of Illinois NLRs. Representatives travelled throughout the state to hold meetings at county offices, which were followed up by automated phone calls to Illinois residents. In 2016, AWQPF members promoted the strategy to producers through a wide variety of programs and activities, including field days, workshops, and conferences. Through these and other efforts, Illinois farmers have become largely aware of practices that mitigate nutrient loss.



Resources and outreach have led to increases in BMP adoption on agricultural lands. Nitrogen application timing has shifted from fall only to fall and spring split applications on an increasing number of acres. Likewise, the number of acres of in-field and edge-of-field conservation practices has increased substantially since the 2011 baseline year. The figure below illustrates BMPs reported

through the Conservation Reserve Program (CRP) administered through the Farm Service Agency and the Conservation Reserve Enhancement Program (CREP) run through the Illinois Department of Natural Resources. This figure does not encompass all the available BMP implementation data, but it provides a snapshot of these programs.

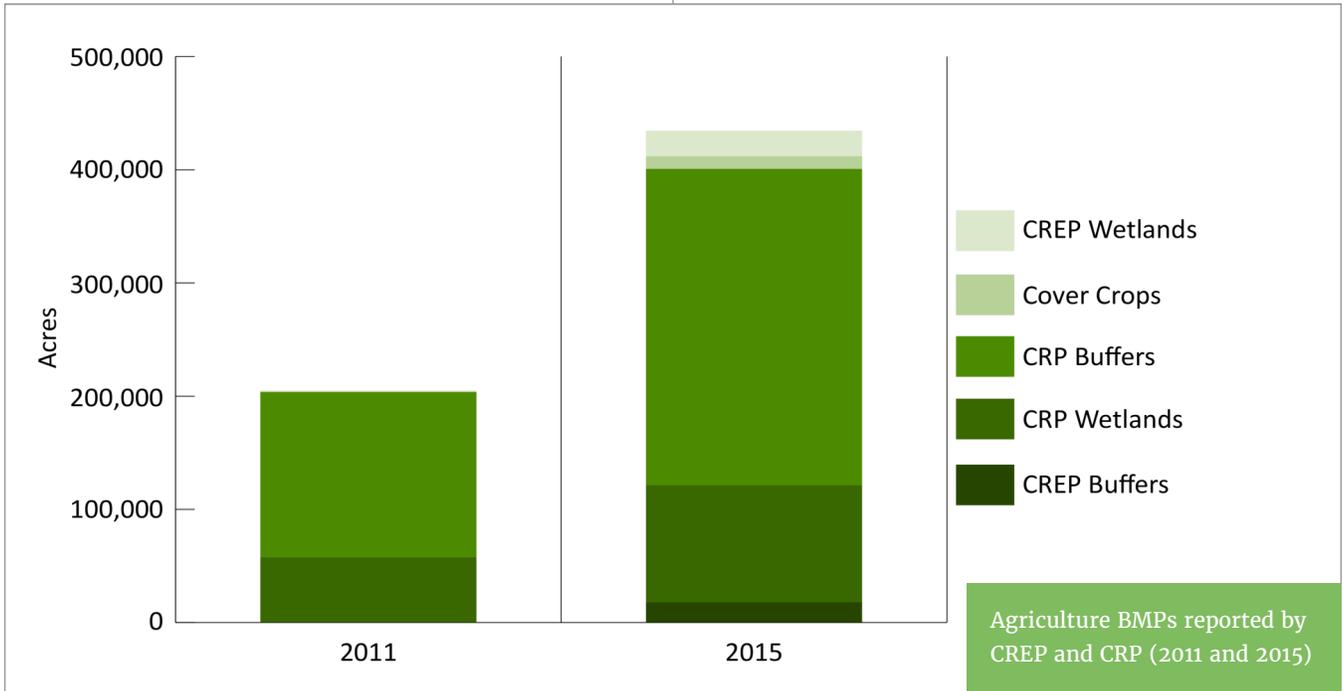


Photo: Illinois Farm Bureau



Photo: Metropolitan Water Reclamation District of Greater Chicago

## Point Source

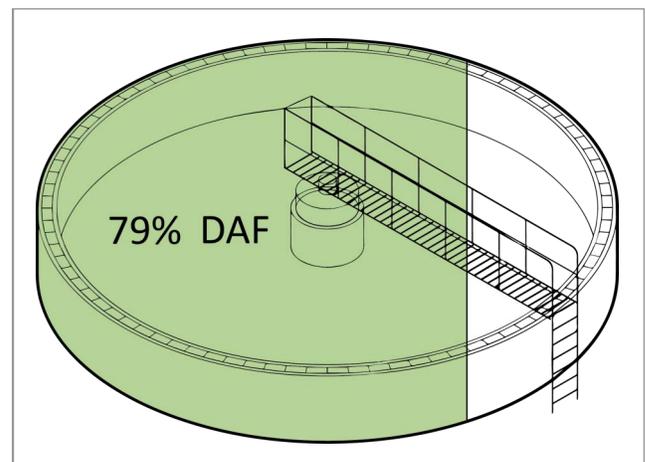
The Performance Benchmark Committee (PBC) is a new working group that was established to address implementation needs defined in Illinois NLRs. Both the agricultural and stormwater sectors had a plan in place to develop measures and benchmarks, so PBC set out to work with the point source sector in this process.

Facility improvements driven primarily by regulatory updates have promoted nutrient loss reduction. As part of the National Pollutant Discharge Elimination System (NPDES) permit renewal process, Illinois Environmental Protection Agency (EPA) requires major dischargers to submit a feasibility study for reducing phosphorus levels. Major dischargers are also required to submit and implement phosphorus discharge optimization plans for existing facilities.

Additionally, as the figure on the right shows, nearly 80 percent of all effluent (design average flow or DAF) from wastewater treatment plants in Illinois is regulated under an NPDES permit with a total phosphorus limit (as of 2016). The number of permits with total phosphorus limits will continue

to grow as existing major permits expire or are up for renewal.

Several of the largest major wastewater treatment facilities have directed significant resources toward nutrient removal. Through a survey, facilities reported allocating approximately \$37.4 million to fund feasibility studies, optimization studies, and capital investment in 2016.



Percentage of point source effluent from major wastewater treatment facilities with phosphorus limits in NPDES permits

## Urban Stormwater

In 2016, Illinois EPA provided \$4,349,708 for nonpoint source projects through Section 319 grants, which include both agricultural and urban projects. In 2014, when stormwater mitigation projects became eligible for the Illinois EPA State Revolving Loan Fund, three projects were funded. In 2016, no new projects were funded, but the numbers are expected to increase as communities begin to implement stormwater management plans.

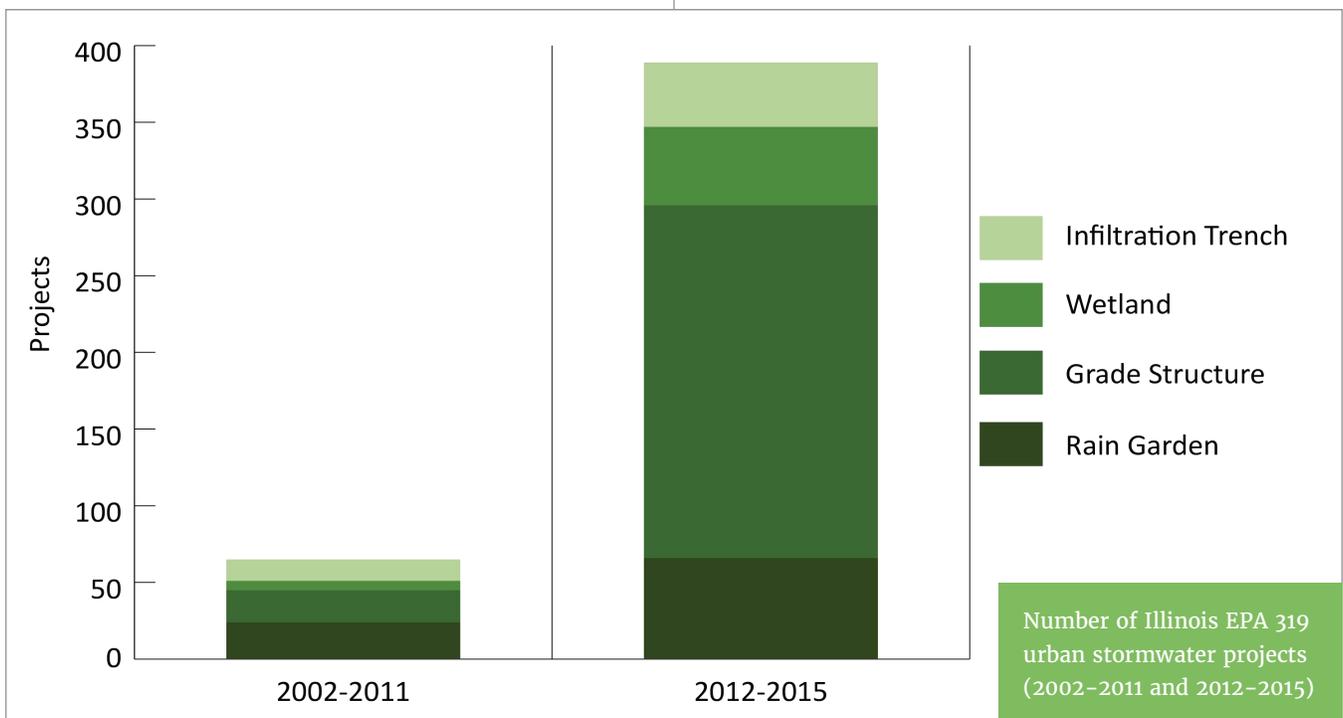


Photo: Illinois Water Resources Center



Photo: Illinois Water Resources Center

Illinois EPA provides avenues through which municipalities and local organizations can secure funding to address stormwater and nutrient loss issues. Through technical and financial assistance through the Section 319 grant program, Illinois EPA encourages stormwater projects such as those listed below. Additionally, from 2011 through 2014, the Illinois Green Infrastructure Grant program funded 40 projects that addressed combined sewer overflow, stormwater retention and infiltration, and more.



## Science Assessment Update

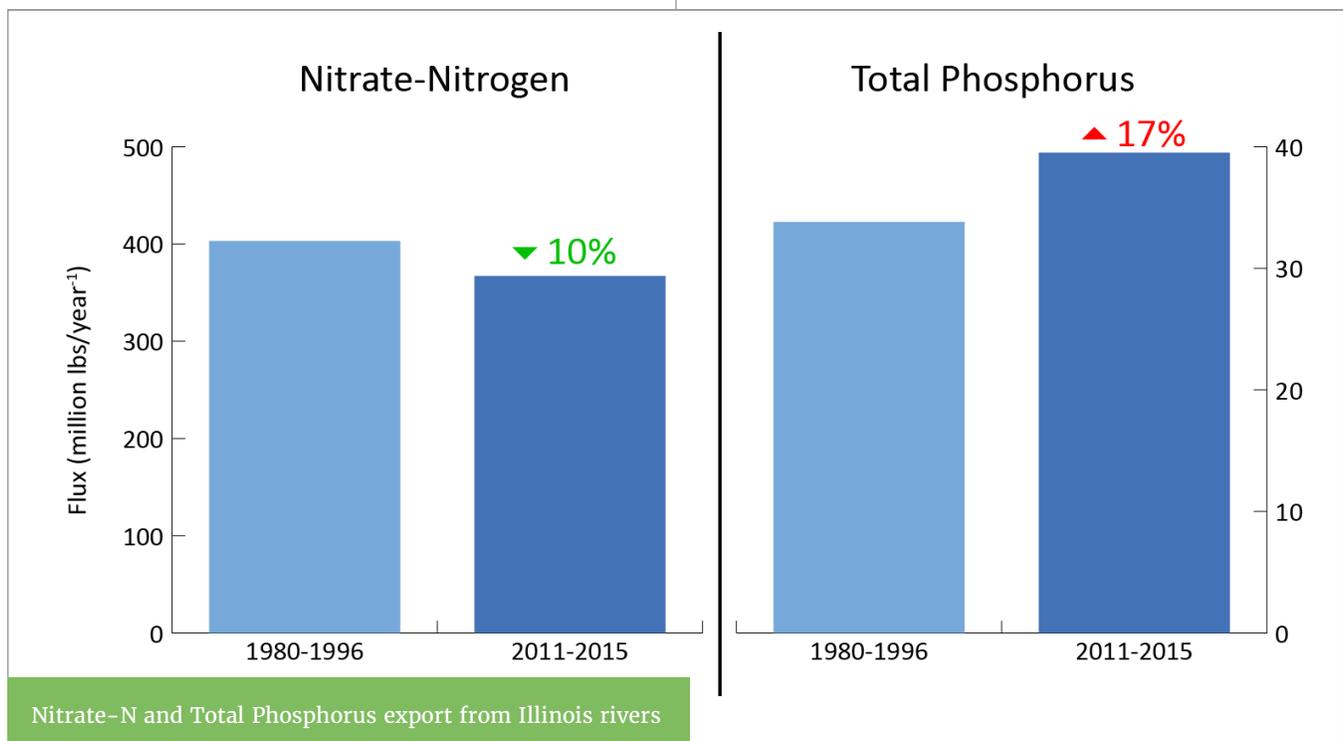
The Illinois NLRs Science Assessment has been updated in this report to include nutrient load data from 2011–2015. Nitrate–nitrogen loads during that time decreased by 10 percent when compared to baseline 1980–1996 load data. The science assessment authors believe a plausible explanation for the decreasing nitrate–nitrogen concentration trend is improved nitrogen balances in the state. Fertilizer sales have changed little since 1980, and harvest removal of nitrogen in grain has greatly increased. This has led to a large decrease in residual nitrogen, and likely has led to a decline in both tile and riverine nitrogen losses. The 10 percent reduction in nitrate load at near average flow conditions for the state may suggest that the load reduction was not primarily due to below average water flows during 2011 to 2015, but that some progress has been made in decreasing nitrate–nitrogen losses from Illinois due to improved management and conservation efforts.

Evidence presented in chapter 4 of this report reveals that farmers are increasingly adopting 4R (right source, right rate, right time, right place) nutrient stewardship, which offers a possible explanation for why fertilizer sales have been static as crop yields continue to increase.

Conversely, total phosphorus loads increased by 17 percent over the same period, which may be explained by an increase in effluent flow due to population growth and land use changes that come from population growth. Additionally, some facilities had not yet completed upgrades to meet new permit requirements at reporting time. The impact of these upgrades will be reflected in future reports.

Overall, this first update since the release of the strategy finds that existing agricultural programs and personnel have collaborated on research and outreach to work towards optimizing nutrient loss reduction and that significant progress has been made. In the point source sector, ongoing efforts to update and upgrade facilities show promise for the future. Additionally, communities are beginning to address stormwater issues through green infrastructure and other approaches.

This fact sheet offers a brief recap of all the resources, efforts, and results that have moved nutrient loss reduction forward in the three sectors. To learn more, see detailed information in the Illinois Nutrient Loss Reduction Strategy Biennial Report.



## Acknowledgements

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› Aqua America

› Association of Illinois Soil and Water Conservation Districts

› Bloomington and Normal Water Reclamation District

› City of Aurora

› City Water, Light, and Power

› Downers Grove Sanitary District

› Environmental Law and Policy Center

› GROWMARK

› Illinois Association of Drainage Districts

› Illinois Department of Agriculture

› Illinois Department of Natural Resources

› Illinois EPA

› Illinois Environmental Regulatory Group

› Illinois Farm Bureau

› Illinois Fertilizer and Chemical Association

› Illinois Pork Producers Association

› Illinois Corn Growers Association

› Metropolitan Water Reclamation District of Greater Chicago

› Nutrient Research Education Council

› Prairie Rivers Network

› Sierra Club

› University of Illinois at Urbana-Champaign

› University of Illinois Extension

› Urbana Champaign Sanitary District

› USDA-Natural Resources Conservation Service

### Special Thanks

Drs. Mark David, Gregory McIsaac, and Corey Mitchell, *University of Illinois, Department of Natural Resources and Environmental Sciences*, who provided the update to the Science Assessment.

Dr. Anna-Maria Marshall, *University of Illinois Department of Sociology*, who provided analysis of the outreach data.

### Cover Photo

Illinois Water Resources Center

\* The Illinois NLRS Biennial Report was coordinated by Illinois Water Resources Center. As a part of University of Illinois Extension, Illinois Water Resources Center and Illinois-Indiana Sea Grant work with scientists, water professionals, and communities to address the state's water resource challenges.

