AGRICULTURAL SECTOR

PERSPECTIVES ON NLRS IMPLEMENTATION

WARREN D. GOETSCH, P.E.

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY | Improving our water resources with collaboration and innovation

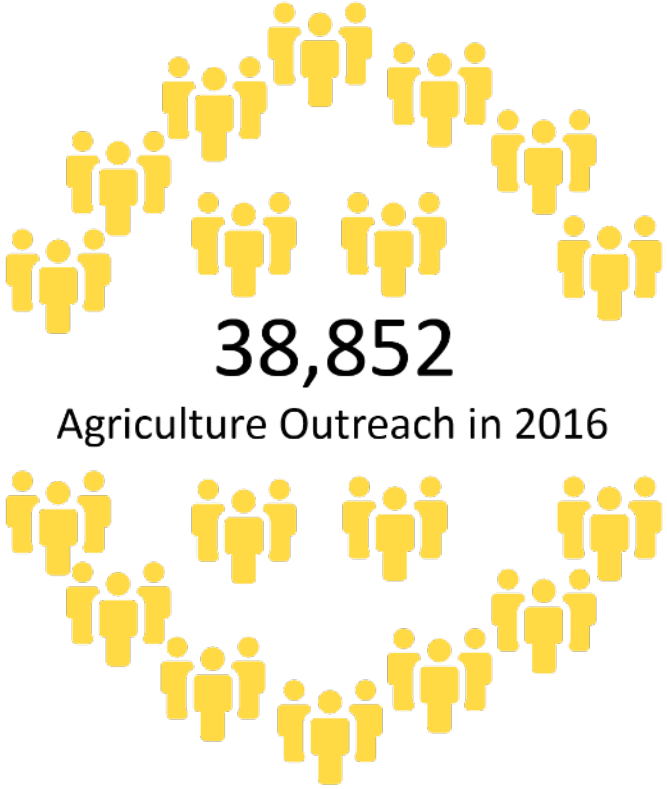
Progress made on the Illinois Nutrient Loss Reduction Strategy over the first two years of implementation?

The agricultural sector has made significant progress both in terms of issue awareness as well as BMP adoption. Producers turned out in significant numbers to various meetings and other events over the last two years to learn about the NLRS and appropriate management practices to address nutrient loss. Producers have also shown significant progress towards BMP adoption with regards to reduced tillage, cover crops, and fertilizer application timing.

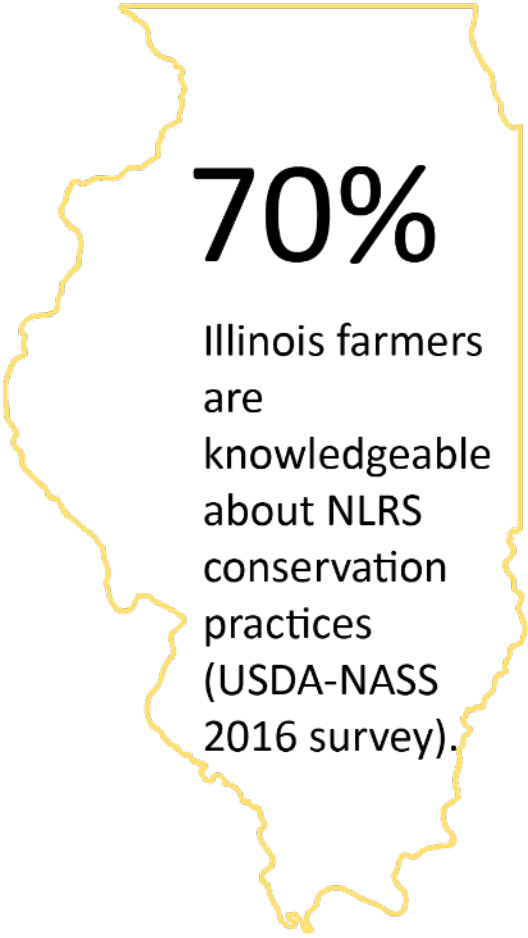
AGRICULTURE OUTREACH HIGHLIGHTS

1,100
NLRS Roadshow Attendees in 2015

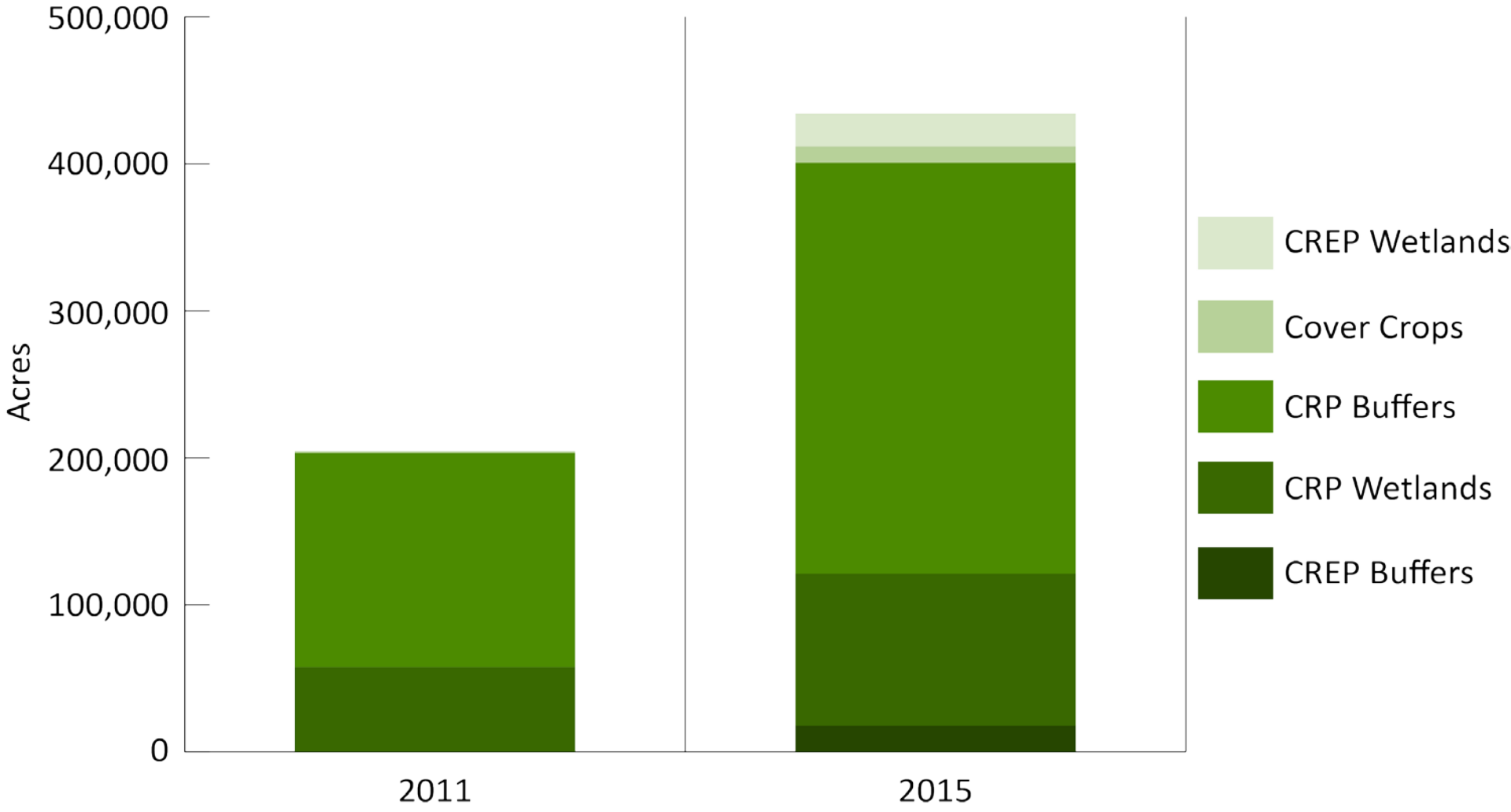
64,000
Automated Phone Calls to Farmers



38,852
Agriculture Outreach in 2016



70%
Illinois farmers are knowledgeable about NLRS conservation practices (USDA-NASS 2016 survey).


500,000
400,000
300,000
200,000
100,000
0
Acres
2011
2015
CREP Wetlands
Cover Crops
CRP Buffers
CRP Wetlands
CREP Buffers

Have you expectations changed or grown in the last two years?

Personally, my expectations have grown as I have seen the level of interest and ownership that has been exhibited all across the ag community over this issue.

- *Organizational Level*
- *Producer Level*

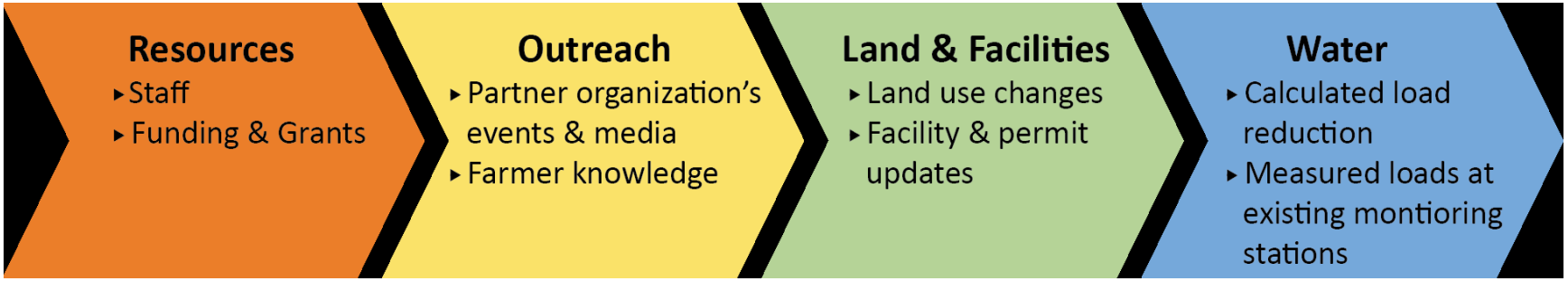
What are the successes and/or lessons learned over the first two years of this implementation phase?

Producers are certainly willing to learn more about management practices and interested in experimenting with best management practices like cover crops.

However, they must see both an immediate as well as a long term benefit to their farming enterprise if they are to be expected to adopt the more expensive BMPs.

What are the successes and/or lessons learned over the first two years of this implementation phase?

The ag community has provided a very positive response to the awareness phase of the strategy but the BMP adoption phase (Land & Facilities) will be more challenging.



What opportunities or action steps should we focus on going forward?

-Just like any initiative, we need to continue on all phases of the strategy, continuing to raise awareness while moving more focus towards implementation.

-We need to continue the momentum developed during the initial two years of the strategy without “burning out” the early adopters.

What opportunities or action steps should we focus on going forward?

-Focus must shift more to the local areas where local leaders can promote the program and assist with local adoption.

-The new *watershed coordinator* approach should be a good test of this concept over the next few years.

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Illinois NLRS Workshop

One Point Source Perspective

(from one sewer rat)

Rick Manner

November 29, 2017

Progress In 1st Two Years?

- Paperwork / numerous permits modified
  - Limits
  - Monitoring
  - Assessments
  - Optimization
  - Construction
  - $$$ spent

- Some substantial progress – Tangible results
  - Chemistry at many POTWs ***is*** improved
  - Chemistry at all POTWs will continue to improve
  - Measurably better biotic indices in DuPage River

Have Expectations Changed or Grown?

- Some large "early wins" came in as expected
  - MWRDGC is moving the ball
  - Interim P Rule continues to move things forward

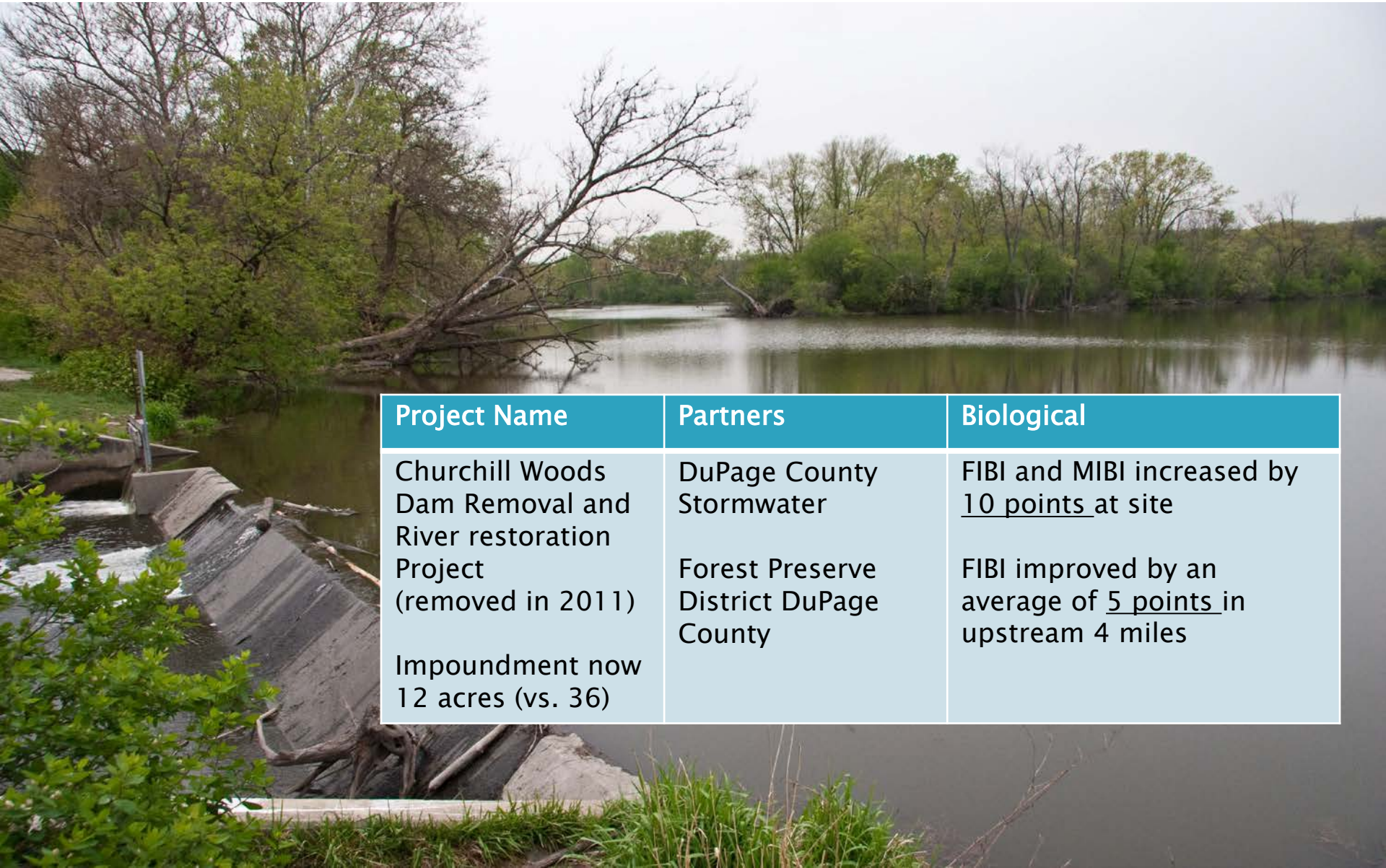
- Several positive surprises – Woo-hoo!
  - MWRDGC, DRSCWG have exceeded expectations
  - MWRDGC settlement has many new good ideas

- Still worried that many ratepayers' dollars will be spent and water chemistry will improve, BUT "success" in these metrics will probably not result in fewer green rivers in IL, or in less expansive Gulf Hypoxia.

What Are The Successes?

- MWRDGC Stickney at 0.67 mg/L!!! (1/17 to 10/17)
  - 0.36 mg/L from Kirie (easier facility to install)
- Numerous Interim P Facilities Statewide
  - 2 New BNR Plants at SCWRD (Springfield, $170MM+)
- Bio-P Installations Recently Complete
  - NSWRD (North Shore, $9MM)
  - GPSD (Peoria) – voluntary, for improved operations
- Projects in DRSCWG – Improved biotic indices!!!

What Are The Successes?



Project Name	Partners	Biological
Churchill Woods Dam Removal and River restoration Project (removed in 2011) Impoundment now 12 acres (vs. 36)	DuPage County Stormwater Forest Preserve District DuPage County	FIBI and MIBI increased by 10 points at site FIBI improved by an average of 5 points in upstream 4 miles

What Are The Successes?

Project Name	Partners	Short Term	Long term
Oak Meadows Dam Removal and River restoration Project (Removed 2016)	Forest Preserve District DuPage County DuPage County Stormwater	Qualitative Habitat. Evaluation Index (QHEI) improved an average of 16 points	Post project Macroinvertebrate Index of Biotic Integrity (MIBI) and Continuous DO sampling started in 2017

What Are The Successes?

Practice	Units	Notes
Dam Removal	2	Improve DO and habitat values in impoundment
A-Jacks Removal	6,175 linear feet	Allow for increase in bank habitat values
Sheetpile Removal	1,190 linear feet	Allow for increase in bank habitat values
Soil Lifts Installed	7,530 linear feet	Allow for increase in bank habitat values
Bank Protection Fabric Installed	13,740 square yards	Erosion Control
Cobble Installed	9,400 Tons	Increase steam bed habitat values
Boulders Installed	105 Tons	Increase steam bed habitat values
Root Wads Installed	3,765 linear feet	Allow for increase in bank habitat values
Riparian Enhancement (including wetlands)	42.2 acres	Increase buffer/riparian habitat value
Other Natural Areas Restoration including wetlands	103 acres	Increase upland habitat value
Total wetlands (all)	38.2 acres	Increase habitat value

What Are The Lessons Learned?

- ***NLRS is working to reduce P from POTWs statewide***

- Interim P rule efficiently impacts expanding plants

- Assessments confirm
  - Smaller facilities will gravitate towards Chem-P
    - Although several have done Bio-P
  - Larger facilities will generally prefer Bio-P
    - More detailed assessments may show Bio-P to be more expensive than anticipated. FRWRD went back to their Board for confirmation that they should spend higher $$$ for Bio-P.
  - Going to limit of 0.1 mg/L will be very expensive

What Are The Lessons Learned?

- Confirmed every plant is unique
  - FRWRD integrated BNR & expansion at West Plant in 2003
  - FRWRD surprisingly high costs for other 2 plants
  - NSWRD installed BioP at 2 plants for $9 million
  - BNWRD expects to need to rebuild most of plant for BioP
    - Will require 10+ years to design and build, maybe $100MM?
  - GPSD has installed BioP voluntarily – no limits
    - enough C into plant that BioP is relatively straightforward
  - UCSD BioP in 2005 at SW Plant
    - Replaced ChemP. Installed voluntarily to save operational $.
  - UCSD NE Plant has no P limits – is optimizing
    - We have seen surprisingly decent summertime P removal with creating small anaerobic zone (no school, less flow)

What Are The Lessons Learned?

- Innovation gets useful progress faster
  - Bio-P is continuing to become more standard, reliable
    - This technology is very young. It was unproven earlier.
    - Several smaller POTWs have even taken up installing Bio-P
  - MWRDGC
    - < 0.7 mg/L at Stickney in 3 years
    - < 0.4 mg/L at Kirie
    - Largest Ostara P-removal in world ($32MM)
    - Evaluating numerous other options – more tomorrow
  - DRSCWG shows how to fix a bad TMDL

What Are The Opportunities?

- **MWRDGC settlement has many good ideas**
  - Need time to install P removal technology
    - Need to act as soon as practical.
      - Start and do complicated work now, not simply delay.
  - Bias favoring Bio-P
    - Understanding that sometimes it won't work
  - Annual geometric mean of 0.5 mg/L
    - Not a toxin. Aiming for lowest, long-term performance.
  - Watershed-based solutions should take precedence
  - Trading

  - Attractive compromise / Better than litigating permits

    "Our fathers' generation figured out BOD. Can we do nutrients?"

What Are The Opportunities?

- **DRSCWG is a Model of Great Watershed Planning**
  - Demonstrates value of high quality analysis
    - Verified TMDL was wrong to focus on chemistry as #1 cause
    - Local leadership blazed a better trail
    - Ranked issues in order of likely impact on watershed
    - Addressing top priority issues first (mostly habitat)
    - Money ***not spent*** on POTW P-removal is funding source
    - Can they be permitted to continue doing other projects first?
    - Can others be allowed to follow in their footsteps?

What Are The Opportunities?

Trading

- Might stimulate next set of innovative ideas
  - IPCB Initiative
- Optimize cost of improvements between plants
  - Allow some plants to do more faster and others slower
  - Able to equate very different solutions

Contact Information

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Environmental Groups Perspective

First Two Years of Illinois Nutrient Loss Reduction Strategy Implementation

Dr. Cindy Skrukrud
Clean Water Program Director
Sierra Club, Illinois Chapter

Perspective on progress that has been made…

- Heartened by nitrate reductions in water quality data
  - Farmer survey also substantiates this change—
    - Nitrogen management
    - Cover crop & edge of field practices adoption
    - Perennial crops
- Discouraged by phosphorus increases in water quality data
  - We have even farther to go than we anticipated in the original strategy
  - Agree that phosphorus reduction activities are underway at a number of major wastewater facilities
  - Farmer survey indicates—
    - Acres in reduced tillage increasing
    - Soil testing is leading to reduced P application

Have your expectations changed or grown?

- Good momentum within the wastewater and agricultural community to address this problem has improved our expectations that we will meet our targets
- We are still concerned that the timeline is not detailed/aggressive enough to meet 2025 interim target and 2035 goal

Successes/lessons learned over the first two years

- Lots of people talking about the Strategy
- Farmer survey provided useful information
- Wastewater sector survey was too complicated and intimidating

Opportunities/action steps to focus on going forward

- Use data available now to develop stepping stones of practices to implement on a biennial basis in order to achieve reductions needed to meet 2025 targets
- Conduct actual tally of phosphorus and nitrate discharges from wastewater plants on a yearly basis to keep track of progress
- Continue biennial survey of farmers/translate into estimated reductions achieved
- Ensure SWCD funding as means to reach farmers and address urban runoff in all counties throughout the state
- Expand authority to all Illinois counties to establish countywide stormwater management plans/ordinances and stormwater utility fees

Opportunities/action steps to focus on going forward

- Watershed group formation is key to address nutrient issues within instate waterways
  - Illinois EPA should provide direction & support
- Increase instate river monitoring to assess progress
- More research is needed on the total contribution of nutrient loss from CAFOs, both from the CAFO itself and manure spreading fields
- Promote research into development of new crops and methods
- Continue to make progress on wastewater plants reducing phosphorus below 1.0 mg/L, lower where needed to protect against unnatural plant or algal blooms in Illinois waters
  - Explore new technologies for nutrient capture
  - Conduct pilot studies
- Increase outreach to public on Harmful Algal Blooms and their health concerns

Environmental Sector Representatives

THANK YOU!

- Prairie Rivers Network
  - Carol Hays
  - Kim Knowles

- Sierra Club
  - Albert Ettinger
  - Cindy Skrukrud

URBAN STORMWATER

2017 Inaugural NLRS Workshop

Springfield, November 29, 2017

Hal Sprague
Center for Neighborhood Technology

CNT

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Urban Nutrient Losses

Urban stormwater occupies a small but important niche in the Illinois Nutrient Loss Reduction Strategy.

Contributes a small percentage of nutrients carried by Illinois rivers that feed the Dead Zone, but impact on the ecological health of local streams and lakes at the headwaters is substantial.

CNT

Urban Nutrient Losses

"The goal of the strategy is twofold: reduce the load of nutrient pollution leaving the state by way of the Mississippi River *and improve water quality for the benefit of Illinois residents*."
(NLRS, p. 1-1.)

CNT

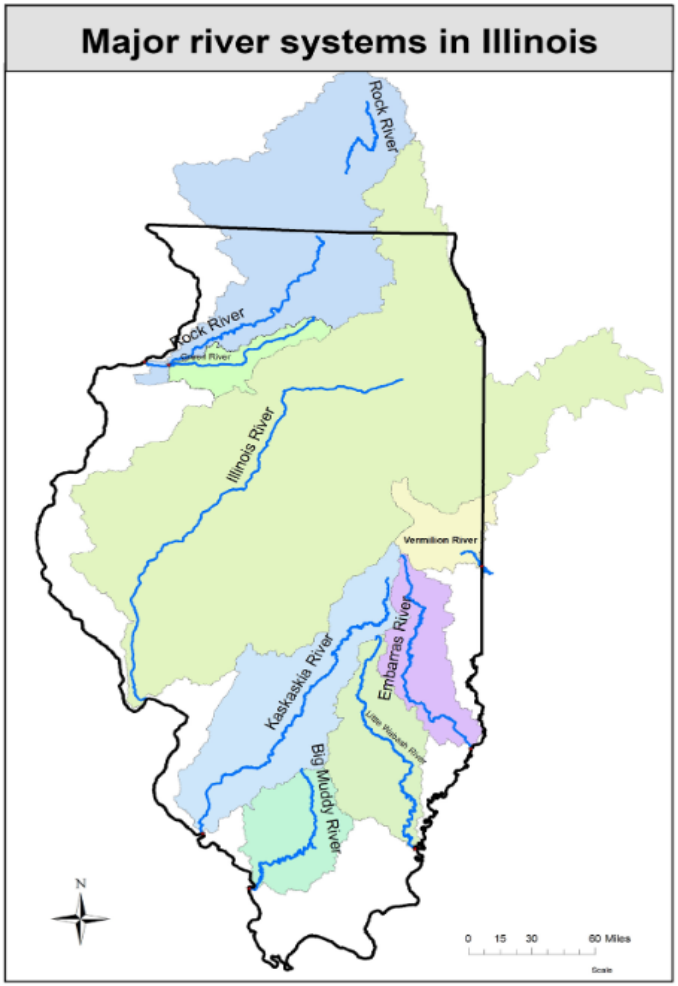


Figure 3.1. The eight major river systems used in estimating state nutrient loads. Note that gaging stations are upriver from the state boundary, so the estimated area is smaller.

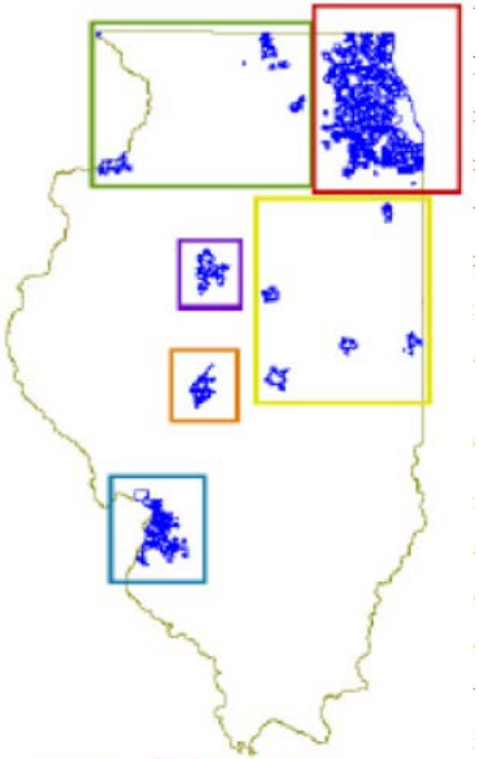


Figure 7.2. MS4 Communities.

1. **What is your sector's perspective on progress made on the Illinois Nutrient Loss Reduction Strategy over the first two years of implementation?**

We are disappointed.

2. Have your expectations changed or grown over this period?

Expectations have changed –

We are realistically pessimistic, but still steadfastly hopeful.

(We are not giving up!)

3. What are the successes and/or lessons learned over the first two years of this implementation phase?

Initiatives:

Subcommittee explored possibility of workshop series to inform elected officials and practitioners about stormwater management and concerns.

3. What are the successes and/or lessons learned over the first two years of this implementation phase?

Initiatives:

Efforts to assist MS4 communities in developing survey questions to evaluate public outreach efforts, as part of permit requirements

3. What are the successes and/or lessons learned over the first two years of this implementation phase?

Initiatives:

Created a tracking subcommittee to determine the best way to document urban nonpoint source mitigation practices in Illinois [more on that later in the program]

Successes:

- Under Section 319, in 2016, IEPA provided $4,349,708 for nonpoint source projects, including agricultural and urban projects.

- Green Infrastructure Grant (IGIG) Program, initiated in 2011, funded 40 projects.

Successes:

- Illinois-Indiana Sea Grant's Lawn to Lake Program
- County education programs (e.g., DuPage County)
- Illinois MS4 General Stormwater Permit
- Calumet Stormwater Collaborative
- Stormwater Fee Programs

Lessons Learned, Questions and Concerns:

a. State Revolving Fund – regulation purgatory
b. Green Infrastructure Grant Program – no longer available; not enough money
c. Rain Barrels – too small to be effective
d. MS4 Permit – no numerical standards, limited enforcement and training
e. TMDLs?
f. Stormwater fee programs – only 22

4. What opportunities or action steps should we focus on going forward?

a. SRF – speed up revisions to prioritize GI
b. Advocate for revival of GI Grant Program, at a $5-10M level
c. Promote larger rain capture systems: >500 gal, with slow release mechanisms
d. MS4 Program – promote adoption of numerical volume standards, more resources at IEPA for the program, standardized training requirement

4. What opportunities or action steps should we focus on going forward?

e. Countywide stormwater management with volume control standards
f. More stormwater fee programs to provide revenue for project funding and promote loans as a good alternative to direct payment
g. Education, education, education – require MS4s to have CFMs? Use NGICP as standard GI training? Programs for public works directors & elected officials?
h. Street sweeping?

ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

WATER SECTOR

ISAWWA Surveyed the Water Industry

Request for Survey Input

As members of the Illinois Nutrient Loss Reduction Strategy (NLRS) Policy Work Group representing the Drinking Water sector, Kevin Culver and Ted Meckes have been tasked to report to the work group on the Water Sector's perspective on progress that has been made on the NLRS goals over the first 2 years of the implementation period. Here is a LINK to the NLRS biennial report for your reference.

Here is a link to the SURVEY to provide feedback.

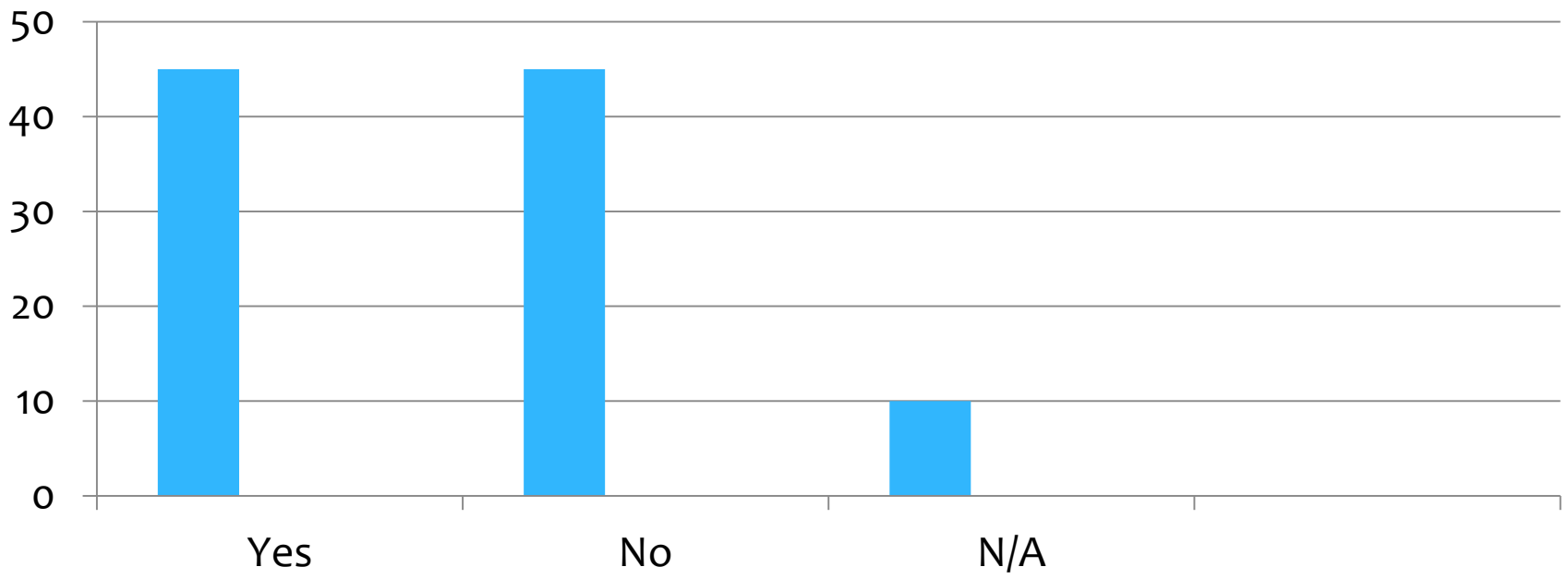
Thank you for your input.

Kevin Culver
Ted Meckes

Have you seen a decrease in nitrate and phosphorus levels in your water supply?

	Yes	No	N/A
Nitrate Reduction	25%	40%	35%
Phosphorus Reduction	20%	50%	30%

Have you experienced better communication with producers and retailers in your watershed?



Have you seen an increase in the following in your watershed?

	Yes	No	N/A
Grass Filter Strips	10%	45%	45%
Cover Crops	30%	30%	40%
Increase Setback Distances	0%	70%	30%
Training Opportunities for Producers	55%	20%	25%

Have your expectations changed or grown over this period?

* Yes my expectations have grown but the progress is too slow. Farmers either need incentives or disincentives.

* Let's say I'm hopeful. I do believe the farmers are aware of the problem but I don't think they are doing enough to rectify the problems.

What are the successes and/or lessons learned over the first 2 years of this implementation phase?

* Their have been more studies and outreach programs, but conventional tillage seems to be up.
* Increase in crop cover acres
* Progress is slow- changes need to be made in regards to tillage and setbacks.

What opportunities or action steps should NLRSPWG focus on going forward?

* The NLRSPWG needs to develop a list of Best Management Practices (BMP's)

    Cover crops,

    Setbacks

    Grass waterways and filter strips

    Conservation tillage

    Nutrient Management Plans

and the producers and retailers need to follow those BMP's

WHERE WE GO FROM HERE

* Collaboration between Producers, Water Supplies, Regulatory Agencies
* Change tillage practices
* Identify Funding Sources
* Continue Education
* Adopt BMP's

QUESTIONS