ILFB Partner Update: Illinois Farmer Implementation of the NLRS

Lauren Lurkins
Director of Environmental Policy
Illinois Farm Bureau
ILLINOIS FARM BUREAU

• Since 1916, Illinois Farm Bureau has provided education and information to help farmers, while supporting legislation and lobbying about agricultural issues.

• Founded by farmers as the Illinois Agricultural Association, one of the first activities of the new organization was to bring soil and crop specialists to each county to supply farmers with the latest agricultural research information and recommendations.

• Today, IFB has approximately 80,000 voting members. The voting membership represents three out of every four Illinois farmers.

• Farmers join through their county Farm Bureau and engage in a grassroots policy development process, programs and initiatives.
IFB HAS PRIORITIZED LEADING ON ENVIRONMENTAL ISSUES – WITH A SPECIAL FOCUS ON THE NLRS
2015 TO CURRENT - $1.5 MILLION

CURRENT IFB NLRS PRIORITIES

• Education and Outreach
• Supporting Research
• Supporting Implementation
• Demonstrating Progress
EDUCATION AND OUTREACH

- From 2015 to present:
  - Almost 48,000 people reached in 306 events (field days, workshops, webinars, conferences, presentations)
  - Approximately 500 FarmWeek articles to 74,000 weekly subscribers
  - Approximately 45 RFD Radio interviews, 80 rural markets in Illinois
  - Approximately 5 million people reached on social media
  - Approximately 60,000 visits to www.ilfarmersconserve.com
SUPPORTING RESEARCH

Scientific Researchers from:
- University of Illinois at Urbana-Champaign
- University of Illinois Extension
- Illinois State University
- Southern Illinois University Carbondale
- Prairie Research Institute

- Advisory Committees
- Support letters
- Farmer focus groups
- Hosting on-farm research sites
DEMONSTRATING PROGRESS

Important for:
- Tracking progress
- Telling farmer stories to a variety of audiences and agencies
- Showing diversity of needs and practices across state
CONCLUSIONS

• We appreciate the opportunity to participate and innovate
• Benefits of voluntary are robust engagement and commitment
• Documentation of efforts
• Direct farmer communication
• Meaningful progress
THANK YOU!

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(309) 557-3153
INLRS: Practices to Focus on Moving Forward

Dan Schaefer, Director of Nutrient Stewardship IFCA
Figure 4.36. On-farm nitrogen rate trials in all regions of Illinois, 2017–18
MRTN N rates from the N rate calculator, fall 2019

Based on N price = $0.30/lb N (NH₃ at $500/ton) and corn price = $3.75/bushel. Number in parentheses is number of trials used to produce the MRTN number.

<table>
<thead>
<tr>
<th>IL region</th>
<th>Soy-corn</th>
<th>Corn-corn</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>178 (68)</td>
<td>216 (72)</td>
</tr>
<tr>
<td>Central</td>
<td>188 (279)</td>
<td>208 (151)</td>
</tr>
<tr>
<td>Lake Springfield Watershed</td>
<td>183 (33)</td>
<td>209 (11)</td>
</tr>
<tr>
<td>South</td>
<td>200 (116)</td>
<td>208 (34)</td>
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</table>

Calculator website: http://cnrc.agron.iastate.edu/
NITROGEN RATE FACT SHEET

BMP’s for Sustainable and Profitable N Applications

Fall 2018

4R Nitrogen Rate Considerations

- The Nitrogen (N) input is among the highest variable cost inputs for the corn produce & ranks high in importance for corn production.
- Growers must continue their efforts to reduce the quantity of N moving off target and consider the 4R’s related to N, where rate is key.
- As corn yields climb to record historic levels, application rate guidelines from the past may over estimate N needs of the crop, eg. The old “Mass Balance” approach to past N Rate - (Exp: 275lbs/acre predicted corn yield x 1.2N/Bu = 330 lbs/acre actual N - $80 credit).
- The Maximum Return to Nitrogen (MRTN) Calculator is a true data driven tool, utilizing recent, local N-rate plots, which offers the producer a basis for an N rate which considers both yield and crop economics. (N cost relationship to corn grain selling price).
- N-Watch and The Climate Corp. N management tool can serve as a "N verification" tools as growers are attempting to maximize NUE, yield and profitability.

Maximum Return to Nitrogen (MRTN)

Corn yields continue to climb to record historic levels and corn hybrids seem to have better use efficiency of N, growers need every dollar to give a maximum return, and concerns of excess N in surface and ground water can lead to efforts to efforts to regulate N rates. The factors listed above should be enough for us to consider a modified approach to making N recommendations. Find the MRTN Calculator (http://crop.agron.iastate.edu/), and look at those input decision factors that pertain to your area. See the example in the chart to the right that considers a multiple price scenario.

Highlights of the MRTN rate calculator:

- MRTN Rate (lbs N/acre), (Green Arrow), is the N rate at the MRTN. For the data set, rotation, and price ratio(s), the MRTN rate would be the suggested rate to apply for maximizing net return to N application.
- Profitable N Rate Range (lbs N/acre), is the N rate values at a $3/acre net return range (LOW and HIGH) around the MRTN. An N rate within this range around the MRTN would provide similar expected economic return and could be considered the profitable N rate range. ($4.50/7 lbs of a C-88 rotation has a profitable rate range from 168—203 pounds per acre given the grower some rate flexibility)
- MRTN rate calculator is data driven from local N rate field trials and as you can see in the chart to the upper-right, there are 152 current corn on corn field trials and 245 corn on soybean field trials in the data set for Central Illinois. The data set is updated annually where new trials are added and older trials are taken out of the system.
- Do I still give credit to soybeans N left in the soil? No the data set above takes into consideration the N rate in the corn—soybean rotation. Soybeans are a net user of N and they do not leave N in the soil as an N credit, as some believe. The old Mass Balance approach to N trial took an “N - credit” for the previous soybean crop, whereas we should consider corn stover in a corn on corn rotation as a "penalty" to the N rate, because of the higher C:N ratio.
- How can I know that MRTN - N rates are adequate for the crop. Verification tools might include N-Watch soil sampling. Climate’s N - management tool, or the combination of the two in order to form a more accurate assessment of N status in the soil. PILFS can implement more N rate field studies in our "footprint" to increase confidence levels.

### 2017 N-Rate Trial, Lealino Mo.

<table>
<thead>
<tr>
<th>Year</th>
<th>Rotation</th>
<th>Number of plots</th>
<th>N-H4 Cost per Ton</th>
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<tbody>
<tr>
<td>2017</td>
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<td>52</td>
<td>$433</td>
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<td>$488</td>
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</tbody>
</table>

Contact Dari Muggard for more information: dmuggard@prfils.com
• Large portion of agricultural land in Illinois has 0 to 2% slope

• Large precipitation events can cause substantial runoff even from relatively flat fields

• Lack of research on the effect of conservation tillage practices, P rate, and placement method on P runoff.
Dissolved P Concentration (Camargo IL)
Average P Loss = <1 lb/A/yr

*6 of 8 flow events with greatest DRP were snowmelt events; 11/17/09 and 1/1/19 were rain events on unfrozen soils
IL Corn NLRS Update

L.F. Gentry, Ph.D.
Director, Water Quality Research, Illinois Corn Growers Association
IL Corn Targeting
Non-Point N & P Losses

Focus on: farmers

partnerships

financials

in-field practices

cover crops

Moving the needle on nutrient loss reduction
IL Corn’s Water Quality Initiatives

• First Time Cover Crop program (with Becks Hybrids)
  • Every year since 2015
  • 80-100 farmers every year

• Cover Crop Coupon program
  • 3rd year
  • $150-200 off cover crop seed costs

• Water testing program
  • Partnering with county SWCD offices
  • Anonymous water testing

• Precision Conservation Management
Running the numbers

- 330 farmers
- 350k acres
- 2 states - Illinois, Kentucky
- $5.3M NRCS RCPP award
Partnerships are Pivotal

- **Local Efforts**
  - SWCDs
  - IL Sustainable Ag Partnership
  - S.T.A.R.
  - Local Ag Retailers & Independent Consultants

- **NRCS**

- **Corporate Supply Chain**
  - PepsiCo, Mars, Field to Market

- **Conservation Groups**
  - The Nature Conservancy, American Farmland Trust, Environmental Defense Fund

- **Foundations and Universities**
  - Zea Mays, Walton Family Foundation, University of Illinois
Scaling Up & Staffing Up

- New IL Corn staff hires
  - Travis Deppe – PCM Director
  - Debbie Malloch – PCM Administrative Manager
  - Megan Dwyer – Nutrient Loss Reduction Manager

- Otter Lake RCPP
- 5 Year Transition program
- Rural Green Partnership
What are we doing to facilitate practice change in Illinois?
What are we doing to facilitate practice change across the Midwest?
Recognition & Success

• NRCS recognized PCM’s RCPP as a model of innovation

• U.S. Sen. Dick Durbin (5/19/19, Pantagraph): “The Illinois Corn Growers are among just a handful of commodity groups in the Midwest leading the way toward solutions for better soil, water quality and wildlife habitat, all of which help to address climate change.”

• Nov 2019: $258k National Fish and Wildlife Foundation Conservation Partners Program grant

• Nov 2019: $2.5M Conservation Innovation Grant (with NCGA)
Thank you!

Questions?
S.T.A.R. Program Update

Emily Bruner, PhD
American Farmland Trust
Chair, S.T.A.R. Science Advisory Committee
WHAT IS S.T.A.R.?

✓ A **FREE** tool
✓ Evaluate nutrient and soil loss management practices on individual fields
✓ Promote “conservation management practices”
HOW DOES S.T.A.R. WORK?

1. Field Form completed for individual fields for a given crop year.
2. Points assigned for each practice.
3. Summary of points convert to a S.T.A.R. Rating of 1 to 5 stars.
POTENTIAL S.T.A.R. BENEFITS

- Decrease nutrient & soil loss
- Positive image of agriculture
- Inspire other farmers and landowners
- Promotes producers for new farmland leases
- Assist with local conservation cost share
- Future market incentives for sustainably grown crops
- Support of water quality defense issues
- Increased net income

S.T.A.R. is a means to **EVALUATE, VERIFY, and RECOGNIZE.**
IL S.T.A.R. SUPPORTERS

- Illinois Department of Agriculture
- Illinois Environmental Protection Agency
- Association of Illinois Soil and Water Conservation Districts
- Soil and Water Conservation Districts
- The Nature Conservancy
- American Farmland Trust
- Illinois Sustainable Ag Partnership
- Soil Health Partnership
- Illinois Nutrient Loss Reduction Strategy Committee
- Illinois Fertilizer and Chemical Association
- ADM
- Kellogg’s/Bunge
- Illinois Corn Growers/Precision Conservation Management
- Interested county Farm Bureaus
- Various watershed project groups
- Illinois Certified Crop Advisors
- Farm Credit Illinois
IL S.T.A.R. Program Results 2017-2018

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
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<tbody>
<tr>
<td>Participants</td>
<td>78</td>
<td>181</td>
</tr>
<tr>
<td>Fields</td>
<td>104</td>
<td>439</td>
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<tr>
<td>Acres</td>
<td>7,500</td>
<td>27,505</td>
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<tr>
<td>Licensed Counties</td>
<td>2</td>
<td>34</td>
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</table>

S.T.A.R. was officially endorsed by the Association of IL Soil and Water Conservation Districts in 2018
IL S.T.A.R. Program 2019

- 45 counties now offer S.T.A.R. via SWCDs and Farm Bureaus

- S.T.A.R. training and information provided to over 800 attendees*

*Not including trainings provided by partner organizations
What’s New in 2019

- Revised Field Form to better align with NLRS goals
- Third-Party Program Evaluation
- Updated Business Plan
- Progressive Web App Development
- Annual Outcomes Report
What’s New in 2019

Regional and State Level
- Multiple RCPPs in development
- IDOA official endorsement

Midwest
- MOU with Iowa Association of Soil Conservation District Commissioners
- Several IN Counties participating

National
- NACD interested in making Program available nationally
THANK YOU
<table>
<thead>
<tr>
<th>Practice Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cover Crops (12)</strong></td>
<td></td>
</tr>
<tr>
<td>Winter Hardy (additional 2 pts if terminated after spring planting)</td>
<td>7 for first species, 3 for</td>
</tr>
<tr>
<td>Winter Kill</td>
<td>2 for first species, 1 for</td>
</tr>
<tr>
<td><strong>Soil Sampling (4)</strong></td>
<td></td>
</tr>
<tr>
<td>Sampled every four years or less</td>
<td>2</td>
</tr>
<tr>
<td>Spring/Summer Sample</td>
<td>1</td>
</tr>
<tr>
<td>GPS sampled (grid or zone)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Nutrient Management, Fall - Feb (5)</strong></td>
<td></td>
</tr>
<tr>
<td>No Nitrogen applied in this time frame*</td>
<td>4</td>
</tr>
<tr>
<td>No more than 50% of the total N applied as NH$_3$ (82-0-0) with an inhibitor^</td>
<td>1</td>
</tr>
<tr>
<td>MAP or DAP applied before Dec 1st</td>
<td>1</td>
</tr>
<tr>
<td>Manure/Biosolid injected or applied and incorporated after October 20th</td>
<td>1</td>
</tr>
<tr>
<td>Manure applied, not incorporated</td>
<td>-1</td>
</tr>
<tr>
<td><strong>Nutrient Management, March 1st - Summer (6)</strong></td>
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</tr>
<tr>
<td>No Nitrogen applied in this time frame and no prior fall application*</td>
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</tr>
<tr>
<td>Nitrogen application(s) during this time frame amounted to 50% to 74% of total N</td>
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<tr>
<td>Nitrogen application(s) during this time frame amounted to at least 75% of total N</td>
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<tr>
<td>A side-dress application (after planting) was at least 25% of the total N</td>
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<tr>
<td>Manure/Biosolid injected or applied and incorporated</td>
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<tr>
<td><strong>Additional Nutrient Activities (14)</strong></td>
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</tr>
<tr>
<td>----------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Total N applied = 181 to 200 lb/ac corn after soy, 201 to 220 lb/ac corn after corn</td>
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<tr>
<td>Total N applied = 180 lb/ac or less corn after soy, 200 lb/ac or less corn after corn</td>
<td>4</td>
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<tr>
<td>50% of P applied was banded subsurface</td>
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<tr>
<td>Triple Super as P source</td>
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<tr>
<td>P and K applied based on removal rates or soil sampling</td>
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</tr>
<tr>
<td>VRT application (any N,P,K application)</td>
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<tr>
<td>Any N or P source broadcast on frozen ground</td>
<td>-6</td>
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<tr>
<th><strong>Crop Rotation (12)</strong></th>
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<td>Any rotation that does NOT have more than 2 years in a row of same cash crop</td>
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</tr>
<tr>
<td>Any rotation with 1 year or more of small grain in last 5 years</td>
<td>5</td>
</tr>
<tr>
<td>Any rotation with 1 year or more of a perennial forage in the last 5 years</td>
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<td>Fall: No tillage or low disturbance fertilizer bar</td>
<td>5</td>
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<tr>
<td>Fall: Strip till, non-HEL field and/or shank type fertilizer bar, and no other Fall tillage</td>
<td>3</td>
</tr>
<tr>
<td>Fall: Any full width tillage operation not exceeding a 3” depth</td>
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</tr>
<tr>
<td>Fall: Any full width tillage operation on soybean stubble</td>
<td>-3</td>
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<tr>
<td>Spring: No tillage or low disturbance fertilizer bar</td>
<td>5</td>
</tr>
<tr>
<td>Spring: Strip till, Strip Freshener and/or shank type fertilizer bar^</td>
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<tr>
<td>Spring: Any full width operation, limited to a single pass, and no other fall tillage</td>
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* (MAP, DAP and Feb wheat top dress for fields south of 1-70 exempted)

^AND when the 4” soil temperature was below 50 degrees.

^ Non-HEL Field, and NO other Spring tillage
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<tr>
<th>Practice Category</th>
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<td>Saturated buffers</td>
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<td>Bioreactors</td>
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<td>Constructed wetland</td>
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<tr>
<td>Terraces/Contours/WASCOBs</td>
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<tr>
<td>Grass Filter Strip/Riparian Buffer (includes woods/forest)</td>
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<tr>
<td>Grass waterway, WASCOB, or Contour/Terrace</td>
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<td>Pollinator planting (a 1/2 acre minimum)</td>
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<td>Windbreak</td>
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<thead>
<tr>
<th>Activities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation Plan that reduces sheet &amp; rill erosion to &quot;T&quot;</td>
<td>1</td>
</tr>
<tr>
<td>Nitrogen rate study</td>
<td>1</td>
</tr>
<tr>
<td>Attended soil or nutrient management meeting/field day</td>
<td>1</td>
</tr>
<tr>
<td>Have a written nutrient mgt. plan and/or farm under CCA advisement</td>
<td>1</td>
</tr>
<tr>
<td>Enrolled in Federal, State, or Local Conservation Program</td>
<td>1</td>
</tr>
<tr>
<td>Completed S.T.A.R. in 2018 for this field</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STAR Level</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>40+ Points</td>
<td>5 STARs</td>
</tr>
<tr>
<td>32 - 39 Points</td>
<td>4 STARs</td>
</tr>
<tr>
<td>23 - 31 Points</td>
<td>3 STARs</td>
</tr>
<tr>
<td>16 - 22 Points</td>
<td>2 STARs</td>
</tr>
<tr>
<td>0 - 15 Points</td>
<td>1 STAR</td>
</tr>
<tr>
<td>Use of a winter hardy cover crop, no tillage in fall or spring, rotation that includes small grain or forage</td>
<td>No nitrogen applied in fall or spring, low nitrogen rate, at least 50% of phosphorus applied banded &amp; subsurface</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>5-7 points</td>
<td>4 points</td>
</tr>
</tbody>
</table>

*Some practices reduce the total points! Not all management practices considered are listed above.
S.T.A.R STEERING COMMITTEE

• Megan Baskerville, Upper Sangamon River Watershed Manager Illinois | The Nature Conservancy
• Megan Dwyer, CCA, Nutrient Loss Reduction Manager | Illinois Corn Growers Association
• Elliott Lagacy, Regional Representative | Bureau of Land and Water Resources, Illinois Department of Ag
• Dr. Carol Hays, President | The Strategic Collaboration Group, Inc.
• Ivan Dozier, Illinois State Conservationist | Natural Resources Conservation Service
• Steve Steirwalt, President | Association of Illinois Soil and Water Conservation Districts
• Joe Rothermel, Chair and Farmer | Champaign County Soil and Water Conservation District
• Erin Bush, Resource Conservationist | Champaign County Soil and Water Conservation District
• Grant Hammer | Executive Director | Association of Illinois Soil and Water Conservation Districts
• Mike Wilson, Incoming Board Chair | Illinois Certified Crop Advisor Program
• Kris Reynolds, Midwest Deputy Director | American Farmland Trust
• Dr. Emily Bruner, Midwest Science Director | American Farmland Trust
S.T.A.R SCIENCE ADVISORY COMMITTEE

• Dan Schaefer, Director of Nutrient Stewardship | Illinois Fertilizer and Chemical Association
• Lowell Gentry, Principal Research Specialist in Agriculture | University of Illinois Natural Resources and Sciences
• Doug Gucker, Extension Educator, Local Food Systems and Small Farms | University of Illinois Extension
• Dr. Emily Bruner, Midwest Science Director | American Farmland Trust
• Eric Miller | Piatt County farmer and SWCD Board Member
• Dr. Emerson Nafziger, Professor Emeritus | College of ACES, University of Illinois
• Brett Roberts, State Conservation Agronomist | Illinois Natural Resources Conservation Service
• Erin Bush, Resource Conservationist | Champaign County Soil and Water Conservation District
• Joe Rothermel, Chair and Farmer | Champaign County Soil and Water Conservation District
Point Source Progress Report

Rick Manner
Illinois Association of Wastewater Agencies
(Urbana & Champaign Sanitary District)
Point Source Progress Report

• Originally about half of P coming from Point Sources

• Three existing modes of regulation existing
  • 1.0 mg/L P monthly limit, upstream of reservoirs
  • TMDL’s – primarily where existing impairment seen
  • 1.0 mg/L P monthly limit, “Interim P Rule” for all expanding plants

• Recently all Major NPDES Permits include:
  • Monitoring
  • Evaluation of limits of 1.0, 0.5, and 0.1 mg/L
  • Optimization and Minimization planning

• Expecting that would be generating great progress
4.3 MILLION POUNDS

24% in 7 yrs.

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY
# 4.3 Million Pounds of Progress

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>NPDES Permit</th>
<th>2011 TP Load (lb/yr)</th>
<th>2018 TP Load (lb/yr)</th>
<th>Reduction (lb/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MWRDGC-Stickney</td>
<td>IL0028053</td>
<td>2,344,030</td>
<td>707,230</td>
<td>1,636,800</td>
</tr>
<tr>
<td>MWRDGC-Kirie</td>
<td>IL0047741</td>
<td>141,985</td>
<td>40,012</td>
<td>101,973</td>
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<tr>
<td>MWRDGC-Calumet</td>
<td>IL0028061</td>
<td>2,058,425</td>
<td>1,990,902</td>
<td>67,523</td>
</tr>
<tr>
<td>Sangamon County Water Reclamation</td>
<td>IL0021989</td>
<td>113,296</td>
<td>49,419</td>
<td>63,877</td>
</tr>
<tr>
<td>District-Spring Creek</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Shore Sanitary District-Gurnee</td>
<td>IL0035092</td>
<td>116,070</td>
<td>52,700</td>
<td>63,370</td>
</tr>
<tr>
<td>Village of Fox Lake</td>
<td>IL0020958</td>
<td>76,657</td>
<td>17,808</td>
<td>58,849</td>
</tr>
<tr>
<td>City of Belleville</td>
<td>IL0021873</td>
<td>67,701</td>
<td>11,040</td>
<td>56,661</td>
</tr>
<tr>
<td>DuPage County Public Works</td>
<td>IL0065188</td>
<td>73,625</td>
<td>17,683</td>
<td>55,942</td>
</tr>
<tr>
<td>Village of Plainfield</td>
<td>IL0074373</td>
<td>63,469</td>
<td>7,918</td>
<td>55,551</td>
</tr>
<tr>
<td>Greater Peoria Sanitary and Sewage District</td>
<td>IL0021288</td>
<td>96,827</td>
<td>42,477</td>
<td>54,350</td>
</tr>
</tbody>
</table>
4.3 Million Pounds of Progress

In 7 Years, Illinois Has Accomplished the Largest Reduction in Gulf Phosphorous Loadings Ever Seen
4.3 Million Pounds of Progress

If 100% of Missouri Installed Enhanced P Removal Across the Entire State,
4.3 Million Pounds of Progress

If 100% of Missouri Installed Enhanced P Removal Across the Entire State, Illinois’ Improvement Is Bigger!
4.3 Million Pounds of Progress

If 100% of Indiana Does Cover Crops,
4.3 Million Pounds of Progress

If 100% of Indiana Does Cover Crops, Every Year, Forever
4.3 Million Pounds of Progress

If 100% of Indiana
Does Cover Crops,
Every Year, Forever

Illinois’ Improvement Is Bigger!
4.3 Million Pounds of Progress

If 100% of Colorado, Including Cities and Farms, Stopped All Discharges to MS River
If 100% of Colorado, Including Cities and Farms, Stopped All Discharges to MS River, Illinois’ Improvement Is Bigger!
P Removed - Past, Present, and Projected

PRE-BASELINE
P Removed - Past, Present, and Projected

PRE-BASELINE

4.3 Million Pounds 2019
P Removed - Past, Present, and Projected

In Progress:
Suburbs, Nutrient Compromise

4.3 Million Pounds 2019

PRE-BASELINE
4.3 Million Pounds 2019

In Progress: Suburbs, Nutrient Compromise

P Removed - Past, Present, and Projected

PRE.BASELINE
4.3 MILLION POUNDS
Nutrient Delivery to the Gulf of Mexico

Illinois' Contribution to Basin:

- Total Nitrogen
  - IL cities are about \( \% \) of phosphorous total

- Total Phosphorus
  - Yield (kg km\(^{-2}\) yr\(^{-1}\))
    - < 1
    - 1 to 10
    - 10 to 100
    - 100 to 500
    - 500 to 1000
    - > 1000

- Yield (kg km\(^{-2}\) yr\(^{-1}\))
  - < 0.1
  - 0.1 to 1
  - 1 to 10
  - 10 to 50
  - 50 to 100
  - > 100
Illinois = 15% of MS River population
Illinois = 16% of US corn production
Illinois = 14% of US bean production
NPDES Permits and Nutrients

Amy Dragovich, P.E.
Manager, Permit Section
Division of Water Pollution Control

December 3, 2019
Overview

• IAWA and NGO Agreement
• Watershed Groups
IAWA and NGO Agreement

• Agreement between IAWA and NGOs for Major facilities
• To address ‘reasonable potential’ of violating narrative WQ standards
• Promoting biological nutrient removal
• Proposal drafted and NPDES conditions finalized
  • Nutrient Assessment Reduction Plan – 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
Phosphorus Related Impairment

• The downstream waterbody or segment is listed by the Agency as impaired due to dissolved oxygen and/or offensive condition (algae and/or aquatic plant growth) impairments related to excessive phosphorus levels.

• Impairments identified on 303 (d) List
Risk of Eutrophication

• Determination based on available information that plant, algal or cyanobacterial growth is causing or will cause violation of a water quality standard.
  • Data from most recent five years, during May – October
  • pH > 9.0; or
  • Median sestonic chlorophyll a > 26 ug/L; or
  • Daily maximum pH > 8.35 and daily maximum DO saturation > 110% on two or more days
Nutrient Assessment Reduction Plan

• Developed and submitted by December 31, 2023
• Supported by data and sound scientific rationale
• Must cooperate with 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
Timelines and Exceptions

• 0.5 mg/L total Phosphorus 12 month rolling geometric mean by Jan 1, 2030
• Exceptions
  • Not technologically feasible with biological phosphorus removal
  • Would result in substantial and widespread economic or social impact
  • Can only be met by chemical addition
  • Not feasible by January 1, 2030, but is feasible within a longer timeframe
  • Not achievable, but effluent limit shall not exceed 0.6 mg/L
Circumstances

• Written plan, preliminary engineering report or facility plan by January 1, 2025 to rebuild or replace the secondary treatment process – December 31, 2035

• Construct/operate BNR process – December 31, 2035

• Chemical addition instead of BPR – December 31, 2025

• NARP determines a lower limit is necessary and attainable
  • The lower limit and timeline in NARP will apply
Non-NARP Conditions

• 0.5 mg/L Total Phosphorus 12 month rolling geometric mean effective January 1, 2030

• Exceptions and Circumstances may apply

• Permit may be reopened if additional information becomes available that NARP would be required

• Permit modification would be public noticed
Fox River Watershed

• NPDES conditions Finalized and Permits issued
• Requirements include:
  • Collect additional data and amend model
  • Amend Fox River Implementation Plan by December 31, 2022
  • Submit optimization plans
  • 0.5 mg/L Total P 12 month rolling geometric mean effluent limit by January 1, 2030
    • Exceptions if not technologically feasible or economically reasonable
Upper Des Plaines River Watershed Workgroup

- NPDES conditions finalized
- Requirements include:
  - Develop an in-depth analysis of all chemical, physical and biological data collected
  - Develop a Nutrient Assessment Reduction Plan
  - Continue water quality monitoring program
  - Submit optimization plan
  - Submit Phosphorus Removal Feasibility Study
  - 1.0 mg/L monthly average limit within 3 years (if not required by existing permit)
  - 0.5 mg/L Total P 12 month rolling geometric mean effluent limit by January 1, 2030
    - Exceptions if not technologically feasible or economically reasonable
Lower Des Plaines Watershed Group

• NPDES conditions Finalized

• Requirements include:
  • Conduct stream monitoring and develop recommendations for future monitoring
  • Submit a Phosphorus Removal Feasibility Study
  • Submit optimization plan
  • 1.0 mg/L monthly average limit within 3 years (if not required by existing permit)
  • 0.5 mg/L Total P 12 month rolling geometric mean effluent limit by January 1, 2030
    • Exceptions if not technologically feasible or economically reasonable
  • Develop a Nutrient Assessment Reduction Plan

• Hickory Creek Watershed Planning Group joined group in July 2019
Other Watersheds

- DuPage River/Salt Creek Workgroup
- Lower DuPage River Watershed
- North Branch Chicago River Watershed Workgroup
Questions?

Amy Dragovich, P.E.
Manager, Permit Section
Division of Water Pollution Control

217/782-0610
amy.dragovich@Illinois.gov
Background

DuPage County, IL

- Located just west of Chicago/Cook County
- Population: 926,000 (2\textsuperscript{nd} most populous in IL)
- 336 square miles
Who Are We?

Stormwater Management in DuPage County

• Countywide program established in 1989
• Guided by the Stormwater Management Planning Committee & Plan
• Enforce the Countywide Stormwater Management & Floodplain Ordinance
• Flood Control Facilities have a floodwater capacity of nearly 6 billion gallons

Programs

• Watershed Management
• Water Quality
• Floodplain Mapping
• Regulatory Services
• Flood Control Operations & Maintenance
• Shared Services
Overview

Nutrient Reduction Efforts

- MS4 Permit partnership
- Watershed Planning
- Water Quality Improvement Program Grant
- Education & Outreach
Countywide NPDES Partnership

A total of 41 MS4s partners
- Municipalities, Townships, DuPage County

Major Watersheds
- East Branch DuPage River
- West Branch DuPage River
- Salt Creek

Partial Watersheds
- Des Plaines River, Fox River, DuPage River mainstem
Watershed Planning

Watershed Plan Development for Impaired Waterways

• Klein Creek, Kress Creek, Winfield Creek, Sawmill Creek, St. Joseph Creek completed in 2017
• Lower Salt Creek Watershed Plan with Chicago Metropolitan Agency for Planning completed in 2018
• East Branch DuPage River 2019-2021
• Lots of outreach and stakeholder meetings
Watershed Planning

Detention Basin Assessments
• Over 3000 stormwater basins within the completed watersheds to date
• Engaged stakeholders to assist
Detention Basin Reconnaissance

Native plants, buffers, varying water levels/zones, lots of plant/soil/water interaction, stable shorelines = “good” water quality basins
Detention Basin Reconnaissance

Severe shoreline erosion, turfgrass, waterfowl, little to no plant/soil/water interaction, trash = “poor” water quality basins
Implementation

Potential Funding Sources
- Illinois EPA 319 funding
- DuPage County Water Quality Improvement Program

St Joseph Creek Stabilization
- Village of Downers Grove
- State, County, and Village funding to implement project identified in Watershed Plan
- Track estimated pollutant load reductions
Water Quality Improvement Program Grant

Projects that provide a water quality benefit

• Assistance program since 2000
• Fund up to 25% of construction

Eligible projects include:

• Streambank stabilization and rehabilitation
• In stream habitat improvements
• Detention basin retrofits
• Riparian or wetland buffer creation or enhancements
• Green roofs
• Rain gardens
• Permeable pavers
Water Quality Improvement Program Grant

Awarded Projects Types
- Green Infrastructure Practices
- Detention Basin Retrofit
- Native Planting Project
- Shoreline Stabilization
- Stream Restoration
- Multiple Best Management Practices

County Boundary

Municipal Boundary

Open Space

Watersheds
Green Infrastructure

Elmhurst Police Department Rain Garden (2017)
Jay Stream School Permeable Paver Parking Lot, Carol Stream (2016)
Jefferson Junior High Green Initiatives, Woodridge (2016)
WQIP Funded Projects

Stream, Riparian Restoration & Basin Retrofits

Elizabeth Court Detention Basin, Wood Dale (2015)


Caddie Corner Park Streambank Stabilization, Woodridge Park District (2013)
Public Outreach & Education

Water Quality Education

• Social Media Campaign ("Love Blue. Live Green.")
• Videos, Infographics, Brochures, Booklets, GIFs, Story Maps
• Monthly Newsletter
• Education Contracts (General, Youth & Technical)

Events

• Green Infrastructure Seminar
• Pollution Prevention Seminar
• Watershed Workshops
• Community Events
• Sponsored Seminars (i.e. Beyond the Basics, DuPage Environmental Summit)
Public Outreach & Education

Love Blue. Live Green.

A campaign to protect and enhance the quality of DuPage County's water.

DuPage County, IL  dupageco.org/swm  Joined August 2019
516 Following  301 Followers

Love Blue. Live Green.  @LoveBlueDuPage - 17h
Planning to fry a turkey this Thanksgiving? Make sure to join in recycling your cooking oil at one of several @DuPageCookingOilCollection events around the county.

Saturday, November 30 from 9am-Noon.

Cooking Oil Collection – Thanksgiving 2019
As part of an annual, on-demand event, several collection points will be collecting used, liquid cooking oil (not grease) around the county.

WATER WHERE YOU LIVE

DuPage Hosting "Healthy Rivers, Healthy Communities" Conference

WATER WHERE YOU LIVE

DuPage Hosting "Healthy Rivers, Healthy Communities" Conference

yucky green algae

A single rain barrel will capture close to 1,300 gallons of water during the peak summer months.

Learn more at www.dupagecounty.org/water
Public Outreach & Education
Citizen Involvement

Citizen Stewardship Programs

• Adopt-A-Stream
• Storm Drain Medallions

Events

• Thanksgiving Cooking Oil Collection
• Pumpkin Smash
• DuPage River Sweep
• Sustainable Design Challenge
Questions?

Mary Beth Falsey
Water Quality Supervisor
DuPage County Stormwater Management
(630) 407-6680
marybeth.falsey@dupageco.org