

NLRS Annual Partnership Conference**Meeting Minutes**

November 5, 2025

Online and In-person

Illinois Ballroom A, I Hotel & Illinois Conference Center

1900 S 1st St, Champaign, IL 61820

9:30 am – 4:00 pm

**Attendance**

On November 5, 2025, 97 people attended in person and 62 people attended online, totaling 159 people.

Policy Working Group Members in attendance included: Megan Baskerville, The Nature Conservancy; Dennis Bowman, University of Illinois Extension; Albert Cox, Metropolitan Water Reclamation District of Greater Chicago; Michelle Curby, Illinois Department of Agriculture; Megan Dwyer, Illinois Corn Growers Association; Albert Ettinger, Mississippi River Collaborative; Julie Hewitt, Nutrient Research and Education Council; Robert Hirschfeld, Prairie Rivers Network; Brandon Janes, Village of Deerfield Public Works & Engineering; Rick Manner, Urbana and Champaign Sanitary District; Andrew Margenot, University of Illinois Crop Sciences; Justin Ramey, Illinois Department of Natural Resources; Kris Reynolds, American Farmland Trust; Trevor Sample, Illinois Environmental Protection Agency; Dan Schaefer, Illinois Fertilizer & Chemical Association; Steve Stierwalt, Association of Illinois Soil and Water Conservation Districts.

In addition to these members, stand-in representatives from the following PWG organizations were present: *Illinois Environmental Regulatory Group, City of Springfield*

Opening Comments

Acting Director James Jennings (Illinois EPA)

Illinois marked the 10-year NLRS anniversary with measurable point source progress. As of 2024, statewide phosphorus loads from municipal wastewater have declined ~46% from the 2011 baseline, with nitrogen down ~10%. Jennings credited multi-sector collaboration of agencies, municipalities, universities, NGOs and emphasized Illinois' large regulatory portfolio and public engagement. IEPA is deploying both regulatory limits and financial tools, including a new edge-of-field grant program) to reduce agricultural nitrate loss via practice adoption. Operational impacts from the federal government shutdown have been limited, though communication with US EPA Region 5 frontline staff has slowed due to furloughs. Jennings reiterated a science-based, adaptive approach. Illinois must protect the over 100k miles of streams, and progress will depend on sustained investment, robust monitoring, and transparent updates.

Illinois NLRS Portal Preview

Joan Cox (Illinois Extension)

Joan Cox, NLRS Program Manager at University of Illinois Extension, outlined progress on Illinois' transition from NLRS Biennial Reports to an interactive NLRS Data Portal designed to improve

accessibility, timeliness, and user engagement. She explained the rationale for reporting, tracking progress toward nutrient loss reduction goals, meeting federal expectations under the Hypoxia Task Force framework, and showcasing collaborative efforts across about 160 organizations. The Portal preserves the NLRS logic model (Resources, Outreach, Land & Facilities, Water) while adding dynamic features: interactive maps for point source nutrient loads, downloadable charts and datasets, searchable research database, expanded partner and watershed pages, and an interactive geospatial map. Joan also shared the new partnership directory and handbook, linked on the site and accessible for download at <https://go.illinois.edu/NLRSPartnerHandbook>. Users can visit the point source interactive map to filter data by nutrient type, facility, or watershed, compare trends to baselines, and access historical implementation metrics back to 2011. Future enhancements include agriculture and urban stormwater maps (2026), updated water quality data, and a partner narrative section. Cox emphasized participatory design through working group feedback and surveys, with a soft launch scheduled for December 2025 and interim goal evaluation using USGS five-year averages to come. The portal aims to streamline reporting, support adaptive management, and provide a cost-effective, science-based platform for Illinois NLRS stakeholders. Visit the point source interactive map to filter data by nutrient type, facility, or watershed, compare trends to baselines, and access historical implementation metrics back to 2011. Future enhancements include agriculture and urban stormwater interactive maps (2026), updated logic model data. Cox emphasized participatory design through working group feedback and surveys. A soft launch is scheduled for December 2025 and interim goal evaluation using USGS five-year averages to come in 2027. The portal aims to streamline reporting, support adaptive management, and provide a cost-effective, science-based reporting platform for Illinois NLRS stakeholders to use and learn from. Find the NLRS Data Portal website at go.illinois.edu/NLRSPortal. Questions? Contact NLRS@illinois.edu.

Statewide Nutrient Loads & HUC 8 Dashboard

Presented by Trevor Sample (Illinois EPA, on behalf of U.S. Geological Survey or USGS)

Due to federal furlough, Trevor Sample delivered water quality data updates on behalf of USGS staff. Using eight USGS “super gage” stations, Illinois computes annual statewide loads and five-year averages for phosphorus and nitrate. Preliminary data from water year 2024 compared to the 1980–1996 baseline shows phosphorus –7%, nitrate –15%, and streamflow –11%. The 2020–24, five-year average indicates nitrate –19%, phosphorus +12%, and streamflow +2%, underscoring hydrologic influence on observed loads. Although Trevor noted that the 2021–24 four-year average, which excludes the wet year of 2020, indicates nitrate –30%, no change for phosphorus, and streamflow -10%. A new USGS HUC 8 interactive dashboard at <https://rconnect.usgs.gov/IL-HUC8-Nutrients/> provides load and yield visualization by nutrient, time period, and by point and nonpoint types, with monitoring station overlays, data summaries, method tabs, and downloadable data. HUC 8 data from 2018-22 shows higher nonpoint source nitrate losses in the northern two-thirds of Illinois, , and higher phosphorus yields in southern and central Illinois. Some unmonitored watershed metrics are estimated via adjacent basins. Current point source nutrient loads and yields use data from major municipal Discharge Monitoring Reports. USGS will finalize water year 2024 and begin 2025 calculations. The 2021–25 five-year averages will be compared to NLRS interim goals when the data become available in the fall of 2026.

Discussion:

- Question on dashboard hosting: It will remain on USGS servers for now and the NLRS Data Portal will link to it.
- Clarification: Point source data uses major municipal Discharge Monitoring Reports only.

Understanding Nutrient Trends via Flow Normalization

Dr. Bin Peng (University of Illinois)

Dr. Bin Peng began by explaining the origins of Illinois' nutrient reduction goals, which stem from the federal Hypoxia Task Force framework aimed at reducing the size of the Gulf hypoxic zone. The Task Force initially set a coastal goal of limiting the five-year average hypoxic area to less than 5,000 square kilometers and later introduced nitrogen and phosphorus reduction targets of 45% long-term goal and 20% 2025 interim goal.

Peng emphasized that nutrient loading is influenced by two key factors: concentration and streamflow. Traditional tracking methods, such as five-year moving averages, do not account for hydrological variability, which can mask the effects of meaningful changes in watershed nutrient losses over time. For example, wet years with high streamflow can exaggerate nutrient loads, making progress appear different than it is. To address this, flow normalization techniques remove the influence of year-to-year streamflow fluctuations and isolate changes attributable to human activities and conservation efforts. Five-year moving averages can conflate management effects with hydrologic variability, while use of flow normalization can help separate discharge-driven variability from anthropogenic change.

Illinois' monitoring stations' data show nitrogen reductions appear earlier and stronger when flow normalized, while phosphorus increases are dampened in magnitude relative to observed loads. These results indicate hydrology's role in nutrient loads. Peng recommended incorporating flow normalized annual metrics alongside annual and five-year average observed loads in NLRS dashboards to help stakeholders understand year-to-year changes and trust the reported trends. Future research needs include developing an annual nutrient export inventory, quantifying seasonal and climate variability, teasing apart hydrological change and anthropogenic activities through flow normalization, and developing watershed scale planning tools to guide conservation implementation.

Discussion:

- Question on defining Upper vs. Lower Mississippi: Division occurs at the confluence of the Ohio and Missouri Rivers.
- Question on anthropogenic vs. hydrological variability contribution maps: Work is ongoing for both N and P anthropogenic vs. hydrological variability contribution mapping.
- Question on cropping pattern data sources: Both acreage and crop yield data from USDA are considered in modeling efforts.

Nutrient Water Quality Standards & NARPs

Albert Ettinger (Sierra Club/Mississippi River Collaborative)

Albert Ettinger focused on the legal and regulatory framework for controlling nutrient pollution in Illinois waters and the challenges of implementing effective standards. He began by emphasizing the severity of nutrient pollution, which causes eutrophication, leading to excessive plant and algal growth, depletion

of dissolved oxygen, and harmful algal blooms. These conditions threaten aquatic life, recreation, and drinking water safety, as illustrated by the recent shutdown of Mattoon's water supply due to a harmful algal bloom. Illinois lakes have numeric phosphorus criteria (e.g., 0.05 mg/L), but streams rely on narrative standards (e.g., "unnatural plant or algal growth"), complicating enforcement, permitting, and attainment determinations. He argued for adopting numeric criteria for rivers and streams, referencing the 2018 Illinois NLRS Nutrient Science Advisory Committee recommendations (~0.11 mg/L for P; 0.9–3.98 mg/L for N, regionally), noting that it has not been codified.

He reviewed case law requiring water quality-based effluent limits even under narrative standards and noted recent judicial constraints that may increase the urgency for numeric targets.

Regarding Nutrient Assessment Reduction Plans (NARPs), created to complement technology-based limits, Ettinger highlighted frequent gaps: lack of numeric instream targets to meet dissolved oxygen and algae standards, unclear reduction needs, and limited actionable strategies. While the statewide phosphorus 0.5 mg/L permit target by 2030 is advancing, he cautioned that ecological objectives may require closer to 0.1 mg/L in some streams. He stressed avoiding downstream transfers of P (e.g., Illinois River) and called for stronger integration of point and nonpoint source controls and watershed-based planning, noting the need for aggregated responsibility. For instance, if the upstream and nonpoint loads are high, wastewater reductions alone won't fix the problem. He emphasized that all sources need long-term reduction strategies cited some examples from other states of legal tools that exist for upstream control. He listed regulatory flexibility such as variances, Use Attainability Analyses, and compliance orders allowing time for construction.

Finally, Ettinger addressed nitrogen, noting that NPDES limits for nitrogen do not yet exist but may emerge, as it is critical to protecting local and downstream waters, citing the 2023 HTF Report to Congress. The effect of nitrate pollution on Illinois water bodies and drinking water requires further study.

He concluded by urging Illinois to adopt numeric nutrient criteria, stricter phosphorus goals, targets and reductions in NARP implementation, and action on all pollution sources, not just wastewater, and long-term flexibility through regulatory variances where needed. To protect water, Illinois needs comprehensive strategies to reduce both phosphorus and nitrogen pollution for the benefit of local waters and downstream ecosystems.

NLRS: Point Source Progress

Rick Manner (Champaign & Urbana Sanitary District)

Rick Manner reported that municipal investments have reduced phosphorus loads by ~8.4 million lb from baseline, exceeding the sector's 2025 interim goal and already surpassing its long-term 45% goal ahead of schedule. Major contributions include MWRDGC (≥ 3.5 million lb reduction), suburban facilities (Fox/Des Plaines), and mid-sized cities (Champaign-Urbana, Peoria). Key milestones included the Calumet upgrade (2024; > 1 million lb P reduction) and will include the planned O'Brien (2027) and Decatur (2029) projects. The 2017 statewide MOU among IEPA, Illinois Association of Wastewater Agencies, and environmental partners defined 0.5 mg/L limits by 2030-35 provided planning certainty and earlier optimization. He warned of State Revolving Fund backlogs that could delay biological nutrient removal projects due to lack of financing.

Looking ahead, Manner projected that Illinois could achieve a 50% statewide reduction in phosphorus loads within five years and potentially approach 60% by 2030, with 10 million pounds removed from baseline levels due to point source reductions. He stressed that while point sources have delivered dramatic improvements, further statewide reductions will require addressing nonpoint sources, sediment accumulation, and legacy phosphorus in river systems. He also noted that point source nitrogen management will become increasingly important, though it presents unique challenges due to the need for anoxic conditions and potential trade-offs with phosphorus removal.

Manner concluded by emphasizing the need for updated information on statewide percent contributions by nutrient loss sources, or sector attributions. These should include the historic sectors of agriculture, point source, urban stormwater, but should also include streambank erosion and streambed scouring as sources. He urged stakeholders to continue collaborative efforts and explore innovative strategies, such as side stream nutrient removal treatment, wetland construction and restoration, and enhanced biological process technologies to accelerate progress toward Illinois' long-term water quality goals.

NARP Implementation and Permit Strategy

Scott Twait (Illinois EPA)

Twait traced the regulatory evolution of NPDES permits. Since 2006, 1.0 mg/L annual average total phosphorus effluent standards have been required for new or expanded facilities with 1M gallons of discharge per day or greater. Since 2015, interim regulation of 1.0 mg/L annual average has been required for major municipal facilities discharging to impaired waters. Since 2019, an MOU among IEPA, IAWAs and environmental partners has required 0.5 mg/L annual average by 2030 (or by 2035 for facilities implementing biological nutrient removal including N reduction). NARPs are required for dischargers to impaired or at-risk waters. Twait acknowledged that many NARPs have fallen short, lacking clear targets, stakeholder engagement, and nonpoint source strategies. Common deficiencies include failure to define instream phosphorus goals, insufficient monitoring, and limited coordination with watershed partners.

Illinois currently has 214 major municipal facilities. Of these, 55 NARPs have been submitted, about 15 remain outstanding, and 86 facilities participate in watershed workgroups, which are collaborative entities that negotiate cost-effective solutions and, in some cases, phased timelines for phosphorus control. Twait highlighted the DuPage River/Salt Creek group as an example of innovation, prioritizing dam removal and habitat restoration before chemical phosphorus reduction to achieve local ecological benefits. He also noted that the Illinois River Watershed Workgroup is reconvening to address unique challenges posed by upstream nutrient loads.

Looking ahead, Twait outlined next steps: incorporating NARP findings into permit renewals, facilitation of public meetings and outreach, expanding stream and effluent monitoring, and posting all NARPs online for transparency. Twelve permits which include NARP and watershed requirements have already been release for public notice. The agency's focus for 2025–26 is completing reviews, addressing deficiencies, and ensuring compliance with phosphorus limits and water quality standards. Twait closed by acknowledging the complexity of balancing technology-based limits, water quality goals, and stakeholder concerns, while reaffirming IEPA's commitment to adaptive management and science-based decision-making.

Point Source Discussion, including Albert, Rick, and Scott's presentations:

- Question on private well nitrate data: Illinois has not conducted a comprehensive statewide survey of private well nitrate occurrence. Public water systems report under the Safe Drinking Water Act, but private wells are tested individually, so data are limited. Some states (Iowa, Minnesota) have compiled such data. Illinois public water appears in better condition, but private well status is largely unknown.
- Question on NARP submissions and review: Approximately 60 NARPs have been submitted overall. Northeastern Illinois has ~90 wastewater treatment facilities covered by fewer than 10 watershed groups. Outside Chicagoland, ~40 NARPs involve 50–60 facilities. IEPA has reviewed all NARPs in some form, though permits are still pending.
- Comment on Sackett decision: The ruling will likely increase wetland destruction and stream channelization, reducing nitrogen removal and worsening streambank erosion. State legislation is needed to address gaps left by weakened federal protections.
- Question on Illinois River Watershed Group leadership: Brian Johnson, Director of Greater Peoria Sanitary District.

NLRS: Urban Stormwater

Eliana Brown (Illinois Extension)

Brown described NLRS Urban Stormwater Working Group (USWG) efforts to unify reporting and implementation tracking using the NLRS logic model (Resources, Outreach, Land & Facilities). Preliminary trends show urban stormwater implementation funding modestly up for 2023–24, staffing returning to pre-2021 levels, and practice implementation shifts. For instance, rain barrels dropped (77 to 37 communities, 2023-2024) while community rain gardens surged (15 to 57), reflecting a shift to higher impact best management practices. She noted that earlier this year, the USWG partners refined MS4 reporting categories as Inventories (Green Infrastructure or GI, detention), Plans/Policies (master plans; utility fees; GI requirements), and Community Practices (street sweeping, leaf collection, rain barrels/gardens, de icer management).

Metropolitan Waste Reclamation District of Greater Chicago (MWRDGC) progress since 2004 includes six watershed plans, 100+ GI projects (retaining 15M gal per rain event), and 266 projects are expected to be completed by March 2025 (1,500 ac ft storage; >\$900M invested). The USWG Education subgroup discussed University of Illinois Extension's Rainscaping Education Program (a 15-hour rain garden workshop series), which will relaunch in 2026 with expanded content to include bioswales, permeable pavement, NRCS alignment, MS4 credits. Illinois Extension Stormwater Team announced development of a new GSI Maintenance Curriculum, responding to statewide survey finding that 79% of respondents believe that green infrastructure maintenance is the primary barrier to GI adoption.

NLRS: Agriculture

Michelle Curby (Illinois Department of Agriculture)

Curby highlighted the Fall Covers for Spring Savings program offering up to \$5 per acre crop insurance premium discounts for additional cover crop acres not otherwise funded. Participation continues to expand across Illinois counties. Sign-up in 2024 included 240,724 acres submitted, with 200,000 funded.

Ninety-one counties applied and 79 applicants where first-time adopters adding about 39,400 new cover crop acres. Funding increased from \$330k in 2019 to \$1.16M in 2025, enabling more than triple the funded acreage.

I-COVER (Infield Conservation for Operationalizing Vital Ecosystem Resilience) offers 3-year contracts at higher rates (up to \$105.40/ac for multi species, spring-terminated cover crops). Sign-up paused in 2025 due to uncertainty related to federal government funding. However, a new sign up is planned for early 2026 prioritizing geographic diversity and new technology.

The Climate Pollution Reduction Grant (CPRG) Climate Smart Agriculture program aims to reduce greenhouse gasses by incentivizing no till/strip till on up to 1.9M acres over three years, offering participants \$35/acre annually. The Oct. 2025 enrollment drew 1,279 applications from 97 counties covering 847,108 acres.

The Partners for Conservation cost share program continues to deliver structural and vegetative conservation practices (terraces, filter strips, waterways, grade stabilization, etc.). Cumulative estimated reductions for 2024 PFC practices total roughly 15,900 tons sediment, as well as 19,623 lb P and 39,098 lb N reductions annually.

The Streambank Stabilization & Restoration participation has declined from 15 projects in 2021 to 4 in 2024 due to cost and permitting challenges. Illinois Department of Agriculture is exploring innovations to address the significant role of streambank erosion in nutrient loads.

Ag Retail Survey & Practice Adoption

KJ Johnson (Illinois Fertilizer and Chemical Association)

KJ Johnson delivered an update on the Illinois Ag Retail Survey, a collaborative effort to capture accurate, statistically valid data on farmer nutrient management and conservation practices. Johnson explained that while IFCA has conducted surveys since 2015, early efforts relied on simple online tools and self-reporting, which provided limited data. Recognizing the need for more robust data, IFCA partnered with Iowa State University's Center for Survey Statistics and Methodology and Iowa NREC, as well as Illinois EPA to implement a scientifically rigorous approach modeled after Iowa's successful program.

The survey utilizes stratified random sampling methodology and selects 150 retail sites from 515 sites statewide. Each retail site randomly selects 10 farmers, with one field randomly selected per farmer. This method delivers ≥500 samples.

Key 2024 Ag Retail Survey findings: Row crop acreage is about 22.37M (corn 10.8M, soy 10.8M, wheat 0.77M); rotations are dominated by corn and soy (81.4%) and also include continuous corn (4.5%) and corn-corn-soy (7.8%). Cover crops reached ~1.95M acres (8.7% of row crop acres) and included 64% winter hardy single species (mostly cereal rye), 32% mixes, and 4% winter-kill species. No till accounts for 22.9% of corn and 37.1% of soybean acres. Nitrogen applications average 198 lb/ac on corn soy rotations acres, which is near UIUC recommendations, and 219 lb/ac on continuous corn acres. Nitrogen application timing is split across fall/spring/side dress. Anhydrous covers ~50% of fall N, with ~96% using nitrification inhibitors. Phosphorus application data indicate 78% of acres were soil tested to determine

P levels, and 86% received commercial P. Variable-Rate Technology of fertilizer P was utilized on 35% of acres. Annual P applications on were observed on 62%.

Looking ahead, IFCA plans to expand participation and build multi-year trend analyses to inform NLRS progress reporting. Johnson stressed that one-year snapshots are insufficient for evaluating long-term change. However, sustained data collection will enable stakeholders to track adoption trajectories and target outreach effectively. He concluded by thanking partners for their collaboration and reaffirming IFCA's commitment to science-based strategies that balance productivity with environmental responsibility.

Discussion:

- Question about access to manure application rates: About 4% of acres had any kind of manure application, and that was mostly hog manure.

Streambank Erosion & Legacy Phosphorus

Dr. Andrew Margenot (University of Illinois)

Andrew Margenot delivered an update on research examining streambank erosion as a significant, yet often overlooked, nonpoint source of phosphorus (P) loss in Illinois. His presentation underscored the scale of this issue, its implications for nutrient reduction strategies, and the urgent need to refine nutrient source apportionment models for Illinois.

Margenot began by explaining the mechanics of streambank erosion, a natural process exacerbated by hydrologic variability and human activities. In Illinois' flat landscapes, streams meander over decades, gradually undercutting banks until catastrophic mass failures occur, releasing large volumes of sediment into waterways. These sediments contain phosphorus primarily derived from parent material (geogenic sources), not from P fertilizer, can contain P concentrations ranging from 300 to 800 ppm total P. While only a small fraction of this phosphorus dissolves immediately upon entering streams, the remainder persists as legacy sediment, capable of releasing dissolved reactive phosphorus (DRP) over years or even decades through iterative deposition and remobilization.

This lag effect, Margenot emphasized, complicates nutrient management. Even if agricultural P inputs decline, streambank-derived sediments can sustain elevated P inputs long after streambank erosion events occur. This temporal dynamic helps explain recent P loading trends in Illinois rivers. Despite Illinois croplands being in a net negative P balance since the 1990s, statewide riverine P export increased by 35% as a five-year average (2017–21). This discrepancy suggests that current strategies, which largely equate nonpoint sources with agriculture, underestimate nonpoint source contributions from streambanks and streambeds.

To address this underestimation, Margenot's team, supported by NREC and Illinois Farm Bureau, has undertaken a multi-scale assessment combining historical aerial imagery (1930s–present) with contemporary field monitoring. Using orthorectified aerial photos, researchers estimate channel migration over 85 years, while erosion pins installed at 475 stream sections in 77 streams provide fine-scale measurements of contemporary bank recession. These pins, coupled with soil sampling of total P and P speciation, enable calculations of gross sediment losses and P loadings. Additional intensive monitoring at Walnut Creek (a HUC12 watershed in Bureau County) integrates streamflow data, tile

drainage assessments, and close-interval erosion measurements to capture short-term variability in sediment losses and P loadings.

Preliminary findings are striking. Based on two years of field data:

- The project conservatively estimates losses from perennial streams in Illinois, or 86,110 miles of streams. Losses average 229 pounds of sediment eroded per linear foot of streambank and 373 mg/kg (ppm) total P loss per linear foot of eroding streams.
- Assuming 50% of streams are actively eroding, annual P loading could reach 19.6 million pounds, meaning 57% of Illinois' baseline P loss of 34 million pounds could be attributable to streambank erosion.
- Assuming 25% of streams are actively eroding, the estimate drops to 9.8 million pounds, or 29% of baseline P loss for the whole state.
- Assuming 75% of streams are actively eroding yields 29.5 million pounds, or 87% of baseline P loss for the whole state.

These ranges mirror global and regional findings. Streambank erosion accounts for roughly 40% of suspended sediment export and 31% of total P export globally, with Iowa's long-term monitoring network estimating 31% of statewide P export from bank erosion.

Margenot stressed that these figures represent gross loading, not net export. Rivers act as "sediment banks," storing and slowly releasing P over time. Quantifying these legacy stores, and their dissolution rates, is critical for forecasting future P loads and designing effective interventions. Current data gaps include:

1. Channel and floodplain sediment inventories to estimate retained P.
2. Historical erosion modeling to contextualize recent trends.
3. Long-term monitoring networks, akin to Iowa's 20+ year effort, to reduce uncertainty and improve confidence in estimates.

The implications of these data are profound. If streambank erosion contributes even 30% of annual Illinois' P losses, current NLRS nonpoint reduction strategies risk misallocating resources by focusing almost exclusively on agricultural fields. Furthermore, Margenot warned that reduction timelines may be unrealistic unless this source is addressed, noting that no state in the Mississippi River Basin currently accounts for streambank erosion in its nutrient reduction plans.

He called for integrating the implementation of streambank stabilization, riparian and hydrologic restoration, and legacy sediment management practices into NLRS frameworks, alongside continued recommendation of specific agricultural BMPs.

Margenot concluded by framing streambank erosion as both a challenge and an opportunity. It can be viewed as a manageable nonpoint source that, if properly quantified and mitigated, could significantly advance Illinois' progress toward nutrient reduction goals.

Discussion:

- Question on channel monitoring: While conducting this research, are you also monitoring channel stabilization near the investigation sites? If the channel shifts, the banks will too, and implementing stream channel stabilization could serve as a long-term best management practice.
- Andrew (Response): Excellent point. Professor Bruce Rhodes, Dr. Zhou, and I are co-principal investigators on a project, which is funded by NREC. It's a two-year study scheduled to conclude next year. Using IDOA databases, we're examining over 500 streambank stabilization projects initiated around 2001. However, this work focuses on bank stabilization methods, such as barbs or armoring, not on assessing the channel itself. I'm not certain about channel evaluation in that context. This raises a broader question of how we can design, if possible, the hydrology of the landscape?

Science Team Update

Dr. Andrew Margenot (University of Illinois)

Andrew Margenot provided an update on the Illinois NLRS Science Committee's work over the past year, focusing on efforts to improve the accuracy and transparency of best management practice (BMP) effectiveness estimates for nutrient loss reduction. He explained that while the current NLRS framework assigns fixed percentage reductions for nitrate-nitrogen (N) and total phosphorus (P) losses for each BMP, this approach has notable limitations. These include reliance on single values without uncertainty ranges, lack of absolute reduction metrics (pounds per acre), and outdated or incomplete evidence bases.

Margenot emphasized that nutrient reduction strategies should reflect both relative reductions (%) and absolute reductions (lb/ac) because hypoxia in the Gulf is driven by total nutrient loads, not percentages alone. For example, a 3% reduction on a high-load field could represent a substantial decrease in pounds of N or P. He also noted that presenting a single value for BMP effectiveness can mislead policymakers and stakeholders by implying high confidence, when in reality reductions for some practices may vary widely across site conditions, management practices, and weather patterns.

To address these gaps, the Science Committee launched a systematic review and meta-analysis project, led by postdoctoral researcher Dr. Rachel Sortor and funded by NREC. The objectives are to:

1. **Identify peer-reviewed and relevant literature** documenting nitrate-N and total P reductions for the 15 BMPs currently in the Illinois NLRS, as well as emerging practices.
2. **Quantify distributions of reductions**, including median, mean, minimum, maximum, and the 25th and 75th percentiles of both relative (%) and absolute (lb/ac) metrics.
3. **Account for flow-weighted concentrations** in runoff and tile drainage to improve accuracy.
4. **Develop a comprehensive report** for Illinois NLRS stakeholders and a peer-reviewed publication for the scientific community.
5. **Update the Illinois NLRS Agriculture Conservation Practices in 2026** to include ranges of reductions and associated uncertainty for each BMP.

Margenot highlighted Iowa's NLRS as a model for incorporating variability into BMP estimates, noting that Iowa presents ranges rather than single values, which improves transparency and decision-making. Illinois aims to adopt a similar approach and expand it by integrating recent research funded by USDA, NREC, and other sources. The committee is using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure rigor and reproducibility.

Initial searches conducted in late 2024 revealed that many BMPs now have significantly more published evidence than when the NLRS was first developed, underscoring the need for updates. However, Illinois-specific studies remain limited, so the review will include research from Illinois-like systems in neighboring states, guided by NRCS Major Land Resource Areas (MLRAs) to ensure environmental comparability. The team is also considering additional BMPs beyond the current 15, which have shown promise in recent studies.

Margenot concluded by acknowledging an audience question about factoring in co-benefits of BMPs, such as flood mitigation, habitat enhancement, and biodiversity. He noted that while these are not currently factored into BMP evaluations, they could be incorporated into future economic analyses alongside cost-per-pound nutrient reduction metrics. He stressed that the primary goal remains improving the scientific foundation of NLRS assumptions to enable more effective, data-driven policy and resource allocation.

Nutrient Research & Education Council Updates (NREC)

Julie Hewitt, Nutrient Research & Education Council

NREC is a research program established by 2012 state statute to steward fertilizer assessment funds and support applied research. NREC reported >\$48M cumulative investment since its initiation, typically allocating \$3.5–\$4.2M/yr. In 2025, allocations rose to \$5.1M following the assessment increase (\$0.75 to \$1/ton). NREC Portfolio areas include cover crops (about ⅓ of investments), 4R stewardship (17%), integrated systems (18%), phosphorus projects (12%), edge-of-field practices (16%), plus growing focus on legacy sediment and streambank erosion. New 2026 projects include soil test calibration for P/K under 4R, winter wheat–soy double crop nutrient management, statewide N/P watershed budgets, S and N interactions in corn, integrated strategies to reduce nitrate losses, microbial approaches to nutrient losses, and legacy sediment quantification.

Hewitt closed by reaffirming NREC's vision, which is enabling farmers and fertilizer users to adopt best practices that optimize nutrient efficiency, sustain crop yields, and protect water quality. She acknowledged that while scientific progress has been strong, adoption and implementation remain challenging, requiring continued collaboration and outreach. Finally, she invited attendees to Investment Insights Live on February 17, 2026, at the I Hotel and Illinois Conference Center in Champaign, with a new Southern Illinois session planned at SIU-Carbondale to engage regional stakeholders.

Farmer Facing Programs Panel

Illinois Sustainable Ag Partnership (ISAP) panelists and programs represented: Jean Brokish, American Farmland Trust (Panelist host), Rachel Curry, University of Illinois Extension (Watershed Outreach Program), Adrienne Marino, The Nature Conservancy (Batch and Build), Natalie Kerr, Illinois STAR (Illinois STAR), Kris Reynolds, American Farmland Trust (FLASH Batch N Grow); and Greg Goodwin, Illinois Corn Growers Association (Precision Conservation Management).

A closing session used a light “Dating Game” format to keep engagement high while conveying program NLRS programs’ details. Programs highlighted included STAR, Precision Conservation Management (PCM), Batch & Build Pilot Program, FLASH Batch & Grow program, and Illinois Extension Watershed Outreach programs. STAR provides a 1–5 rating tied to practice adoption, recognition, and incentives (up to \$25/ac for 5-star growers or for improvement year over year), supported by STAR Navigators. Precision Conservation Management (PCM) helps quantify farmer’s Return on Investment (ROI) for conservation; PCM offers annual enrollment, garners high satisfaction among participants, and engages corporate partnerships (e.g., beverage industry) for expanded reach. Batch & Build aggregates construction projects of saturated buffers, bioreactors, controlled drainage into cohort projects, which streamlines permitting, relieves some engineering and cost barriers. Illinois pilot project aims to implement conservation on 20 sites by 2026 in partnership with ADM Coalition and Knox County SWCD. Batch & Grow provides turnkey cover crop support (seed ordering, seeding logistics) via farmer-led FLASH groups. This initiative is growing local networks and entrepreneurship. Its first year reported about 8,000 acres seeded with about 5,400 new cover crop acres. Illinois Extension’s Watershed Outreach program addresses knowledge and cost barriers in priority watersheds. Last year, they served the region through outreach partnerships and a program providing free cover crop seed, funded and supported in cooperation with Illinois Soybean Association and SWCDs. The consistent themes across programs were to reduce friction and adoption barriers, build farmer networks, and link and provide incentives to accelerate practice adoption in support of Illinois NLRS agricultural sector implementation.

Closing Remarks

Director Dr. Matthew Vann (Illinois Extension)

Dr. Vann thanked partners and highlighted Illinois’ capacity for cross sector collaboration to tackle evolving challenges (climate variability, legacy nutrients, technology adoption). Extension will continue connecting science, communities, and practices, prioritizing transparent reporting, capacity building, and practical training. He acknowledged the leadership of the Illinois Environmental Protection Agency, the Illinois Department of Agriculture, and the NLRS Extension Team for their guidance and coordination of the NLRS partnership. Illinois Extension reaffirmed its role in connecting science, communities, and practices to advance NLRS goals. The remarks closed with appreciation for everyone’s dedication to protecting Illinois’ water and sustaining its land for future generations.