Policy Working Group Meeting

Meeting Minutes

Thursday, September 1, 2022 9:00 – 11:00 a.m.

Meeting Summary

Welcome and Introductions *Trevor Sample, Illinois Environmental Protection Agency and Eliana Brown, University of Illinois Extension*

Trevor welcomed everyone to the virtual meeting. Eliana Brown facilitated the meeting and Layne Knoche and Joan Cox from University of Illinois Extension assisted with technology and meeting minutes. Eliana introduced the new student intern assisting with NLRS, Noah Bell, and the new NLRS Phosphorus-priority watershed Extension Outreach Associate, Nicole Haverback.

NLRS Biennial Report – Partner Survey Results summary *Joan Cox, University of Illinois Extension*

Joan reviewed the results from the Policy Working Group member survey aimed at understanding perspectives on uses, content, style and structure, and timing of the Biennial Report. Results had been shared ahead of the meeting for members to review and bring feedback and discussion points to an open discussion. Several members provided feedback. For members wanting additional discussion about more analyses in the report, they should attend the Performance Benchmark meeting on September 28, 2022, 2-3 p.m., and prepare to discuss the type of analysis desired, who could perform it, and possible funding sources. Final conclusions and decisions about streamlining will be shared at the next PWG meeting during the 2022 Annual Conference on November 1.

Photo/Talent Releases for the Biennial Report *Eliana Brown, U of I Ext.*

Eliana reviewed the additional photo documentation requirements now required for photos submitted to the Biennial Report. She reviewed the University of Illinois Extension Communications guidelines and provided the link to the forms at https://extension.illinois.edu/commit/release-forms and explanations of the agreements for talent and photo releases. She encouraged members to complete these steps as they take photographs during their fall programming and submit them for the next Biennial Report. The due date for submission of photos and documentation for the next Biennial Report is Jan. 31, 2023.

Nontraditional NARP Conversation: Stakeholder Engagement 101 *Mila Marshall, Sierra Club*

Mila provided examples of ways the Sierra Club has provided outreach in water resources and nutrient pollution with various public audiences. Public training topics have included water quality education, introduction to state government, education on federal and state regulation and policy, skill development such as writing letters to the editor, engaging on NARPs with one's elected officials and with water operators, and introduction on how to build alliances and broaden networks around nutrient pollution. She discussed nontraditional engagement using examples of a Blues music themed call. Mila gave examples of teaching people to understand their watershed and its associated cities and wastewater facilities. During virtual calls, they focus on training people to stay self-informed by conducting mapping exercises that focus on map interpretation and new map-making skills. Mila has partnered with wastewater treatment facilities to grow outreach components related to NARPS and plans to increase partnership beyond the East Central Illinois area wastewater facilities.

Agriculture Water Quality Partnership Forum Meeting summary *Michael Woods, Illinois Department of Agriculture*

Michael summarized non-government partners' presentations provided at the June 15, 2022 AWQPF meeting. This working meeting encouraged partners in the ag sector to share ideas and approaches to advance the voluntary efforts of nutrient reduction in the agricultural sector. In summary programming to increase in-field and edge-of-field practice implementation are underway. Partners echo the need for augmented public and

private funding for practices and specifically for nutrient management education, planning, and implementation. Some organizations proposed adoption of nutrient management policy. Efforts to expand agricultural certification programming and to increase private sector investment from food supply chain corporations will provide new opportunities to raise public awareness of sustainable, high-yielding agriculture. Partners echoed the value of consistent communication, education, and technical service with regards to the stacking nutrient-reducing conservation practice benefits and payments. The June meeting also included an overview of the best available data sources to populate the Agriculture and Adaptive Management Chapters of the Biennial report. Also, a summary of Climate-Smart Agricultural initiatives in Illinois were highlighted.

Nutrient Monitoring Council Meeting summary *Trevor Sample, IEPA*
Trevor reviewed presentation highlights from the August 2, 2022 NMC meeting. Presentations included *Nitrate and Phosphorus Loads 2017-2021 for Illinois Rivers* by Tim Hodson of U.S. Geological Survey, *Phosphorus loads in the Illinois River Basin: 1980s-2019* by Greg McIsaac of the University of Illinois, *Rock River Basin Nitrate Loads 1980-2019* by Greg McIsaac, *Preliminary results for groundwater nitrate modeling in the Rock River region* by Vlad Iordache of Illinois State Water Survey, and *Illinois River Basin Next Generation Monitoring* by Tim Straub of U.S.G.S. Several of those presenters were on hand to answer questions.

Round Robin Partner Updates

- The 2022 NLRS Conference will be held November 1, 2022, 9 a.m. – 3:30 p.m. as a hybrid event. Details and registration will be distributed soon.
- IFB finished twelve spring and summer Nutrient Stewardship Field Days featuring demonstrations and research across the state.
- Secretary Vilsack announced three of the pending $1 billion dollar Climate-Smart Commodity proposal recipients. The rest will be announced September 13th.
- IFCA is hosting a 4R field day at Eric Miller's farm near Hammond, IL, September 15, 8 am – 2 pm, with free lunch. The IFCA Ag Retailer Survey will be distributed in January and will capture data from the 2022 cropping year.
- MWRD continues to work in partnership with the ag sector at its Fulton County site. A field day this summer featured research and tied research in ag and wastewater together for P reduction.
- AFT and partners have secured 50,000 acres in contracts enrolled in the IL Cover Crop Initiative and plan to expand this. Also, the Fall Covers Program, in which farmers can apply for a premium discount for crop insurance, will be starting its 4th year soon.
- ISAP's conservation story map is now live and still seeking additional inputs. See https://ilsustainableag.org/learn/conservation-story-map/.
- Albert Ettinger said several wastewater professionals are expressing concerned about NARPs requirements and are hoping that IEPA will provide follow up so that studies can finish on time.

Meeting Minutes

In attendance: Kay Anderson, American Bottoms Regional Wastewater Treatment Facility; Megan Baskerville, The Nature Conservancy; Noah Bell, University of Illinois; Michelle Bloomquist, Illinois Department of Natural Resources; Dennis Bowman, University of Illinois Extension; Jean Brokish, American Farmland Trust; Eliana Brown, University of Illinois Extension; Travis Burke, University of Illinois Extension - Agriculture/Agri-Business; Laura Christianson, University of Illinois Crop Sciences; Albert Cox, Metropolitan Water Reclamation District of Greater Chicago; Joan Cox, Illinois-Indiana Sea Grant; Rachel Curry, University of Illinois Extension; Paul Davidson, University of Illinois Agricultural and Biological Engineering; Davis, Illinois Environmental Regulatory Group; Chris Davis, Illinois Environmental Protection Agency; Ivan Dozier, U.S. Department of Agriculture - Natural Resources Conservation Service; Megan Dwyer, Illinois Corn Growers Association; Albert Ettinger, Mississippi River Collaborative; Mary Beth Falsey, DuPage County Stormwater Management; Laura Gentry,

University of Illinois/Illinois Corn Growers Association; Catie Gregg, Prairie Rivers Network; Grant Hammer, Association of Illinois Soil and Water Conservation Districts; Nicole Haverback, University of Illinois Extension; Julie Hewitt, Nutrient Research and Education Council; Liz Hobart, GROWMARK; Tim Hodson, U.S. Geological Survey; Brandon Janes, Village of Deerfield Public Works & Engineering; Kevin Johnson, Illinois Fertilizer & Chemical Association; Shibu Kar, University of Illinois Extension - Natural Resources, Environment, and Energy; Layne Knoche, University of Illinois Extension; Todd LaFountain, Springfield City Water, Light, and Power; Lauren Lurkins, Illinois Farm Bureau; Dick Lyons, Illinois Association of Drainage Districts; Rick Manner, Urbana and Champaign Sanitary District; Adrienne Marino, The Nature Conservancy; Mila Marshall, Sierra Club; Ashley Maybanks, The Nature Conservancy; David McEllis, Environmental Law & Policy Center; Greg McIsaac, University of Illinois; Lisa Merrifield, University of Illinois Extension; Ojo Oluwaseun, Organization; Brian Rennecker, Illinois Department of Agriculture; Todd Rettig, Illinois Environmental Protection Agency; Kris Reynolds, American Farmland Trust; Trevor Sample, Illinois Environmental Protection Agency; Dan Schaefer, Illinois Fertilizer & Chemical Association; Jason Solberg, Illinois Fertilizer & Chemical Association; Randy Stein, Bloomington and Normal Water Reclamation District; Steve Stierwalt, Association of Illinois Soil and Water Conservation Districts; Tim Straub, U.S. Geological Survey; Kelly Thompson, Illinois Environmental Regulatory Group; Jennifer Tirey, Illinois Pork Producers Association; Amy Underwood, Downers Grove Sanitary District; Max Webster, American Farmland Trust; Michael Woods, Illinois Department of Agriculture

Welcome and Introductions, *Trevor Sample, IEPA and Eliana Brown, U of I Extension*

Trevor welcomed everyone to the virtual meeting. Eliana Brown facilitated the meeting and Layne Knoche and Joan Cox from University of Illinois Extension assisted with technology and meeting minutes. Eliana introduced the new student intern assisting with NLRS, Noah Bell. Noah previously worked on nutrient runoff studies in Dr. Margenot's lab at UIUC. She introduced Nicole Haverback, the new NLRS Phosphorus-priority watershed Extension Outreach Associate. Nicole said a few words about her background experiences in agriculture, education, and employment. She grew up on a livestock and row crop farm in Atkinson, IL and graduated from Iowa State university in 2022 with a Bachelor of Science in Agriculture and Rural Policy Studies. Previously she worked with Water Rocks and with Iowa Learning Farms to educate stakeholders about Iowa's Nutrient Loss Reduction Strategy. Nicole is stationed in the Effingham Extension Field Office and will serve stakeholders in the Embarras and Little Wabash watersheds.

NLRS Biennial Report – Partner Survey Results summary *Joan Cox, U of I Extension*

At the February 2022 meeting, the Steering Committee introduced the topic of streamlining the Biennial Report due to the growth of report content and production workload over the years. They solicited feedback and issued a partner survey of the PWG members over the summer. Questions asked about the Biennial Report uses, content, style and structure and timing. Ten of 29 member organizations responded, representing non-government, industry, and local/state partners' perspectives. Joan summarized the survey responses in aggregate.

Survey responses about individual and organizational uses of the report indicate that in addition to its contributions to research, grant proposals, funding allocations and outreach products/programs, the report solidifies partnerships among stakeholders, encourages improved science, and informs policy. Ten responses suggested 18 audiences served by the report. While the report can serve each target audience to some degree, the Strategy relies on partners to develop audience-specific communication products that carry unique language, composition, design, and formatting.

Survey responses about content highlighted members' favorite features, insights and recommendations for change, as well as suggestions on which data years should be included in the next report. Since many of the

responses related to data which comprise the bulk of the report, the Steering Committee did not foresee changes to that, rather less photos or perhaps the shift from providing *both* data tables and graphs to display the same information. Instead, raw, unformatted data tables may appear in an Appendix, while a graphic of the information remains in the main body of the report. The survey captured suggestions to shorten the report, make it more readable via factsheet format, include more analyses (science, program, funding and policy analyses), and draw more conclusions overall. If interested in further analyses of any type, PWG members are welcome to attend the Performance Benchmark Committee (PBC) meeting on September 28, 2022 form 2-3 pm and prompt discussion by providing the type of analysis desired, who could perform it, and how it could be funded. Members can email illinoisnlrs@gmail.com to be added to the PBC emails in preparation for this upcoming meeting. The survey indicated all data from baseline to present should be displayed in the 2023 Biennial Report, possibly using line graphics to consolidate data 1980 to present.

Survey responses about style and structure showed split opinions on the importance of photos, with eight organizations indicating desire to continue to submit photos and to comply with new photo and talent release form documentation required by the University of Illinois. The style and structure of the Partner Narratives and Updates, which make up a large portion of the ag, point source, and stormwater chapters was a focal point of several questions. Seven of the ten responding members indicated that it was not necessary to have these portions of the report read in the same voice, style, and structure as the main body of the report, indicating approval of inserting Partner Narratives and Updates in the individual voices and styles in which they are submitted. When asked about the degree of editing desired, responses indicated that copy editing is welcome, but no respondents thought that the production team should be re-writing text and data displays to read in the overall voice, style, and structure as the rest of the report. Three organizations requested edits to both grammar and data displays. When asked if in favor of Partner Narratives and Updates in an Appendix instead of the main body, five said yes and three said no.

Survey responses about timing indicated eight of the ten respondents voted for a Dec. 1 launch date with a subsequent Annual meeting moved to January. This would keep the most recent data years in the Biennial Reports. One vote indicated prioritizing the current timeline of a release on Aug. 31 and a November Annual meeting, citing conflict with the number of holidays, annual meetings and conferences during the winter months. Joan mentioned that this time of year could also be used in fiscal planning as well, and if the timeline takes precedence, the other option was to keep the Aug. 31 launch, but forego use of the most recent year data (2022 data). Survey comments indicated that data quantity and recency should be prioritized when deciding a launch date, as well as the production team resources, and meeting the needs of U.S. EPA and the Hypoxia Task Force.

Joan shared that the Steering Committee is still accepting feedback and anticipates sharing conclusions at the next PWG meeting on November 1 during the afternoon of the NLRS Annual Conference.

Open Discussion

Comment (Albert Cox): Thanks for taking into account the partner perspectives and resources for making the report. It's up to the production team to evaluate and determine what can be done. While there are suggestions for more analyses, it may or may not be possible. The PBC meeting may have additional suggestions for content changes.

Comment (Rick Manner): The timing is clear in that the data comes out and then the report is written. It is not favorable to miss a large amount of recent data in favor of having a meeting at a given time of year. The production team should decide the most reasonable schedule and tell the partners when the report can be available.

Comment (Chris Davis): It looks like many of the survey responses are not in conflict, but some are indicating the report should go in significantly different directions. We should try to accomplish as much as possible. There may be some hard choices in taking one recommendation over another in terms of which overall direction to go with the content suggestions. A strategy is being developed by this working group and beyond, it doesn't belong to one entity, such as U of I or EPA. The Policy Working Group facilitates the strategy process and moves forward as a group. There is not a leader-follower approach, but a collective forum that makes decisions together.

Comment (Mila Marshall): The report is enjoyable and accessible, especially the executive summary. For utility and accessibility, the executive summary could even be cut down to a one-pager for elected officials. Could we translate it into talking points so that people can write a public comment, or use it at a public city council meeting? An NLRS communication product could be made that is smaller and more accessible to activate the content. Sierra Club does this type of work.

> Response (Albert Cox): The Communications subgroup makes products for each report including a letter to public officials that summarizes it. There is also a power point presentation made for each report so that members can take it and tweak it to various audiences.
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> Response (Mila): I would like to work more on the Communications subgroup to see if we could generate some factsheets.
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> Response (Trevor Sample): We can discuss survey content suggestions and this feedback with the Communications subgroup. Currently, we rely on partners to pull out information relevant to them and to generate factsheets from the report.

Comment (Catie Gregg): There are a combination of responses about shortening the report and adding more analyses. These *do* seem to conflict, but perhaps punchy, actionable steps shared in a factsheet format could help the public become for familiar with the data and its conclusions. For example, let's clarify what legislation we want and what steps would facilitate the strategy process and status, and then communicate to others concisely.

Comment (Albert Cox): It is important for the communication subgroup to meet prior to the development of the next Biennial report in order to develop a more effective communication plan. I also see a need for NLRS partners to have a concise way to say, "what did we learn and what does it tell us to do next". The Communications subgroup should convene and brainstorm.

Comment (Tim Hodson): Three-bulleted key points or talking points is a practice encouraged in many science journals. It also helps to make results more accessible to the public and to journalists.

Comment (Eliana Brown): Could you provide us with three key points for your science assessment, Tim?

> Response (Tim): I'd be happy to. Also, three over-arching points that go along with the Executive summary for the overall report would be nice.

Photo/Talent Releases for the Biennial Report *Eliana Brown, U of I Ext.*

Eliana mentioned that partners and extension staff compiled nearly a thousand photos for the 2021 biennial report, which proved a very nice enhancement to the document. For the 2023 report, the production team anticipates being more selective and using fewer photos. However, partners are still encouraged to submit photos. New guidelines from University of Illinois required photo release and talent release documentation forms to accompany each photo. Eliana demonstrated how to find these forms on the Extension website at https://extension.illinois.edu/commit/photos and https://extension.illinois.edu/commit/release-forms. She

discussed the agreement terms which give the University of Illinois rights to the photos. She emphasized that the photos would only be used for the Biennial Report, but that the generic University forms were required. Talent release forms differ for adults and minors and are used when a person in the photos is recognizable. If not recognizable, the talent release is not required. Photos of attendance at events may be taken from behind the participants to avoid the extra burden of gathering talent releases. The due date for submission of photos and documentation for the next Biennial Report is Jan. 31, 2023.

Nontraditional NARP Conversation: Stakeholder Engagement 101 *Mila Marshall, Sierra Club*

Mila works with the Clean Water Team at Sierra Club, which functions to broadly introduce the public to water quality topics and to nutrient pollution from agricultural and urban sources. They have focused on public programming about Nutrient Assessment Reduction Plans (NARPs). She has spent two years learning communication processes that translate high level topics to water resources decision makers and to the general public. Mila noted nontraditional stakeholder engagement provides more people with tools to advocate and communicate effectively with other stakeholder groups, including intra- and inter-watershed conversations.

Public training topics have included water quality education, introduction to state government, education on federal and state regulation and policy, skill development such as writing letters to the editor, engaging on NARPs with one's elected officials and with water operators, and introduction on how to build alliances and broaden networks around nutrient pollution.

While NARPS only apply to wastewater treatment facilities, the work emphasizes the relationship between wastewater and agriculture working together for nutrient reduction in Illinois. Sierra Club receives a Lumpkin Family Foundation grant. This entity typically funds agricultural programming. They, however, have invested in this work due to the value of combining the ag and wastewater sector outreach.

Since NARPs have geographic boundaries and much of the NARP engagement work is already up and running in East-Central IL, they target outreach in this region or use the region as a model during statewide outreach efforts. All Clean Water Team outreach, regardless of the issue, works to keep participants engaged with nearest Sierra Club group (14 across Illinois) and keep participants advocating for the environment. East-Central Illinois has 16 counties and two Sierra Club groups.

The outreach is designed to be entertaining and engaging. Mila gave examples of teaching people to understand their watershed and its associated cities and wastewater facilities. Infographics and factsheets supplement the education process. During virtual calls, they focus on training people to stay informed on their own by conducting mapping exercises that focus on map interpretation and new map-making skills.

To connect the NLRS Biennial Report information and NARPs they recently conducted a *River with the Blues* theme call that infused Mississippi River Blues music into the outreach content. The theme peaked curiosity among music lovers that were not water knowledgeable. Content focused on nutrient movement from Illinois to the Mississippi Gulf area and featured a fisheries owner in Mississippi. This humanizing component connected the nutrient pollution issue in Illinois to its impact on business owners, economies, and the natural world alike. The playlist is at https://open.spotify.com/playlist/6VhVspW2yZapNrr6bNuvZ3?si=41fc1b9566bb4680.

While wastewater treatment plants give in person and virtual tours, Sierra Club supplements this with public outreach on general water literacy, wastewater plant operations, and the path of person's own wastewater takes back into the natural environment. Outreach content focuses on the number of facilities nationally, then on East-Central IL area and plant-level technology. The experience improved vocabulary and increased

participants' understandings of their personal contexts in the bigger picture of wastewater and nutrient pollution. Such education enhances advocacy speaking and writing skills, and it improves the quality of interactions with water professionals and elected officials around NARPs and nutrient issues.

NARPS and nutrient work is connected to permit tracking at Sierra Club. Volunteers review data for each permit site in Illinois. This work helps the public recognize not only the NLRS, but overall responsibility in clean water.

Mila has worked with Rick Manner of the Urbana and Champaign Sanitary District to engage the public on the function of wastewater facilities in water quality. The Sierra Club is actively working to establish more relationships with operators, recently connecting with the Rantoul, IL facility. To allow a brief, flexible engagement for wastewater operators and an engaging experience for the public, they use 30 -minute calls instead of an hour, create content that moves people physically, and provides trivia, games, and awards.

Comment (Albert Cox): This programming has been successful in expanding public engagement. It implements many good ideas on public engagement in water quality and actions individuals can take.

> Response (Mila): We engage with people who have little understanding of watersheds, regulation, or state and federal agencies. Many have never heard of IEPA or IDNR, or other state or federal entities that have functions within a watershed. When we talk about NLRS, it is coupled with how water is regulated, what a permit is, and which resources a person can use to better understand and activate around the issue. Power points and public recordings are shared.

Comment (Tim Hodson): What is the most important *form* of outreach to a group of people you just described? Is it newspaper, eye-to-eye, local television?

> Response (Mila): Eighty percent of the public learns about water by watching the news, and this is typically only about water crisis. Overall environmental journalism is low and letters to the editor are competitive. So, if there is not a water crisis, a letter often won't be admitted to the column. In order to create education and momentum on water-related content we adapt to audiences and must understand why we are working with them. Venues include virtual, in person, city council meetings, radio, etc. Typically, environmental organizations talk to each other on social media, not to the public. Also, nontraditional stakeholder engagement is slow-moving in comparison with traditional network engagement.
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> Response (Tim): A good outreach package is very important.

Comment (Mila): Sierra Club has recently started a campaign with veterinarians to reach pet lovers. It focuses on a HAB-contaminated water animal health issue as leverage to educate about nutrients. For pet lovers, they can engage on nutrients issues through their animal health professionals.

Agriculture Water Quality Partnership Forum Meeting summary *Michael Woods, IDOA*

The goal of this meeting was to capture ideas and approaches to advance volunteer ag efforts. The Steering Committee provided primer questions to all non-government ag sector partners prior to the June 15, 2022 meeting and requested responses be shared at the meeting. Presentations at the meeting robustly showcased each organization's current and planned initiatives and monetary investments. Details from each presentation are available in the minutes and presentations pdfs online at https://www2.illinois.gov/epa/topics/water-quality/watershed-management/excess-nutrients/Pages/Agriculture-Water-Quality-Partnership-Forum.aspx. Michael summarized the twelve non-government organizations that provided presentations.

Ag sector efforts to increase nutrient 4R education and acre implementation, to expand acreage of cover cropping and land use shifts to perennial energy crops, extended rotations, pasture grazing or land retirement, and to elevate edge-of-field practice implementation are underway through several non-government partner organizations. Most organizations echo the need for augmented public and private funding for nutrient management education, planning, and implementation. Some organizations proposed adoption of nutrient management policy and the further development of policy models aimed at nutrient reduction goals and binding water quality standards.

Efforts to expand agricultural certification programming and to increase private sector investment from food supply chain corporations will provide new opportunities to raise public awareness of soil and water stewardship impacts on water quality and of a pathway toward sustainable, high-yielding agriculture.

Partners highlighted the complexity of ag sector variables such as geography, climate, cropping systems, farm ownership and operations, and other factors in working toward nutrient reductions. Partners echoed the value of consistent communication, education, and technical service with regards to the stacking nutrient-reducing conservation practice benefits and payments.

At the June meeting Trevor Sample provided an overview ag sector survey response. This was an effort to gather the best available data sources to populate the Agriculture and Adaptive Management Chapters of the Biennial report. Specifically, the survey covered data sources for saturated buffers, terraces, wetlands, bioreactors, buffers/filter strips, and cover crops. Details are available online in the meeting minutes.

During the June meeting, Michael provided a summary of Climate-Smart Agricultural origins and goals, as well as initiatives within Illinois. The Illinois activities have begun with several partnerships in the ag sector and NRCS awarding a Regional Conservation Partnership Program (RCPP) grant to increase conservation cropping practices while reducing sediment, nitrogen, and phosphorus loading to the Mississippi River Basin and while raising awareness of carbon capturing practices and of 'release carbon'-limiting practices in agricultural.

Nutrient Monitoring Council Meeting summary *Trevor Sample, IEPA*

Trevor reviewed presentation highlights from the August 2, 2022 NMC meeting. Full details of this meeting are available in the minutes and presentations pdfs online at https://www2.illinois.gov/epa/topics/water-quality/watershed-management/excess-nutrients/Pages/Nutrient-Monitoring-Council.aspx.

Nitrate and Phosphorus Loads 2017-2021 for Illinois Rivers presentation was given by Tim Hodson of U.S. Geological Survey. Preliminary analyses used baseline as 1984-1996.The analysis will be finalized using 1980-1996 baseline. Continuous water quality data averaged over 2017-2021 and 95% confidence intervals showed that statewide nitrate loads increase 10.4% compared to baseline, and statewide phosphorus loads increased 33.5% compared to baseline. Since streamflow during the 2017-2021 period was 30.6% higher than during baseline, data were flow-normalized resulting in a statewide decline of nitrate loading by 10% compared to baseline, and a statewide loading of phosphorus approximately equal to baseline.

Phosphorus loads in the Illinois River Basin: 1980s-2019 presentation was given by Greg McIsaac of the University of Illinois. Since the 1980-1996 baseline period, all major rivers draining Illinois have increased in total phosphorus loads to the Illinois River, except for the Green River. Greg and a team of researchers at ISWS, USGS, UIUC Ag and Biological Engineering, with support from NREC, explored spatial and temporal factors that may be contributing to this increase. Investigated factors included sedimentation budgets for the Illinois mainstem, 41 subwatershed load calculations, correlations to chloride concentration and Dissolved Phosphorus: Total Phosphorus ratio (DP:TP), and biological sinks such as zebra mussels. Conclusions show that 78% of overall P load increase seen at Valley City monitoring station are coming from the Illinois River mainstem between

Marseilles and Valley City, excluding the tributaries. Twenty-two percent of the increase is from point source discharge into the Sangamon River Basin. Possible causes of increased load from the IL R. mainstem include 1) increased *dissolved* phosphorus load resulting in less deposition of phosphorus, 2) desorption of phosphorus from river sediments with possible correlations to chloride, sulfate or nitrate concentrations and water chemistry, 3) historic zebra mussel population dynamics impacting phosphorus sequestration, 4) unidentified point source(s), and 5) CAFOs and increased concentration of livestock. The investigation of 41 sub-basins showed many watersheds shifting to greater concentrations of dissolved phosphorus while particulate phosphorus and total suspended solids loads have decreased. These findings may be indicative of the consequences of increase land area in conservation tillage and expanded tile drainage compared to the baseline period of 1980-1996. While there have been total phosphorus load reductions in the tributaries draining Cook County, the reductions were offset by increased total phosphorus loads from the suburbs (e.g., DuPage River) and increases from some agricultural regions (e.g., Mazon River). When investigating flow-normalized phosphorus loads, most agricultural watersheds were weakly correlated with streamflow. Greg and team recommend future studies on phosphorus desorption and mobilization from Illinois River sediments in connection with chloride, sulfate and zebra mussels. They also suggest studies of Spoon River, Indian Creek, Kickapoo Creek, and the Sangamon River between Fisher and Monticello, as large changes in total phosphorus yields were seen in these watersheds. A recent publication of this research can be found at: Spatial and Temporal Variations in Phosphorus Loads in the Illinois River Basin, Illinois USA - McIsaac - JAWRA Journal of the American Water Resources Association - Wiley Online Library.

Rock River Basin Nitrate Loads 1980-2019 presentation was given by Greg McIsaac. In comparison to baseline (1980-1996), the 2015-2019 period saw a large increase in nitrate yield, from 4.2 lb N/ac-yr at baseline to 21.5 lb N/ac-yr average recently. Sixty-seven percent of the increase was seen on the Rock River between Rockton and Joslin and excluding the Kishwaukee River at Perryville. To investigate the effects of possible factors leading to the 10,600 Mg N/yr increase in nitrate-N load in the lower Rock River, Greg estimated values of N (Mg N/yr) contributions from several possible factors: increased corn/soy acres (est. +1200), increased irrigated acres (est.+510), increased water yield (est.+1900), point source (est.~200), and flow measurement errors at Rockton (est.+2200). Reduced in-stream denitrification, decreased livestock numbers, and groundwater lag time contributions were not considered for this initial budget. These estimates left an approximate 5000 Mg N/yr difference unexplained. A combination of increased groundwater concentration and flow could plausibly account for the difference and could have derived from cropland leaching 10 to 20 years earlier. Greg noted that shallow groundwater concentrations measured near the river are needed to investigate this hypothesis.

Preliminary results for groundwater nitrate modeling in the Rock River region presentation was given by Vlad Iordache of Illinois State Water Survey. He reviewed the subsurface (Tampico) and deep (Sankoty) sand and gravel aquifers in the region (Green River lowlands) and shared results of simulations using the IL Groundwater Flow Model developed by ISWS, ISGS, and IDNR. Phase I of the research populated the model using various public water monitoring data available through IEPA, ISWS, and IDOA. Phase II incorporated nitrate concentrations, transient states of seasonal water demand for irrigation (101 stress periods) and county growth rates over time. A simulation initiated in 1980, assumed no initial nitrate in the groundwater, and applied "contaminated" recharge of 10 mg/L NO_3-N across the region through 2030. Future model improvements could include nitrate information applied across the model domain more heterogeneously to incorporate nitrate application rates, timing, and distribution as well as irrigation demand and distribution. The transient model calibration to observed water quality data and summer flow conditions, as well as an uncertainty analysis, is concluding this fall. Vlad and others in Dr. Daniel Abrams group at ISWS solicit help with acquiring and evaluating nitrate data for the model. Vlad can be reached at 217.300.8779 or iordache@illinois.edu.

Illinois River Basin Next Generation Monitoring presentation was given by Tim Straub of USGS. The Illinois River Basin (IBR) was one of ten basins in the U.S. chosen by USGS to intensify monitoring and drive the future of integrated water science. This national initiative utilizes Next Generation Water Observing Systems (real-time

water quantity/quality monitoring) and Integrated Water Availability Assessments (evaluation of human and ecosystem needs for surface and ground water supplies and the anthropogenic and natural factors affecting water quantity/quality). The IBR was chosen due to its over-abundance of nutrients, associated HABs, range of river activities, land uses, and differences in gradient along its reach. Stakeholder meetings were held throughout Illinois this past year. Priorities for the basin will be understanding factors contributing to HABS and the sources, distribution and transport of nutrients. Monitoring includes super gage data, two cruises of the Illinois River (May and August 2022), and seasonal nutrient monitoring snap shots from headwaters to mouths of major tributaries. A sediment and nutrient source tracking project will investigate several fingerprint and age tracers on a small stream in central Illinois to better understand nutrient transport. The project will model groundwater-surface water interactions and nutrients in the Quiver Creek and Kankakee River sub-basins and will use airborne electromagnetic (AEM) surveys of the Upper Fox River and the Lower Illinois River. Investigations are ongoing to understand why the HAB blooms occur in the basin, and remote sensing and a DNR tracker will investigate viability of early warning detection of CyanoHABs and will improve understanding of conditions that cause them.

Several of the researchers that had provided these presentations during the Aug.2 NMC meeting were on hand for questions following Trevor's presentation.

Question (Albert Ettinger): Can Greg McIsaac describe the relationship between chloride and phosphorus? What did he find and what future research is needed?

> Answer (Greg): There is a correlation between chloride and phosphorus loads, but that doesn't prove causation. River sediment incubation studies in the Chesapeake Bay area observed release of P from sediments but couldn't explain the mechanism. Also, research shows there could be conflicting mechanisms at play. This is beyond my area of expertise.

Question (Albert E.): Will the agency continue these investigations. I understand that across the Mississippi River Basin, chloride levels are increasing. It may be important to investigate this relationship. Does anyone know of work being planned?

> Answer (Tim Hodson): In Illinois we have good records of how loads of various nutrients and elements have changed over time. Greg's work is useful in registering where the changes have occurred in locations and over time. Some of the water chemistry processes may be occurring at certain times and locations. There is still a lot we don't know, and more sampling and monitoring sites are needed. It is an active area of research, but it is still too early to say the chloride has a causal role, only possibly a correlation. USGS plans to continue this research.

Question (Albert E.): Please clarify 78 % of the phosphorus load from Marseilles to Valley City and 22% from the Sangamon R.

> Answer (Greg): It is 78% and 22% of the *increase* in load, not the entire load.
>
> Answer (Trevor Sample): We are still looking into the increased P load from potential non-point sources other than agriculture. We are looking at the increased load component as dissolved P mobilized from sediment and from streambank erosion. Dr. Andrew Margenot at University of Illinois is working on an NREC-funded study to evaluate the streambank erosion component that may contribute to P loads. This study will run over a couple of years.

Question (Albert E.): The flow-adjusted measure is useful, but if the source of increased P is streambank erosion, wouldn't that go down overtime and higher flows wash it to the Gulf?

Answer (Tim H.): This is a hypothesis. Flow-adjusted metrics are useful but can be deceptive. Twenty-two percent is coming from point sources in the Sangamon R. watershed, which is unrelated to streamflow. The other 78% is from lower mainstem of Illinois. Chloride and other factors are increasing too. I am cautious about interpreting causation from the correlation to increase flow or concentrations of other factors.

Albert: If we are applying the correct amount of P currently [in agriculture], then it should be a less over time.

Response (Tim H.): I am cautious to call phosphorus in the mainstem "legacy phosphorus". P in stream bed sediment now could have come from wastewater. There are many point sources upstream of the mainstem. As Chicagoland reduces P loading over a long period, the reservoir of P should deplete. But the lower mainstem of the Illinois is nearly a lake at certain times of year and quite effective at trapping P. We expect it would go down over time, but don't have a grasp of the timescale yet. Streambanks are another potential long-residence reservoir of P.

Round Robin Partner Updates

Eliana Brown: The 2022 NLRS Conference will be held November 1, 2022, 9 a.m. – 3:30 p.m. as a hybrid event. The in person option is planned at the IDOA auditorium in Springfield. Details and registration will be distributed soon.

Lauren Lurkins: IFB finished twelve Nutrient Stewardship Field Days over spring and summer 2022. These featured demonstrations and research. They were all in person events and were covered by radio, FarmWeek and social media communications. More coverage is available at http://www.ilfb.org/ifb-in-action/what-were-working-on/protecting-our-environment/nutrient-stewardship-grant-program/#n2022.

Michael Woods: Secretary Vilsack announced three of the pending $1 billion dollar Climate-Smart Commodity proposal recipients. We hope some are accepted for Illinois. These will be announced September 13th.

Keven Johnson: IFCA is hosting a 4R field day at Eric Miller's farm near Hammond, IL, September 15, 8 a.m. – 2 pm, with free lunch. Email kj@ifca.com. All are welcome. Secondly, the IFCA Ag Retailer Survey will be distributed in January. We have been working with Iowa State and retailers on this. This survey will capture data from the 2022 cropping year. Get it touch with him if you want to discuss this.

Albert Cox: MWRD continues to work in partnership with the ag sector. Its Fulton County site field day this summer featured research and tied research in ag and wastewater together for P reduction. Additional funding from U of I researchers funded by U.S. EPA as well as NREC-funded U of I researchers are working at our Fulton County site. Lauren provided a link to the summary of the MWRD and IFB work in Fulton County https://www.ilfb.org/ifb-in-action/what-were-working-on/protecting-our-environment/nlrs-partnerships/rural-urban-partnerships/.

Kris Reynolds: AFT has partnered with National Fish and Wildlife Foundation, ADM, NRCS, and Farmers Business Network. In July they rolled out the IL Cover Crop Initiative. So far farmers have inquired for 100,000 acres, and the program has secured contracts for 50,000 acres. Currently 75,000 acres are available, and they may shortly expand it to 125,000 total acres for this year. Farmer response has been great. SWCDs have been referring many of acres to the program. We are preparing technical support for farmers to adopt and manage cover cops this coming fall. Also, Fall Covers Program, where farmers can apply for a premium discount for crop insurance, will be starting its 4th year soon.

Jean Brokish: ISAP's conservation story map is now live. It includes basic water quality data as well as profiles for research and demonstration sites, farmers, and service providers. See https://ilsustainableag.org/learn/conservation-story-map/. Contact Jean at jbrokish@farmland.org if you know of entities that want to be included.

Albert Ettinger: Some conferences I have attended this year are expressing concerned about NARPs. Some permittees that have NARPs have been silent on their study status, and the public outreach component may not be happening on some. It is the hope that IEPA will provide follow up on NARP requirements so that studies due at the end of next year can finish on time. Sierra Club and other groups are trying to follow up on this, but some see it as IEPA's job to see that the work gets done.

Response (Trevor): I will pass this on to Sanjay.

Eliana thanked partners for their continued work toward NLRS goals. The meeting adjourned at 11:10 a.m.