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Social Science Evaluation Report

Indian Creek watershed project, Livingston County, Illinois



Photo courtesy of Conservation Technology Information Center

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Contents

- Introduction1**
 - Overview.....1
 - Project purpose – nutrient loss reduction and why it matters1
 - Indian Creek watershed – why this watershed?2
 - Evaluating the Indian Creek watershed project3
 - Putting the project into context4

- Perceptions of the project – goals and success11**
 - Perceived goals of the project..... 11
 - Perceived successes of the project..... 13

- Producer participation – why and what happened?18**
 - Why did producers participate? 18
 - Learning and behavior change – what and how?..... 20

- Key Takeaways22**
 - Community approach..... 22
 - Strong, respected, and trusted local staff 23
 - Producer leaders who are willing to share..... 24
 - Steering committee – diversity of participants 25
 - Funding 26

- Challenges and improvements27**

- Discussion and recommendations33**

- Citations36**

Introduction

Overview

Purdue University was engaged by the Conservation Technology Information Center (CTIC) to evaluate the Indian Creek watershed project by determining its successes and documenting key project elements that contributed to the project's success. What follows is a bulleted summary of key findings from the Indian Creek watershed evaluation. Information on the Indian Creek project itself and a detailed accounting of our findings can be found in the Indian Creek Watershed Social Science Evaluation Report.

In brief, the Indian Creek watershed project is led by the CTIC and in partnership with the Livingston County Soil and Water Conservation District (SWCD), the Illinois Environmental Protection Agency (IL EPA), USDA Natural Resources Conservation Service (NRCS), and many other conservation agencies and organizations, local citizens and farmers. The project focuses on improving water quality in a small agricultural watershed in central Illinois. It targets education and outreach, as well as cost-share funding, to encourage the voluntary adoption of conservation practices and systems that are known to improve on-farm nutrient use efficiency. The project goals were to treat 50 percent of the farmed acreage in the watershed with conservation practices and systems, and measure water quality in Indian Creek to determine if voluntary adoption of such practices and systems, at this scale, can improve water quality.

The project has been funded in large part by a Section 319 nonpoint source pollution abatement grant from IL EPA. The project evaluation and report were funded by the Illinois soybean checkoff.



Funded by the Illinois soybean checkoff.

Project purpose – nutrient loss reduction and why it matters

Conventional agriculture practiced in the Midwest is connected to nutrient loading in waterbodies, which adversely impacts water quality and overall watershed health. In Illinois, nutrient runoff from agricultural land has been linked to reduced water quality, including excess nutrients that harm drinking water (IL EPA) and contribute to Gulf hypoxia (IL EPA; Rabalais et al. 2002). In fact, Illinois EPA estimates that between 1997 and 2011, approximately 20 percent of nitrate-nitrogen loading in water flowing to the Gulf of Mexico came from rivers in Illinois. Illinois EPA has targeted five watersheds for priority nutrient reductions due to nutrient losses from agricultural runoff in order to respond to the U.S. EPA's 2008 Gulf Hypoxia Action Plan (IL EPA). Corn and soybean production is an important source of grain, silage, and energy in the current marketplace, and is also a significant contributor to water quality problems as noted above. In light of this, producing food and ensuring healthy soils for future generations while also protecting water quality is an important set of issues for the agriculture industry and conservation professionals to address.

Incorporating conservation systems into farm management practices (e.g., utilizing cover crops or adjusting rates and timing of fertilizer applications on crops) has been shown to reduce nutrient loss from fields, which in turn can reduce nutrient loading in rivers and streams (IL EPA; Rejesus and Hornbaker, 1999), thereby improving water quality. Voluntary, cost-share, conservation programs are a popular approach to incentivize producer adoption of conservation practices (Reimer and Prokopy, 2014). Along these lines, Illinois recently introduced its Nutrient Loss Reduction Strategy, which seeks to address water quality impacts from both point (e.g., sewage wastewater) and non-point (e.g., water runoff from agricultural land) sources through voluntary goals and measures (IL EPA). The Indian Creek watershed project, located primarily in Livingston County, Illinois, is an example of a voluntary program aimed at reducing non-point source water pollution from agricultural land. This project has been held up as an exemplary and successful watershed project (Christiansen, 2013; Doran, 2014; Miller, 2014; SFTL) worthy of replication. To inform the possible successes and replicability of the Indian Creek Watershed project, this report documents, through the eyes of project participants and observers, the ways in which the project was successful and how such successes were achieved.

Indian Creek watershed – why this watershed?

The Indian Creek watershed conservation project was targeted by CTIC and several State and local partners in Illinois. Funding for this project came from a variety of sources. Two key funding sources were a Section 319 non-point source pollution abatement grant from IL EPA and funding from the USDA Natural Resource Conservation Service’s Mississippi River Basin Initiative (MRBI).

- Section 319 funding is funding that comes from Section 319 of the Clean Water Act. These funds are given to US EPA and allocated to projects by State water quality agencies. In Illinois, this agency is the IL EPA. CTIC applied for, and received, Section 319 funds from IL EPA to implement the outreach, demonstration, and education portions of the Indian Creek project.
- MRBI targets cost-share funding to help producers implement conservation practices and systems in priority watersheds that have high nutrient concentrations located within the Mississippi River Basin; this, in order to mitigate hypoxia in the Gulf of Mexico. This MRBI funding is a reservation of NRCS Farm Bill program funds from the Conservation Stewardship Program (CSP) and Environmental Quality Incentives Program (EQIP), which are used to incentivize the use of conservation practices on agricultural lands. These program funds were targeted specifically to producers in the Indian Creek watershed. The SWCD worked with the newly formed Indian Creek Steering Committee to submit an application to NRCS for these funds.

The Indian Creek watershed, made up of three HUC12 watersheds, is part of the larger Vermilion River watershed. The Vermilion River flows into the Illinois River, which then makes its way to the Mississippi River and down to the Gulf of Mexico (IL EPA, 2009). The Vermilion River is a 303(d) ¹ listed impaired river for excessive nitrates; meaning nitrate levels in the Vermilion are regularly above the maximum concentration level of 10 mg/liter set by EPA drinking water standards. Such high nitrate concentrations are detrimental to human health if consumed (EPA d).

CTIC, the Illinois Department and Agriculture, IL EPA, along with local NRCS and SWCD staff, identified the Indian Creek watershed for this conservation project for five key reasons:

- 1) The watershed, at 51,243 acres, was thought to be small enough to have a positive impact on Indian Creek’s water quality if 50 percent of the watershed’s farmed acreage was enrolled in a conservation project.
- 2) The small size of the watershed would enable SWCD staff to contact every producer in the watershed through face-to-face contact.
- 3) The watershed included a diversity of farms, from farms with thousands of acres to those with only 40 acres, as well as farms with livestock.
- 4) Producers in the area were known to be interested in, or already implementing, conservation practices; thus it was hoped producers in this area would be responsive to learning about and implementing such practices along with new ideas surrounding nutrient management.
- 5) The local SWCD office was staffed by a long-time resident who was also a farmer, and thus known and trusted by the producers in the watershed, thereby increasing the likelihood of enrolling 50 percent of the watershed’s farmed acreage in conservation programs.

Once CTIC secured the Section 319 grant from IL EPA, Livingston County SWCD resource conservationist, Terry Bachtold, formed a steering committee of hand-picked area producers, local agricultural retailers, SWCD Board members, and the Mayor of Fairbury, IL. This steering committee came together to decide whether to

¹ Required by the Clean Water Act, a 303(d) listing designates impaired and threatened streams, lakes, and river segments as not meeting pertinent water quality standards (EPA a). Once a water body is listed, each State in which the waterbody is located must develop Total Maximum Daily Loads for that waterbody – a calculation of the maximum amount of pollutant in the waterbody. If non-point source pollution is identified through the TMDL process, States may then apply for EPA Section 319 grants to fund assessment and control of the listed water bodies and their applicable pollutants (EPA b).

recommend that the Livingston County SWCD apply for NRCS MRBI funding. Once this was decided, the committee helped provide information for the grant application – an ultimately successful application.

Evaluating the Indian Creek watershed project

State and local agencies and others involved in the Indian Creek watershed project contend that the project has been particularly successful in achieving producer participation in cost-share programs. In addition to high levels of participation, the project has received attention from agricultural trade publications and conservation organizations, who highlight it as a model watershed conservation program. The Illinois Soybean Association, cognizant of the perceived success and potential toward reduction of nutrient loss from agricultural land, funded this project evaluation – *Was the project a success? What were the successes? What elements are needed to replicate the successes in other watersheds?* – CTIC sought out and engaged Purdue University to address these questions. We took a case study approach to this project evaluation, delving into the details of the community, attending meetings and field days, reading reports and news accounts of the project, and interviewing a broad cross-section of participants and observers.

The primary source of our data were 35 semi-structured interviews conducted between February and March of 2015 in Livingston County, Illinois and over the phone. Our first step in this process was to contact and interview key project staff² in order to understand the overall Indian Creek watershed project intent, process, and perceived achievements. Livingston County SWCD staff then provided us with an initial list of producers (those participating in cost-share programs and those who did not participate) and steering committee members. As we learned more about the project’s reach through interviews, attending meetings, and reading reports and news articles, we identified additional people, external to the project³, to interview. The breakdown of our interviews is as follows:

- **12 producers (10 households)**
 - 8 participant
 - 4 non-participant
- **7 steering committee members**
 - Agronomists
 - Agricultural retailers
 - Agricultural advisors
- **6 key project and agency staff**
 - Conservation Technology Information Center (CTIC)
 - Livingston County NRCS and SWCD
 - Illinois EPA
 - Illinois Department of Agriculture
- **10 external to project**
 - Other County NRCS staff
 - Illinois American Water
 - Engineers
 - Non-profit conservation organizations

² CTIC, NRCS, and SWCD staff.

³ Contact information was found through public information available on the internet.

In addition to interviews, we attended the following gatherings in order to observe the function and content of each meeting and event:

- Steering Committee, January 28, 2015
- Annual Meeting, February 19, 2015
- Steering Committee, April 2, 2015
- Field Day, July 16, 2015

To gain understanding of project details and perceived achievements from the project lead perspective, we analyzed project reports. We also examined agricultural trade publications and conservation organization newsletters in order to gauge the external reach of the project:

- CTIC progress reports.
- Demonstration plot results reported by Dr. Harold Reetz.
- Conservation organization newsletters and publications.
- Agricultural trade publications such as AgriNews, AgWired, and Illinois Farmer Today.

Utilizing each of these data sources, we explored the following themes in order to report on project successes and key takeaways to be considered for new watershed projects:

- Details of the project.
- Perceptions of project goals.
- Motivations for participating (or not participating).
- Learning achieved through participation (and how learning occurred).
- Perceived project successes.
- Challenges surrounding the project, cost-share programs, and conservation practices.
- Suggested elements needed for successful implementation of a similar project in a different watershed.

These broad themes were covered in each interview through the use of a written interview guide. The interviews were then transcribed and the text analyzed for emergent themes within these broad categories. Project documents and agricultural trade publications provided additional data, yet also corroborated what we learned from the 35 interviews. The results reported here come from our interview data analysis process.

Putting the project into context

Indian Creek watershed

The Indian Creek watershed is located primarily in Livingston County, Illinois, with Ford and McLean Counties touching its southern and western edges respectively. It is a 51,243 acre drainage area with agriculture as its primary land use, made up of three HUC12 watersheds:

- Indian Creek (071300020203)
- Belle Prairie-Indian Creek (071300020204)
- Town of Fairbury (071300020205)

Figure 2 Indian Creek watershed, Illinois

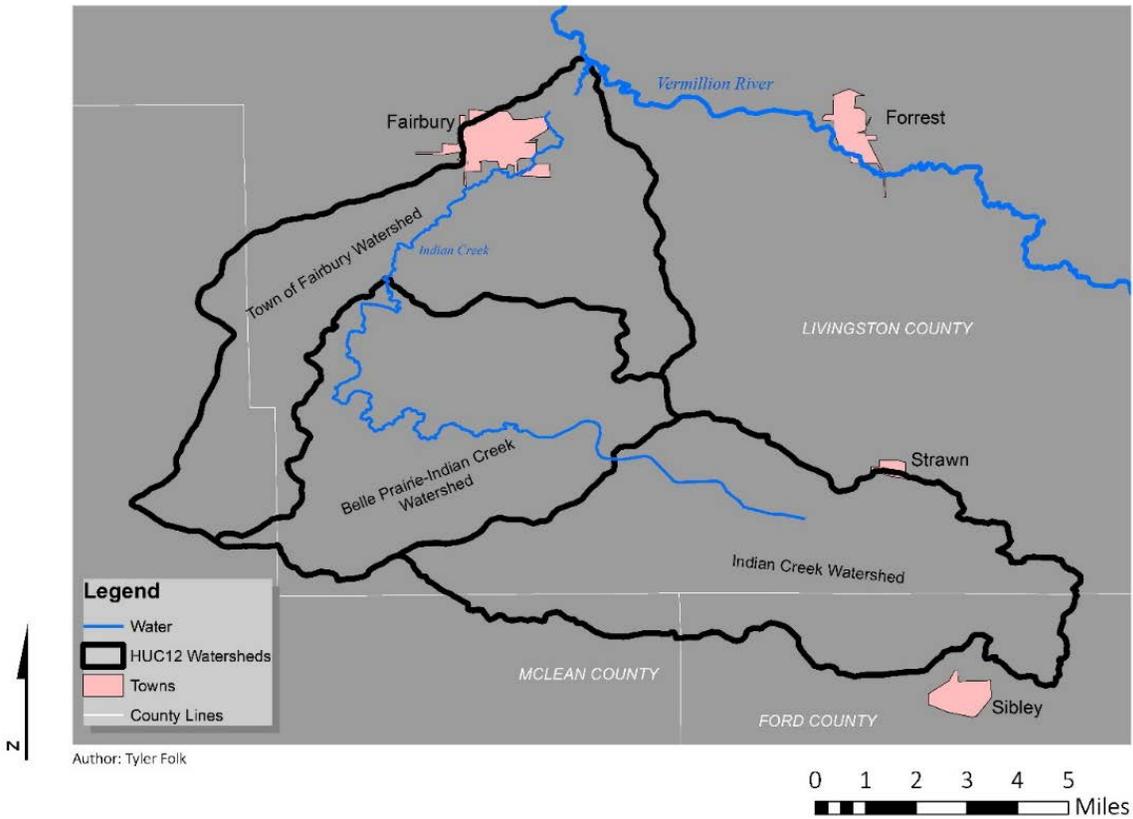
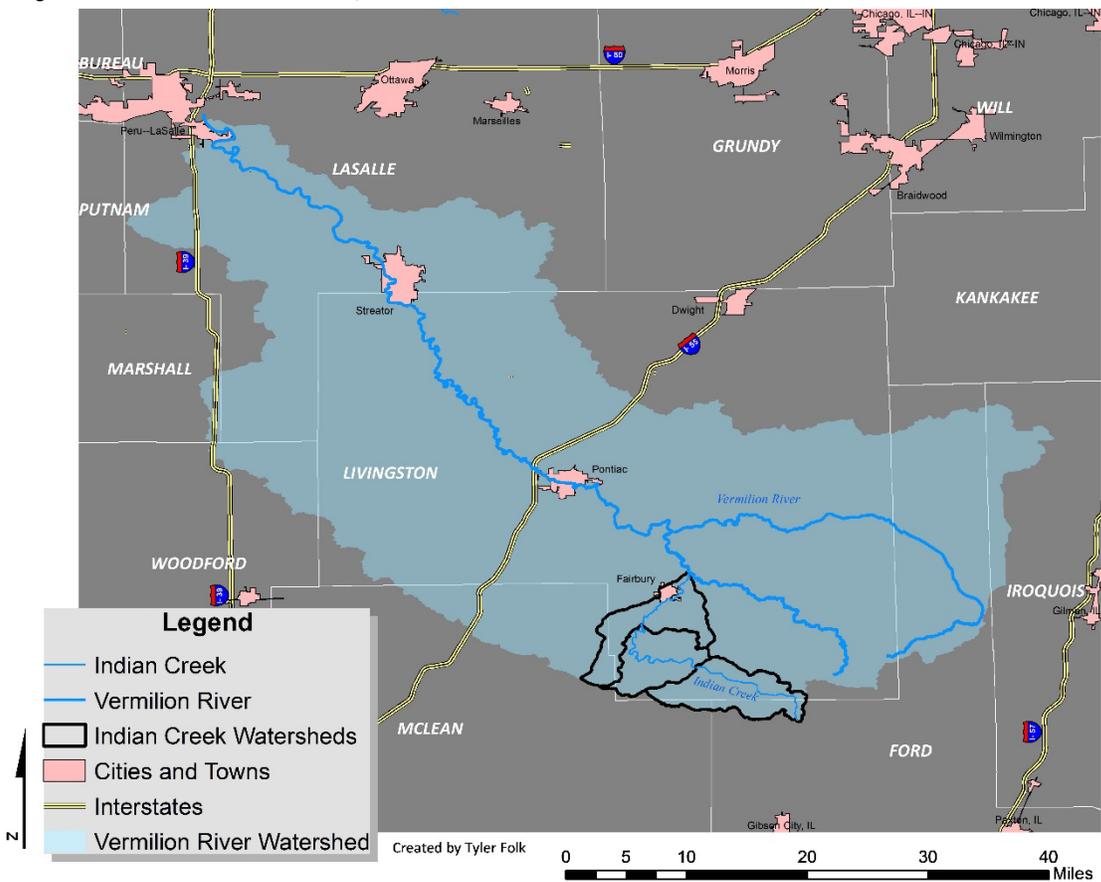


Figure 1 Vermilion River watershed, Illinois



Indian Creek itself is not a 303(d) listed stream, however it flows into the South Fork of the Vermilion River and then on to the main stem of the Vermilion River, which are both listed as impaired. Because of the Vermilion River’s impaired listing, ongoing Total Daily Maximum Load calculations are required. The Vermilion River provides drinking water for Pontiac (2013 population estimate 11,688) and Streator (2013 population estimate 13,422), both of which are located downstream from the Indian Creek watershed and its principal community, Fairbury (2013 population estimate 3,689). The Vermilion’s TMDL indicates that nitrogen and nitrate are “potential causes” of its listed status⁴ (NRCS 2008). EPA drinking water standards through the Safe Drinking Water Act dictate a maximum concentration of 10 mg/liter of nitrate to maintain safe drinking water (EPA c). Illinois American Water, who administers the drinking water in this area, must treat the water from the Vermilion several times a year in order to meet the Safe Drinking Water Act standards. They do this either through mixing the river water with stored reservoir water with nitrate levels at or below 10 mg/liter, or through an ion exchange system if mixing water cannot achieve safe drinking water standards (Personal communication from Illinois American Water representatives). Because the Indian Creek watershed project is linked to the impaired waters of the Vermilion River, water quality has been monitored since 2010 at four sites (IL EPA a, 2014 p. 37). The goal for this project was to achieve nitrate levels at or below 10 mg/liter in Indian Creek (CTIC 2013).

Livingston County and the Fairbury Community

The Indian Creek watershed sits almost entirely within Livingston County. The County’s 2013 estimated population was 38,186. The majority of the population in Livingston County was White (92.5%) in 2013. While Livingston County’s poverty level (10.3%) was lower than Illinois as a whole (14.1%), there was a similar median household income and age distribution for those aged 25 – 54, with Illinois having a higher percentage of persons over 65 years old (15.9% versus 12.9%) (See Table 1). Although Livingston County and the State of Illinois had similar educational attainment for High School education and above, persons with a Bachelor’s degree or higher was significantly lower in Livingston County (14.5%) than the State as a whole (31.4%).

Table 1 Livingston County Demographic Profile as compared with Illinois, 2013 U.S. Census American Community Survey

	Livingston County	Illinois
Population (estimated)	38,186	12,848,554
Race, White	92.1%	72.5%
Median age	40.9	36.8
Percent of persons aged 25 - 54	41.5%	41.4%
Percent of persons aged 65 years and over	12.9%	15.9%
Percent of persons with a High School education or higher (25 years and older)	86.1%	87.3%
Percent of persons with Bachelor’s degree or higher (25 years and older)	14.5%	31.4%
Median household income	\$54,614	\$56,797
Percent of persons below the poverty line	10.3%	14.1%

Sources: U.S. Census b, U.S. Census c.

The City of Fairbury is the principal community and gathering place in the Indian Creek watershed. It is located in the upper/northern portion of the watershed, and approximately 15 miles southeast of Pontiac, which is the county seat of Livingston County (see Figure 2). In 2013, the estimated population of Fairbury was 3,713, a 1.2 percent decline from 3,757 in 2010 (US Census a). Fairbury is the hub of the Indian Creek project. Steering committee meetings are held in the community room at Dave’s Grocery, the community’s grocery store that also contains a vibrant and well frequented café. The project’s Annual Meetings and the indoor portions of their Field Days are generally held at the First Baptist Church of Fairbury, which is located next door to Prairie Central High School. Fairbury’s downtown houses its City offices, a library, the post office, several shops and restaurants, and financial service retailers. Entering the town from the east, you’ll find a Fairbury mainstay, McDonald’s

⁴ Nitrogen and nitrates found in water bodies can be due to runoff from fertilizer use on agricultural land (EPA c).

Family Restaurant. We had several meetings at this restaurant, and never failed to see a group of farmers sitting in the front room chatting over coffee. Overall, time and again we were told that this is a tight-knit community – *“...This is a very community minded area. People are very connected to each other through social activities as well as just personally related...”* – we certainly felt this sense of community during our visits.



We were told that one of the reasons the Indian Creek watershed was chosen as a potential location for a Section 319 grant application, was the diversity of crops and livestock in the area – *“There’s a lot of diversity in this watershed that you don’t see throughout Illinois. There’s a lot of specialty crops, turkeys and poultry, a lot of livestock diversity, both crops and animals that maybe you don’t see a lot in other watersheds. They’re just typically pure corn-soybean, although that still is the dominant crop.”* – Indeed, while corn for grain and soybeans for beans make up the majority of total harvested cropland in the three watershed counties, Livingston, Ford, and McLean Counties also include a good number of cattle and hogs.

Table 2 Indian Creek watershed County agricultural profile (Livingston, McLean, Ford counties) as compared with Illinois, 2012

	Livingston County	McLean County	Ford County	Illinois
Total harvested cropland (acres)	614,333	635,582	290,265	22,373,010
Corn, grain (acres)	323,873	347,414	159,490	12,263,259
Corn, silage/greenchop (acres)	2,626	1,756	543	171,562
Soybeans, for beans (acres 2012)	277,323	279,769	125,449	8,933,457
Cattle and calves inventory (number)	10,510	12,139	3,032	1,127,630
Hogs and pigs inventory (number)	236,426	173,116	4,114	4,630,796

Source: Ag Census (2012)

Producer participation – conservation practices and demonstration plots

As part of the Indian Creek watershed project, producers could participate in two overall project types: 1) changes to farm management through conservation practices and, 2) implementation of nutrient use efficiency demonstration plots. First, through cost-share programs (primarily CSP and EQIP), producers implemented agreed upon conservation practices or systems on their farm, or took land out of cultivation, for a period of time⁵. Producers then received payments to defer the cost of lost yields or the cost of changing farm management practices. Second, the project received Section 319 funding through IL EPA. This funding was allocated to CTIC to assist in organizing the Indian Creek Watershed project, to lead the educational and outreach portion of the project, and to fund the implementation of nutrient use efficiency demonstration plots on producers’ land. Section 319 funding also paid for a portion of the gage and nitrate probes for the water monitoring equipment. Details on the conservation practices and demonstration plots implemented are described next.

Cost-share programs

The majority of practices implemented through the project centered upon nutrient management, including different approaches to nitrogen application, tissue testing, the use of precision technology for nutrient management (right source, right rate, right place, right time), and writing a nutrient management plan. Other

⁵ The EQIP program is a maximum of 10 years. CSP contracts are for 5-years.

popular practices included the implementation of cover crops, conservation crop rotation, grassed waterways, and residue and tillage management. These practices were implemented by producers. Technical assistance was available from NRCS/SWCD staff if needed. The following tables list the types of practices contracted, the number of contracts per practice, and the number of acres covered within each practice.

Table 3 Conservation practices under contract through the CSP program, 2010 through 2013 (2014 unavailable)

Conservation Practice (CSP)	Contracts	Acreage
Nutrient management - nitrogen application	27	15,469.5
Nutrient management - tissue testing	27	14,239.6
Pesticide drift reduction	7	4,243.3
Cover crop	7	2,622.3
Nutrient management - precision technology	5	2,901.1
Air emissions	3	1,218.7
Nutrient management - nitrification inhibitors	3	1,123.0
Nutrient management - livestock	2	708.9
Locally grown and marketed farm products	2	365.0
Weed management	1	1,165.9
Grazing management	1	15.0
Livestock forage	1	12.0
Water facilities - wildlife escape	1	10.0
Waste management	1	1.0
TOTAL	88	44,095.3

Notes: Contract information provided by the NRCS office in Livingston County, IL.
Some acreage could be included under more than one contract/practice.

Table 4 Conservation practices under contract through EQIP and CTA programs, 2010 through 2014

Conservation Practice (non-CSP)	Contracts	Acreage
Waste Recycling, Storage, and Transfer	16	1,837.3
Conservation Crop Rotation	8	2,499.6
Grassed Waterway	5	22.7
Subsurface Drain	5	6,097.0
Composting Facility	4	4.0
Cover Crop	4	135.7
Access Road	3	950.0
Comprehensive Nutrient Management Plan - Written	3	5.0
Reduced Till	3	1,527.4
Nutrient Management	2	258.9
Seasonal High Tunnel System for Crops	2	4,000.0
Upland Wildlife Habitat Management	2	8.2
Windbreak/Shelterbelt Establishment	2	440.0
Agricultural Energy Management Plan, Headquarters - Written	1	1.0
Conservation Cover	1	4.1
Critical Area Planting	1	0.9
Filter Strip	1	4.1
Pumping Plant	1	1.0
Roofs and Covers	1	1.0
TOTAL	65	17,797.9

Notes: Contract information provided by the NRCS office in Livingston County, IL.
Some acreage could be included under more than one contract/practice.

Demonstration plots

Another important component of this watershed project were nutrient use efficiency demonstration plots. These plots provided valuable data to the producers who implemented the demonstrations on their farms and to the community at large, as the agronomists in charge of the plots presented the previous year's demonstration data at each annual winter meeting. Through our interviews, we found that plot demonstration data was a key aspect of the success of this project. The demonstrations provided local data to local producers, with the producers and agronomists who worked the plots available to speak about their experiences and findings with other producers and the public. To accomplish this portion of the project, CTIC utilized Section 319 funding to hire agronomists Dr. Harold Reetz (Reetz Agronomics) and Mr. Tim Smith (CropSmith, Inc.) who then worked with producers in the watershed area to implement nutrient use efficiency demonstration plots on their farms. Each year the project staff and agronomists worked with the steering committee, including producers, to create a "menu" of plot demonstrations from which interested producers could choose. Small plot demonstrations were typically about a half-acre in size, worked with small-plot equipment or hand labor. Larger demonstrations, performed with regular farmer-scale equipment, were approximately 15 to 20 acres in size. Table 4 shows the number of demonstration available on the demonstration menu, the number of demonstrations initiated, and the number of producers engaged in the demonstration plots between 2011 and 2014.

Table 5 Demonstration and nutrient use efficiency plots implemented, 2011 through 2014

	Available demonstrations	Demonstrations initiated	Number of producers engaged
2011	6	6	3
2012	10	10	6
2013	13	11	7
2014	9	9	9

Notes: Contract information provided by Reetz Agronomics.
Some producers contracted for more than one demonstration plot.

Structure of the project – the people and organizations who made this project work

Through our interviews and document review, we identified the following organizations and people as being key to the processes and successes of the Indian Creek watershed project. Here, we highlight each key partner and their function as part of the day-to-day workings of the project. In the [Key Takeaways](#) section, we elaborate on the importance of each of these organizations and people toward the success of this project.

CTIC

CTIC is the backbone of this project. Chad Watts, CTIC project director, leads this effort and has been instrumental in coordinating the social and information sharing components of the project (e.g., quarterly steering committee meetings, annual meetings, field days, media contacts, and making presentations to groups about the project). He, along with CTIC project coordinator, Sue Tull, is also in charge of getting the word out about the project through email updates, newsletters, and media relations. Sue Tull also ensures that the project is on schedule and on budget. CTIC has been instrumental in bringing in additional funding for initiatives and projects that complement the ongoing conservation work in the Indian Creek watershed. As will be shown, project outreach provided by CTIC (and made possible through Section 319 funding) is an important aspect of this project's success.

Livingston County SWCD

While the local SWCD office also provides coordination support for steering committee meetings, annual meetings, and field days, this agency provides the on-the-ground effort to gain project participation. Terry Bachtold, resource conservationist, is the face of the project. He hand-picked the steering committee, asking producers who were well regarded in the community and who were also motivated to implement conservation practices, as well as all local agriculture retailers and the Mayor of Fairbury, to participate. In addition to pulling

together this core group, Terry Bachtold visited face-to-face with every producer in the watershed to tell them about cost-share and demonstration plot opportunities available through the project. Terry Bachtold is a trusted member of the community, to whom other people listen. He is a farmer himself and his family has lived in the community for generations. He is quiet and not pushy, yet passionate about conservation. Terry Bachtold's standing in this community, his demeanor, and his passion about this watershed project, have been instrumental for producer participation.

USDA NRCS, Livingston County office

Eric McTaggart, district conservationist in the local NRCS office, administers the cost-share program contracts and provides on-farm technical assistance to help match producers with appropriate conservation measures for their farms. After Terry Bachtold recruited producer participants, Eric McTaggart and Livingston County NRCS staff helped producers identify priority conservation practices and systems that could address each farm's needs. They then explored appropriate program options to help farmers defray the cost of the practices and systems. Eric McTaggart would meet with producers at their farms, in the NRCS office, or during open houses, to recommend the program best suited to the producers' needs, and walk them through the applicable paperwork. Like Terry Bachtold, Eric McTaggart's demeanor is not pushy, which contributes to the trust of local staff in successfully contracting with producers in the watershed.

Steering Committee

The steering committee was put into place prior to cost-share funding applications. This early recruitment helped to ensure local buy-in and commitment to the project. The current steering committee is made up of local SWCD and NRCS staff, local producers, local agricultural retailers, and agronomists Harold Reetz and Tim Smith. The meetings are open and anyone is welcome to attend; for example, representatives from American Farmland Trust, The Nature Conservancy, and the Illinois Soybean Association have attended in the past. Many of the project sponsors, who represent agricultural industry leaders, also often attended steering committee meetings to participate in discussions, and to offer insights and expertise⁶. The committee meets quarterly. These meetings serve several functions; the meetings are: 1) a place for the committee to discuss conservation practices and demonstration plots and determine which projects to include on the practice and demonstration menu; 2) a setting for the committee to recommend specific events and speakers for annual winter meetings and summer field days and then plan (and volunteer) for specific aspects of each event; 3) an informal venue for information sharing amongst all participants.

Indian Creek watershed project goals

The participants and partners of the Indian Creek watershed project worked to achieve the following three project goals (CTIC, 2013):

- Implement conservation practices on 50 percent or more of the Indian Creek watershed's farmed acreage.
- Measure water quality in Indian Creek to determine whether voluntary implementation of priority conservation systems on at least 50 percent of the land in the watershed, over the six year timeframe of the project, is a sufficient implementation scale and timeframe to impact water quality.
- Provide educational assistance to watershed producers in order to make overall improvements to water quality in Indian Creek through the utilization of the 4R Nutrient Stewardship framework.

⁶ Project sponsors can be found at the following website: <http://www.ctic.purdue.edu/IndianCreek/Sponsors/>.

Perceptions of the project – goals and success

In the following pages, we report on the details of our evaluation by presenting prevalent themes that emerged from our interview transcript analysis. We begin by reporting on the perceived goals of the project, followed by what our interviewees thought were the successes of the project. We then move to more specific aspects of the project, including why producers decided to participate, what our interviewees learned, and how and whether behaviors changed because of participation in the project. The analysis presented here includes all of the interviews we conducted for this project, including producers and non-producers.

Perceived Goals

WATER QUALITY

INFORMATION

EDUCATION

Perceived goals of the project

Nutrient management for water quality

Each person we interviewed was asked what they thought was the primary goal of the Indian Creek watershed project. This was asked so that we could get a sense of whether the understanding of the overall project, by the people we interviewed, matched the actual intent of the project. Overall, interviewee perceptions of the project goals corresponded with the actual intent of the project. Interviewee perceptions centered on nutrient loss reduction for improved water quality of Indian Creek and downstream to the Vermilion River. Most answers, from producers and non-producers, included a discussion about improving water quality through changes in farming practices including tillage and nutrient management.

“...that we could make a difference in water quality by what farmers out here in the watershed are doing; how they’re tilling the land and how they’re applying the nutrients, and tweaking and adjusting their decision making process over here, can make a difference over here in water quality.” *(Producer participant)*

“...the plan itself is looking at fine-tuning management practices to basically improve production and minimize potential negative impact on environment. So fine-tuning nitrogen management, fine-tuning phosphorous and potassium utilization, looking at it from a standpoint of not sacrificing yields, but also maintaining good environmental quality.”
(Ag Retailer, soil testing)

That these responses correspond to one of the intended goals of the project — to encourage nutrient management through the 4R Nutrient Stewardship framework⁷ (CTIC 2013, 14) — indicates that project messaging, education, and outreach efforts were successful in conveying a message that changes in farm management practices can influence downstream water quality.

Discussion

PROJECT MESSAGING,
EDUCATION, AND
OUTREACH EFFORTS
APPEAR TO HAVE BEEN
SUCCESSFUL.

⁷ The 4R Nutrient Stewardship framework asks producers to think through the following four principles: right source, right rate, right time, and right place. This framework is meant to reduce nutrient loss by efficiently utilizing nitrogen fertilizer so that the nutrient goes to the crop when and where it is needed. See <http://www.nutrientstewardship.com/what-are-4rs> for more information.

Information – for local farmers and beyond

In addition to improved water quality goals, there was one additional common goal that emerged from our interviews – education and information dissemination to enable producers to apply new knowledge to their own farms.

“...the bottom line is that’s really why they’re doing this, is to get that information and then to get it back into the farmer’s hands so that they can see what it’s gained.”
(Producer participant)

"What we're trying to do is demonstrate best practices so that we can then use those as an educational piece and use the information from those. Publish that, the results if you will, so that other people catch on and say maybe that's a good practice for me to try."
(Project and agency staff)

“I think – and just stating again my opinion here – is that they just really want to be able to offer and just be that source of information for producers if they want to participate in these programs...whether it’s financial assistance or just information...quite a few people may not directly have an interest in the adjacent water quality issues, but they definitely want to see what they can do on their farm to help soil quality and a lot of these things do tend to lead to improved water quality and knowing that a lot of these things are connected, so I think they (the project leaders) do a good job with just being basically an information source for all of these things.” *(Conservation NGO)*

This project had a hands-on, empowerment focus. The project put information into producers’ hands through experimenting with changes in farm management, through the implementation of demonstration plot testing of nutrient management strategies, and through the dissemination of demonstration results and lessons learned at project sponsored meetings and events. Thus, that *information* emerged as a project goal makes sense, as the project intent was to empower this community to learn, to change, and to build a culture of adaptation and learning that could last past any official watershed project:

"...part of the idea behind 319 money is they want something to kind of kick start and then it can be sustainable...if we could spur the locals to have an interest and create that infrastructure then that would be more likely to continue." *(Project and agency staff)*

Perceived Successes

INCREASED PRODUCER
AWARENESS

INCREASED PUBLIC
AWARENESS

BEHAVIOR CHANGE

PRODUCER
PARTICIPATION

Perceived successes of the project

Although improved water quality through changes in nutrient management practices was, overall, both a perceived goal and the actual intent of the project, our interviewees did not discuss improved water quality as a perceived *success*. Indeed, several interviewees expressed the desire to see more water quality data and hoped that changes toward conservation practices were having a positive impact on Indian Creek. In addition, they did not have confidence that the water quality data that had been gathered was telling the full water quality story, including a healthy fish population in Indian Creek⁸ and less than “normal” weather cycles creating artificially high nitrogen loads⁹. Changes to water quality can take time (IL EPA, Meals et al., 2010; Tomer and Locke, 2011). The five year time span of the project included a very dry year in 2012 followed by a very wet spring in 2013, combined with a lack of baseline data for Indian Creek, did not contribute to an overall picture of whether nutrient loading in Indian Creek decreased due to this specific project¹⁰.

Discussion

ALTHOUGH THE PROJECT
GOAL OF IMPROVED WATER
QUALITY DID NOT APPEAR
TO BE MET, THE PROJECT
WAS SEEN AS AN OVERALL
SUCCESS.

Despite issues surrounding water quality data, the people we interviewed expressed many successes of the Indian Creek project. The two most discussed successes were **increased producer awareness** and **increased public awareness**. These successes should be noted in their potential toward positive influences on producers’ yields, soil health, and long term farm viability, if not also future water quality. Our interviews suggest that participation in the Indian Creek watershed project contributed to producers’ willingness to learn and experiment with new ideas. We conjecture that this new awareness and willingness to experiment could contribute to this community’s ability to adapt to changing climate conditions. The following section describes the major themes of success that emerged from our interviews.

Increased producer awareness – building a culture of experimentation and learning

The most commonly expressed success discussed by the people we interviewed was that the project increased producer awareness of how agricultural practices impact local water quality.

“I think the other thing is just having people aware where we’re at. That, hey folks...as wonderful as our community is, there’s things that we can address.” (Producer participant)

Through participating in this project, whether through a CSP contract, a demonstration plot, or simply going to meetings, producers realized that there are different ways to manage nutrients than what is typically practiced in the Corn Belt (e.g., fall application of nitrogen). They learned that these practices can have positive influences on yields, profits, and water quality.

⁸ Several interviewees mentioned a fish shock test at Indian Creek that occurred CTIC’s 2013 National Conservation in Action Tour. This experience appeared to be a point of pride for many of the people we interviewed, as they told us that the shock test indicated that the creek was healthy.

⁹ The issue of water quality data will be discussed more fully in the [“Challenges and improvements”](#) section.

¹⁰ Researchers at Notre Dame University are currently analyzing the water data to understand trends in the water quality of Indian Creek. Results will be available by the summer of 2016.

"I definitely think it's been successful in encouraging people to try new things and encouraging people to be aware of the fact that there are multiple ways of doing things. It's not just the way Grandpa did it and Pop did it and I'm going to do it this way. There are a variety of opportunities and options and I think, for the most part, most of the people involved with the project have been willing to get outside their comfort zone and try some things that they may not have tried otherwise." (Ag Retailer, soil testing)

"...overall I would say the biggest thing is it's an awareness thing for the producers...a source of gathering information. And then, to also put some of the practices into use on their own farms and to try them and to see how they work or if they work right and if they're satisfied with it. The bottom line is, if they do and it's economically feasible, producers will, for the most part, grab ahold of them and use them in the future...I do feel like they have made us aware of the options...to participate and what some of the benefits will be if you do participate (in a CSP type project)..." (Producer participant)

This new knowledge then also led some producers to pay more attention to agriculture's impact on local water quality and their farm's soil health, and to thinking about their own farm management practices in a different way.

"...before, we were always worried about how can we get our standing water, if we have water events, how do we get the water away from our soils and downstream as quickly as possible. And we've become really good at that. But in the same process, when you have all that tile, then you have...nutrients that go downstream and into our soil or whatever it might be...it's been a real awakening for some people...How do we do it better? What can we do to slow the water down? What can we do to keep the nutrients? ...So now we're thinking more positive, in terms of how it affects...water quality, downstream effects of it. We can give the water away really quick, but when Pontiac is the recipient then...it's how people look at the bigger picture...(rather) than just their field and how to get the water off of that as quickly as possible. So it's opened some eyes..." (Participant producer)

"... (The) stewardship program, it makes you, if you don't know something, then you're not aware of it. If you know it, and you're aware of it, then you look at it a little harder." (Producer participant)

"We're paying more attention because of the (nitrogen use efficiency) experiments we've done and the ones that are going on in the project. We're paying more attention to articles in magazines that also talk about it and reinforce it, in the way of cover crops and side dressing and what(ever) else." (Producer participant)

Increased public awareness – improving water quality for neighbors and demonstrating voluntary conservation programs work

In addition to the project increasing producer awareness of agriculture's impact on local water quality and different ways of addressing nutrient management, the other major theme that emerged from our interviews was that the project increased public awareness of producer efforts toward helping to improve water quality.

Public as community

One participant producer talked about teaching moments with community members at church or at the grocery store as opportunities to talk about the watershed project, how the farms in the area effect water quality, and then how local farmers are trying to improve water quality in Indian Creek. Another spoke about similar ideas in terms of showing the local community that the producers in the watershed are taking responsibility toward local water quality.

"...when I rub shoulders with folks that come in here to church and my neighbors up at Dave's at the grocery store or whatever, and somebody says, 'Hey, what's this watershed thing?' It's an opportunity to say, 'Hey, it's about water quality.' Next time, 'Have you ever noticed the green scum on Indian Creek in late summer?' ...the creek runs through the golf course, so the guys golfing see when the water's high and when the water's low and when the water's rushing through there all dark and muddy or when it's nice and clear or when the green scum comes. I think just the awareness...what you guys are doing out in the field is affecting the creek. Well, yeah. We want to take responsibility for that. We want to try to clean it up so you feel like canoeing there in the middle of June and paddling around." (Producer participant)

"...in our summer and winter meetings, we'll have quite a few different people, not just producers or landowners, who will take part in the tours just to see how things are going. I think it's a way to branch out to the townspeople to let them know that we're trying different things to help clean up our water...we have to do something before we're told we have to do something. I think if we get that educational message...across to all of the community members...That we're trying. And it's not easy. And sometimes it's hard to quantify...So I think we're slowly getting through to as many people as we can. We're going to do our part anyway." (Producer participant)

The broader public

Others spoke about the "public" in the context of policy and regulation. Many of the people we interviewed felt that the voluntary conservation efforts being made in the Indian Creek watershed was an example of the positive impact voluntary measures could make on water quality. Interviewees spoke about how the levels of participation in the watershed and the amount of national press the project had received, showed that the producers in this area of Illinois were trying to help improve water quality.

"It can't help but be a good public relations thing. I don't know if public relations is the right word. But the public knows farmers are doing something about it. Even the farmers themselves think about it, whether they're doing a lot or not. It's in the news; it's in the farm magazines. This one guy comes to (Indian Creek watershed) meetings and writes articles. So even if you're not participating, if you read anything at all, you know what's going on. So, public awareness or farmer awareness. That's a start." (Producer participant)

The project's success then led to the reputation of the watershed community as one with "conservation-minded" producers, thus bringing in interest from outside entities like the Argonne National Lab to work in the watershed, or as a watershed project to emulate.

"...we've gotten a lot of good media coverage...After a few years it kind of snow balled where others started hearing, 'Well you have a lot of conservation-minded farmers in these areas who are willing to adopt practices'...some other folks coming in and start showing interest and wanting to put their programs in the watershed. We had folks from Argonne come down and they're doing a biomass study. We've done some other studies with tile monitoring...So a lot of it is social, in terms of just saying, 'We know there's a lot of good things going on because we've read about it.'" (Project and agency staff)

The nature of the Indian Creek watershed project meant conservation information disseminated beyond the watershed through sponsors located outside the state and through agricultural trade publication coverage. In addition, aspects of the project like CTIC's 2013 National Conservation in Action Tour brought policy makers from State and Federal agencies like NRCS and US EPA to the watershed area. Interviewees felt that the attention of the project by Federal policy makers was beneficial, as the project showed high levels of producer participation in voluntary conservation programs, thus alleviating the need for regulation.

"The people who come here from the companies that are sponsors are not just local people. We've got a couple of guys that'll be driving in from St. Louis. One comes in from Iowa. They come regularly to these meetings. And then, that extends out to other communities that they're working in....The project is being held up as an example of how people can work together to get something done about water quality and nutrient management. The practices that we're using get seen by people from all over. A year ago, we had the National Conservation tour here. That was a big deal actually. We had four busloads of people and we had the Chief of NRCS stop here; we had top people from U.S. EPA. Those folks don't get out to the...middle of Illinois in the Corn Belt very often. That attention is good...When they go back and make decisions, they see from the grassroots out here, what works and what things are being done and what the impact is. And, I think that's important." (Agronomist)

"It also lets the public in general or political leaders...see some new things first hand. Then it also gives those people who are making policy the opportunity to talk to people that are actually doing the work on the ground. And, to me, that's a great way for us as producers or local individuals to interact with those people that are going to influence those policy makers...If we can get the word out, especially from the aspect that, yeah, we're trying to clean up our act as far as what we put in the streams from our crops..."
(Producer participant)

This idea of a project that highlighted producer participation in a voluntary conservation project related to the current regulatory environment in Illinois as well. The Indian Creek watershed project was seen as an example of what can be achieved without regulation, and seemed particularly salient as the Illinois Nutrient Loss Reduction Strategy was in the process of rolling out.

"The other thing that I think really helps a lot is that the Indian Creek watershed is really focused on nitrates and we're right in the middle of our nutrient loss reduction strategy...They've (Indian Creek project) been kind of out in front of this a little bit...They're heading with the wind on nutrient management...If the industry starts to change some, and farmers, and how they utilize all the different aspects of nutrients, then I think maybe we'll have some massive changes and start to make the corrections we've been working on here. It's possible that Indian Creek will be a model that what they've learned there helps to also support the nutrient loss reduction strategy." (Project and agency staff)

"I guess it's important that an initiative is being taken to try to support the initiative of what we heard the EPA's wanting to do (the Illinois Nutrient Loss Reduction Strategy)... It's going to take more than just us here in the Indian Creek watershed to do that. But an initiative means that you started somewhere to hopefully then, it can be spread to a bigger area..."
(Steering committee member)

Other successes

Behavior change

There were other aspects of the Indian Creek watershed project that were specifically mentioned as successful, one being that it was apparent that producers were changing when and how they applied nitrogen on their crops:

"I think we did a pretty good job in the watershed as far as saying, look guys, the split applied nitrogen is really paying dividends, and I think if you talk to CPS and Brandt here in town, they will say that the amount of in-season nitrogen they're handling is up substantially over the last four or five year period. Now, whether that's all watershed or just economics or, I mean, there's tons of information out there that is pointing in this direction...."
(Producer participant)

"...the biggest thing at least that I've seen in the two years since I've been here that have been a part of it that (project)...all the previous or how many ever years of farming, it's been pretty standardized (to) spread fertilizer in the fall, put a little fall anhydrous on; that's pretty much just been the normal...now maybe bring in more of that nitrogen application into the spring, and just doing different things..." (Ag Retailer, fertilizer)

We cannot directly associate changes in how and when producers in the Indian Creek watershed apply fertilizer, with the Indian Creek project. Like the comment above states, agronomic information points towards timing the application of nitrogen closer to when crops are planted (NRCS, 2012; Ribaudo et al., 2011). That being said, local agricultural retailers mentioned these changes over the course of the project¹¹ and a transition away from fall application has not been seen in high levels in the United States (Ribaudo et al., 2012).

Participation

Another successful outcome of the project was the level of participation in cost-share programs by producers in the watershed. This meant that project goals were met (almost 50 percent of the watershed enrolled in a cost-share program), but also meant that more acreage was being better managed.

*"When we talked about the success of Indian Creek...when you look at from the NRCS side, the CSP enrollment, there's a lot of acreage. I mean the goal from the beginning to see what kind of water quality results we get, when you get 50% of the acreage in a watershed enrolled in some kind of practice, or very close to that, so that's success."
(Project and agency staff)*

"...we're successful because we've got several thousand acres that are being managed better because of (the project)." (Agronomist)

Many interviewees talked about how, even after many years, the producers in the watershed were renewing CSP contracts, members of the steering committee continued to be engaged, local producers kept volunteering to go out and talk about the project, and people kept coming to outreach events.

"...it's continued on for six years and still going strong and I think they're still signing up people for different projects and the CSP is still signing people up...We're still having our two field days a year, and getting people out." (Producer participant)

"I would say just one of the biggest successes is just the farmers' engagement. There are several farmer leaders that have really stepped up and put a lot of work into it into keeping the project going...farmers have a lot of work to do. They've got their day job of farming...I'm just impressed with the amount of work that folks that aren't getting paid to do this put into it...I think...40% of farmers in the watershed have participated in some way...I don't know any other watershed project that has gotten that kind of engagement." (Conservation NGO)

"One of the successes is that we've been able to amass and engage the steering committee and local farmers and keep the local farmers involved." (Project and agency staff)

¹¹ For more information, see the section on "Learning and [behavior change](#)" in this report.

Discussion

THE PERCEPTION THAT WATER QUALITY GOALS HAVE NOT BEEN MET COULD BE DETRIMENTAL TO FUTURE CONSERVATION IN THIS AND OTHER WATERSHEDS. SUCH A DISCREPANCY CAN DECREASE PRODUCER TRUST IN THESE TYPES OF GOVERNMENT PROGRAMS.

Thus far in this report, we have discussed whether project goals aligned with perceived goals and perceived successes. We have shown that although the actual project goals corresponded with what our interviewees' thought the project goals were, the successes discussed did not match these intended goals. The perception that water quality goals have not been met could be detrimental to future conservation in this and other watersheds, particularly if improving water quality is the impetus and a major goal of the watershed project; such a discrepancy can decrease producer trust in these types of government programs. There is much research to indicate that adoption of conservation practices have many benefits, including the potential of improved water quality (Kassam et al., 2009; Tilman et al., 2002; Tomer and Locke, 2011). Despite this apparent discrepancy between goals and success, the successes expressed by the people we interviewed indicate that many producers in this community want to, are willing to, and continue to try new conservation practices. Not only this, but the project has been perceived as successful from outside the watershed, thus spurring more research in this watershed and the desire to emulate aspects of this project in other watersheds. These perceived successes may, in part, be due to the project's emphasis on the benefits of the 4R Nutrient Stewardship framework, which emphasizes efficiencies and suggests increased farm profitability (Nutrient Stewardship)¹².

The remainder of this report unpacks successes and takeaways as discussed by the people we interviewed. In the next section we first present data that describes why producers decided to participate in the watershed project. These findings could be useful in targeting motivations of producers to participate in other watershed projects. We conclude this section by delving into details about what our interviewees learned through participating in the project, as well as how they learned.

Producer participation – why and what happened?

Producer participation

VOLUNTARY

PRODUCER-LED

COST-SHARE FUNDING

LEAD BY EXAMPLE

Why did producers participate?

Overall we found that producers appreciated the voluntary nature of the project and the flexibility in determining which conservation practices to implement through cost-share projects. Some producers felt that participating in the Indian Creek watershed project fit with their desire to steward their land, however we also found that financial incentives gave impetus for producers to step in and try new practices – the cost-share programs pushed producers into trying new things where they may not have otherwise. These themes are described next.

Voluntary, producer-led project

We asked producers why they decided to participate in the Indian Creek watershed project. Overall, the producers we interviewed knew that the Vermilion River was impaired. They also knew that water quality problems in the Mississippi River Basin and the Gulf of Mexico could translate to future restrictions on fertilizer use. Most producers felt that voluntary measures toward reduced nutrient loading in waterways was preferable to regulations.

¹² It is suggested that efficient use of nutrients can reduce input and labor costs, therefore increasing farm profitability (Harvesting the Potential).

"...in my mind...the Chesapeake Bay things that I read about...was frankly scary, and if we could do anything to keep from being mandated on how to manage our farms, if we could do it voluntarily, I think that was one of the original reasons for a lot of people being interested. At least, from my perspective...and the Gulf, we all know what's going on with that...It just seems like an unsurmountable task, to be able to keep nutrients out of water. But if they want to try, then that was our point in trying to get some more data and some more ideas and see where it goes..." (Producer participant)

Some producers felt that the voluntary nature of the Indian Creek watershed project spurred experimentation and innovation that would not occur if specific rules were enforced from above. Rather, by participating in this project, producers felt in control over their own farm operations through experimenting with practices that benefited their operations while also benefiting the downstream environment.

"I think...the biggest enemy...of the watershed would be regulation. That whoever would come in and say, 'okay, these are the parameters and this is what's going to happen'...I think it would squelch a lot of research, a lot of attempts at trying to quantify what works and what doesn't work...I think as soon as somebody comes in and says, 'nope, this is what we're doing', then I think you lose that incentive...(The watershed project) seems so open and I guess I can't ever see a point when we will stop learning something...even in the stupid years, you could always take something home. Or something to think about..." (Producer participant)

"To be able to pick out our enhancements that we wanted to use that would fit in with what we had time to do and wanted to do." "...if they would have said this, this, and this, you have to do to qualify for this, then it wouldn't have been, we might have just shucked it." (Producer participants)

Cost-share

With this regulatory context in mind, producers had the desire to try new practices that might alleviate future regulatory risk, while improving their own farm's efficiencies and positively impacting water quality. Thus, the cost-share aspect of the Indian Creek watershed gave producers the opportunity to try new practices with compensation that would alleviate financial risk.

"...with the cost sharing, you do some things that you maybe wouldn't do otherwise because you're not sure whether it's going to pay or not, or how well it's going to do..." (Producer participant)

"It was an opportunity to try things that we might not normally try, with a monetary compensation to make it more attractive to do. Hopefully, it was from a desire to do the right thing through the years, to evolve into better farming practices. I hope that was in our mind also." (Producer participant)

"The CSP has been a good program that way, I think. Gives you the chance to try different things and then rewarded us for our efforts." (Producer participant)

Lead by example/do the right thing

While regulation and cost-share incentives were important to many producers, some also felt that participating in the watershed project and implementing conservation practices was the right thing to do.

"...(Terry) came and got us involved in the CSP and then, right at the same time, the watershed project started and he asked me if we'd be involved, and I said, 'well, sure'...it was just a natural progression... And I looked at this, and it was like, well, okay, if I was ever going to volunteer or get involved in a community project, I mean, why wouldn't I do this one? I mean, it's right in the wheelhouse. It's right what we're doing...it just seemed like a natural fit." (Producer participant)

"To me, you gotta lead by example...So, to me, that kind of falls right along my line of thinking is if I'm on a steering committee and they need people to do plots or whatever and I'm not willing to do one myself, or take the time to do it, and then talk about it afterward, then I don't have any business asking anybody else to do it. You gotta step up to the plate and do it." (Producer participant)

Learning and Behavior

MEETINGS

NETWORKING

CSP PROGRAM AND PROCESS

HANDS-ON LEARNING

Learning and behavior change – what and how?

Information sharing and producer education was an important component in the planning and implementation of the Indian Creek watershed project (CTIC, 2013). We therefore sought to understand what and how producers learned. We found that much of what was learned through the Indian Creek watershed project centered on nutrient management; specifically the 4R Nutrient Stewardship framework and nutrient use efficiency. Indian Creek field days also exposed producers to new conservation technologies and other topics related to Indian Creek (e.g., fish shock). Producers told us that face-to-face interactions with other producers were important to the learning process. Moreover, the hands-on nature of trying different conservation practices, the trial and error of implementing practices themselves, and the yield data producers saw coming from their own farms and other farms in the watershed, all contributed to producer learning and subsequent changes in behavior.

Meetings and networking

We found that producers valued networking opportunities with other producers in order to discuss lessons learned from various conservation practices. Also important were meetings where nutrient use efficiency data was presented and new technologies were demonstrated.

"A lot things (I learn) are just talking with other producers when you're at these meetings, different things they've tried. And they've had their different pieces of equipment that is relatively new and they try to have that on display and that type of thing. But, visiting with different people is valuable, the biggest thing." (Producer participant)

"I think (the field days are) very important from a producer's standpoint because it gives them an opportunity to see some new practices. Like, last year...they had this little rectangular shaped robot that put out cover crop...It went down (the) seed corn plot and came around and made a couple passes to plant annual rye and some radishes...They also flew a drone over the top to see how that's going to be coming into some new technology...So I think it gives guys an opportunity to see that." (Producer participant)

CSP process and hands-on learning

Going through the CSP process allowed producers to step back and think about their overall farming operations and question their farm management habits. In addition, there is a difference between reading about the benefits of various practices and being able to experiment with them yourself, thus hands-on implementation of conservation practices on producers' own land allowed them to see, first hand, how the practice would or would not benefit their own farm operations.

"The CSP program got us to sit down (think)...we're no tilling beans here and we're strip tilling corn here. Well, why aren't we doing it over here? ...Let's take a step back and let's look at what we're doing and does it make sense? It was healthy for us...I don't know if it was the combination of that and having the benefit of my son coming back in and saying, you know, Dad, there's different ways of doing things..." (Producer participant)

"I think if you try it on your own on a smaller piece of acreage and you see some benefits, I think that goes a long way to go on. That's kind of how I started with the cover crops. I started with 40 acres and just keep pumping it up and see if we can get the whole thing eventually." (Producer participant)

*"We have learned on nitrogen application, the season changes the requirements, the amount of nitrogen you need, because apparently you lose a lot of nitrogen, say, in a wet year. And so we've learned some of those things by doing the nitrogen stock analysis in the fall."
(Producer participant)*

Behavior change

As we have mentioned, changes in producer behavior were identified as one of the successes of this project. The Indian Creek watershed project sought to influence producers' behaviors through participation in cost-share programs and through their being exposed to nutrient use efficiency data (CTIC, 2013). We found that participation in the Indian Creek watershed project through cost-share contracts and dissemination of data resulting from demonstration plots not only spurred learning, but also contributed to some producers changing farm management behaviors. The people we interviewed spoke primarily of changing nutrient management practices after seeing results of various nutrient management strategies on their farms.

"...we did renew (our CSP)...we're going to do the split rate nitrogen, but actually, we ended up doing it on all our acres...what we have done I think has been beneficial to our farming operation and just farming in general...that we all need to try different things and see what will work and what won't work." (Producer participant)

"We changed our nitrogen management practices because of them (demonstration plots)...on all those (our) acres, we changed our nitrogen management...My reasoning was the higher the yield on the strips, the more nitrogen went into the crop, as opposed to leaching into the groundwater which eventually goes down Indian Creek. So, we were basing things off of yield and our tests had included the 4R's...So we tried to incorporate that (the 4R's) into the strips, and year after year the same practices came up with the highest yield. And so, after a couple years, we went to that practice." (Producer participant)

"Between the CSP program and then, now the Indian Creek watershed...we've drastically changed how we do, particularly our nitrogen. And, basically, really, all of our nutrients...some of (our changes) was because of CSP, and some of it was because of the watershed and some of the results that we were seeing...But, because of that information (through yield mapping), and also what we saw from the watershed...this fall, we didn't put any (nitrogen) on. Previous fall...maybe 10 percent. We got exposed to the 4R strategy...all of our nitrogen needs are now in the season when the crop's growing." (Producer participant)

"I would go back to the split application of nitrogen and the variable rate of the fertilizer. I think those are the big things that we're seeing that on more acres. People taking a bigger look at the 4R program...We've put some power in those tools..." (Ag Retailer, fertilizer)

Takeaways

LOCAL STAFF

PRODUCER LEADERS

DIVERSE LOCAL REPRESENTATION ON STEERING COMMITTEE

COMMON GOAL

FUNDING

Key Takeaways

Our evaluation of the Indian Creek watershed project found that the intended goal of the project, to improve water quality through changes in conservation practices, was understood by the people we interviewed. We also found that although water quality was the major intended outcome of the project, perceived project successes centered on increased producer and public awareness of the links between agriculture and water quality, as well as the efficacy of conservation practices to improve farm efficiencies while positively influencing water quality. Our interviewees reported success in the number of producers and amount of acreage enrolled in cost-share programs and demonstration plots. We found that the project also appeared to be successful in teaching producers alternative ways of managing nutrients on their farms. Through our interviews, we gathered a picture of why the Indian Creek watershed project seemed to work so well. In addition to our own analysis, we asked the people we interviewed what *they* would take away from the Indian Creek watershed project if they were to begin a new project somewhere else. Their answers coincide with our conclusions. In this section we present principal takeaways as described by the people we interviewed. Although this project is located in a specific community in a specific watershed, these themes can be thought of as ingredients for a potentially successful watershed project¹³. The themes we discuss here may already exist in a particular watershed, or they could be developed and fostered in target watersheds for future implementation.

Community approach

One overall message that came through our interviews was the sense of community in this watershed; particularly that the community came together to work toward a common goal to test and implement conservation practices in order to improve water quality in Indian Creek. Key to this idea of community was involving the *entire* community, from producers, to Future Farmers of America students, to local agricultural retailers in the watershed area. As will be detailed in this section, the architects of the Indian Creek watershed project sought to ensure that the project was a community-driven, locally led process of education toward improvement of a community resource.

"...it was a kind of a community effort to try to get more than just operators or farmers involved, get the whole community because it is the whole community that kind of feeds off of Indian Creek... Another nice thing was we have a very strong local presence as far as our school system goes and the FFA chapter that we have. So it's a good educational opportunity for all of us in the community, even from students all the way to older producers, and older landowners. So I think that, particularly the community approach, was a good way for us to do it and that got more people involved." (Producer participant)

¹³ See Babin et al.'s (in press) article which lays out social criteria to consider in the selection of watershed conservation projects that can contribute to the likelihood of project success.

Discussion

THIS COMMUNITY CAME TOGETHER TO WORK TOWARD A COMMON GOAL – IMPROVED DRINKING WATER FOR DOWNSTREAM NEIGHBORS.

“Here in the Livingston County area, for the last 30, 40, 50 years, there’s always been a good working relationship between Extension and Farm Bureau and NRCS and SWCD and FSA and all the various governmental and quasi- organizational groups...Good working relationships amongst all of the various entities that can be involved. And that includes the fertilizer chemical dealers, the fertilizer chemical association, the various Ag groups and organizations, the fertilizer supply companies...all the way up and down through the food chain...from the Ag suppliers. And, locally here in the watershed, we’ve had a very good buy-in amongst the various organizations. So, you’ve got to have good rapport; you’ve got to have good working relationships; and people have to work for a common cause... Those things have to be in place, in my opinion, before you can expect to have the level of apparent success that we’ve had.”

(Ag Retailer, soil testing)

“And everybody feels like they’re a part of it. It’s not like... (we) come in here and show them how to do something and we leave. The farmers are just as much a part of it as we are... And I feel like we’re almost a part of the community here when we come up here.” (Agronomist)

Strong, respected, and trusted local staff

The community approach included local leadership in the SCWD and NRCS offices; people who were respected, trusted, who knew the producers in the watershed and could work well with them. The people we interviewed spoke about the influence of specific people, as well as the Livingston County SWCD Board, as contributing to the success of this project. Terry Bachtold (SWCD Resource Conservationist) was, by far, mentioned by name as key to getting producers to sign up for cost-share programs, to join the steering committee, and to speak in public about their experiences. Eric McTaggart (NRCS district conservationist) was also mentioned as someone who was adept at determining which cost-share program would work best for each producer, and then walking them through the application process. Together, these two local staff people appear to be hugely influential in the success of this project.

“If we’re starting with the NRCS office, you’ve got to have somebody in there that can be either nice enough, persuasive enough, to encourage the farmers to sign up...Terry’s...a nice guy but he’s not a...preacher about the whole thing...You’ve got to have a nice guy that doesn’t rub anybody the wrong way...” (Producer participant)

“I can’t say enough about Eric and Terry...There’s so many things (programs) available, and they’ve made...this community, Livingston County, so aware of everything that’s out there available...They’ve been invaluable. So, if you can get that right leadership at NRCS and Soil and Water...but you gotta have those couple, in our case, it was Terry and Eric, that and our Soil and Water District Directors are an active bunch of guys. And they’re a bunch of glass half full guys. They’re always positive... it’s like anything else, it runs out of energy...they were more of that steady, Steady Eddy, kinda keep it goin’ kind of a thing...that’s no different than the band boosters or 4-H Club or whatever.”

(Producer participant)

Discussion

LOCAL NRCS AND SWCD STAFF WERE RESPECTED AND TRUSTED BY WATERSHED PRODUCERS.

“I think the leadership of this watershed started with Terry, and a lot of the reason they chose Indian Creek is because that’s the watershed he lives and works in. He’s not somebody that came in from the outside and just took the job. He’s been established there for a long time and he has a lot of relationships with farmers there. He’s seen sort of as an equal because he is a farmer too.” (Project and agency staff)

*“...I have an opinion that places where we’re successful are where there’s just really some good leaders that can help engage others, and especially if they’re producers. So that watershed has some really good farmers that have strong convictions and are good leaders. Sometimes I think its staff people or partners might have that particular person too, and usually they’re people that are working hard and very strong in their conviction...for the actual practices, having good District Conservationists there with Eric too is a big deal. Ultimately that’s where the rubber’s kind of hitting the road. If you didn’t have a really quality DC there, maybe the implementation part of this doesn’t go quite so well either.”
(Project and agency staff)*

“Clone Terry. Or, have somebody like that... Somebody in the community that knows people, has the contacts... it’s his attachment to the community, his knowledge of it...that allows everybody else to come in and do the job.” (Agronomist)

The quotation from the interview above mentions that a key takeaway from the Indian Creek watershed project would be to “Clone Terry.” In line with this person’s remarks, Terry Bachtold’s personality, his time living in the Fairbury community, his status as a farmer, and his relationship to the producers can be found in other people in other watersheds. The key is to identify strong, respected, and trusted local staff who are passionate about their work, believe in their message, and can communicate the benefits of conservation so that producers will risk change by trying new conservation practices.

Producer leaders who are willing to share

Not only do you need good local leadership for a successful conservation project, our interviewees told us that it is important to involve local producer leaders. These producers should be people who are respected in the community and whom others watch to see how they manage their farms. They should be willing to commit to implementing conservation practices and/or demonstration plots and to speak about their experiences and farm management data.

*“I think they did a really good job of finding a group of farmers that were willing to put plots in and, not only that, but invite the community in to see what was going on, on their farm and to explain it...”
(Ag Retailer, fertilizer)*

“Well, I’d go visit my NRCS and SWCD people, get them on board. You need somebody committed...I’d find me about a handful of farmers that would be committed, that are active in conservation, that would be willing to do plots and such, and get them on board...the key really is those farmers. You need the farmers cooperating and willing to do the plots and help support the data that you’re going to put together, or you don’t really have much...” (Steering committee member)

Discussion

LOCAL PRODUCERS WHO WERE RESPECTED IN THE COMMUNITY WERE ASKED TO BE PART OF THE PROJECT FROM THE VERY BEGINNING. THESE WERE LEADERS WHO WERE WILLING TO SHARE THEIR FARM MANAGEMENT EXPERIENCES AND DATA WITH THE LARGER FARMING COMMUNITY.

“You know just getting the right partners in the right places, finding the right farmers, who are good spokesman who are willing to help...if you find farmers who farm the dark corners of the county that nobody watches, it’s not as influential. But some of these guys, they’re on Soil and Water Board, they’re in the community, they’re doing all these things. People know them, people understand what they do. And they’re kind of watching what they do because they’re seen as the innovators. I think that’s important to identify those folks.” (Partner and agency staff)

Steering committee – diversity of participants

The value of partnerships was another key theme that emerged from our interviews. The partnerships in this watershed project included local staff and producer leaders, as well as many other stakeholders. Key here was the involvement of the Mayor when the project first began, and an invitation to participate, to all local agricultural retailers. The agronomists that ran the demonstration plots were a part of the steering committee, as were staff from CTIC. Other conservation NGO’s would participate periodically. While Terry Bachtold hand-picked the initial committee, the committee had an open door policy in terms of meeting participation. We were told that the committee was locally led, that the producers had a strong voice on the committee, and that the diversity of the people involved played to the strengths of each group. Not one single person or entity carried the committee. Rather, it was the strength of the whole.

“The key thing is to have a strong steering committee...If you can get a dozen, half a dozen strong cooperators, farmers, producers, plus some of your local technical people from NRCS or the Soil and Water Conservation District, or Department of Ag, whoever are willing to make the effort, that’s the key. If you can get that committee going and, again, it gives some town people, some local government people, so they all see what’s going on...That’s really it. Get that community involvement that everybody wants to talk about but it’s not always easy to get... (and) we need some strong leaders who are willing to have a vision and not be afraid to speak up and do it.” (Producer participant)

“... (Terry) surrounded himself with a lot of different types of people, whether it was from the equipment industry or the agronomy industry, and it made it seem like this was a big deal...” (Producer participant)

“...they also have a lot of farmer participation and I think it’s because they bring everybody to the table. You know, at that landowner meeting they also had representatives from the fertilizer dealership, the implement dealership, I think somebody from John Deere was there, they had a few landowners, and they had professionals; they also had some ag crop specialists, some insurance guys, anybody that could be a part of the program...(were) pretty much at the table. And that was impressive to me. Everybody had some part to say about it, whether it’s selling you a product or something you’re going to use, or maybe you’re going to use this guy’s expertise for consulting or crop advice or something like that. So I think it’s the fact that they bring in every angle of agriculture to try to get conservation on the ground. And that’s pretty smart. It’s speaks well to a lot of producers, I think.” (Conservation NGO)

Discussion

THE PROJECT STEERING COMMITTEE WAS MADE UP OF A DIVERSITY OF STAKEHOLDERS FROM THE LOCAL COMMUNITY; THUS GIVING THE PROJECT A LOCAL FOCUS. THE COMMITTEE WAS ABLE TO RELY ON EACH OTHER’S STRENGTHS TO FULFILL PROJECT GOALS AND ACTIVITIES.

As noted in the comment above, bringing “in every angle of agriculture” into the project was significant. The participation of local agricultural retailers on the steering committee was seen by many of the people we interviewed as a key aspect of project success. These retailers are the local producers’ trusted advisors, and their involvement impacted the perceived legitimacy of the project.

“...bringing industry in makes them (the producers) want to be a part of it too because that’s mainly from farmers listening to Ag retailers and the folks they buy products and services from. So when they’re on board, it’s not just a Soil and Water person, CTIC coming in from the outside, it’s their own people they’ve been working with that can get them to buy into the message and the program and that’s really the importance to the farmers as well. Their own Ag retail guys that they’re used to working with.” (Partner and agency staff)

The locally-led aspect of the project was seen as important by many of the people we interviewed. Local direction allowed the producers themselves, along with local agricultural retailers, to communicate on-the-ground realities of the different conservation practices and nutrient use efficiency plots proposed by project agronomists and NRCS and SWCD staff. It follows that by utilizing local knowledge, the menu of practices and demonstrations watershed producers could choose from were more likely to be trusted and therefore implemented, than practices dictated from above.

*“...probably the most critical (component) to have successful watershed planning and implementation is to have the local planning committee directing...what things are going to be looked at, what the resource concerns are from a natural resource standpoint, but also looking at what practices or programs would be the best fit to address those and then also providing direction on how to go about implementing it...they’re the ones who know their neighbors and we may have some idea here in the field office that, from our knowledge or experience, that we think this would be the best way to go. When you talk to the local folks, you may be completely wrong.”
(NRCS District Conservationist, bordering County)*

Funding

In addition to the people involved and the structure of the project, many of the people we interviewed noted that funding was an important part of the project’s success. The benefit of funding was two-fold. First, cost-share funding served as an incentive for producers to try new conservation practices and systems. Second, Section 319 funds and sponsorship money were secured and utilized by CTIC, an outside organization, to lead outreach efforts, fund demonstration plots, and cover costs associated with marketing and communication. These funding sources worked hand in hand to get producers to the table, to fund numerous cost-share projects, and to utilize demonstration plot data in outreach meetings to get even more producers to think about different ways of managing nutrients on their own farms.

Discussion

THE AVAILABILITY OF COST-SHARE FUNDING AND OUTREACH/EDUCATION FUNDING WAS SEEN TO BE IMPORTANT TO THE SUCCESS OF THIS PROJECT. THIS SAME ASPECT WAS ALSO CONSIDERED TO BE A CHALLENGE TO REPLICATE IN THE FUTURE AND A DETRIMENTAL TO THE UPTAKE OF CONSERVATION PRACTICES ON THE BASIS OF THEIR ON AND OFF FARM BENEFITS.

“...the first thing is you have to have money...If you don’t have the money, it’s really difficult to do things at the scale that needs to be done...there’s the Farm Bill money, there’s a little bit of State money, there’s never enough money to go around. You have to have the money to do everything that CTIC is doing...you have to have the money to do all of the outreach...you get people excited to enroll in these programs and then there isn’t enough money to go around...maybe...they won’t want to go through the process...again because it is sort of a process to fill out the paperwork and then wait and see if you get any funding and if you don’t... that’s kind of a waste of time... But then if you have the money there, but you don’t have all the outreach to let farmers know practices that they can implement and that there’s extra money in their watershed...you can have all the money there, but you don’t have the outreach to get them in the door...You have to have the outreach and once you have the outreach, you have to have the money there for the farmers, and vice versa.” (Partner and agency staff)

“I go back to CTIC too, especially on this project, the PR type of work, to do that pretty well helps as well...we’re not doing everything on the cheap, you’ve got buses for tours, nice buses, and the ability to do everything pretty quality because there’s money there and the skill of CTIC to do that, I think that’s pretty big too. So that people do pay attention because they see something kind of I’m not saying glossy, but pretty well-done in a big way.” (Partner and agency staff)

Improvements

WATER DATA – BASELINE AND OUTCOMES

TOO RESOURCE INTENSIVE TO SCALE-UP

DEPENDENT ON HIGH COMMODITY PRICES

COMPLEX AND INFLEXIBLE CONTRACTS

MORE PARTICIPATION

Challenges and improvements

As part of our interviews, we specifically asked if there was anything that our interviewees would change with the project if they could – what sort of improvements could be made to make the watershed project better? When asked directly, the people we interviewed had a difficult time coming up with improvement ideas. However, as we analyzed interview transcripts, several key challenges and ideas for improvements emerged. These aspects of the watershed project are discussed next. Some concerns relate to cost-share projects as a whole, and thus can be considered in the larger Farm Bill project context. Other concerns were related specifically to the Indian Creek watershed project, but are relevant to other watersheds. Thus the following findings can aid in the development of future projects, while informing the larger aspects of cost-share programs as a whole.

Data and outcomes

Interviewee thoughts on water quality wove its way throughout this project. Because the funding for the Indian Creek watershed project stemmed from issues of water impairment in the Mississippi River Basin, that water quality emerged as a prevalent theme is not surprising. As we have discussed, our interviewees understood that the goal of this watershed project was to improve water quality in Indian Creek and, eventually, the Vermilion River. Time and again, however, we found that there was a disconnect between this goal and the perceived reality of actual water quality.

Our analysis suggests that the people we interviewed understood that improvements to water quality can take many years. Moreover, many people talked about “wild” weather years skewing the water data (particularly the 2012 drought), and that there may not be “normal” weather years anymore.

"...2012, you might as well toss it out the window... (the) ups and downs of our weather cycles...is what's gonna be normal. And so it's been difficult to get a baseline started. I'm concerned that it's a process that doesn't just happen on one, two, even five years of data. It's probably a ten year thing, at least...Nobody could foresee the kind of drought we had in '12. And nobody could see the incredible yields and production we had in '14..."

(Producer participant)

"We've had some pretty wild years, with the 2012 drought. Then 2013, the early season rains...if we'd quit monitoring in 2012, we'd have been geniuses. There was no nitrates in the water because there was no water to move. 2013 was a much different story, we'd a looked like we hadn't done anything in the spring of 2013 when all those residual nitrogen that was left in the soil from 2012 we got all that rain...we didn't get to this point with nitrates in the stream overnight, and it remains to be seen how long it takes for those changes on the land to translate to changes in the water..." (Partner and agency staff)

Despite this environmental understanding, the people we interviewed expressed a desire to see more water data in order to understand whether changes in farm management practices had a positive impact on water quality.

"...research and demonstration just takes time and multiple years to really...show a lot of changes and different things happening...I'm not so sure on the demonstration and research that I've seen a lot of things that tell us that this is the way to go...from our agency's perspective in promoting the types of practices that they're demonstrating and researching...being equipped with...some answers or some data and information that could be used in promotion...it might be that I've just missed that too, and not seen a lot of the actual data...it seems like sometimes at the events the data's not quite ready...then maybe, I just haven't gone back to look for it on the website...I'm not saying that it doesn't exist, it's just that...I haven't seen a lot other than what Tim presents each year."

(Partner and agency staff)

"I've not seen those readings (on water quality data). I know they talk about it. I don't know if they're just waiting 'til they get everything accumulated before they start talking about it..."

(Ag Retailer, fertilizer)

Or, as in the following example, one producer desired a firm conclusion in terms of the proper amount of nitrogen to apply depending upon the season (e.g., dry versus wet).

"It will be interesting to see, as the project continues to unfold, to just see what some of the conclusions are...This is what happened each year, and here's kind of the average for each of these four or five years...you need four or five, ten years of information to really draw a right conclusion... It would be good if we could draw some kind of a conclusion, what kind of nitrogen we need to put on for corn, and maybe not hurt ourselves on the real good years, but not put so much on that we're environmentally unfriendly either." (Producer participant)

In addition to the lack of Indian Creek specific water data during the project years, several of the people we interviewed mentioned a lack of baseline data in Indian Creek prior to the project's start. Not having this baseline made measuring the water quality impact of the acreage enrolled in various conservation practices difficult.

"One of the things we don't have on this project is baseline data. What were farmers doing when we started it and what changes that they've made... It'd be nice if we could do that. That'd help measure this, whatever success that we (achieved)" (Agronomist)

In spite of a lack of baseline data and the difficulty in gathering the project's full water quality story, one of the people we interviewed felt that the difficult weather years would give them a good indication of how Indian Creek could handle a "worst case scenario" in terms of nutrient loading.

"There's really no normal years anymore...it's good to see, how well does the watershed react in terms of extremes in terms of drought and extensive wet years. So you...have an idea of what the watershed is capable of producing, in terms of nutrient load... we got maybe one normal year in 2011 under our belt and then we got the drought followed by extensive wetness. So, in that case we sort of feel like we've seen what we feel like could be the worst case scenario, in terms of nutrient load...We didn't have that baseline data (for Indian Creek) that we really would have liked to have had say five years of data before the project started...We sort of started at the same time, so in that case it's kind of hard to show...cause and effect of before and after. What we're trying to do is show some sort of trend over time, from the beginning of the project to the end." (Partner and agency staff)

Overall, we suggest that the seeming disconnect between the goals and outcomes of the Indian Creek project could be a detriment to this project, as well as future watershed projects. Although there are benefits in addition to water quality in the adoption of conservation practices and the utilization of the 4R Nutrient Stewardship framework, this disconnect could increase distrust of conservation programs and might hamper progress toward producer adoption of conservation practices, for example:

"..it's a challenge because, you talk to these farmers...you've got to make these changes so we can impact water quality. You know at the end of the day, if we don't see a measurable impact in water quality, they can say, 'what'd we even do that for?' Poof it's all gone." (Partner and agency staff)

Discussion

IF WATER QUALITY GOALS ARE PART OF A WATERSHED PROJECT, IT IS IMPORTANT TO CONSIDER EXPRESSLY CONVEYING THE REALITIES OF WATER QUALITY IMPROVEMENTS THROUGH ALL AVENUES OF THE PROJECT. GOALS SUCH AS SOIL HEALTH OR INCREASED FARM EFFICIENCIES MAY ALLEVIATE SOME RISK ASSOCIATED WITH INCORPORATING WATER QUALITY GOALS ALONE.

Water quality improvements are a long-term endeavor. Therefore, if water quality goals are part of a watershed project, it is important to consider expressly conveying the realities of water quality improvements through all avenues of the project. In addition, the Indian Creek watershed project instituted an educational approach to producer participation. Because of this educational focus, project leaders conveyed additional benefits of utilizing conservation practices such as the 4R Nutrient Stewardship framework: "...we've tried to build that case that this is also agronomically and economically sensible. It's not just about water quality." (Partner and agency staff) Although the people we interviewed generally understood the difficulties of obtaining water quality data, instituting additional project goals with outcomes that are easier/faster to measure or more personally salient than water quality may enhance producer satisfaction with the overall program. For example, goals such as soil health or improved farm efficiencies may alleviate some risk associated with incorporating water quality goals alone.

Scaling up cost-share programs

Another issue that emerged from our interviews was a concern over the intensity of resources needed to implement the Indian Creek watershed project. It was recognized that the large amounts of funding needed to cover cost-share programs and outreach components of the project would be difficult to replicate or scale-up nationwide.

“...to the extent that we’re doing it (cost-share programs) here in the Indian Creek watershed...Politically, we can probably not afford it nationwide... And, I don’t say that critically of anybody, but just saying from my viewpoint, as a taxpayer, I don’t think it would be good to do this all across the Corn Belt or the Midwest.” (Producer participant)

*“The thing that would be different for other watersheds would be to get the support Indian Creek has in terms of funding and resources. There's a lot of resources poured in there...If we were going to expand this all the way across the state, it would take a lot of resources. That was a bit of a question that the Soil and Water Conservation District Board initially had was how much of our resources would be pulled away from a full County program to focus on Indian Creek... if Livingston (County) wanted to expand to two other watersheds within their county, would they have the horses to be able to do that?...Is there enough there within their office and their district to be able to expand to that kind of level?...what's happened to so many watersheds is they kind of fizzled if they didn't have continuous support of funding from somewhere...How long does it take to sustain a good effort here in the watershed?”
(Partner and agency staff)*

Recall that one of the takeaways mentioned by the people we interviewed was the issue of funding. The cost-share dollars plus outreach funding was seen to be a beneficial mix. Indeed, several producers mentioned the cost-share component of the project as one of the reasons why they decided to participate. Other people thought that cost-share programs were a crutch, or if not available, an excuse not to implement conservation practices even though such practices are seen to have long-term benefits. A few of the people we interviewed expressed some hope that projects like Indian Creek might have a broader reach to neighboring communities and watersheds. That in conveying the benefits of conservation practices in terms of farm management (with a potential added bonus that water quality might improve), producers might take up such practices because it makes sense for their farms. This, rather than relying on Farm Bill funding to experiment with new farm management practices.

Farm economics

At the farm level, several interviewees mentioned that the high price of corn during the watershed project allowed them to feel more comfortable in trying new conservation practices, particularly in alleviating financial risk associated with establishing cover crops. As commodity prices decline, producers may feel that experimenting with conservation practices or new nutrient management strategies entails too much financial risk. This then suggests more emphasis on cost-share programs in a lower corn price future, as well as less participation in future watershed projects.

Discussion

COMMODITY PRICES MAY INFLUENCE PRODUCER LIKELIHOOD OF TAKING ON THE RISK OF TRYING NEW FARMING PRACTICES.

“As long as you are not reducing their profit margin, their bottom line, and they can maintain production and profitability, and still raise crops, raise their produce in an efficient manner, there is no reason not to pursue these things. If they’re starting to suffer financially from reduced income, then it’s much more challenging.” (Ag Retailer, soil testing)

*“Well, of course, we went through a good time to start this project with commodity prices being as good as they were. So, that helps, you know, people are more willing to experiment probably when the margins aren’t so tight...Cover crops cost some money to put out, and you like to see a benefit from them, especially if there isn’t much money in it. So, that type of thing would be maybe a little bit of a drawback.”
(Producer participant)*

*“And, we’ve been blessed enough to have the resources available to say, ‘I’ll try that’. Okay, it’s gonna cost 20 bucks an acre more. Okay, I’ll try that on a 40 or whatever...So, that makes it easier...It looks like we’re moving into a less profitable time frame here. When you bring corn from...5.50, 6 dollars down to where we’re at currently, 3.50, 4 dollars. Not that we can’t be profitable at that level...And so I worry about, when you get into that kinda climate, where margins are going to be tighter per acre, are guys gonna be willing to spend fifteen, twenty dollars an acre on cover crop seed, knowing that they’re gonna have to come back with a ten or fifteen dollar application to get it terminated next spring?”
(Producer participant)*

Contracts and paperwork

Another issue our interviewees conveyed, including producers who did not participate in the program, was the Conservation Stewardship Program contract process; a program that funded numerous projects in the watershed. The paperwork involved and contract requirements were seen as too burdensome for a three reasons: 1) For some producers, filling out the contract paperwork was perceived not to be worth their time in relation to potential benefits they might receive, along with the risk that the project may not even be accepted, 2) A few landlords did not want to be locked in a contract with one producer for a 5-year time period, and 3) One producer told us that they wanted more flexibility in meeting their yield goals than a contract would allow. This is an issue that cannot be controlled at the watershed level. As the CSP program is refined, and voluntary nutrient reduction programs are implemented, flexibility in the contract process may warrant a discussion at the Federal level.

“...CSP is so different from what we’ve ever done in the past. Until you get walked through the entire process, I don’t think you could read a publication and understand it very well. You have to go talk to some(one), your neighbor that has done it, or talk to Terry or I and get a synopsis of it, or just kind of wade through the process to fully get a grip on what it means to you if you sign up and do it. Because it’s only been around for 5 years so it’s not like they know it.” (Project and agency staff)

*“Well, my good friend that farms, and he’s not part of the Indian Creek watershed project, but he and his brother and nephew farm together. And they looked into CSP...and when they saw the amount of paperwork involved, signing up landlords and everything involved, they just walked away from it. They said it was too much red tape and too much work...”
(Producer participant)*

Discussion

BURDENSOME AND INFLEXIBLE COST-SHARE CONTRACTS CAN BE A DETERRENT TO PARTICIPATION.

“We rent probably a little over half of (our land)...we would have had it 100% in it (CSP), but one of the landowners chose not to participate, just from a standpoint they didn’t want to sign up for the long term obligation to rent me the farm. And, we’ve been farming the farm for, oh, thirty, almost thirty years, so I don’t know why that was an issue...so that was their choice, so those acres are not in...” (Producer participant)

*“The thing that gets in my craw is that, number 1...I think we had to come up with our deeds. Worse yet, we had to get the landlords to sign a paper that says that to the best of their knowledge, we would be farming their land for five years...every year, they (NRCS) ask us if anything’s changed before they pay us. Well, if we’ve lost land, our payments may be lower...if we aren’t honest and don’t tell them that and they find out later that we didn’t tell them the truth, they could kick us out of the whole program, probably, and stop all the money. So I don’t see what the point is in having the landlord sign up, or sign that paper.”
(Producer participant)*

Participation

Despite the perceived successes of the Indian Creek watershed project, notably in the number of contracts and acreage enrolled in cost-share programs, many of the people we interviewed reflected on the desire to increase participation. This concern of participation included engaging producers who are not interested in conservation, spreading awareness of conservation and nutrient management benefits to the larger community, involving more producers in demonstration plot tests, and keeping watershed meetings interesting and relevant in order to encourage attendance.

“As long as everything stays voluntary, you have these certain pockets of areas where people are really innovative and creative and they talk to each other and they’re excited to try new things, or at least willing to. And then, you get other areas where they don’t want to do anything, ‘cause they don’t have to.” (Conservation NGO)

“Probably the challenge is still just getting, just like last night, getting more people, if there’s some way you could get more people there, more local community, more farmers...that’s been a challenge and probably will continue to be a challenge to get more people aware of what’s being done.” (Steering committee member)

“We’d like to get more farmers actively involved in doing plot work if we could.” (Agronomist)

“...you get too long a meeting with a monotone voice and this, all kinds of PowerPoints. All you need is the last two sentences, the conclusion of what you ought to be doing.” (Producer participant)

Discussion

INCREASING PARTICIPATION
INSIDE AND OUTSIDE THE
WATERSHED WAS DESIRED.

Non-participant farmer reasoning

As part of this evaluation, we interviewed four producers who did not participate in the Indian Creek watershed project through a cost-share program or demonstration plot. In interviewing these producers we wanted to understand if they knew about the watershed project and why they decided not to participate. All four producers knew about the project and had reasons for not participating: 1) Lack of time, 2) Governmental involvement, 3) Contracts and paperwork, 4) Skepticism of project goals and data.

One major reason for non-participation was time, *"...other things going on. Just didn't want to get involved in it."* Another reason revolved around governmental involvement. One producer expressed skepticism toward the involvement of IL EPA and their lack of local knowledge about farming in the Livingston County area (and how to farm in general). Two producers took issue with using public tax payer money to fund individual farmers, especially in funding conservation projects they felt producers should be implementing anyway. Indeed, each of these four producers had implemented conservation practices on their farms already, including moving away from fall application of nitrogen. In terms of the CSP contract process, one producer mentioned their landlord not wanting to commit to a five year contract. Another did not want to be locked in to specific nitrogen rates, as there was some distrust in testing data, *"...when I read through the fine print...it told us that if our soil tests were above a certain level, that we couldn't put more fertilizer on... (It's) hard to trust the numbers and we know what value we get off of putting a certain amount of fertilizer on...we just didn't want to have the government be meddling with that..."*.

Along these lines of not trusting data, one producer felt that the goals of the Indian Creek watershed project were not clear. This person felt that there needed to be clear science to back up any claims toward project outcomes such as water quality. This producer was unconvinced that there was a water quality issue, expressing worry that the government and environmental groups tweak numbers to convey the story they want told (e.g., there is a water quality problem in the Indian Creek watershed). This issue of distrust is especially concerning and feeds into our interviewees' desire to see and understand the water quality data coming out of the project. If the express goal of this project centers on water quality, then a transparent avenue for describing the data collection process and conveying the data should be available and accessible¹⁴.

Discussion and recommendations

Structure of the project

- **Local leadership** who knew the community, were trusted, and worked well with local producers, was a key component of producer participation in the Indian Creek watershed project.
We recommend identifying dedicated local leadership, in some capacity, within potential conservation project communities. Ideally this person (or persons) should know/understand the community, work well with producers, be seen as knowledgeable and trustworthy, and be willing to be a visible part of the project and dedicated to working through challenges and barriers in order to achieve project goals.
- The project was community driven and locally led. Local leadership convened a **steering committee of diverse partnerships** prior to applying for government funding. The partnerships developed on the steering committee helped move the project forward, kept it going for five years, and gave the project a sense of legitimacy. There is currently a sense from the steering committee members that they will continue to meet, even if it is not as often.

¹⁴ Water monitoring data is available on the USGS website:

http://nwis.waterdata.usgs.gov/il/nwis/inventory/?site_no=05554300&agency_cd=USGS. However this data lacks interpretation or analysis on the potential effects of enrolled acreage in conservation practices on the data presented.

We recommend a similar approach to future conservation projects. Ideally the steering committee would be made up of all aspects of the agricultural community, including community members, in order to bring all stakeholder voices and strengths into decision making processes. Including local agricultural retailers should be considered an important component of the makeup of the steering committee, as these are the people who routinely advise producers – producers and retailers can work together toward the implementation of on-farm conservation practices.

Common goals

- Indian Creek flows through the Fairbury community and runs into the Vermilion River, which provides drinking water for the neighboring communities of Pontiac and Streator. Many producers were concerned that their practices might have an influence on their neighbors. This **local goal** perhaps means more than an abstract problem hundreds of miles away in the Gulf of Mexico, as the producers we interviewed wished to help their **neighbors** and **community** at large.

We suggest that incorporating local/community issues be considered in conservation project communities. Whether this is concern over fish, taking a float trip, providing drinking water, or improving the long-term sustainability and viability of local/personal farmland, community identity and local concern can be better conceptualized than problems many miles away.

- The **regulatory environment** provided another common goal for the producers in this area. The Illinois Nutrient Loss Reduction Strategy offered a convenient framework for producers in the Livingston County area to show that they take water quality seriously, and are working toward better farm management for the greater good as well as their own farm viability over time. One of the successful aspects of the Indian Creek watershed project expressed by the people we interviewed, was that producers could try different practices in order to see what worked best for their own farms; this rather than being told specifically what to do or how much fertilizer to use, etc. Producer motivations to implement conservation practices is of concern in any conservation project. Motivators such as farm stewardship, improving neighbors' drinking water quality, or a sense of off-farm environmental responsibility may be a more sustainable way to influence farm management practices over the long-term. However, "fear" of regulation is very real. We suggest that linking voluntary conservation measures with State-wide programs such as the Illinois Nutrient Loss Reduction Strategy, can put conservation projects, and what project leaders are asking producers to do, in a larger context.

In this case, because of the regulatory context, many producers expressed that they were working together as a community to show "regulators" that they can address environmental quality issues on their own. This sense of community and pride should not be underestimated. We recommend that conservation project communities identify their own issues that might foster a sense of community to work toward a common goal.

Awareness building among producers

- The project entailed **hands-on learning** by producers, thereby allowing them to see which conservation practices made most sense on their own farms. The project educated producers on alternative ways of managing their farms, as well as the impact of agriculture on water quality and soil health. Achieved through their own **experiments and data shared by other producers**, the education and outreach process contributed to producers' **awareness** that there are environmental problems (both on and off farm), and that different management practices can improve their own efficiencies while improving environmental quality.

If producers are not aware of a problem, or don't believe the sources that say there is a problem like impaired drinking water quality, then they cannot or will not change their farming practices and routines – there is no need to fix something that works. The education on water quality and soil health provided at various meetings and field days, the hands-on nature of conservation practice implementation, and the sharing of nutrient management data was key to building awareness of agriculture's various impacts on the environment and various solutions to those impacts. This awareness then led to more curiosity and more effort to read and learn. We therefore recommend this multifaceted approach to learning and change for future conservation projects.

Watershed scale

- The people we interviewed told us that they felt the scale of the watershed was small enough to reach every farmer, yet big enough that there were enough producers to make enrolling 50 percent of the watershed's farmed acreage feasible. We were told that, because of this project, land enrolled in this project is now being managed in a different way. The success of this project has the potential to impact producers in neighboring counties and watersheds through data and information sharing. Indeed, the Indian Creek project partners have secured MRBI funding to expand into Vermilion River watershed headwaters (Personal communication with an American Farmland Trust representative).

We suggest that future conservation projects consider the scale of the watershed as an important factor in choice of project context/location. The scale should carefully correspond with project goals.

Goals and data

- Many producers spoke of water quality as being a primary goal of the Indian Creek watershed project. Despite this, almost everyone had questions about whether their efforts were making a difference toward improved water quality.

We suggest that if water quality goals are an explicit aspect of a watershed project, it is important to provide transparent water data, as well as connections between agricultural practices and water quality. This data must be trusted and transparent, with little room to question the legitimacy of stated problems and goals. If such transparency is not possible, then other goals should be brought to the forefront of the conversation (e.g., soil health, long-term farm viability, etc.).

Next steps/further research

- Through this evaluation, there appear to be many successful aspects of the Indian Creek watershed project. Our findings suggest that this project has contributed to an added sense of community surrounding conservation. In addition, as noted previously, there is uncertainty surrounding water quality impacts resulting from the acreage enrolled conservation practices. The steering committee, as it currently operates, provides a structure and a space for information sharing and learning. Members of this committee have expressed a desire to continue meeting after project funding ends, although perhaps not to the same extent. We maintain that this project has provided an overarching networking structure that could facilitate future learning and data sharing, which we propose might also contribute to the adaptive capacity of this community in the face of changing and uncertain weather patterns and climate.

We therefore suggest future follow-up on this project specifically to address: 1) The project's impact on water quality and, 2) The long-term sustainability of the learning network and if behavioral changes are maintained over time.

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