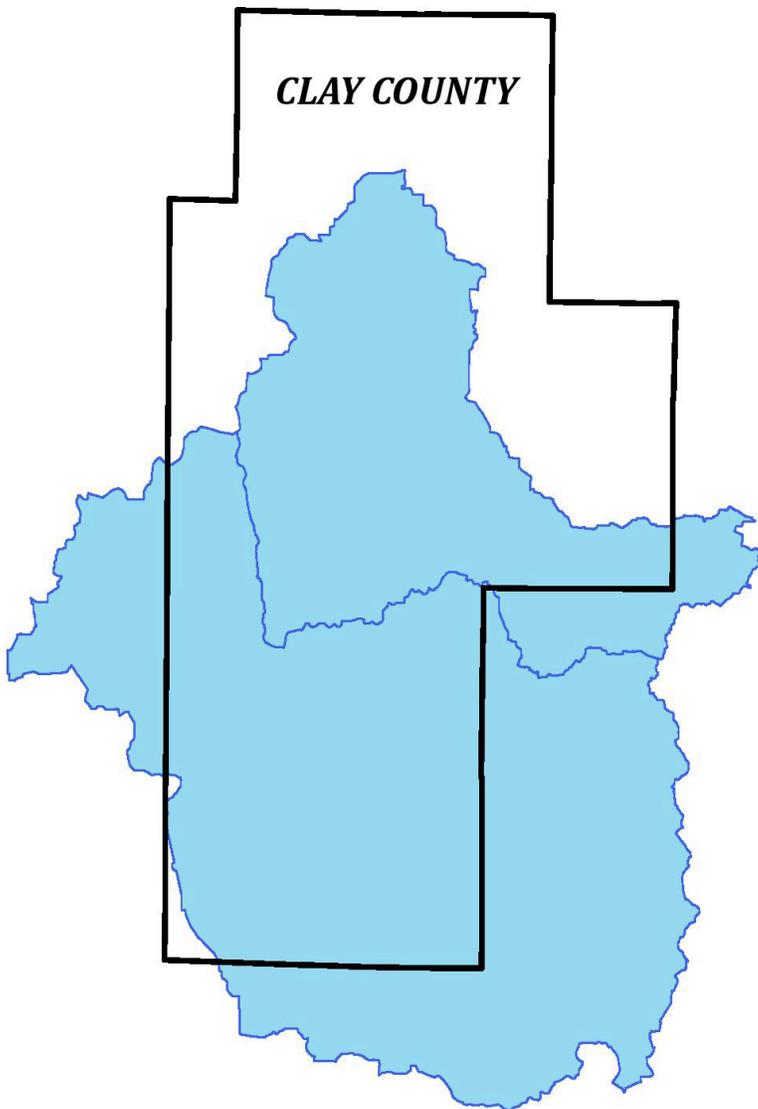


**2018-2021**

**Lower Eel River Watershed**  
*319 Implementation II Project*  
**Final Report**



**Clay County Soil & Water  
Conservation District**



**LOWER EEL RIVER  
WATERSHED**  
**319 GRANT**

*ARN: #25438*

*Project Sponsor: Clay Co. SWCD*

*Report Period:*

April 9<sup>th</sup>, 2018 – April 8<sup>th</sup>, 2021

*Report Completed by:*

Laura Demarest, Watershed Coordinator

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## **INTRODUCTION and OVERVIEW**

The LERW (Lower Eel River Watershed) 319 Implementation II project officially began on April 9<sup>th</sup>, 2018 and ended on April 8<sup>th</sup>, 2021. It ran concurrently with the LERW Implementation I grant (A305-6-183) for its first 8 months, allowing for the successful carryover of many producers, partners, and practices. The purpose of the LERW 319 Implementation project was to implement a variety of conservation BMPs throughout the area, resulting in significantly improved regional water quality and management changes at the individual farm level, in order to achieve the goals outlined in the LERW Watershed Management Plan and proposed in the 319 grant application.

The original application for funding included several generalized goals, which were adapted into ‘Tasks’ for the Grant Agreement and can be found summarized in the next section of this report.

The LERW WMP was approved in May 2008 and was written according to IDEM’s 2003 Checklist. The goals from the LERW Watershed Management Plan (WMP pgs. 43-49) are somewhat limited in scope as the load reduction goals are too modestly estimated. It is likely that the tools available for estimating load reductions at the time the WMP was written were not as advanced as those being used today. During the first round of 319 Implementation (A305-6-183), the LERW Advisory Committee reviewed the goals of the WMP and came to a consensus on an updated set of goals that would more appropriately align with the current timeline for implementation. These updated goals set by the LERW Advisory Committee are as follows:

*...To implement practices described in the Lower Eel River Watershed Management Plan (LERWMP) in order to achieve the LERWMP goals established by the steering committee. The goals of the LERWMP include: (1) reduce the current level of E. coli by 10% within 5 years, (2) reduce nitrates and phosphates by 10% within 5 years, and (3) reduce sediment loads by 10% within 5 years. The goals of the LERW project will align with the LERWMP goals as they will be: (1) a reduction of E. coli concentrations by 6% within 3 years, (2) a reduction in nitrates and phosphates by 6% in 3 years, (3) a reduction of sediment by 3% in 3 years, (4) provide a cost-share program to implement best management practices (BMPs), and (5) increase public awareness. These goals will be accomplished by completing three tasks: (1) provide a cost-share program to implement BMPs, (2) education and outreach, and (3) evaluate water monitoring data collected and increase the number of volunteers in the Hoosier Riverwatch (HRW) water monitoring program.*

The LERW 319 Implementation II project (#25438) commenced with Sage Danch as the Watershed Coordinator from April 2018 to April 2019 before Laura Demarest was hired in April 2019 to finish the remaining two years of the grant term. The Clay County SWCD Board of Supervisors and SWCD Coordinator, Jennifer Creager, provided financial oversight for the grant.

## **PROJECT GOALS AND OBJECTIVES**

Fulfilling the goals of the LERW WMP through implementation was to be accomplished through a variety of efforts that were organized according to “Tasks” outlined in the Grant Agreement. Within the scope of each Task were a number of objectives to be completed in order to satisfy the overall goals of the LERW 319 Implementation project. The completion of these tasks will be presented at length in the next section of this report. The requirements of each Task are summarized as follows:

### ***Task A: Develop and Promote a Cost-Share Program to fulfill goals of the LERW WMP***

- Develop and promote an approved Cost-Share Program to implement BMPs and improve water quality
- Employ a Watershed Coordinator to provide technical assistance to landowners by:
  - Conducting farm visits
  - Assisting with conservation planning and BMP selection
  - Inspecting BMPs to ensure they meet design specifications

### ***Task B: Cost-Share Implementation***

- Implement the approved cost-share program described in Task A
- Ensure that all BMPs conform to NRCS specifications or other applicable, approved specifications
- Implement BMPs only in critical areas as described in the LERW WMP
- Follow cost-share payment and reporting protocol according to IDEM 319 program requirements
- Tabulate pollutant load reductions for every BMP funded by 319 or utilized for match
- Create and maintain a geo-referenced database for all BMPs implemented through the 319 project

### ***Task C: Water Quality Monitoring and Analysis***

- Develop a Quality Assurance Project Plan (QAPP) for monitoring activities: submit to the State for approval
- Conduct trend monitoring at 12 selected sites on a quarterly basis
- Hoosier Riverwatch methods will be used to collect data on the following parameters: DO, BOD, pH, Orthophosphates, Nitrates, Nitrites, Turbidity, E.coli, temperature, and flow
- Complete cQHEI assessments on all sites each year
- Conduct annual macroinvertebrate sampling on all sites each year

### ***Task D: Education and Outreach***

- Conduct an education and outreach program that includes the following efforts:
  - Hold one Hoosier Riverwatch training workshop
  - Reconvene the Lower Eel River Watershed Advisory Committee and conduct quarterly meetings to implement the cost-share and WMP for a minimum of twelve meetings
  - Conduct one stakeholder meeting per year to provide information on the 319 grant and inform new stakeholders about grant programs
  - Develop and distribute one brochure to promote the Cost Share Program
  - Distribute six flyers, newsletters, or brochures to promote education field days and workshops
  - Distribute six newsletters highlighting the progress and promoting the programs of the grant
  - Provide seven news releases to local newspaper, partnership newsletter, or radio advertisement promoting the cost-share program, education field days and workshops
  - Distribute a septic care and maintenance “How-To” postcard or hold a septic workshop annually
  - Hold two annual field days or workshops (for a total of 6) to educate watershed landowners, stakeholders, and community members about nonpoint source pollution and the importance of using best management practices in their management programs. Field day and workshop topics may include cover crops, precision ag. upgrades, pasture walks, BMP showcases, demo plots. Develop a survey to evaluate the success of the field days and workshops. Conduct surveys before and after each event
  - Place educational signs at four installed BMP locations
  - Provide one presentation to local officials to solicit input about the LERW project and promote the cost share program and educational events

### ***Task E: Reporting***

- Prepare and submit a progress report to the State with each invoice package, at least quarterly
- Submit two electronic copies of a final report to the State via USB or other applicable media

## **EVALUATION OF GOAL ACHIEVEMENT**

Overall, the LERW 319 Implementation project proved to be a success, providing an abundance of BMP opportunities for enthusiastic producers. This success can largely be validated by assessing the completion of the items listed in each of the previously outlined Tasks, especially those associated with the Cost Share Program. Additionally, favorable trends in producer interest and participation in conservation efforts were noted throughout the duration of the project. Moreover, many helpful lessons were gleaned during the course of this grant project, which will enable future conservation efforts to benefit considerably.

The LERW Implementation II project utilized every cent of the 319 grant funding, exceeded the match goal, and delivered a variety of conservation projects to producers in critical areas. Cover crops and Nutrient Management in the form of precision agriculture technology upgrades gained the most traction during the course of implementation, netting the highest load reductions and most inquiries from new participants.

When considering the specific goals stated in the LERW Watershed Management Plan, it may be premature to gauge overall completion, as the LERW initiative will continue in the form of the LERW 319 Implementation III project, for which an additional 319 grant application was selected for funding. This grant will serve as the third and final phase for the LERW initiative using the 2008 WMP, and is slated to begin in early 2022. WMP goals will be discussed and evaluated in this report as applicable.

A series of 'Project Outcomes' and 'Measures of Success' was posited in the LERW 319 Implementation II grant application (presented below). Each 'Measure of Success' below will receive a check mark to indicate if it was completed in actuality. Additional discussion may be included, as necessary.

### ***Project Outcomes and Measures of Success:***

1. Install 3,000 acres of cover crops (✓ including cover crop seeding tools), 20 acres of filter/buffer strips (✗ installed < 2 acres), 10 livestock practices (✗ installed 9 total), 10 miscellaneous BMPs (✓ see full list below)
  - ✓ Track number of landowners and land managers involved in BMP installation
  - ✓ Track number of acres affected
  - ✓ Utilize 100% of the cost-share funding
  - Track load reductions (anticipated load reductions if BMP goal is achieved – see below)
    - ✓ 3,000 acres of Cover Crops = N 12.9 t/yr, P 3.33 t/yr, Sediment 4,229 t/yr (if including Cover Crop seeding attachment tools)
    - ✗ 20 acres Filter/Buffer strips = N 1.56 t/yr, P 0.84 t/yr, Sediment 1,171 t/yr
    - ✓ 10 Livestock practices = N 7.08 t/yr, P 2.75 t/yr, Sediment 66.1 t/yr
    - ✓ Misc. BMPs (WASCOBs, Diversion, etc.) = N 1.56 t/yr, P 0.63 t/yr, Sediment 759.9 t/yr
2. Increase stakeholder awareness in the community by 15% throughout the duration of the grant (✓/✗ unable to quantify with certainty)
  - Analyze before/after surveys from educational events in order to demonstrate an increase in positive behavior towards and awareness of water quality and nonpoint source pollution issues in the LERW
    - ✓/✗ At this time there is no method to accurately determine whether or not this "Measure of Success" has been achieved. Ongoing evaluation will be necessary. COVID-19 greatly impacted outreach activities in 2020-2021. Pre/post surveys were administered but did not yield results that could be usefully analyzed as the results were too varied and survey participation was too low.
3. Reduce loads to: P = 146.93 t/year, N = 521.35 t/year, Sediment = 7,528.23 t/year, E.coli = 2.601E+13 cfu/year
  - ✓ Track number of projects completed
  - ✓ Track number of livestock excluded
  - ✓ Track total BMP acreage
  - ✓ Track estimated load reductions  
(See LERW Implementation II total load reductions pg. 6)
4. Conduct 6 educational field days/workshops, and increase attendance by 10% each year. Conduct 1 Hoosier Riverwatch training for new volunteers in the area. Raise Hoosier Riverwatch involvement in the area by 10% by the end of the grant.
  - ✓ Track number of education and outreach events conducted
  - ✓ Track number of participants at each event
  - ✗ Conduct 1 Hoosier Riverwatch training for new volunteers in the area
  - ✗ Raise Hoosier Riverwatch involvement in the area by 10% by the end of the grant

Due to COVID-19 restrictions, Hoosier Riverwatch training events had to be cancelled along with the LERW trend monitoring work, as detailed further in this report. Obtaining necessary monitoring supply refills and equipment was significantly delayed as well.

***Watershed Management Plan Goals:***

As previously discussed, the goals outlined in the LERW Watershed Management Plan reflect the overarching intention to improve water quality through the installation of BMPs as still a guiding principle. After almost 5 years of targeted BMP implementation it may be too early to make an accurate determination as to whether or not the WMP goals have been met, especially considering the load reduction goals in the WMP are quite low in some cases. Additionally, the monitoring data collected during LERW Implementation I was ‘trend’ monitoring only. To date, high-precision baseline data for this watershed has not been collected aside from an IDEM TMDL E.coli-only study completed in 2005. Hoosier Riverwatch methods have been used to good effect, though these results provide a more generalized insight into the region’s water quality rather than an abundance of high-quality data. It is difficult to gauge overall WMP goal completion through water monitoring methods alone – especially when using unfunded Hoosier Riverwatch methods on a quarterly basis. There is significant seasonal variability to be found in data collected only four times per year through trend monitoring methods.

At this time, the best methods available for evaluating load reduction goal achievement consist of modeling tools such as Region 5, StepL, and estimations based on information from local agronomists. These tools are quite useful, especially when used in conjunction with a funded, high-precision monitoring program. The table below represents load reduction goals outlined in the WMP alongside recorded load reductions as a result of installed BMPs during the LERW Implementation project (phases I and II). In the future, it would be best to ‘ground-truth’ the collected load reduction data with accurate stream monitoring data. To make this possible, it would be best to have adequate funding for the collection of high-quality water samples to be sent for lab analysis on a more frequent basis rather than relying on unfunded volunteer monitoring methods conducted on an infrequent basis.

The LERW WMP outlines a 10% reduction goal for Nitrates, Phosphorus, Sediment, and E.coli loads within a 5 year time span, however it is obvious that after two rounds of 319 Implementation, these goals have been tremendously exceeded. This ‘overshot’ of the goals likely stems from inconsistencies in load reduction calculation tools and methods used during the Planning phase. If updating the Lower Eel River WMP in the future, more scrutiny should be paid to the load reduction calculation tools, especially when creating quantifiable short and long-term goals. In any case, theoretical load reduction calculation tools have their limitations and funding for high-quality water monitoring in the future would help verify that the conservation practices installed have, in fact, had positive effects on water quality.

	<b>LERW WMP Baseline Load Estimates</b>	<b>LERW WMP Reduction Goals</b>	<b>LERW Implementation I Reduction 2016-2018</b>	<b>LERW Implementation II Reduction 2018-2021</b>	<b>Total Load Reduction (2016-2021)</b>	<b>Goal Completion Percentage</b>
<b>Nitrogen</b>	123,180 lbs/yr	10%	43,277.8 lbs/yr	108,612.63 lbs/yr	151,890.43 lbs/yr	123.3%
<b>Phosphorus</b>	11,380 lbs/yr	10%	16,525.5 lbs/yr	18,190.1 lbs/yr	34,715.6 lbs/yr	305.1%
<b>Sediment</b>	700.52 tons/yr	10%	16,206.4 tons/yr	11,580.7 tons/yr	27,787.1 tons/yr	3,966.6%
<b>E.coli</b>	1.857E+13 cfu/yr	10%	Cannot be determined	Cannot be determined	Cannot be determined	Cannot be determined

*\*WMP Load reduction goals can be found on pgs. 43-50 of the Lower Eel WMP*

It is also worth noting that until the fall of 2020 no adequate load reduction tool for E.coli has been definitively approved for use in 319 projects. All BMPs installed after the development of the new E.coli load reduction tool did not have a measureable effect on E.coli load reduction so the calculation tool has yet to be utilized. Public awareness education is the main strategy for reducing E.coli loads in the watershed though the success of these efforts cannot be accurately quantified.

## COMPLETION OF TASKS

One straightforward way to quantify the success of the LERW Implementation grant project is to review the completion of the objectives outlined in each Task. More complex topics will be further discussed and analyzed as necessary. Supporting documentation can be found in the LERW Final Report USB Appendices.

### *Task A: Develop and Promote a Cost-Share Program to fulfill goals of the LERW WMP*

- Conduct farm visits
- Assist with conservation planning and BMP selection
- Inspect BMPs to ensure they meet design specifications

The Watershed Coordinators each conducted many farm visits and assisted with conservation planning and helping producers choose the best BMP for their goals. For projects beyond the scope of their experience, technical assistance was enlisted in the form of ISDA or NRCS personnel who provided engineering plans and assisted with as-builts. All projects were successfully installed; payment and load reductions information can be found in **Appendix F (Invoice Packages)**. All geodata for installed projects can be found in **Appendix B**. Engineering plans and supporting planning documentation is contained within their producers folders housed in the Clay SWCD office.

### *Task B: Cost-Share for BMP Implementation*

- Implement the approved cost-share program described in Task A

The LERW Cost-Share Program was carried over from the first round of implantation with few changes in order to reduce confusion and capitalize on the momentum started during the first grant. Some clarifying language was added to certain BMPs (precision ag./planter upgrades), caps on cost-share were made less restrictive, and ranking methods were simplified. All supporting documentation can be found in **Appendix A**.

- Ensure that all BMPs conform to NRCS specifications or other applicable, approved specifications
- Implement BMPs only in critical areas as described in the LERW WMP
- Follow cost-share payment and reporting protocol according to IDEM 319 program requirements

All documentation relating to individual projects/producer payments, bills, maps, etc. can be found in **Appendices B and F**. Additionally, a summary of all cost-share projects with corresponding load reductions, etc. can be found in the Quarterly Progress Reports in **Appendix E**.

During the Cost-Share Program, a shapefile was created for each type of BMP installed within the LERW watershed (Cover Crops, Nutrient Management, WASCObS, etc), either with 319, CWI, or LARE funding. This geodata was provided to IDEM in the Final Report USB – **Appendix B**). In addition, the latitude/longitude for each installed BMP was provided to IDEM on the 319A form, submitted for cost-share reimbursement or match.

- Tabulate pollutant load reductions for every BMP funded by 319 or utilized for match
- Create and maintain a geo-referenced database for all BMPs implemented through the 319 project

The LERW Implementation Cost-Share Program was approved by IDEM on 6/26/18 before being updated and resubmitted for approval 2/3/20. The updated version was based on successful Cost-Share Program models that had been used during 319 Implementation in neighboring watershed projects (TTK, PCWP). The updated LERW Cost-Share Guidelines offered a tiered cost-share approach for certain practices (structural, precision ag. and planter upgrades), but was streamlined for administrative ease and made less restrictive in order to ensure that funding would be completely utilized. Documentation regarding the Cost-Share Program can be found in **Appendix A**.

By the close of the LERW 319 Implementation grant, all of the cost-share funding had been completely utilized and more producers were still asking to apply. Additional implementation funds were requested in the form of another 319 Implementation grant, which was selected for funding and is slated to start in early 2022. All BMPs were installed according to NRCS (or other approved) specifications and in accordance with IDEM 319 program guidelines. See below for a summary of BMP Implementation projects and **Appendix F** on the LERW Final Report USB for comprehensive BMP documentation (match and funded by 319 cost-share).

In summary, the LERW 319 Implementation grant was very successful, resulting in the installation of an impressive number BMPs on critical area acreage. Many of these producers were first-time participants and young farmers who showed keen interest especially when it came to cover crops and precision agriculture. This is a promising observation for future conservation sustainability in the LERW watershed region.

Pollutant load reduction totals corresponding to each individual project are reported in the Quarterly Progress Reports submitted to IDEM with each Invoice Package. See **Appendix E** for further details.

**Total BMPs implemented in LERW critical areas during LERW II Implementation (2018-2021):**

- *Cover Crops = 1,760.39 acres*
- *Cover Crops (Seeders/Equipment) = 3,983.71 acres*
- *Field Border/Pollinator Habitat = 1.5 acres*
- *Grade Stabilization Structure = 430 ft<sup>2</sup>*
- *Grassed Waterways = 4,454' linear ft.*
- *HUAP = 1,728 ft<sup>2</sup>*
- *Nutrient Management (Precision Ag. upgrades) = 6,545.25 acres*
- *Pasture Seeding = 8.3 acres*
- *Pipeline = 1,566' feet*
- *Prescribed Grazing/Fence = 8.3 acres (4,215' interior + exterior/exclusion fence)*
- *Residue & Tillage Management (Conservation tillage equipment upgrades) = 2,512.56 acres*
- *Spring Developments (1) + Livestock Watering Tanks (3)*
- *WASCOBs = 25*

The total pollutant load reduction estimates of the BMPs installed as a direct result of the LERW 319 Implementation II project (Cost-Share and Match projects) are summarized as follows:

- *Nitrogen: 108,612.63 lbs/year*
- *Phosphorus: 18,190.1 lbs/year*
- *Sediment: 11,580.7 tons/year*

**Lesson Learned #1:** Garnering enough interest for cost-share funding has not been a problem in this region, though there was a rush to spend a sizeable amount of funding in the final months of the project due to engineering projects not getting constructed in a timely fashion. Some of the delays have been weather-related or, in a few cases, a producer signing up for a too-ambitious project load. In one unfortunate case, a producer passed away before he was able to complete the projects for which he had applied. These circumstances are

inopportune, but one of the main ‘selling points’ of the 319 cost-share program is that, in comparison to many of the federal programs, there is no penalty to the applicant for non-completion. This feature of the 319 programs often opens the door for new participants who may be overwhelmed by the federal programs and offers some beneficial flexibility, however in the future, it may be prudent to assign an earlier ‘deadline’ for engineering projects to be completed or to consider limiting the number of projects for a first-time applicant. Fortunately for the LERW Implementation project, there are always a number of projects on the WAIT LIST, many of which have relatively quick turn-over, such as Precision Ag. and No-Till Planter upgrades.

**Lesson Learned #2:** It is very important to fully communicate with producers about their projects and intentions, especially when it comes to technological tools. In some cases there was confusion regarding the 319 program’s requirement that a piece of precision ag equipment must reduce N inputs in some way and not simply help the producer plant a crop more efficiently or monitor yields more accurately. It must also be confirmed that equipment is new to the operation and not a repair or replacement.

### **Task C: Water Quality Monitoring and Analysis**

- Develop a Quality Assurance Project Plan (QAPP) for monitoring activities; submit to the State for approval

The QAPP for trend monitoring during LERW Implementation was approved 10/24/18.

For the LERW 319 Implementation grant, it was stipulated that a minimum of 12 sites would undergo ‘trend monitoring’ quarterly (a total of 12 sampling events) during the course of the project.

- Conduct ‘trend monitoring’ at 12 selected sites on a quarterly basis
- Hoosier Riverwatch methods will be used to collect data on the following parameters: DO, BOD, pH, Orthophosphates, Nitrates, Nitrites, Turbidity, E.coli, temperature, and flow
- Complete one cQHEI assessment on all sites each year
- Conduct annual macroinvertebrate sampling on all sites

The LERW monitoring program was not completed and a change of scope was submitted as required. Numerous obstacles hindered monitoring, including an extended delay to refill Riverwatch supplies from IDEM (over 1 year after requesting refills), poor weather, and COVID-related personnel issues. Hosting a Riverwatch training event wasn’t possible due to COVID-19 restrictions for gatherings and meeting facilities.

When the second Watershed Coordinator began work in April 2019, the trend monitoring program was already behind schedule, owing to the overlap between LERW Implementation I and II, with emphasis being placed on finishing up the LERW Implementation I trend monitoring program and final cost-share projects. The Cost-Share Program is always the chief priority during Implementation and it can be difficult to find ideal weather windows to conduct trend monitoring while working to fill the needs of program participants. Additionally, obtaining resupplies from the Hoosier Riverwatch department took almost a year after the initial request, owing to COVID-related workplace restrictions and personnel issues.

**Lessons Learned:** Implementation of BMPs through the development and promotion of the Cost-Share Program was the #1 priority for this grant, which meant most of the attention and effort was diverted towards handling customer requests for projects, conducting on-site planning, submitting engineering requests, compiling planning documents, verifying project completion, and processing payments. The trend monitoring-related tasks were (unfortunately) relegated to the ‘back burner’ in order to ensure that implementation efforts and customers were handled first and foremost.

When applying for 319 Implementation grants, unfunded trend monitoring has not been advised as a beneficial endeavor to include in the ‘tasks’, especially as it can detract from the main focus of implementing BMPs and

is unlikely to yield high-precision data that can be used to ascertain WMP goal progress accurately. Though a modest schedule for trend monitoring was outlined in the application using no-cost Hoosier Riverwatch methods, it still suffered from numerous setbacks, as described. In the future, a group should give heavy consideration to the importance of continued monitoring during Implementation if there will not be adequate funding for the collection of data that is truly useful to the project in terms of WMP load reduction comparisons and accurate evaluation of progress towards short and long-term goals.

#### ***Task D: Education and Outreach***

Conduct an education and outreach program that includes the following efforts:

- Hold one Hoosier Riverwatch training workshop

Hosting a Riverwatch training event wasn't possible due to COVID-19 restrictions for gatherings and meeting facilities from 2020-2021. There was also a significant delay (nearly 1 year) in obtaining Hoosier Riverwatch supply refills from IDEM due to personnel issues and COVID-19. A change of scope was permitted for the purpose of suspending trend monitoring activities and the Hoosier Riverwatch training event requirement.

- Reconvene the LERW Steering Committee and conduct quarterly meetings to implement the cost-share and WMP for a minimum of 12 meetings

The LERW Advisory Committee continued with many of the same stakeholders who regularly participated throughout the previous Implementation grant installment. The LERW Advisory Committee was required to meet at least quarterly (a minimum of 12 times) during the time of the LERW 319 Implementation II grant. Meetings were sometimes more or less frequent than quarterly, depending on the group's needs. From 2020 until the end of the grant, meetings were significantly impacted by COVID-19 restrictions, making it difficult to find a suitable in-person meeting site. Advisory Committee meetings were announced on the [watershed-alliance.org](http://watershed-alliance.org) website and offered via Zoom though participation was nearly non-existent as this online option was not preferable for most of the regular attendees.

Supporting documentation for all meetings can be found in **Appendix A** on the LERW #25438 Final Report USB. Advisory Committee meeting dates:

5/22/18, 12/4/18, 6/4/19, 9/4/19, 11/21/19, 10/15/20, 1/29/21, 2/9/21, 2/23/21, 3/9/21, 3/23/21, 4/6/21

**Lessons Learned:** Overlapping grants have the potential to make meeting Task requirements difficult. For instance, with concurrent LERW grants, the Advisory Committee meetings had to be doubled during the overlap period so that meetings could be 'counted' separately for each grant. These meetings sometimes felt compulsory, especially during Implementation, where attendance dropped off considerably after the Cost-Share Guidelines were created. The lower attendance could be due to the fact that there is less 'heavy' decision-making involved during implementation when compared to the planning phase. Meeting attendance was also significantly impacted by COVID-19 restrictions and the shift to using Zoom for online meetings as an accommodation. It was obvious that most of the Advisory Committee 'regulars' did not prefer to participate via Zoom which meant the majority of meetings in 2020-2021 had no attendees. Fortunately, the Implementation phase of the project presents fewer prescient topics that require Advisory Committee input.

In the future, it is worth considering that fewer meetings be required during the Implementation phase of the grant as there may not be as strong of a need for frequent feedback from the Advisory Committee (as opposed to during the Planning phase). A group can always meet more than the requirements stipulate, if needed.

- Conduct one stakeholder meeting per year to provide information on the 319 grant and inform new stakeholders about grant programs

A public “Kick-Off” meeting was held to announce the new grant, and then stakeholder meetings were conducted each year in the form of the Clay County SWCD Annual Meeting. An extensive update on the 319 project was provided as well as an Annual 319 Report which was also published in the local newspaper. Dates for each meeting are listed below:

- 9/10/18– LERW Implementation II Kick-Off meeting
- 3/19/19 – Clay County SWCD Annual meeting 2019
- 3/10/20 – Clay County SWCD Annual meeting 2020

- Develop and distribute one brochure to promote the cost-share program

A Cost-Share brochure was developed and distributed when the grant commenced. It was updated and redistributed during the summer of 2019 to reflect the changes in the Cost-Share Program.

- Distribute six flyers, newsletters, or brochures to promote education field days and workshops

A total of 6 flyers/brochures were created during the LERW Implementation II grant and can be found in **Appendix D** on the LERW Final Report USB. These include the following:

- Updated Cost-Share Brochure (2019-2021)
- 2020 Contractor’s Breakfast event flyer
- Mussels – educational brochure
- Mining – educational brochure
- Cover Crops – educational brochure
- LERW Streams & Rivers sign/flyer (created for potential billboard but used for distribution/display)

- Distribute six newsletters highlighting the progress and promoting the programs of the grant

A total of 6 newsletters were created and distributed. Most were via email or Clay Co. SWCD social media. Annual summary reports were created to showcase LERW Implementation II progress and printed in the Brazil Times tabloid for the SWCD Annual meeting and also provided at the public meetings. Supporting documentation can be found in **Appendix D** and descriptions are reflected below:

- Clay SWCD Facebook posting 2018 – LERW II Grant announcement – Spring 2018
- Clay SWCD Facebook posting 2019 – LERW Grant info + Locally Led meeting announcement
- FSA e-Newsletter August 2019
- 319 Annual Report 2019 (shared for 2020 SWCD Annual Mtg)
- Clay SWCD Facebook posting Dec 2020 – Watershed info and education
- 319 Annual Report 2020 (shared for 2021 SWCD Virtual Annual Mtg)

- Provide 7 news releases to local newspaper, partnership newsletter, or radio advertisement promoting the cost-share program, education field days, and workshops

News regarding the LERW watershed project was often featured in the Brazil Times newspaper. Since the

watershed is situated primarily in Clay County it was not often necessary to interface with the media of neighboring counties as frequently, though partner SWCDs and other organizations informally circulated news of events/workshops via their own email lists/social media. Copies of press releases can be found in **Appendix D** on the LERW Final Report USB.

**Articles and Advertisements:**

- Brazil Times Cost-Share program advertising x 3
- Greene County Daily World x 1
- Tribune Star x 1
- Hoosier Times (Spencer, IN) – online press release Dec. 2018
- Clay County Plat Book 2020
- Brazil Times SWCD Annual Meeting tabloid 3/2021

- Distribute a septic care and maintenance “How-to” postcard or hold a septic workshop annually

Two educational post-cards were adapted from EPA ‘Septic Smart’ materials and used for distribution. Additionally, the Clay County Commissioners were addressed on 9/17/18 by the Watershed Coordinator and Clay SWCD personnel. As a result of this presentation, a declaration was made to declare a week in September as ‘Septic Smart’ week. Supporting documentation can be found in **Appendix D**.

- Hold 2 annual field days or workshops (6 total) to educate watershed landowners, stakeholders, and community members about nonpoint source pollution and the importance of incorporating BMPs into their management programs. Develop a survey to evaluate the success of field days and workshops. Conduct surveys before and after each event

A total of 6 field days/events were completed in order to educate stakeholders about the LERW Implementation II grant, non-point source pollution, and conservation practices. Supporting documentation can be found in **Appendix D** and a description of events is reflected below:

- September 2019 – Locally Led public meeting w/ 319 updates (Clay Co. Fairgrounds)
- March 2020 – Contractor’s Breakfast w/ 319 updates (Brazil, IN)
- July 2020 – Clay Co. Commissioner’s meeting - 319 updates, grant application support
- July 2020 – Clay County Council meeting – 319 updates, grant application support
- 8/31/20 – Ceres Cover Crop Field Day (Brazil, IN)
- March 2021 – Clay SWCD Virtual Annual Meeting w/ 319 grant updates

**Lessons Learned #1:** COVID-19 greatly impacted the ability to have field days and in-person events. Many of the ‘regularly-scheduled’ Clay SWCD events were cancelled. In some cases virtual alternatives were offered, but participation was extremely low. When applying for 319 funding in the future, it is best to consider that unanticipated circumstances may create difficulties when it comes to being able to complete all of the deliverables outlined in the grant agreement tasks. In this case, a total of 6 field days/events was achievable, but in a normal year there would have been many more opportunities for outreach/education events as well as higher match/in-kind contributions. It has been a good reminder to always have contingency plans for cancellations and unforeseen obstacles.

**Lessons Learned #2:** Pre/post surveys were administered when possible but did not yield results that could be usefully analyzed as the results were too varied and survey participation was too low. Tracking attendance at events may be a more straight-forward method for gauging outreach success and community engagement.

- Place educational signs at 4 installed BMP locations

One aluminum sign was created and placed in a cover crop field in Fall 2018. It was retrieved and brought back to the office for re-use. In winter 2020-2021, two more signs were made (corrugated plastic). These two signs, along with the original aluminum model, were used in 3 of Henry Buell's cover crops fields with highest visibility from busy roads. A total of 4 BMPs were showcased using LERW signs.

**Lessons Learned:** A single, heavy aluminum sign was made when the grant started with the intention of retrieving it from the showcase BMP after some time and moving it to a new BMP, for a total of 4 placements. In the future, it would be best to have a total of 4 signs created at the same time, preferably early in the grant timeline. It would not be necessary to use expensive aluminum as corrugated plastic works well and is cheaper. As BMPs are completed, signs can be provided for showcase projects (i.e. close to heavily trafficked areas, cover crop stands that look excellent, for use before a field day or event, etc.). The corrugated plastic signs can stay with the BMP longer and can be retained by the producer for as long as they wish without the added legwork of the Watershed Coordinator needing to retrieve and move them to new locations.

- Provide 1 presentation to local officials to solicit input about the LERW project and promote the cost-share program and educational events

In August 2020, the Watershed Coordinator and personnel from Clay Co. SWCD attended the Clay Co. Council Budget meeting to provide 319 grant updates and an overview of active conservation efforts in the region. Leverage sheets were provided along with a summary of recent LERW Implementation grant activities.

### ***Task E: Reporting***

- Prepare and submit a progress report to the State with each invoice package at least quarterly.

A total of 11 Quarterly Progress Reports were submitted during the course of the LERW 319 Implementation project, meeting the Task E requirement. Copies of all Progress Reports can be found in **Appendix E** on the LERW Final Report USB.

Progress Reports were submitted for the following time periods:

- April 8th, 2018-August 7th, 2018
- August 8th, 2018-November 1st, 2018
- November 1st, 2018-February 11th, 2019
- February 11th, 2019-June 30th, 2019
- July 1st, 2019 – October 5th, 2019
- October 6th, 2019 – December 24th, 2019
- December 25th, 2019 – April 15th, 2020
- April 16th, 2020 – August 4th, 2020
- August 5th, 2020-January 12th, 2021
- January 13<sup>th</sup>, 2021-March 1<sup>st</sup>, 2021
- March 2<sup>nd</sup>, 2021-April 8<sup>th</sup>, 2021

- Submit two electronic copies of a final report to the State.

The LERW 319 Implementation project Final Report and all supporting documentation was submitted to the State on two USBs and provided to the Watershed Specialist on a dedicated USB. All hard copy information will be retained at the Clay County SWCD Office for a minimum of 3 years.

## **Discussion of Monitoring Results**

Associated monitoring documentation can be found in **Appendix C** on the LERW Final Report USB, however no monitoring data was collected and therefore the IDEM ARUT spreadsheet was not submitted. A change of scope was approved by the IDEM Watershed Specialist to discontinue trend monitoring efforts during Implementation. During the LERW Implementation II 319 project numerous challenges thwarted trend monitoring efforts, including delayed Hoosier Riverwatch supply refills, COVID-19 restrictions on office visitation for IDEM and SWCDs, unfavorable weather windows, and getting behind schedule in 2018 while finishing up the first installment of LERW Implementation I trend monitoring. Even if COVID-19 had not presented unique challenges, there are general issues that stem from including an unfunded trend monitoring program during 319 Implementation efforts. As previously discussed, Hoosier Riverwatch monitoring methods can be useful in providing an overview of water quality in a region, though these methods are not precise enough (nor is data collected frequently enough) to use as a definitive gauge for progress towards meeting WMP goals. In the future, it is recommended that unfunded trend monitoring not be included when applying for 319 Implementation grants. There is no doubt that this watershed will greatly benefit from continued implementation and until better methods/tools are available for stream monitoring, the best gauge for improvement and WMP goal achievement is through the usage of pollutant load reduction modeling tools such as StepL and Region 5.

## **Public Participation and Partnerships**

The LERW 319 Implementation II program celebrated a successful outcome chiefly because of the dedication and commitment of those involved. Led by the competent and motivated Clay County SWCD team, the project was promoted through regional field days and events (when not impacted by COVID-19). Many beneficial partnerships were formed or reinforced as a result of this project including neighboring SWCDs (Vigo, Owen, Parke, Greene), Indiana State Department of Agriculture, Purdue Extension, Ceres Solutions, Staley's Soil Service, Duke Energy, Sycamore Trails RC&D, Ouabache Land Conservancy and the Otter Creek 319 project, DNR, Farm Bureau, and the Farm Service Agency. Additionally, many helpful contacts were made in the form of regional agronomists, seed dealers, contractors, and equipment sales personnel. The NRCS CIT and District Conservationist were also instrumental in providing specifications, cost-estimates, and engineering plans for structural practices in the 319 program. Special thanks also goes to Dale Walker, ISDA Resource Specialist, who was instrumental in meeting with producers for conservation planning and construction checks. Many local officials on the County Council and Commissioners are also directly tied to farming and were happy to learn more and do what they could to help promote the 319 program. The success of this project can largely be attributed to the Sullivan SWCD Board for their oversight and management of the 319 project, as well as SWCD Coordinator, Jennifer Creager, for her efficient administration skills and careful scrutiny of the finances.

One major credit to the LERW Implementation II program is the fact that the Match requirement was not only fulfilled, but exceeded! Indeed, the match requirement was \$250,000.00 and the final total reached \$253,041.07 exceeding the goal by \$3,041.07! This is a true testament to the commitment of local partners, producers, and volunteers and if not for the many COVID-related setbacks, a greater amount of match would certainly have been accrued. The momentum only continues to gain speed as the project rolls over into the LERW Implementation III project!

## **Successes, Challenges, and Lessons Learned**

In summary, the LERW 319 Implementation II project demonstrated many positive efforts, including:

- Exceeded match requirement by \$3,041.07
- BMPs installed on thousands of acres
- Large load reductions achieved through Nutrient Management and Cover Crops
- Widespread adoption of precision agriculture techniques and innovative cover cropping methods
- Strong support from the Clay SWCD and partners
- High level of participation from landowners and producers due to strong word-of-mouth promotion
- 319 grant awarded for additional implementation in the LERW watershed (2022-2025)

- Good communication with SWCD Coordinator regarding finances, event planning, etc.
- Other conservation efforts including:
  - Clean Water Indiana grant for cover crops in Clay County
  - ISDA technical assistance and annual Tillage/Cover Crop transects
  - INField Advantage group
  - Continued cross-promotion NRCS/FSA programs
  - Ceres assistance with field days, promotion
  - Duke Energy grant to promote native plants, water quality
  - Cross-promotion with Ouabache Land Conservancy/Otter Creek 319 project

However, all roads to success often have a number of ‘bumps’ along the way. Below are some challenges the LERW 319 Implementation II project experienced (and learned from):

- COVID-19 caused significant challenges when it came to hosting meetings, field days, and events and/or finding organizations willing to partner with due to the varying levels of restrictions associated with different agencies (local, state, federal). Many of the regularly-scheduled local events were cancelled and finding meeting spaces was very difficult, even for small gatherings. Online meeting options were utilized but many of the constituents did not prefer to use Zoom and other similar technologies. Rural areas often suffer from connectivity issues and though these online meetings options can open up new avenues for including attendees who do not wish to travel, it did not seem that the stakeholders in this region were willing/and or able to use this technology advantageously.
- Several engineering projects were rushed to completion before the grant deadline due to weather delays, unforeseen circumstances, and over-ambitiousness on the part of some producers. A large amount of funding had to be utilized (approximately ~\$30,000) quickly in the remaining months of the grant. It would be best to be wary of this in the future and plan ahead accordingly (earlier construction deadlines, sign-up limits for first-time customers).
- Overlapping implementation grants can make meeting the number of obligatory field days, Advisory Committee meetings, and newsletters difficult, as it is not possible to count a single event to meet the requirements of both grant agreements.
- Unfunded trend monitoring does not provide data comparable to the caliber of what was collected during the planning phase (i.e. funded, lab grade) and less emphasis should be placed on these methods in the future, especially when using unfunded monitoring methods to gauge WMP goal achievement.
- Quickly evolving precision agriculture technology can make it challenging to stay informed.
- Advisory Committee meetings during Implementation phases should be less frequent as there is often little to discuss after the Cost-Share Program has been developed. Obligatory meetings are not useful for anyone involved and COVID-19 greatly impacted the ability to have convenient meetings.

## **Future Activity**

When it comes to the LERW watershed efforts, the Clay County SWCD continues to act as the backbone of the project, overseeing the completion of required tasks and handling all expenditures. They continuously look for opportunities to promote conservation and form strong partnerships while facilitating ongoing implementation efforts in the LERW watershed and throughout the region.

A new round of LERW 319 Implementation grant funding will be available in early 2022 and a healthy list of interested producers awaits! This third round of 319 grant funding (2022-2025) will mark the final installment of Implementation for the current Lower Eel River 2008 WMP. It is likely that after LERW III Implementation concludes, the Clay Co. SWCD will work towards creating an updated Watershed Management Plan for the Lower Eel Watershed by using the new tools, experience, and insight that they have acquired in recent years. There is no doubt that it will take time to shift the culture and attitudes of local stakeholders towards more conservation-minded, sustainable methods, but after two successful rounds of 319 Implementation it is apparent that these ideas are gaining traction and becoming more widespread, which is a huge step in the right direction!