



**Project: Unpaved Roads BMP Pilot Project for the Illinois River
Watershed**

SGA 19-800

Final Report

Prepared by IRWP

December 15, 2022

Table of Contents

Background	3
Project Implementation.....	3
Education on Best Management Practices.....	3
Subtasks Completed	4
Original Project Timeframe.....	5
Partners Involved and their Roles.....	5
Funding Breakdown (Federal and State)	5
Conclusion and Lessons Learned	5
Appendices	6
Appendix 1: Financial Reviews	6
Appendix 2: One Month Post Construction Report	6
Appendix 3: Training Materials	6
Appendix 4: Six Month Post Construction Report	6

Background

Segments of the Illinois River watershed do not support their designated uses of aquatic life (ADEQ, 2016) because of excessive turbidity and sediment. In the Illinois River – Lake Wedington subwatershed, unpaved roads were found to have contributed 39% of sediment to the watershed, which was the highest contributor when compared to streambank erosion, pasture runoff, and runoff from impervious surfaces (FTN Associates, 2012). Dirt and gravel roads that are properly maintained, managed, or improved can achieve a 50-90% reduction in sediment loading (AWRC UIRW Management Plan, 2010). From a cost-efficiency perspective, according to FEMA, roads that have been improved are cheaper to maintain in the long term, due to lessened road wear requiring gravel additions and a reduced need for grading. A smoother driving surface also minimizes wear and tear on vehicles and therefore operating costs to companies who frequently utilize the roads. Because unpaved roads BMPs can be used to reduce runoff velocity, lessen erosion impacts, and reduce sediment inputs, IRWP sought to expand knowledge regarding the impact of and solutions for these types of roads. This project worked to reduce sedimentation and turbidity within this priority watershed and to demonstrate the success of using BMPs and the need for future projects utilizing the same practices.

The goal of this project was to implement recommendations from the Upper Illinois River Watershed (UIRW) Based Plan to reduce non-point source sediment loads through the implementation of Best Management Practices (BMPs) for unpaved roads. The project focused on installation of unpaved roads BMP demonstration projects at selected high priority sites and to demonstrate these best management practices during a field tour. County road crews, relevant county staff, and county elected officials were engaged in this project to learn about and implement unpaved roads practices through practical training and field demonstration with the goal of getting these attendees to include these practices in future roads maintenance and repair projects.

Project Implementation

IRWP worked with Benton County Roads Department to install BMP demonstration sites on unpaved roads in two locations within the county. Practices were identified to showcase methods to reduce non-point source sediment inputs into the watershed, with a secondary goal of reduced maintenance needs at those sites. The project looked for sites that would highlight multiple types of effective practices across varying site types, so they could then be showcased during the demonstration field tour. Two sites were selected by the Benton County Roads Department and IRWP and approved by ANRD. These sites are located on Haden Road (36.235987, -94.279234) and Lawson Road (36.154404, -94.470433) in Benton County. IRWP hosted an in-person training, inviting county roads department personnel from multiple counties, relevant county staff, and county elected officials. There were 31 attendees from agencies and 11 different counties/municipalities.

Education on Best Management Practices

The project sought to showcase the different BMPs utilized in the demonstration sites through a field tour and co-host training using an already-established certification program on unpaved roads. The following six best management practices were installed:

1. Broad based dip
2. Removal of outslope berm

3. Open-bottomed box Culvert with endwall/headwall
4. Through the bank pipe
5. High water bypass structure made of precast concrete mats cabled together
6. Raising of the road profile

A project-specific, informational booklet was designed and printed for each attendee at the training and field tour. Event feedback surveys were handed out for attendees to share how to better improve possible future events.

Subtasks Completed

The project was able to complete all tasks and deliverables during implementation. Below is a summary of the tasks completed.

- **Subtask 1.1 and 1.2:** Financial reviews were completed for 2019 and 2020 and submitted to ANRD as per the agreement. The 2021 financial review has also been completed and is hereby submitted with this report.
- **Subtask 2.1:** IRWP worked with Benton County Roads Department to identify a list of high priority sites, eventually settling on two sites located on Haden Road and Lawson Road which could accommodate at least three BMPs. Construction had several setbacks but moved quickly overall and was completed in summer 2022. In 2021 the IRWP Project Manager also attended and completed the Arkansas Unpaved Roads Training Program taught by Dr. Stacy Williams.
- **Subtasks 2.2:** IRWP engaged a consultant to design the BMPs at three locations, Osage Hill Road, Lawson Road, and Stephens Road. Stephens Road and Osage Hill Road did not move forward however designs and budgets for Lawson and Haden Road were completed. Timelines for installation were negotiated with Benton County Roads Department.
- **Subtask 2.3:** Benton County Roads Department added the projects to their work schedule for mid-August 2021 and began construction thereafter on six BMPs. IRWP checked in with Benton County Roads and visited sites multiple times over the course of construction. All construction was completed by summer 2022 despite setbacks due to supply chain shortages and heavy flooding.
- **Subtask 2.4:** One month inspections were performed primarily in June 2022, although some BMPs were completed earlier and were therefore inspected earlier. Six month inspections were conducted in early December 2022 for all sites.
- **Subtask 3.1:** IRWP coordinated with the Center for Training and Transportation Professionals (CTTP), ANRD, and Benton County Roads Department to plan the training and field tour which leveraged the established State of Arkansas certification program.
- **Subtask 3.2:** IRWP worked with partners to develop a bound booklet and digital booklet to be used for the training and field tour.
- **Subtask 3.3:** IRWP and partners promoted the training and field tour to all Arkansas County Roads Departments and through the IRWP website in coordination with CTTP and ANRD. On May 12, 2022 the training and field tour with certification was held at the IRWP Learning Center.
- **Subtask 3.4:** IRWP conducted a survey of attendees on the field tour and certification.
- **Subtask 4.1:** Fourteen Quarterly reports for all periods were submitted on time.
- **Subtask 4.2:** Two Annual Reports were submitted on time.

- **Subtask 4.3:** Annual review meetings were held as requested by ANRD. Multiple coordination conversations were held as needed.
- **Subtask 4.4:** This draft final report prepared and hereby submitted.
- **Subtask 4.5:** This will serve as the final report depending on feedback and approval of the draft report.

Original Project Timeframe

The pandemic necessitated adjustment to the original schedule and delayed implementation of the program. The project was extended from December 31, 2020 to November 30, 2022 with the final report being due December 31, 2022. IRWP was able to meet this revised schedule.

Partners Involved and their Roles

This project was primarily a partnership between Benton County Roads Department, ANRD and IRWP. IRWP worked closely with the Roads Department to identify possible locations for projects that were considered high priority and suitable for different BMPs. Initially three sites were identified but one site was dropped. IRWP hired a consultant to then plan and design the BMPs for the locations selected. The Roads Department was responsible for purchasing, installation and cost-share of BMPs at the two selected sites. The Center for Training and Transportation Professionals (CTTP) was also engaged to conduct the training. IRWP hosted the training, co-presented training content and led the field tour.

Funding Breakdown (Federal and State)

The 319(h) grant funded a total of \$137,570 (50%) of the costs which required matching funding from Benton County Roads Department and IRWP in the amount \$137,570 (50%). However, Benton County Roads Department invested substantially more in this project to complete BMPs for Lawson Road \$101,638.17 and for Haden Road \$175,509.42 due to complimentary improvements, flood washouts of BMPs, and escalating materials cost.

Conclusion and Lessons Learned

This project was a good opportunity to demonstrate best management practices to improve the management of unpaved roads. The training and field tour successfully engaged representatives from county roads departments and those who work with county roads departments from around the state. Some lessons learned include:

- Hands-on training with grader operators and county roads department personnel and follow-up technical assistance is needed to ensure practices function as designed.
- More design assistance and co-planning of practices will help counties ensure they achieve the desired outcomes with relation to sediment reductions, functionality, and cost savings.
- Materials costs and construction costs escalated quickly due to delays and washouts requiring Benton County Roads invest more in the BMPs than anticipated.

We are grateful to Benton County Roads Department Director Mr. Jay Frasier, Benton County Judge Barry Moehring, CTTP trainer Dr. Stacy Williams, and ANRD staff including Kevin McGaughey, Tony Ramick and others who made this project possible.

Appendices

The following appendices are included as attachments with this final report.

Appendix 1: Financial Reviews

Appendix 2: One Month Post Construction Report

Appendix 3: Training Materials

Appendix 4: Six Month Post Construction Report