



LRRB Research Need Statement

LRRB-3

Date: March 8, 2021

Need Statement Champion:	Name	Agency	E-mail	Phone
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Submitted by:	LRRB via Priority Process			
Originated from:	LRRB Idea Solicitation Process (Pre-Screen Board Mtgs)			

Select Type:

Research OR Implementation

Need Statement Title:

Updated the 2009 Storm Water Management – Best Practices

Need Statement: Describe the problem or the opportunity. Include background and objective.

The use of stormwater treatment strategies continues to increase as new stormwater regulations continue to evolve. These regulations require cities and counties to install, operate and maintain stormwater treatment practices to meet regulatory limits. The LRRB Stormwater Maintenance BMP Resource Guide produced in 2009 provided a comprehensive resource for BMPs appropriate then but should be updated. For example, stormwater ponds were listed as one of the preferred BMPs but due to regulatory changes, today’s practices include better infiltration techniques.

In addition, the LRRB recently conducted a study [Characterization of Runoff Quality from Paved Low-Volume Roads and Optimization of Treatment Methods](#). The goal of this project was to characterize contaminants in stormwater runoff from low-volume rural roads. For this study, two-lane asphalt paved rural roads with less than 1,500 ADT were considered low volume. There were two objectives:

- Learn what was in the runoff.
- Identify and provide recommendations for stormwater treatments best-suited for low-volume rural road runoff.

Researchers asked nine county engineers to recommend low-volume road sampling sites. Ten sites across six counties were selected based on soil types, land uses, site accessibility, proximity to a weather station with a rainfall monitor (such as airports) and ease of placing a sample collector at the side of the road. In addition, researchers used sampled Mississippi River water to compare to roadway runoff samples. More than 15 agency staff from these counties assisted researchers; they retrieved samples from the sites after 174 rainfall events over the two years the project was conducted. Runoff samples were sent to a lab to determine sample concentrations of TSS; metals (cadmium, copper, lead, nickel and zinc); total phosphorus (TP); and nitrates and nitrites.

Based on their findings in this study, researchers recommended ditches with swales, which are already used along many rural roads, as an effective stormwater treatment. They are considerably less expensive than other best management practices and are often in the existing right of way, avoiding the need to acquire more land for wet ponds or other treatments.



The focus of this task is to synthesize the 263-page report and develop a summary document that can easily communicate the research findings and use it to educate anyone involved in stormwater mitigation in rural counties.

Additionally, findings from another LRRB study currently underway in [2020 Stormwater Pond Maintenance, and Wetland Management for Phosphorus Retention](#) should be incorporated as appropriate.

Questions this research should focus on answering include:

- Besides stormwater ponds, what other BMPs should be used?
- What BMPs are effective at sediment removal? Especially pertaining to contaminated materials with the new regulatory requirements since 2009?
- Specifically, what new requirements have been implemented for phosphorus treatment/removal, what are the best practices?
- What are the costs to local agencies? Are there funding sources to assist with phosphorus mitigation?
- Are local agencies effectively reusing stormwater? What are the rules, regulations, and opportunities for stormwater re-use?
- What are the criteria for evaluating BMP effectiveness and their long-term maintenance requirements? How does the criteria and correlating treatment options alter in a low volume road setting?
- Examine underground storm water chambers viability and cost effectiveness

Suggested Deliverables:

An updated version of the 2009 Best Management Practices for Stormwater Management expanded to include Low Volume Roads BMP section.

How does this project build upon previous research (include title or reference to a completed research effort)?

Related LRRB Research:

- [Stormwater Pond Maintenance, and Wetland Management for Phosphorus Retention](#) (2020)
- [Characterization of Runoff Quality from Paved Low-Volume Roads and Optimization of Treatment Methods](#) (2020)
- [Stormwater Maintenance BMP Resource Guide](#) (2009)

Provide names to consider for a Technical Advisory Panel:

Brian Giese (Pope County); John Welle (Aitkin County); Rich Sanders (Polk County); Darrick Anderson (Cass County); Dan Sauve (Clearwater County); Mark Daly (Faribault County); Carol Andrews (St. Louis County); Joe Triplett (Chisago County); Ron Gregg (Fillmore County); Justin Kanas (Bolton Menk); Phil Wacholz (Freeborn County); Sam Muntean (Lac Qui Parle); Lon Aune (Marshall County); Steve Backowski (Morrison County); Joe MacPherson (Anoka County); Paul Oehme (Lakeville); Mark Maloney (Shoreview); Ross Bintner (Edina); Michael Thompson (Plymouth); Patrick Sejkora (Eden Prairie); MnDOT Water Resources representative; MPCA representative