

# Developing a Bridge Scour Warning System

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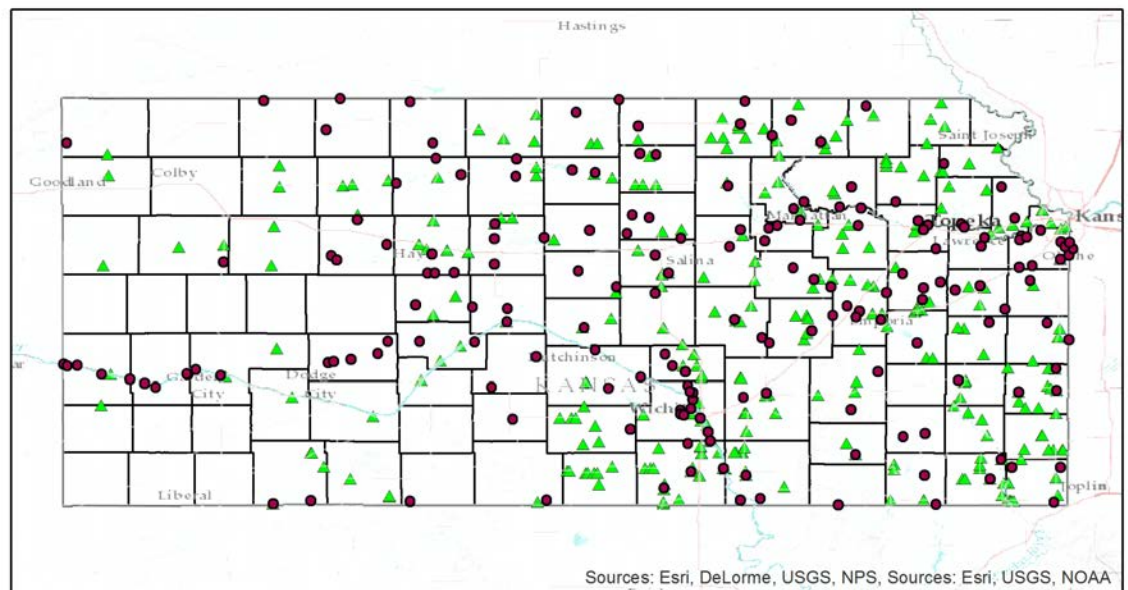
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## Introduction

Flooding and scour can be major threats to the integrity of bridges. During flood events, scour at bridge piers and abutments can undermine the foundations of the bridge, causing significant damage or even total structure loss. Because scour occurs below the water level during a large flood event, it can be difficult to detect and may go unnoticed unless a targeted inspection is performed.

The Kansas Department of Transportation (KDOT) is required by federal mandate to establish and maintain a bridge scour plan of action for all scour-critical bridges in the state. A plan of action can include the implementation of scour countermeasures to protect and stabilize a bridge and/or scour monitoring. Bridge scour monitoring presents multiple challenges for bridge owners, including state Departments of Transportation (DOTs).



### Legend

- USGS Stream Gauges
- ▲ KDOT Scour Critical Bridges

0 25 50 100 150 200 Miles



*Scour-Critical Bridge and USGS Gauge Locations in the State of Kansas*

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## Project Description

This research project surveyed in situ and ex situ monitoring options with particular attention on warning system options in the public domain. In situ monitoring can include portable and/or fixed devices for detecting bridge scour. Ex situ monitoring implies a statewide system that issues scour alerts to trigger bridge closures and/or inspections based on hydrologic conditions (rainfall and/or streamflow).

## Project Results

A systematic statewide system would be preferable for monitoring scour-capable events at bridges across the state. KDOT could leverage existing United States Geological Survey (USGS) and National Weather Service (NWS) tools to monitor scour-critical bridges or pursue a vendor to offer a turn-key solution. For critical locations, additional measures could be implemented at specific sites to offer more information or a higher level of monitoring.

## Project Information

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