

# Estimating the Discharge for Ordinary High Water Levels in Kansas

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## Introduction

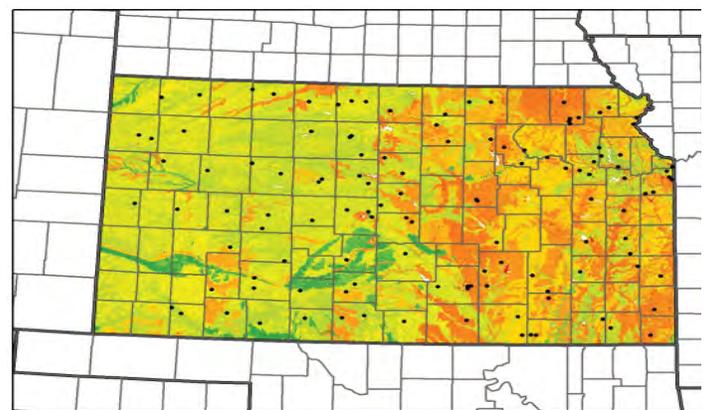
The water resource design community in Kansas, including the Kansas Department of Transportation (KDOT), is required to obtain appropriate permits for construction projects. Projects that involve stream modification, including drainage structures, must define the Ordinary High Water (OHW) level or mark and the related discharge ( $Q_{OHW}$ ) for compliance and permitting purposes.

## Project Objective

The purpose of this report is to provide guidance on both the definition of the OHW level and the hydrologic estimation of the discharge responsible for the OHW level in rural Kansas streams.

## Project Description

This report provides two methods for the hydrologic estimation of the discharge responsible for the ordinary high water level in Kansas: a regression-based approach and a HEC-HMS flood hydrograph simulation method.



0 20 40 80 120 Miles



NRCS Runoff Curve Numbers for AMC 2

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## Project Results

This frequency-based definition of the  $Q_{OHW}$  is supported by USACE (2005) which states that the OHW level should be an indication of 'regular or frequent' high-water levels. The 6.5-month event will occur about twice per year, and will be equaled or exceeded in approximately 84% of years. The return period (defined here as  $T = 1/AEP$ ) for this event is approximately 1.2 years.

USACE (2005) states a clear preference for the use of on-site, physical indicators of the OHW. Where possible, two or more of the characteristics in Table 2-2 should be used to identify the OHW in Kansas streams. The hydrologic methods presented in Chapters 3 and 4 can be used as a check on field estimates, or in lieu of field determination where physical indicators are absent, misleading, or inconclusive.

## Project Information

For information on this report, please contact: Dr. C. Bryan Young (cbyoung@ku.edu; 785.864.2999), The University of Kansas Department of Civil, Environmental, and Architectural Engineering, 2150 Learned Hall, 1530 W 15th Street, Lawrence, Kansas 66045.

USACE. 2005. Regulatory Guidance Letter No. 05-05, Subject: Ordinary High Water Mark Identification. U.S. Army Corps of Engineers.

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