Draft Minimum Stream Corridor Revisions
Chapter 1.5.6 Drainage Criteria Manual
January 2018

Introduction:
In Existing Urban Areas the preservation of a Minimum Flood Corridor is required for all channels which drain greater than 150 acres. For new Growth Areas, the preservation of a Minimum Flood Corridor is required along all channels which drain greater than 150 acres or have a defined bed and bank.

The Minimum Corridor is a no-disturbance area, also called the riparian buffer, on either side of a channel that acts as a protective barrier between development and the channel. Stream corridors also enhance adjacent property values, provide natural screening between properties, protects structures from channel erosion, improve aesthetics and provide recreational opportunities.

Maintaining minimum corridors in new growth areas is also crucial for the health of Lincoln's streams. The trees, grasses, and wetlands in the corridor improve stormwater quality by filtering out stormwater pollutants from residential and industrial areas. A robust corridor also provides improved flood flow attenuation, erosion protection, reduced thermal loading and improved aquatic habitat within the channel. Maintaining a properly sized corridor around the channels in Lincoln provides cleaner, healthier, safer streams for everyone.

Minimum Corridor Analysis:
The current methodology for determining the point where channels qualify for a minimum corridor is to protect channels which drain greater than 150 acres or have a defined bed and bank. The method is problematic because the criteria for identifying a defined bed and bank is not clearly explained in the Stormwater Drainage Design Standards. There is also a lack of consistent, practical regional stream identification criteria for the professional community to reference and implement. In the absence of clear direction on how to determine a defined bed and bank, professionals are left to develop their own definition which leads to varied and subjective approaches and results. In addition, many approaches to identifying a defined bed and bank require field investigations and reporting which consumes time and resources.

The purpose of revising the Minimum Corridor is to identify a consistent and equitable set of guidelines for delineating the minimum corridor for potential use by the City of Lincoln. The approach is to evaluate the current Minimum Flood Corridor criteria as well as other regional and national criteria for identifying and preserving minimum corridors. Then, based on the analysis, identify potential methods to simplify and standardize the Minimum Flood Corridor

Minimum Corridor Analysis of Lincoln Streams:
A total of 155 1st Order streams were identified within the GIS study area in the Oak Creek Watershed. The streams were grouped into three categories: streams with less than 20 acres of contributing drainage area, streams with 20 to 40 acres of contributing drainage area, and streams with more than 40 acres of contributing drainage area. Of the 74 streams with less than 20 acres of contributing drainage area, 12 channels were identified in GIS as having a defined bed and

bank. Of the 16 channels with 40 acres or more of contributing drainage area, all 16 channels were identified in GIS as having a defined bed and bank.

Other Minimum Corridor Criteria:
Alternative methods for establishing a minimum stream corridor were investigated and found to typically rely on calculation of the contributing drainage area. The literature review found that the contributing drainage area method is used by multiple agencies and governing bodies. Regional standards such as the Kansas City Metropolitan Chapter of the American Public Works Association Design Guidance Document Section 5600, February 2011 (APWA 5600) recommend stream buffers begin at the 40 acre contributing drainage area.

The City of Gardner, Kansas (Development Criteria Manual Chapter 14.10) requires stream buffers for drainage areas starting at 40 acres, but also requires stream buffers for sites less than 40 acres where the existing stream network is not planned to be enclosed in a pipe network.

The City of Groveport, Ohio (Stream Corridor Protection Zone Delineation and Mitigation Technical Guideline Manual, 2013) requires a Stream Corridor Protection Zone for all channels based on the contributing drainage area, with a minimum setback width of 50 ft and the maximum set as the wider of the calculated setback or the FEMA designated floodway.

Platte County, Missouri (Platte County Subdivision Regulations of 1992 Article IV, Section 405.225) requires stream corridors for all channels starting at a 25 acre contributing drainage area.

Although the simplified defined bed and bank approach did not yield consistent results for identifying channels, it was observed that where the defined bed and bank criteria becomes subjective centers around the 40 acre contributing drainage area.

Existing Minimum Corridor Buffer Width:
The current method for delineating the minimum corridor width is based on: Channel width plus six time the depth of the channel plus 60 feet.

Minimum Corridor and Buffer Width Recommendations:
The existing method of using a defined bed and bank to delineate minimum corridor is subjective and produces widely varying results from one site to another. The recommended approach to minimum corridor definition is to revise the current criteria to remove the defined bed and bank analysis and to require minimum corridor protection for all streams with 40 or more acres of contributing drainage area.

This recommendation is supported by the analysis data and is consistent with other regional drainage criteria manuals such as APWA 5600.

The buffer width delineation process can also benefit from simplification. The recommended approach to determining the minimum corridor width is to revise the current criteria to assign the buffer width based on the contributing drainage area for streams with drainage areas under 300 acres as follows:

Recommended Minimum Corridor and Buffer Width:

Contributing Drainage Area in Acres (DA)	**Buffer Width**
DA < 100 acres	90 foot buffer width centered on channel
100 Ac < DA < 200 Ac	100 foot buffer width centered on channel
200 Ac < DA < 300 Ac	120 foot buffer width centered on channel
300 Ac < DA	Buffer width = channel width plus six time depth of channel plus 60 feet