Meander Belt Width Procedures: Developing a Regional Model for Southern Ontario

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The meander belt width has been described as the space a watercourse occupies (or can occupy) in a floodplain, or the maximum extent to which a watercourse migrates. Delineation of the meander belt is identified in Ontario through both land use planning policies and species at risk legislation, as a tool or means by which to protect public health and safety and protect natural areas adjacent to watercourses. Current procedures utilize site-specific historical migration assessments, or empirical equations developed from watercourses outside Ontario. The watercourses from which most of these empirical equations are derived differ from geomorphic conditions and morphological types in southern Ontario. For those empirical equations developed within southern Ontario, the predictive meander belt width does not often correlate well with other models. Many southern Ontario watercourses have experienced a degree of anthropogenic modification due to land clearing and agricultural practices or urban development, and the available historic record often lacks the information necessary to conduct historical meander morphology and migration assessments. In the case of small, low order watercourses, the meander belt width dimension is driven by the application of empirical relations. There is limited research concerned with the prediction and variables controlling meander belt development, particularly for smaller catchments. Consequently, the reliability of these procedures used in southern Ontario needs to be better understood.

In partnership, Beacon Environmental Limited and the University of Western Ontario, have initiated a research project to evaluate the current standards of practice for meander belt delineation in southern Ontario, focusing on empirical equations to determine whether these models effectively predict belt width dimensions. Drawing on a sample population of river reaches in the Credit River watershed this project will review existing procedures, and develop new empirical relations between the meander belt width and modifying/controlling variables known to affect meander dynamics: total and unit stream power, channel width and boundary materials. The objective of this presentation is to introduce the audience to the research framework, and provide insight to the study procedures and progress. The ultimate goal of the research is the improvement of belt width assessments in the management of stream corridors in southern Ontario.