

Case Study: L-THIA use for watershed management in Indiana.

Larry Theller, GIS Analyst, Purdue University
Kathleen Hagan, Watershed Specialist, IDEM

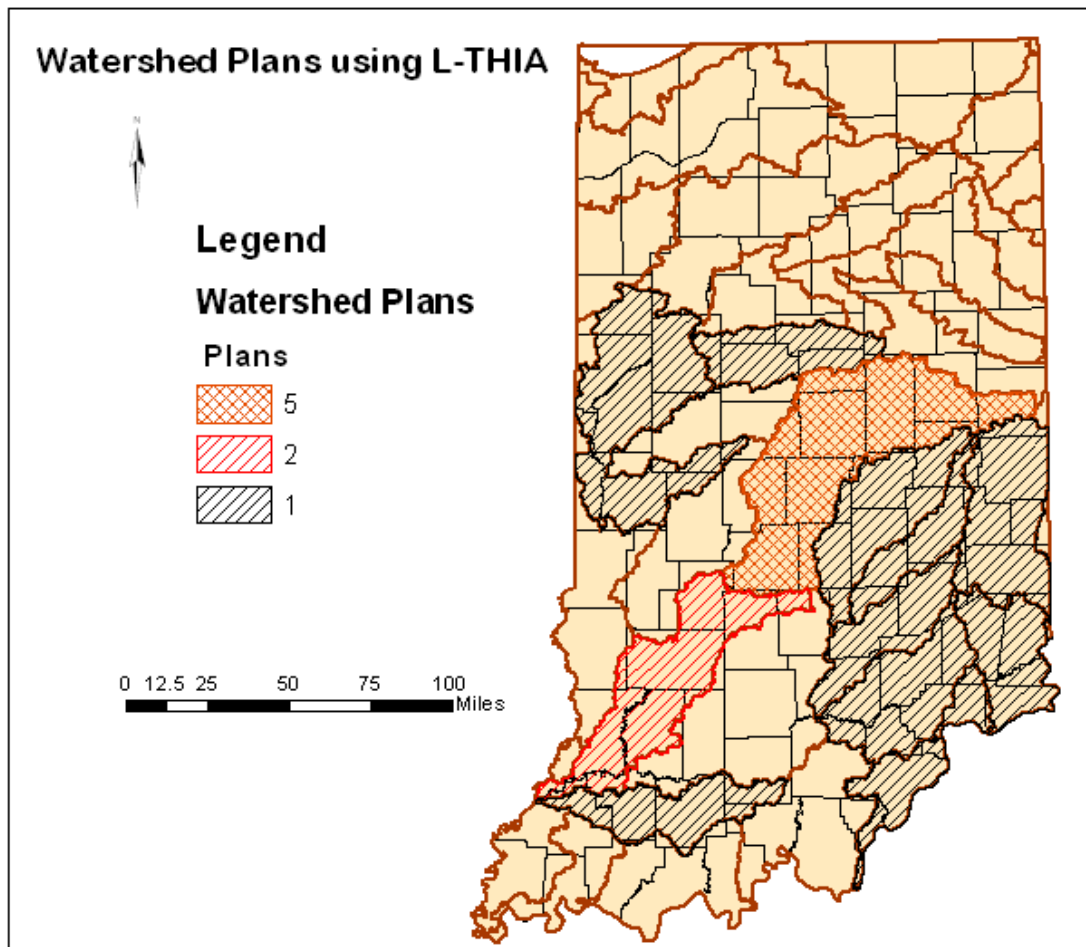


Land use changes can significantly impact groundwater recharge, stormwater drainage, and water pollution. The **Long-Term Hydrologic Impact Assessment** (L-THIA) model was developed as a tool to assess the water quality impacts of land use change. The model produces maps of runoff depth and volume along with nonpoint source pollution loading of the area.

Based on community-specific climate data, L-THIA estimates changes in recharge, runoff, and nonpoint source pollution resulting from past or proposed development. It estimates long-term average annual runoff for land use and soil combinations, based on actual long-term climate data for that area. By using many years of climate data in the analysis, L-THIA focuses on the average impact, rather than an extreme year or storm.

Since 2002, there have been at least 17 watershed management plans (funded by IDEM's 319 or 205(j) program, or submitted to IDEM for review to be eligible for implementation funding) that have used L-THIA. Most commonly, L-THIA was used to estimate existing pollutant loads in a watershed. Sometimes L-THIA was used when there was no monitoring data available, and sometimes it was used to provide a comparison with loads calculated from monitoring data.

In some cases, L-THIA was used to estimate flow when there was no flow data available. L-THIA was also used to determine the impervious area in a watershed, and to determine the potential water quality/quantity impacts of projected growth in a watershed.



HUC 8	Watershed	# plans using L-THIA
05080003	Whitewater	1
05090203	Middle Ohio-Laughery	1
05120107	Wildcat	1
05120201	Upper White	5
05120108	Middle Wabash - Little Vermillion	1
05120202	Lower White	2
05120204	Driftwood	1
05120205	Flatrock Haw	1
05120206	Upper East Fork White	1
05120207	Muscatatuck	1
05120209	Patoka	1
05140101	Silver-Little Kentucky	1
	Total	17

Data source:

Kathleen Hagan, Watershed Specialist

IDEM - Office of Water Quality

MC 65-44 Shadeland

Indianapolis, IN 46204-2251

317-308-3197

www.watersheds.in.gov