

SEPTIC SUITABILITY MODEL FOR KENT COUNTY

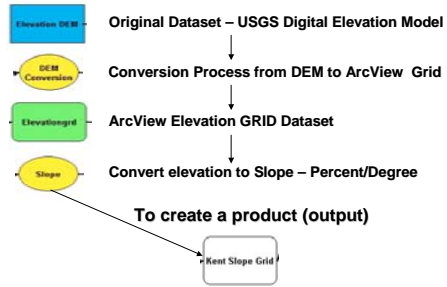
Annis Water Resources Institute
Grand Valley State University



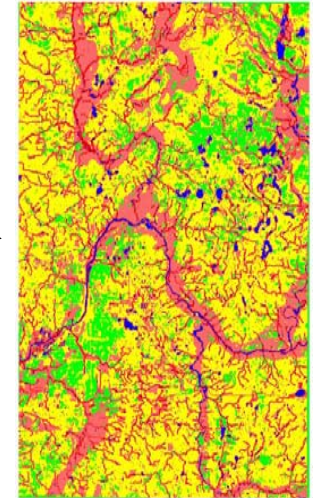
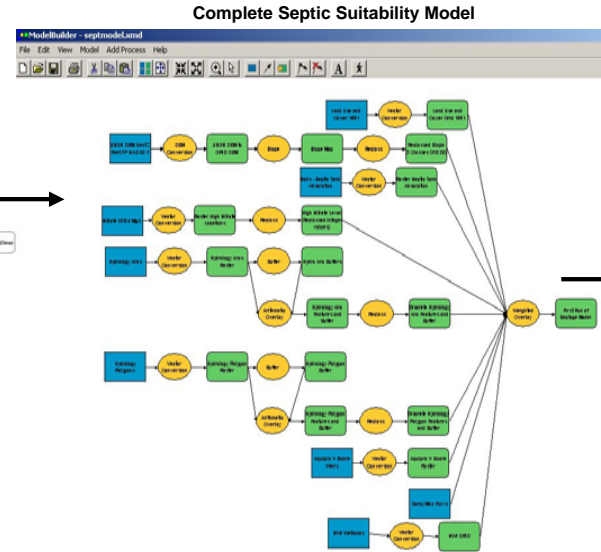
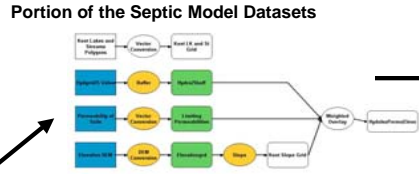
The Kent County Soil Suitability Model shows which areas in Kent County are best suited for domestic septic systems. Many data sources are incorporated into this model. It takes into account information such as groundwater recharge areas, proximity to surface water, and groundwater contamination. While it is not so precise as to be able to predict the suitability of a specific lot, it has a predictive power similar to that of a weather report. The model can be used as a decision making tool for land use planners and an initial indicator of septic suitability for local sanitarians who issue septic permits.

Making a GIS model is a lot like baking bread. Various themes (ingredients) are mixed to produce the final product. As with bread, all ingredients are helpful, but while you need a few cups of flour, just a pinch of salt will do. Likewise, themes that influence the modeled phenomenon most are weighted more heavily than those that are less influential. Themes may also need to be processed (like wheat made into flour) before they can be used. They may be converted from one coordinate system to another or one data format to another. The final model doesn't look like the inputs any more than a bread tastes like flour or yeast, but these "ingredients" are nonetheless integral.

Multiple datasets (Inputs) linked in parallel and chain processes or functions to form Output(s)

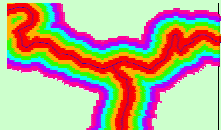


Creation of a Spatial Model – parallel datasets and processes used to simulate reality



Final Output of Septic Suitability Model

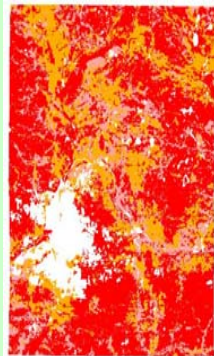
Septic Suitability Model Components



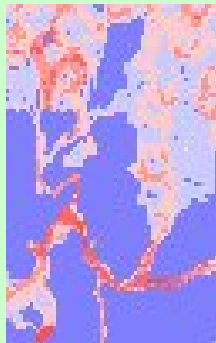
Surface Water Proximity Buffers



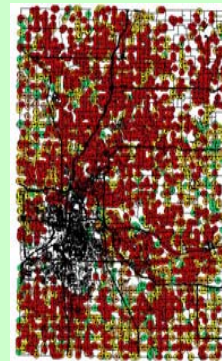
Topographic Slope (Digital Elevation Model)



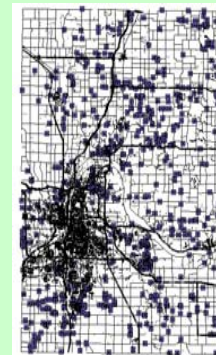
Soil Permeability



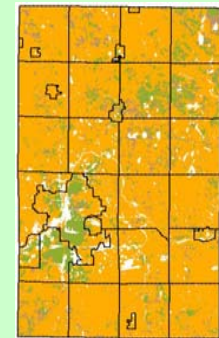
Groundwater Recharge Areas



Groundwater Wells - Surface Contamination Susceptibility (AQUIPRO)



Groundwater Nitrate Contamination



Soil Septic Tank Absorption Suitability