

# Chatham County Farmland Prioritization Mapping Project

## Background

This project was conducted in collaboration with Chatham County Soil and Water Conservation District, Chatham County GIS Department, and Triangle Land Conservancy. Three in-person meetings were held to discuss model structure, evaluation metrics, and prioritization goals. The models were based on previous work by Conservation Trust for North Carolina (CTNC). CTNC published Triangle Farms for Food: Strategy and Action Plan in November 2016, which included farmland prioritization mapping and detailed methodology. Using their existing methodology, we incorporated updated datasets, locally sourced information, and stakeholder input to develop a customized farmland prioritization model tailored specifically to Chatham County.

[Click here to view their report.](#)

[Click here for the GIS mapping results.](#)

[Click here for their prioritization mapping methodology.](#)

## Data Preparation

All data was projected into the NAD 1983 State Plane North Carolina FIPS 3200 Feet. Data was clipped to the Chatham County boundary as needed. For model standardization, raster datasets were reclassified on a 0 to 100 scale. 100 represents highest suitability and 0 represents not suitable. Vector datasets were converted to rasters using the Polygon to Raster tool in ArcGIS Pro and then reclassified on the same 0-100 scale. All raster layers were aligned to consistent cell size (30m) prior to analysis.

## Model Criteria

**Existing Ag Land.** National Land Cover Data (NLCD, 2024). This dataset is provided by USGS and is at a 30-meter spatial resolution with a 16-class legend. [Click here to learn more.](#)

	Point Values
Pasture and Cultivated Crops	100
All other values	0

**Presence of Prime Ag Soils.** Soil Survey Geographic Database (SSURGO, 2024). This dataset is provided by USDA and is at a 30-meter spatial resolution. [Click here to learn more.](#)

	Point Values
Prime Farmland	100
Farmland of Statewide Importance	100
Prime Farmland if drained	80
Prime farmland if protected from flooding or not frequently flooded during the growing season	80
farmland if drained and either protected from flooding or not frequently flooded during the growing season	60
Not prime farmland	0

**Distance from Urban Areas.** Chatham County GIS dataset (02/11/2026). The municipality layer was used with a multiple ring buffer in Euclidean distance.

	Point Values in Rural Model	Point Values in Urban Model
.5 mile or closer	0	100
.5 to 1 mile distance	40	80
1 to 2 miles	60	60
2 to 3 miles	80	40
Greater than 3 miles	100	0

**Proximity to Voluntary Ag Districts (VADs).** Chatham County GIS dataset (02/11/2026). A multiple ring buffer tool in ArcPro was used to create Euclidean distance.

	Point Values
Less than .5 mile	100
Less than 1 mile	60
Less than 2 miles	40
Greater than 2 miles	0

**Proximity to Agriculture Conservation Easements.** Chatham County GIS Dataset (02/11/2026). Filtered conservation easements where agricultural easements were yes. A multiple ring buffer tool in ArcPro was used to create Euclidean distance.

	Point Values
Less than .5 mile	100
Less than 1 mile	60
Less than 2 miles	40
Greater than 2 miles	0

**Proximity to Degraded Water.** NC Department of Environmental Quality. NC DEQ 2022 Integrated Report. The dataset was filtered to waters classified as Category 5 which are impaired and require restoration. A buffer was created in ArcPro using Euclidean distance. [Click here to learn more.](#)

	Point Values
.25 miles or less	100
Greater than .25 mile	0

**Proximity to Approved Development.** Chatham County dataset (02/11/2026). Subdivisions layer was filtered to remove minor subdivisions, proposed subdivisions, and subdivisions with less than 10 homes. For the urban model, the subdivisions were excluded when buffering so they would not be included as a highly suitable location. Both models were buffered using Euclidean distance.

	Point Values for Rural Model	Point Values for Urban Model
.25 miles or less	0	100
.25 miles or greater	100	0

**Location of Feed Stores and Processing Plants.** Data provided by Susannah Goldston, District Director of Chatham Soil and Water Conservation District. A buffer was created using Euclidean distance.

	Point Values
5 miles or less	100
5 miles or greater	0

**Future Agriculture Land Use.** Chatham County dataset. The Chatham County Comprehensive Plan from 2017 is a long-range document that sets goals for the next 25 years. It includes a future land use framework and map on page 45. [Click here to learn more.](#)

	Point Values
Future Ag Land	100
Non-Future Ag Land	0

**Land in Present Use.** Chatham County PUV dataset (02/12/2026).

	Point Values
Land in Present Use	100
Land not in Present Use	0

**Water Intake Zones.** NC Dept of Environmental Quality. NC Surface Water Supply Watersheds (Updated 07/10/2024). [Click here to learn more.](#)

	Point Values
Intake Zones	100
Non-Intake Zones	0

## Suitability Modeler

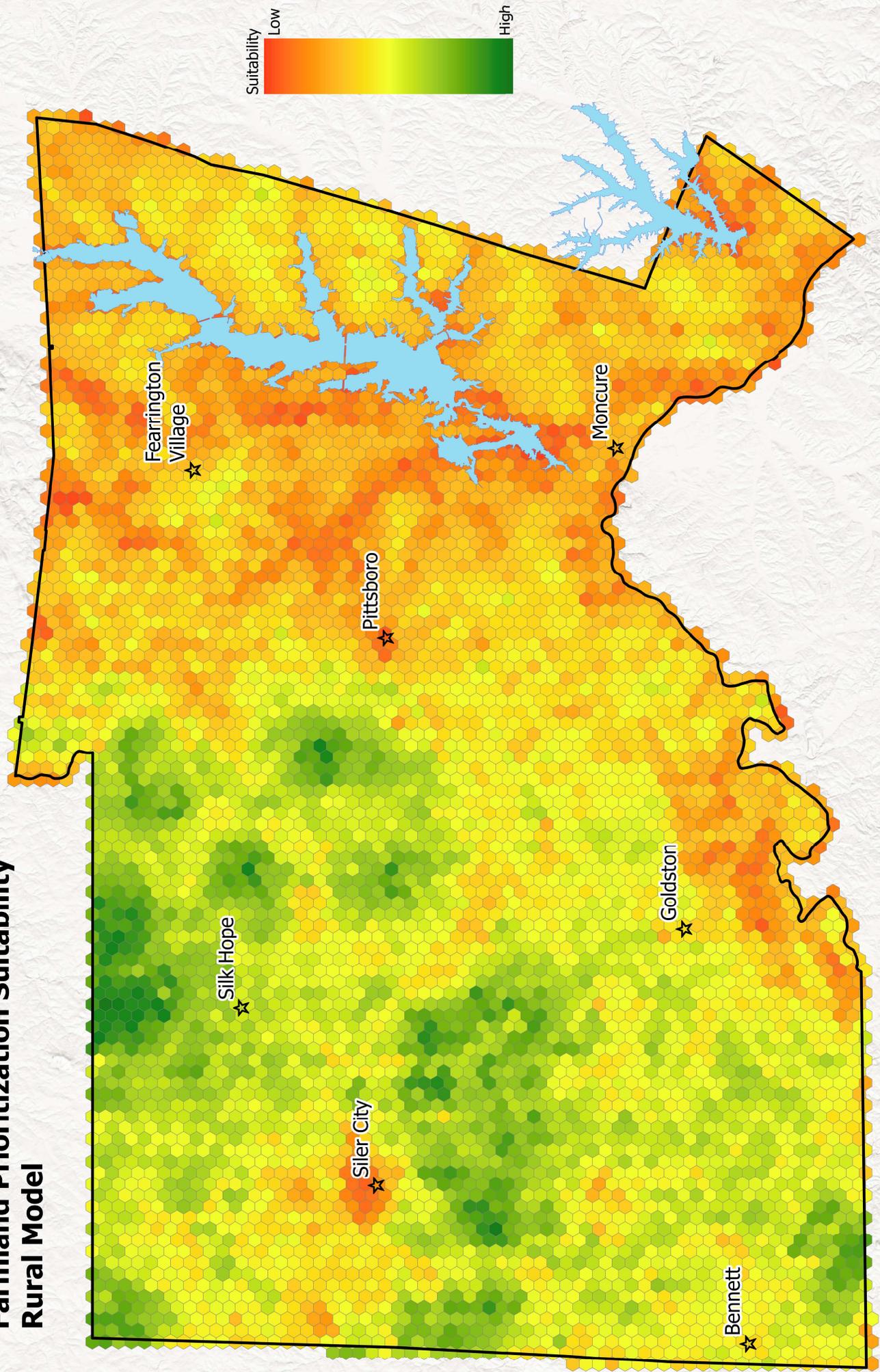
ArcGIS Pro’s Suitability Modeler was used to generate the models. Each standardized raster was assigned a percentage weight. Weights were determined through stakeholder meetings based on perceived importance for agriculture viability and conservation strategy. The total weight for each model equals 100. Because the Suitability Modeler does not allow zero values, all 0 scores were converted to 1 during transformation which is functionally 0.

***The rural model emphasizes soil quality and conservation clustering while the urban model emphasizes proximity to development and infrastructure.***

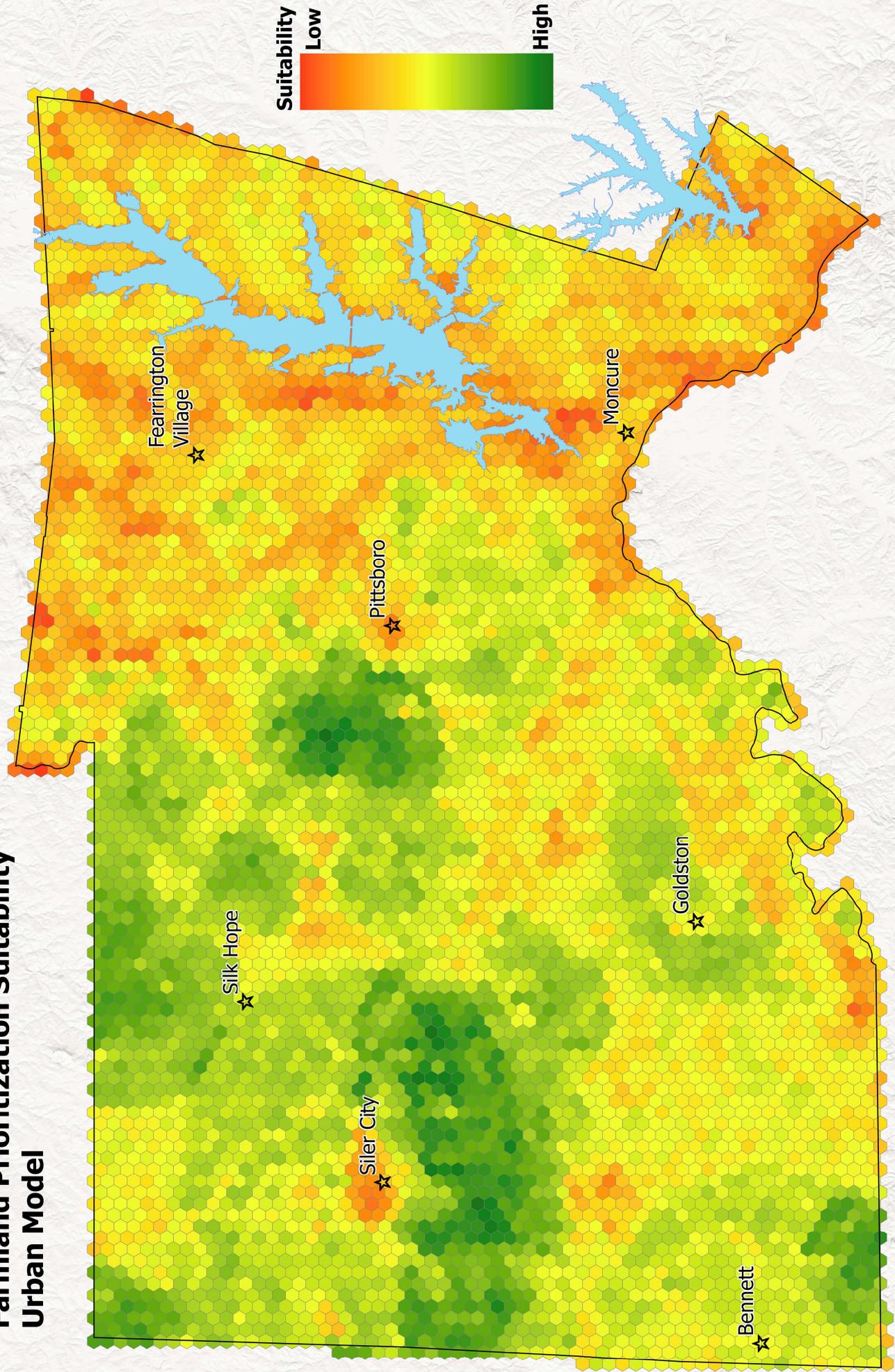
Criteria	Rural	Urban
Ag Land	18	10
Ag Soil	25	25
Distance from Municipalities	2	10
Proximity to VADs	10	NA
Proximity to Conservation Easements	25	25
PUV	10	10
Future Ag Land	2	NA
Proximity to Degraded Water	2	NA
Intake Zones	2	NA
Approved Development	2	10
Access to Feed Stores	2	10
Total	100	100

Following suitability modeling, an eighth-acre tessellation grid was generated across the county. The mean suitability value within each grid cell was calculated using zonal statistics. Tessellations are used to emphasize areas for farmland preservation prioritization rather than individual landowner parcels.

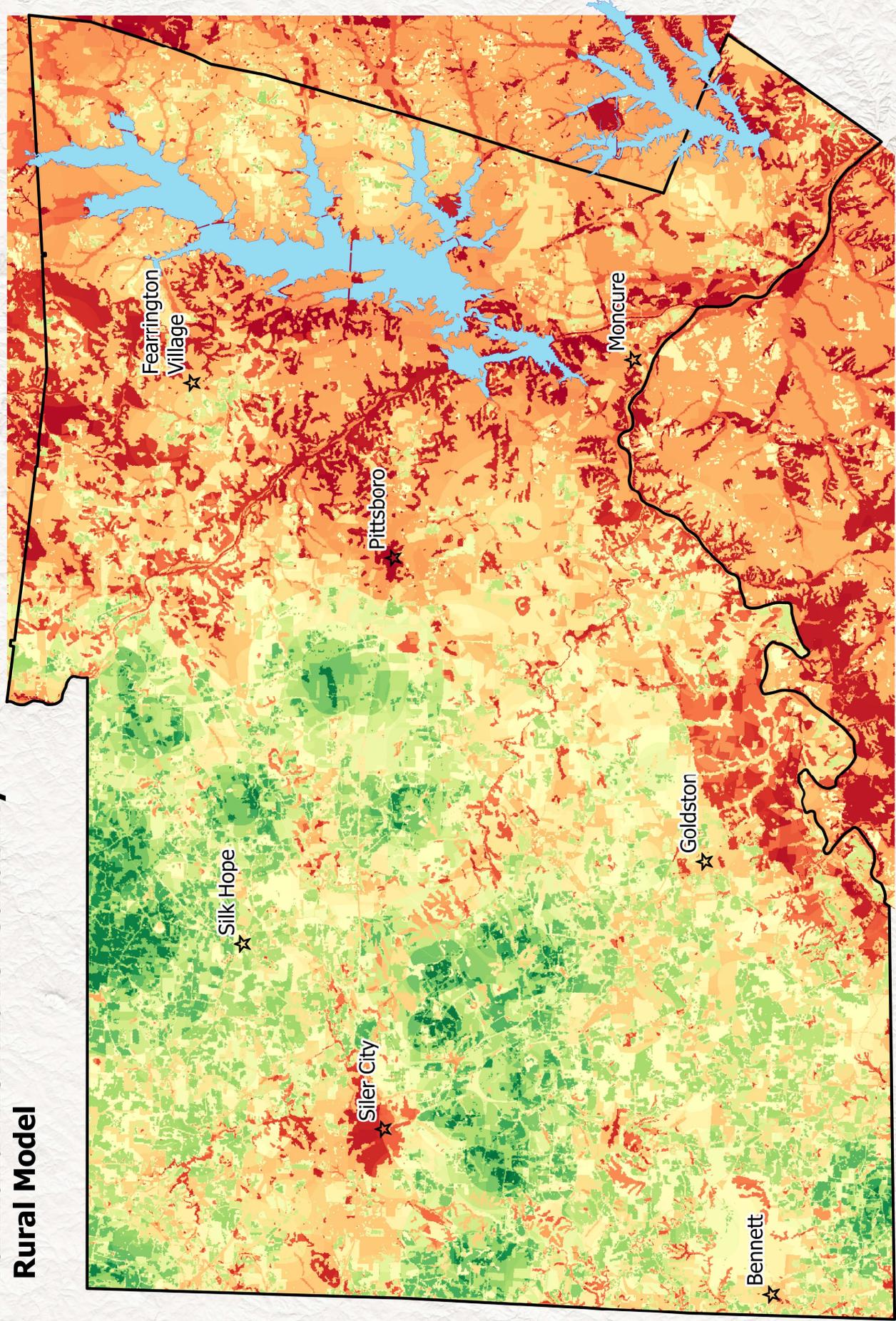
# Farmland Prioritization Suitability Rural Model



# Farmland Prioritization Suitability Urban Model



# Farmland Prioritization Suitability Rural Model

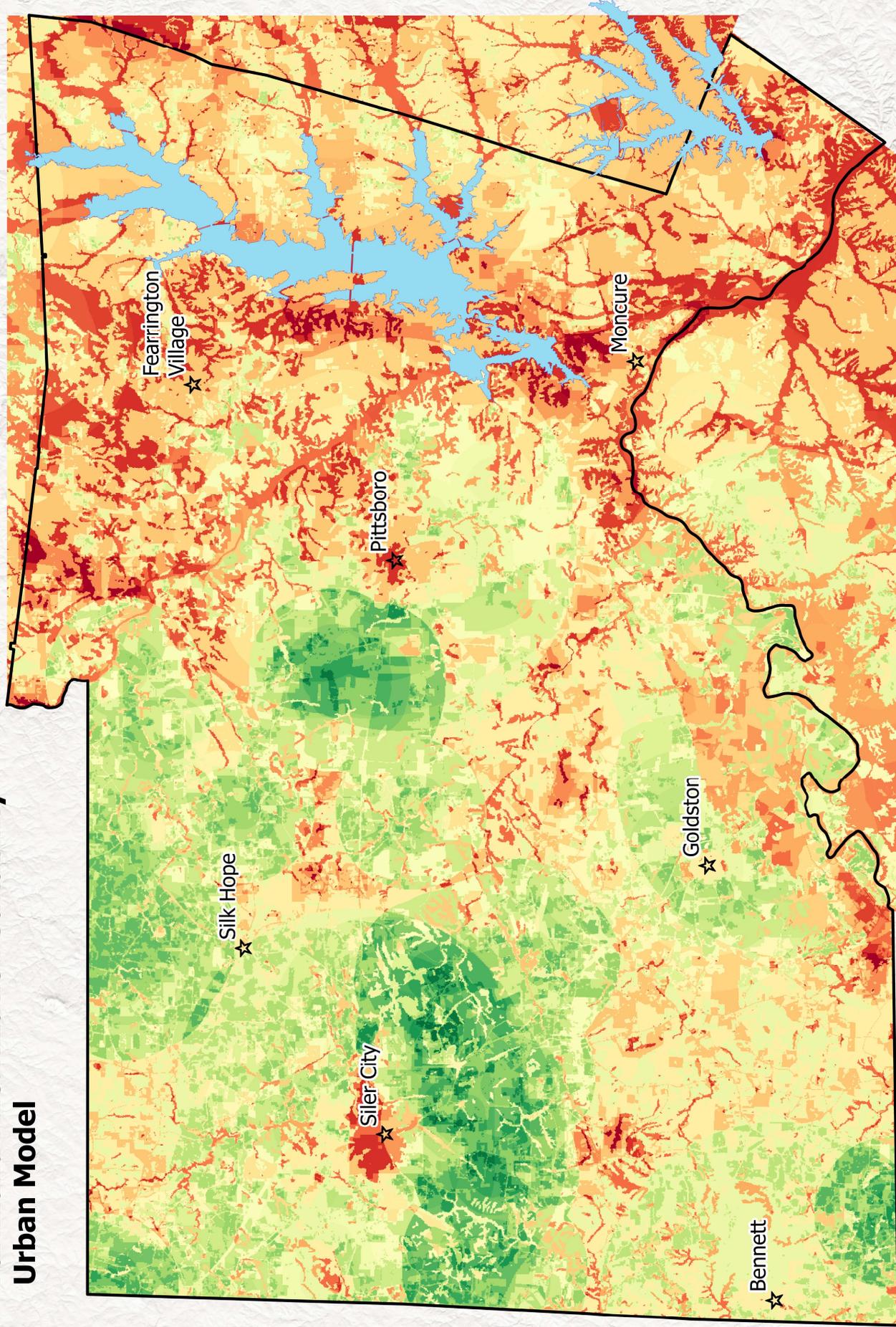


High  
Suitability



Low  
Suitability

# Farmland Prioritization Suitability Urban Model



High  
Suitability



Low  
Suitability