

Watershed & Hydrological Analysis

200 Rough Point Lane

Jackson County, TN · ~301 acres

DRONE-DERIVED DTM · WHITEBOXTOOLS

296.2 m

Relief

258

Watersheds

171

Sub-basins

49.3 km

Stream Network

14.5 km

Main Channels

6

Max Stream Order

29.5°

Mean Slope

221.6 ac

Dominant Basin

4.7%

High Wetness

Data Source & Methodology

Analysis performed on a drone-derived Digital Terrain Model (DTM) from photogrammetric processing of 8,054 aerial images captured with a DJI Matrice 4TD. DTM downsampled from 5 cm/px to 1m/px for hydrological processing.

- ▶ Depression filling — hydrological preprocessing to remove sinks
- ▶ D8 flow direction — 8-direction pour point model
- ▶ Flow accumulation — upslope contributing area per cell
- ▶ Strahler stream ordering — 1=headwater, 6=main trunk
- ▶ TWI = $\ln(\alpha / \tan(\beta))$ — saturation potential
- ▶ Hillslope delineation — slopes draining to each stream link

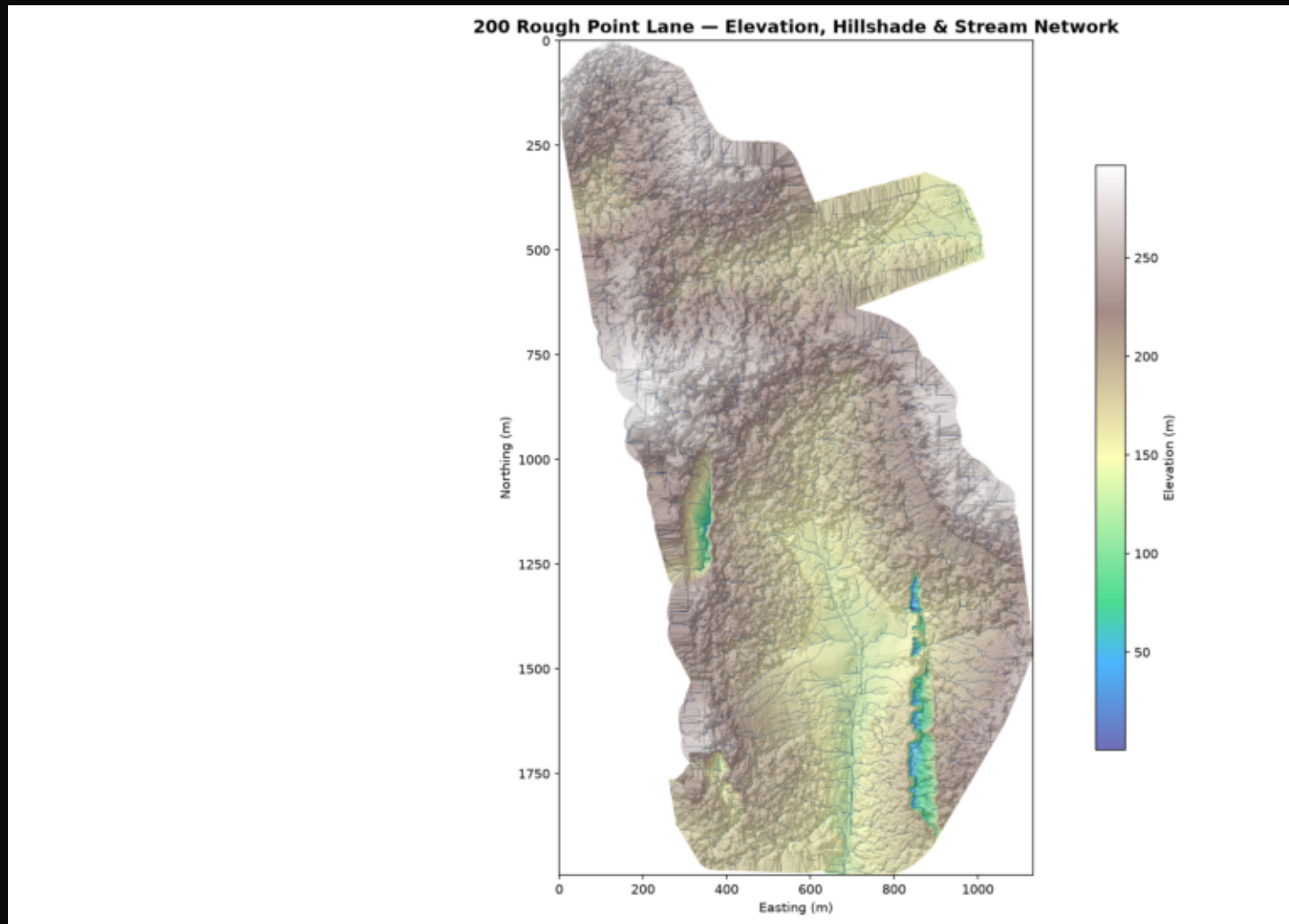
Tools: WhiteboxTools (open-source), rasterio, matplotlib — all free, no license required.

Generated by Brandli Drone Solutions, LLC

listingcdn.com

Elevation, Hillshade & Stream Network

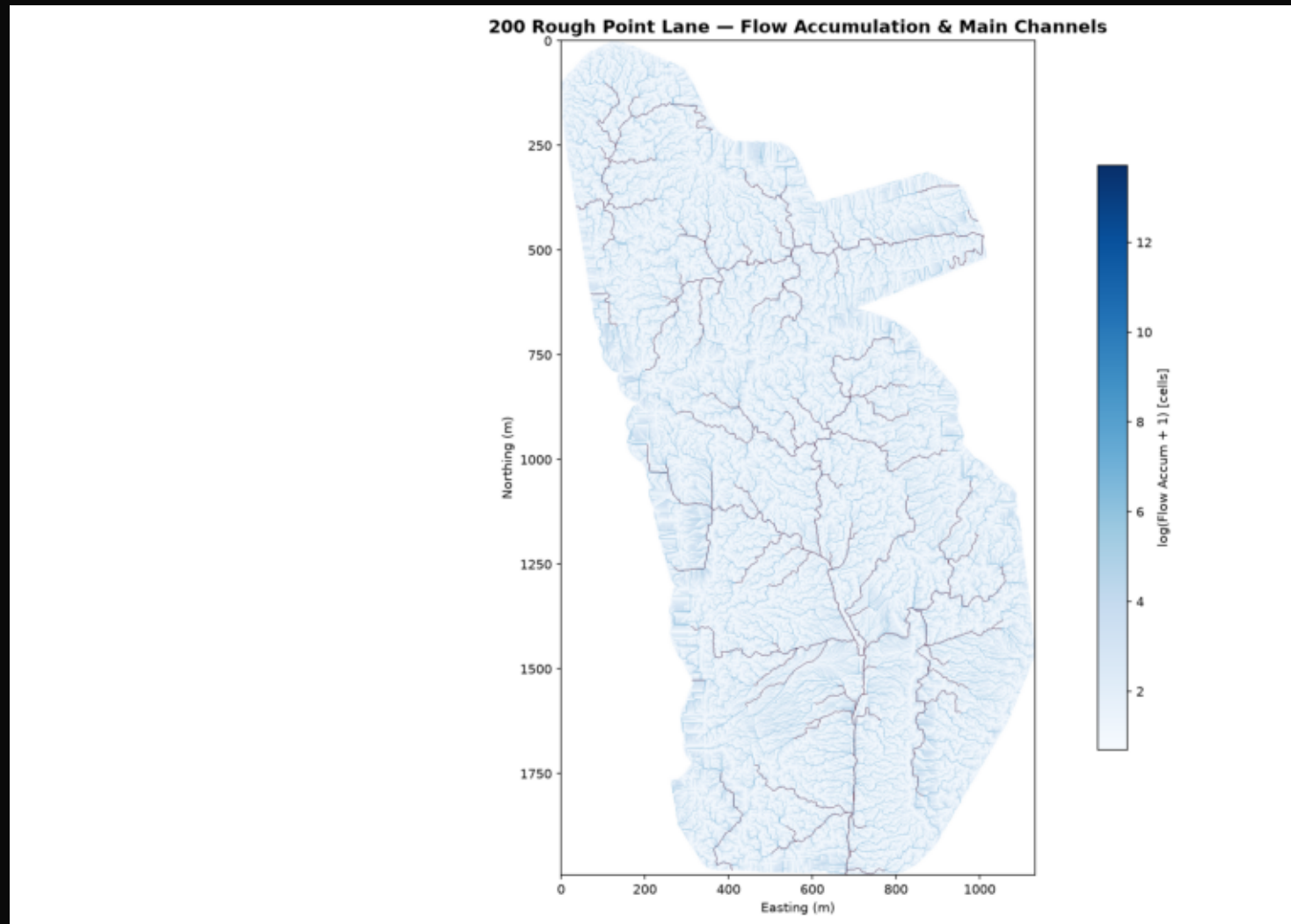
200 Rough Point Lane · Jackson County, TN



Shaded relief with overlaid stream network. Elevation ranges 0.4–297m across the property. The dendritic drainage pattern shows water flows south through a central valley with a deep ravine on the east side.

Flow Accumulation & Main Channels

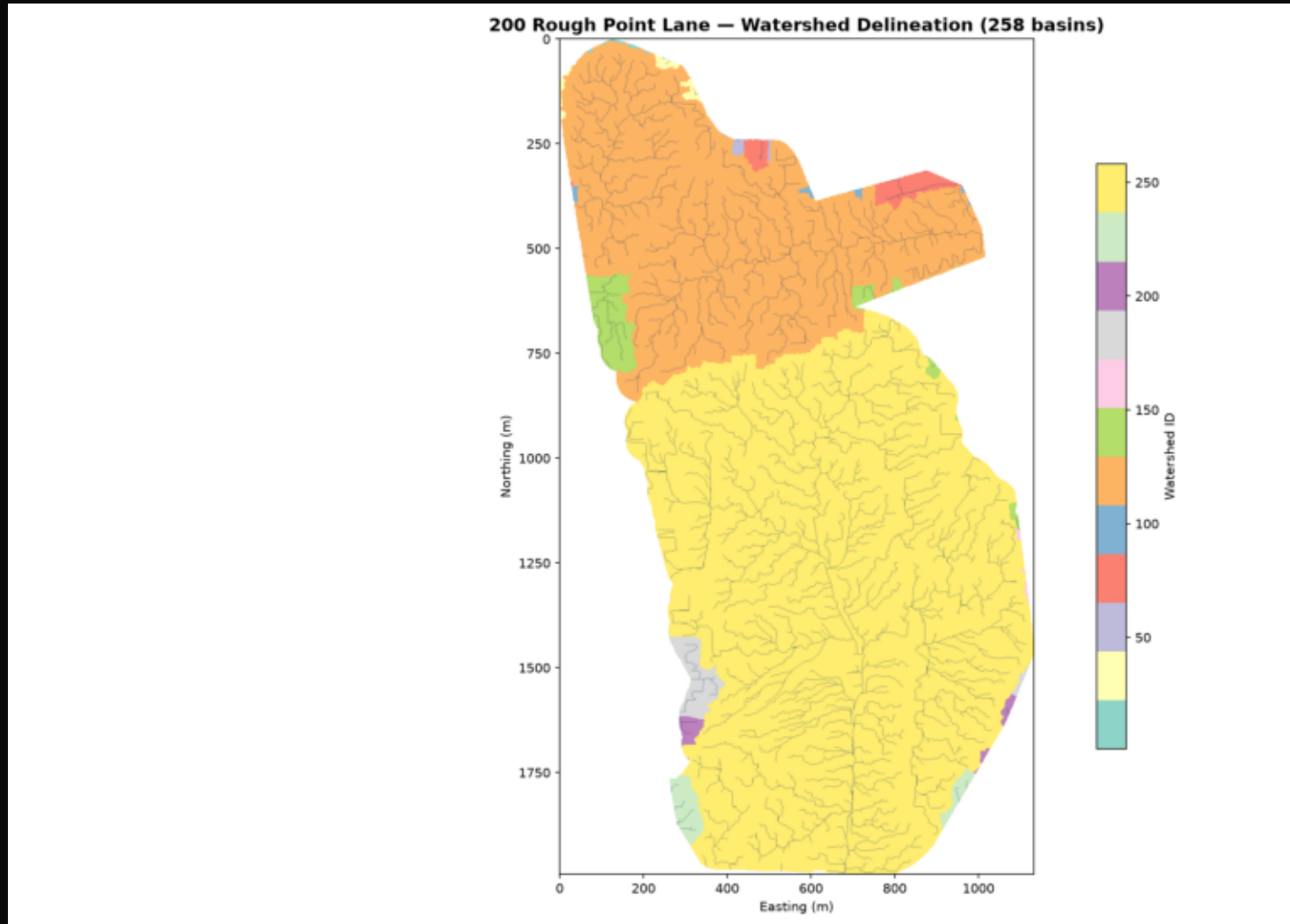
200 Rough Point Lane · Jackson County, TN



Upslope contributing area showing where surface runoff concentrates. 14.5 km of main channels are highlighted. Brighter areas indicate higher water accumulation — these are the primary drainage paths during rainfall events.

Watershed Delineation (258 basins)

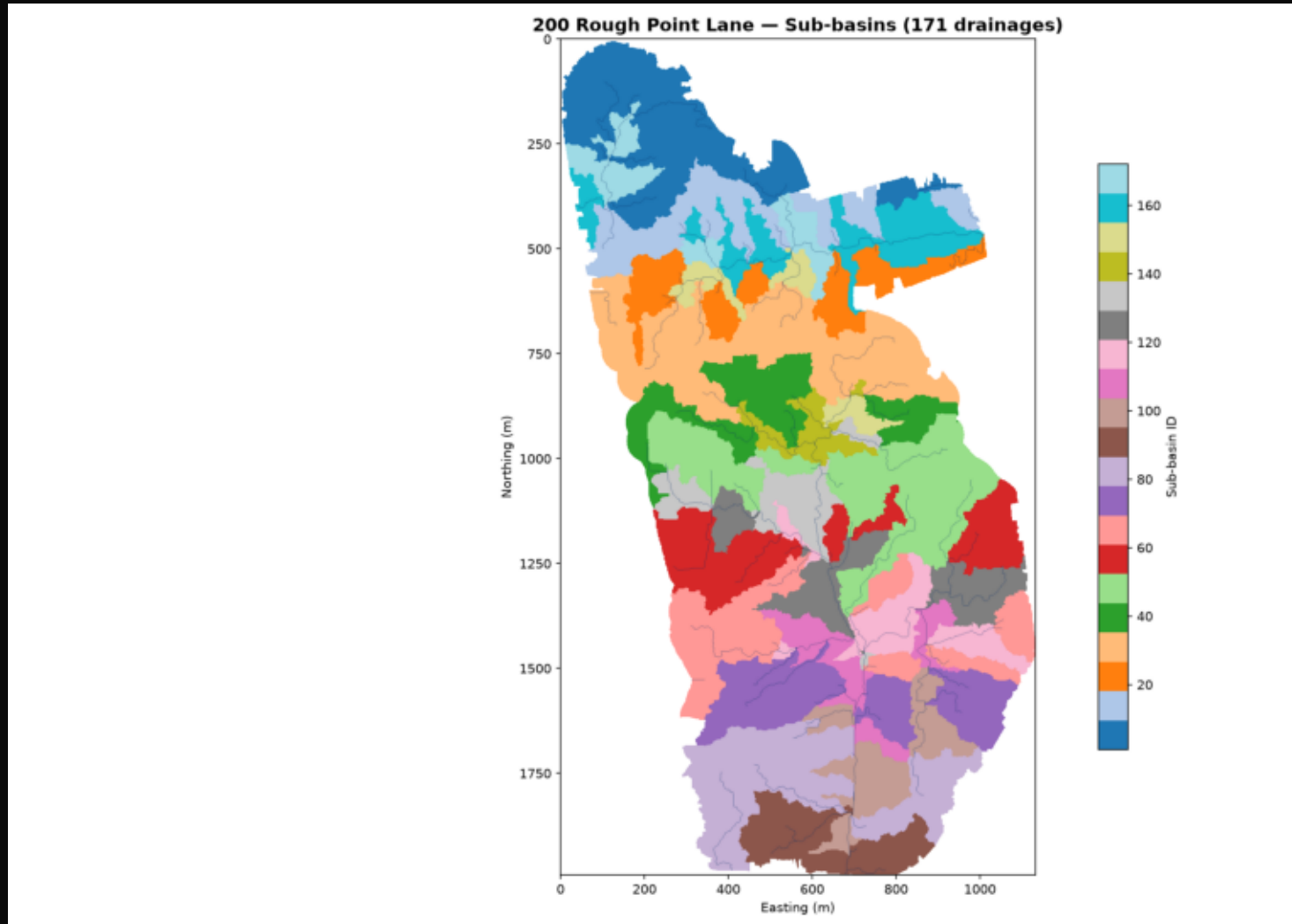
200 Rough Point Lane · Jackson County, TN



Edge-draining watersheds identified from D8 flow direction. Each color represents a distinct drainage basin. 258 basins were delineated, with the dominant basin covering 221.6 acres — closely matching the property boundary.

Sub-basins (171 drainages)

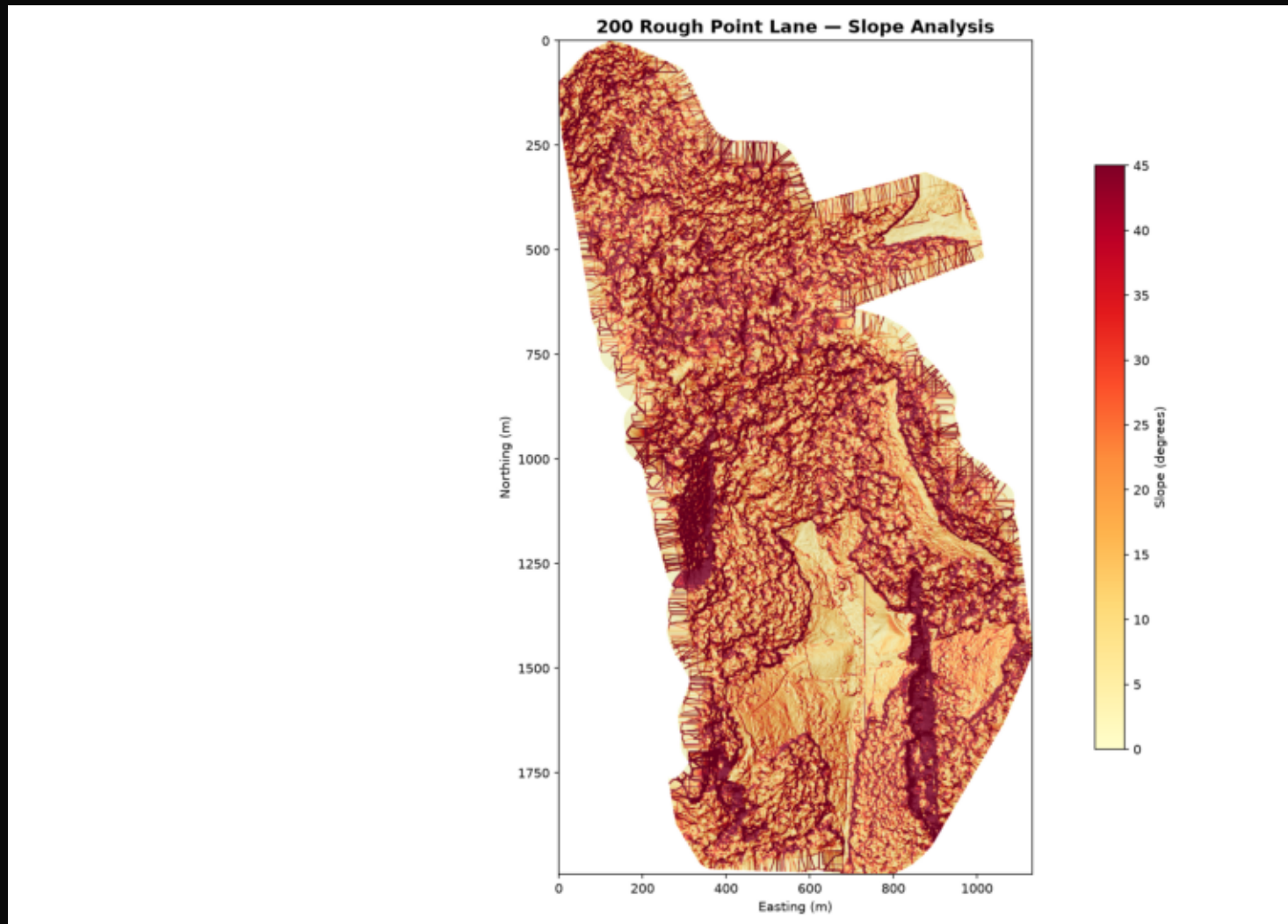
200 Rough Point Lane · Jackson County, TN



Sub-basins delineated per stream link, showing finer-scale drainage units. 171 sub-basins were identified, providing detailed drainage segmentation useful for site planning and erosion management.

Slope Analysis

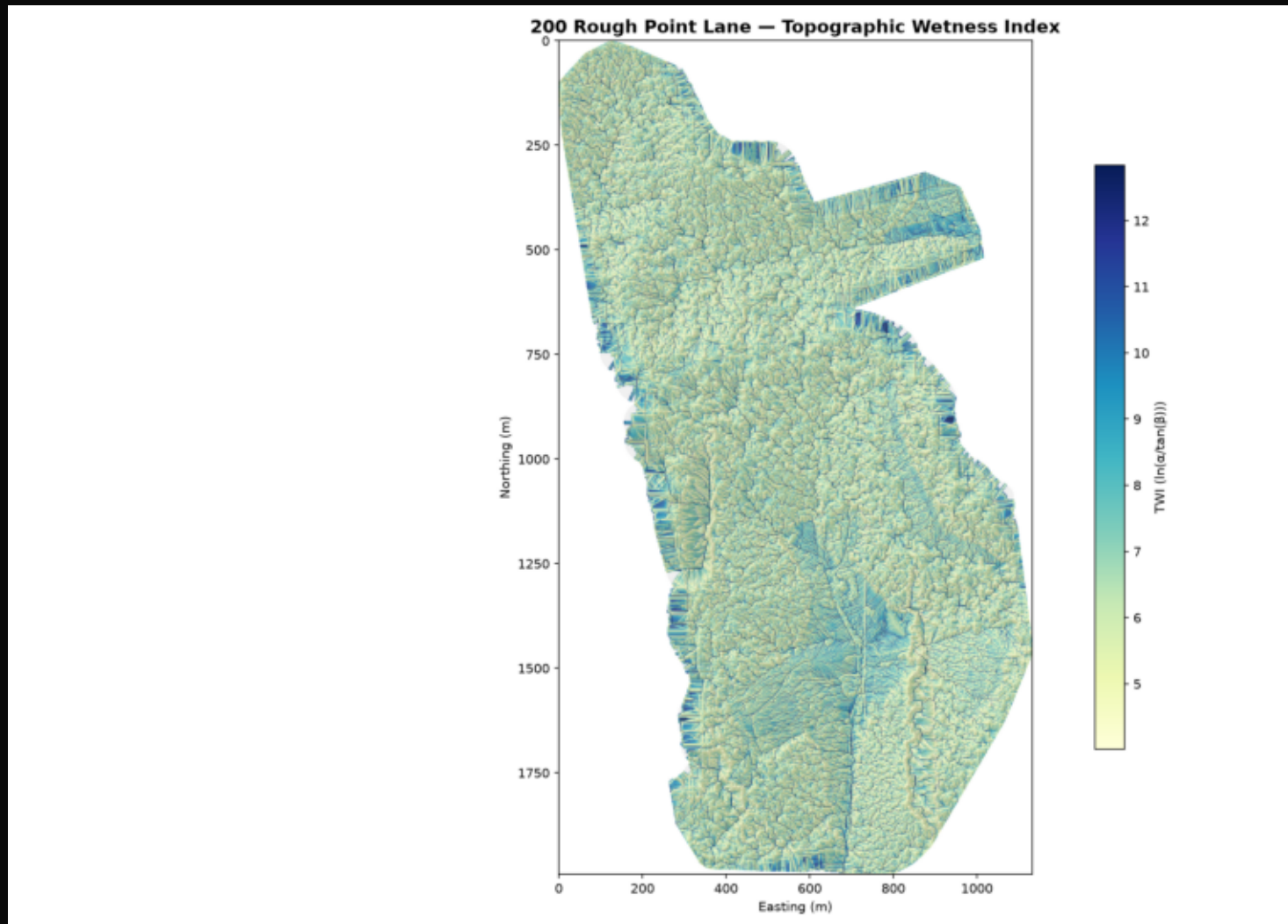
200 Rough Point Lane · Jackson County, TN



Slope in degrees. Mean slope is 29.5° — 32% of the property is steep (>25°), 20% moderate (10-25°), and 11% gentle (<10°). Green areas are buildable; red areas may require engineering for construction access.

Topographic Wetness Index

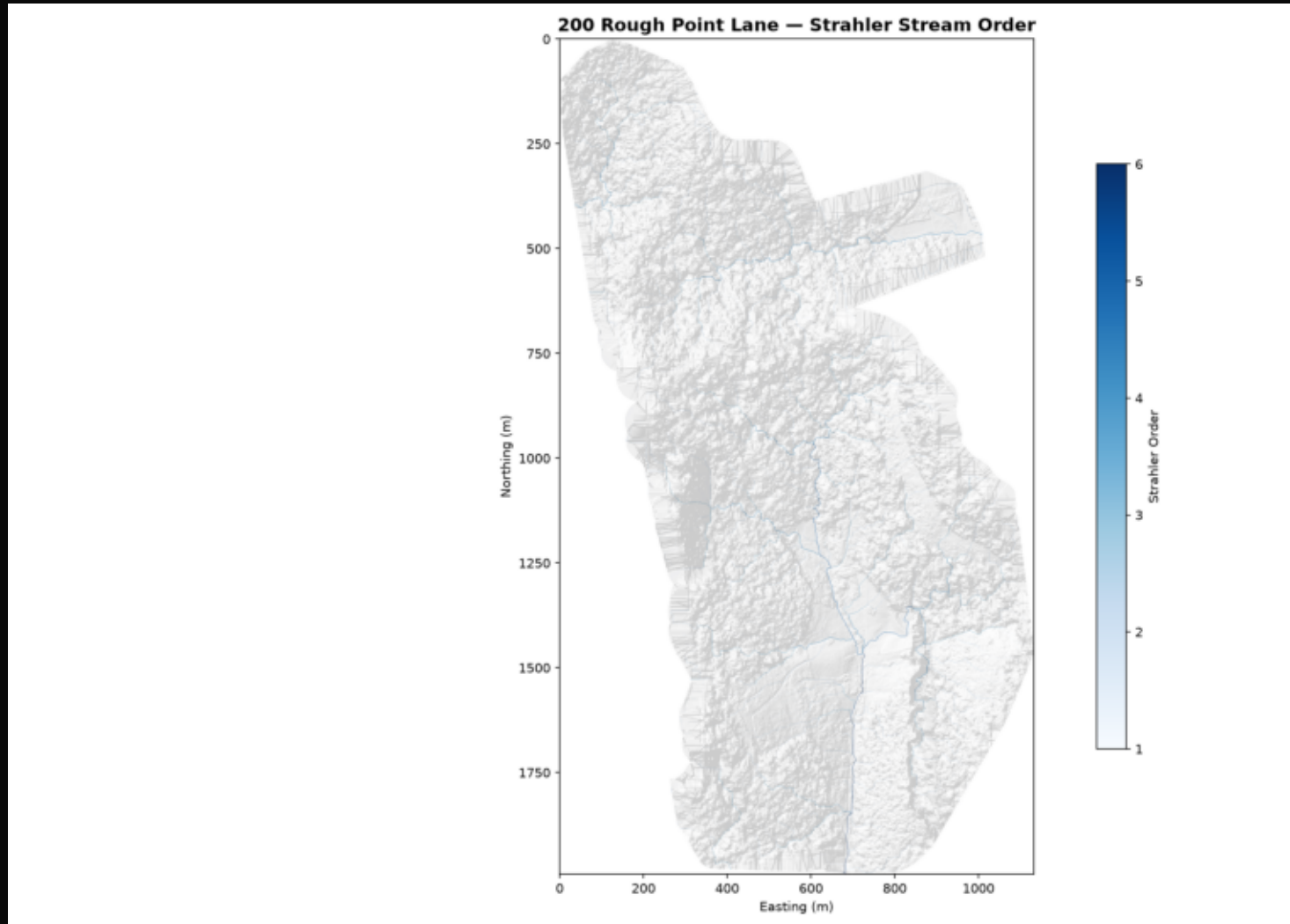
200 Rough Point Lane · Jackson County, TN



TWI predicts soil saturation zones using the formula $TWI = \ln(\alpha / \tan(\beta))$. Range 3.6–24.8. Blue areas (4.7% of property) have high wetness potential — locations where groundwater may emerge and soils remain saturated. Critical for septic suitability and foundation planning.

Strahler Stream Order

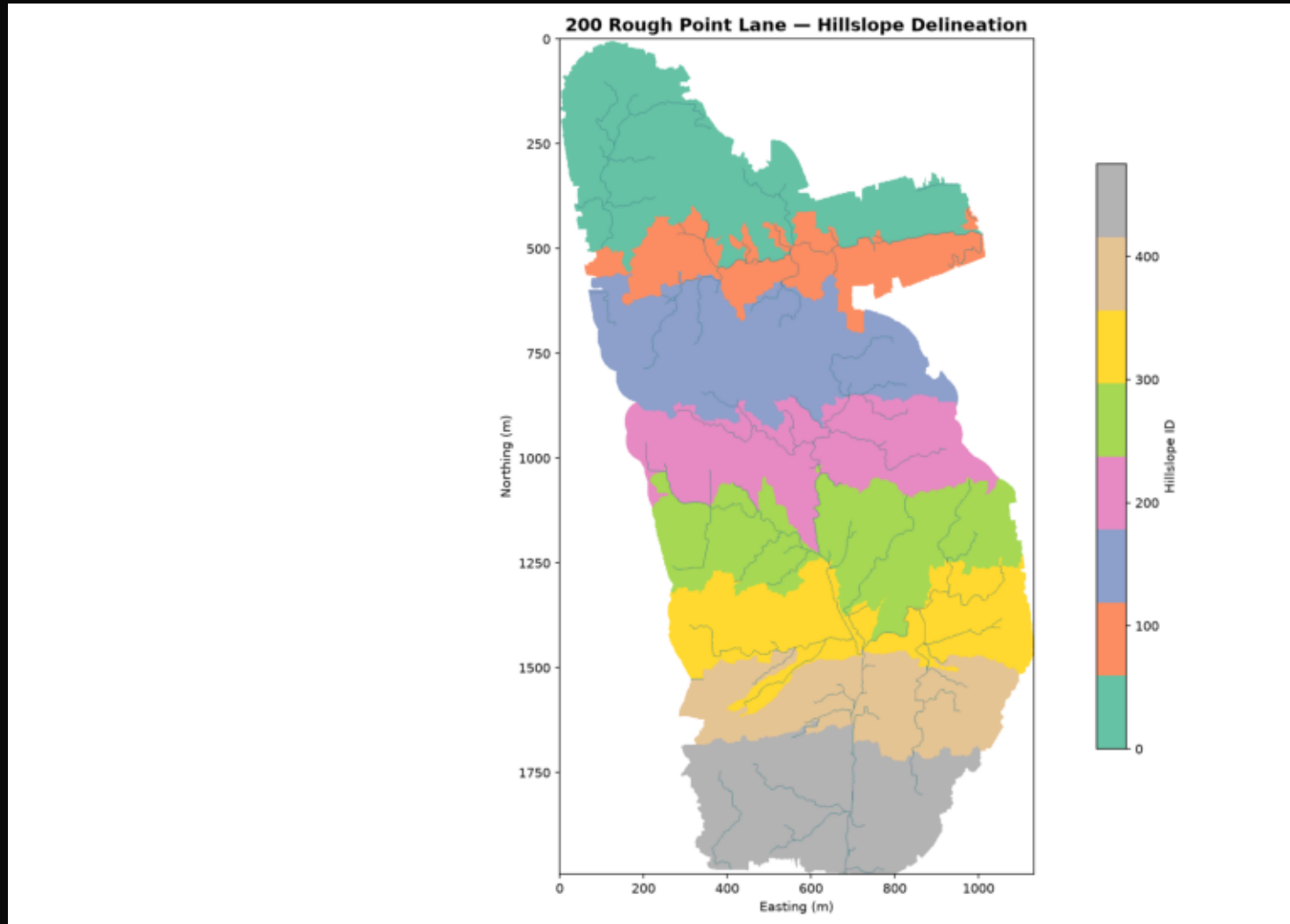
200 Rough Point Lane · Jackson County, TN



Hierarchical stream ordering from headwaters (Order 1, light purple) to main trunk (Order 6, dark purple). The property's maximum stream order of 6 indicates a well-developed drainage network with significant upstream contributing area.

Hillslope Delineation

200 Rough Point Lane · Jackson County, TN



Individual hillslope units draining to each stream segment. Each color represents a distinct hillslope. Useful for erosion management, timber inventory planning, and identifying distinct management zones across the property.