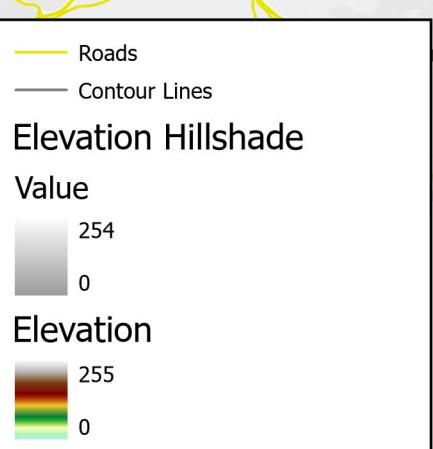
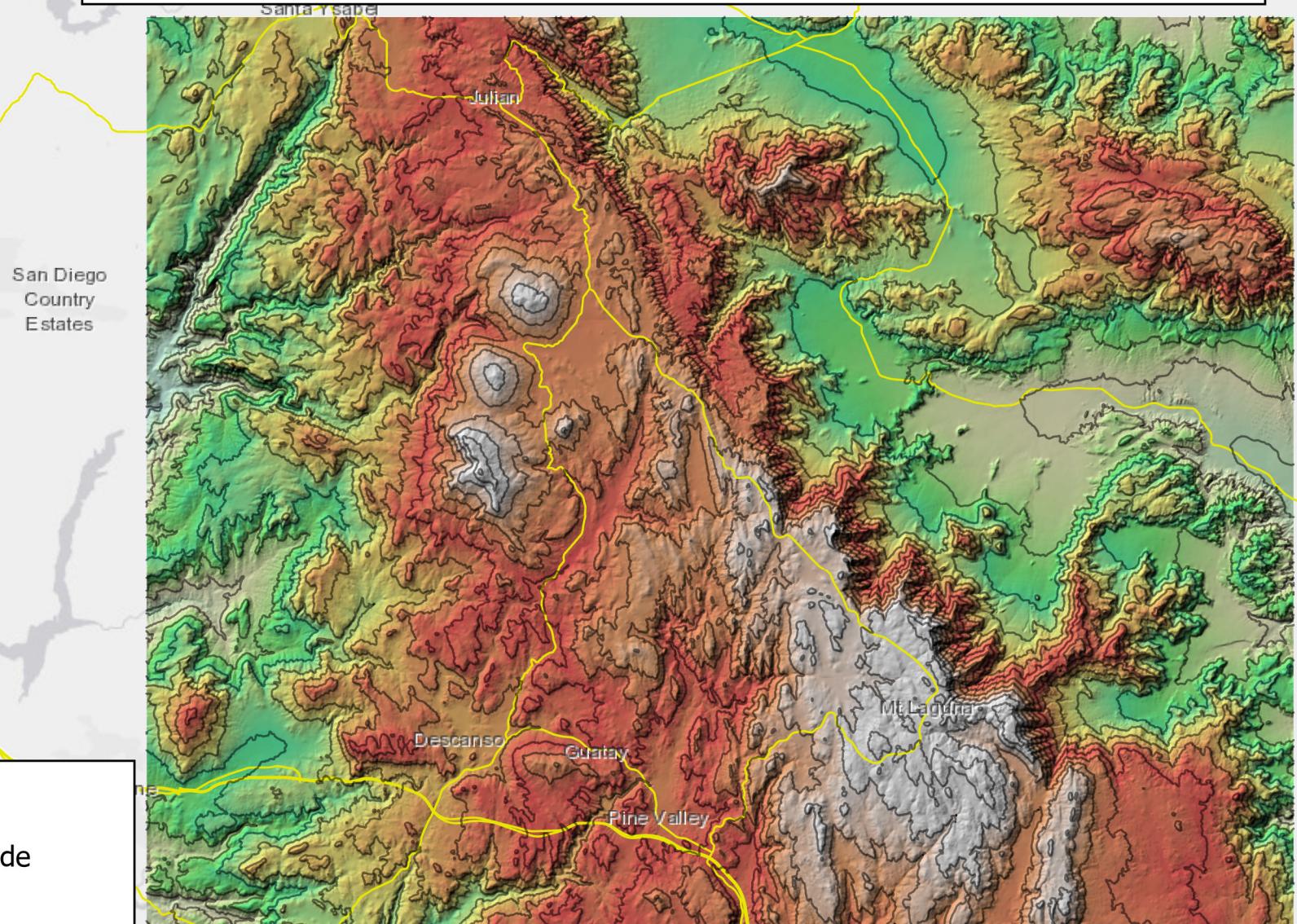


Relief Map of San Diego County, California

Cartography By : Mane Maghakelyan

GEOG 181A



0 1.25 2.5 5 Miles

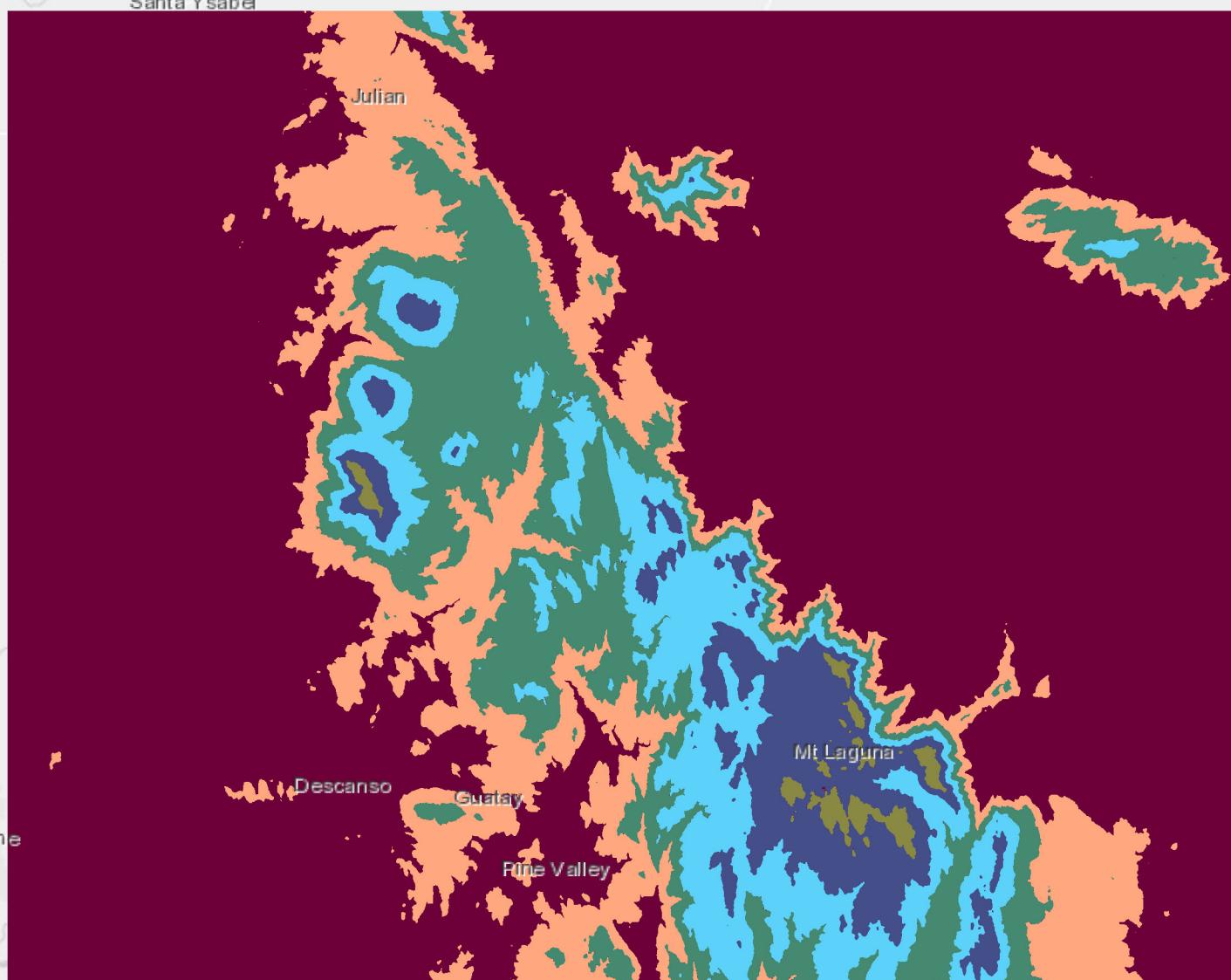


Data Source : San Diego County
Scale: 1:240,000

Terrain Elevation of San Diego County, California

Cartography By : Mane Maghakelyan

GEOG 181A



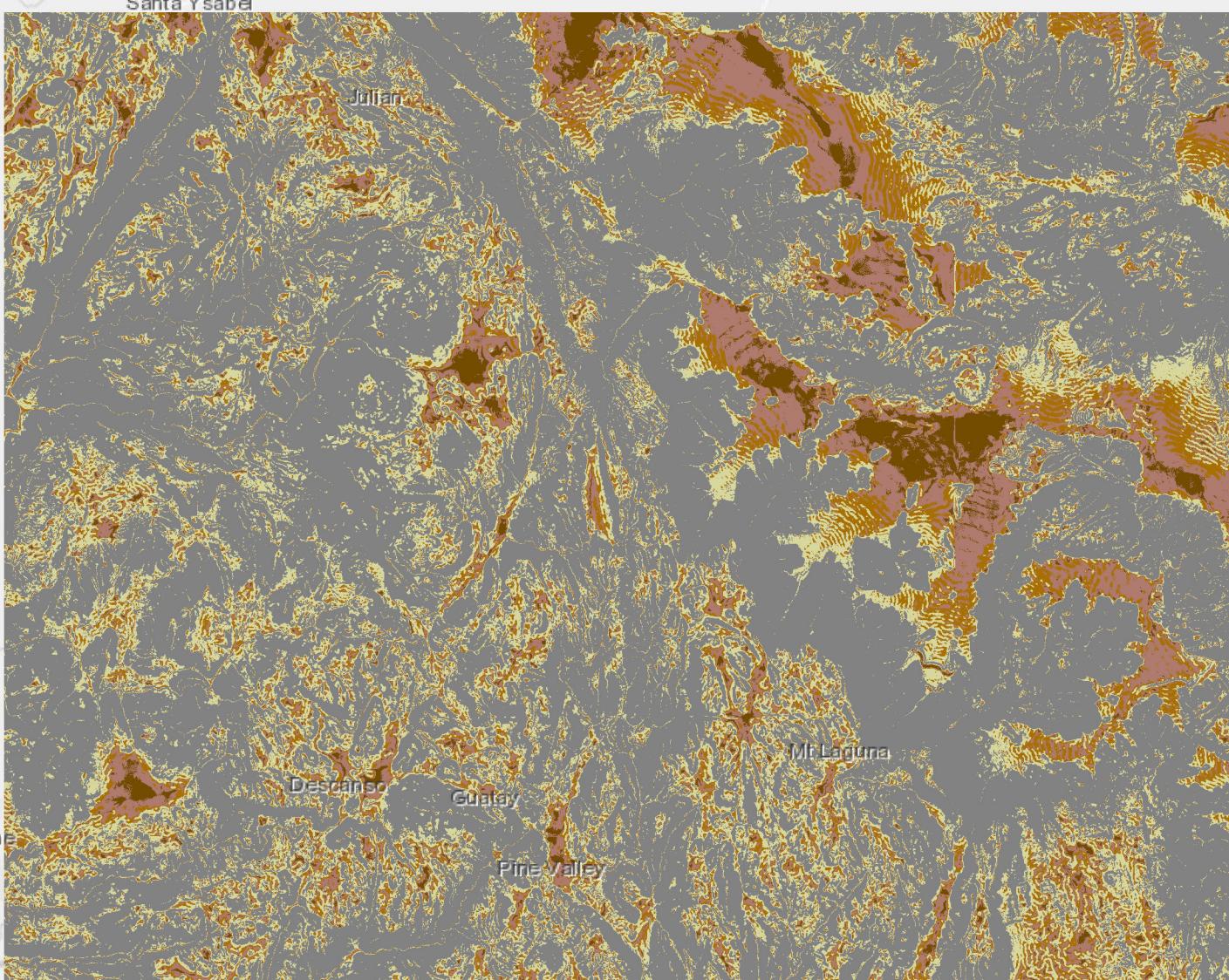
0 1.25 2.5 5 Miles

Data Source : San Diego
County
Scale: 1:240,000

Terrain Slope of San Diego County, California

Cartography By : Mane Maghakelyan

GEOG 181A



Reclassified Slope

Value (Points 0-20 Scale)

| |
|-----------|
| 0 (>10°) |
| 4 (5-10°) |
| 12 (3-5°) |
| 16 (1-3°) |
| 20 (0-1°) |



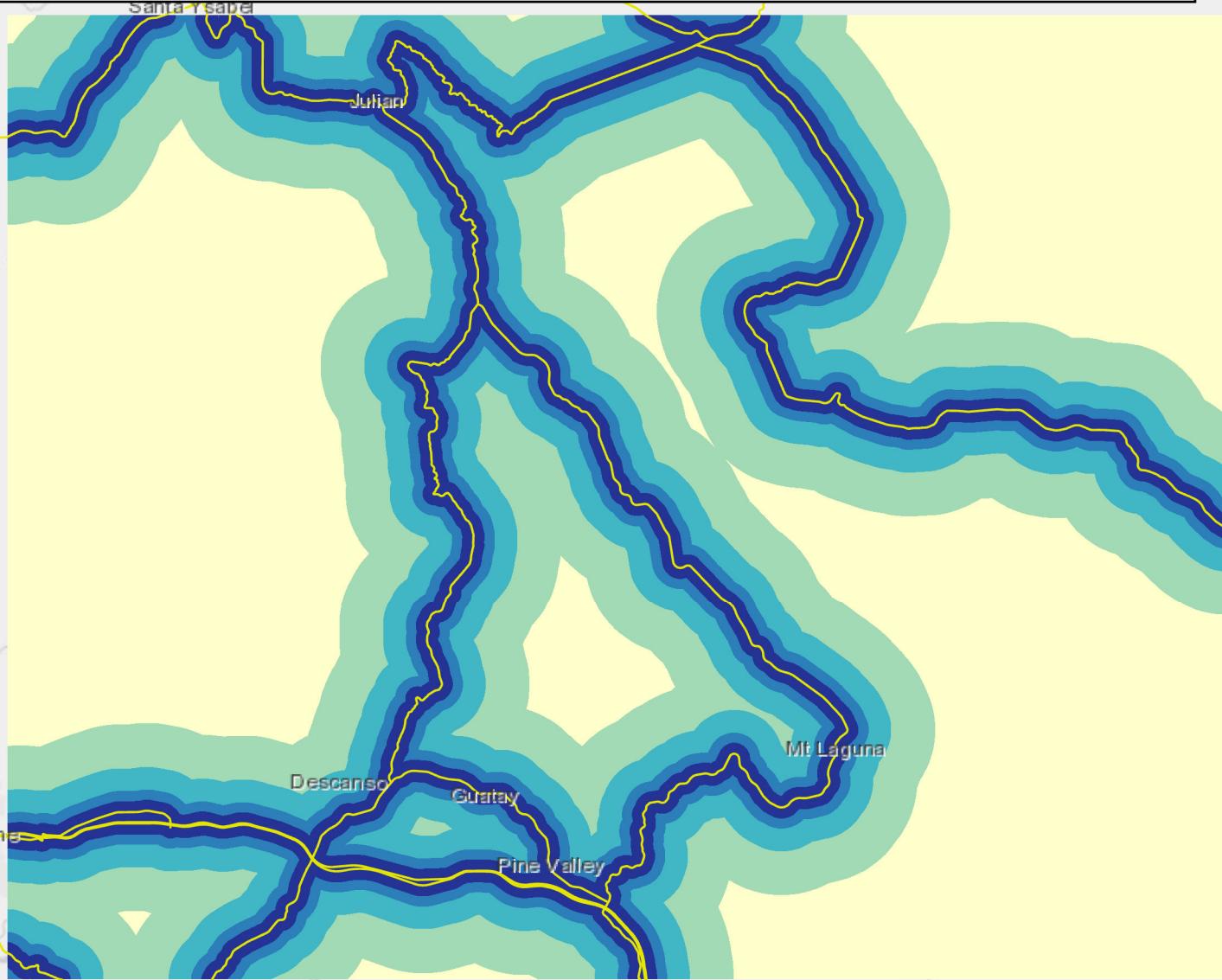
0 1.25 2.5 5 Miles

Data Source : San Diego
County
Scale: 1:240,000

Proximity to Roads of San Diego County, California

Cartography By : Mane Maghakelyan

GEOG 181A



Roads

Reclassified Roads

Value (Points 0-20 Scale)

| |
|---------------------|
| 0 (> 2 Miles) |
| 4 (1 - 2 Miles) |
| 12 (1/2 - 1 Mile) |
| 16 (1/4 - 1/2 Mile) |
| 20 (< 1/4 Mile) |



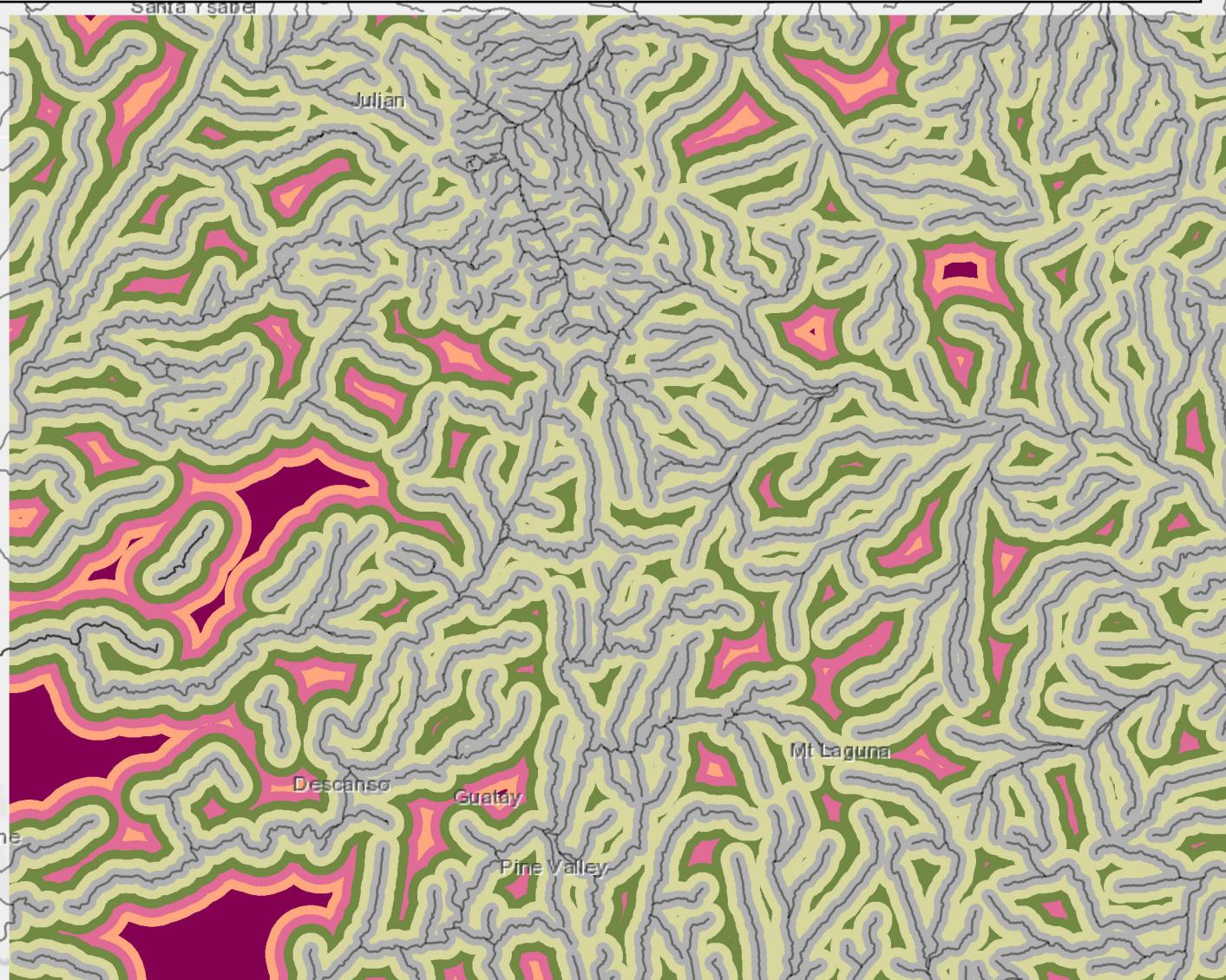
0 1.25 2.5 5 Miles

Data Source : San Diego
County
Scale: 1:240,000

Proximity to Streams of San Diego County, California

Cartography By : Mane Maghakelyan

GEOG 181A



Reclassified Streams

Value (Points)

- [Dark Purple] 0 (> 5300 ft)
- [Orange] 4 (4200-5300 ft)
- [Pink] 8 (3100-4200 ft)
- [Green] 12 (2000-3100 ft)
- [Yellow-Green] 16 (900-2000 ft)
- [Light Grey] 20 (< 900 ft)



0 1.25 2.5 5 Miles

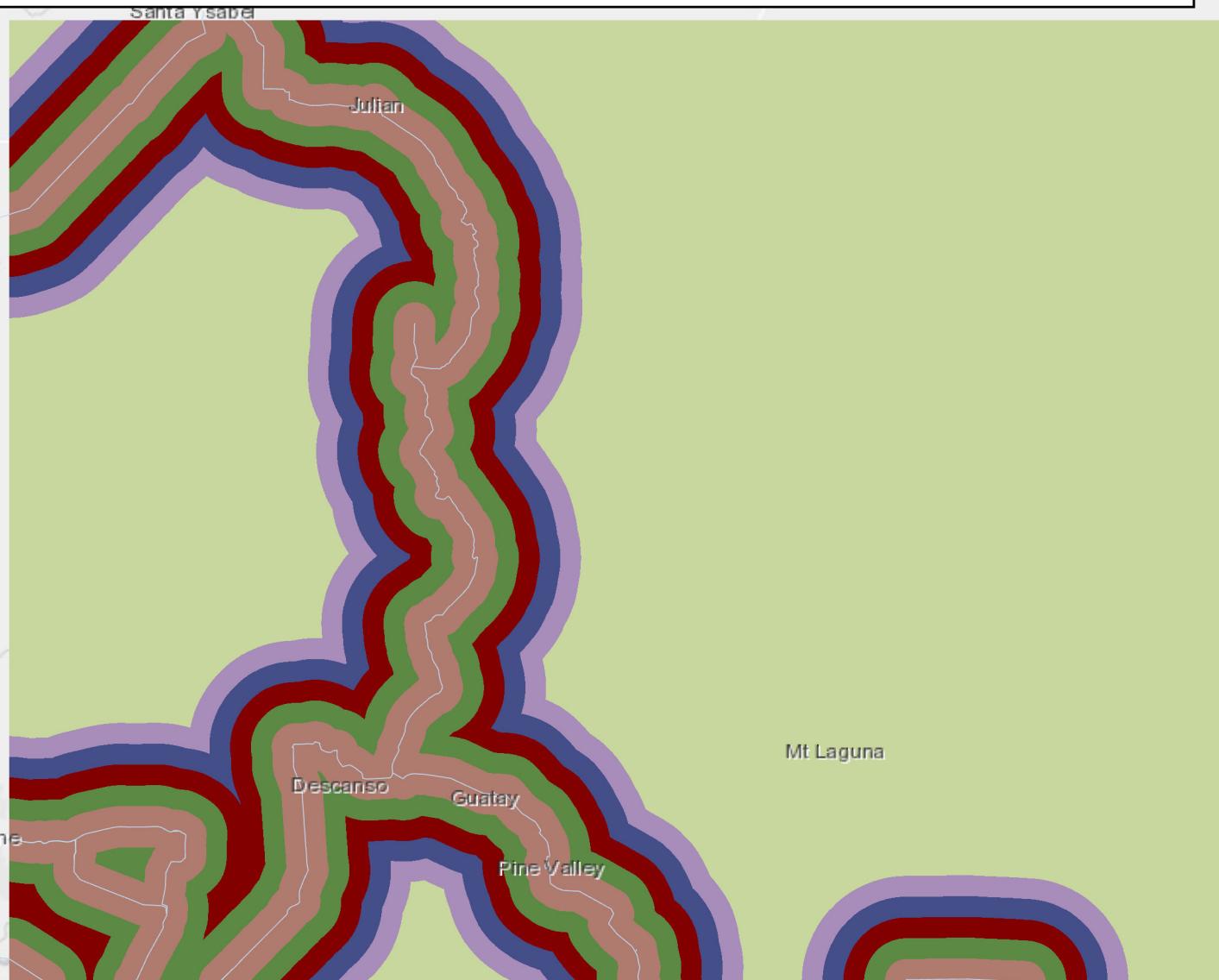
Data Source : U.S. Census Bureau TIGER/Lines

Scale: 1:240,000

Proximity to Transmission Lines of San Diego County, California

Cartography By : Mane Maghakelyan

GEOG 181A



Electric Transmission Lines

Reclassified Transmission Lines Distance

Value (Points 0-20 Scale)

- 0 (>12500 ft)
- 4 (10000-12500 ft)
- 8 (7500-10000 ft)
- 12 (5000-7500 ft)
- 16 (2500-5000 ft)
- 20 (<2500 ft)



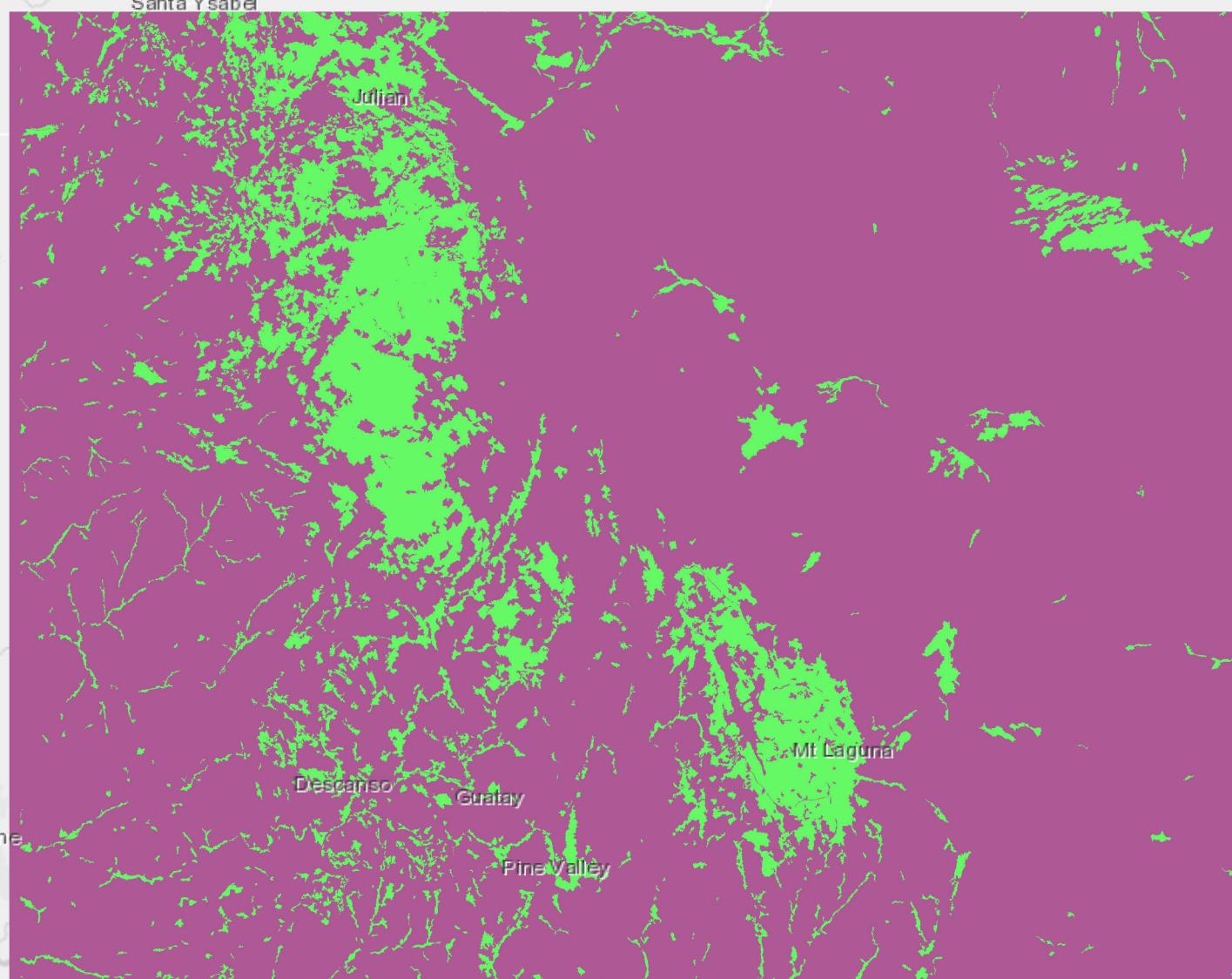
0 1.25 2.5 5 Miles

Data Source : San Diego County
Scale: 1:240,000

Vegetation Map of San Diego County, California

Cartography By : Mane Maghakelyan

GEOG 181A



LEGEND

Reclassified Vegetation

Value

0 (Other Vegetation)

1 (Coniferous Forest, Oaks
Woodlands, and Mixed Forest)



0 1.25 2.5 5 Miles

Data Source : San Diego County

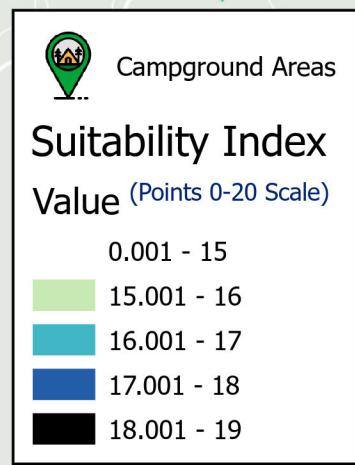
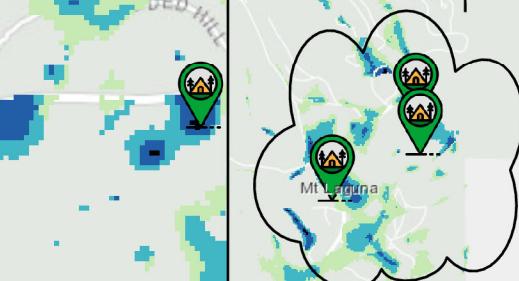
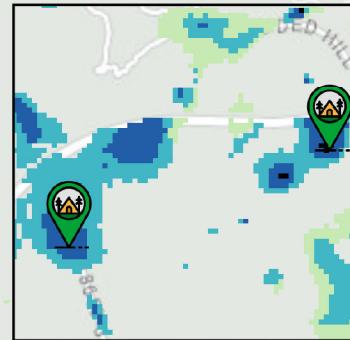
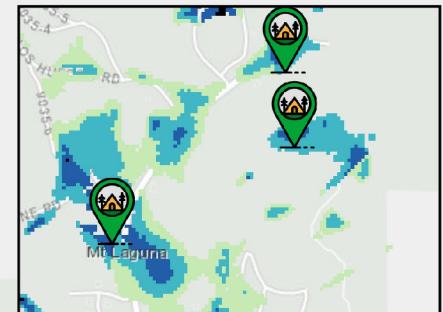
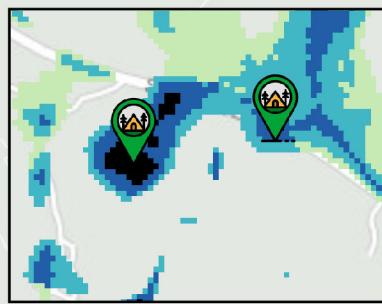
Scale: 1:240,000

| Layer Name | Criteria | Weight (%) | Reclassification Values | Source |
|---------------------------------|---------------------------------|----------------------|-------------------------|---|
| Reclassified Elevation | Terrain Elevation | 20% < 4000 ft = 0 | | Provided by San Diego County Parks and Recreation |
| | | 4000-4500 ft = 4 | | |
| | | 4500-5000 ft = 8 | | |
| | | 5000-5500 ft = 12 | | |
| | | 5500-6000 ft = 16 | | |
| | | > 6000 ft = 20 | | |
| Reclassified Slope | Terrain Slope | 25% > 10° = 0 | | Derived from DEM using Slope tool |
| | | 5-10° = 4 | | |
| | | 3-5° = 12 | | |
| | | 1-3° = 16 | | |
| | | 0-1° = 20 | | |
| Reclassified Roads | Proximity to Roads | 30% > 2 miles = 0 | | Provided by Parks and Recreation |
| | | 1-2 miles = 4 | | |
| | | 1/2-1 mile = 12 | | |
| | | 1/4-1/2 mile = 16 | | |
| | | < 1/4 mile = 20 | | |
| Reclassified Vegetation | Vegetation Cover | N/A | Coniferous Forest = 1 | Provided by Parks and Recreation |
| | | | Oak Woodlands = 1 | |
| | | | Mixed Forest = 1 | |
| | | | Other = 0 | |
| Reclassified Streams | Proximity to Streams of Water | 20% > 5300 ft = 0 | | U.S. Census Bureau TIGER/Lines Shapefile : Water |
| | | 4200 - 5300 ft = 4 | | |
| | | 3100 - 4200 ft = 8 | | |
| | | 2000 - 3100 ft = 12 | | |
| | | 900 - 2000 = 16 | | |
| | | < 900 ft = 20 | | |
| Reclassified Transmission Lines | Proximity to Transmission Lines | 5% > 12500 ft = 0 | | California Energy Commission |
| | | 10000 - 12500 ft = 4 | | |
| | | 7500 - 10000 ft = 8 | | |
| | | 5000 - 7500 ft = 12 | | |
| | | 2500 - 5000 ft = 16 | | |
| | | < 2500 ft = 20 | | |

Suitable Campgrounds in San Diego County, California

Cartography By : Mane Maghakelyan

GEOG 181A



Data Source : San Diego County

Scale: 1:45,000

Mane Maghakelyan

Professor Chen

GEOG 181A

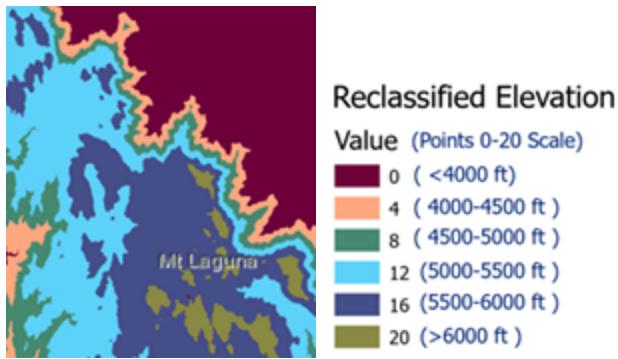
04 August 2024

Site Suitability Analysis Report

This project is based on San Diego County's Laguna/Cuyamaca Mountains terrain to calculate and understand where comfortable camping grounds nearby would be. Using several different spatial analysis tools, there were around ten different convenient campground locations that were suitable following the layers requirements. There were five layers of data that were used to help filter out these locations. The layers consisted of electric transmission lines, proximity to roads, proximity to streams of water, elevation measurements, and slope measurements. All of these layers were applied when calculating the areas that were suitable for campgrounds in San Diego County.

The analysis began with the Digital Elevation Model (DEM) for Laguna/Cuyamaca Mountains. The elevation is crucial for deciding on an accessible area to camp. We would need an elevation above 4000 feet to ensure that campers are not exposed to excessive amounts of heat. Considering those who are camping are not likely to stay at low elevations on a camping trip, this was helpful when deciding the weight distributions for the suitability index. For these reasons, the reasonable weight to assign this layer was 20%. While many campers would not stay at a low elevation, that's where easy road access also lies; however, on a trip it seems desirable to go on higher ground for scenic views and to get the most out of their trip. Ideally, the elevations above 6000 feet are desirable for campground locations because of the cooler temperatures

during the summer heat, which can be a liability if not accounted for. The final suitability index contained the same areas where high elevation existed. (**Figure 1**).

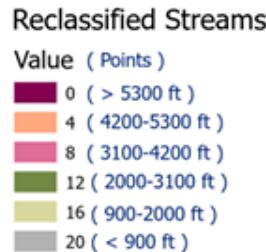
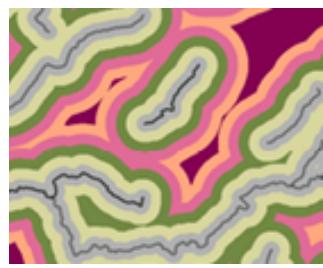


←**Figure 1: Elevation Terrain**

As for the slope, it was given a higher weight distribution of 25%. This seemed slightly more important for campground locations because it would be inconvenient and uncomfortable to camp on a slope higher than 5°. For the suitability index, it was essential to choose sites where the slope was no steeper than 5° maximum. To be less than 6000 ft in elevation, but on flat ground seems more ideal than being on steep terrain and high in elevation. Setting up tents on steep slopes would be quite tedious and difficult.

The proximity of roads determines mile increments to calculate the distance away from the road. The roads layer was, by far, the most important layer to consider. In case of an emergency, it would be vital to have road access quickly. It was also necessary to take into account the feasibility of setting up camp near the road. The transportation containing the items campers bring with them needs to be nearby. The close proximity of the roads make the unloading of gear less of a hassle. It's also important to keep in mind that roads are a good sign to ensure campers don't get lost. As long as they are close to any road, it helps guide them toward safety. For these reasons, this layer received a weight distribution of 30%.

The nearby streams of water was the fourth layer added, sourced from the U.S. Census Bureau TIGER/Lines Shapefile for water. This layer seemed like a useful layer to consider when finding dependable camping grounds. With 1100 feet increments, there was not much space where there was not a river or stream of water nearby (**Figure 2**). When going camping, having a water source is important. Whether campers decide they want to fish, use the water as a substitute for a refrigerator for their food products or drinks, to swim, or just relax near, having a stream of water nearby seems important. The proximity to streams of water layer was given a 25% portion of the suitability index.



←**Figure 2 : Proximity to Streams**

The last layer was proximity to electric transmission lines. It was assigned a weight distribution of 5%. Although it may seem like a completely useless layer to add to this suitability, it's somewhat important to consider. Power is a helpful tool to have when camping. For the glampers (luxury campers) or those who just really need a source of power, this would be a useful factor to keep in mind. It would be hard to find power lines nearby where there are also sources of water, which is why it was assigned a much lower weight than the others. Many campers who want to find camping grounds go into wilderness to get away from the world revolving around power and screens. For these reasons, it would be unrealistic to provide it with a larger weight distribution.

The eleven camping sites chosen on the final map all contained a suitability score of 17-19. These high scores allow us to find convenient camping sites for those who seek one with the same factors as the layers chosen. Each layer displayed on the map had a very close proximity to roads (**Figure 3**). These roads are within walking distance to the camping sites. When choosing the camping sites, every layer was looked at separately to ensure accuracy and practicality for avid campers. Even the vegetation layer was calculated in the process to ensure that these sites are within oak woodlands, coniferous forests, or mixed forests vegetation areas (**Figure 4**).

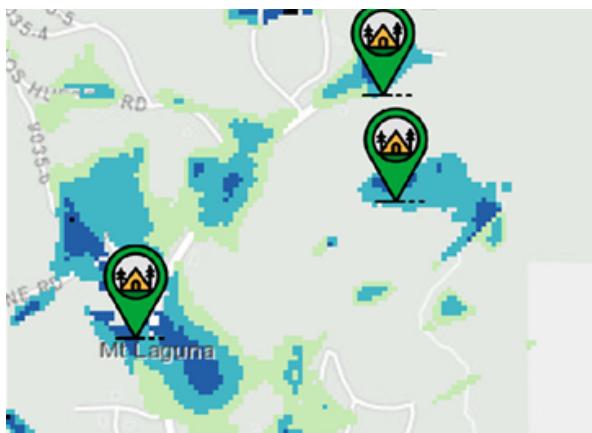


Figure 3 : 3 Out of 11 Final Campsites Compared to the Proximity of Roads

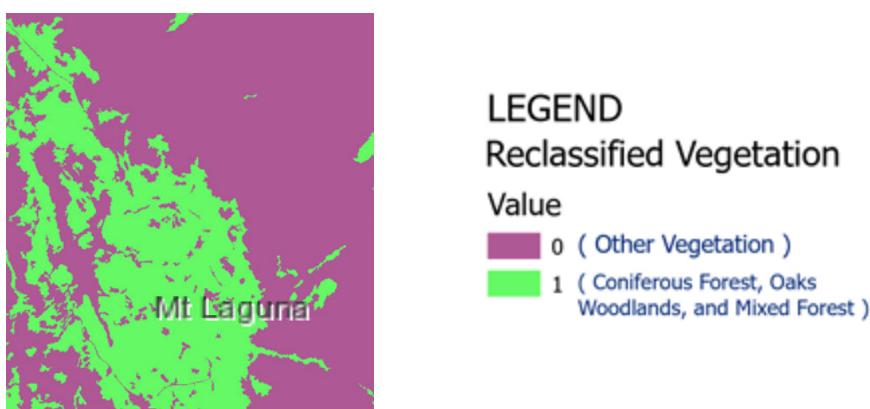


Figure 4 : Vegetation Distribution

In the future, if necessary to filter down the campsites even more using different factors to calculate a new suitability index, the layers would focus on safety more. Forest fires happen more often than imagined. Canyons are also very susceptible to fire, like the San Fernando Canyons. Similarly, any area with lots of trees and vegetation like the Laguna/Cuyumaca Mountains is very prone to fires. Especially in an area where some campers might want to light a fire to stay warm or cook the fish they catch. Areas where brush fires or any fires are less likely to occur would be a desirable factor to include in the calculations to filter the camping grounds to somewhere safer. Other factors to keep in mind when searching for camping sites would be dangerous animal habitats (bears, rattlesnakes, etc...).