

# WIRELESS NETWORK CONSULTING

AZ-5114 / T-Mobile PH68125C  
Coverage Cell Split

## RF DESIGN ANALYSIS



# Coverage vs Capacity

- † **Capacity is providing bandwidth or processing capacity to service the customers in the area.**
  - Areas where large numbers of users are in a specific geographic areas
  - Areas where users are demanding higher data rates for services
  - Areas with a large amount of mobile phone service users
- † **Coverage is Providing Service where service does not exist, calls drop, or “no service”.**
  - Areas where sites are farther apart
  - Areas where terrain or buildings block signals
  - Areas where indoor service is low or nonexistent

# Objective of new site

## † Capacity

- Provide bandwidth for customers in the area surrounding the proposed site

## † Coverage

- Provide coverage for T-Mobile users Southeast of Florence
- Provide coverage along E Florence-Kelvin Highway the area as this area has a “Significant Gap in Service”

## † Why is this site important?

- 96% of Americans own a Cellular Phone
- 57% of American Homes rely exclusively on cellular phones
- 84% or more of 9-1-1 emergency calls are made from wireless devices

# Proposed Site

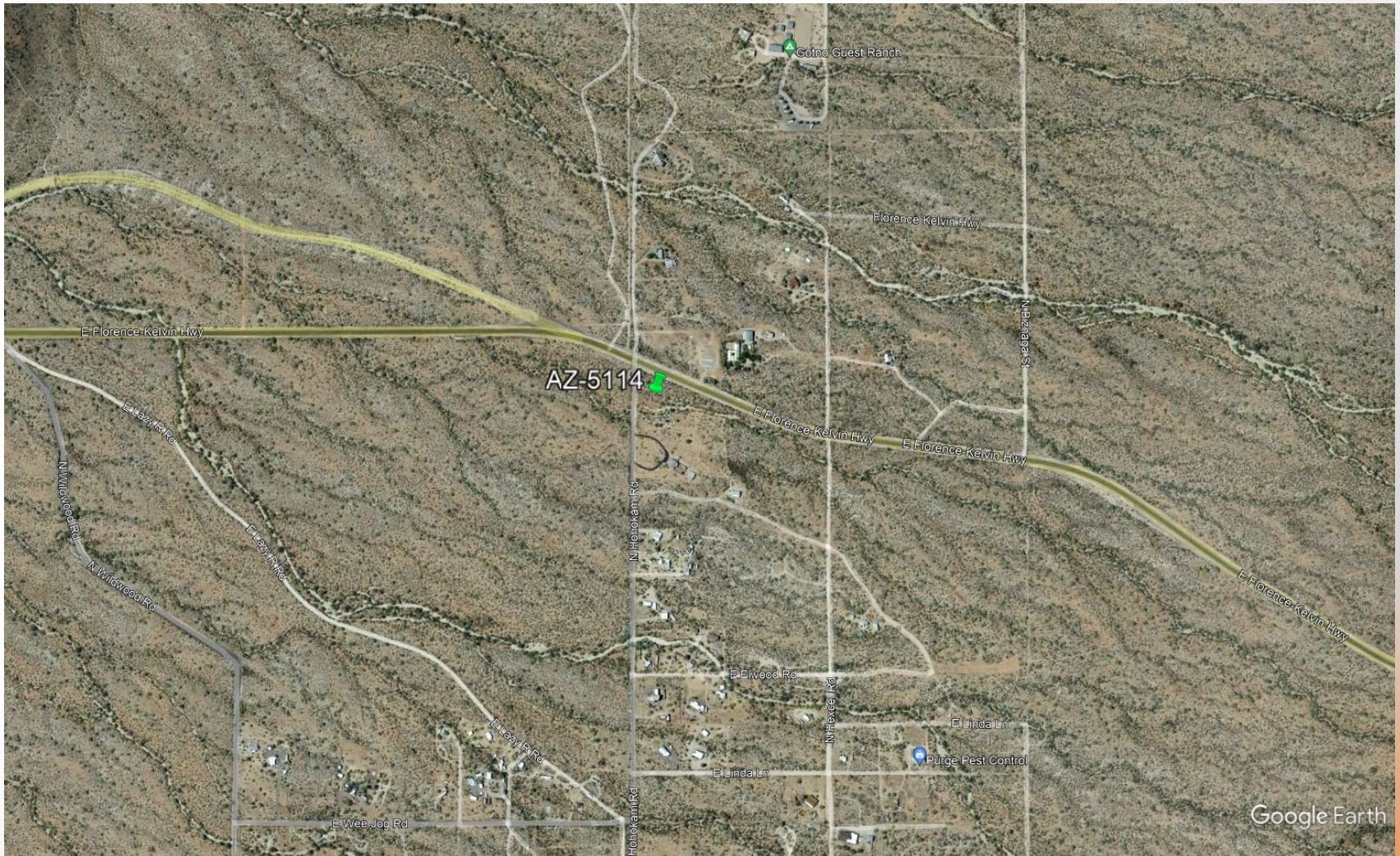
## † 115' Mono-Elm Tower

- 13285 N. Hohokam Road, Florence, AZ 85132
  - Latitude: 33.00064 N (NAD83)
  - Longitude: -111.27645 W (NAD83)
  - Ground Elevation: 1909' (NAVD88)
  - Anchor tenant is T-Mobile
- Antenna Centerline at 105' AGL

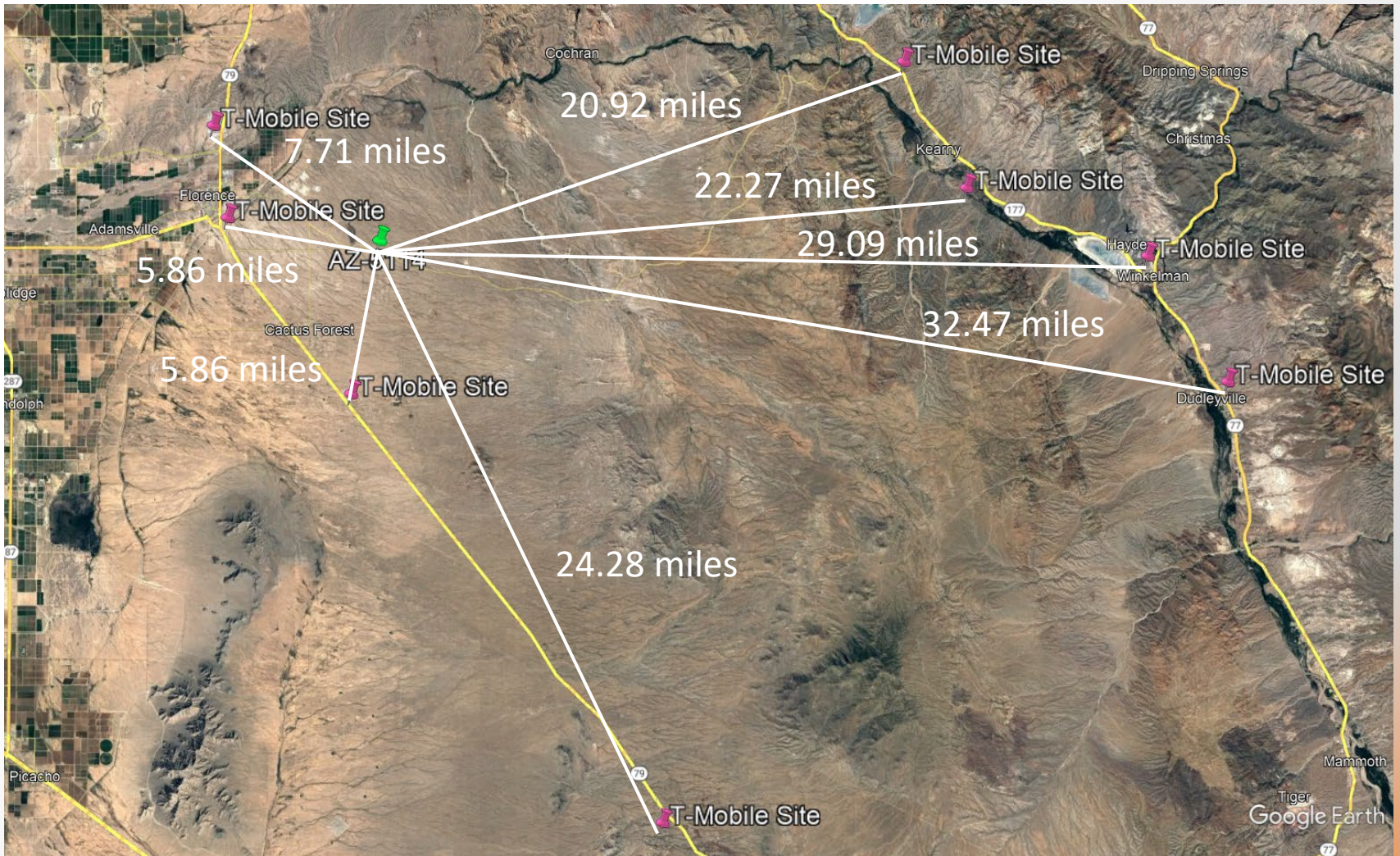
# Why here?

- † Lack of coverage southeast of Florence
- † Lack of services in the surrounding rural areas
- † This area is shown in propagation maps and end user mobile reports as a “Significant Gap in Service” area
- † Significant amount of increased network use in the suburban and rural areas of Arizona as more people are working from home and T-Mobile is expanding into these areas

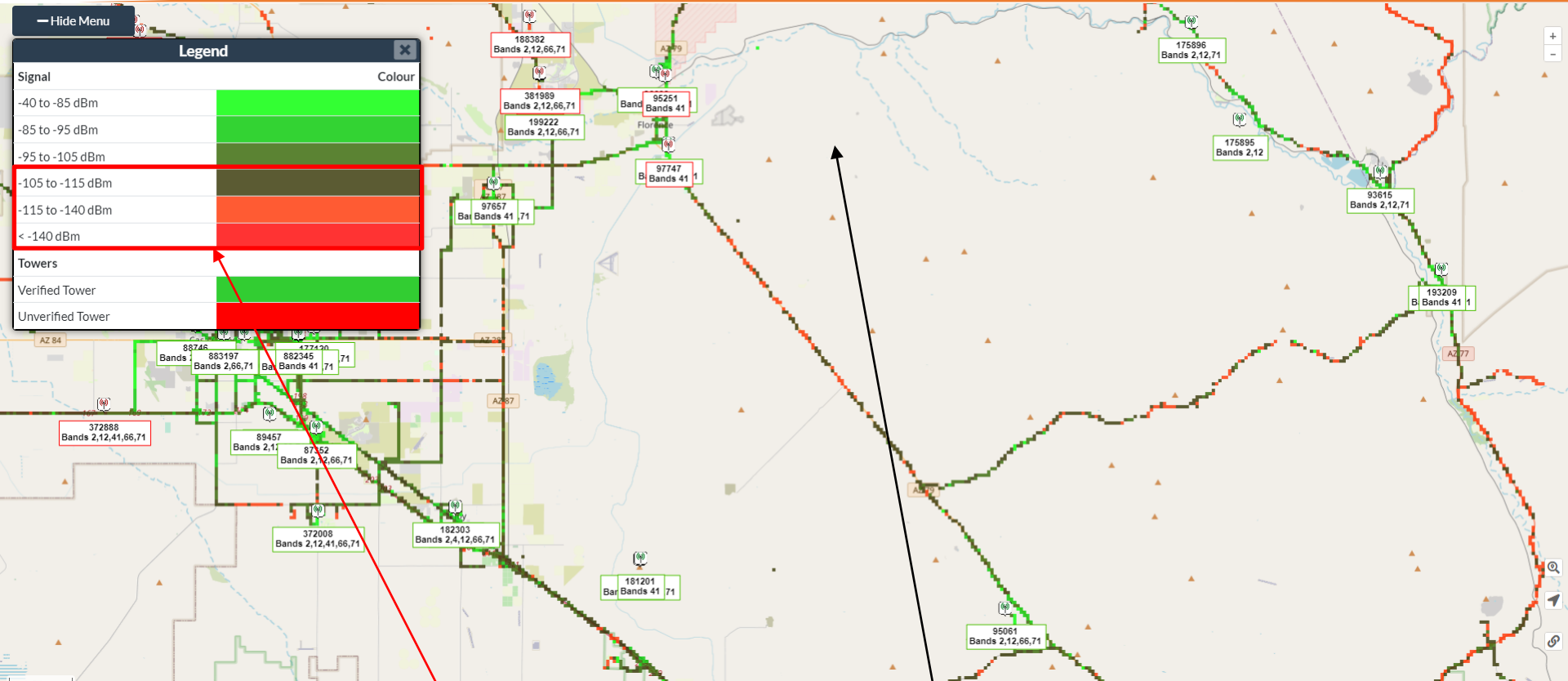
# Zoom – proposed site



# T-Mobile Sites

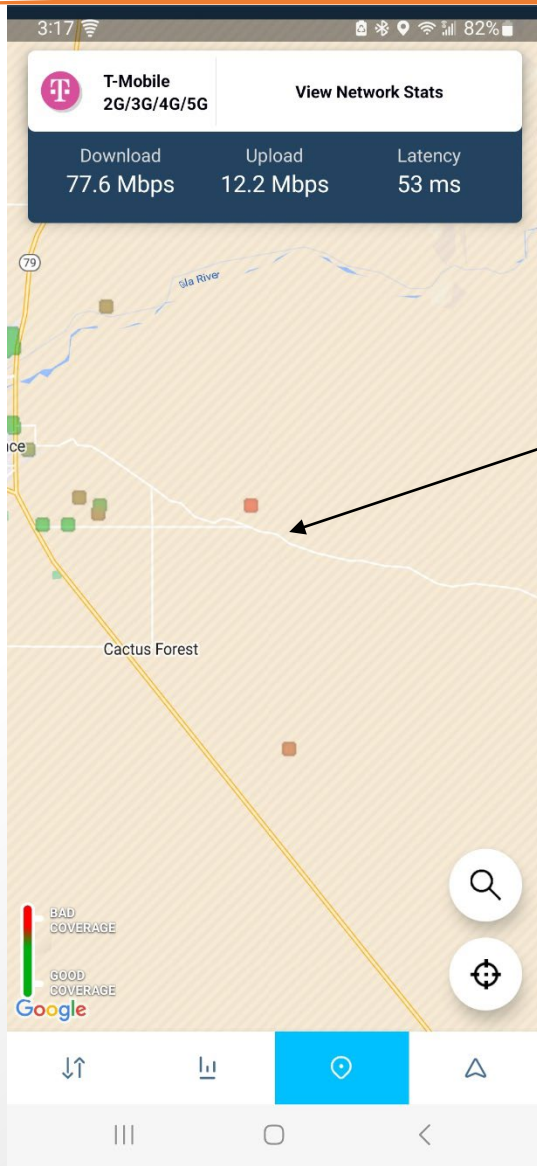


# T-Mobile CellMapper



Poor Service Quality

# Open Signal T-Mobile Quality Map

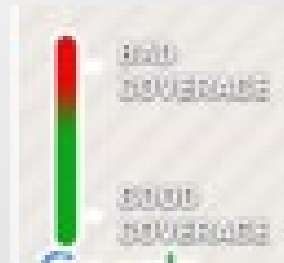


This map show mobiles reporting quality of their connections to the network. This is crowdsource data from T-Mobile users made available by the OpenSignal App:





<https://www.opensignal.com/apps#section-os-app>

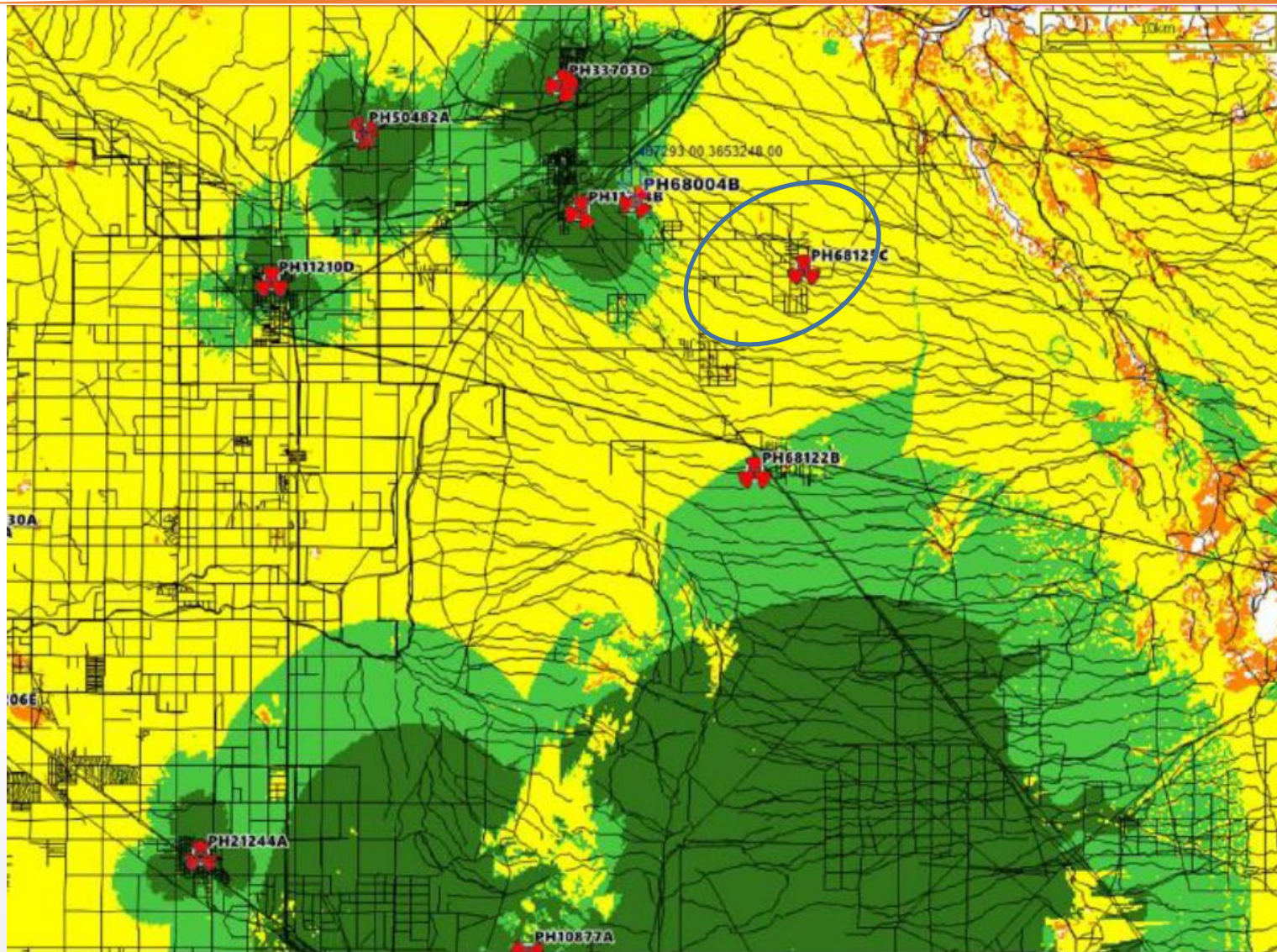
Green data points show good coverage and red data points show bad coverage and lack of data points show no coverage

Note the small amount of mobile user reports in the area showing a lack of service since there are no T-Mobile sites in the area.



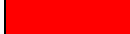


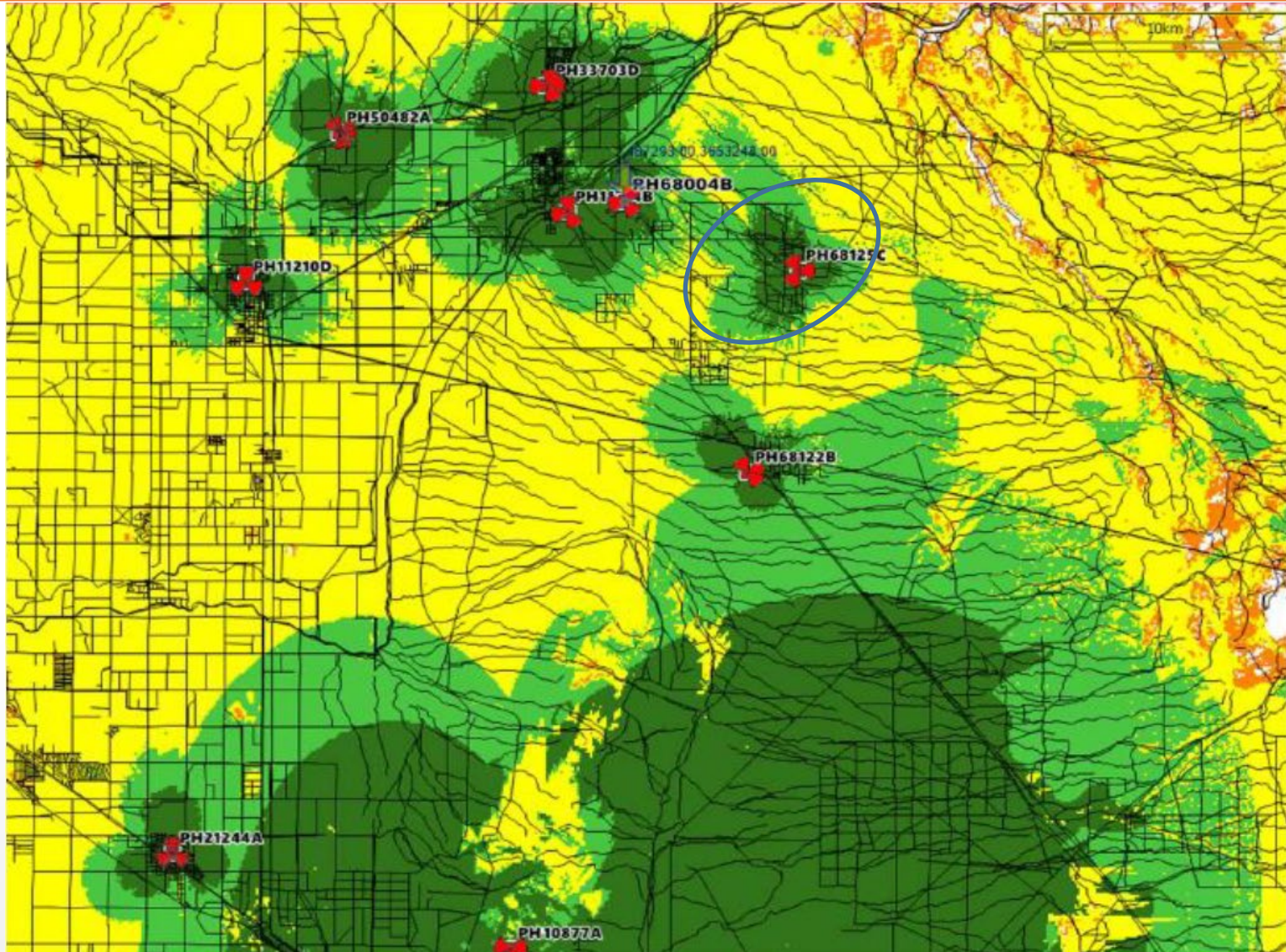
# RSRP – Current Coverage

LEGEND	
	Indoor $\geq$ -85 dbm
	IB Residential $\geq$ -91 dbm
	In-Vehicle $\geq$ -97 dbm
	Outdoor $\geq$ -114 dbm



# RSRP – Proposed Coverage Mid Band

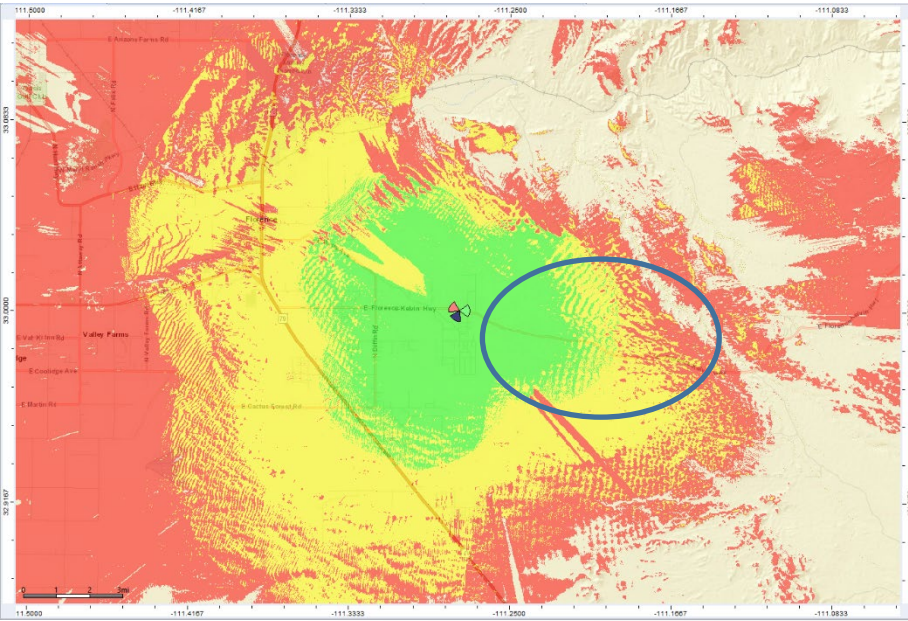
LEGEND	
	Indoor $\geq$ -85 dbm
	In-Vehicle $\geq$ -95 dbm
	On-Street $\geq$ -106 dbm



# Coverage Comparison

## RSRP – 105' vs 80' AGL

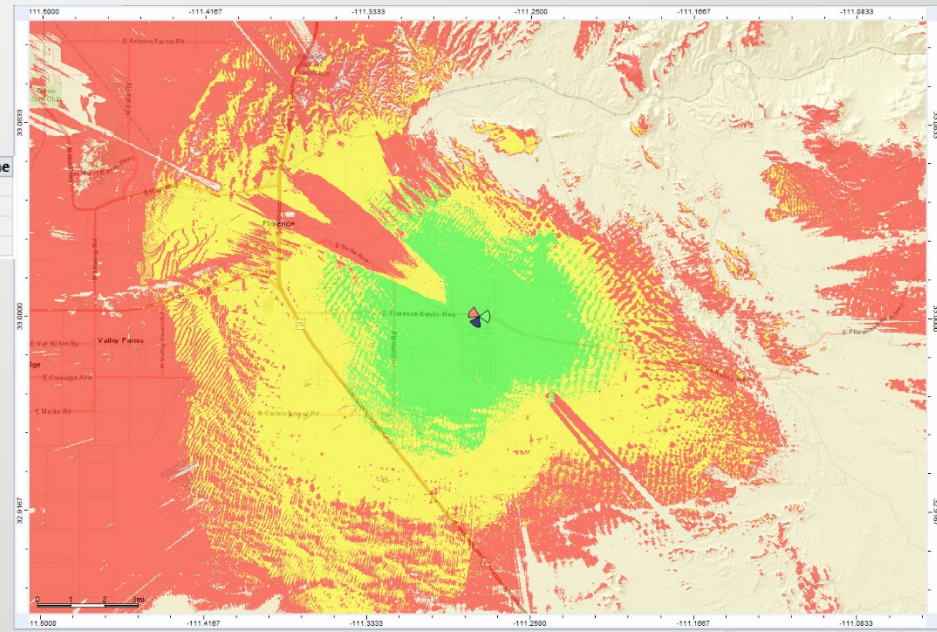
LEGEND	
	Indoor >= -85 dbm
	In-Vehicle >= -95 dbm
	On-Street >= -106 dbm



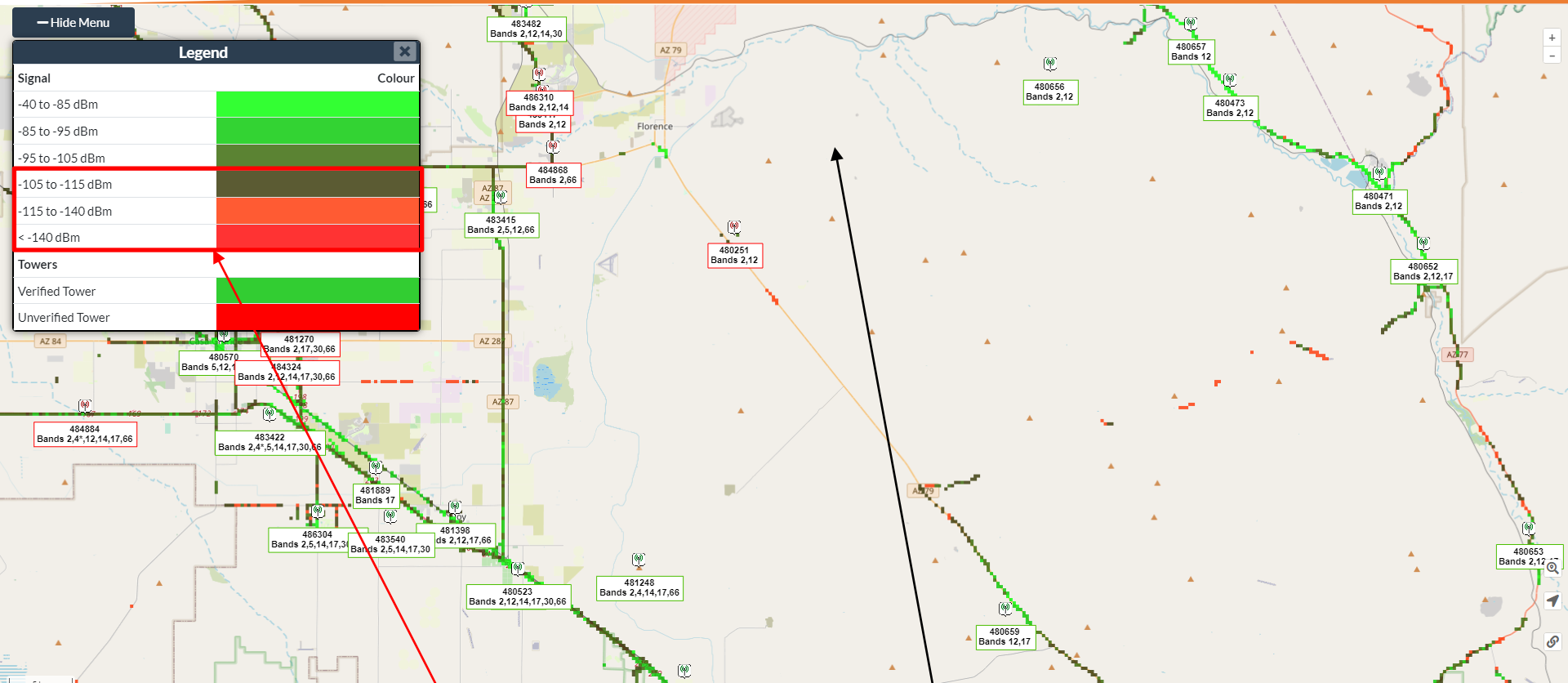
Zone	Prediction	Legend	Zone Surface (km <sup>2</sup> )	Surface (km <sup>2</sup> )	% of Covered Area	% Focus Zone
Focus Zone	LTE_NW-Mobility_RSRP-dBm (0)		1,199.872205	871.431274	100	72.6
		RSRP Level (DL) (dBm) >= -85		110.625298	12.7	9.2
		RSRP Level (DL) (dBm) >= -95		408.231873	46.8	34
		RSRP Level (DL) (dBm) >= -106		871.431274	100	72.6

Above shows 105' AGL data showing 110.6 square kilometers are covered with indoor service vs 80' AGL data showing 84.4 square kilometers covered with indoor service.

Zone	Prediction	Legend	Zone Surface (km <sup>2</sup> )	Surface (km <sup>2</sup> )	% of Covered Area	% Focus Zone
Focus Zone	LTE_NW-Mobility_RSRP-dBm (0)		1,199.872205	812.894348	100	67.7
		RSRP Level (DL) (dBm) >= -85		84.455093	10.4	7
		RSRP Level (DL) (dBm) >= -95		352.879181	43.4	29.4
		RSRP Level (DL) (dBm) >= -106		812.894348	100	67.7

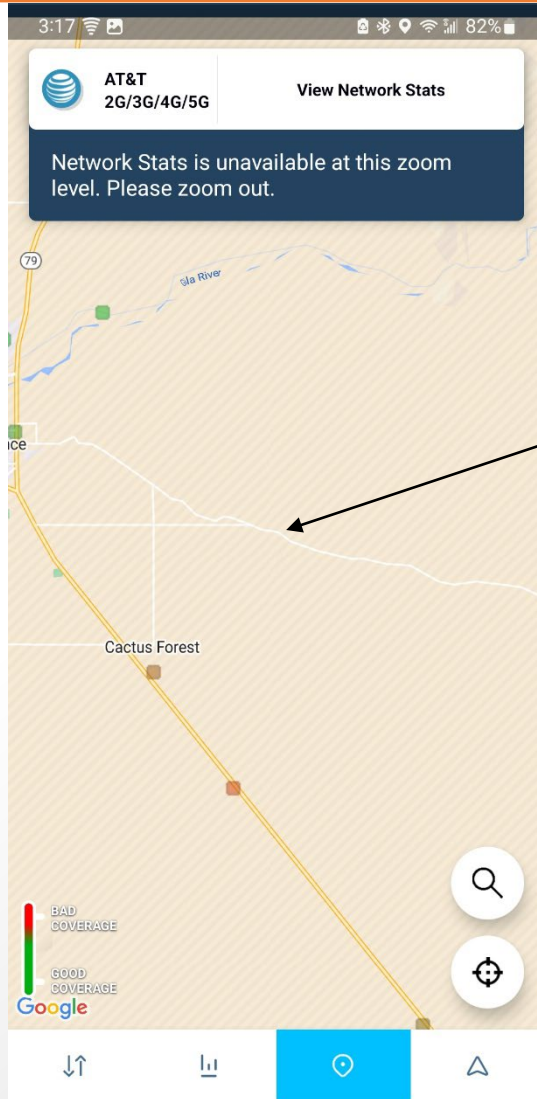


# AT&T CellMapper



Poor Service Quality

# Open Signal AT&T Quality Map

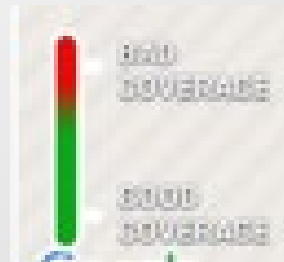


This map shows mobiles reporting quality of their connections to the network. This is crowdsource data from AT&T users made available by the OpenSignal App:

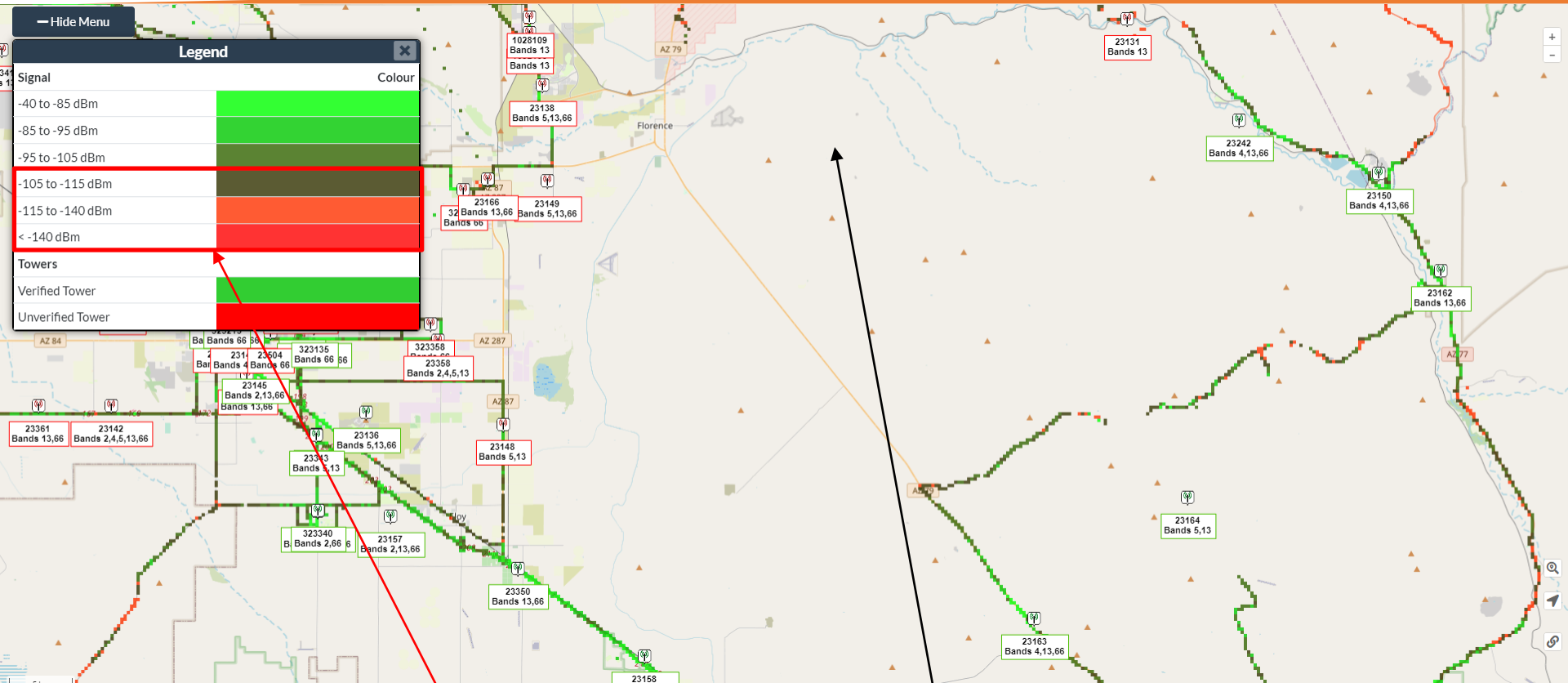
<https://www.opensignal.com/apps#section-os-app>

Green data points show good coverage and red data points show bad coverage and lack of data points show no coverage

Note the lack of data points shows since there are no AT&T sites that serve the area.

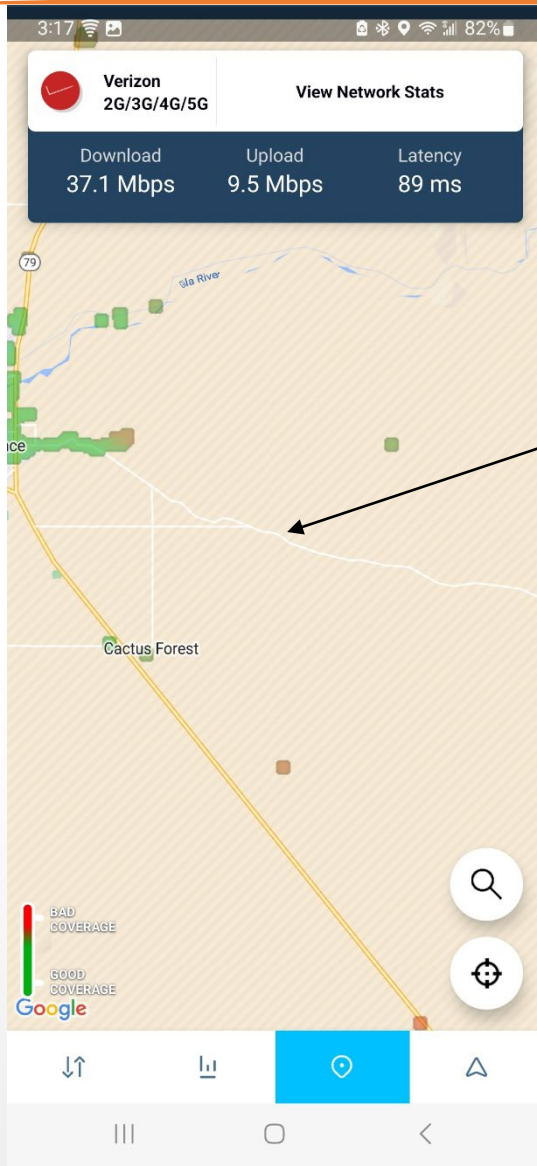


# Verizon CellMapper



Poor Service Quality

# Open Signal T-Mobile Quality Map



This map show mobiles reporting quality of their connections to the network. This is crowdsource data from Verizon users made available by the OpenSignal App:

<https://www.opensignal.com/apps#section-os-app>

Green data points show good coverage and red data points show bad coverage and lack of data points show no coverage

Note the lack of data points shows since there are no Verizon sites that serve the area.

