

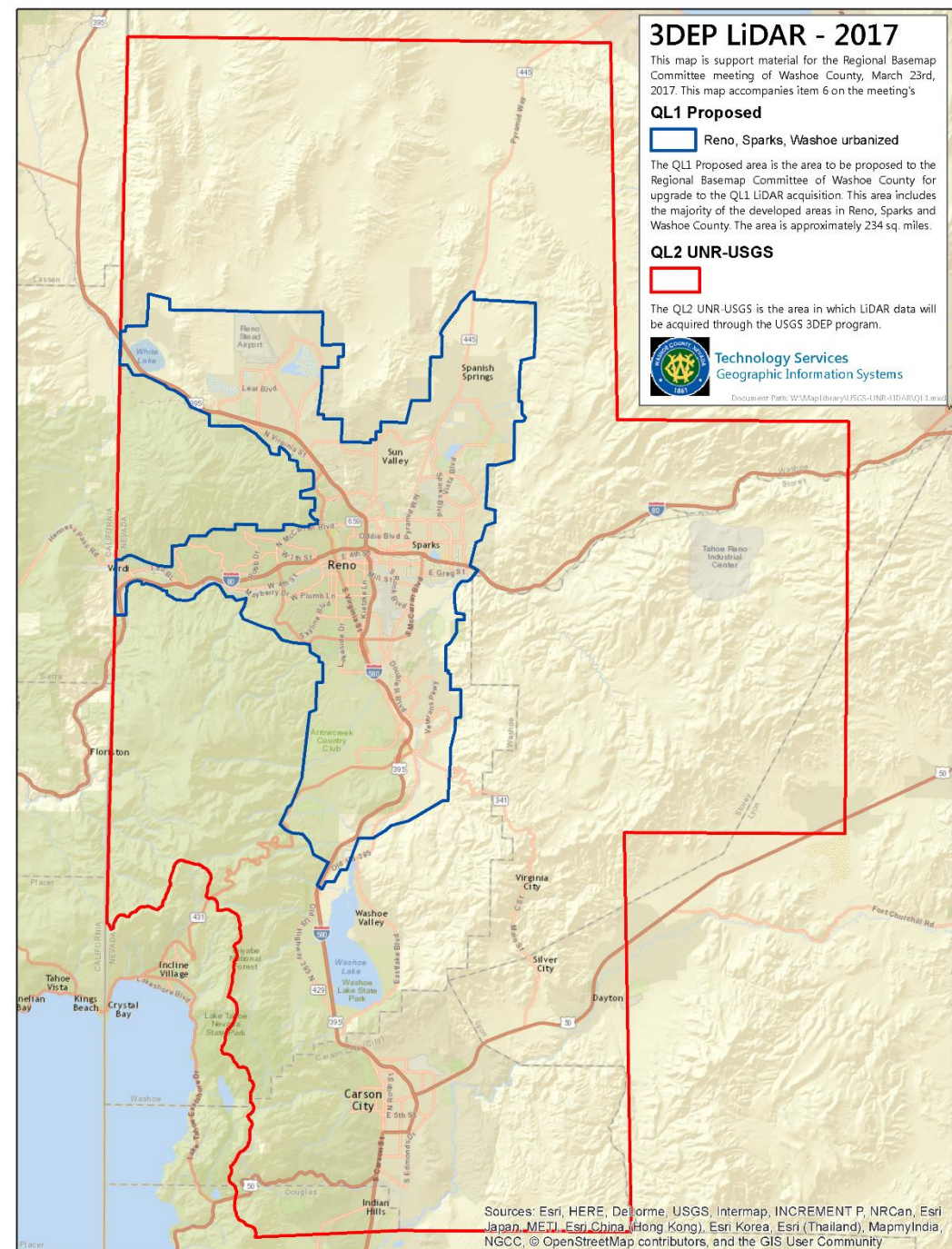
3DEP LIDAR QL1 VS. QL2

REGIONAL BASEMAP COMMITTEE MEETING - 3/23/2017



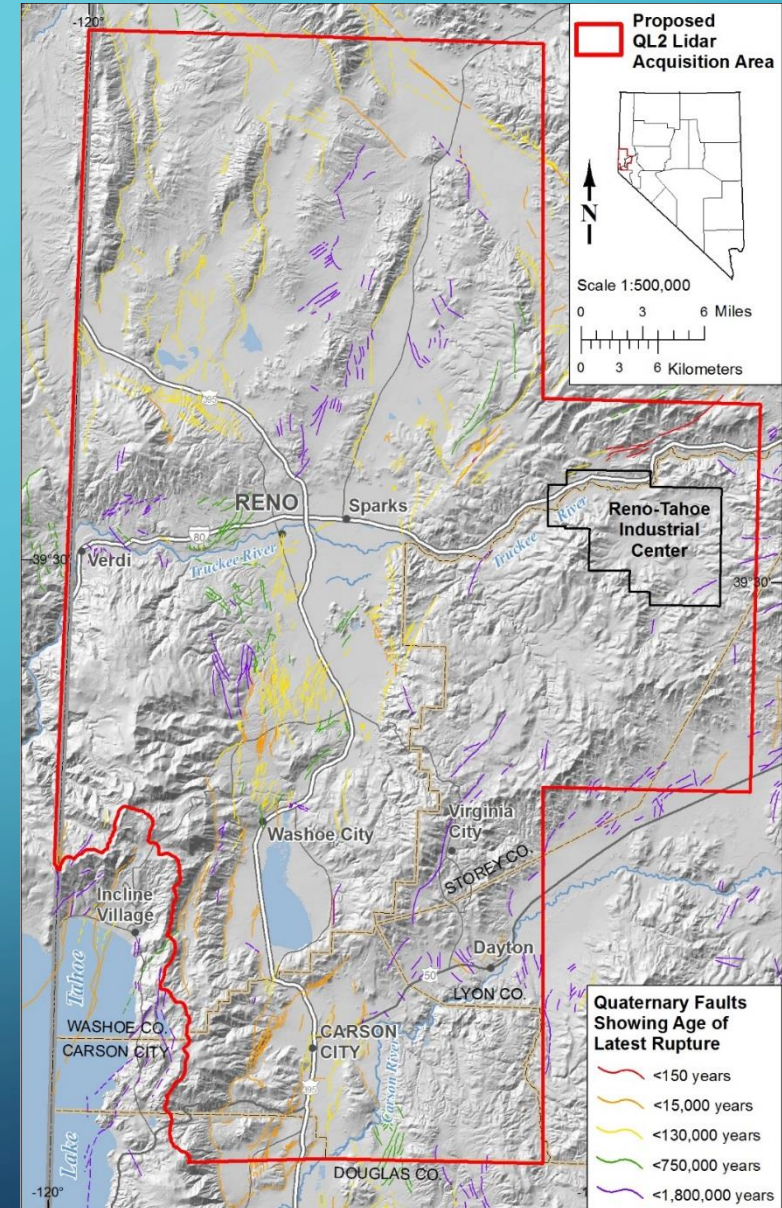
LIDAR COLLECTION FALL 2017

- QL2 – NBMG is providing bulk of local funding
 - looking for a \$25,000 local match to complete QL2 funding
- QL1 buy-up option
 - 243 sq miles @ \$90,428
 - Approx. \$370/sq. mile



RENO – CARSON CITY URBAN CORRIDOR LIDAR PROPOSAL

- Nevada Bureau of Mines and Geology/UNR
- Proposal incorporates Reno – Carson City urban corridor
 - ~1372 square miles for QL2 Lidar
 - Major populated areas in northern Nevada
 - Major transportation corridors
 - Tahoe-Reno Industrial Center
- Applications
 - Urban growth and associated infrastructure
 - Earthquake hazards – 8 earthquakes M6 or larger in past 160 years
 - Flood risk management – Truckee and Carson Rivers
 - Flash-flood, debris flow hazards on small catchments
 - Landslide hazards
- Funding – Total proposal \$349,605
 - \$174,605 secured from USGS
 - \$175,000 match from local entities
 - \$150,000 provided by UNR Vice President for Research and Innovation Office
 - **\$25,000 additional funds needed to maximize match (\$16,000 to maintain current area)**



DELIVERABLES

- **Metadata**
- **Raw Point Cloud**
- **Classified Point Cloud**
- **Bare Earth DEM**
- **Breaklines**

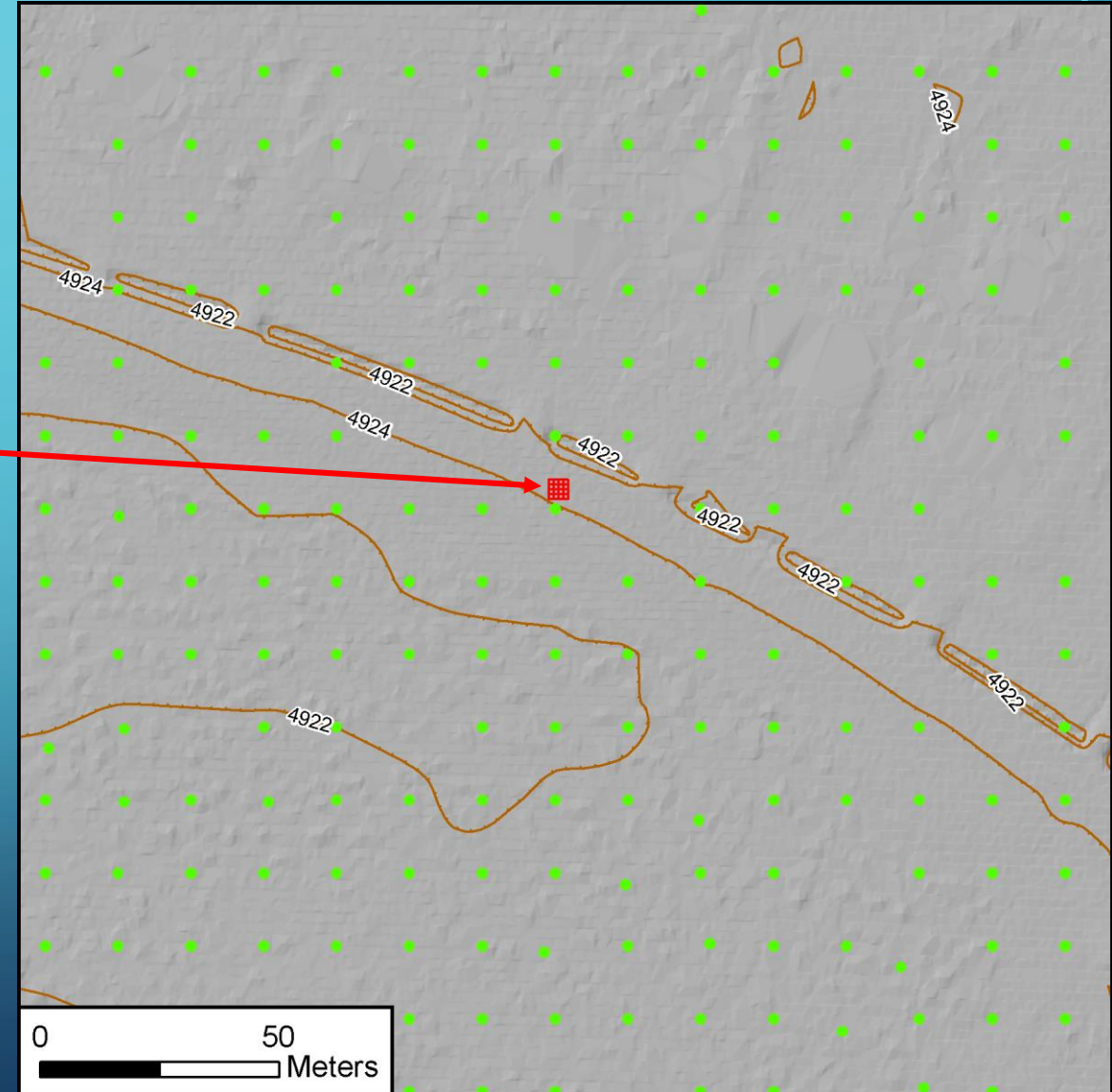
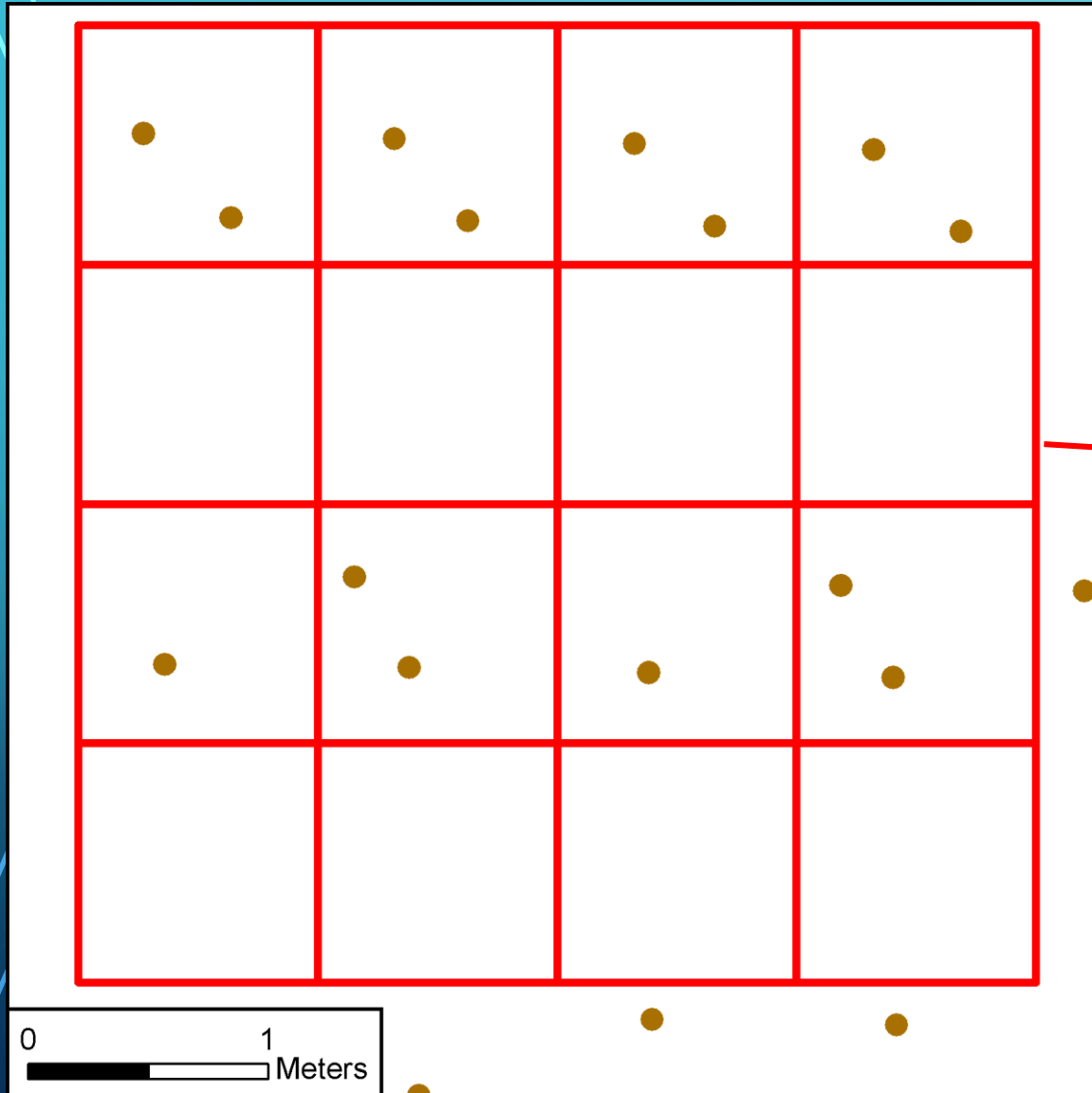
SPECIFICATIONS

Quality Level	Vertical Accuracy RMSEz	Nominal Pulse Spacing (NPS)	Nominal Pulse Density (NPD) Points/sq meter	DEM Post Spacing	Contour Accuracy
QL1	10 cm	0.35 m	8	0.5 meter (1ft)	1 foot
QL2	10 cm	0.7 m	2	1 meter (2ft)	1 foot
QL3	20 cm	1.4 m	0.5	2 meters (5ft)	2 foot

COMPARISON – ELEVATION POINT DENSITY

2013 Pictometry QL3

Mass Points 2016 Geophex

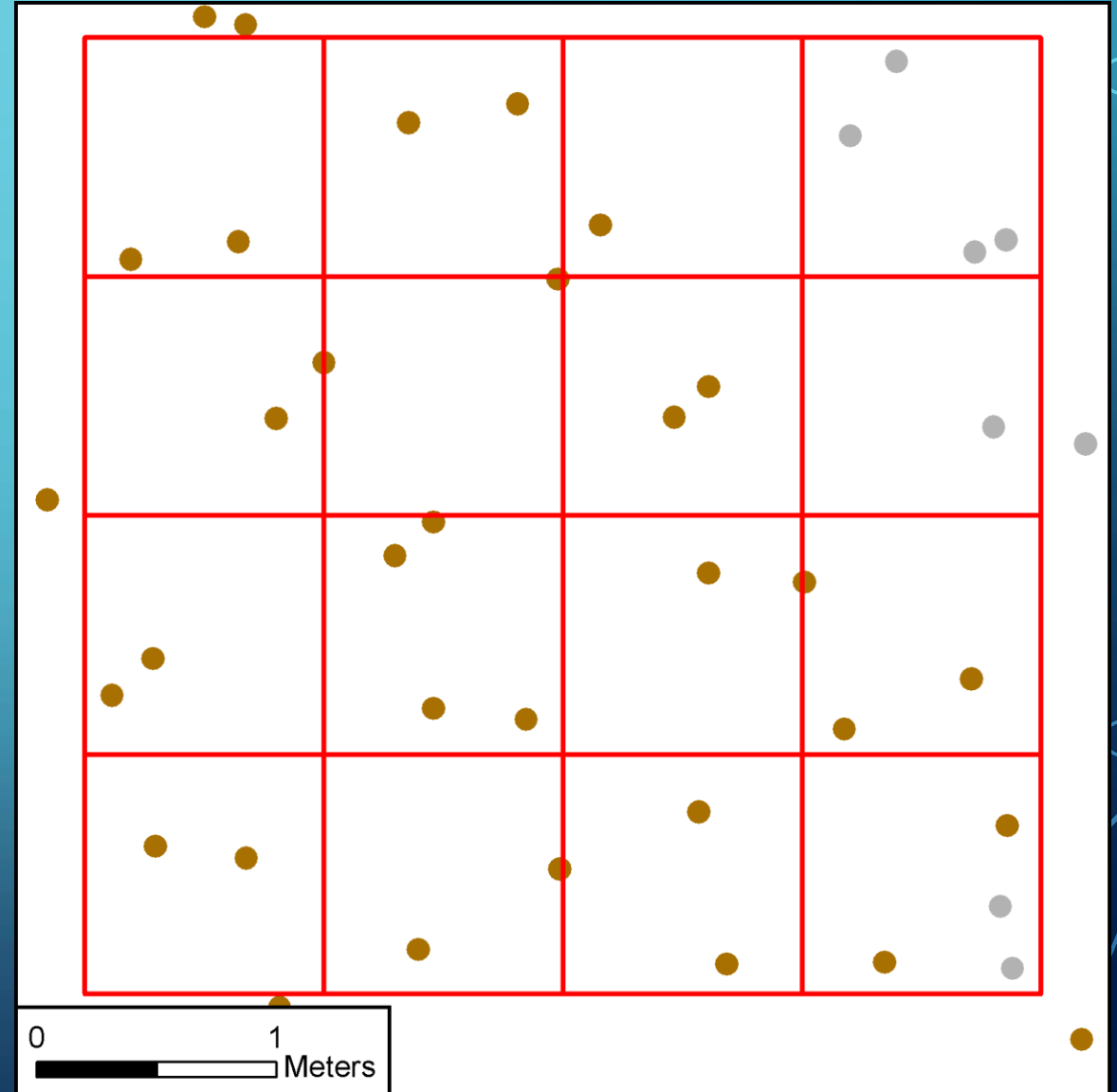
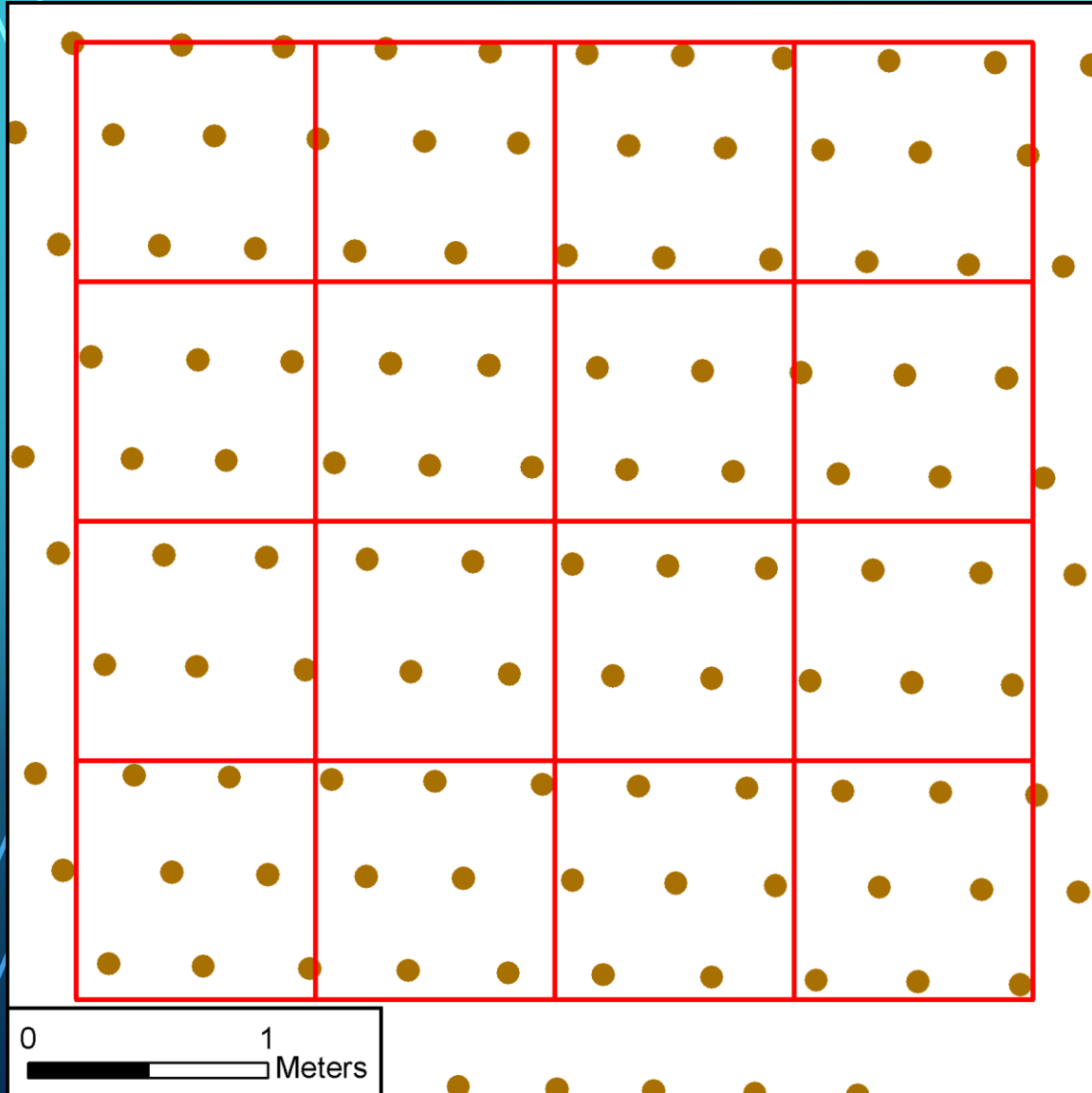


COMPARISON – PULSE DENSITY

QL1

PENNSYLVANIA, DATA CREDIT: PSU

QL2

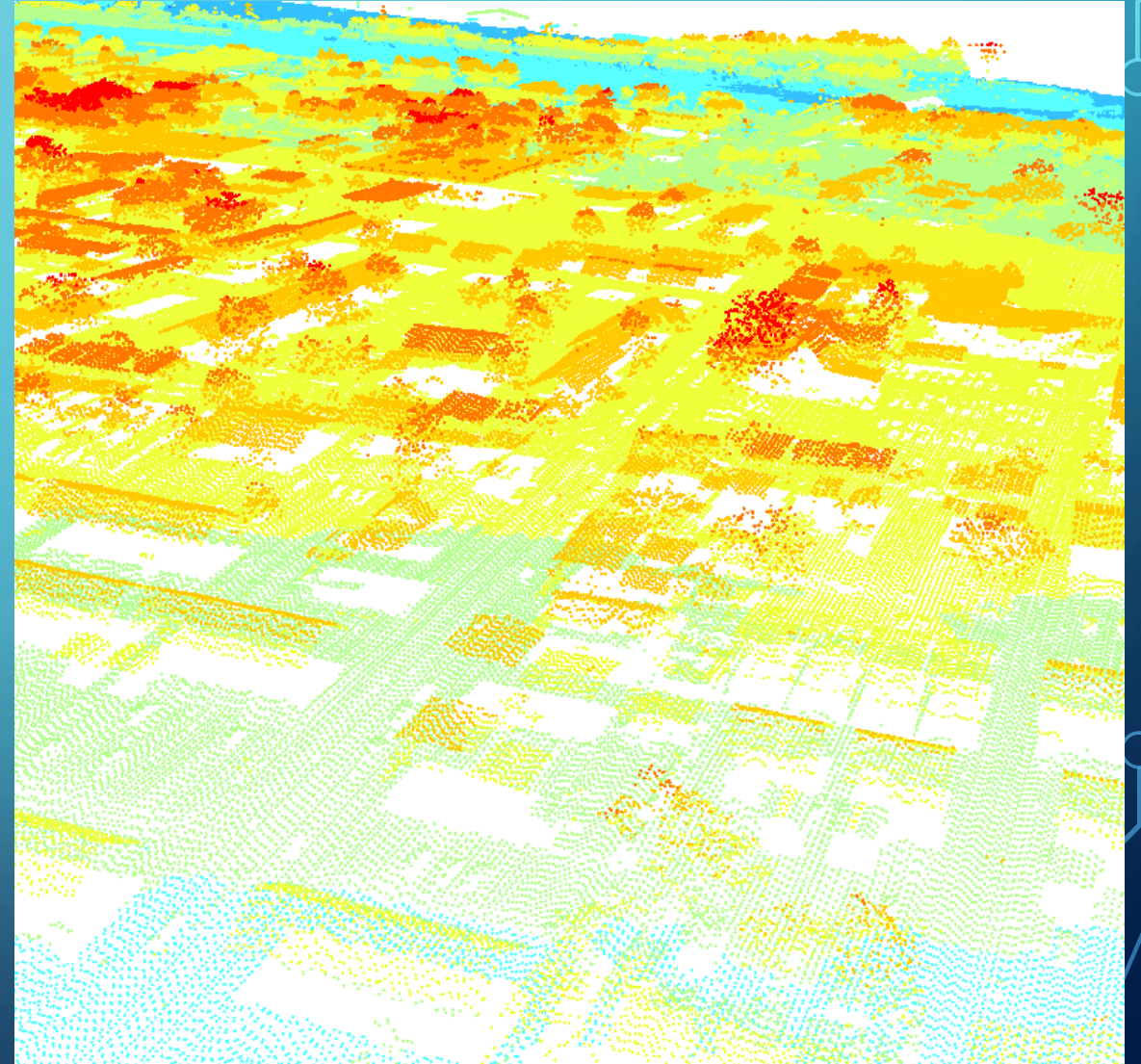
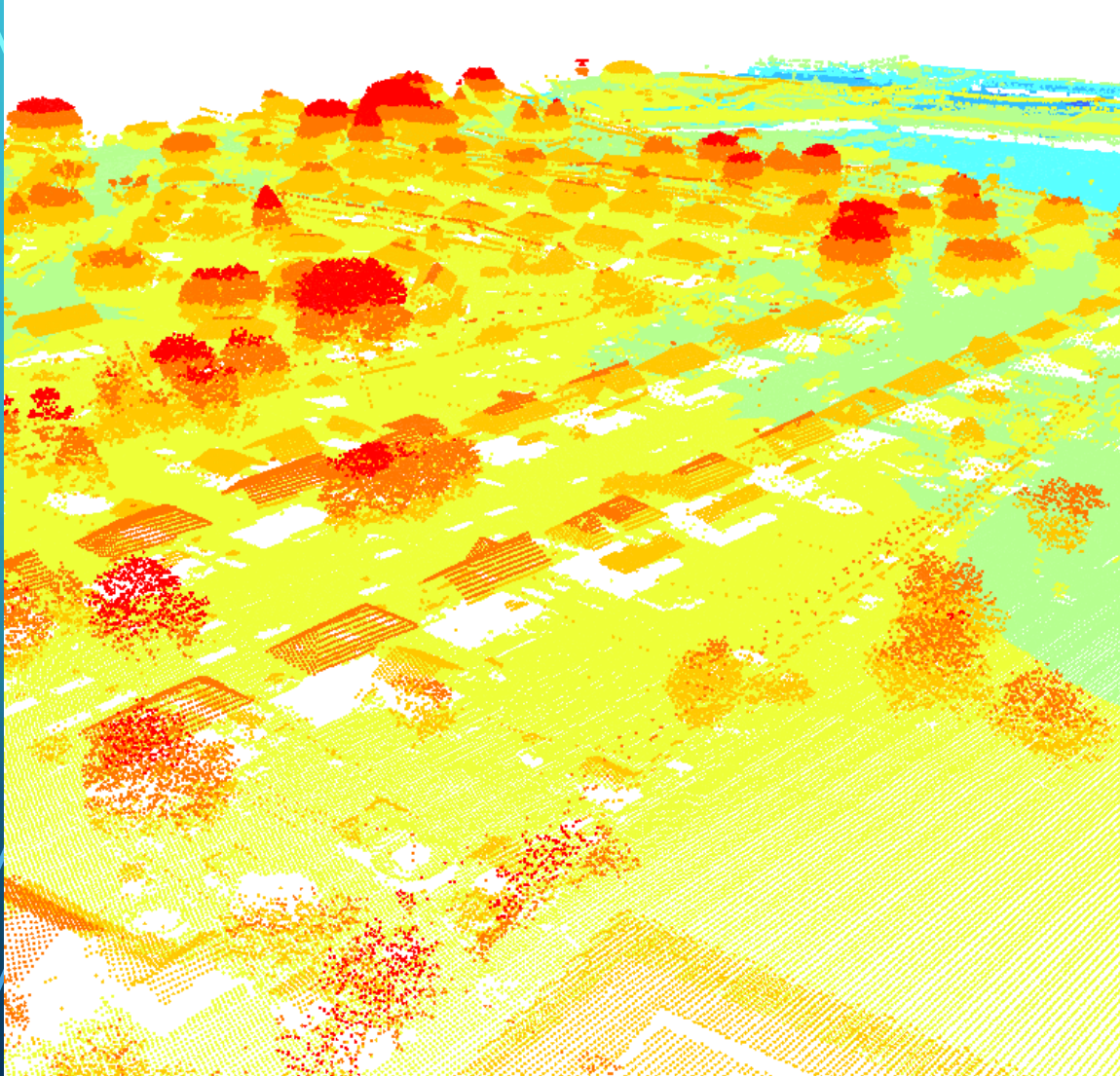


COMPARISON – POINT CLOUD

QL1

PENNSYLVANIA, DATA CREDIT: PSU

QL2

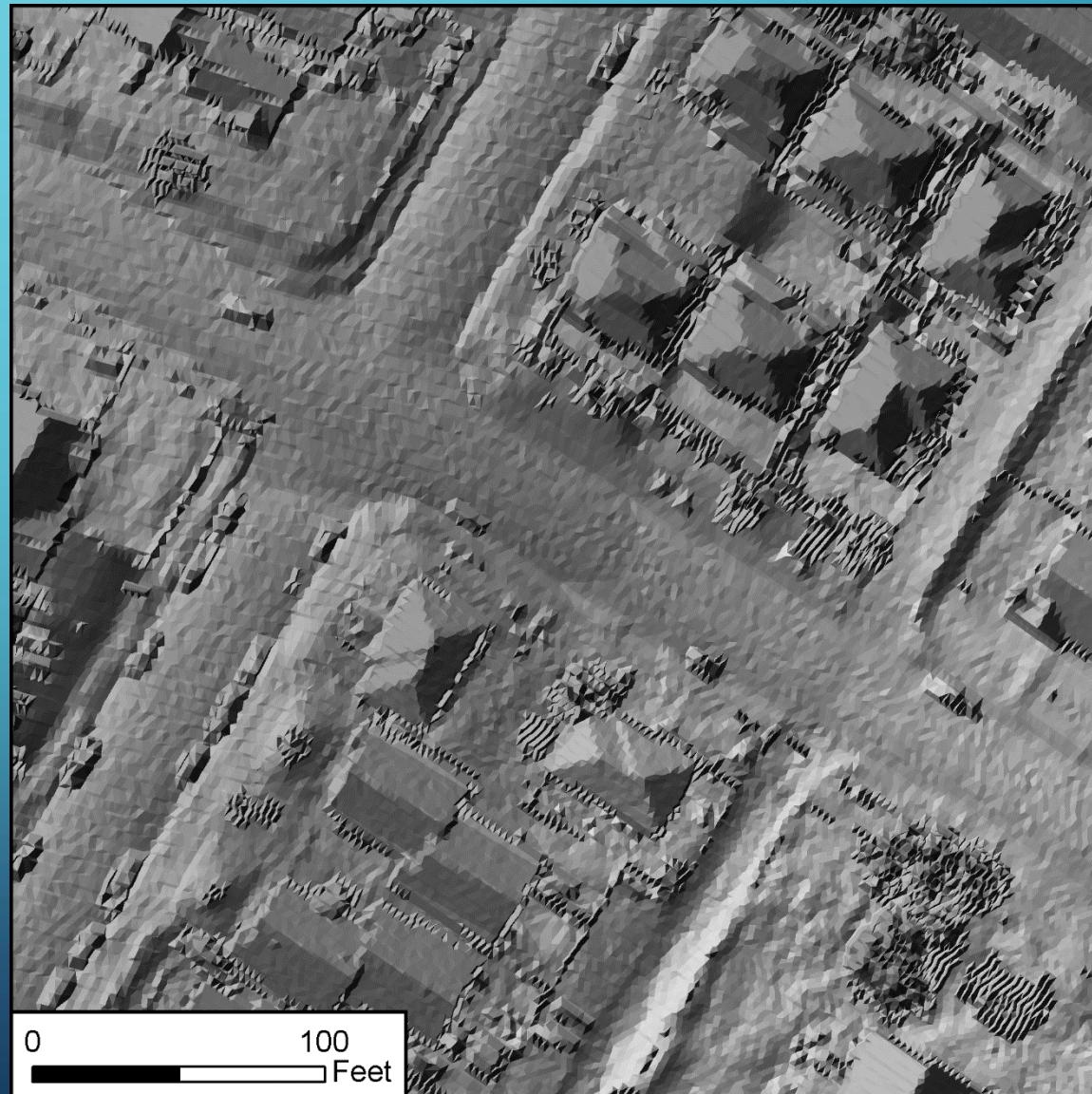
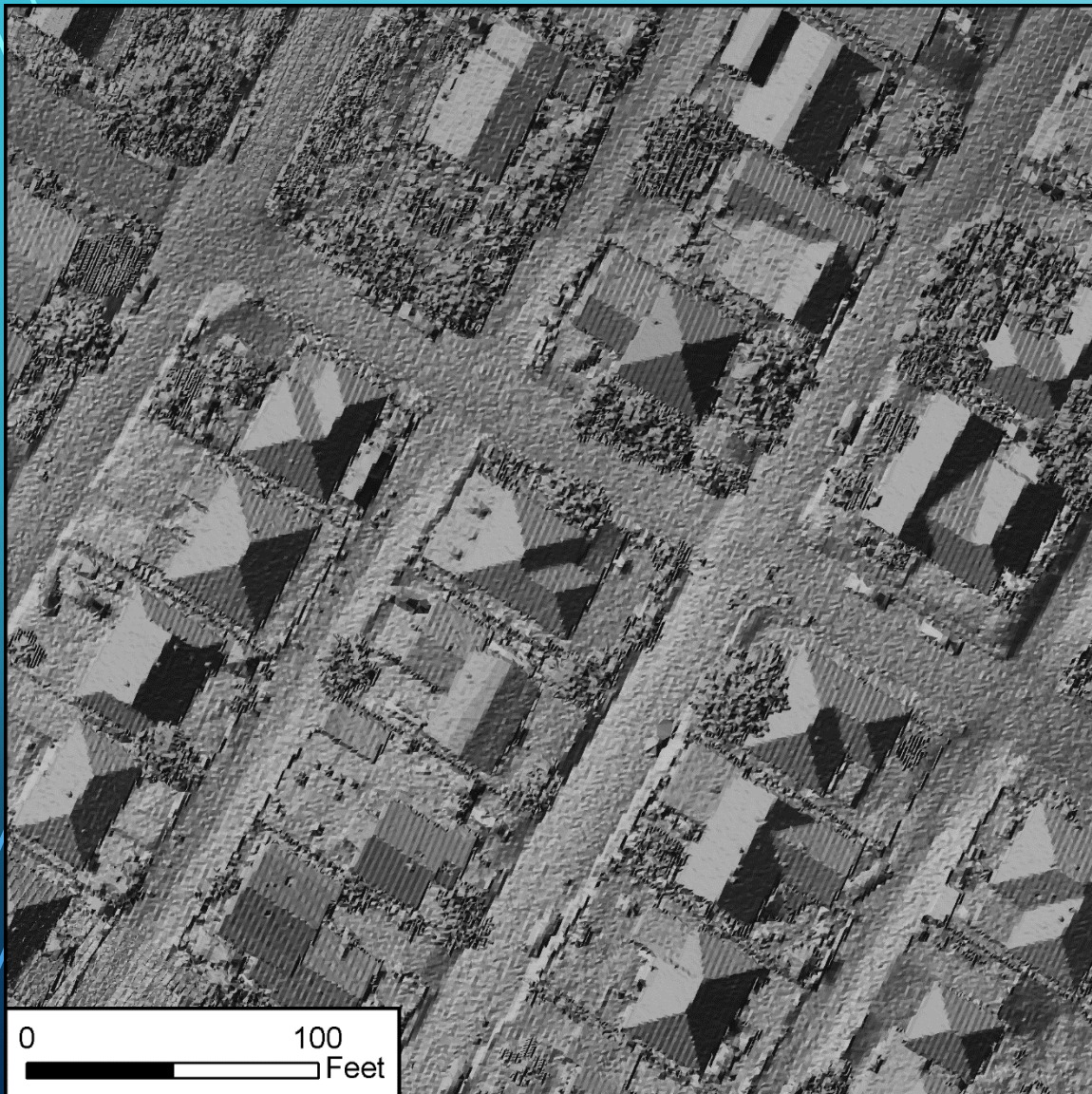


COMPARISON – TIN, EXAMPLE ONE

QL1

SAN DIEGO, DATA CREDIT: USGS

QL2

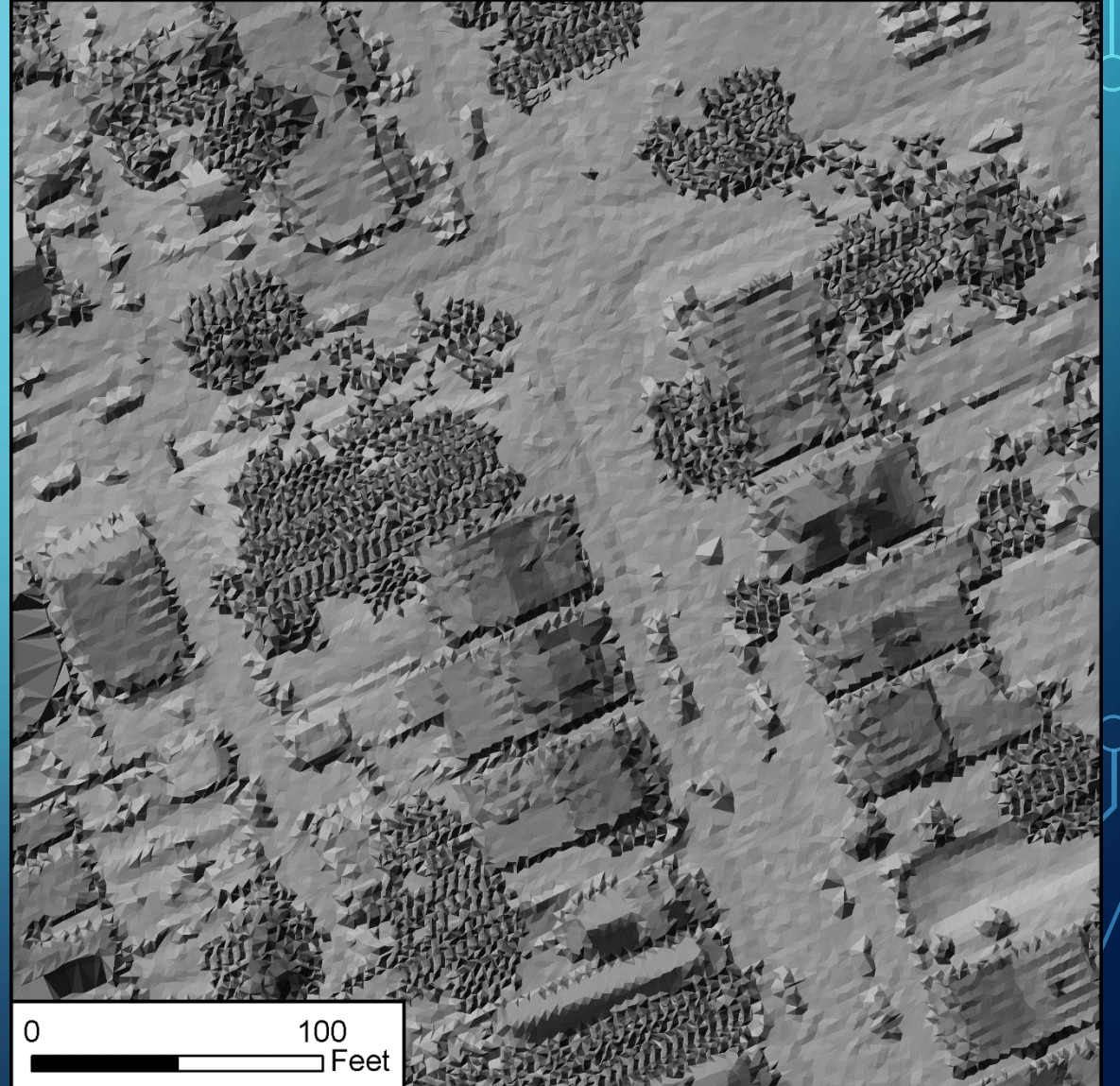
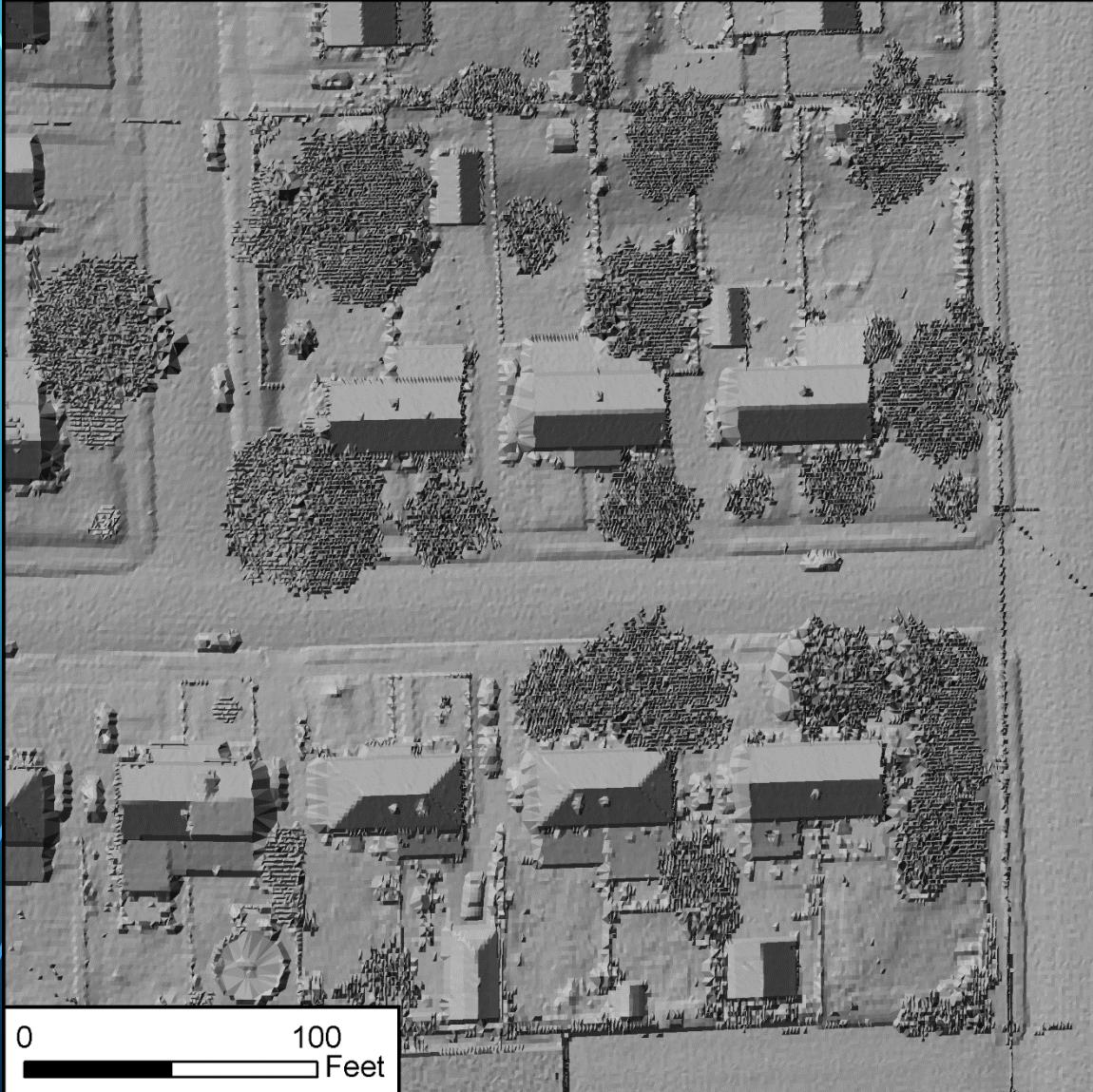


COMPARISON – TIN, EXAMPLE TWO

QL1

QL2

PENNSYLVANIA, DATA CREDIT: PSU

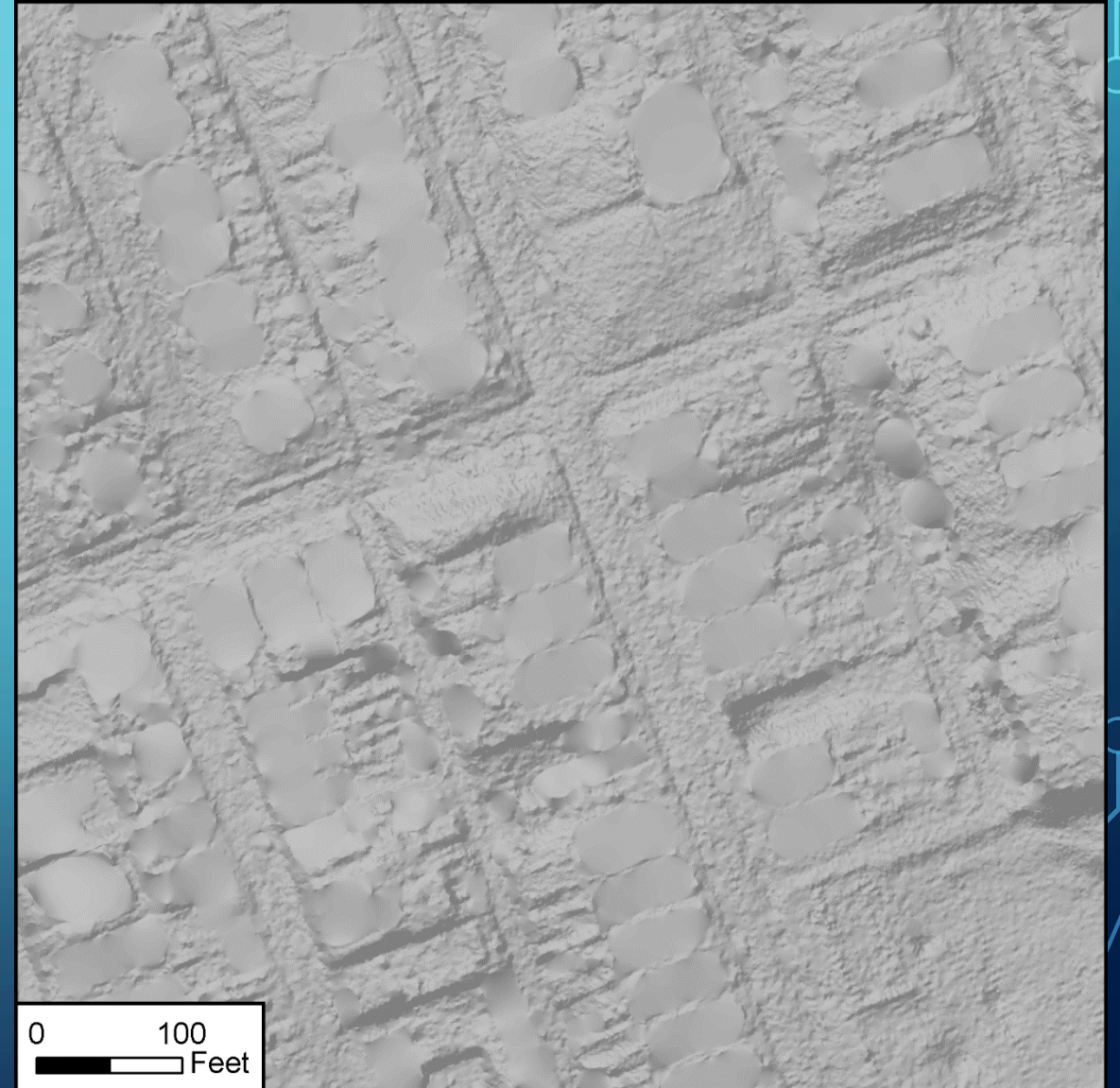
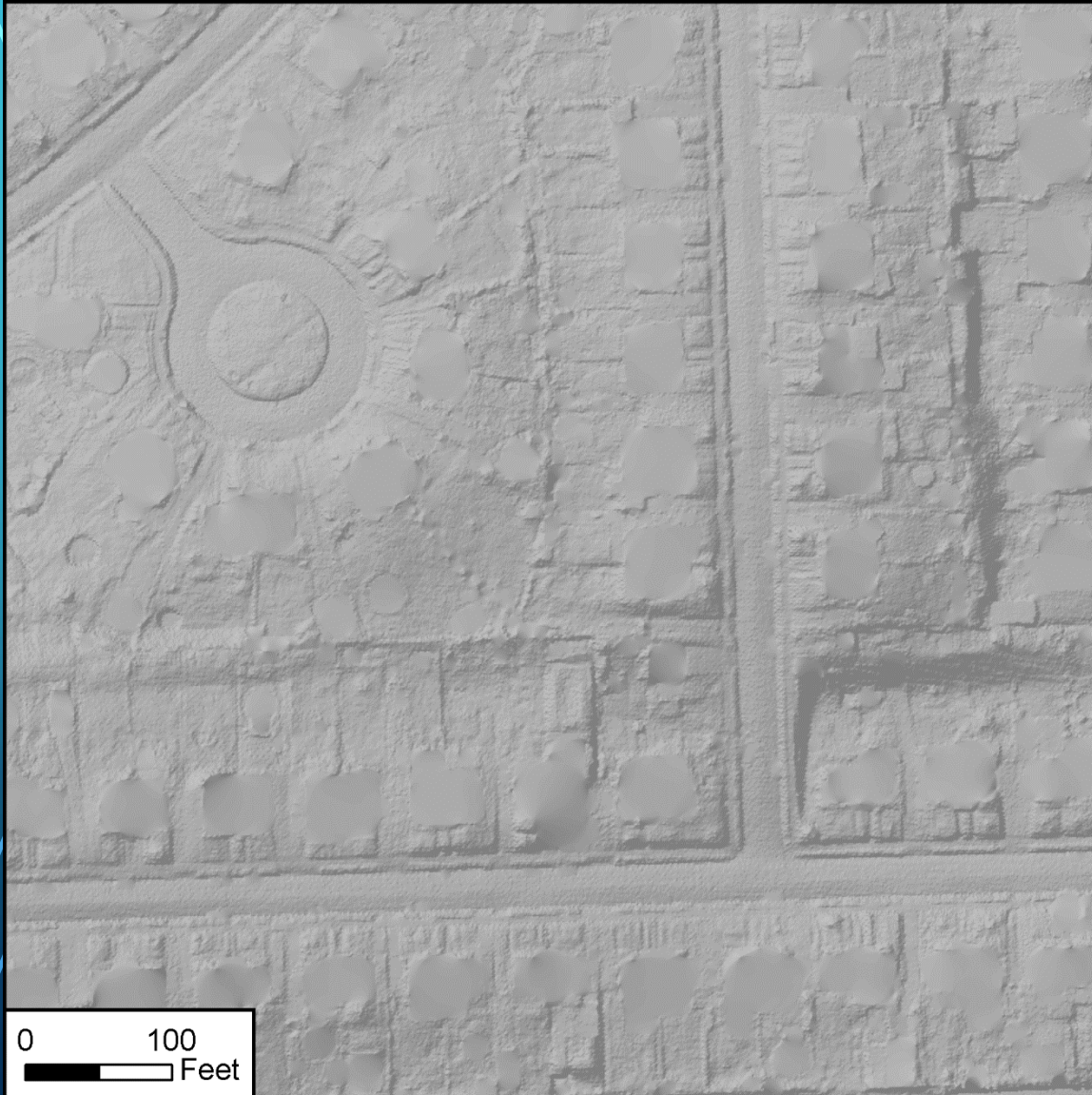


COMPARISON – BARE EARTH DEM, 1FT RESOLUTION

QL1

QL2

PENNSYLVANIA, DATA CREDIT: PSU

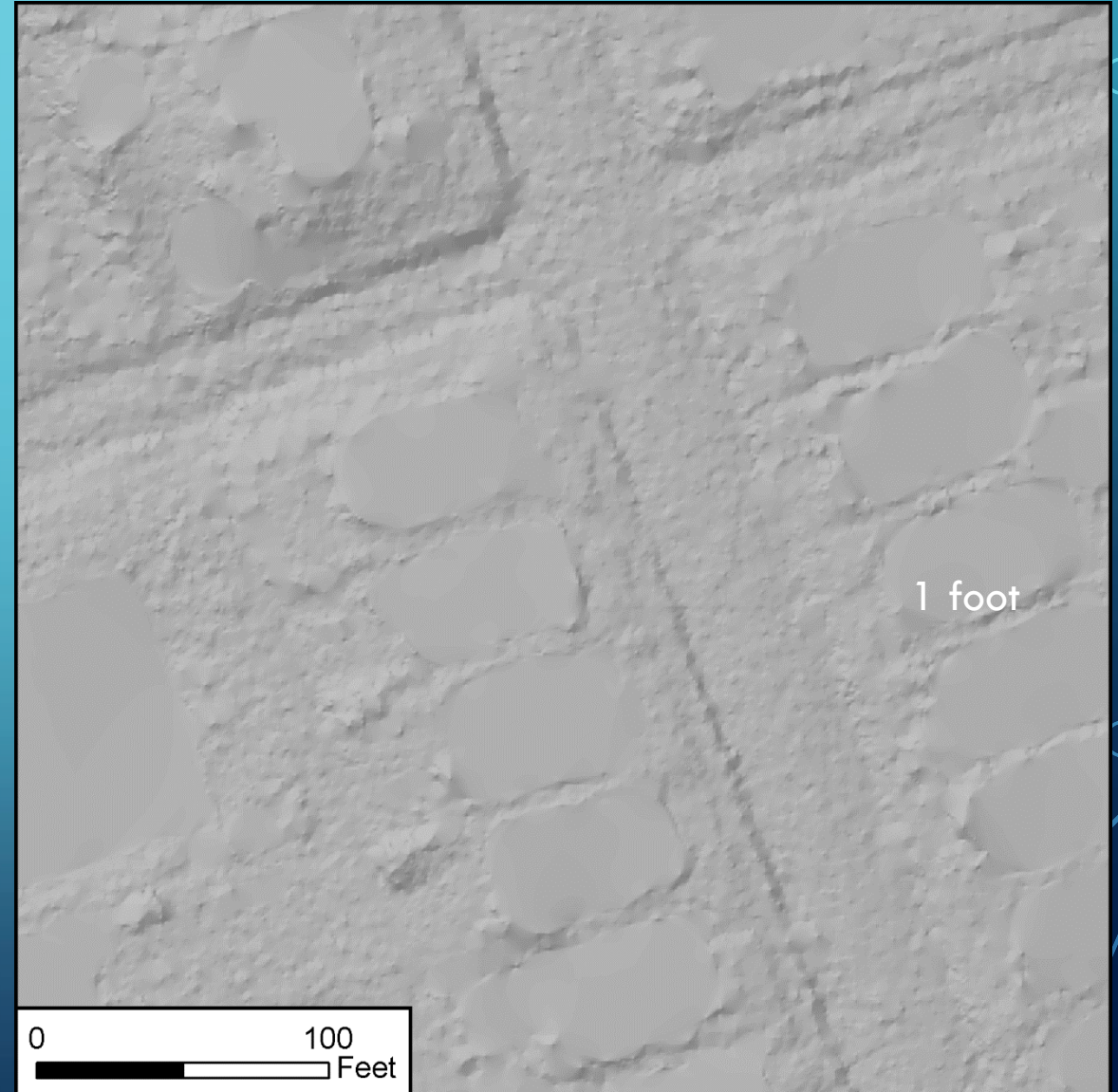
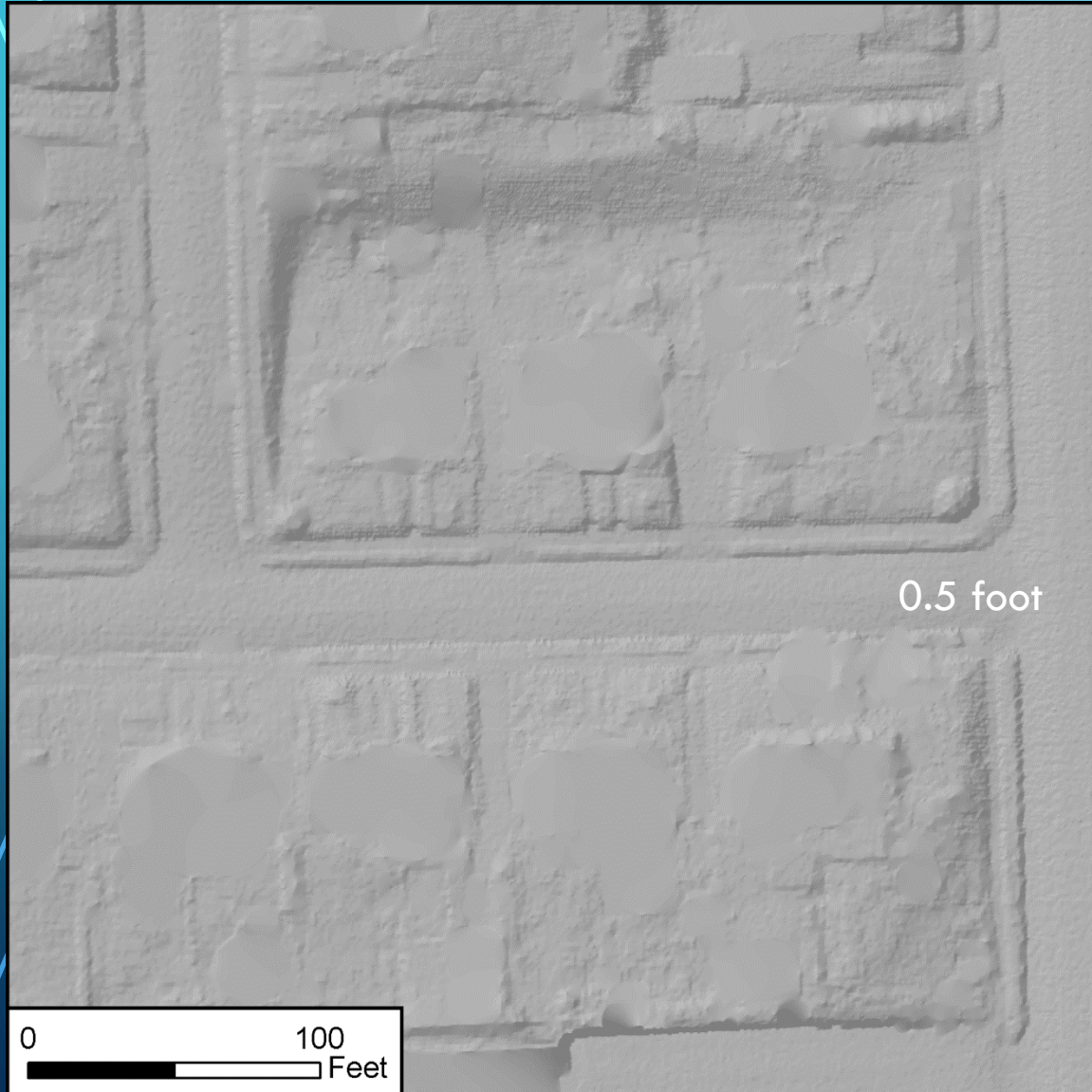


COMPARISON – BARE EARTH DEM, ZOOM IN

QL1

QL2

PENNSYLVANIA, DATA CREDIT: PSU

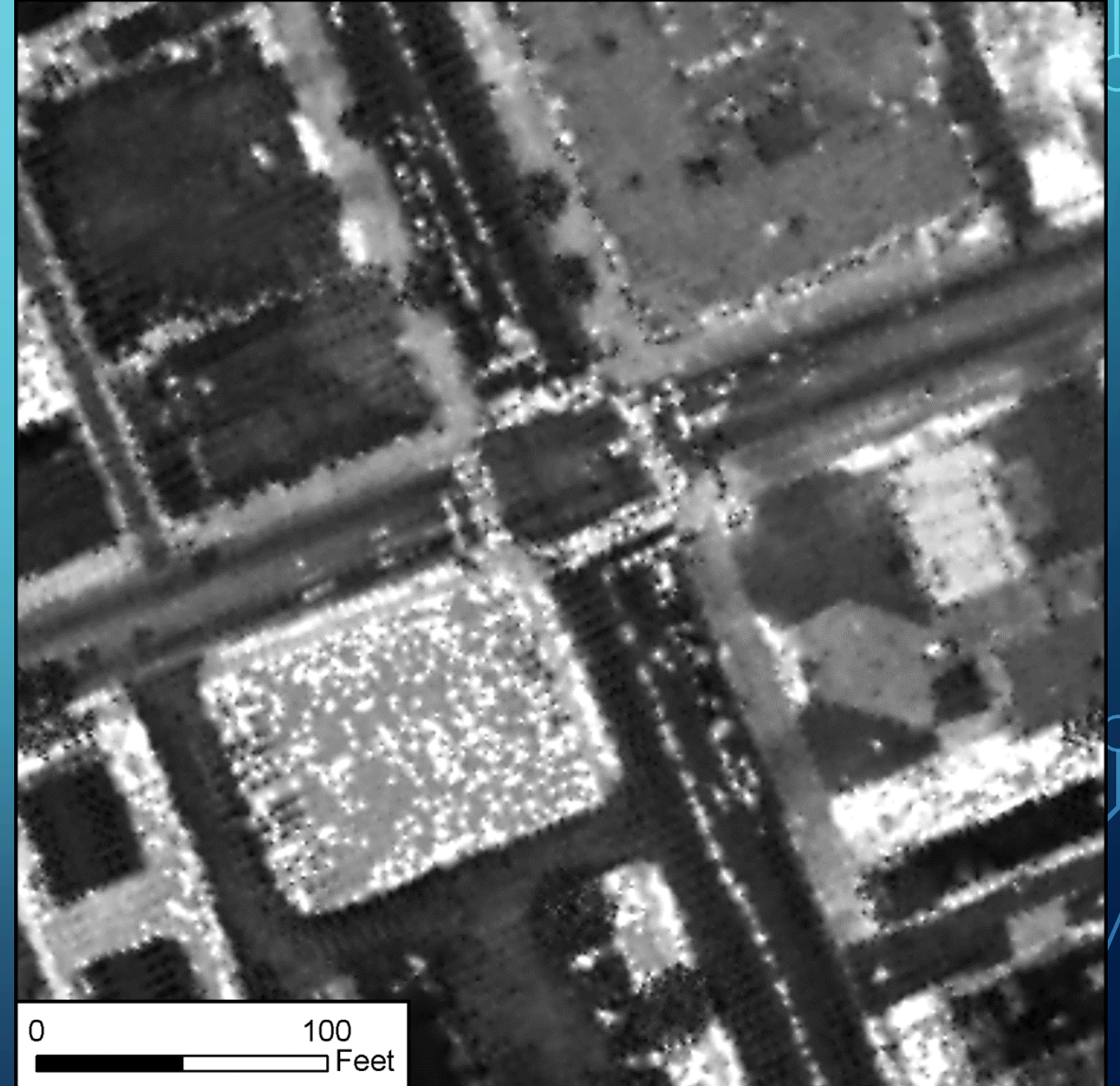


COMPARISON – INTENSITY

QL1

PENNSYLVANIA, DATA CREDIT: PSU

QL2

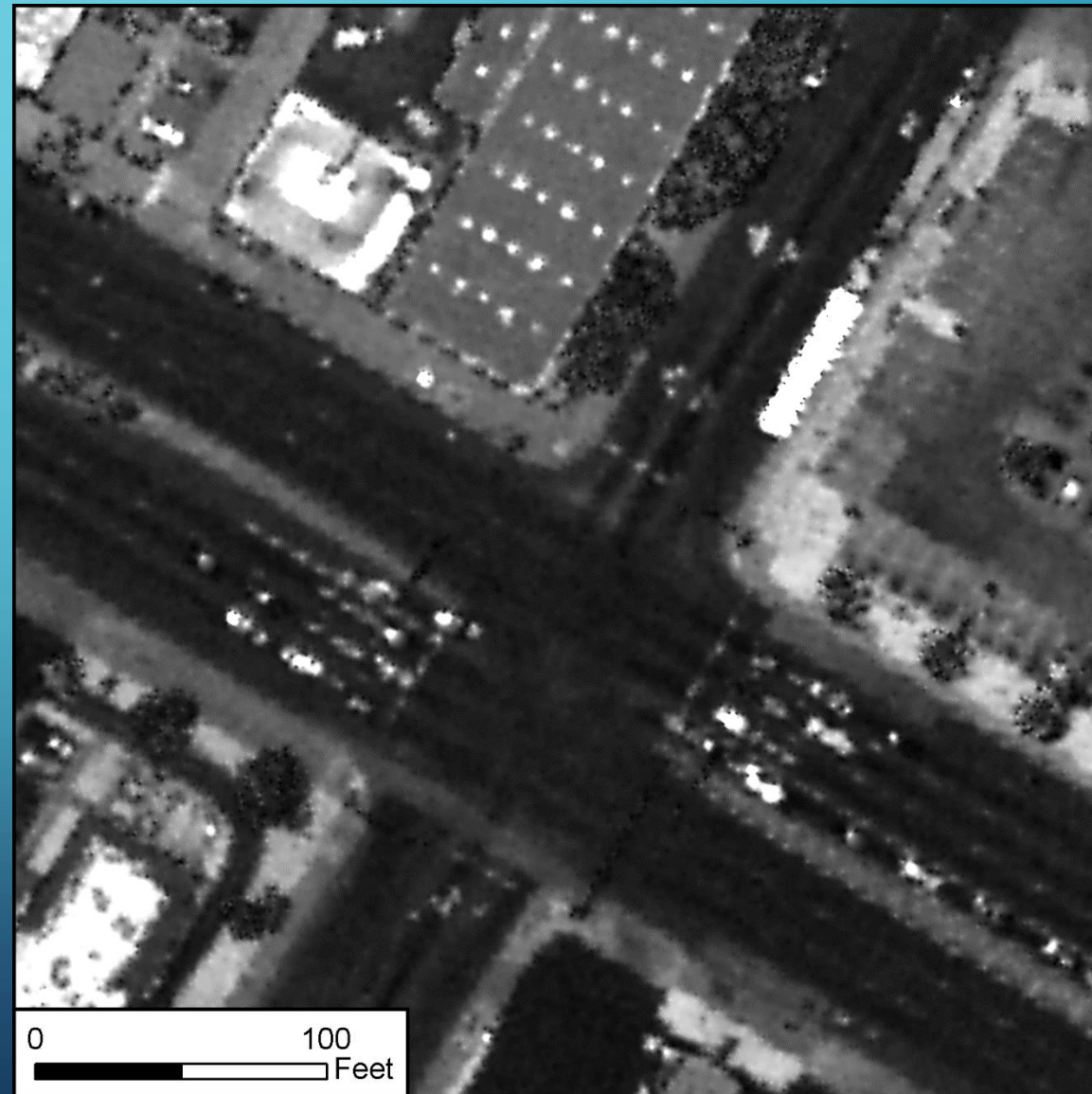
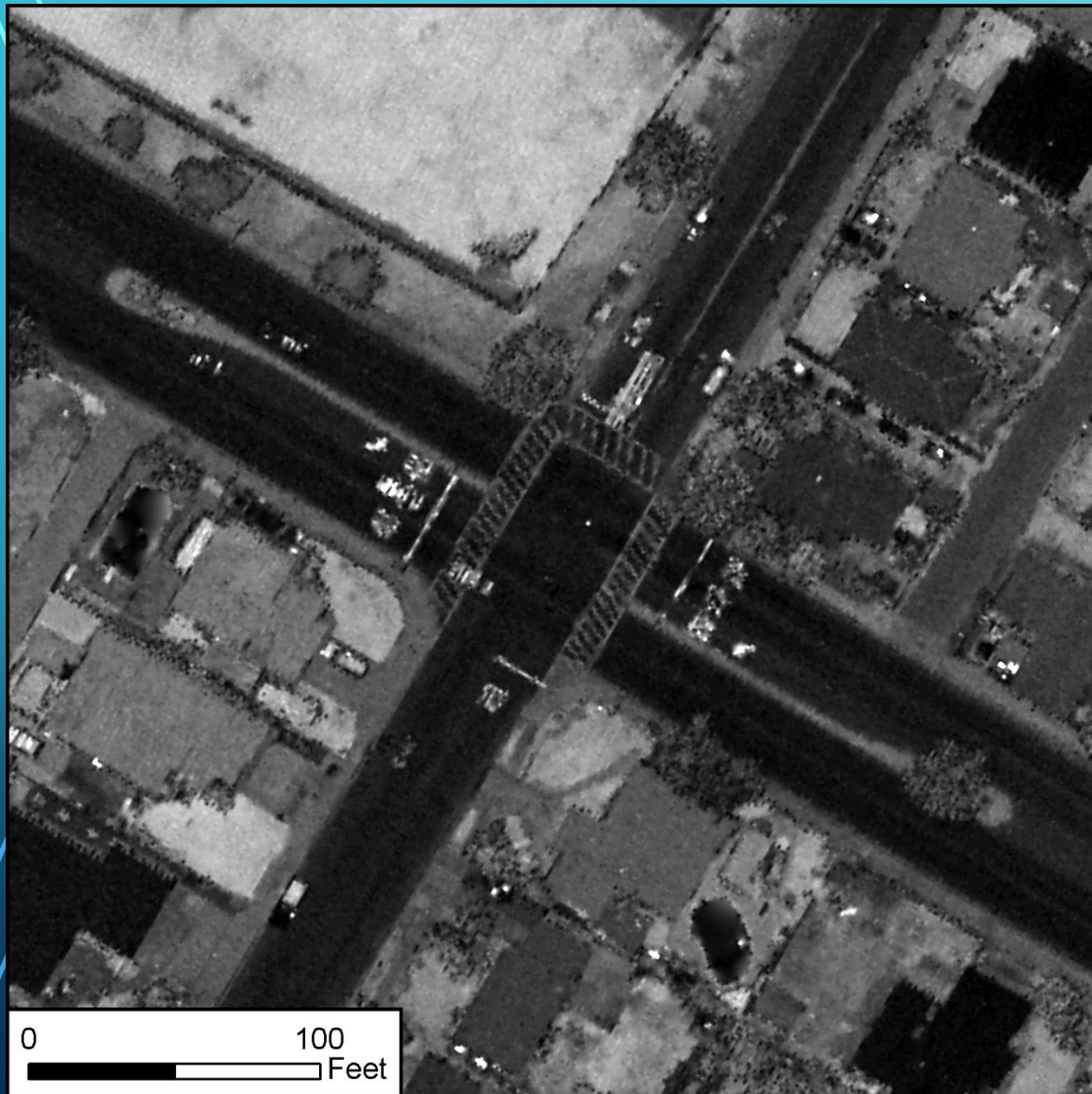


COMPARISON – INTENSITY

QL1

PENNSYLVANIA, DATA CREDIT: PSU

QL2

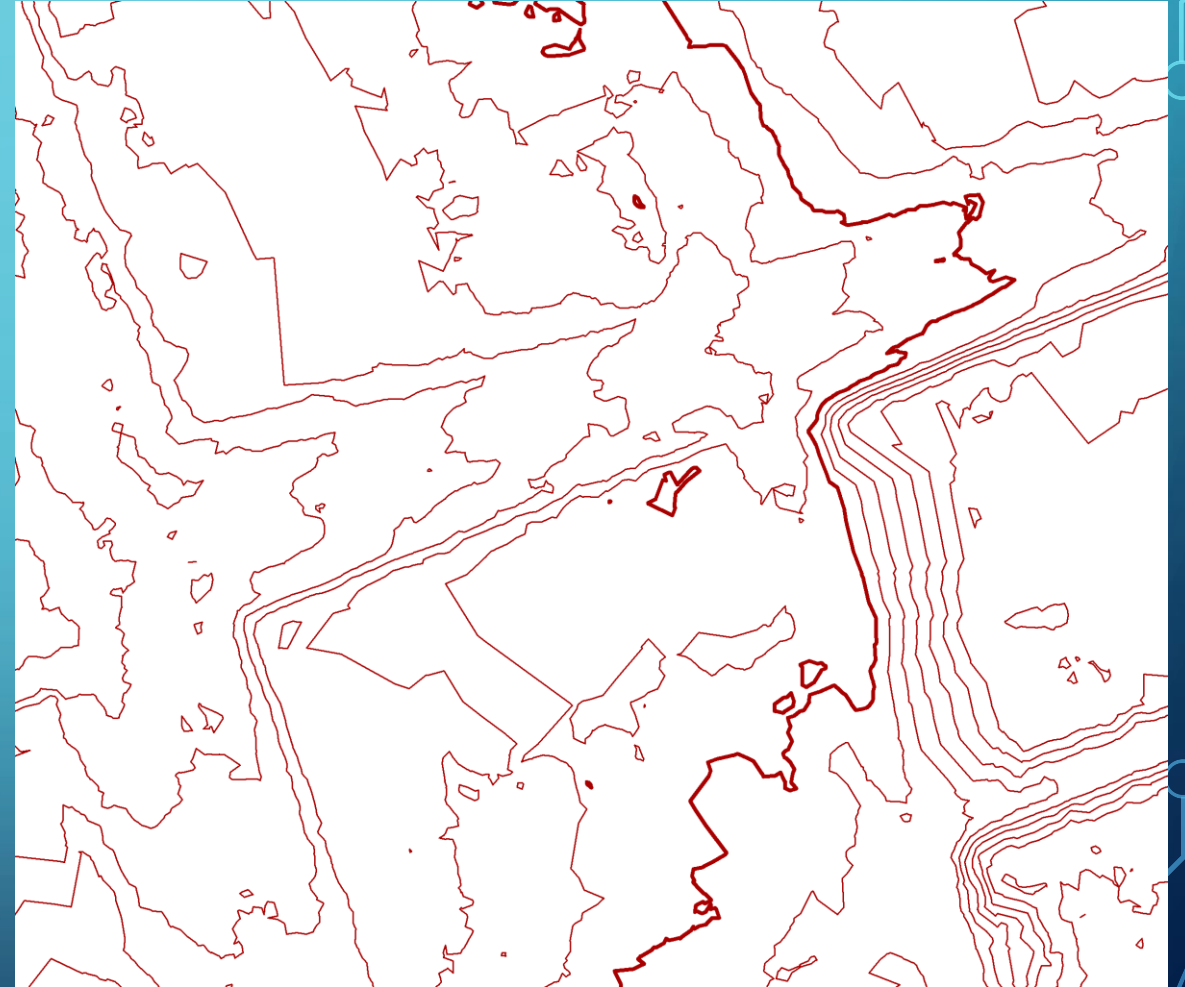
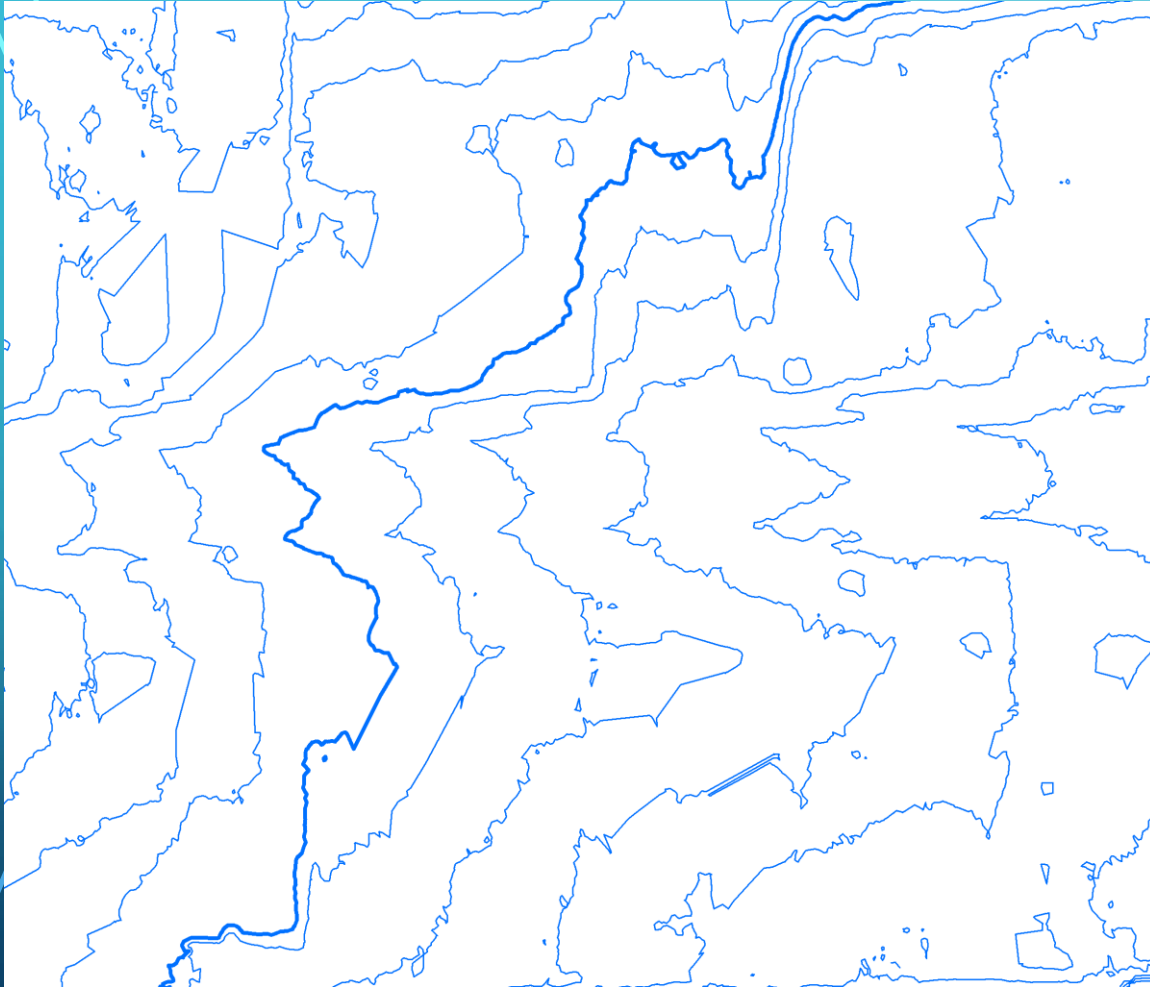


COMPARISON – 1 FT CONTOURS

QL1

PENNSYLVANIA, DATA CREDIT: PSU

QL2



LOCAL USES

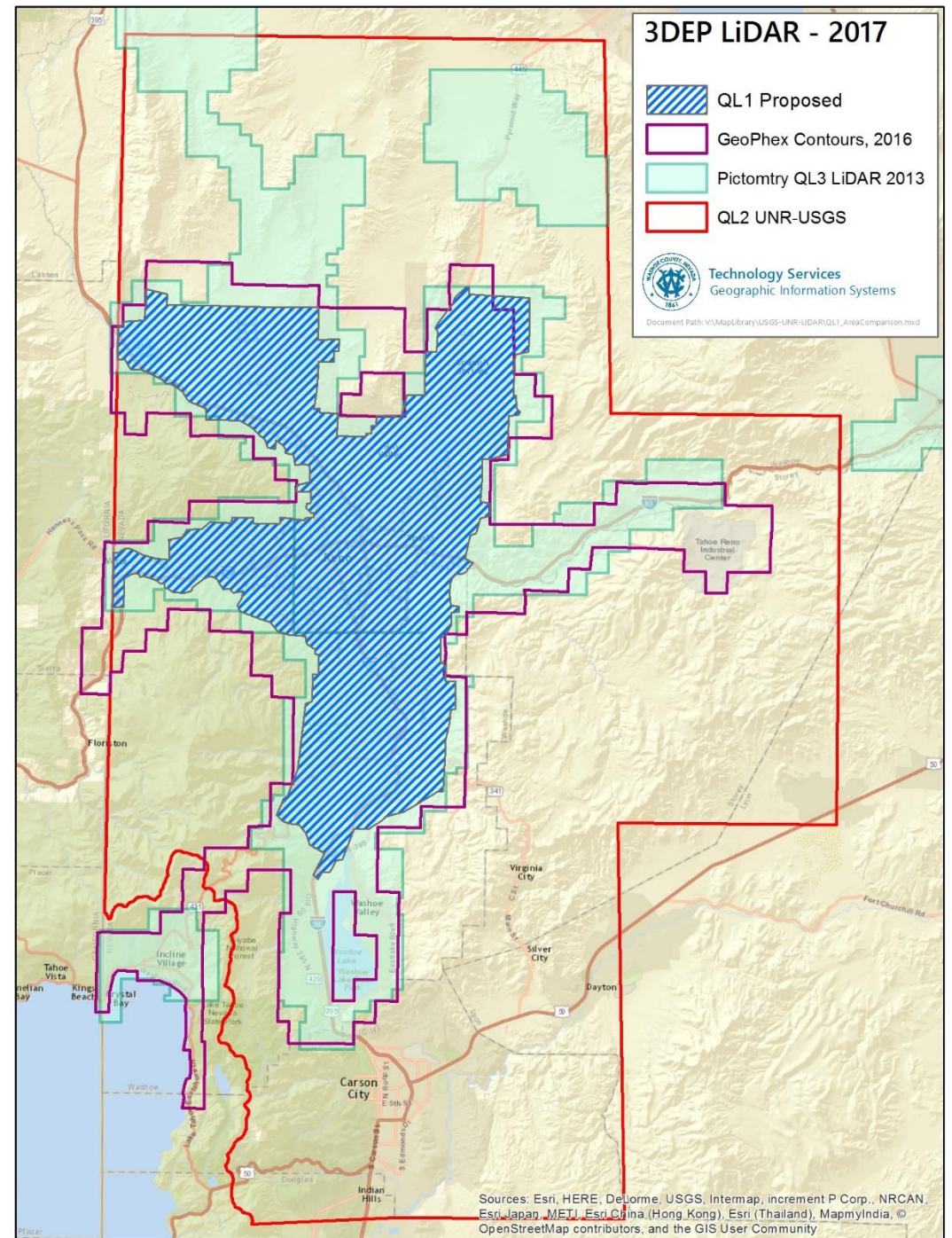
- **Flood control modeling**
- **Grading plans and pre-construction bids (pre-engineering)**
- **Change Detection**
- **Building footprints**
- **Vegetation classification**
- **Rooftop solar assessment**
- **Aerial imagery rectification**
- **Geologic mapping and hazards**

COST COMPARISON

Product	Area (Sq. Miles)	Cost	Cost/Sq. Mile
Geophex 2ft Contours (Photogrammetric) 2016	442	\$84,550	\$191
Pictometry QL3 LiDAR (1 pulse/sq. meter) 2013	554	\$37,660	\$68
USGS QL1 (8 pulses/sq. meter) 2017	234	\$90,428	\$386
USGS QL2 (2 pulses/sq. meter) 2017	1370	\$349,605*	\$255

*324,605 of this total is funded by USGS and UNR through the USGS 3DEP program and UNR's VPRI.

COST COMPARISON



FUNDING OPTIONS

- 1. Do Nothing
- 2. Fund \$16-\$25k to enable QL2 acquisition and match USGS funds
- 3. Option 2 + Fund QL1 acquisition up to \$85k
 - Requires reduction of QL1 area by ~12 sq. miles
 - Total amount would be $25 + 85 = \$110k$