Congratulations, you are getting new Lidar – Now what?

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Adam Derringer, GISP
Senior Project Manager

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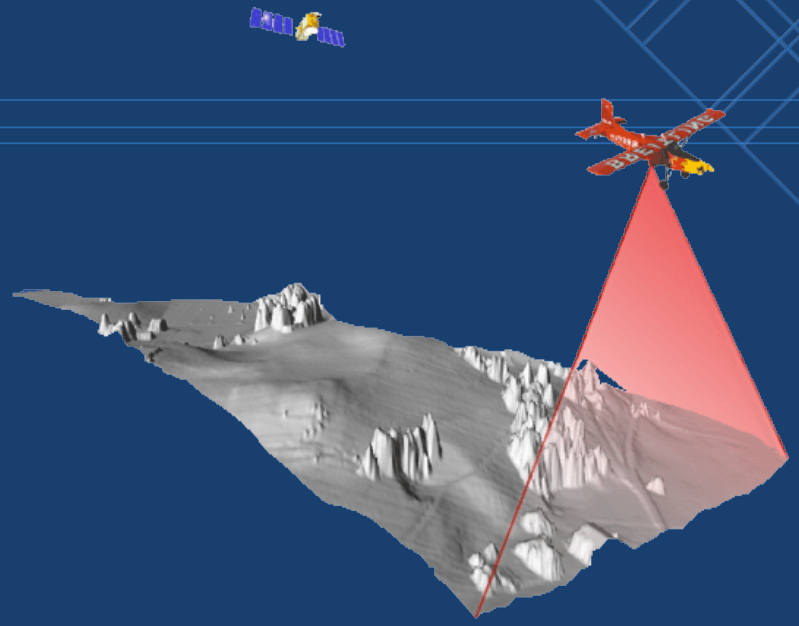
Ingenuity, Integrity, and Intelligence.

Today's Agenda

- Background Info
- What is LiDAR
- Why is it important
- What's up with SE MN
- What can you do with it?
- LiDAR Demo

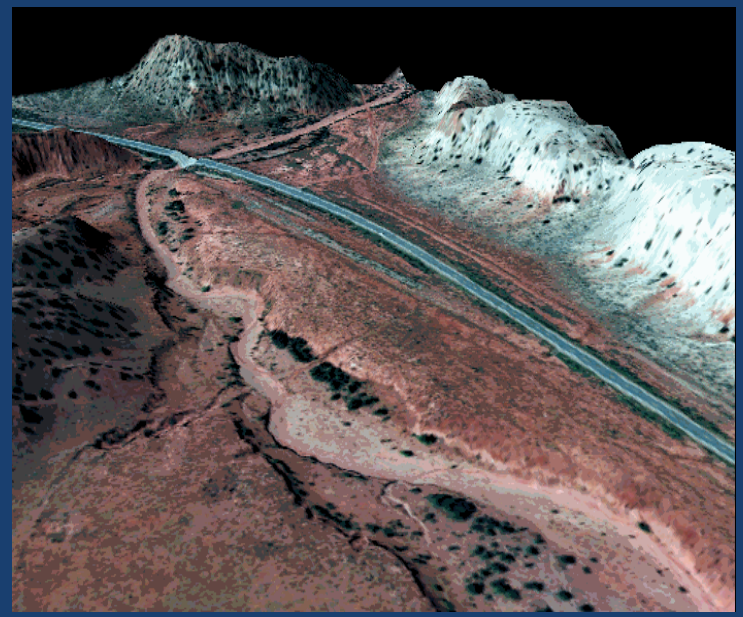
Buildings and hydrographic features extracted from Fond du Lac County, Wisconsin's lidar

Airborne LiDAR Technology



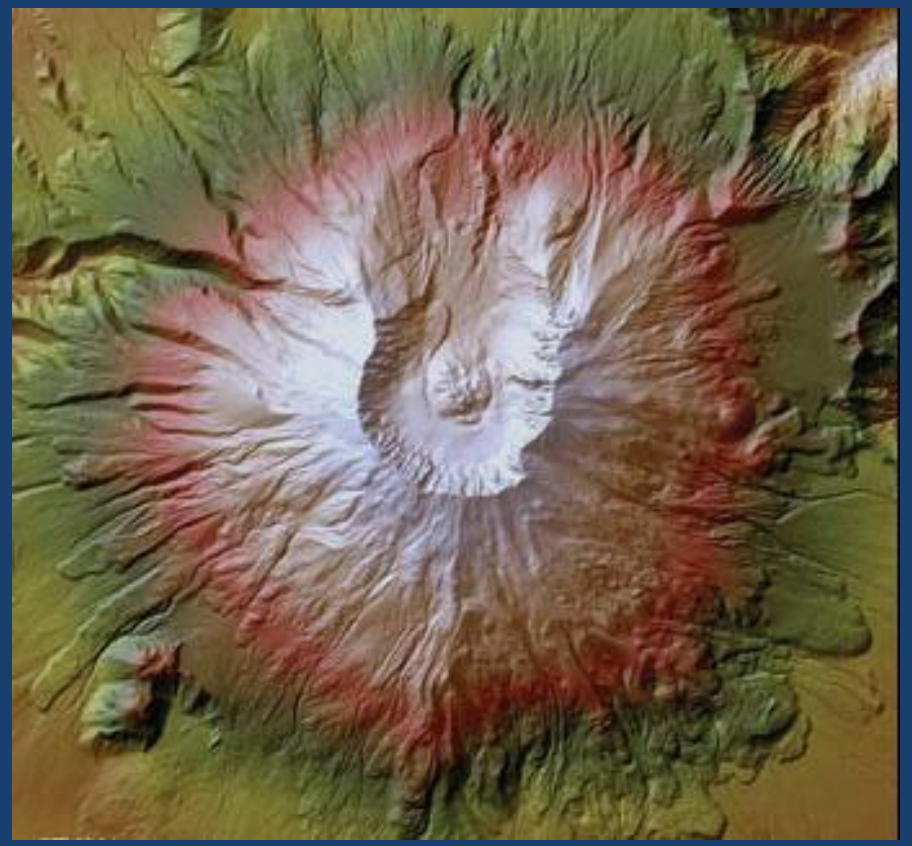
LiDAR:

- Light Detection And Ranging:
- Similar to Radar or Sonar but using an optical source – a laser to measure location based on speed of light.
- Millions of measured points allows the interpretation of surfaces and models.



What is 3DEP

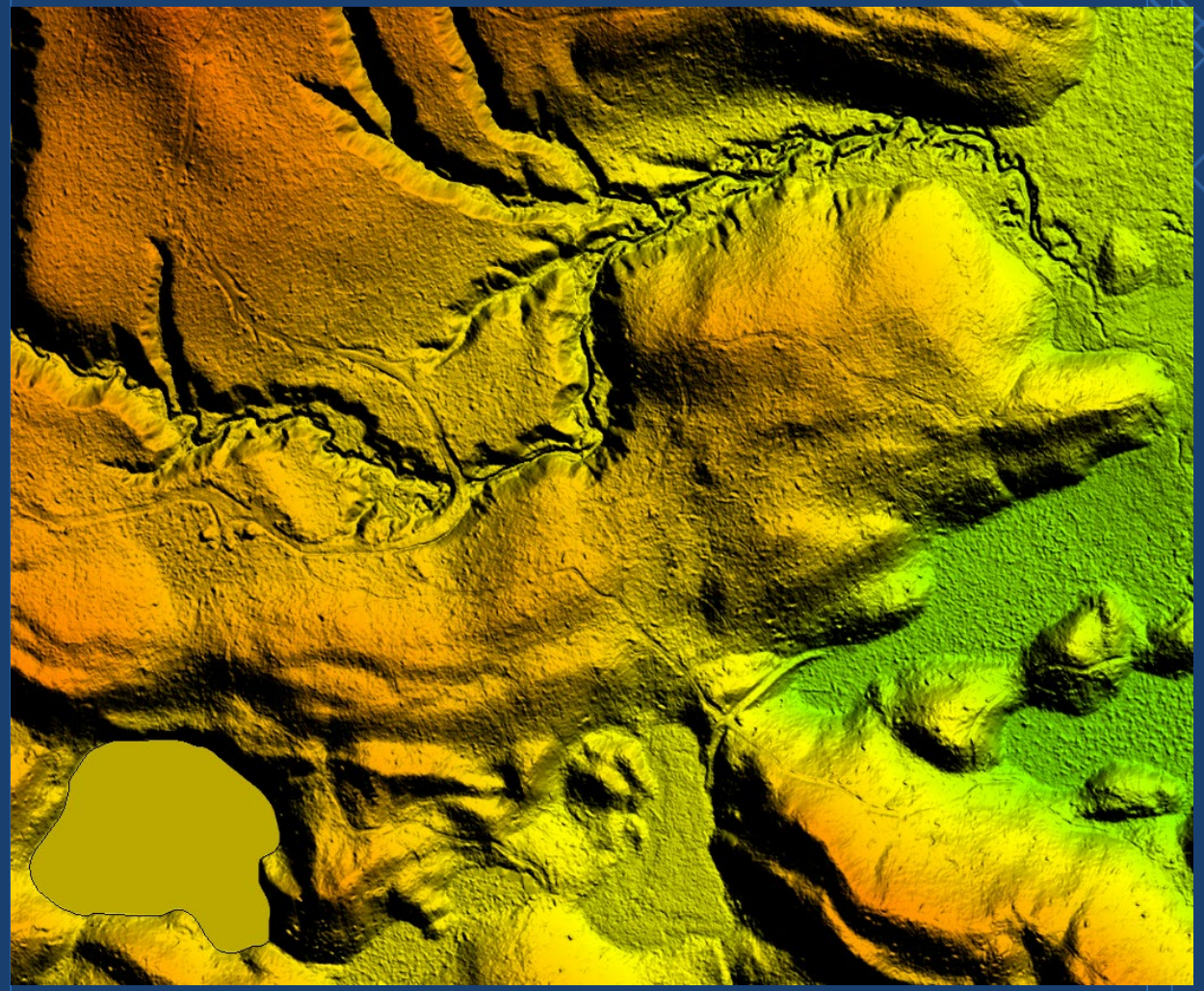
- 3D Elevation Program
- 8 year cycle program for National LiDAR; 2015-23?
- Quality Level Standards
- Partnership Opportunities to Collect Data one time for use by many
- Cooperative or GPSC



Benefits of LiDAR

The Uses:

- Flood risk management
- Infrastructure management
- Construction management
- Natural resources conservation
- Agriculture
- Precision farming
- Water supply
- Water quality
- Wildfire management
- Planning and response

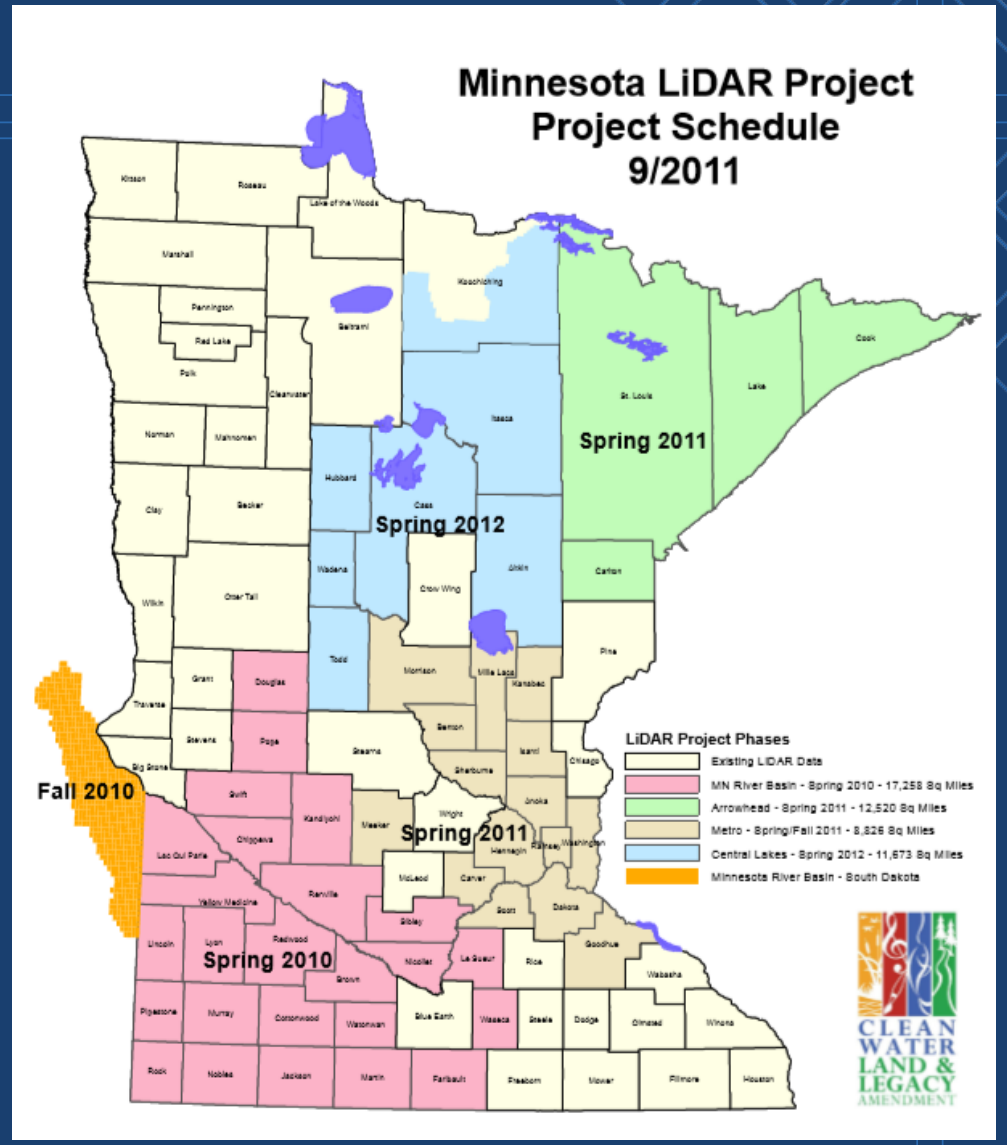


"NEEA Valued LiDAR at $690m annually or and ROI of 5:1"

History of MN LIDAR

MN Elevation Mapping Project:

- Early Adopter
- 2007-2012
- < 1PPM
- State Provided 2-ft contours
- UTM



- **Southeast** (Fall 2008)
  - Overview article
  - Documentation
  - 8,800 square miles in nine counties: Dodge, Fillmore, Freeborn, Houston, Mower, Olmsted, Steele, Wabasha and Winona County.

- **Southwest** (Spring and Fall 2010)
  - 17,260 square miles in 25 counties: Brown, Chippewa, Cottonwood, Douglas, Faribault, Jackson, Kandiyohi, Lac qui Parle, Le Sueur, Lincoln, Lyon, Martin, Murray, Nicollet, Nobles, Pipestone, Pope, Redwood, Renville, Rock, Sibley, Swift, Waseca, Watonwan, Yellow Medicine.
  - Documentation

Where is the State

Current Draft Plan

- 3DEP
- Specifications
- Regions
- State Funding
- Local Partnering

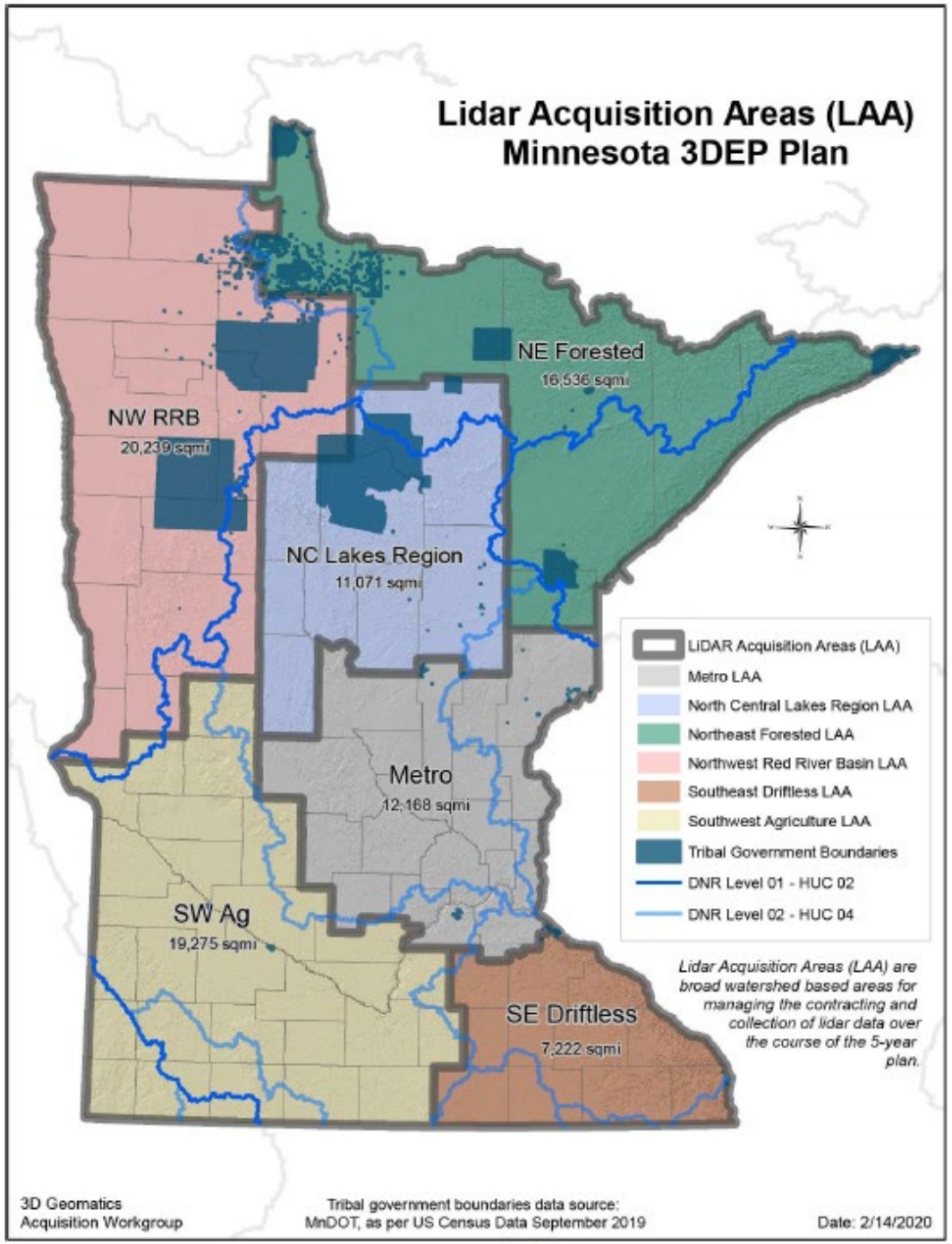


Figure 6: Map of the State's proposed lidar acquisition areas (LAA), depicting broad watershed and political-based areas.

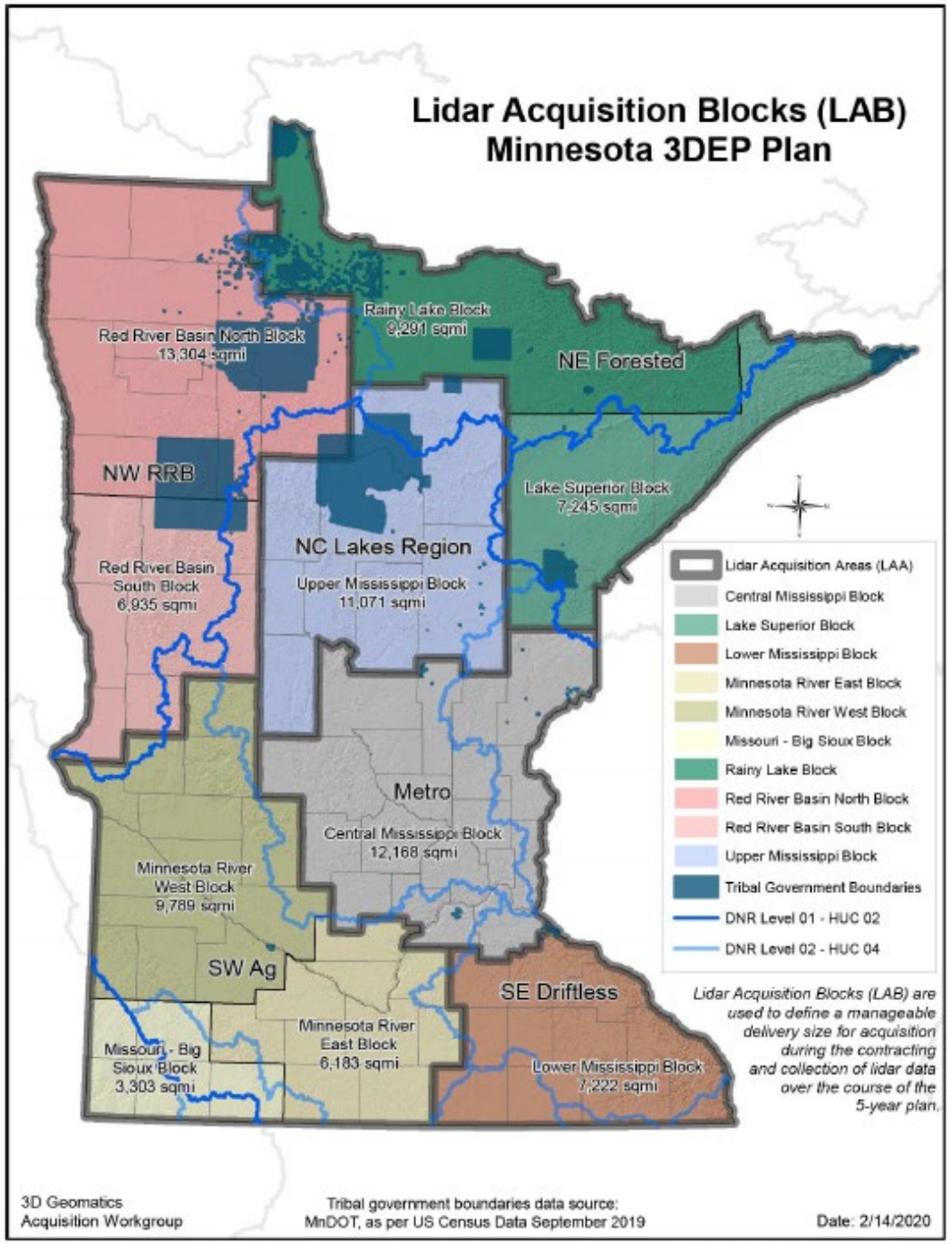
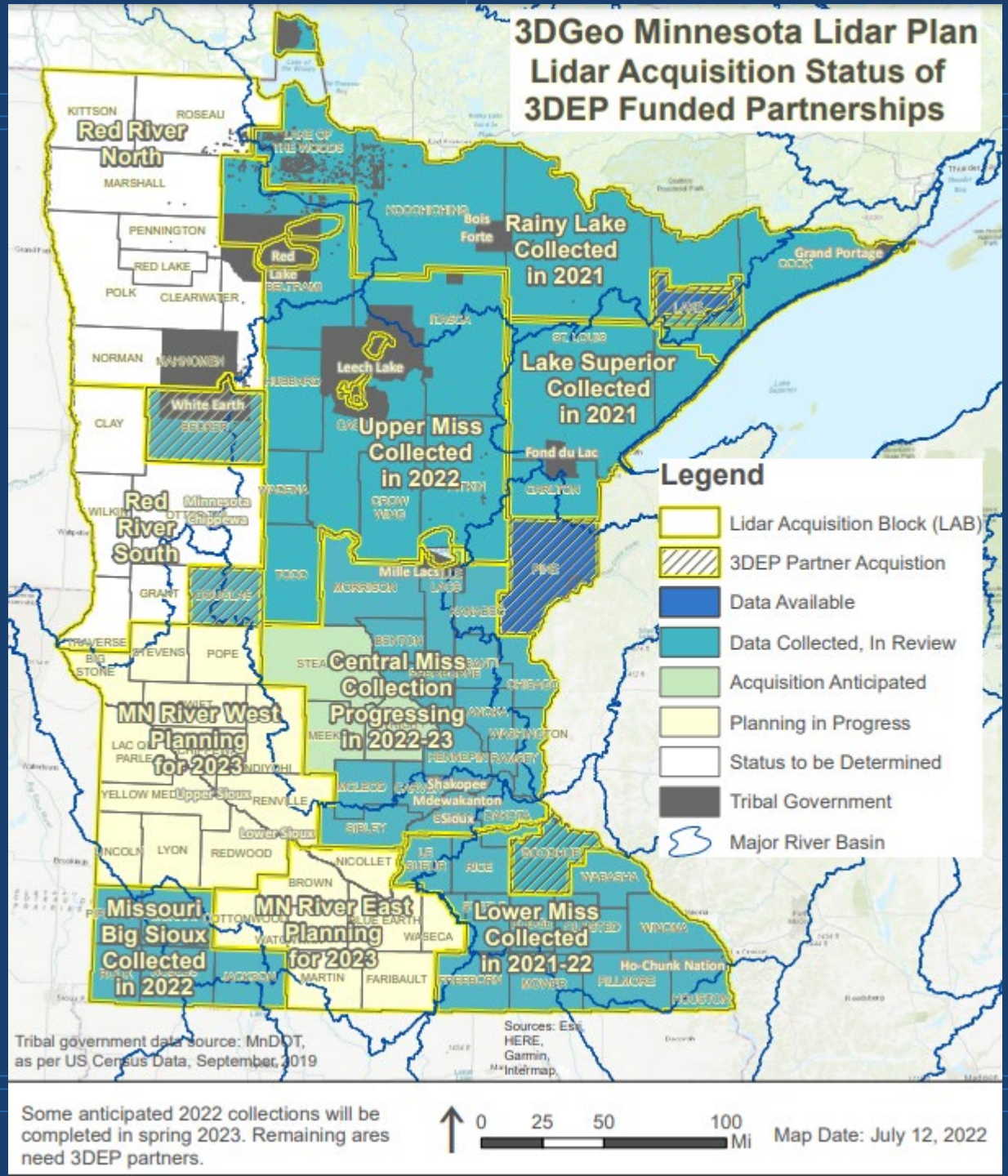


Figure 7: Map of the State's proposed lidar acquisition blocks (LAB), depicting smaller acquisition blocks within the lidar acquisition areas (LAA).



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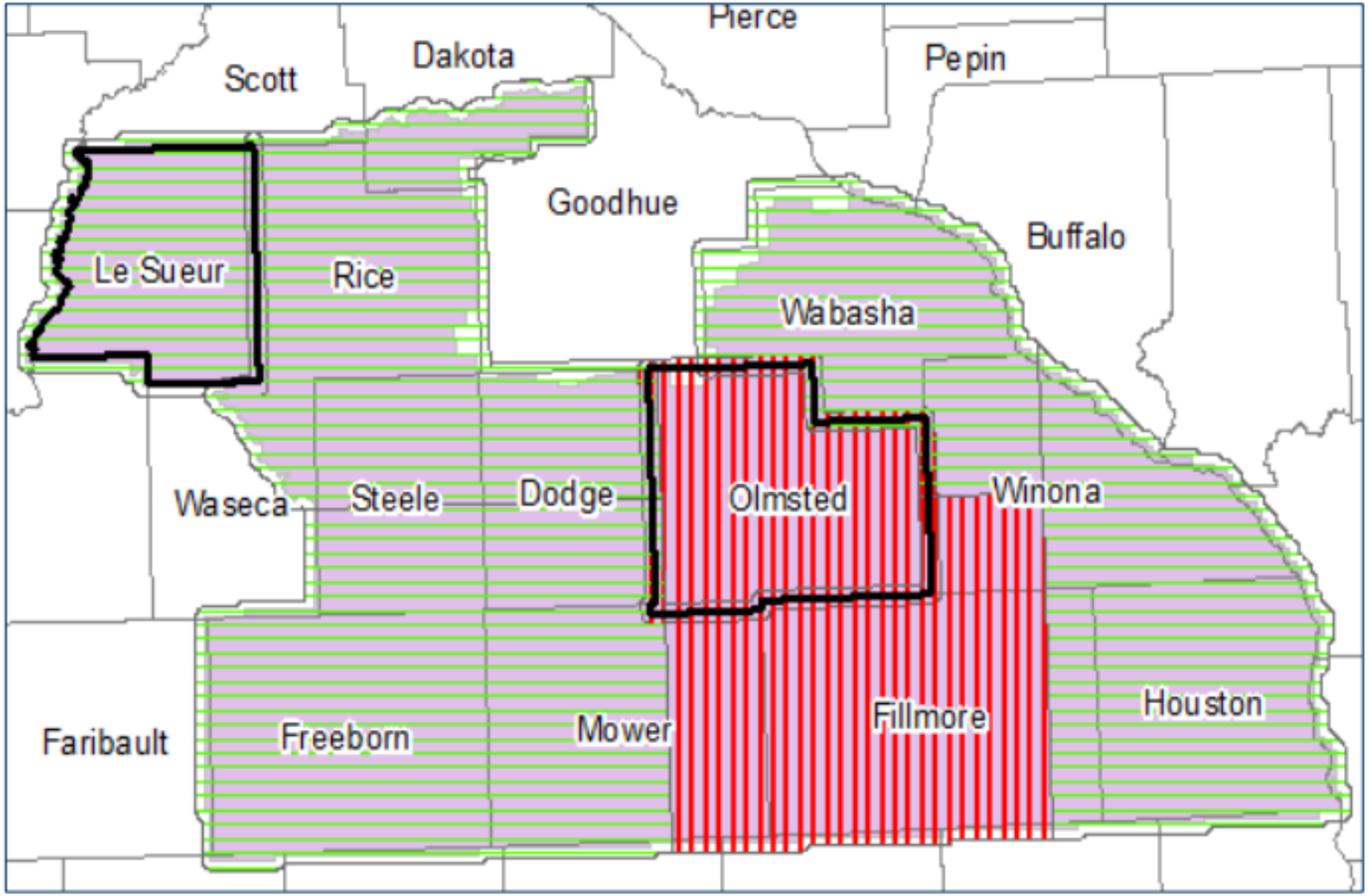
Description

- Vendor was able to put aircraft on this project following completion of a nearby job.
- Collection was outside of contract, but vendor understands lidar base specification and the QC the data must met for certification
- QL0 Counties
  - ASPRS Compliant QL0 Lidar
  - Will meet **1.67** cm RMSEz Non-veg accuracy for check points



QL1 LiDAR Summary

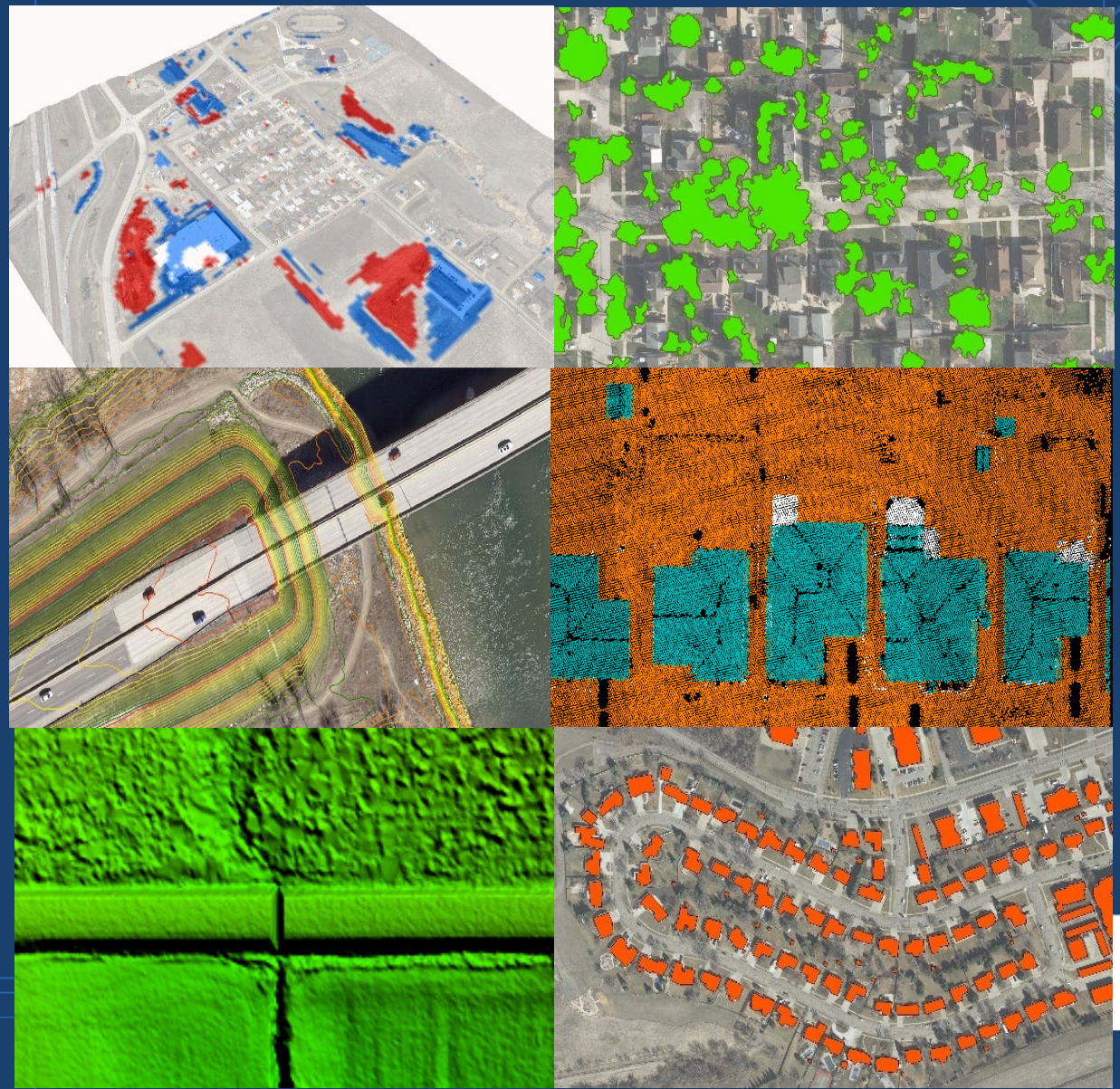
- 8ppm project wide
- Vertical accuracy of 10cm RMSEz
- USGS lidar bases specification
- Hydro Breaklines (100ft streams/2 acre ponds)
- Classified Lidar: Bare-earth, water, bridge decks, noise
- Collect calibration ground control to meet vertical specs
- Vertical accuracy checkpoint collection assessment
- Reports: Data collection, Survey report, Processing report, QA/QC report, FGDC metadata

❖QL2
- 2ppm

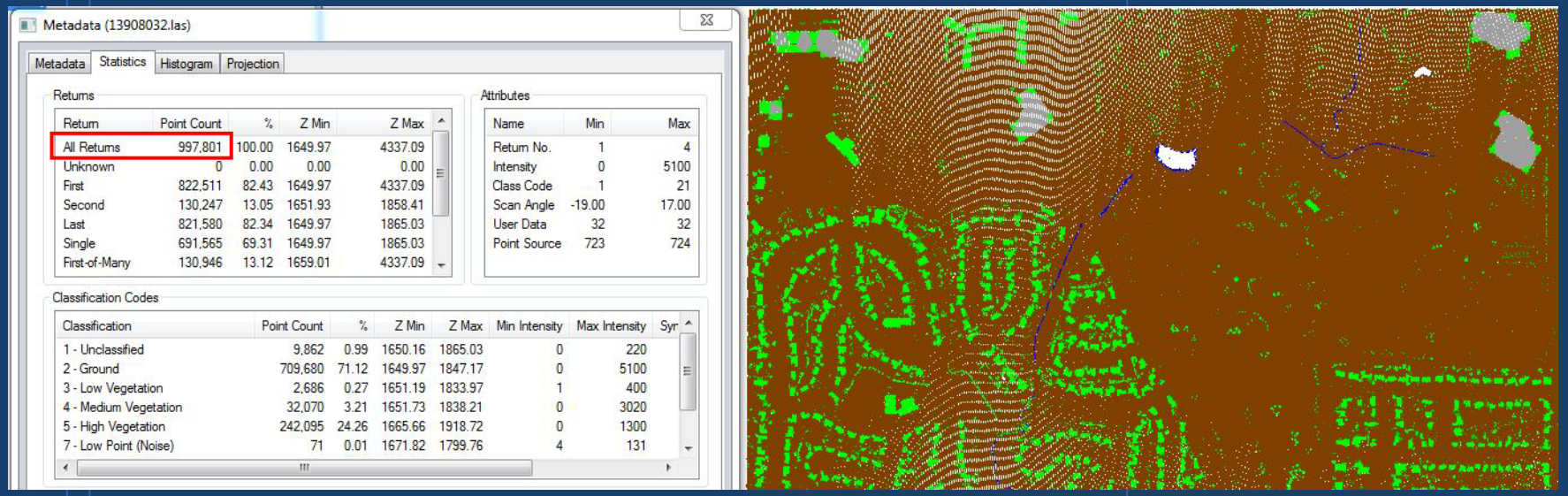
❖QL1+ (Le Sueur and Olmstead)
- 30ppm, accuracy

Additional Products

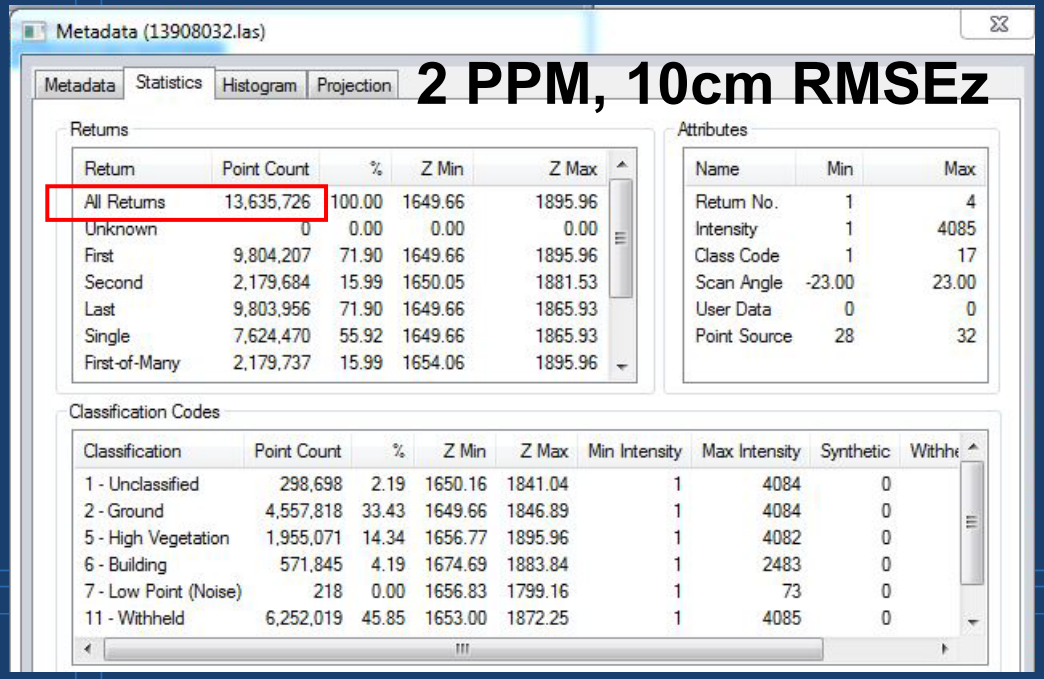
- Improved hydro mapping
- 2D building outlines
- Tree canopy polygons
- 1-ft contour dataset
- Culvert collection from lidar and imagery
- Hydro-enforced DEM
- Slope Analysis
- Erosion susceptibility mapping
- Zoning Analysis
- Map closed depressions
- Asset Mapping
- Digital Surface Model

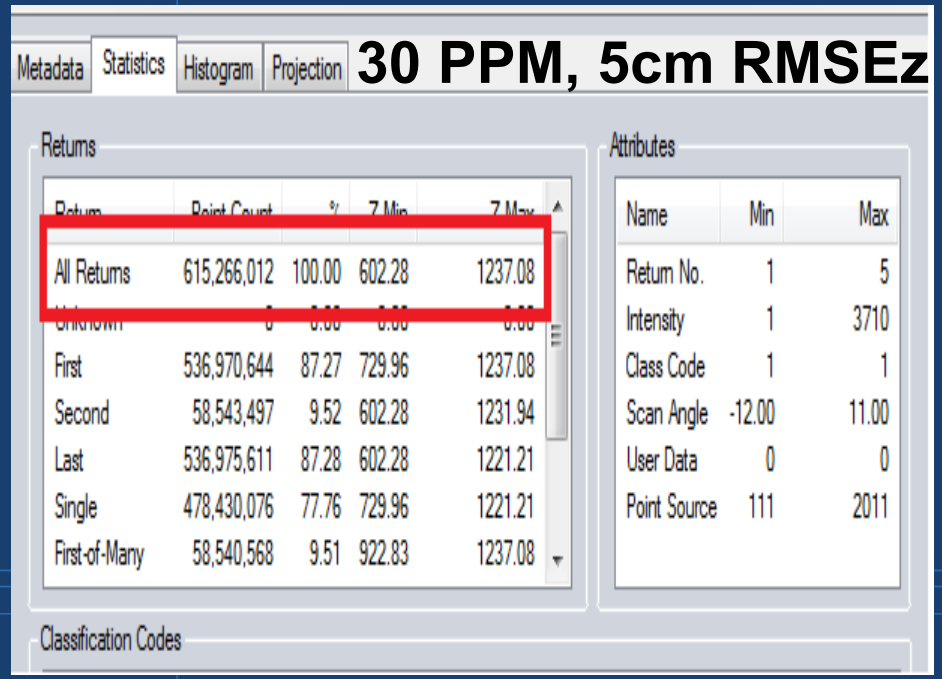


Data Keeps getting bigger!



- Existing Data
- QL3 Specifications
- 1 PPM
- 19cm RMSEz





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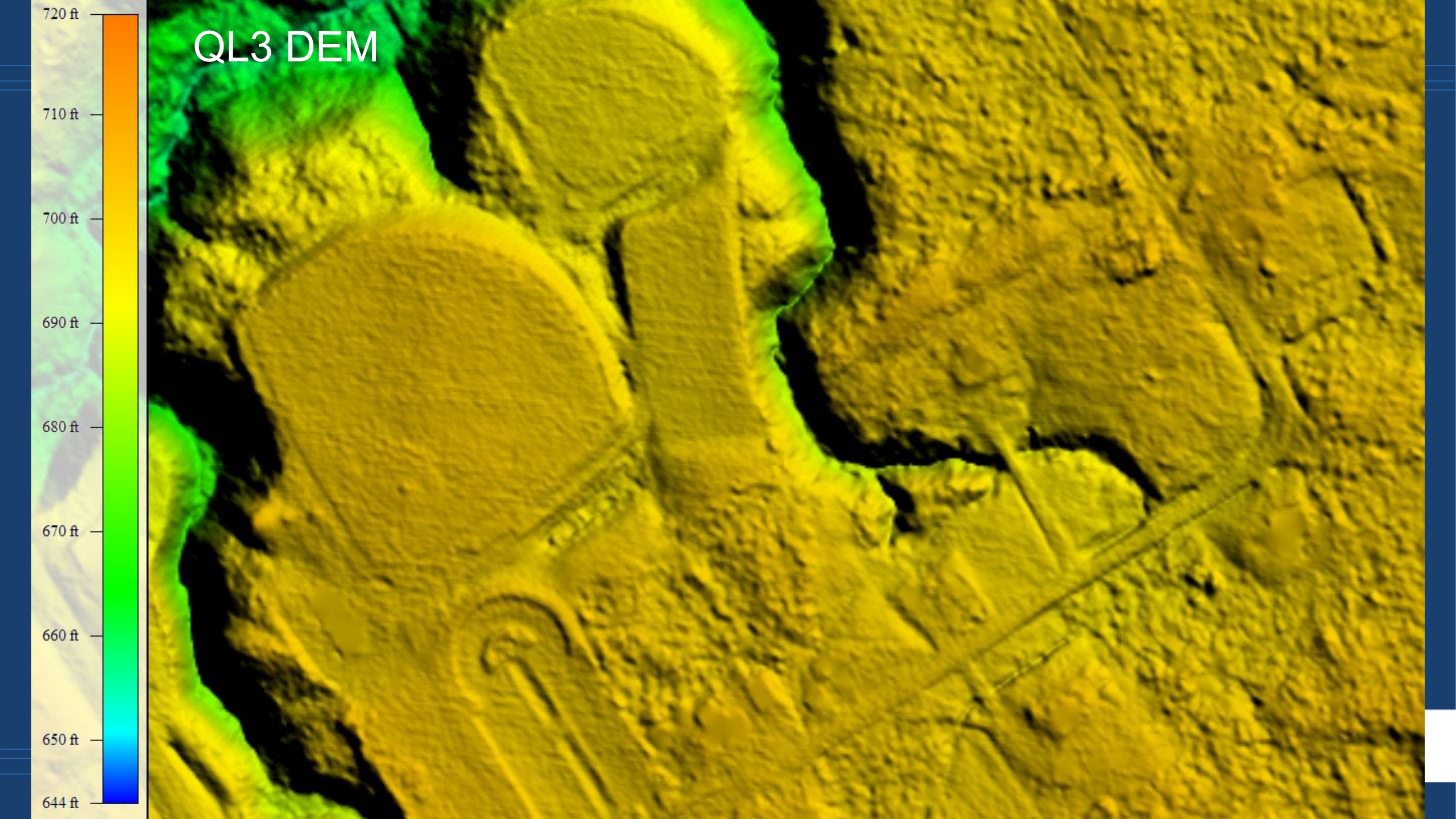
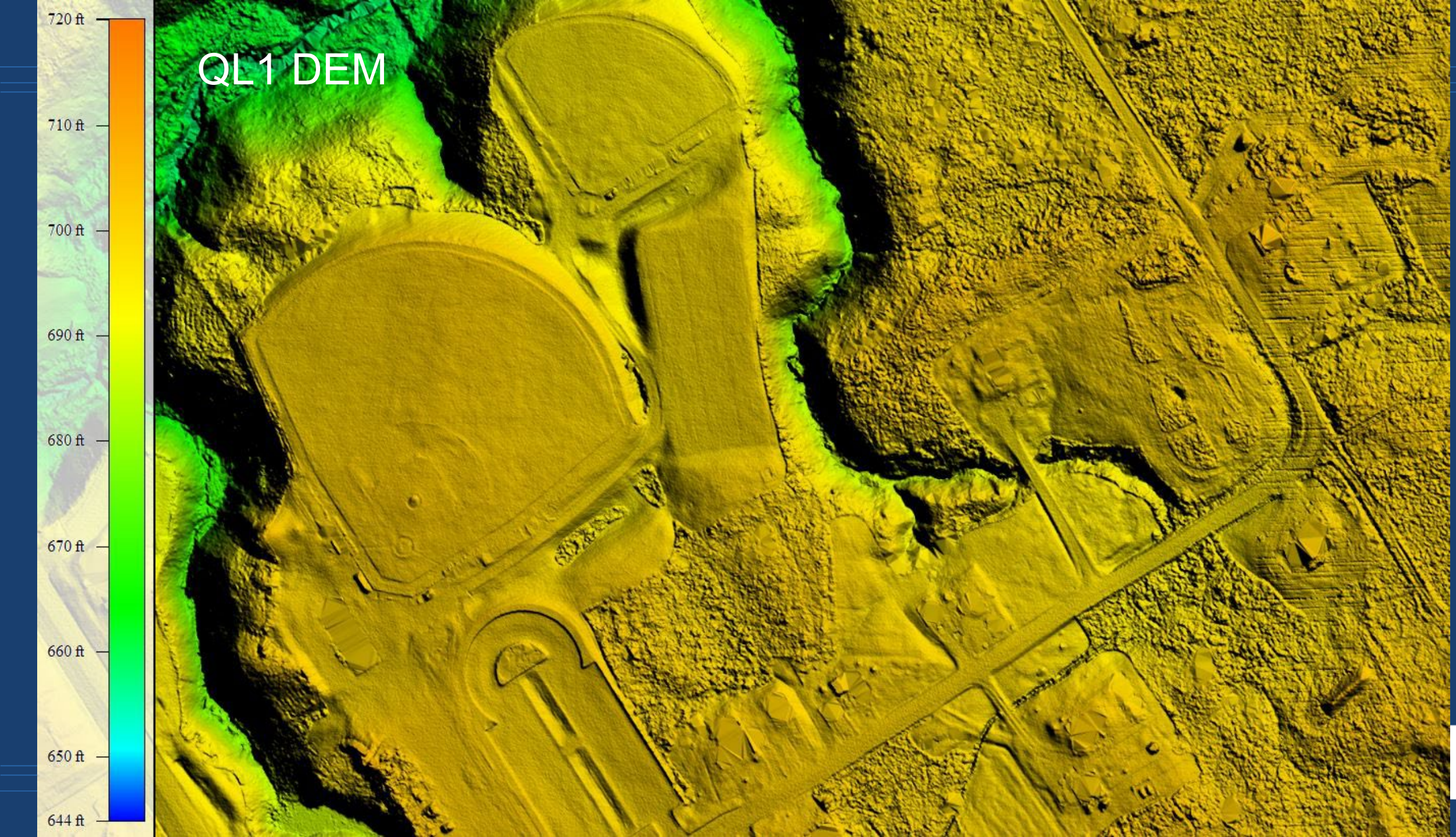

QL3 DEM
720 ft
710 ft
700 ft
690 ft
680 ft
670 ft
660 ft
650 ft
644 ft


QL1 DEM
720 ft
710 ft
700 ft
690 ft
680 ft
670 ft
660 ft
650 ft
644 ft


QL3 Point Cloud


QL1 Point Cloud

Data Demo

Questions?

Adam Derringer, GISP
Senior Project Manager
Ayres Associates
DerringerA@AyresAssociates.com
P: 608.443.1231