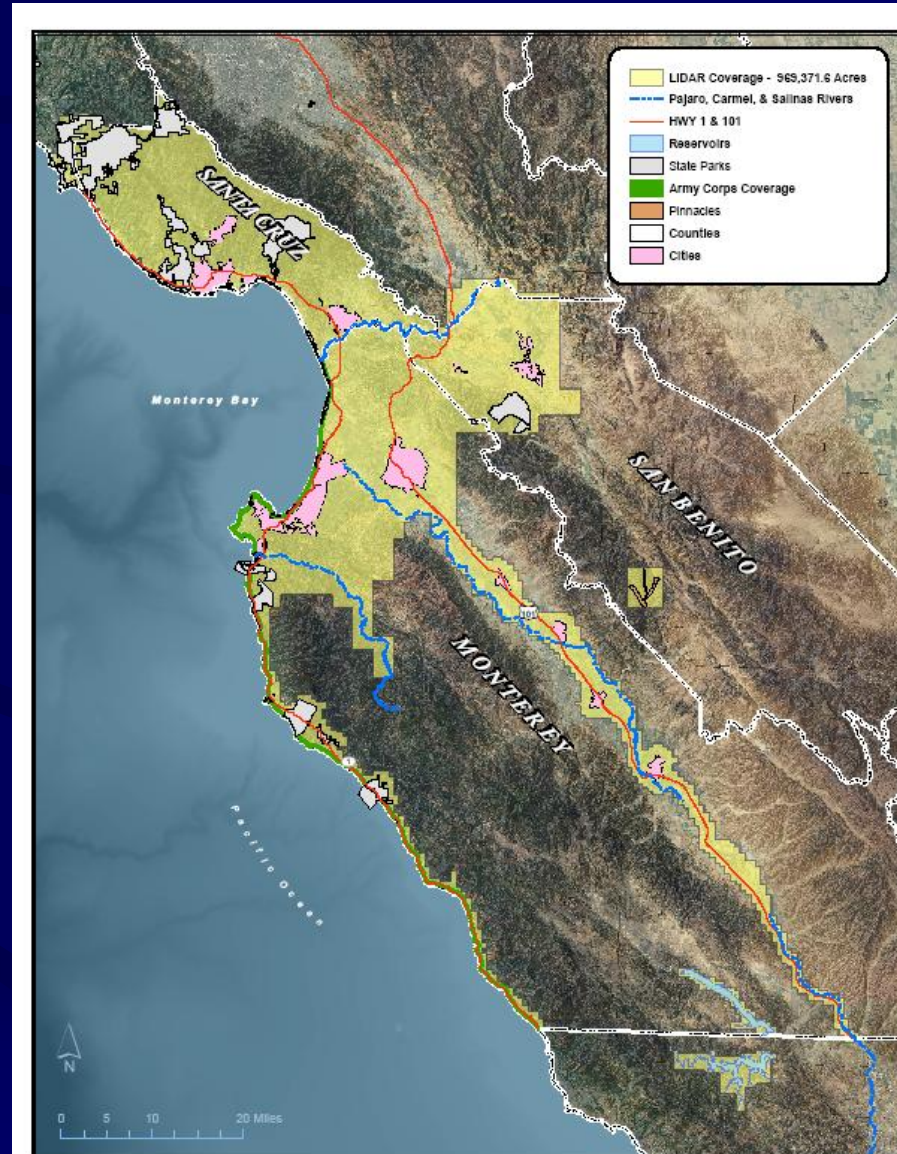


# USGS/CCJDC LiDAR Project

Central Coast  
Joint Data Committee

# CCJDC LiDAR Project

- \$500k USGS / ARRA Grant
- 1700 Sq. Miles
  - All of Santa Cruz County
  - Urban Monterey
  - Big Sur Coast
  - Salinas Valley



# USGS Base Specifications

- Response to numerous ARRA-funded LiDAR acquisitions
  - Goal is to standardize acquisitions
- Destination is NED 1/9 arc-second
  - National Elevation Dataset
  - 3 meter resolution
- Base specifications document available that describes:
  - Collection
  - Data Processing
  - Hydro Flattening
  - Products
  - [lidar.cr.usgs.gov](http://lidar.cr.usgs.gov)

# USGS Collection Specs

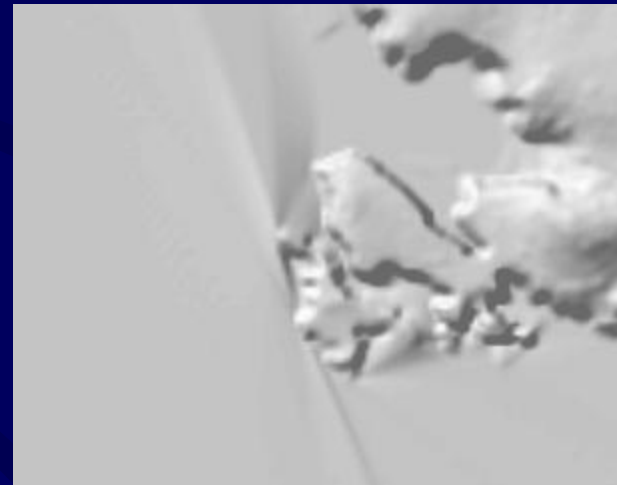
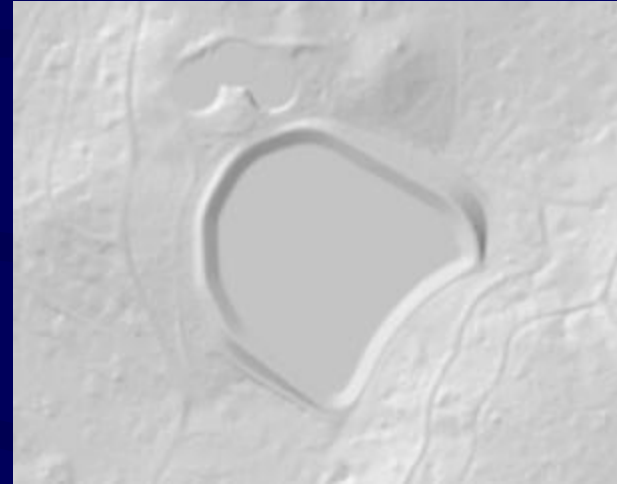
- Nominal Pulse Spacing (NPS)  $< 2\text{m}$ 
  - Density of points
- Scan angle  $< 40^\circ$
- $\leq 15\text{cm}$  (6") vertical accuracy
- Flightline overlap of  $\geq 20\%$

# USGS Data Processing Specs

- LAS v1.2 or v1.3
- UTM Spatial Reference System
  - Standard State Plane also acceptable
  - Zones 3 and 4 used by CCJDC
- Non-overlapping tiles

# USGS Hydro Flattening Specs

- Ponds & Lakes
  - $\geq 2$  Acres
- Streams and Rivers
  - 100' nominal width
  - Break at culverts (road crossings), but not bridges
- Tidal Waters
  - Oceans, Bays



# USGS Products Specs

- Metadata
  - For each flight
  - For survey control
  - For each tiled delivery product
- Raw point cloud
  - LAS v1.2 or v1.3
- Breaklines
  - Use for hydro flattening
- Classified point cloud
  - LAS v1.2 or v1.3
  - Bare-earth ground
  - Water
- Bare Earth Surface (DEM)
  - $\leq 3\text{m}$  cell size
  - Standard raster formats

# Additional Options

- Independent 3<sup>rd</sup> party QA/QC
- Higher NPS
- Increased vertical accuracy
- Top of canopy
- Additional classification
  - Low, medium, high vegetation
  - Buildings, bridges, other structures
- Additional breaklines
- PolygonZ building footprints



# Observations

- RAW LAS files are the basic product
- Classified LAS files are the source from which other datasets can be created
  - DEMs
  - TINs
  - Terrain Datasets
    - Seem to be Esri response to manage LiDAR
- LAS is not an acronym??

# Observations

- Massive amounts of data (terabytes)
  - Need to be able to manage effectively
  - Careful what you wish/ask for

# Observations

- Relatively young technology
  - Not a lot of expertise
  - Even the vendors/contractors struggle with limited knowledge and experience
  - Customers/consumers have a steep learning curve
    - USGS Base Specifications is helpful
  - CCJDC experience....