



**W O O L P E R T**

**ARCHITECTURE | ENGINEERING | GEOSPATIAL**



# NCTCOG Regional GIS Meeting

6-Years and Going Strong

May 15, 2018 – hosted by: Tarrant County

# Woolpert at a Glance



1911

Founded in  
Dayton,  
Ohio



25+

Offices across  
the nation



800+

Global  
employees

# 25+ OFFICES ACROSS THE NATION



## Woolpert Office Locations

Arlington, VA  
Atlanta, GA  
Charleston, SC  
Charlotte, NC

Chesapeake, VA  
Chicago, IL  
Cincinnati, OH  
Cleveland, OH

Columbia, SC  
Columbus, OH  
Dallas, TX  
Dayton, OH

Denver, CO  
Fairview Heights, IL  
Florence, KY  
Greenville, SC

Houston, TX  
Indianapolis, IN  
Miami, FL  
Orlando, FL

Pittsburgh, PA  
Richmond, VA  
Scottsdale, AZ

St. Louis, MO  
Tampa, FL  
Toledo, OH



# A Common Purpose



## OUR VISION

To be the nation's premier  
Architecture | Engineering | Geospatial  
firm.



## OUR MISSION

To help our employees, clients and world  
progress through forward thinking.

- [www.Menti.com](http://www.Menti.com)
- Enter Code
  - 80 59 43



# Who We Are and what We Expect from One Another



Supportive



Focused



Progressive



Industry Leading



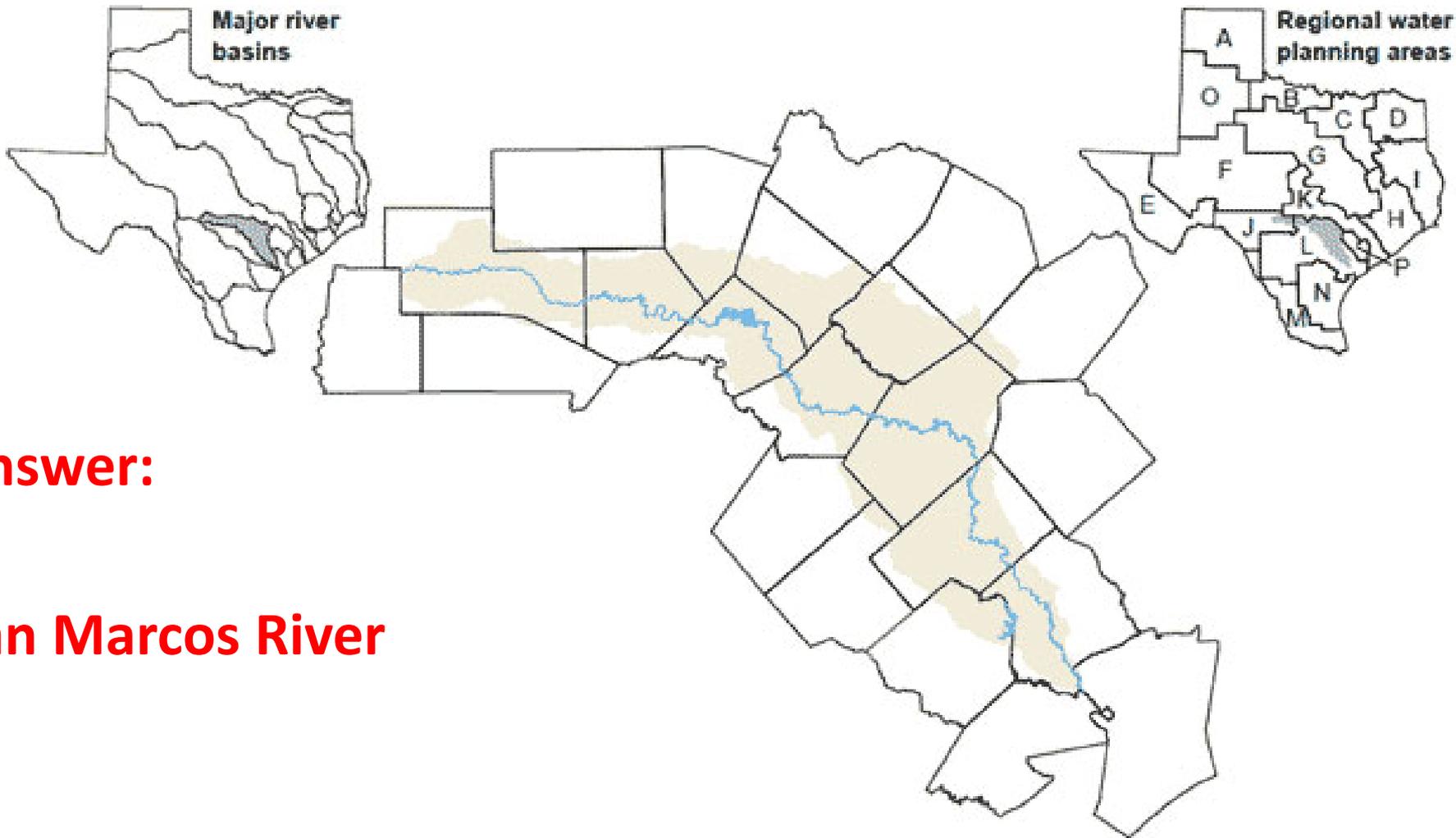
High Performing



Balanced

**All of the following bodies of water are tributaries that feed into the Rio Grande—except for one. Which does not feed into the Rio Grande?**

- San Marcos River
- Alamosa River
- Conchos River
- Pecos River



**Answer:**

**San Marcos River**

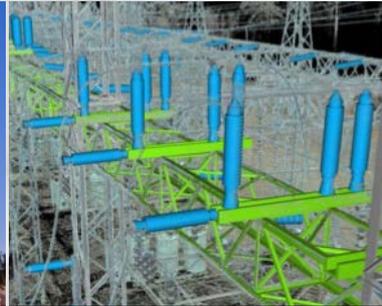
# Who We Serve



Aviation



Education



Energy



Facilities



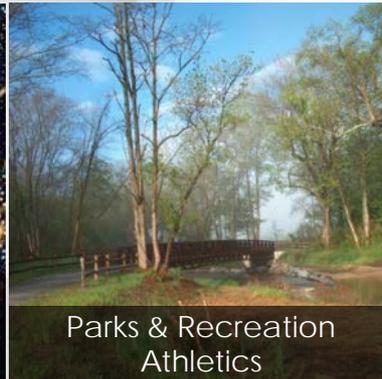
Government



IT Management  
Consulting



National Security



Parks & Recreation  
Athletics



Transportation



Water

# Services

Aerial Mapping

Alternative Delivery

Application Development

Architecture

Asset Management

BIM

Disaster Relief

Engineering

Geospatial

GIS

International Geospatial

Land Licensing and Permitting

Landscape Architecture

Lidar

Onsite Support

National Security

Partnerships

Planning

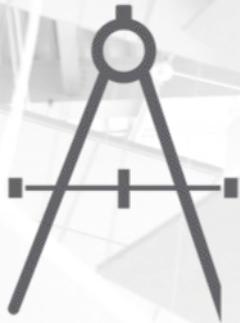
Surveying

Unmanned Aircraft Systems

Water Quality Monitoring

Water Monitoring and Modeling

# Areas of Expertise



ARCHITECTURE



ENGINEERING



GEOSPATIAL



# GEOSPATIAL

With the ability to explore above, on and below Earth's surface, we excel in providing cutting-edge geospatial services to lead and support complex, multidisciplinary projects.

# Geospatial by the Numbers



300+

Geospatial  
Professionals  
on Staff



100+

Cities of Lidar Collection, Data  
Processing and 3D Model  
Building



7

State Mapping  
Projects in the  
Last 5 Years

# Geospatial Services

- 3D modeling
- Asset management
- Automated feature extraction
- Business intelligence
- Change detection
- Coastal management and restoration
- Consulting
- Contingency planning for disasters
- Corridor mapping
- Data analytics
- Digital terrain models
- Elevation data updates
- Elevation data updates
- Emergency response support
- Environmental monitoring
- Flood mapping and analysis
- Forestry
- Hydrology
- Impervious surface delineation
- Land use/land cover
- Solar potential
- Strategic planning
- Surface models
- Urban modeling



Aerial Imagery of Seal Island, ME

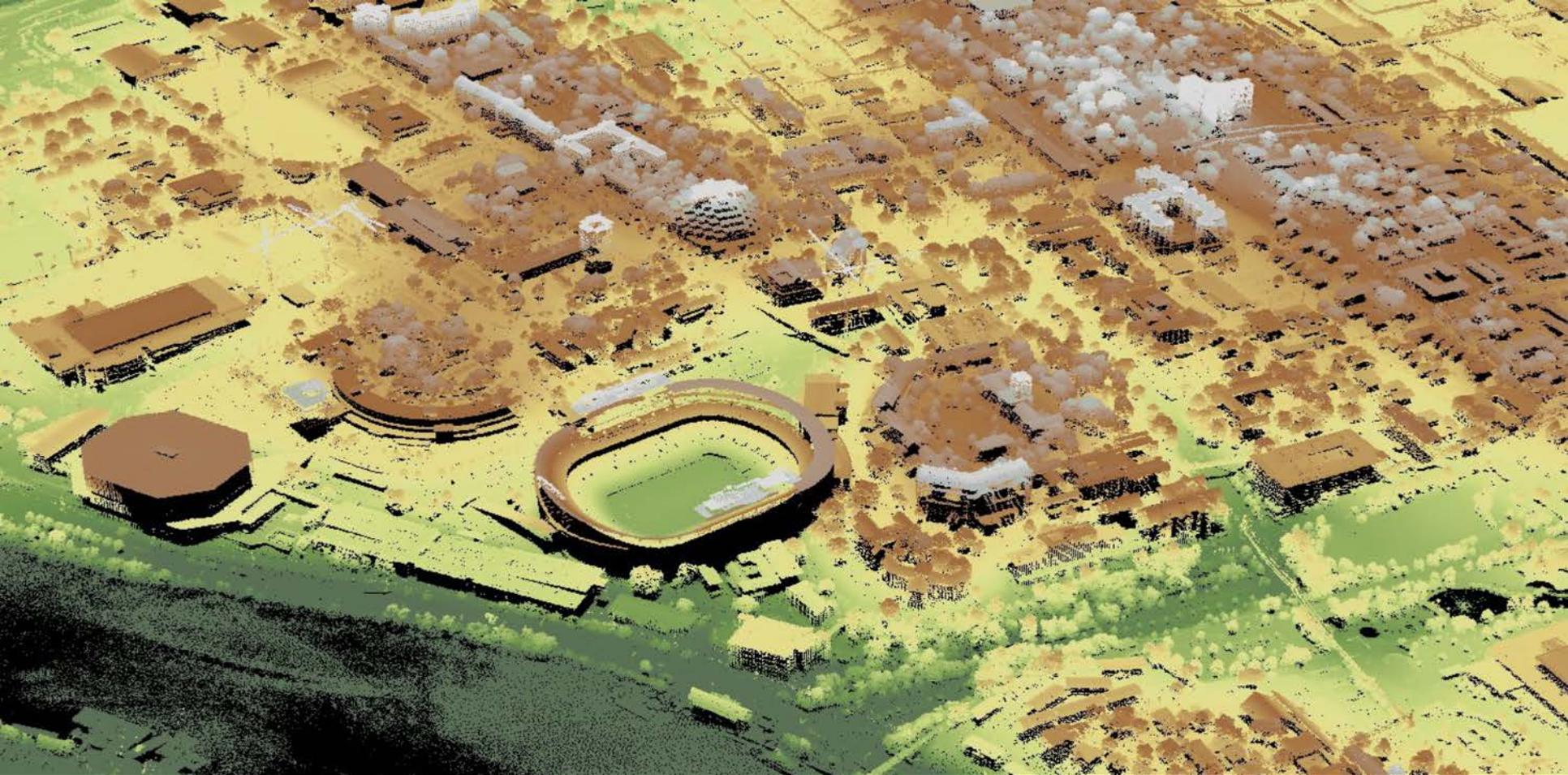




3D Point Cloud – Columbus, OH

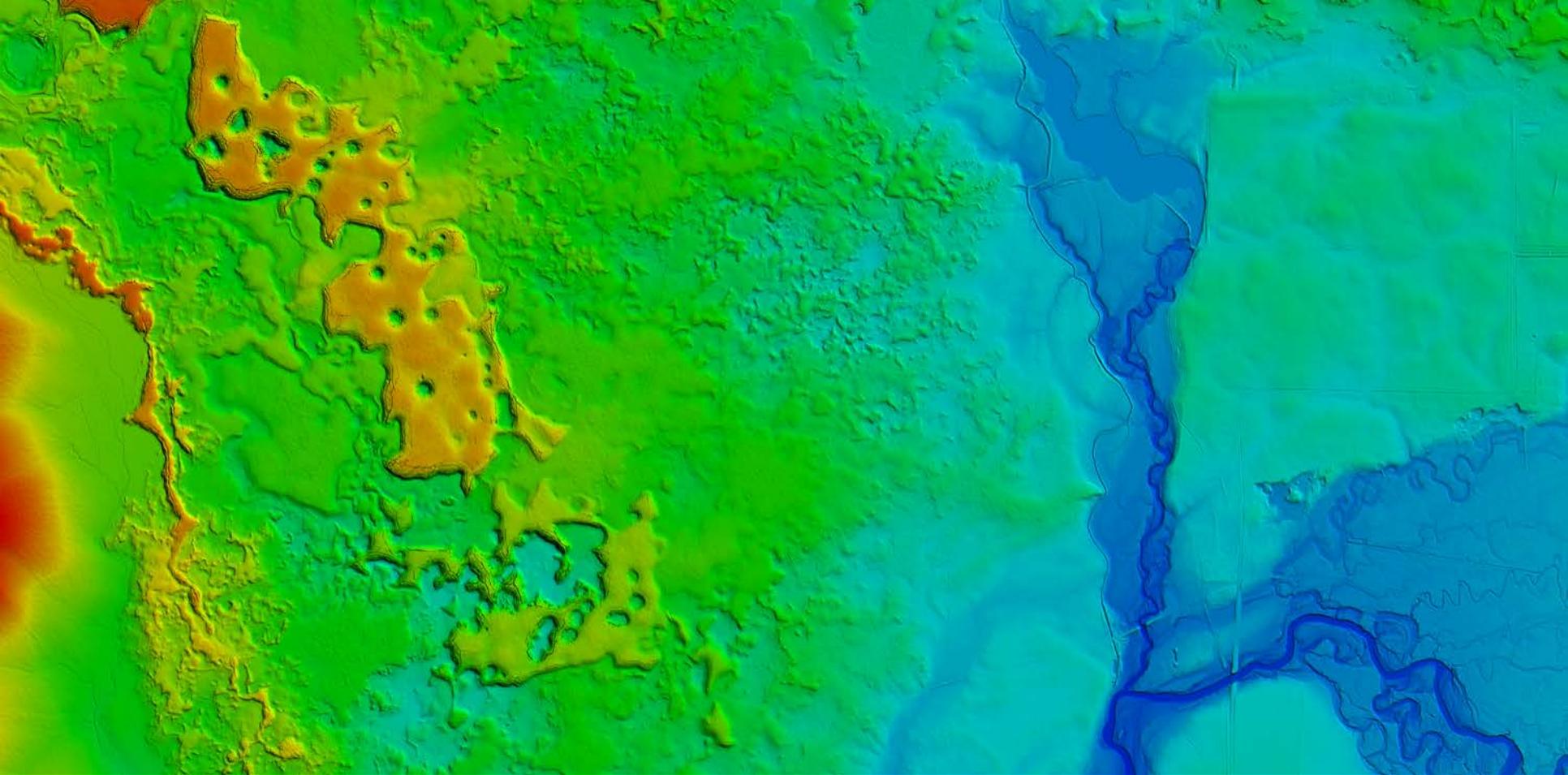






Tennessee Statewide Lidar – Knoxville, TN





Lava Field Lidar Imagery – Malheur County, OR





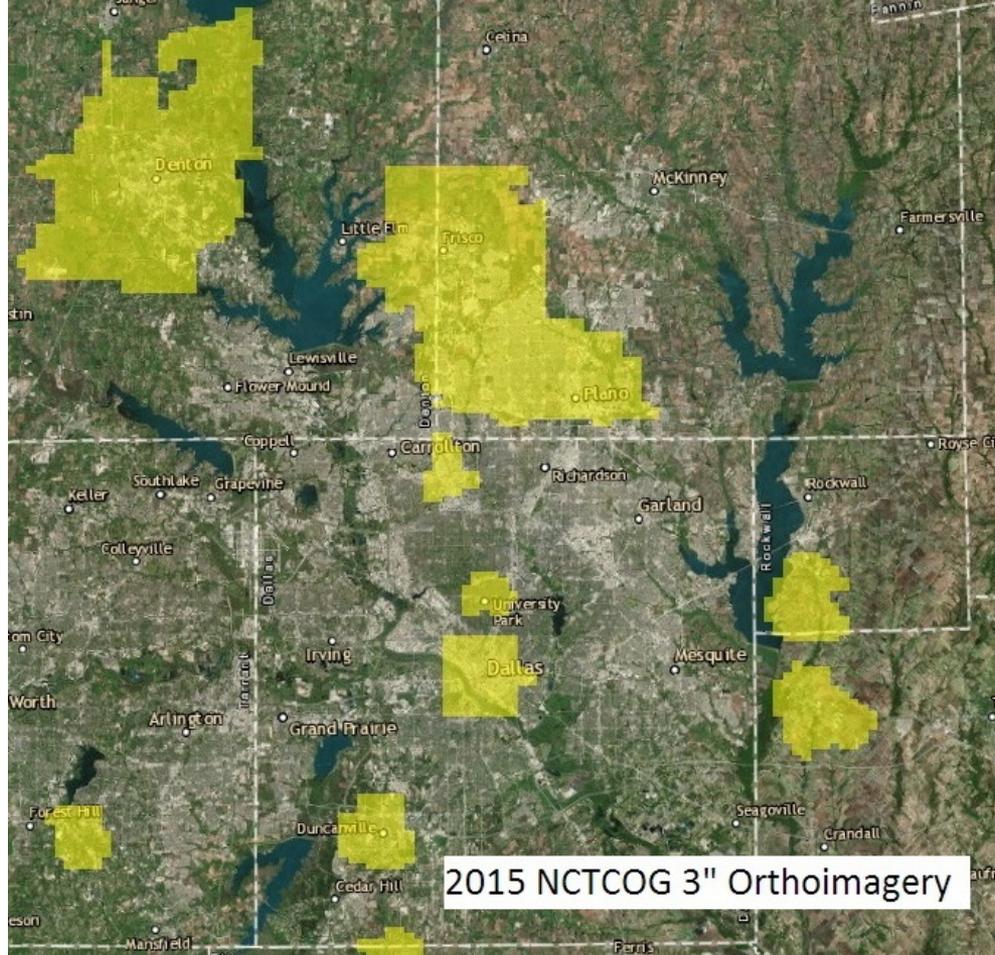
Hydrologic Feature Extraction – Lake Erie, PA

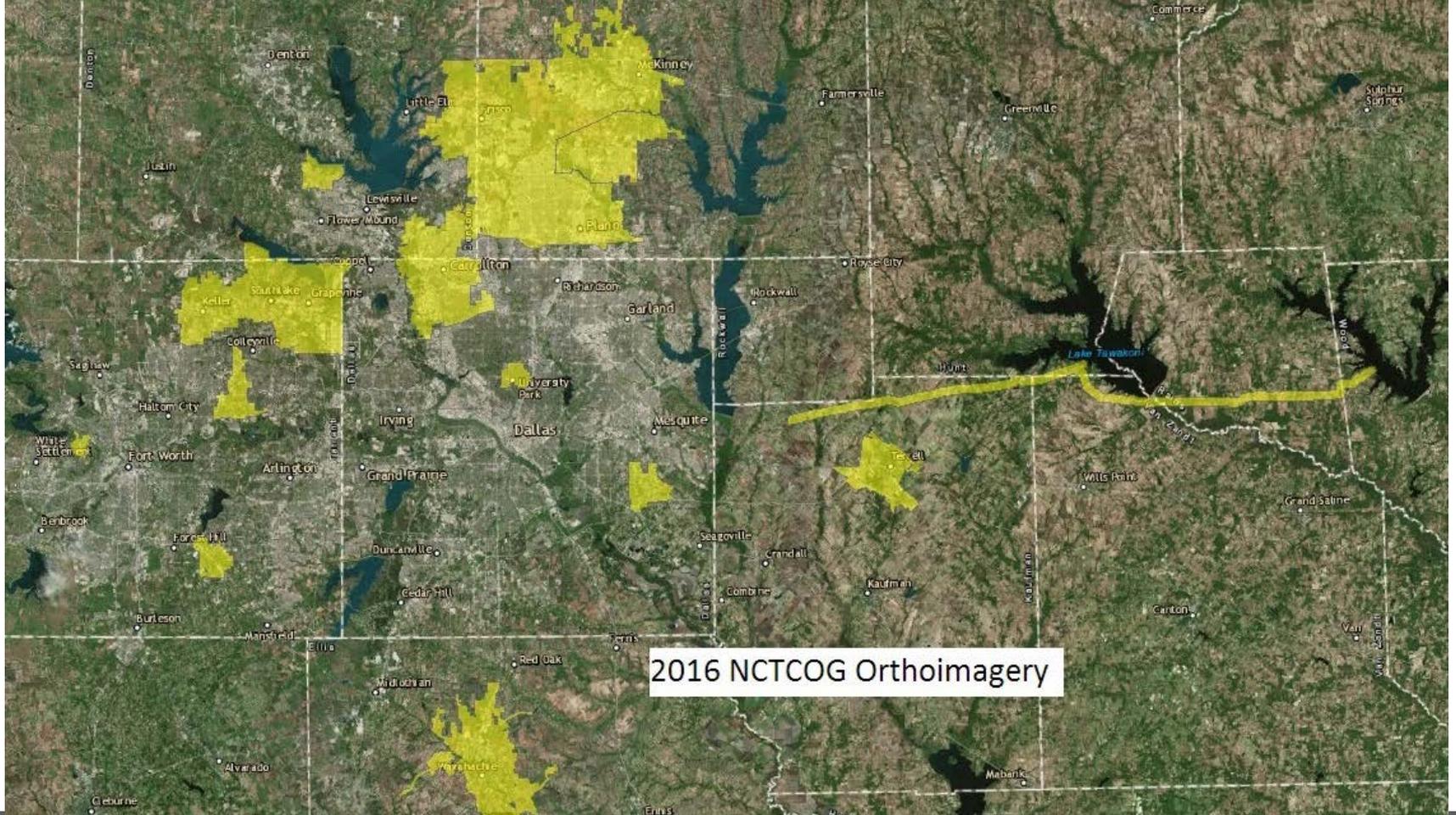






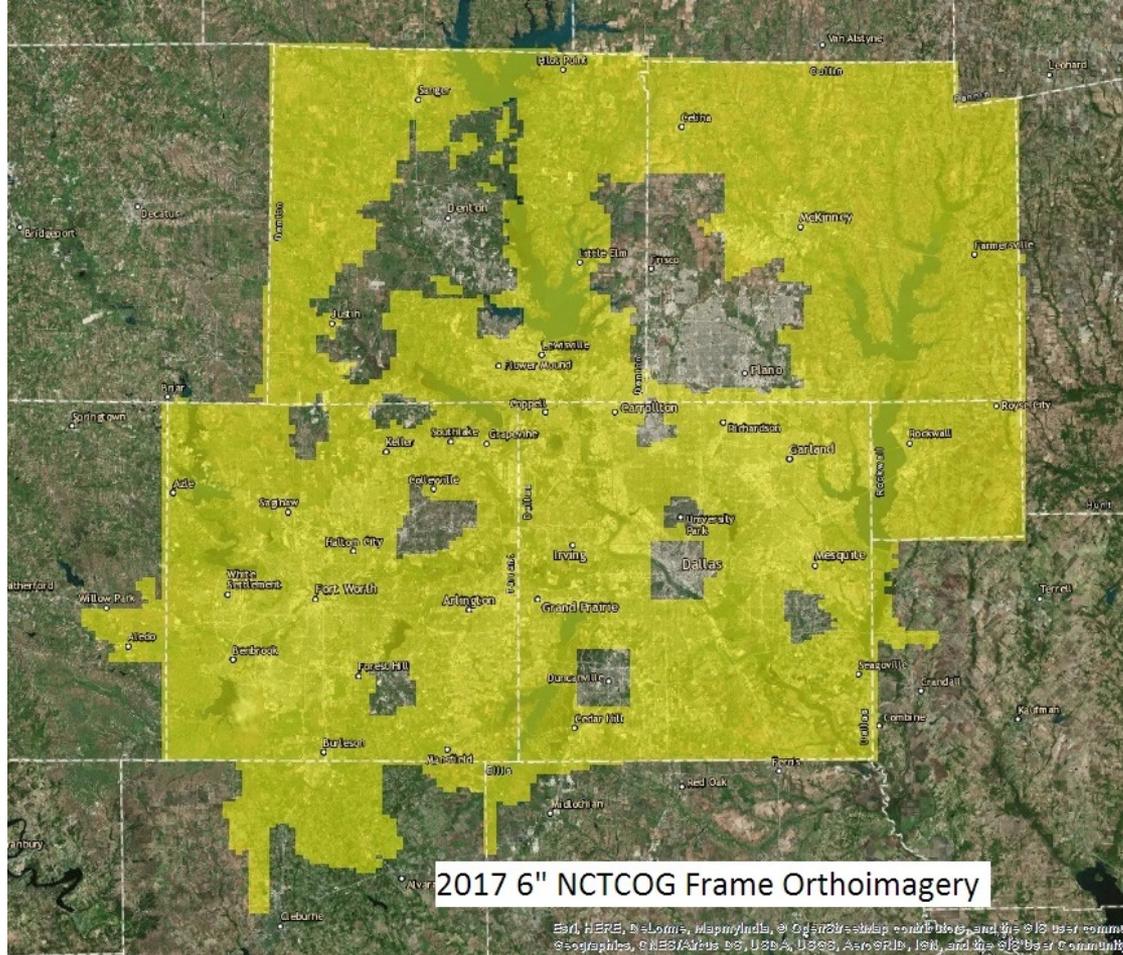


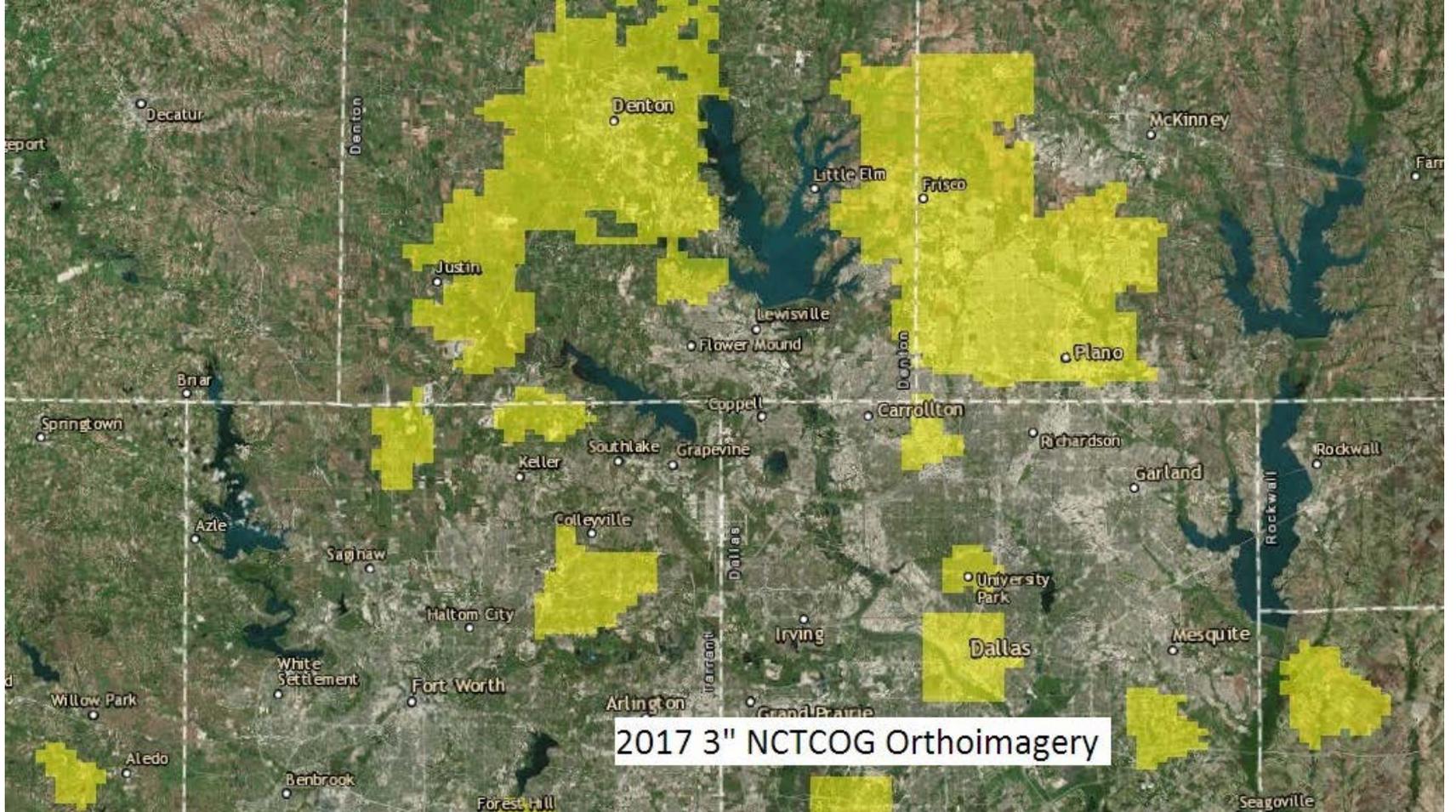




2016 NCTCOG Orthoimagery

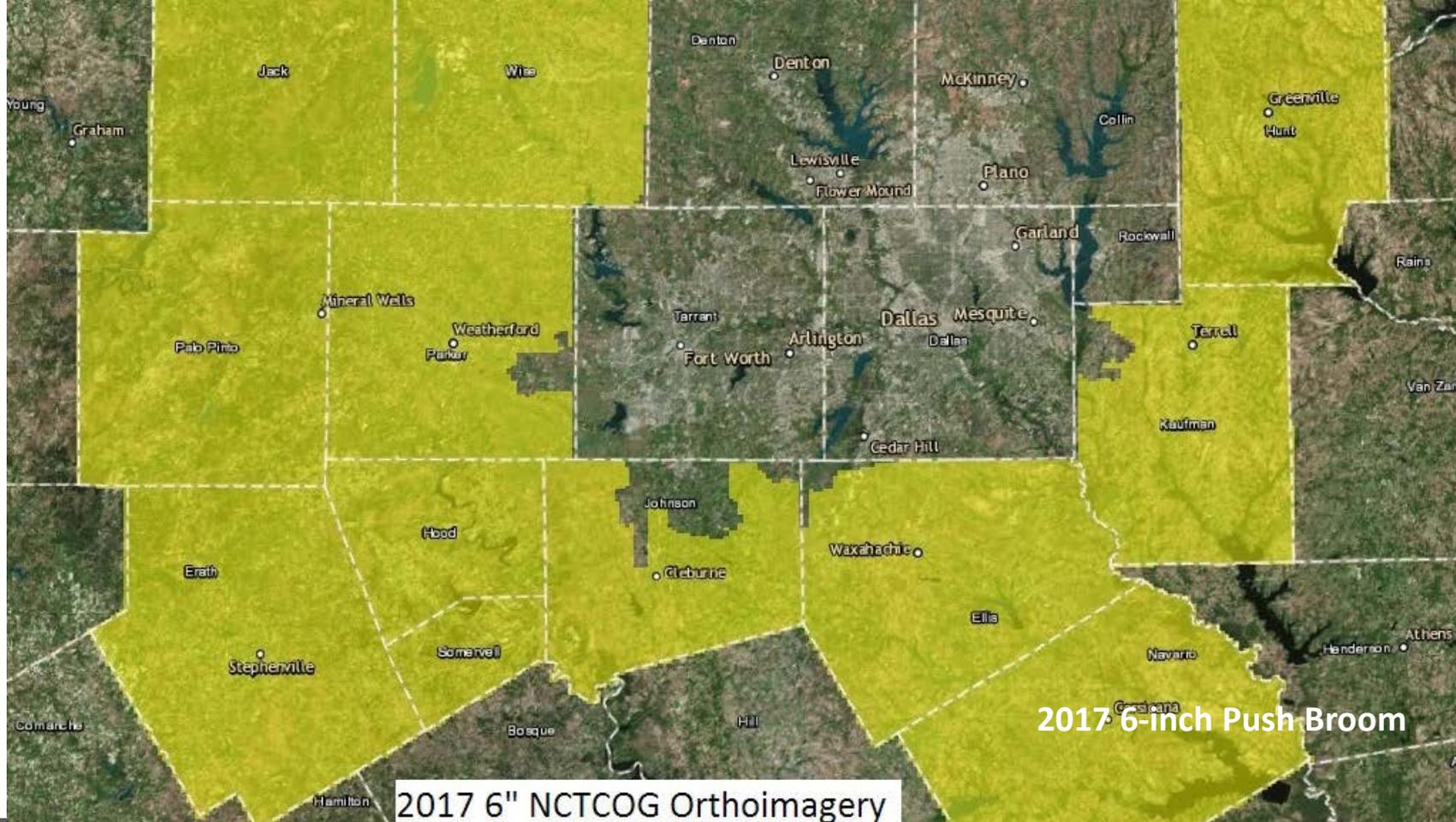






2017 3" NCTCOG Orthoimagery



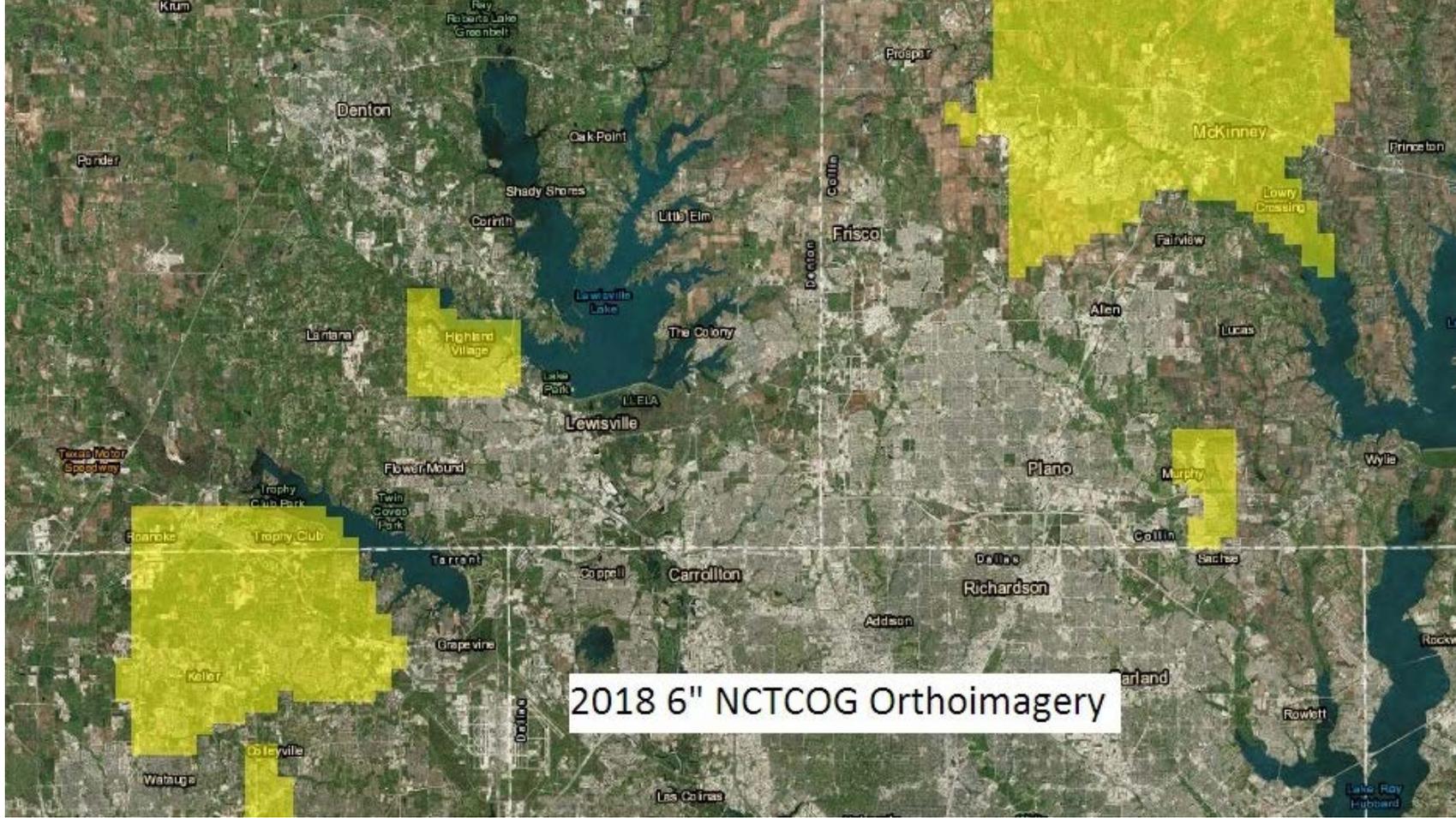


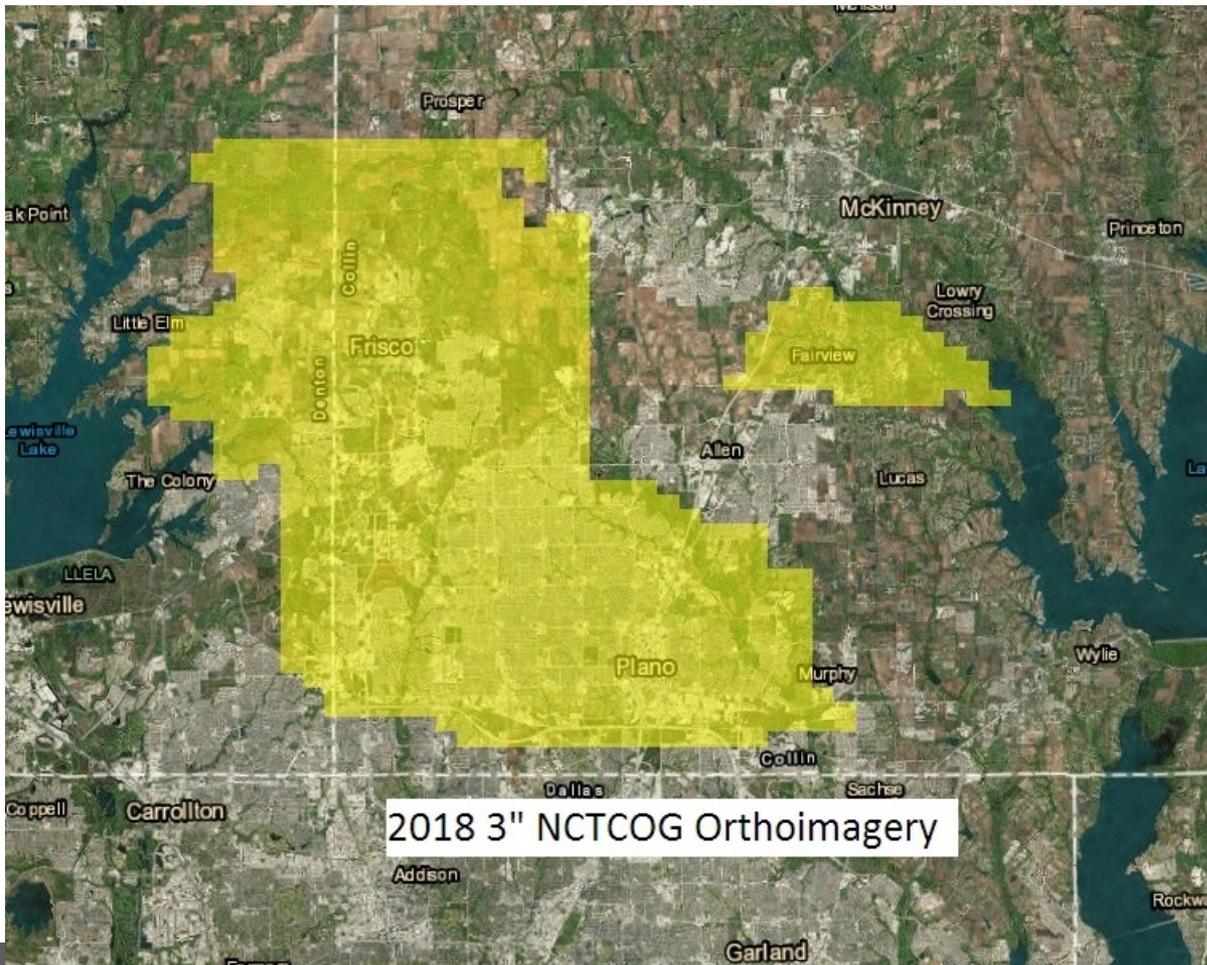
2017 6-inch Push Broom

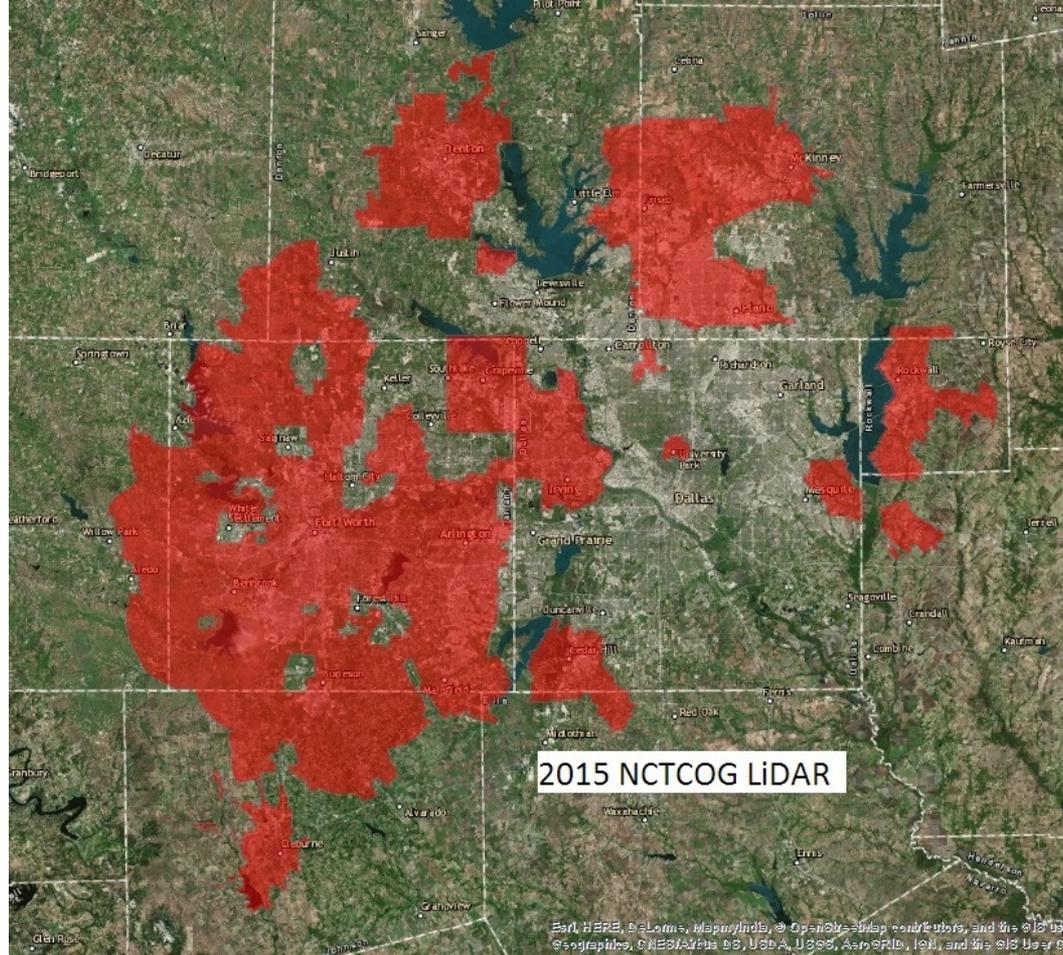
2017 6" NCTCOG Orthoimagery







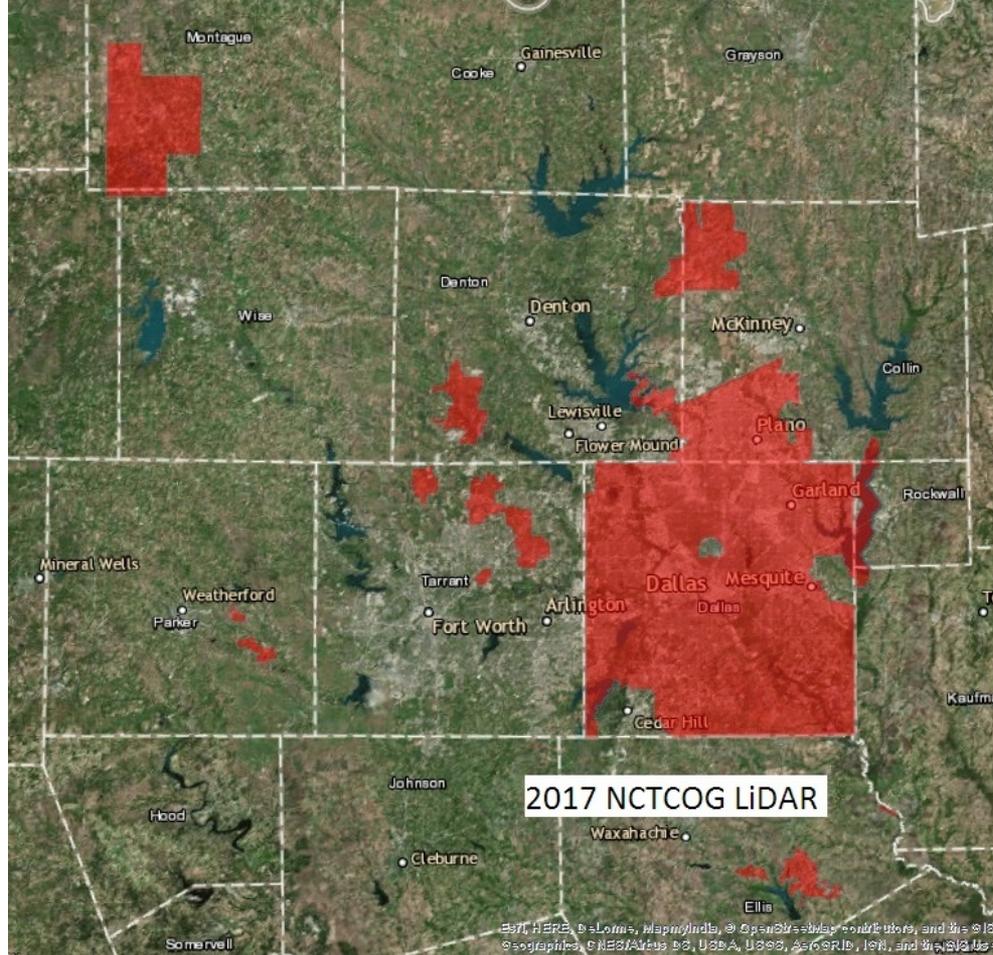


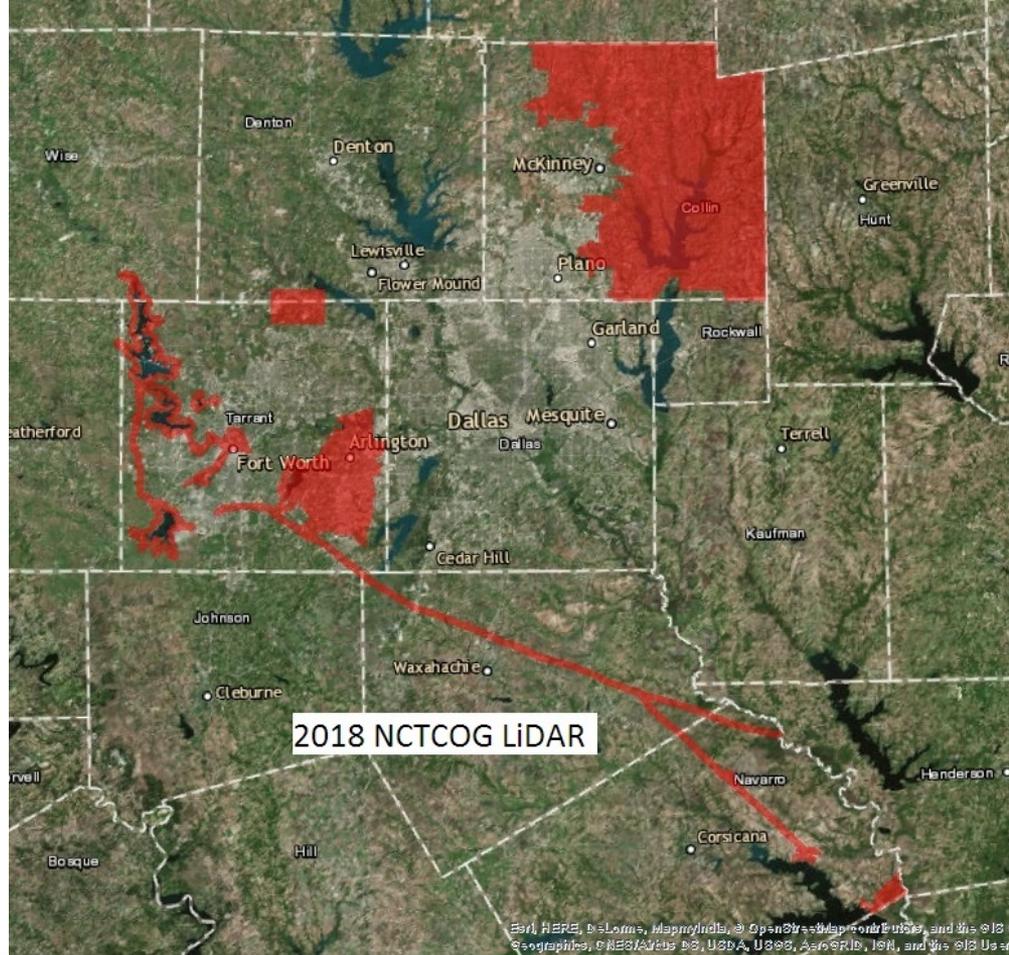


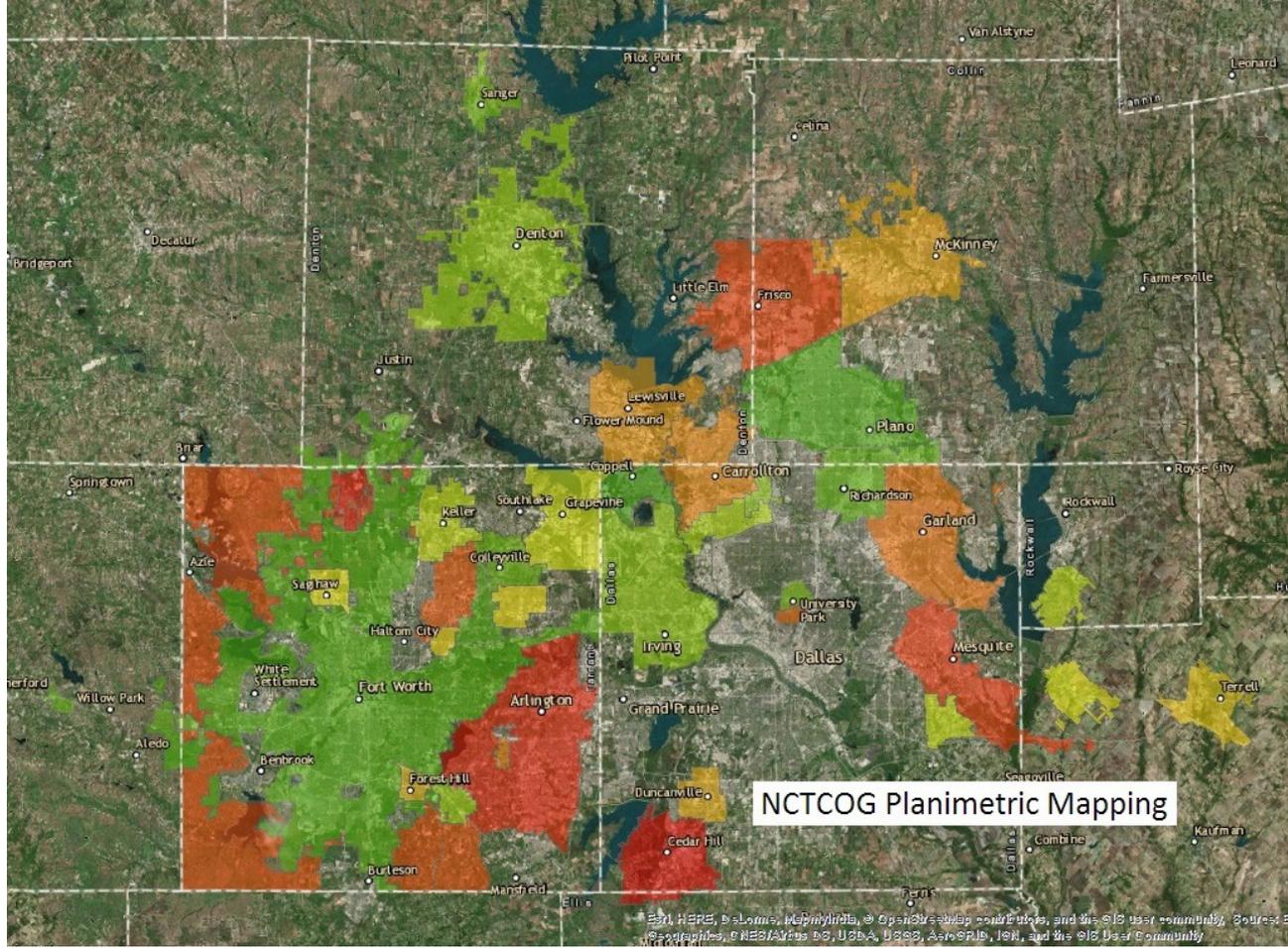
2015 NCTCOG LiDAR

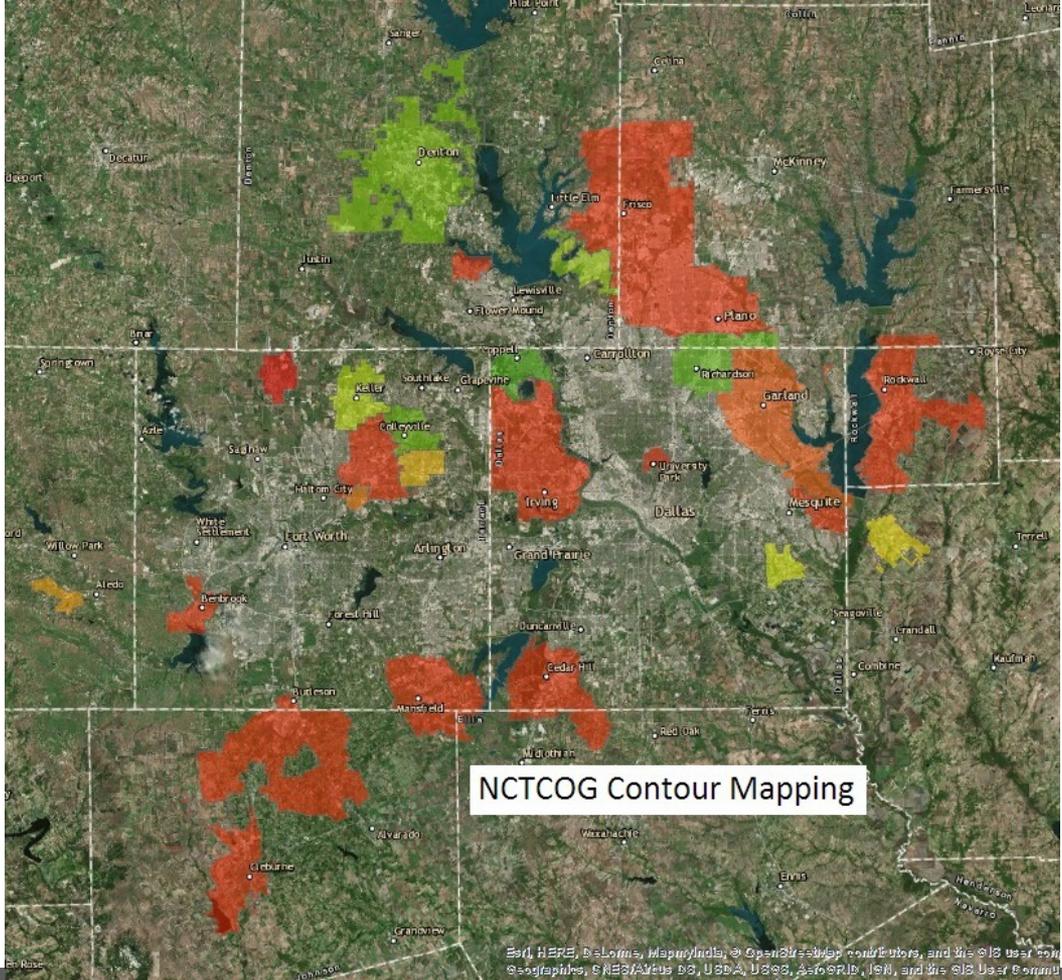
Earthstar, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community





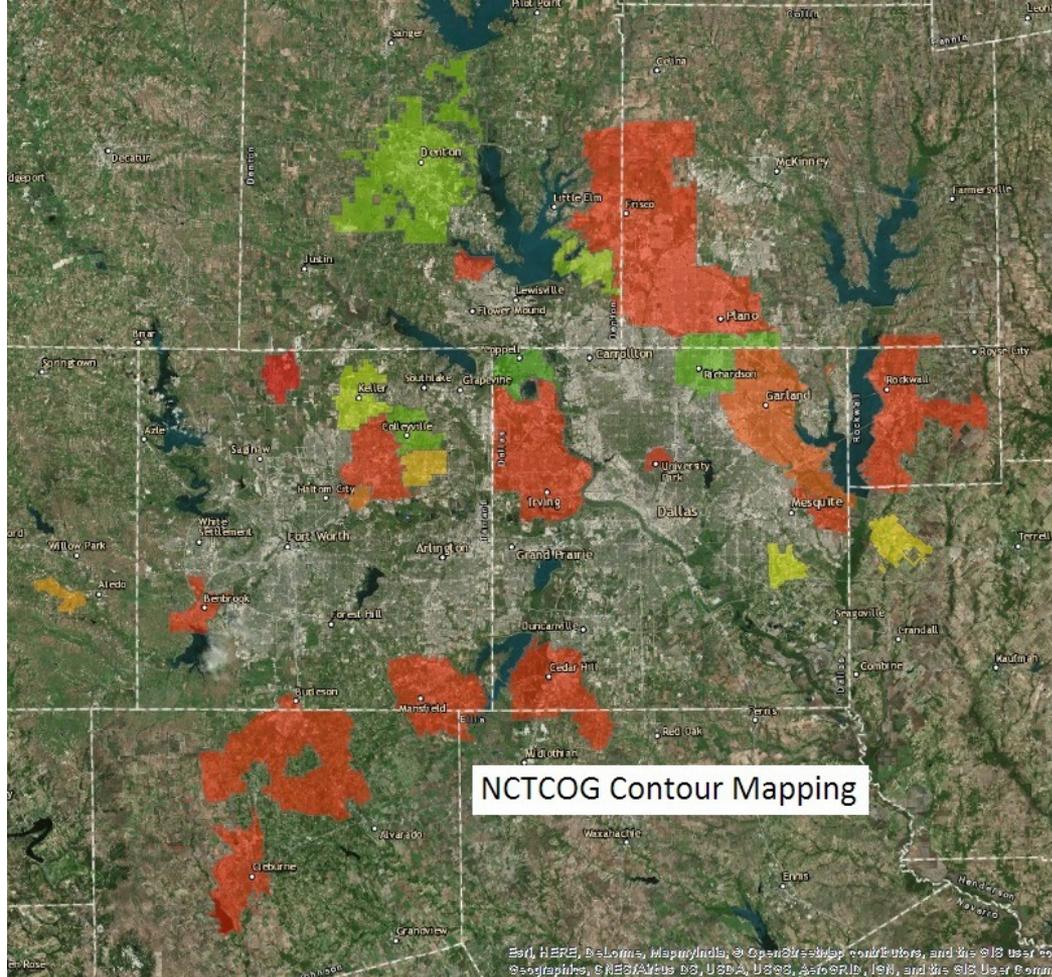






Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community  
Satellite, © HERE, © DeLorme, © GeoEye, © IGN, © Intermap, © Swire, © USDA, © USGS, © AeroGRID, © IGN, and the GIS User Community





## Summary 2013-2018:

### Orthoimagery

6-inch: 27,434 sq miles

3-inch: 1,186 sq miles

Lidar 4 ppsm: 13,637 sq miles

2' Contours: 930 sq miles

Planimetrics (50 cities): 1,649 sq miles

# Delivery

## Summary 2013-2018:

### Orthoimagery

6-inch: 27,434 sq miles

3-inch: 1,186 sq miles

Lidar 4 ppsm: 13,637 sq miles

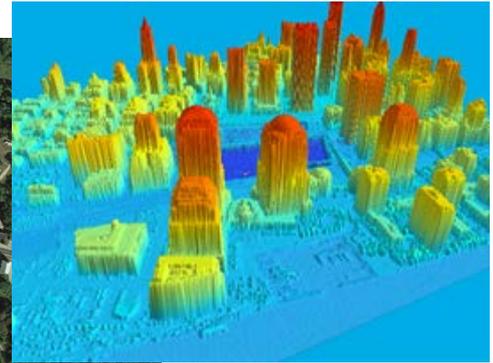
2' Contours: 930 sq miles

Planimetrics (50 cities): 1,649 sq miles



# Cloud Take-Aways

- No Login Required
- Use Existing FTP Software?
- More User Friendly and Familiar to ALL Users
- Can transfer any type of data to any number of clients - Orthos, Lidar, Planimetrics, Contours



With all this Geospatial Data collected – how can you leverage this investment to give you all the information to do your job

# What is Automated Feature Extraction?

- Transforming data into information
  - Leveraging existing geospatial data to create value added products
  - Using LiDAR and 4-band orthoimagery
  - Provides solutions



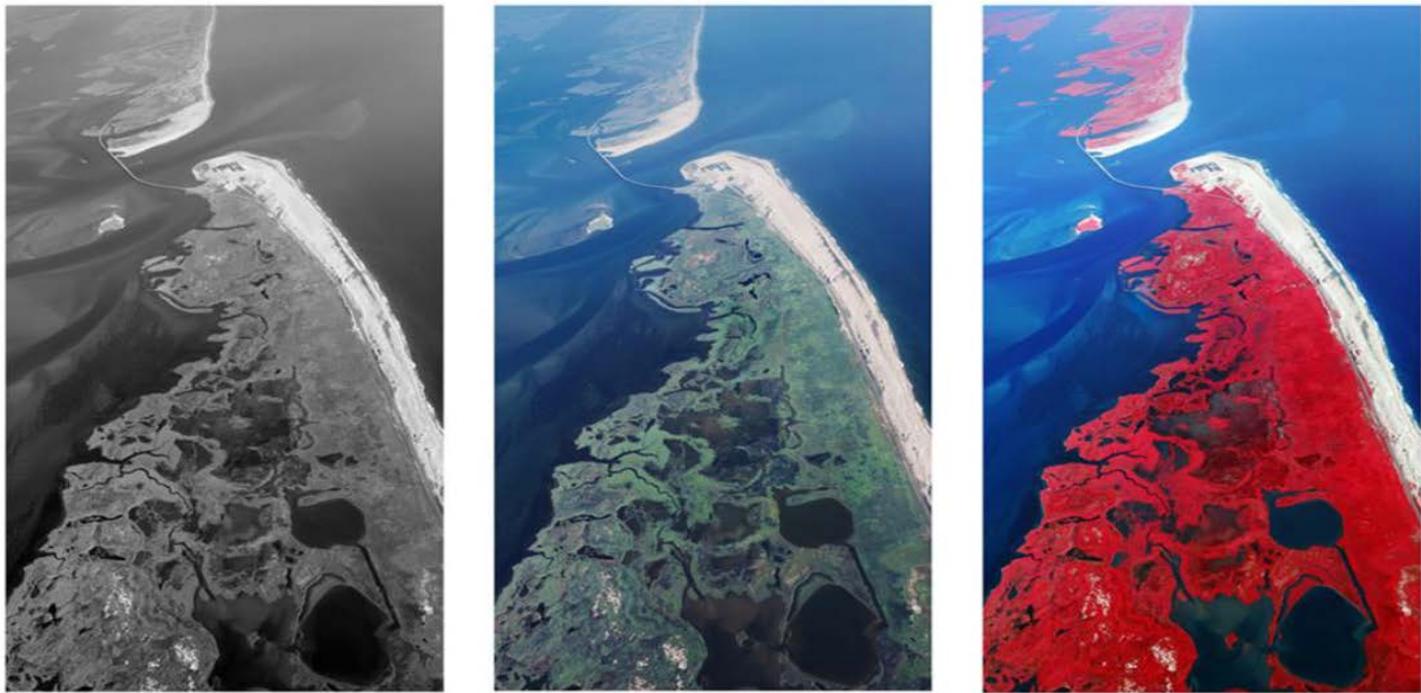


Figure 7. A comparison of panchromatic (left image), color (middle image), and CIR (right image) of North Carolina's Oregon Inlet from the north end of Pea Island looking north. CIR imagery depicts clear, blue water as black, since water absorbs NIR wavelength energy. Water with varying amounts of suspended particles appears in CIR imagery as shades of blue, because suspended particles reflect a very small amount more of green light than clear water does. Photo source: NCDOT Photogrammetry Unit. The three images were acquired in one pass on 10 August 2010 with an Intergraph Digital Mapping Camera.

# Benefits of CIR Imagery – Submerged Vegetation



# Benefits of CIR Imagery – Water / Wetlands - Identification



# Land Cover Mapping

- Land cover
  - type of feature present on the surface of the earth.
    - Bare Earth (gravel, exposed earth, open space < 25% green cover)
    - Pasture (grassland, open space >75% green cover)
    - Tillable (agriculture)
    - Water (rivers, lakes, ponds, waterways)
    - Woodland (forest, trees – high vegetation, shrubs – low vegetation)
    - Developed (commercial and residential)
    - Transportation (all right-of-way)
    - Wasteland (all the rest)

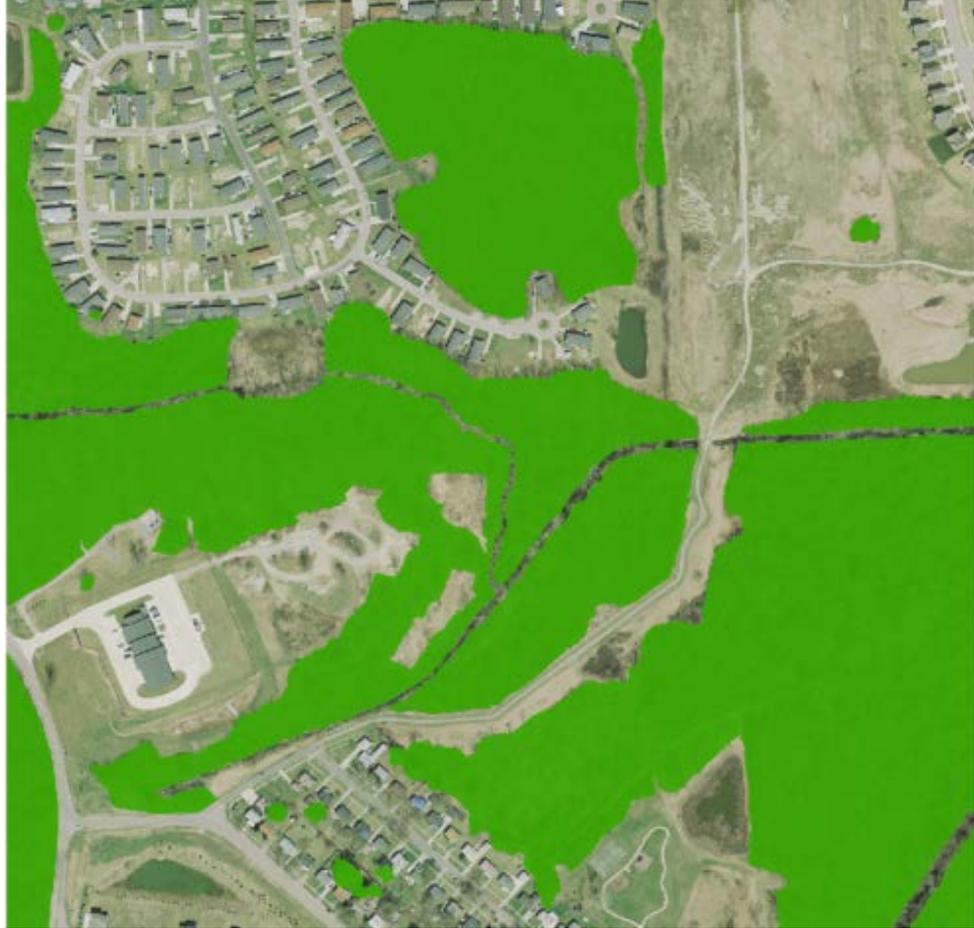
# Open Space/ Pasture



## Urban Bare/ Tillable



# Trees



# Water



# Land Use Mapping

- Land use
  - human activity and economic function
    - Agricultural
    - Residential
    - Commercial and industrial
    - Transportation
    - Recreational (parks, golf courses)
    - Open areas (vacant areas)
    - Water (rivers, ponds, lakes)
    - Undeveloped (all the rest e.g. forests)

# Land Use/Cover Mapping



# Impervious Surfaces Mapping

- Any material natural or man-made that prevents the infiltration of surface water to the underlying strata
  - Buildings
  - Roads
  - Sidewalks
  - Parking lots
  - Other paved surfaces
- Pervious surfaces
  - Gravel
  - Compacted earth

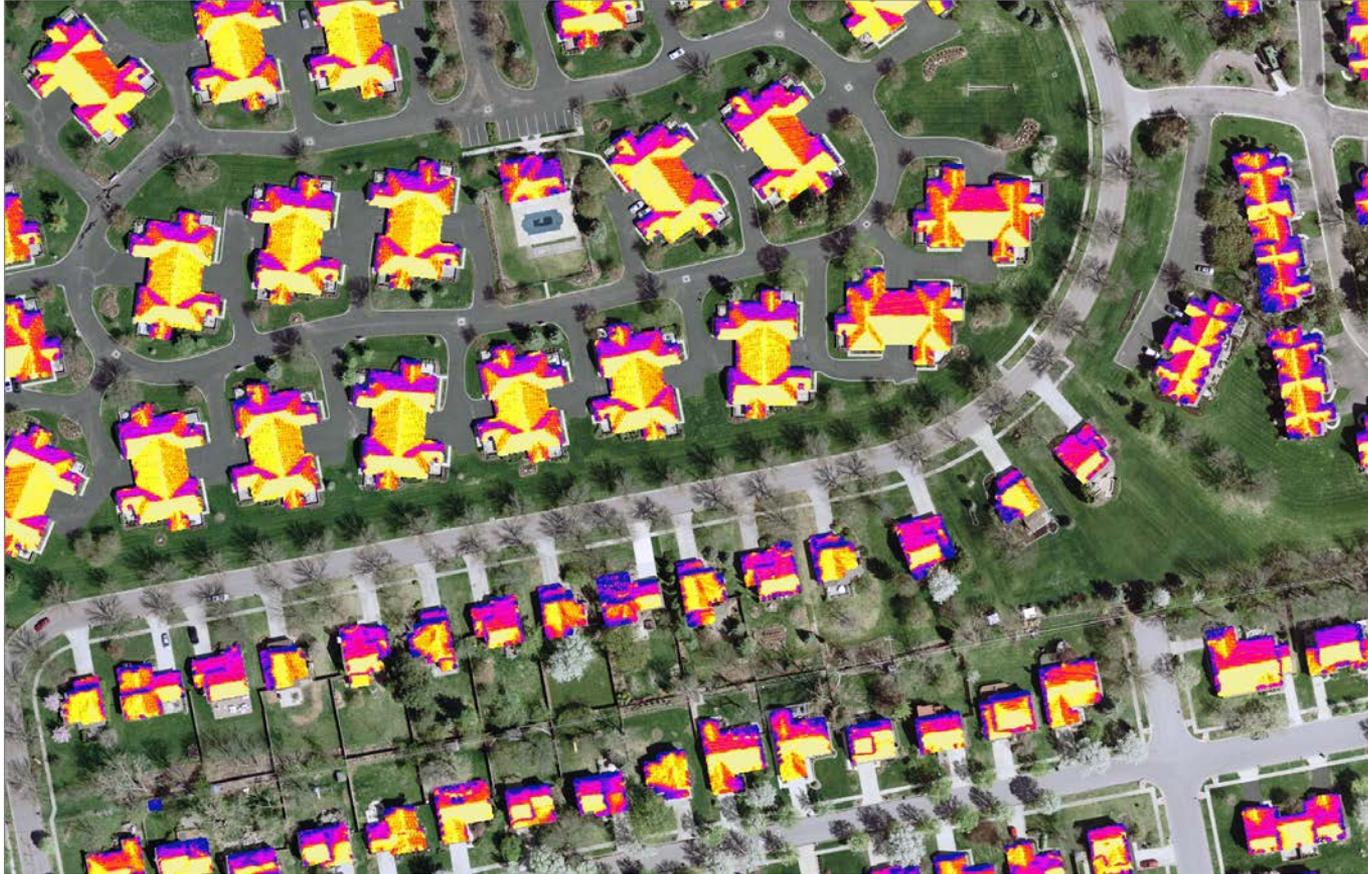
# Impervious Surface



## 2-foot Contours



# Solar Potential Mapping



# NCTCOG

## Buy-up Products

### 3D (or 2D) Planimetrics

- Buildings \*\*
- Paved Roads
- Parking Lots
- Driveways
- Pavement Pads
- Sidewalks
- Unpaved Roads,
- Groups of Vegetation
- Hydrology

### Orthoimagery

- 3-inch
- 6-inch
  
- **Solar Mapping Potential**
- **Impervious Surface Mapping**
- **Change Detection**
- **Land Cover / Land Use**

# THANK YOU

We look forward to working with you.

[Sam.Moffat@woolpert.com](mailto:Sam.Moffat@woolpert.com)

[Eric.cole@woolpert.com](mailto:Eric.cole@woolpert.com)

