

The USDA logo is partially visible on the left side of the slide. It features the word "USDA" in blue, serif capital letters, positioned above a green horizontal band with a white wave-like pattern. Below this is a light blue circular shape.

USDA

# NAIP 2008: Pilot Projects

---

Brian Vanderbilt  
USDA Planning Meeting

December 2, 2008



# Outline

---

- JPEG 2000 Compression
- Seamline Shapefile
- Absolute Control
- NAIP Survey

# JPEG 2000

---

- MrSID MG2
  - Prior to 2005
- MrSID MG3
  - 2005 and later
- JPEG 2000
  - 4-band



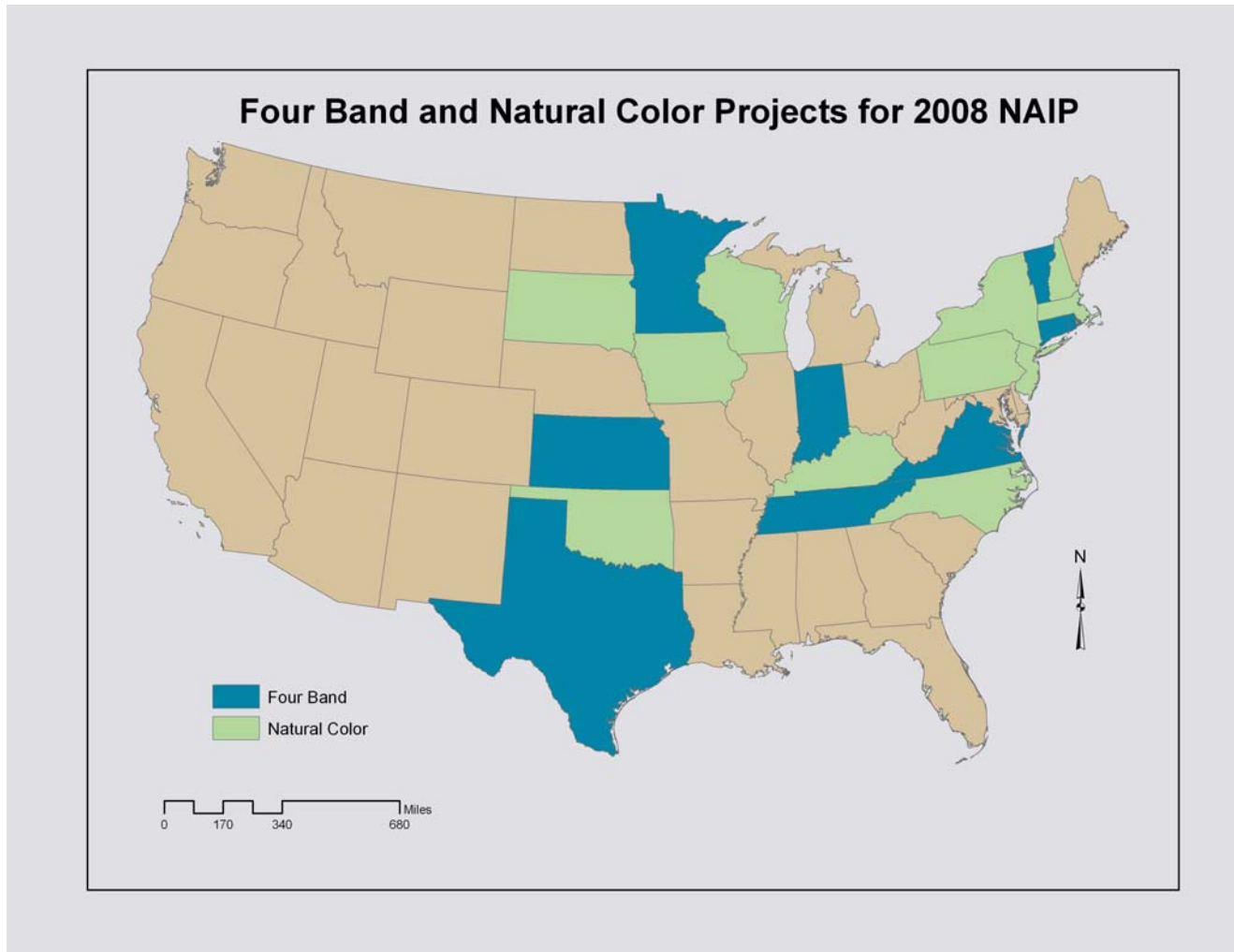
# JPEG 2000

---

- Why did we switch to JPEG 2000?
  - 4-band acquisition
    - 9 multi-spectral states (CT, IN, KS, MN, RI, TN, TX, VT, VA)
  - MrSID MG3 doesn't yet support compression of 4-bands
  - JPEG 2000 is non-proprietary



# JPEG 2000



# JPEG 2000 Vs. MG3

---

- MG3
  - Pros
    - Doesn't exhibit "blurriness"
    - Software compatible
  - Cons
    - Currently cannot handle a 4-band image
    - Proprietary
- JPEG 2000
  - Pros
    - Non-proprietary
    - Multitude of settings
  - Cons
    - Issues may or may not be fixable
    - Support is somewhat limited
    - Multitude of settings
- Proprietary – is it a pro or a con?

The USDA logo is located in the top-left corner of the slide. It features the letters "USDA" in a bold, blue, serif font. Below the text are three stylized, curved lines in shades of green and blue, representing a landscape or agricultural fields.

USDA



2008 NAIP  
(TN)



# JPEG 2000 Issues

---

- Imagery Disappearing at Certain Zoom Levels
  - Zoom scales larger than 1:30,000: image disappears or becomes a gray pixelation



# JPEG 2000 Issues

---

- Rendering
  - CCMs over a certain size (8.5 billion pixels or ~3,200 sq/mi) will cause ArcGIS 9.1 (SP2) to fail
    - Reason for this is a known bug that ESRI will not fix
    - 9.2 fixes this problem
    - Current work-around is to split larger CCMs

# JPEG 2000 Issues

- Viewing Difficulty in Different Software Applications
  - ArcView 3.x
    - Does not read JPEG2000 images
    - Some FSA county offices are still using ArcView
      - Requires GeoJP2 ArcView plug-in from LizardTech
  - ERMapper
    - Causes loading errors if ECW plug-in is installed
      - ArcGIS cannot read JPEG2000
    - Fix is to uninstall ECW plug-in
  - Global Mapper
    - "Patching" with distorted coloration



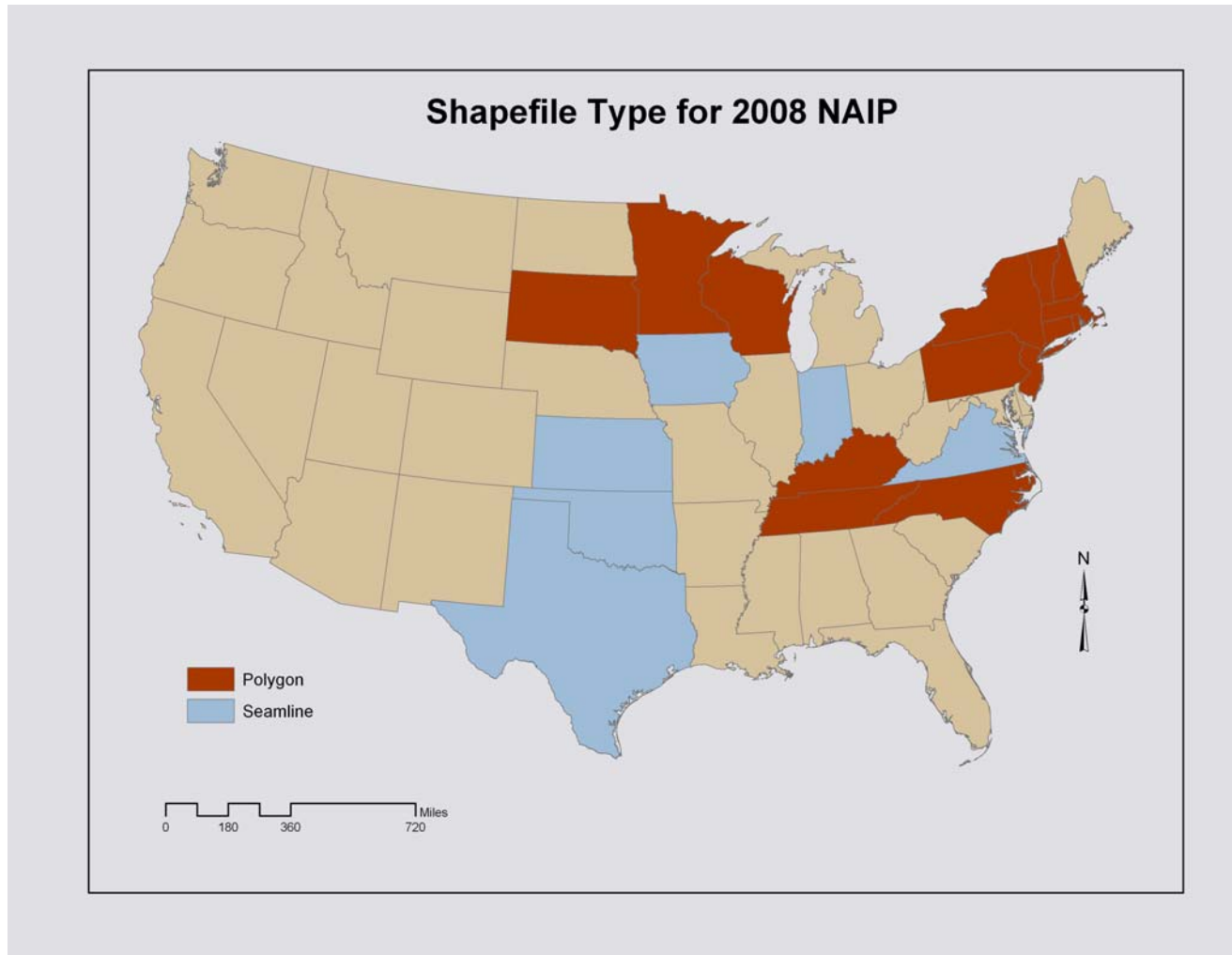
# Seamline Shapefile

---

- Why switch to seamline?
  - More accurate date and time representation of when a particular area is acquired
    - Parts of the imagery representing a standard DOQQ shapefile may have been collected on different dates
    - Moving away from the “majority date”



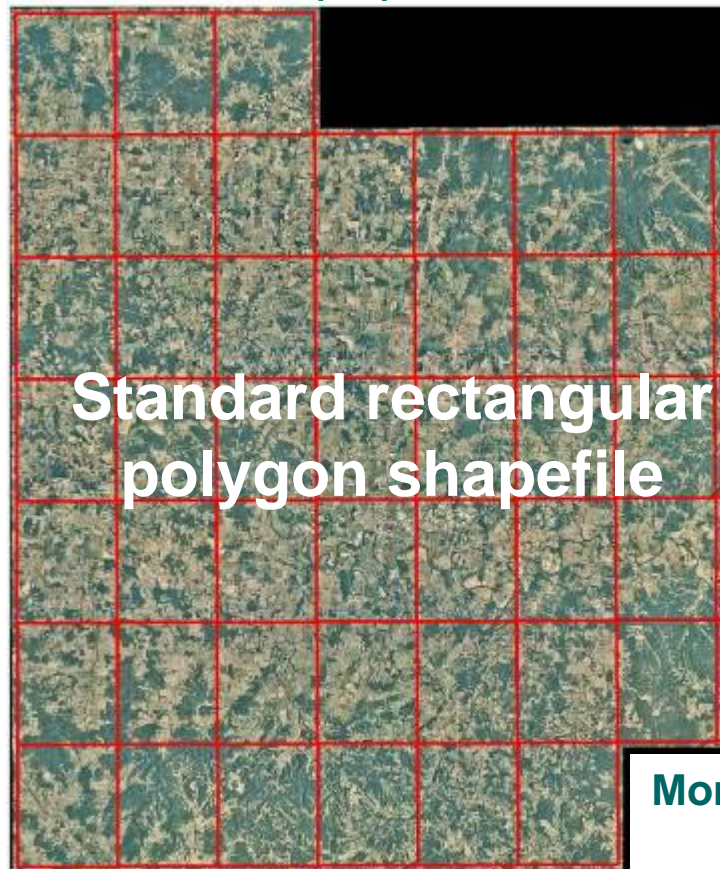
# Seamline Shapefile



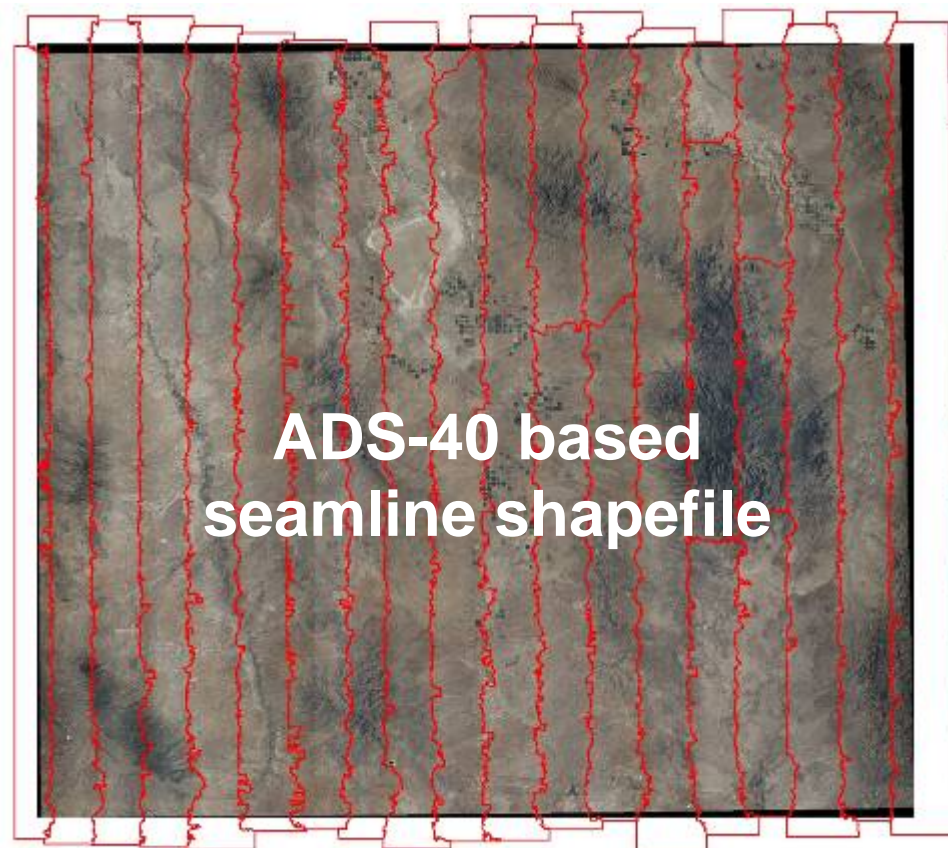


# Seamline Shapefile

2007 NAIP (TN)



Standard rectangular polygon shapefile



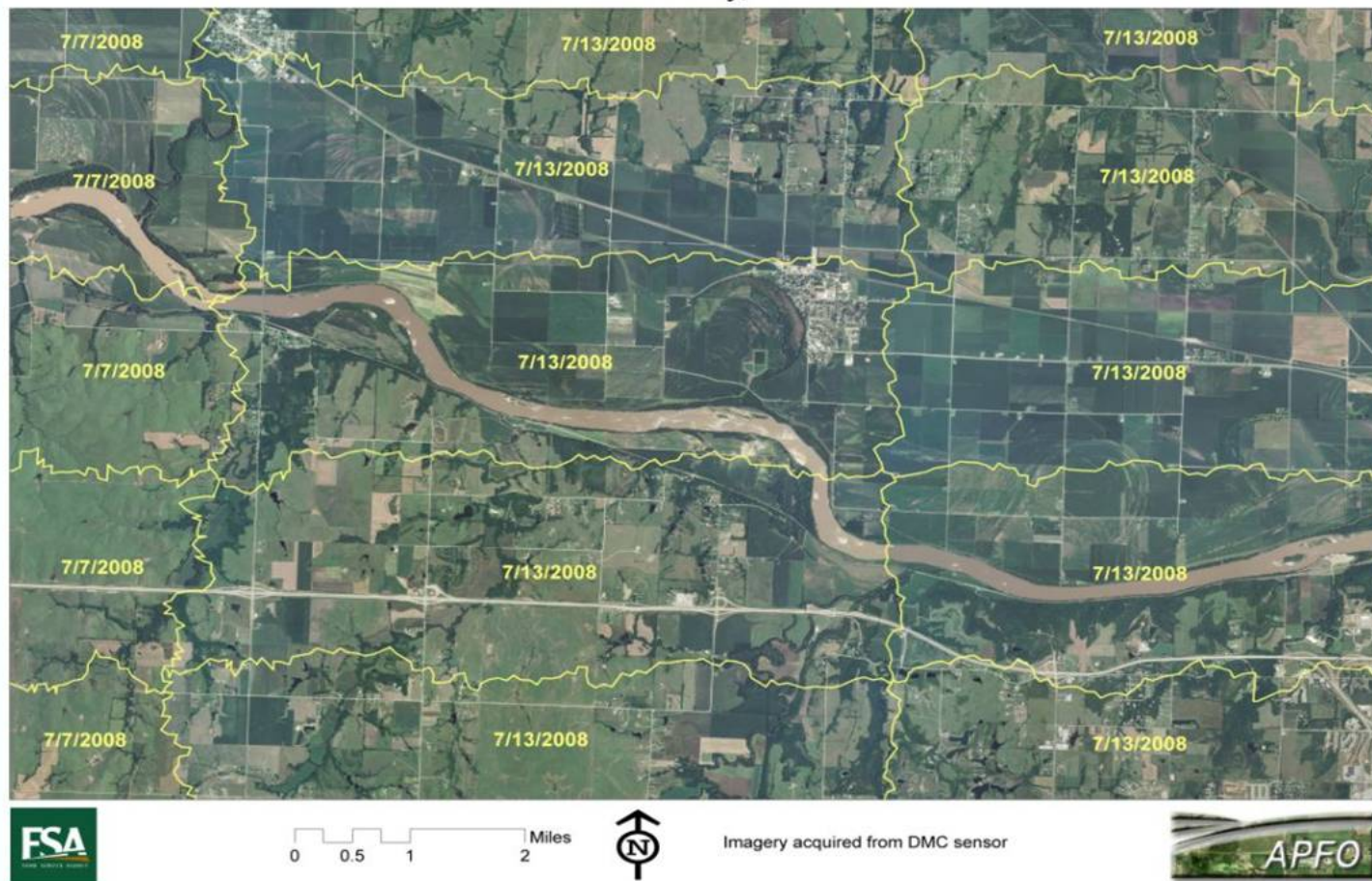
ADS-40 based seamline shapefile

2007 NAIP (AZ)

More accurate representation of exposure dates

# Seamline Shapefile

2008 Acquisition Dates for NAIP Imagery  
Shawnee County, Kansas







# Seamline Shapefile

---

- Pilot in 2007 (Arizona)
- Continued Pilot - 6 states in 2008
  - IN, IA, KS, OK, TX, VA
- Contract requirements
  - Polygon for each exposure used to create CCM
  - No gaps in polygons
  - No overlapping polygons
  - No multiple part polygons
  - No polygons smaller than 40,470 square meters (~10 acres)
  - Data table attributed correctly for each polygon
  - Shapefile coverage represents the extents of the visible imagery

**Seamline Shapefile Error Check**

Input seamline shapefile  
 S:\gateway\ccm\naip\2008\in\18019\ortho\_1-1\_1m\_j\_in019\_2008\_1.shp

Geodatabase  
 C:\SCSS\2008\_seamline\_shapefile\_inspection\indiana.mdb

Output Feature Dataset  
 in001\_2008\_seams

Output Feature Class  
 in001\_2008\_seams\_fc

Feature Class Cartographic Coordinate System (optional)  
 As Specified Below  
 NAD\_1983\_UTM\_Zone\_16N

Output Topology  
 in001\_2008\_seams\_topology

Topology Cartographic Coordinate System (optional)  
 As Specified Below  
 NAD\_1983\_UTM\_Zone\_16N

Output polygons  
 C:\SCSS\2008\_seamline\_shapefile\_inspection\indiana.mdb\in009\_2008\_polygons

Output Polygons Cartographic Coordinate System (optional)  
 As Specified Below  
 NAD\_1983\_UTM\_Zone\_16N

OK Cancel Environments... << Hide Help

**Seamline Shapefile Error Check**

This model is designed to assist with QA inspection of the seamline shapefile associated with Compressed County Mosaics (CCM) in the NAIP program.

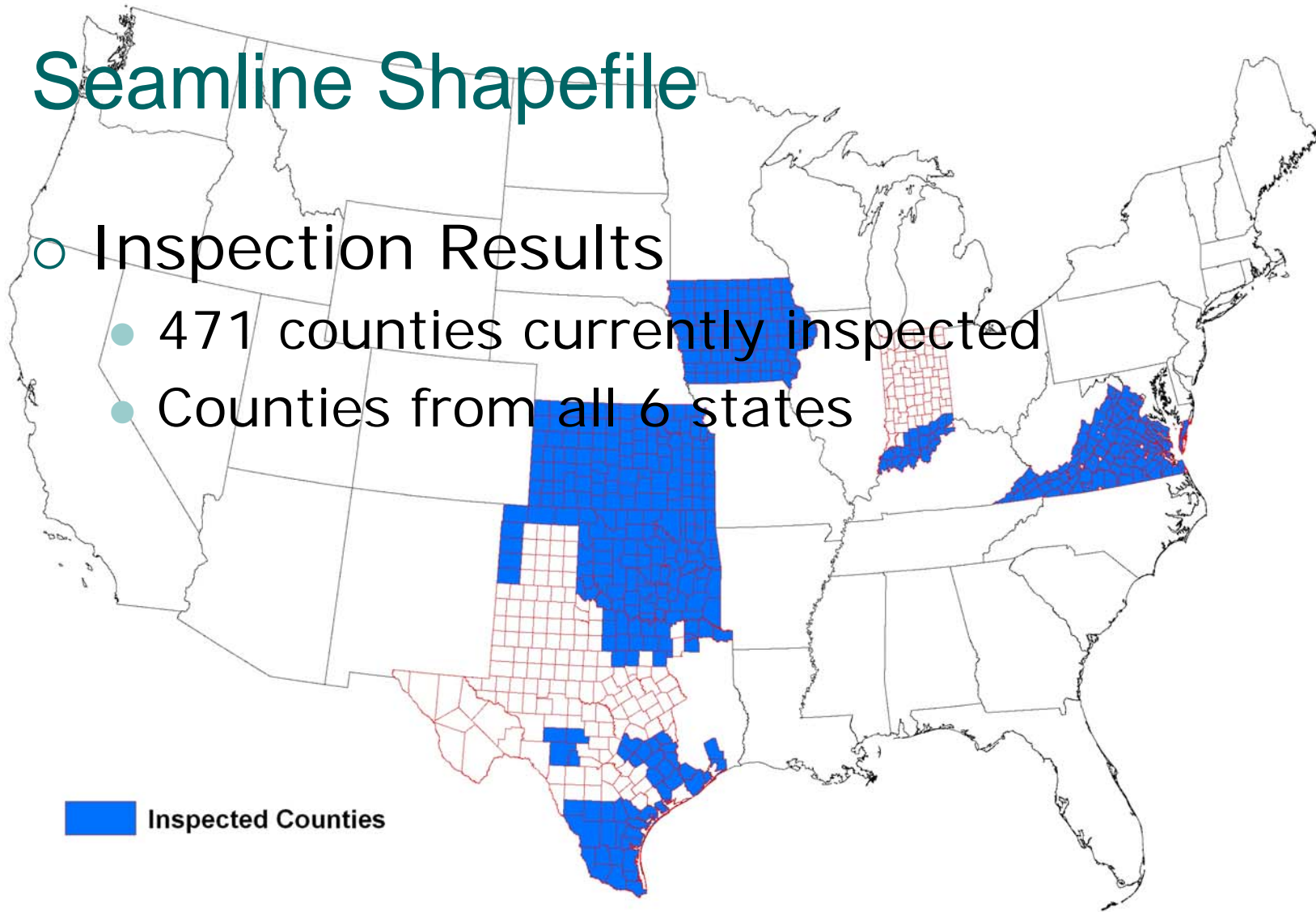


# Seamline Shapefile

## ○ Inspection Results

- 471 counties currently inspected
- Counties from all 6 states

 Inspected Counties



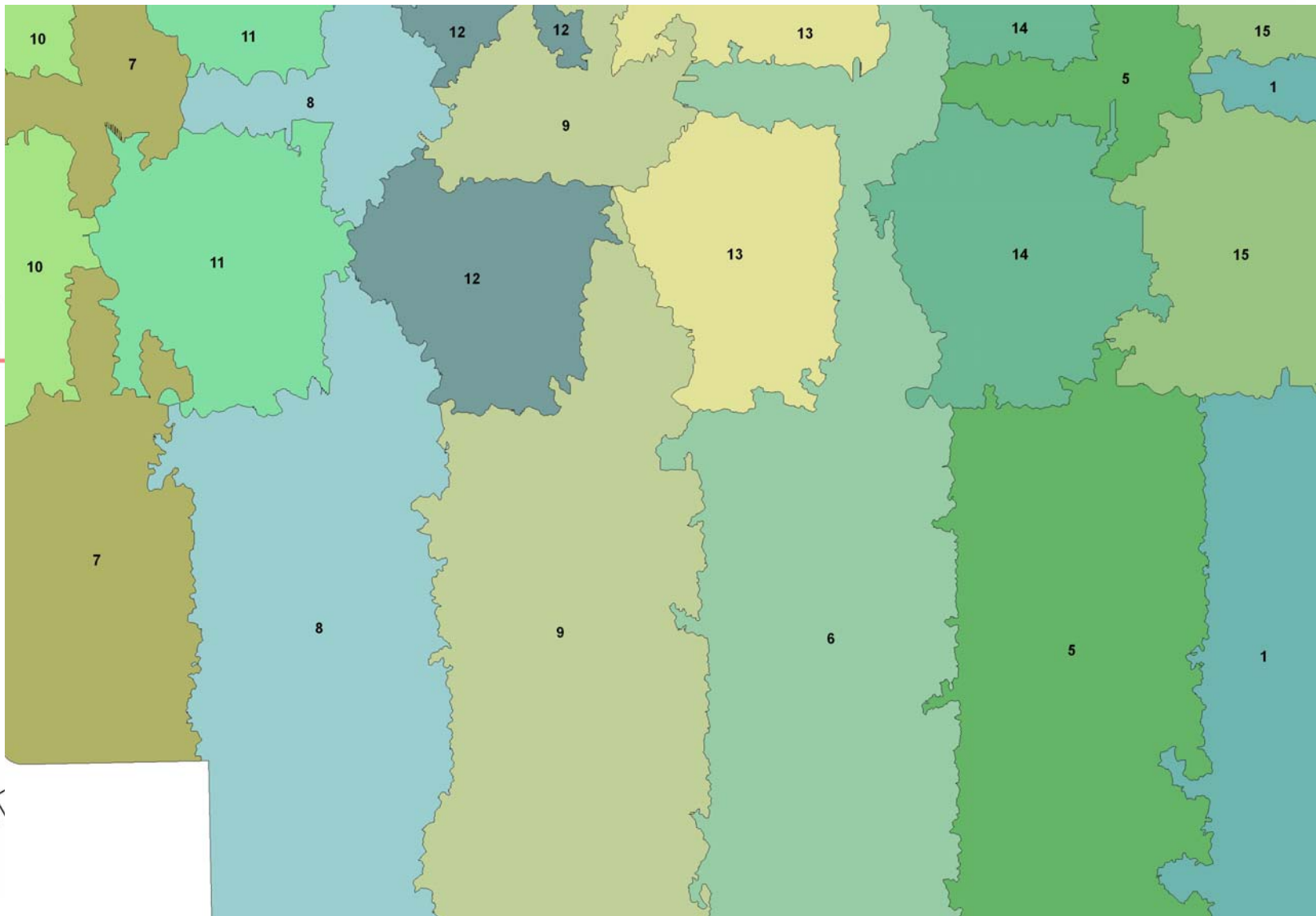


# Seamline Shapefile

---

## ○ Errors

- **5** counties did not have adequate coverage
- **66** counties with overlap errors
- **48** counties with gap errors
- **36** counties with multi-part polygons
- **43** counties with polygons under 40,470 square meters



# Polygons



# Absolute Control

---

- Why move to an absolute horizontal accuracy specification?
  - Less manipulation of vector data (CLU) over time to “match” base layer (imagery)
  - Imagery is used as a base layer in GIS
  - More valuable for partners
  - Doesn't use errors/offset from older imagery
  - Absolute accuracy is a better, more understandable specification

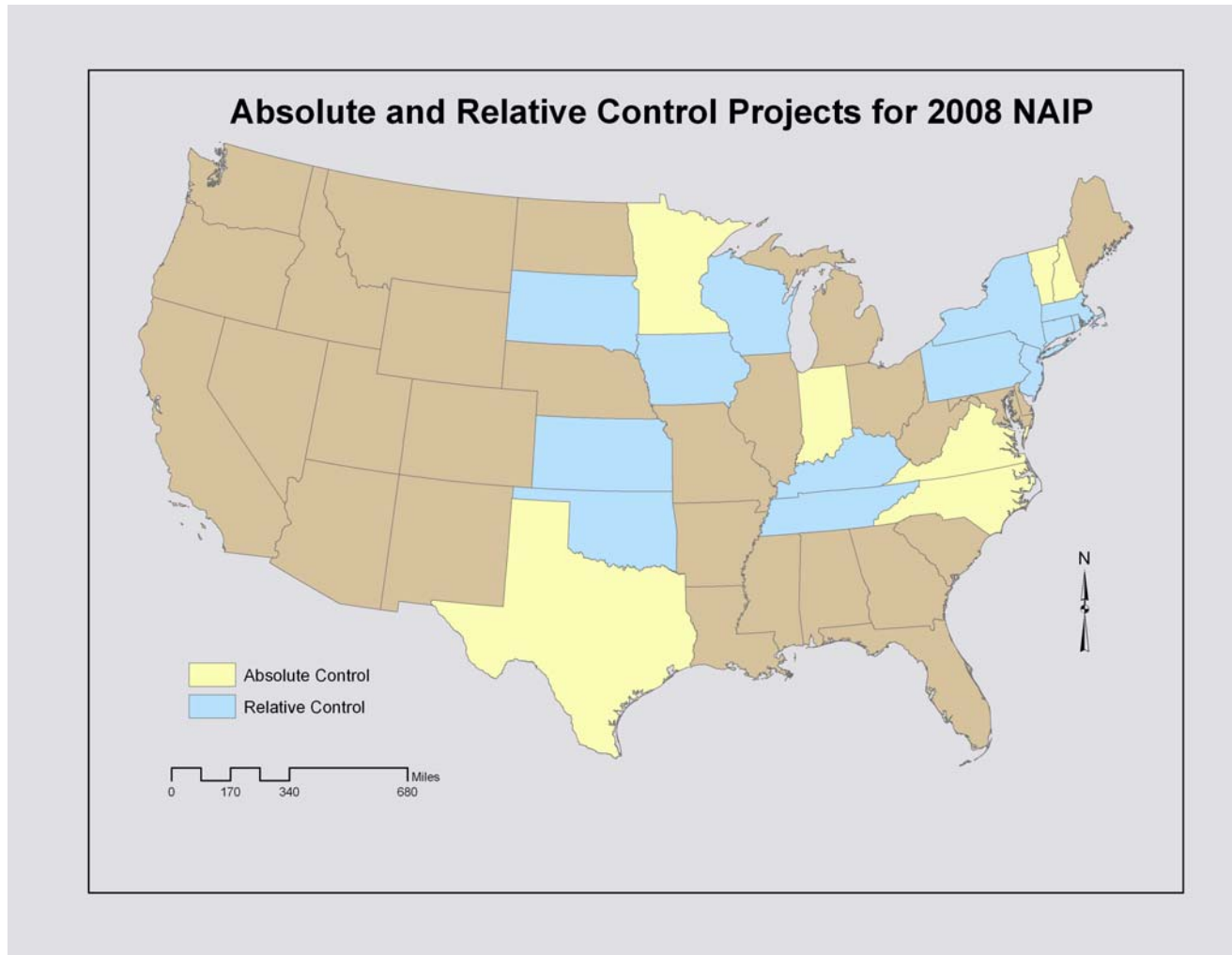
# Absolute Control

---

- Pilots conducted
  - 2006 (UT)
    - UT: 3.40m RMSE (400+ check points)
  - 2007 (AZ)
    - AZ: 2.87m RMSE (530 check points)
- Future states to be phased in
  - 7 states in 2008 (moving out of the pilot phase)
  - 15 states in 2009
  - Once converted, state will not revert
- Working toward a nationwide photo-identifiable control database
  - Control points are strictly for the APFO QA
- NAIP 1m GSD Requirement
  - 95% of well-defined points tested shall fall within 6 meters of true ground



# Absolute Control

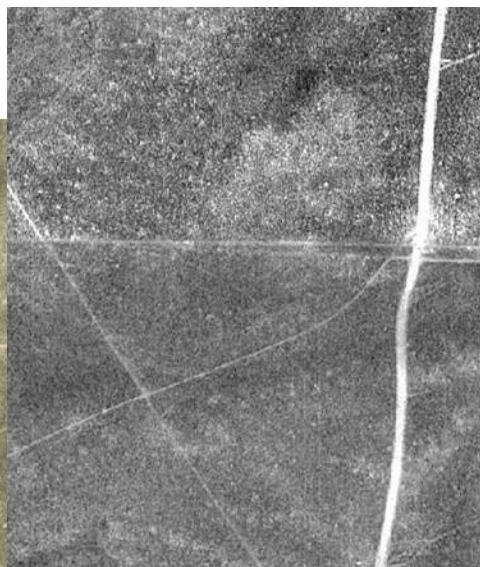




# Absolute Horizontal Accuracy

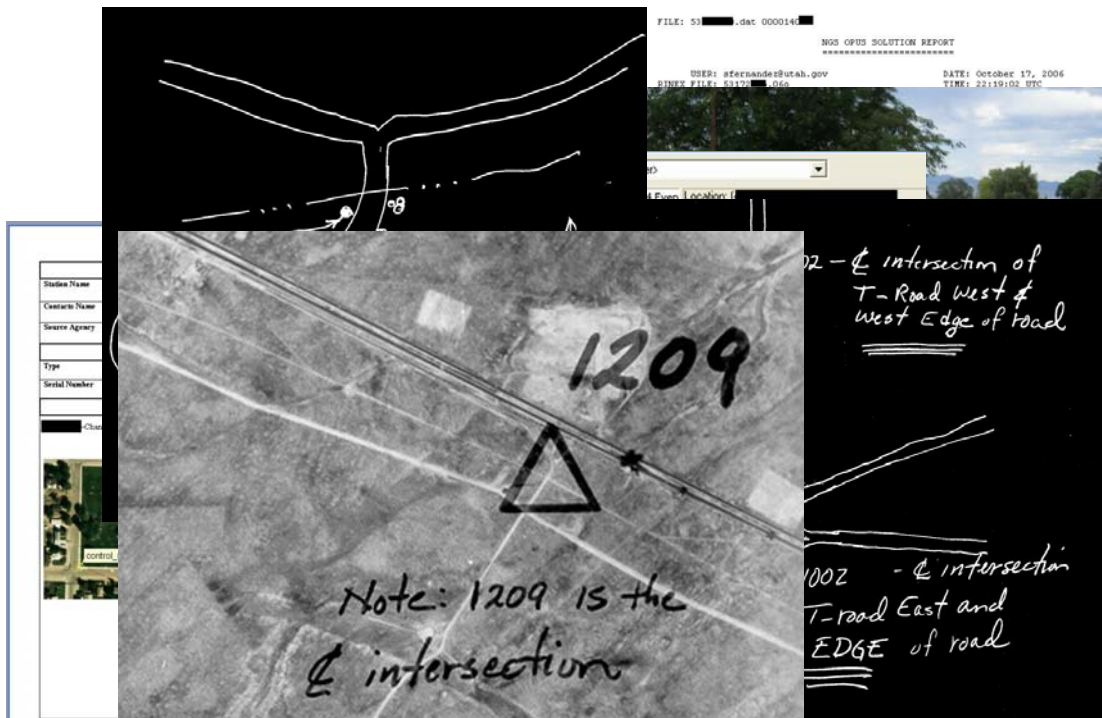
- The engine behind the move of NAIP from relative to absolute control specs is the photo identifiable control database and supplemental data
- Semi-automated inspection process

## Relative



2008

## Absolute



FILE: 53... .darc 000148  
 NOG CPUS SOLUTION REPORT  
 USER: sferandez@utah.gov DATE: October 17, 2006  
 BINNY FILE: 5310... .dgc TIME: 23:19:00 UTC

Station Name
Contact Name
Source Agency
Type
Serial Number

1209

Note: 1209 is the intersection

02 - intersection of T-Road West & West Edge of road

002 - intersection T-road East and EDGE of road

# Example Supplemental Data



OPUS solution 98101701.DAT 000158277.txt - Notepad  
 File Edit Format View Help  
 From: opus@ngs.noaa.gov  
 Sent: Friday, June 22, 2007 8:18 AM  
 To: Emily Schad  
 Subject: OPUS solution : 98101701.DAT 0001

FILE: 98101701.DAT 000158277

NGS OPUS SOL

USER: eschad@woodpatel.com  
 RINEX FILE: 9810170t.07o

SOFTWARE: page5 0612.06 master10.pl  
 EPHEMERIS: igr14322.eph [rapid]  
 NAV FILE: brdc1700.07n  
 ANT NAME: TRM33429.00+GP NONE  
 ARP HEIGHT: 2.000

REF FRAME: NAD\_83(CORS96) (EPOCH:2002.0000)

X: -2109045.977(m) 0.003(m)  
 Y: -4725479.710(m) 0.019(m)  
 Z: 3718154.539(m) 0.004(m)

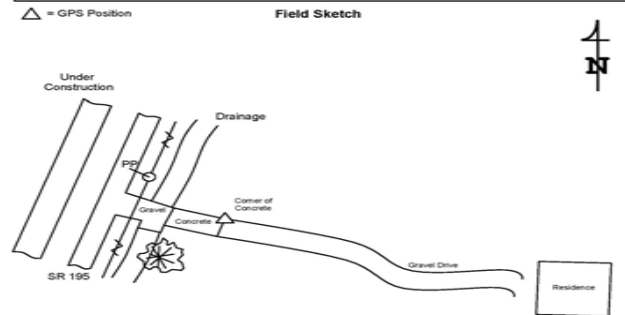
LAT: 35 52 49.37193 0.013(m)  
 E LON: 245 56 53.31230 0.009(m)  
 W LON: 114 3 6.68770 0.009(m)  
 EL HGT: 1209.375(m) 0.012(m)  
 ORTHO HGT: 1236.156(m) 0.028(m) [Geoid03 NAVD88]

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 11)	SPC (0203 AZ W)
Northing (Y) [meters]	3974696.314	541301.679
Easting (X) [meters]	766146.807	186104.132
Convergence [degrees]	1.72890626	-0.17691836
Point Scale	1.00047292	0.99994248
Combined Factor	1.00028306	0.99975272

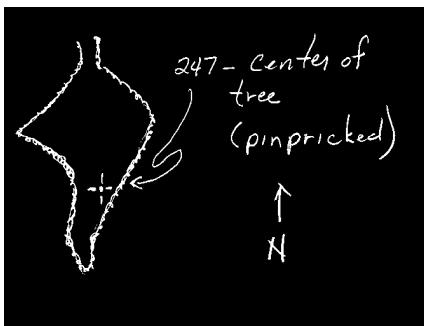
US NATIONAL GRID DESIGNATOR: 11SQV6614774696(NAD 83)

PID	DESIGNATION	BASE STATIONS USED	LATITUDE
A11826	LVND LAS VEGAS VALLEY CORS ARP		N360934.026
DI1079	NVLM AMS WT FACILITY CORS ARP		N360410.756
AM7015	KING KINGMAN CORS ARP		N351150.480

City of Killeen Photo Control Point		Point ID: 602	Date Established: 04.03.06
NAD-83 Geodetic Position		NGVD 29 US Survey Feet	
Latitude N: 30° 56' 22.06821	Elevation: 830.430		
Longitude W: 97° 47' 11.47342	Ellip: 743.456		
NAD-83 Texas State Plane Coordinates Texas Central Zone Meters		NAD-83 Texas State Plane Coordinates Texas Central Zone US Survey Feet	
Y Coordinate: 3143852.014	Y Coordinate: 10314552.907		
X Coordinate: 943335.096	X Coordinate: 3094925.226		



(Drawing not to scale.)







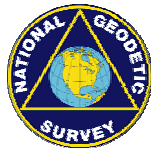
# Absolute Control

---

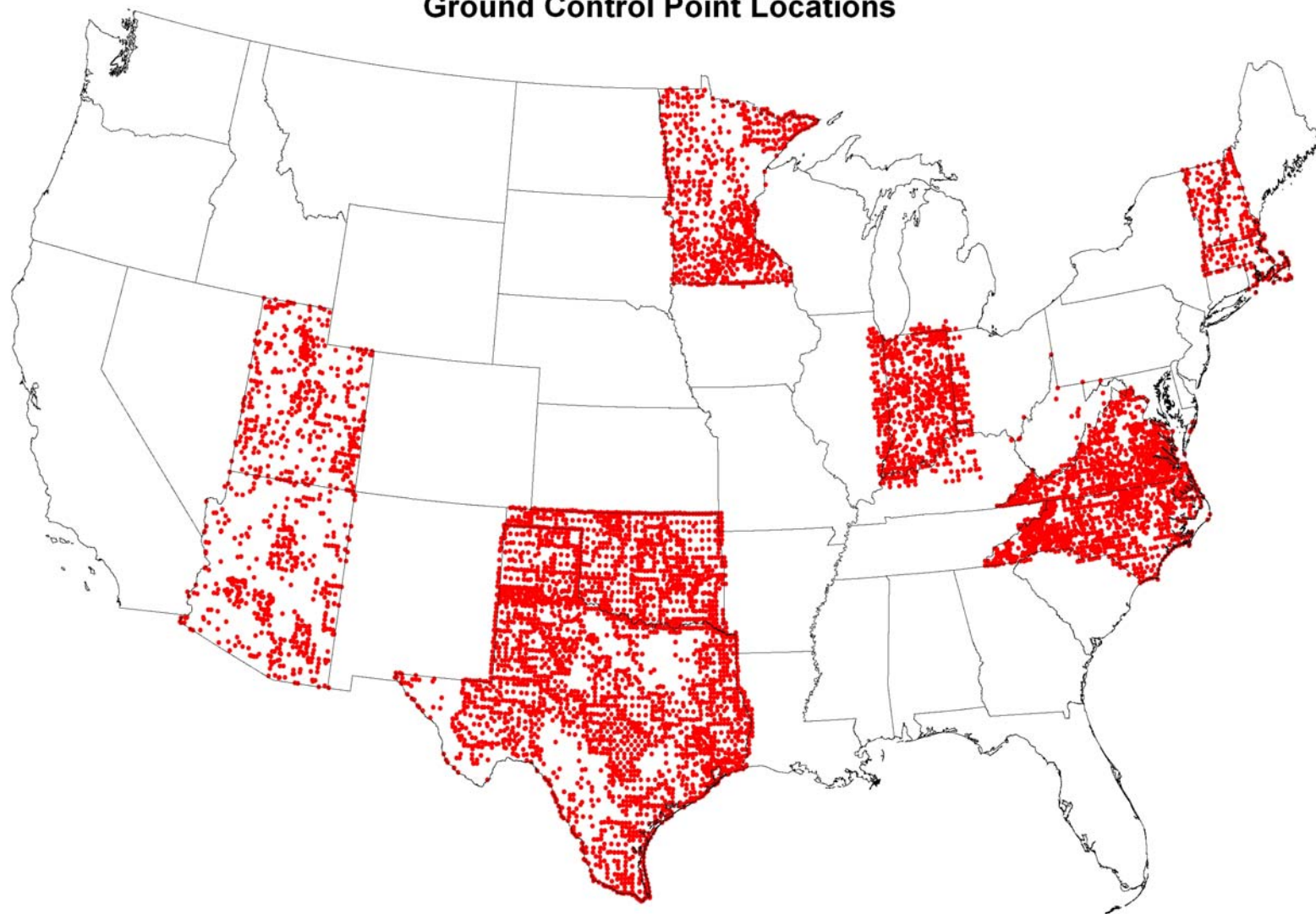
- NAIP 2008 Control Point Acquisition
  - 7 states (IN, MN, NH, NC, TX, VT, VA)
  - Coordination in APFO Service Center Support Section
    - Began in January 2008
    - Worked with local-level (FSA, USGS, and state-level) personnel to facilitate acquisition
  - Control points are received, checked, and data based at APFO

# Absolute Control

- Current data base
  - 8,646 total points
    - Many of the points come with supplemental data
  - Data Sources: USGS, USFS, NGS, State Agencies – TNRIS, Minnesota DOT, NCGS, IndianaDOT, VirginiaITA



### Ground Control Point Locations





# Absolute Control

---

- NAIP 2009
  - All states will be absolute control
  - Coordination will again be in APFO Service Center Support Section



# 2008 NAIP Survey

---

- Purpose
  - Excellent measure of how well NAIP is serving the customer
  - Gives FSA a chance to respond with concerns, level of satisfaction, etc.
- NAIP 2008 survey should be released February 2009
- Results of 2006 and 2007 survey are available upon request

USDA



2008 NAIP - Kenedy Co, TX

