21st ANNUAL PA GIS CONFERENCE
The Penn Stater Conference Center Hotel
State College, PA

June 3-5, 2013

The Geographic Support System Initiative (GSS-I): Working with Partners for Enhanced Data Management

PAGIS: June 4, 2013

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US Census Bureau: Philadelphia Regional Office

United States Census Bureau
Philadelphia Region

Overview

- MAF/TIGER Database (MTDB) recap
- Supporting the 2010 Census (MTAIP)
- Supporting the 2020 Census + (GSSI)
  - Inception
  - 2019 Targeted Address Canvassing
  - GSS-I News/Updates
  - Minimal & Optimal Guidelines
  - Next Steps
- ESRI Community TIGER

Changes in PHRO Territory: January 2013

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The MAF/TIGER Database (MTDB)

- **M**aster **A**ddress **F**ile (MAF)
- **T**opologically **I**ntegrated **G**eographic **E**ncoding and **R**eferencing (TIGER)
- Developed to support 1990 Census
  - Digitized from USGS quads

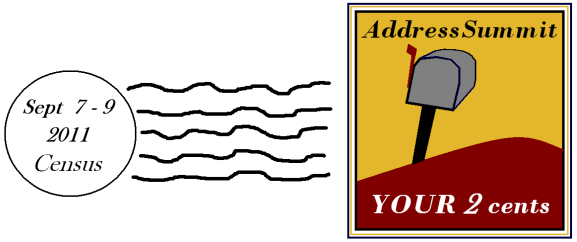
The “TI” in TIGER

- **T**opological **I**ntegration amongst all linear feature classifications
- Efficient storage (national coverage!)
- Helps prevent tabulation data gaps (open polygons)
- Poses Conflation “Rubbersheeting” challenges

MAF/TIGER: Supporting the 2010 Census

- MAF/TIGER Accuracy Improvement Project (MTAIP): 2003-2008
- Address Canvassing: Spring 2009
- Geographic Partnership Programs
  - Local Update of Census Addresses (LUCA)
  - New Construction (NC)
  - Participant Statistical Areas Program (PSAP)
  - Redistricting Data Program (RDP)
  - Boundary & Annexation Survey (BAS)

The Census Address Summit



- Objectives
  - Education on the benefits of a targeted address canvass
  - Shared understanding of the definition of an address
  - Learning how various stakeholders work with addresses
  - Brainstorming and discussion of pilot projects

Geographic Support System Initiative (GSS-I)

MAF/TIGER: Supporting the 2020 Census +

- Geographic Support System Initiative (GSS-I)
  - Integrated program utilizing partnerships for:
    - Improved address coverage
    - Continual spatial feature updates
    - Enhanced quality assessment & measurement (QI)
  - May allow for a targeted address canvassing operation in 2019 (cost avoidance)
  - Better quality throughout the decade to support intercensal surveys (ACS)

http://www.census.gov/geo/www/gss/

GSS-I Partnership Program Update

- Launched the GSS-I Partnership Program in October 2012
- Identified 56 initial partners to participate in ‘Phase 1' by providing their addresses, structure points, and street centerlines
- Goal is to acquire and use partner data for a production test of our process and software first half FY13

GSS-I Phase 1 Partners

TR0161TA2430	Navajo Nation Reservation	
CO01097	Mobile	AL
PL0177256	Tuscaloosa	AL
CO05015	Carroll	AR
CO04013	Maricopa	AZ
CO06047	Merced	CA
CO06079	San Luis Obispo	CA
CO06085	Santa Clara	CA
CO08031	Denver	CO
ST11	District of Columbia	DC
CO10005	Sussex	DE
CO12009	Brevard	FL
CO12013	Calhoun	FL
CO12071	Lee	FL
CO13207	Monroe	GA
CO13235	Pulaski	GA
CO13237	Putnam	GA
CO15001	Hawaii	HI
CO15007	Kauai	HI
CO20061	Geary	KS
CO20091	Johnson	KS
CO20155	Reno	KS
CO20161	Riley	KS
CO24021	Frederick	MD
CO24033	Prince George's	MD
CO27001	Aitkin	MN
CO27131	Rice	MN
CO30031	Gallatin	MT
CO30049	Lewis and Clark	MT
CO30109	Wibaux	MT

CO35019	Guadalupe	NM
CO35043	Sandoval	NM
CO35061	Valencia	NM
PL3506970	Bernalillo	NM
PL3517960	Corrales	NM
PL3563460	Rio Rancho	NM
CO36027	Dutchess	NY
CO36039	Greene	NY
CO36109	Tompkins	NY
CO39041	Delaware	OH
CO39101	Marion	OH
CO41029	Jackson	OR
CO42039	Crawford	PA
ST44	Rhode Island	RI
CO45003	Aiken	SC
CO45035	Dorchester	SC
CO45041	Florence	SC
CO45063	Lexington	SC
CO45071	Newberry	SC
CO45083	Spartanburg	SC
CO45091	York County	SC
PL4819000	Dallas City	TX
PL4857176	Pflugerville	TX
CO51019	Bedford	VA
ST50	Vermont	VT
CO53033	King	WA
CO55025	Dane	WI
CO54037	Jefferson	WV

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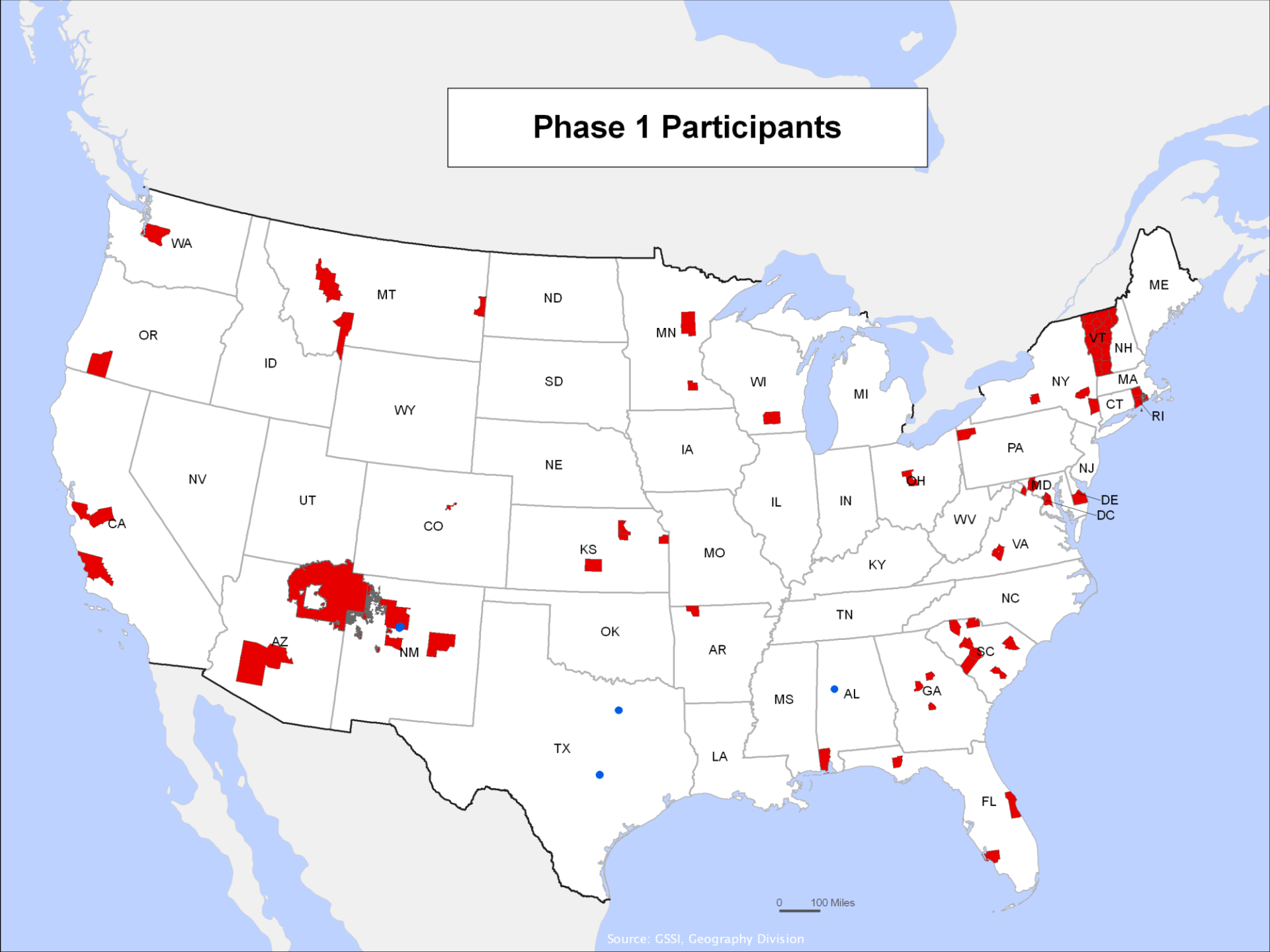
*Community TIGER beta testers

Phase 1 Participants



Minimum Address Guidelines: Matching

A. In order to perform a match to existing MAF addresses, the submitted record must include:

- Complete Address Number
- Complete Street Name

and AT LEAST ONE OF THE FOLLOWING:

- Address Coordinate
- ZIP Code
- Postal City and State
- Census 2010 Tabulation State, County, Tract and Block Code

Minimum Address Guidelines: Geocoding

B. In order to update the location (geocode) for an existing MAF address, the submitted record must meet the requirements of “A” above, but this action requires either:
   - Address Coordinate or
   - Census 2010 Tabulation State, County, Tract and Block Code

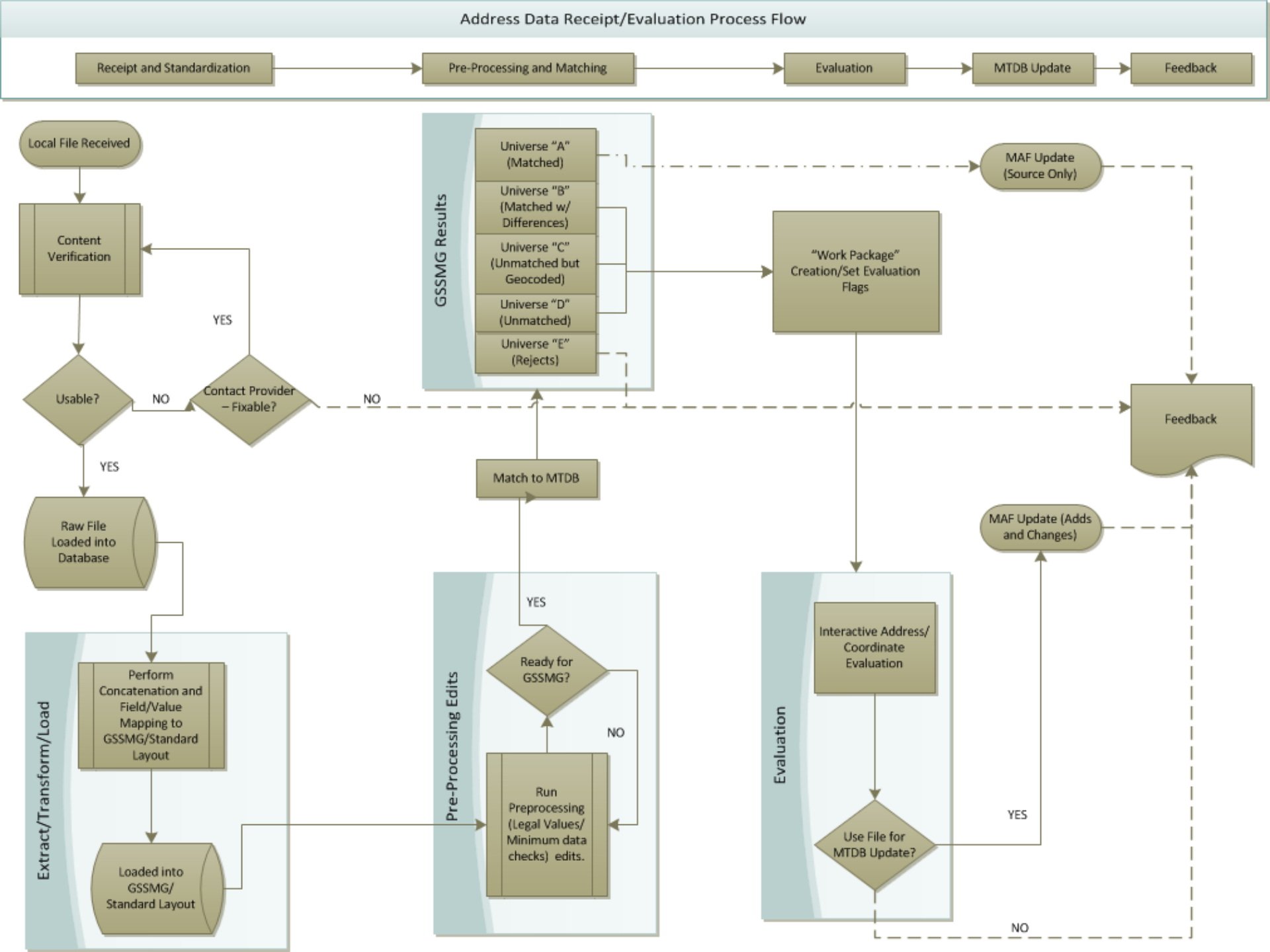
C. In order to ADD new records to the MAF, the submitted record must meet the requirements of “A” above, and additionally must include an Address Feature Type indicator identifying the address as residential, commercial, utility, etc.

Minimum Address Guidelines: Etc.

D. Within Structure Identifiers (Apt 3, etc). If not available:
   - # of units
   - Multi-unit structure flag

E. Group Quarters:
   - NAME (i.e. Shady Acres Retirement Home)
   - TYPE (i.e. Hospital, Prison, College Dormitory)

F. Cannot process only Non-City-Style Addresses, such as:
   - Rural Route Addresses (i.e. RR 3 Box 725 Anytown, NC 28999)
   - Post Office Box Addresses (i.e. P.O. Box 12374 Anytown, NC 28999)
   - General Delivery (i.e. General Delivery Anytown, NC 28999)
   - Location Descriptions (i.e. Brick House at intersection of 1st and Main Streets)


Address Data Receipt/Evaluation Process Flow
Receipt and Standardization
Pre-Processing and Matching
Evaluation
MTDB Update
Feedback
Local File Received
Content Verification
Usable?
NO
Contact Provider – Fixable?
YES
NO
YES
Raw File Loaded into Database
Extract/Transform/Load
Perform Concatenation and Field/Value Mapping to GSSMG/Standard Layout
Loaded into GSSMG/ Standard Layout
GSSMG Results
Universe "A" (Matched)
Universe "B" (Matched w/ Differences)
Universe "C" (Unmatched but Geocoded)
Universe "D" (Unmatched)
Universe "E" (Rejects)
Match to MTDB
Pre-Processing Edits
YES
Ready for GSSMG?
NO
Run Preprocessing (Legal Values/ Minimum data checks) edits.
MAF Update (Source Only)
"Work Package" Creation/Set Evaluation Flags
Feedback
MAF Update (Adds and Changes)
Evaluation
Interactive Address/ Coordinate Evaluation
Use File for MTDB Update?
YES
NO

Preliminary Processing Results

For Two States and 45 Counties…

	National	
Total Records	6,829,527	
Duplicate Records	226,408	
Total Unduplicated	6,603,119	100.0%
Matched to MTDB	5,655,678	85.7%
Unmatched	947,441	14.3%
Unmatched Residential	430,421	6.5%
Newly Geocoded	72,630	1.1%
Same Block	5,304,000	80.3%
Different Block	278,003	4.2%
Same Class*	3,731,084	66.0%
Different Class*	112,483	2.0%

~ 10% of the total records had no address classification code.

Next Steps

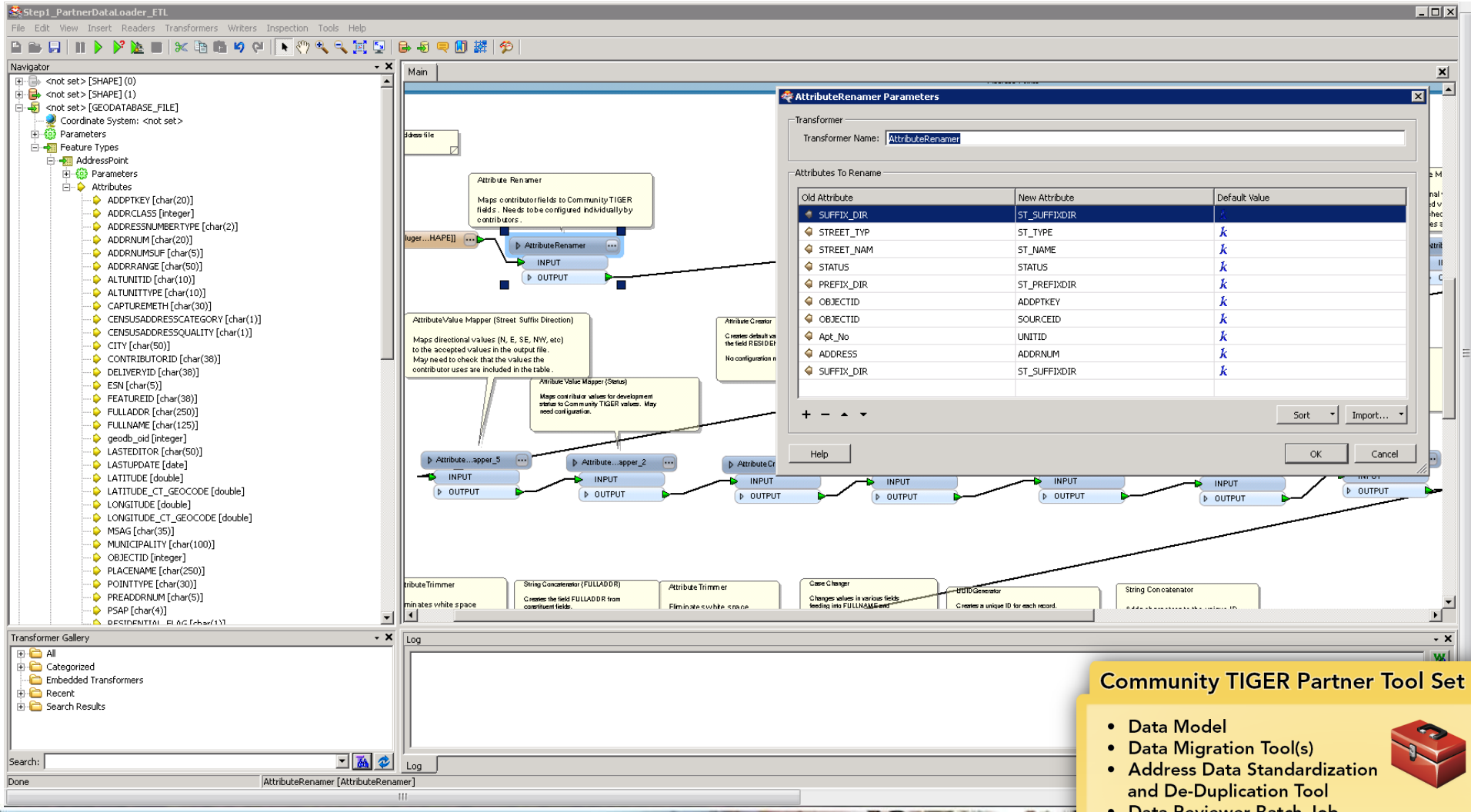
- 'Phase 1' feedback
- Planning for @ 300-500 'Phase 2' partners
  - Criteria-driven (*Targeted Address Canvassing research, data quality issues in MAF/TIGER, existing BAS participants, whole states*)

    ***Centre & Cumberland Counties, PA**
- Community TIGER Integration
- Phase 2 feedback flowing starting in summer 2013

Community TIGER

- Proof of Concept collaborative project with ESRI
- Web (cloud) based data exchange and data management portal
- Phased and iterative project
- Leverages COTS technology, existing systems and proven workflows
- Utilizes and builds upon the next generation ESRI Community Maps

Address Data Migration



Community TIGER Partner Tool Set

- Data Model
- Data Migration Tool(s)
- Address Data Standardization and De-Duplication Tool
- Data Reviewer Batch Job
  - Address Validation
  - Spatial Validation
  - Metadata Validation
- Data Package Tool
- Procedure document

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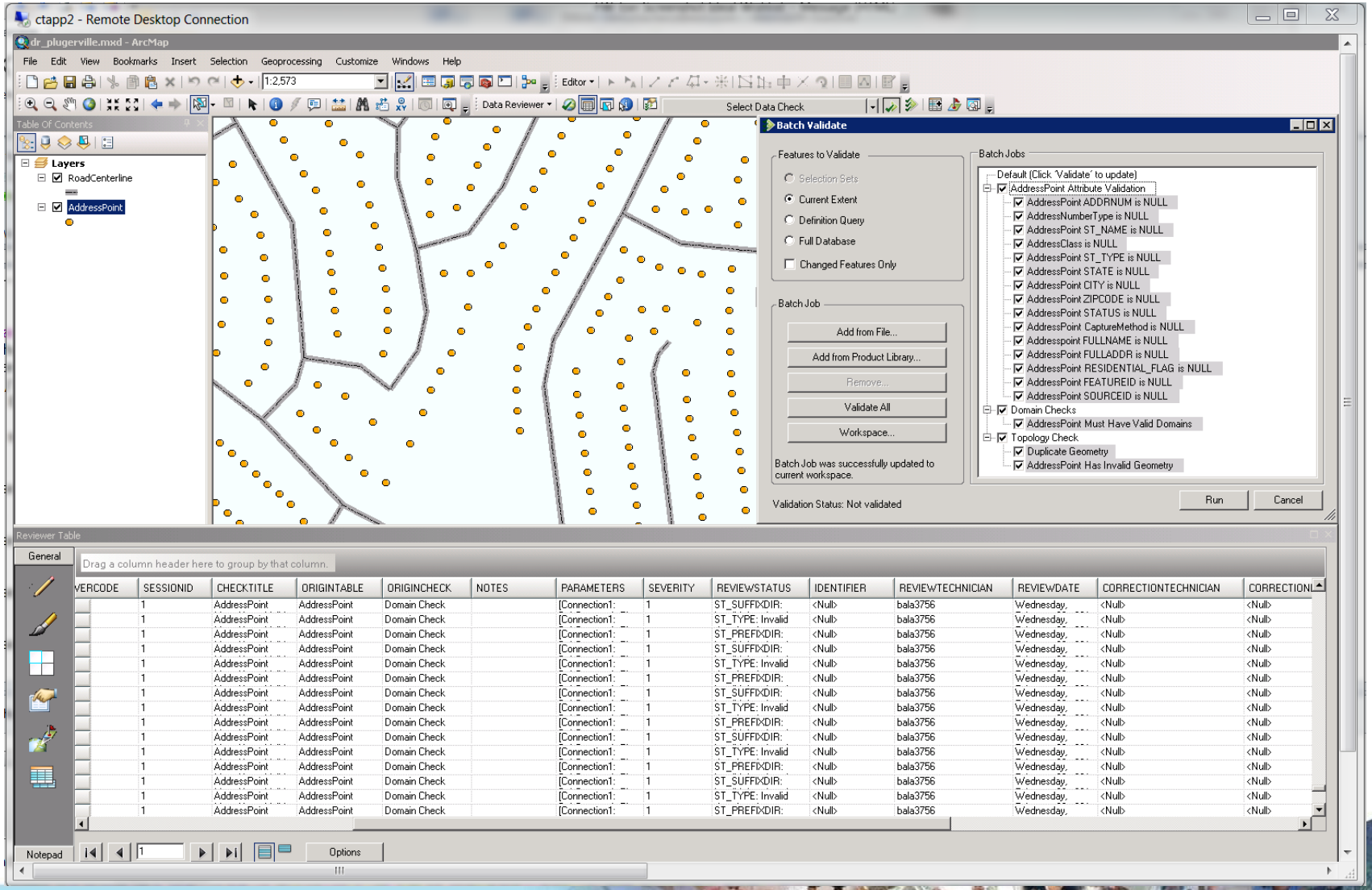
Address Data Validation



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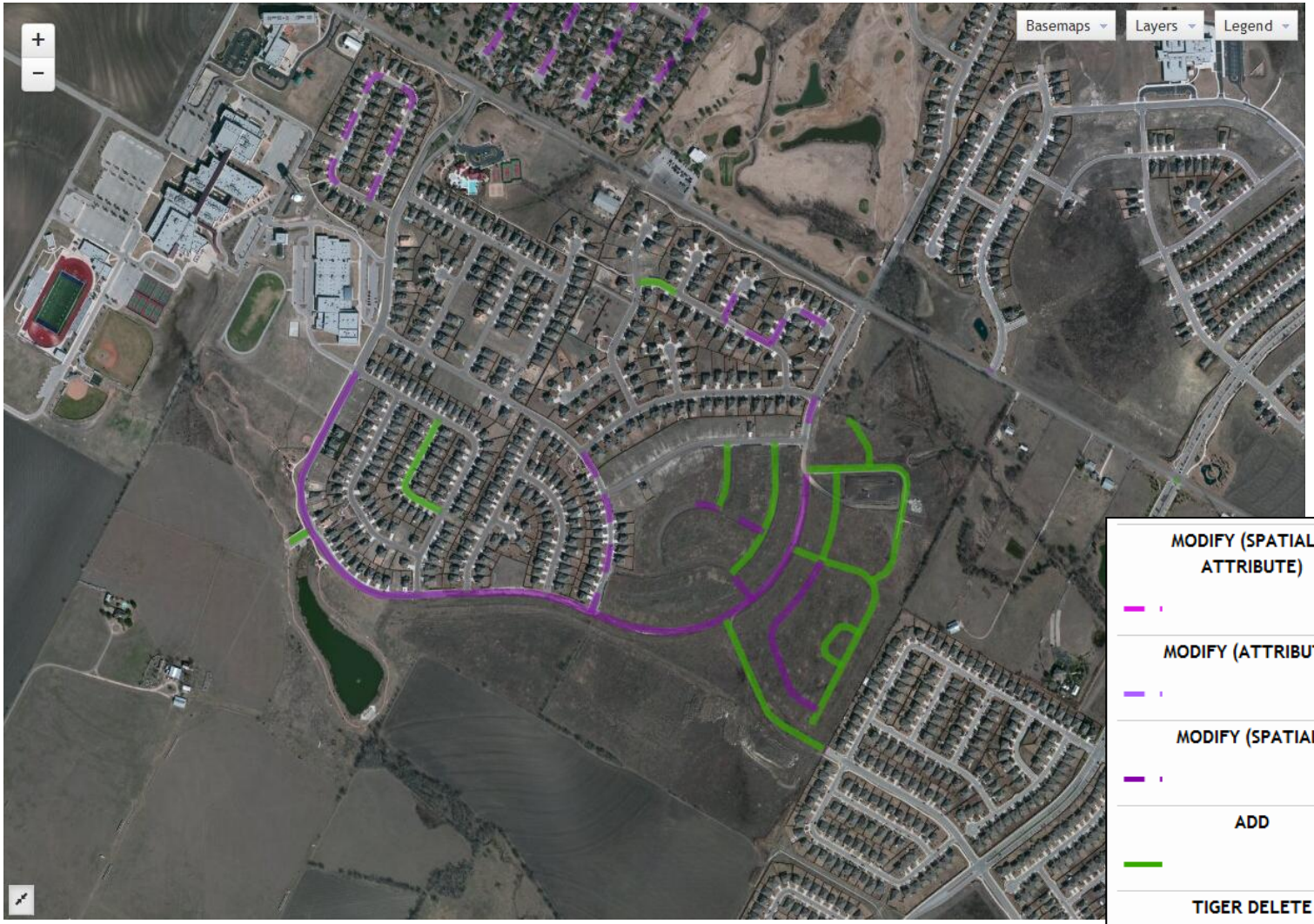
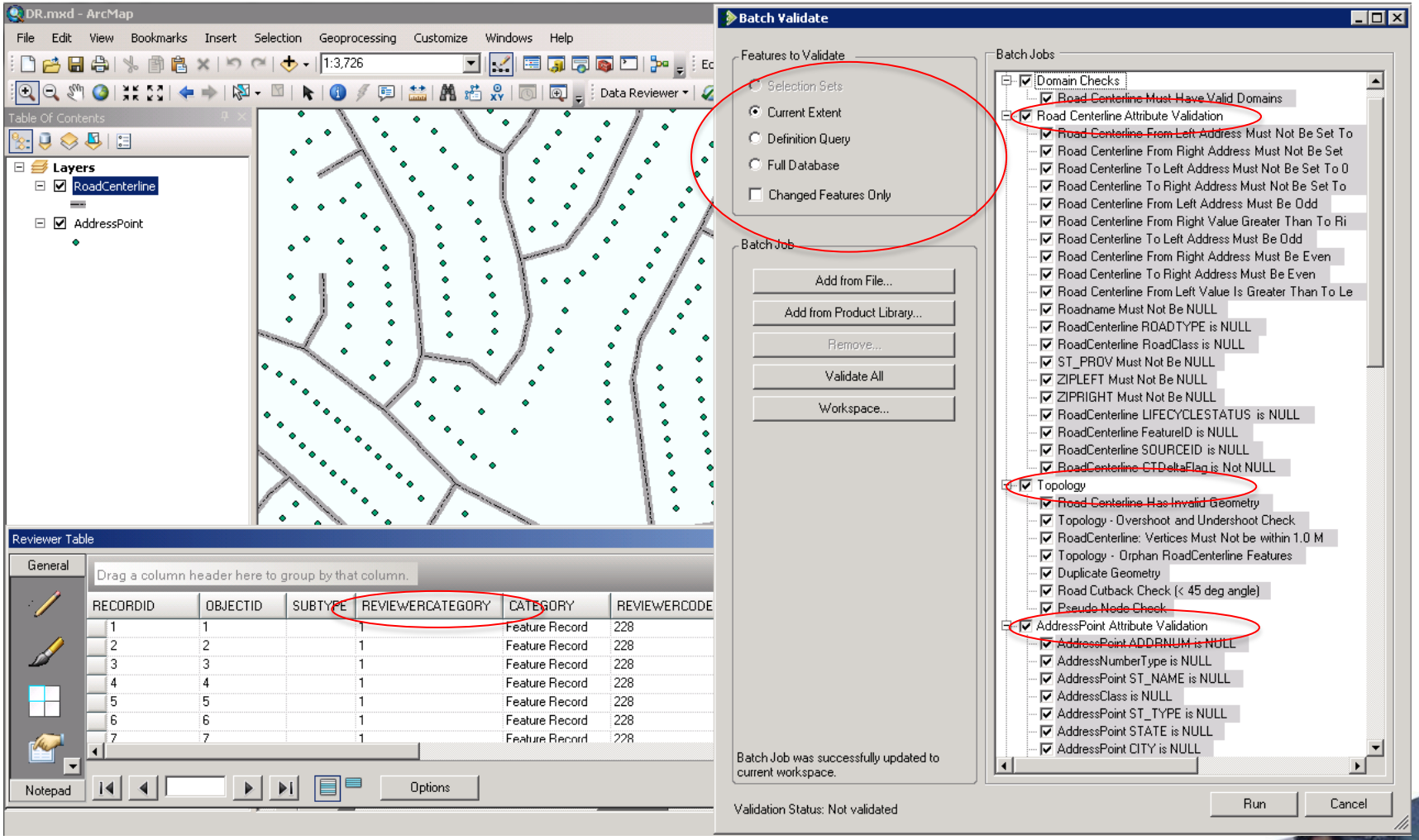
Spatial Matching with TIGER



Spatial Data Reviewer



Data Review

Community TIGER: Contribution Management

Active Contribution | Contribution History

Notifications 0 | Lilin's Test

Upload Contribution

Upload Data

✔ Received January 31st, 2013

2 Preview Your Data ›

- Review data analysis results
- Preview your map
- Optionally upload revised data to resolve issues

Upload revised data

3 Finalize Contribution

Review your map

4 Feedback from Census

Not submitted yet

Data Analysis

View details

Automated QC Results

5	9	15
Errors	Warnings	Messages

Download as file gdb

Layers

RoadCenterline	99%	2	5	6
AddressPoint	98%	3	4	9

Content Analysis

Show on map

Suggested TIGER updates to be sent to Census:

RoadCenterline(adds)	12
RoadCenterline(modified)	22
AddressPoint(adds)	20
AddressPoint(modified)	5

Contribution Feedback

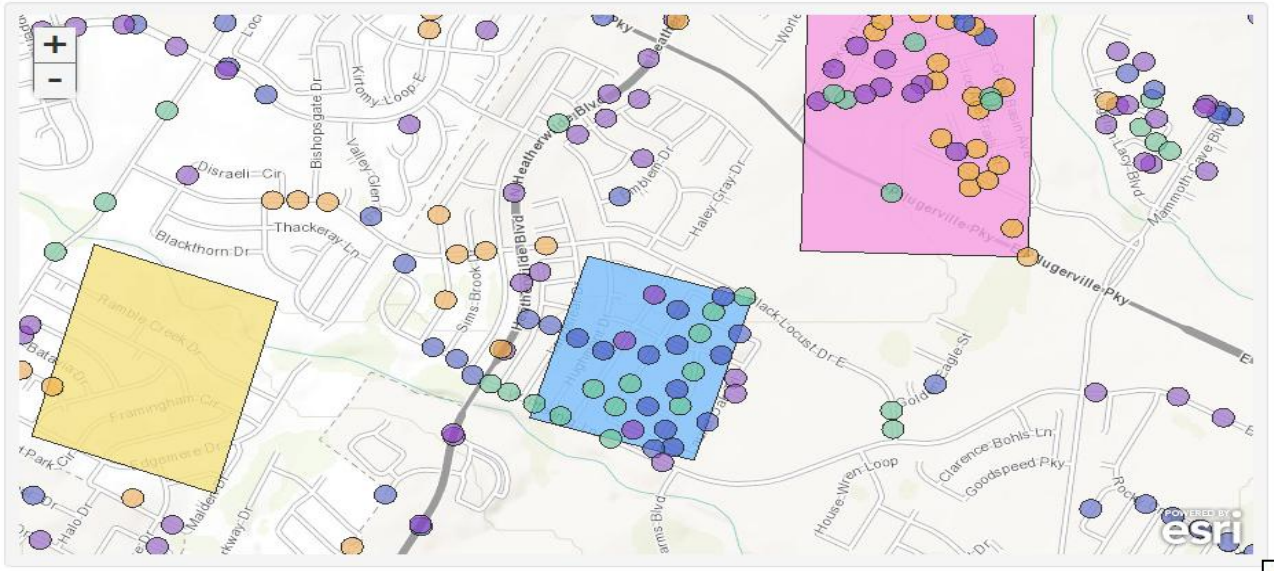
Community TIGER: Contribution History

Active Contribution | Contribution History | Notifications 0 | Lilin's Test

Contribution History

Back to Contribution History

Census Feedback



Modified (spatial)
Modified (attribute)
Modified (both)
Added

hide table

All 59 | Adds 32 | Modified 27 | Delete 0

ID	Proposed Submission Type	Census Acceptance Status	Actions
1	Add	Accepted	Approve
2	Add	Accepted	Approve
3	Add	Accepted	Approve
4	Modified	Accepted with modifications	Approve
5	Modified	Not used	Approve

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Questions?

http://www.census.gov/geo/www/gss/

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