

# New Mexico 911 Program GIS Data Assessment Overview

New Mexico Counties 2020 Legislative Conference, Santa Fe January 22, 2020



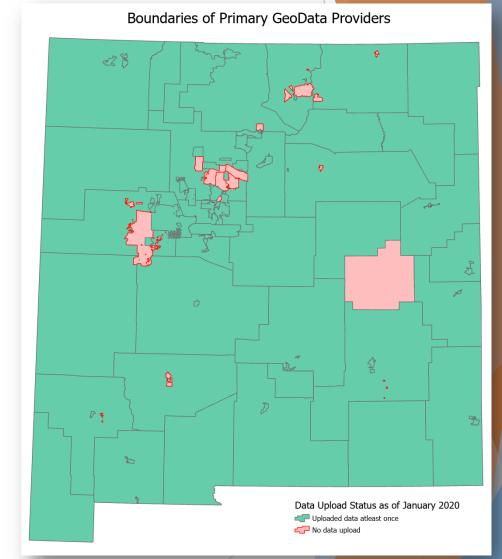
### **GIS Data Overview**

- Contractors for GIS Data Processing starting January 2019
  - Earth Data Analysis Center, The University of New Mexico
  - Bohannan Huston, Inc.
- ► EDAC's Role
  - Data acquisition, processing, assessment, reporting, technical support
  - Creating statewide NM911 Master Database
- BHI's Role
  - ▶ PSAP Data Clips, and updating PSAP Maps



### **GIS Data Overview**

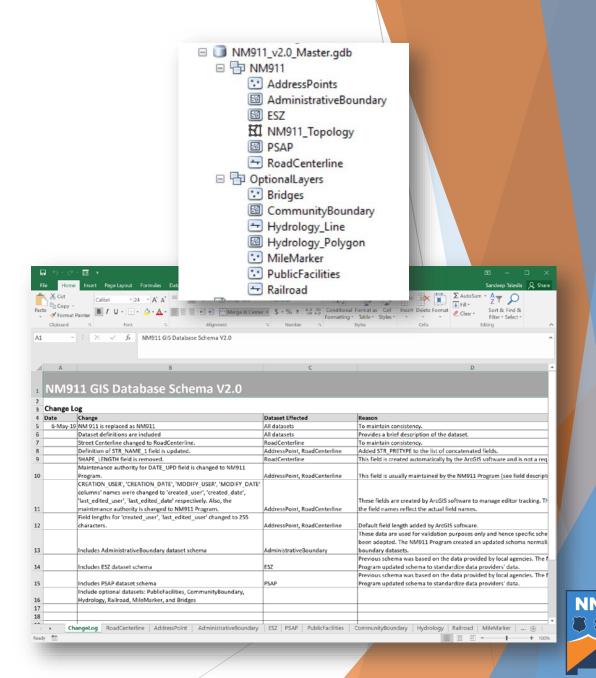
- Data Upload Status (January 2020)
  - ▶ 86 GeoData providers (primary)
    - ► Counties, Cities, Towns, Villages, and Tribes
  - ▶ 67 uploaded data at least once
  - Approx. 25 providers upload each month
- ► 41 PSAPs
  - ▶ 34 Local Govt. (counties, cities)
  - 4 Tribal
  - > 3 DPS
  - 5 Mapping Systems: Airbus MapStar, Airbus Vesta, Motorola CallWorks, WEST MapFlex, WEST PowerMap





## **GIS Data Model**

- Current version 2.0
- Adopted in September 2019
- Required Layers
  - Address Points\*
  - Road Centerlines\*
  - Addressing/Administrative Boundary\*
  - Emergency Service Zone (ESZ) Boundary
  - Public Safety Answering Point (PSAP) Boundary
- New Layers (NG911 Compliant)
  - Public Facilities, Community Boundary,
     Hydrology, Railroads, Mile Markers, Bridges



## **EDAC GIS Workflow**

Geospatial Data Acquisition and Processing

#### Announcement sent to all verified GIS data providers each month

- •Upload to the NM911 Data Portal
- •Timeline: 1st 15th of each month

Data Collection

# Data Conversion

- •NM911 GIS Data Model
- Local Schema to State Schema (field mapping/crosswalk and data import)

#### Data Assessment

•QA/QC

Topology Checks

Data Analysis

Data Reviewer Checks

#### Data Reporting

- •Data Assessment Report and Error Geodatabase are generated and made available on the NM911 Data Portal
- •Data Providers are notified via email

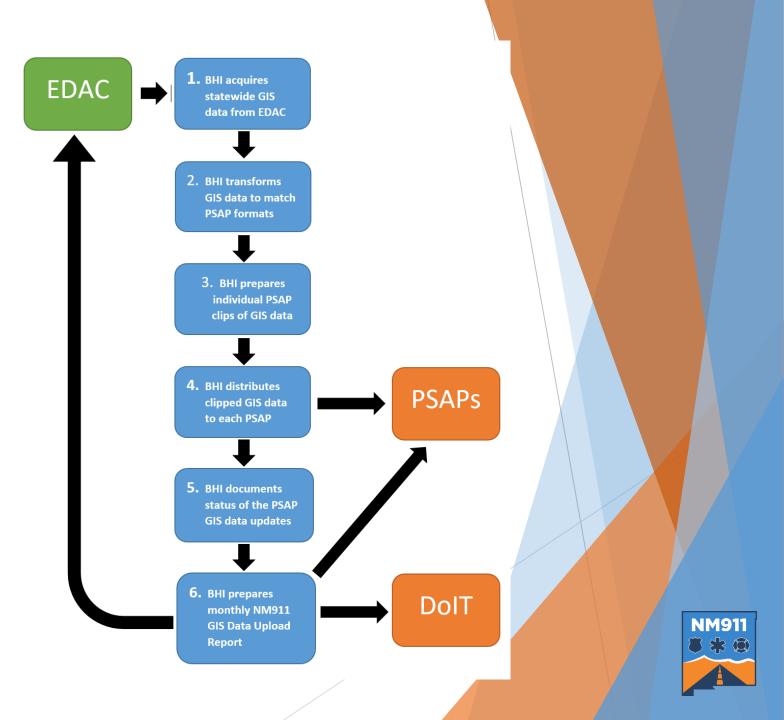
- Data from various providers are merged to create a state master database
- •The database is provided to BHI for PSAP Map Updates
- •Data are made available on RGIS as shapefiles

NM911 State Master Database



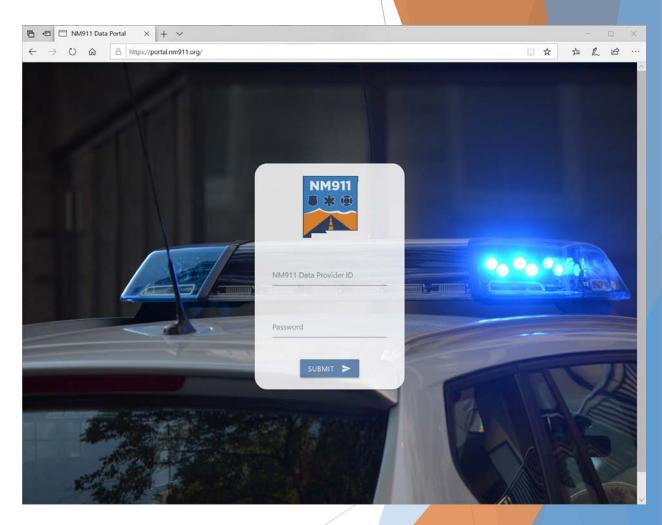
# **BHI GIS Workflow**

PSAP Map Server Updates

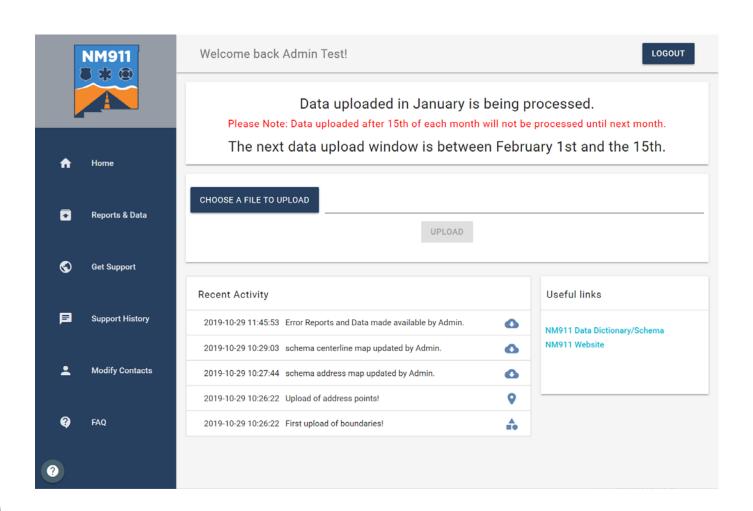


### **Data Collection**

- Data Collection Announcement Email sent to primary GeoData providers each month
- Data are collected through a secure NM911 Data Portal <a href="https://portal.nm911.org/">https://portal.nm911.org/</a>
- Timeline 1st 15th of each month
- Accepted data formats:
  - Shapefiles (zipped or unzipped)
  - File geodatabases (zipped)

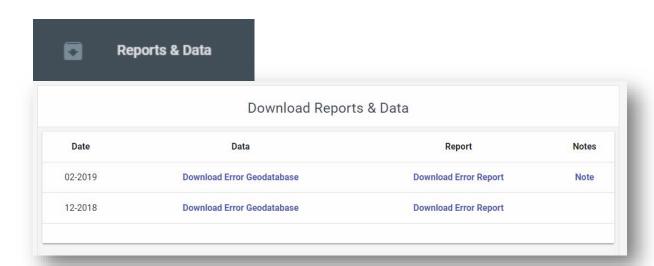




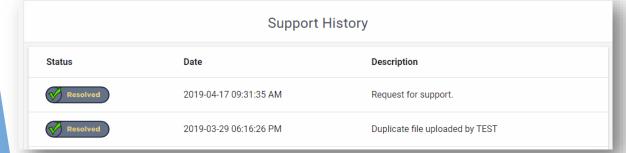


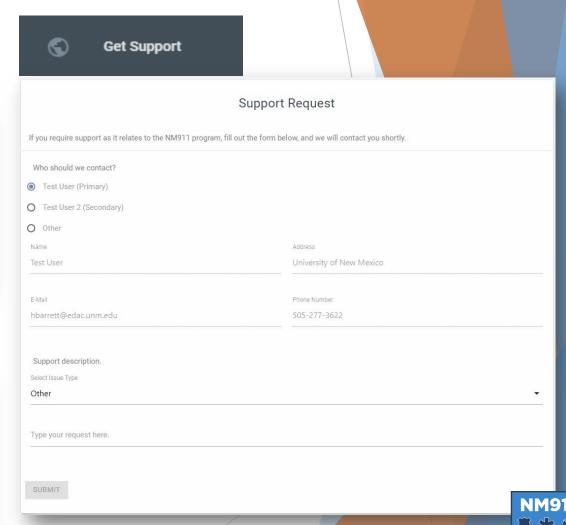


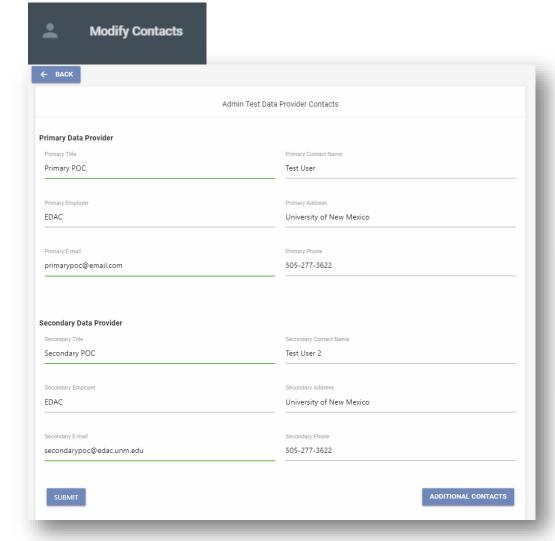


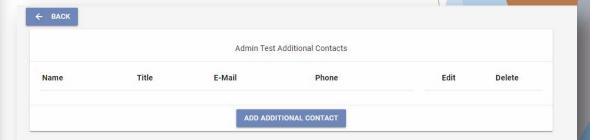




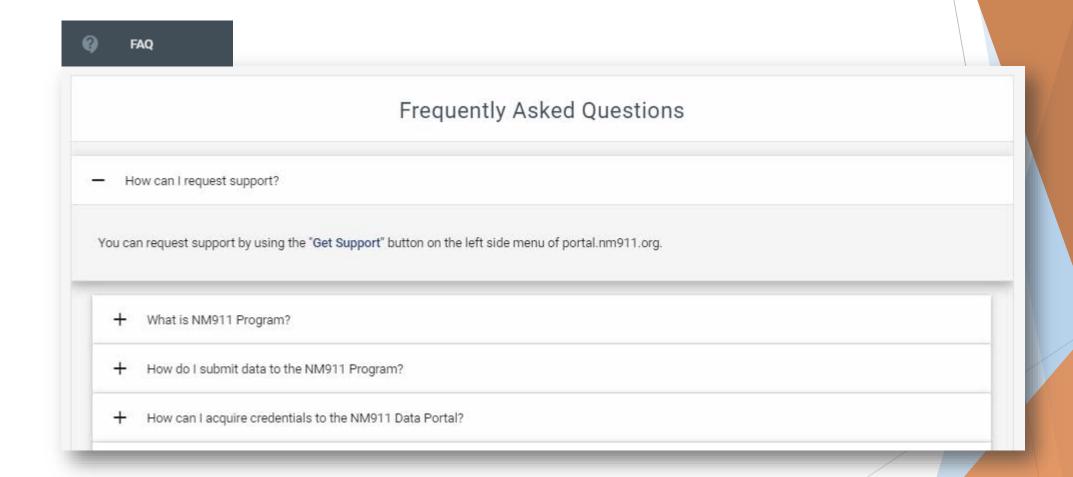








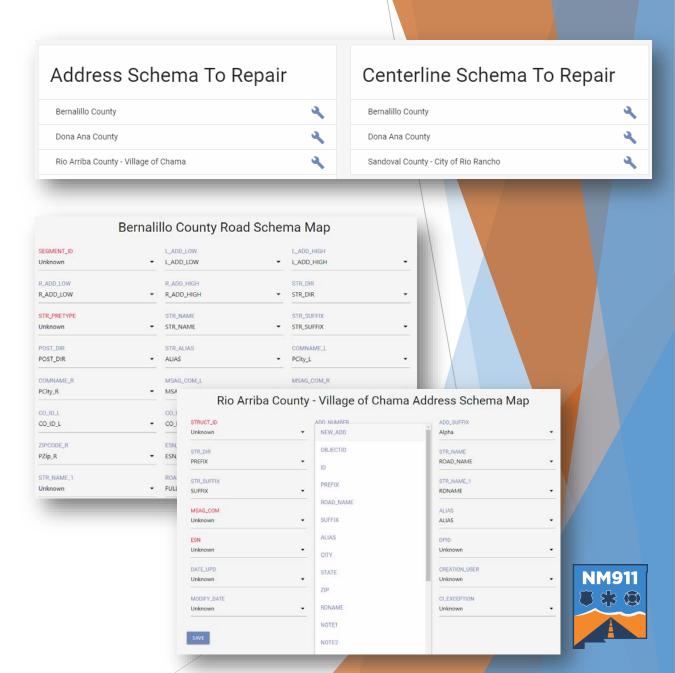






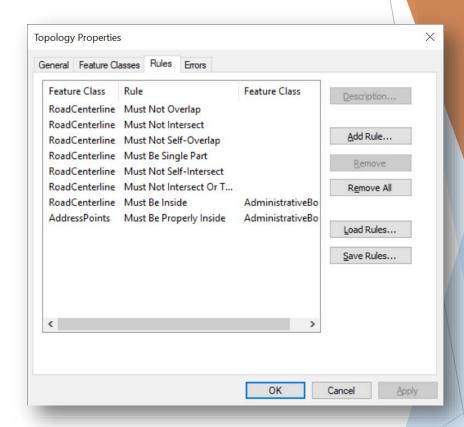
### **Data Conversion**

- NM911 Data Portal Admin Tools
  - NM911 Data Model
  - Field Mapping/Crosswalk between local schema to state schema
  - Data imported to State Schema
  - Error feature classes are created if exists



### **Data Assessment**

- QA/QC to ensure data integrity
- Spatial & Tabular Accuracy Checks
- Topology Checks
- Data Reviewer Checks
- Datasets: Road Centerlines, Address Points, Administrative/Addressing Boundary





### **Data Assessment**

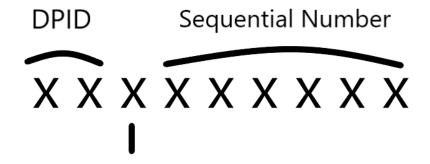
#### DATA REVIEWER CHECKS

- 1 Address Point Address Number Cannot Be 0, Negative, NULL Or Blank
- 2 Address Point Address Number Should Be Within Road Centerline Address Range
- 3 Address Point Full Road Name Must Match Road Centerline Full Road Name
- 4 Address Point Has Invalid Geometry
- 5 Address Point Must Not Have Duplicate Geometry
- 6 Address Point Street Name Cannot Be Blank Or NULL
- 7 NM911 Topology Checks
- 8 Road Centerline Has Invalid Geometry
- 9 Road Centerline Left High Address Must Be Odd
- 10 Road Centerline Left Low Address Is Greater Than Left High Address
- 11 Road Centerline Left Low Address Must Be Odd
- 12 Road Centerline Length Must Not Be Less than 15 ft
- 13 Road Centerline Must Be Broken And Snapped At Road Intersections
- 14 Road Centerline Must Not Have Dangles
- 15 Road Centerline Must Not Have Duplicate Geometry
- 16 Road Centerline Must Not Have Left Side Overlapping Address Range
- 17 Road Centerline Must Not Have Right Side Overlapping Address Range
- 18 Road Centerline Right High Address Must Be Even
- 19 Road Centerline Right Low Address Is Greater Than Right High Address
- 20 Road Centerline Right Low Address Must Be Even
- 21 Road Centerline Should Not Be Multipart



# Data Analysis

NM911 Unique ID Implementation

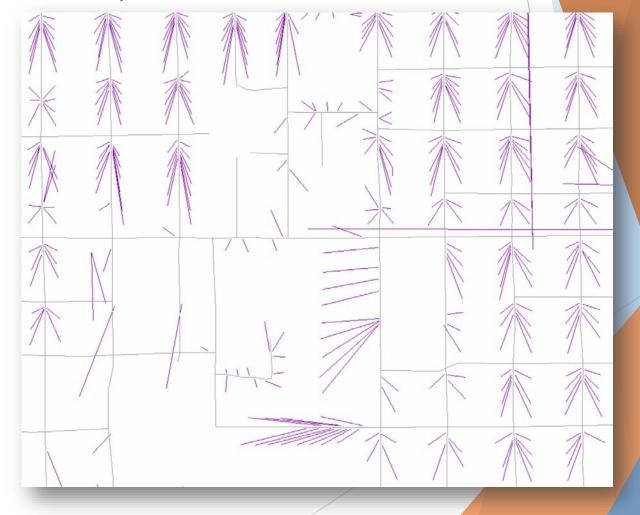


- 0 Address Points
- 1 Road Centerlines



# Data Analysis - Fishbone

- Visually Compare road centerlines to address points
  - Out of numerical order
  - ▶ On the wrong side of the street
  - ➤ On the wrong block





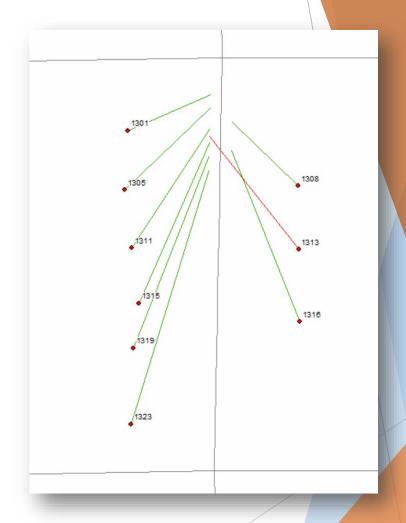






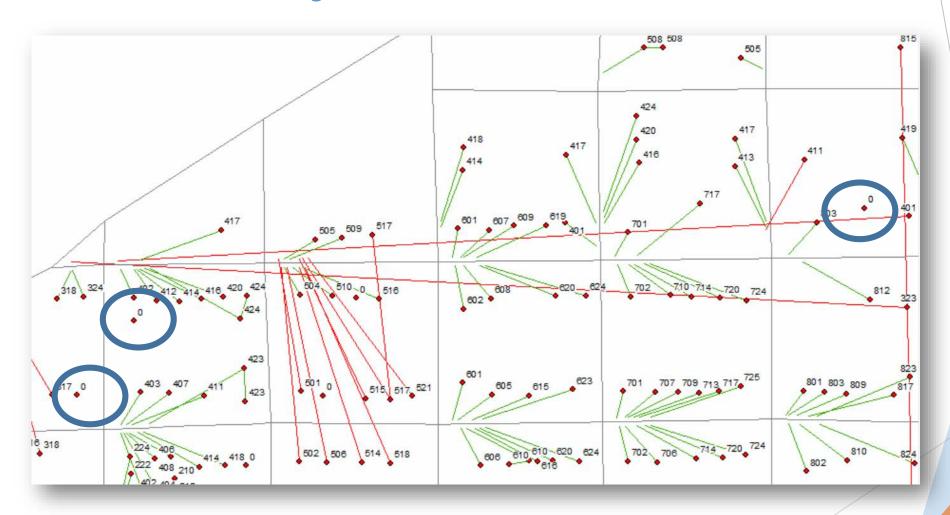




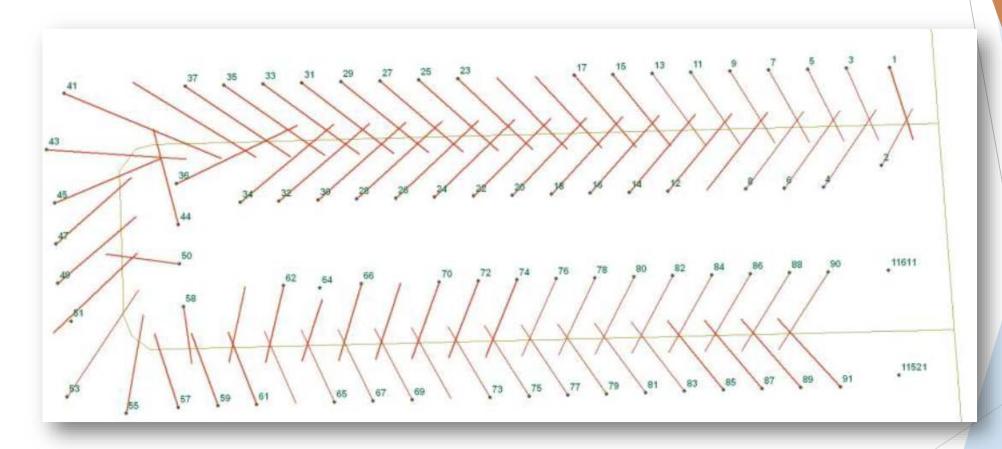








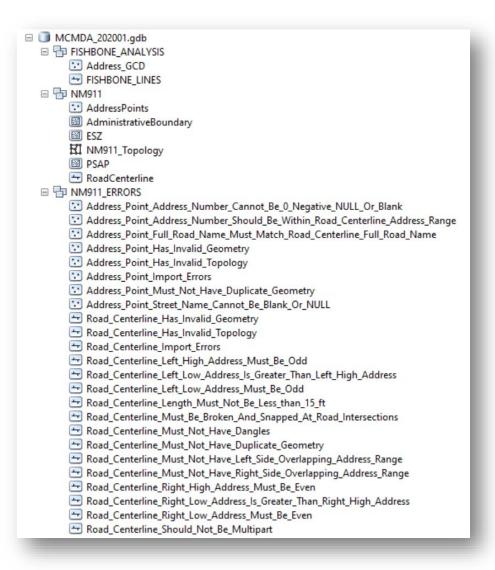




Address range of the road centerline needs to be flipped odd/even



# Data Reporting



#### NM911 GIS Monthly Data Upload Assessment Report

#### MCMDA - January, 2020

The Earth Data Analysis Center (EDAC) at the University of New Mexico (UNM) performs data acquisition and processing for the New Mexico 911 (NM911) Program. With efforts from Geodata Providers, EDAC acquires geospatial data for Road Centerlines, Address Points, and Boundary data such as Administrative, ESN, PSAP, ESZ, and so on from the data providers for their respective jurisdiction (city, county, or tribal). These data are processed and converted to NM911 State Schema, which are uploaded to the Public Safety Answering Points (PSAP) to assist dispatch operations. If data are available, EDAC provides a monthly assessment report as an outcome, listing the number of features analyzed, processed, and inaccuracies or discrepancies found in the dataset, to assist the data providers to improve the quality of the geospatial data.

The New Mexico Geodata Providers are required to upload their monthly data to the NM911 Program via NM911 data portal (<a href="https://portal.nm911.org">https://portal.nm911.org</a>) by the 15th of each month. EDAC will perform necessary QA processes/procedures for data verification and validation to prepare data for further processing to create a master state database. The monthly data assessment report will be made available for data providers via the NM911 Data Portal. Data that were uploaded after 15th of each month will not be processed until the next month.

#### **Data Upload Summary**

The following table shows the datasets provided by MCMDA, date uploaded, total number of features uploaded.

- 1	Feature Class	Date Uploaded	Record Count
	ADDRESS	01/15/2020	22,887
[	ROAD	01/15/2020	3,468

#### **Road Centerlines**

Schema Mapping Summary: The table below shows the schema mapping (crosswalk) between road centerline data submitted by the data provider and the NM911 state schema. Please note that if you change your schema, EDAC will automatically adjust the crosswalk/mapping to conform with your data.

State Schema	Local Schema	
SEGMENT_ID	NM_RDID	
L_ADD_LOW	LEFT_FROM	
L_ADD_HIGH	LEFT_TO	
R_ADD_LOW	RIGHT_FROM	
R_ADD_HIGH	RIGHT_TO	
STR_DIR	PRE_DIRECTIONAL	
STR_PRETYPE	PREFIX_TYPE	
STR_NAME	ROAD_NAME	

New Mexico 911 Program: MCMDA Data Assessment Report, January, 2020

New Mexico 911 Program: MCMDA Data Assessment Report, January, 2020

New Mexico 911 Program: MCMDA Data Assessment Report, January, 2020



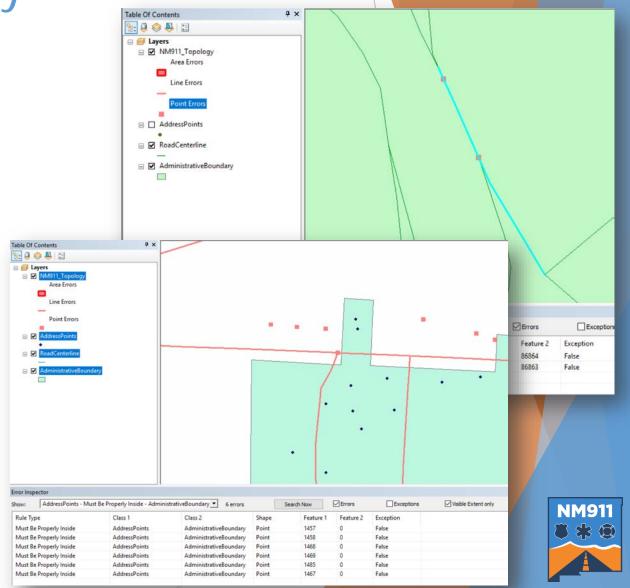
# Data Correction - Exceptions

- Road Centerline Left Low & High Address Must Be Odd
- Road Centerline Right Low & High Address Must Be Even
- Road Centerline Left Low Address is Greater than Left High Address
- Road Centerline Right Low Address is Greater than Right High Address
  - Can be marked as Exceptions based on ground conditions
  - CI\_Exception/C1\_Exception/Exception data column
  - If using MapSAG: It assigns an exception code
  - ▶ If not using MapSAG: Please mark "Y" or "1" (based on the field data type: TEXT, INTEGER) if there is an exception and leave the column blank if no exception



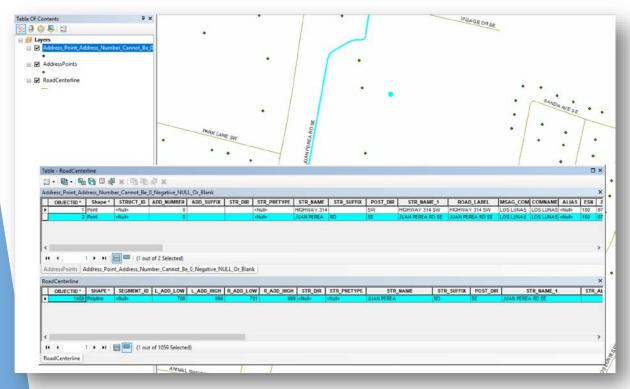
Data Correction - Topology

- Roads Must Not Intersect or Touch Interior
  - Road Centerline Must Be Broken and Snapped at the Intersection with an exception for overpass/underpass.
- Address Point Must Be Properly Inside the Administrative Boundary
  - Administrative Boundary can be replaced with Addressing Boundary of validation, if available.



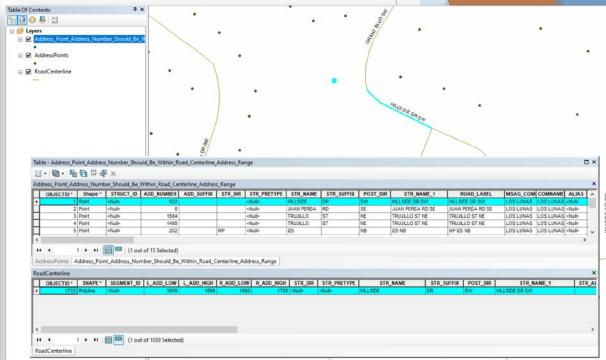
# Data Correction - Address Points Examples

- Address Point Address Number Cannot Be 0, Negative, Null or Blank
  - ► Ex: 0 JUAN PEREA RD SE



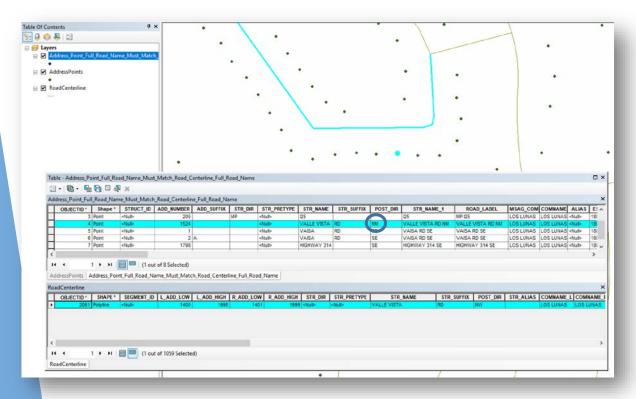
 Address Point Address Number Should Be Within Road Centerline Address Range

Ex: 922 HILLSIDE DR SW



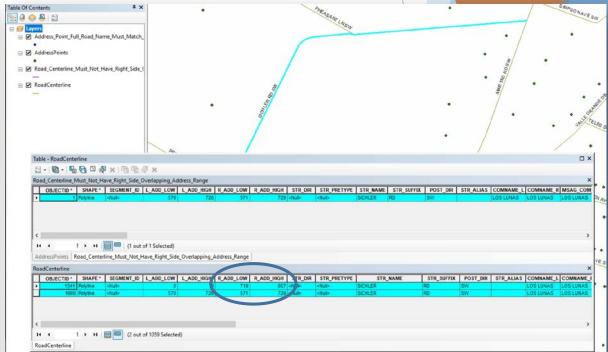
# Data Correction - Road Centerline Examples

- Address Point Full Road Name Must Match Road Centerline Full Road Name
  - Ex: VALLE VISTA RD NW



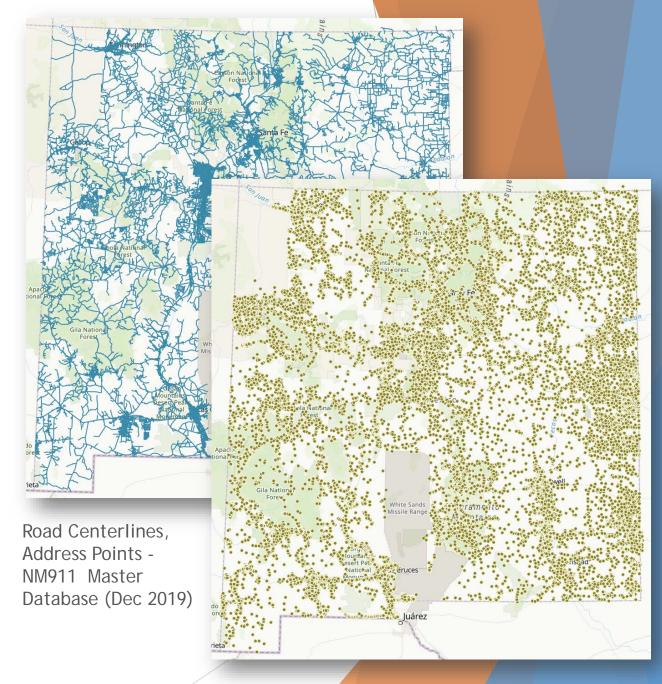
Road Centerline Must Not Have Right Side Overlapping Address Range

► Ex: SICHLER RD SW



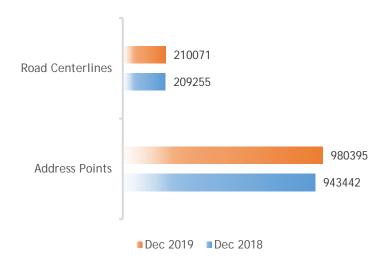
# NM911 Master Database

- Import data submitted by data providers after validation
- Run geometry checks
- Share (road centerlines, address points) with
  - ► BHI for PSAP Map Updates
  - Public on RGIS Geospatial Data Clearinghouse (shapefiles)

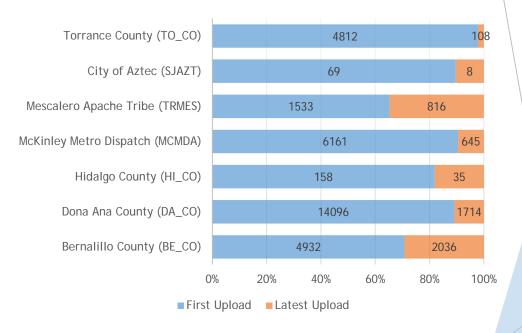


## A Few Data Stats...

#### **RECORD COUNT**



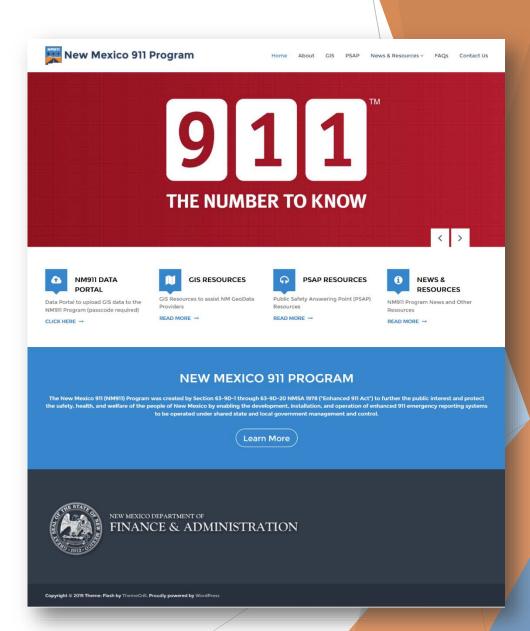
#### IMPROVED DATA ACCURACY





#### NM911 Website

- URL <a href="https://www.nm911.org/">https://www.nm911.org/</a>
- ► Launched in June 2019
- Program related information
  - ► GIS data standards
  - ► Funding eligible items for PSAPs and GeoData Providers
  - Eligible training options GIS
  - Links to download GIS datasets
  - FAQs
  - Presentations
  - And more...





# GIS Training Video Series

- NM911 Data Assessment Overview video
- Posted to YouTube
- https://www.youtube.com/watch?v=dBIsLjWQ 780
- More videos coming soon...





# NMDPS CAD GIS Support

- ► EDAC is under contract with Department of Public Safety (NMDPS) for GIS Support of their Computer Aided Dispatch (CAD) System
- This contract is not related to the New Mexico 911 Program GIS Support
- Routable Road Network Data Available of Request
- For questions regarding their data, workflow, or other inquires, please contact:

Brian Keller

GIS Manager, EDAC

Email: <u>bkeller@edac.unm.edu</u>

Phone: (505) 277-3622 x228









### Contact Us

Technical Questions

Sandeep Talasila

Earth Data Analysis Center, UNM

Email: nm911@edac.unm.edu

Phone: (505) 277-3622 x250

NM911 Data Portal: Submit a support request

General Questions

Gar Clarke

NM911 Geospatial Project Manager

NM Department of Information Technology

Email: george.clarke@state.nm.us

Phone: (505) 827-1663









**Bohannan** A Huston