Improving Routing with Access Roads

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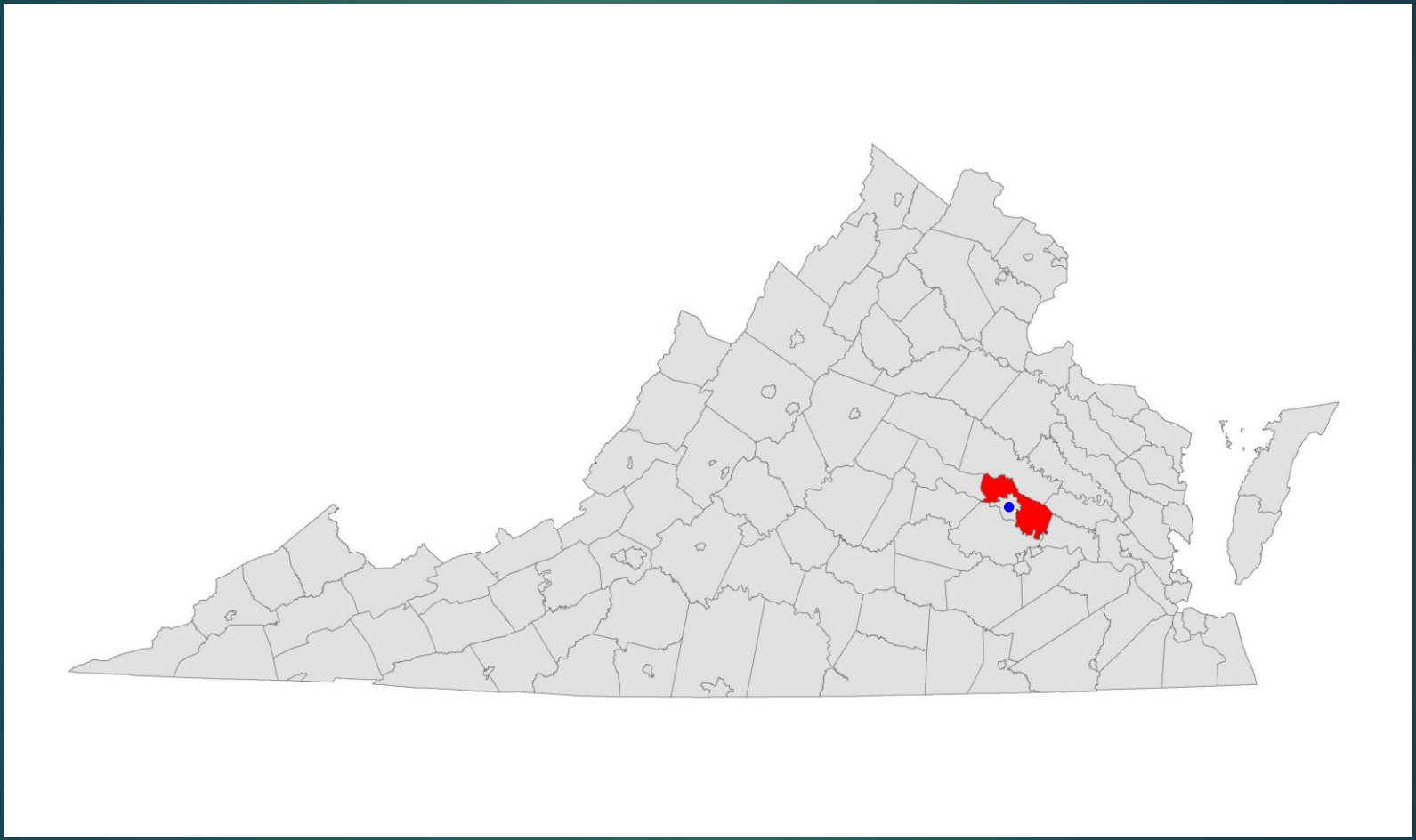
VIRGINIA

Overview

- Henrico Fire operates 21 stations and responds to over 50,000 calls for service annually
- Completed in-house by the GIS Office with close communication with Henrico Fire
- In discussion for over three years

Henrico County, VA

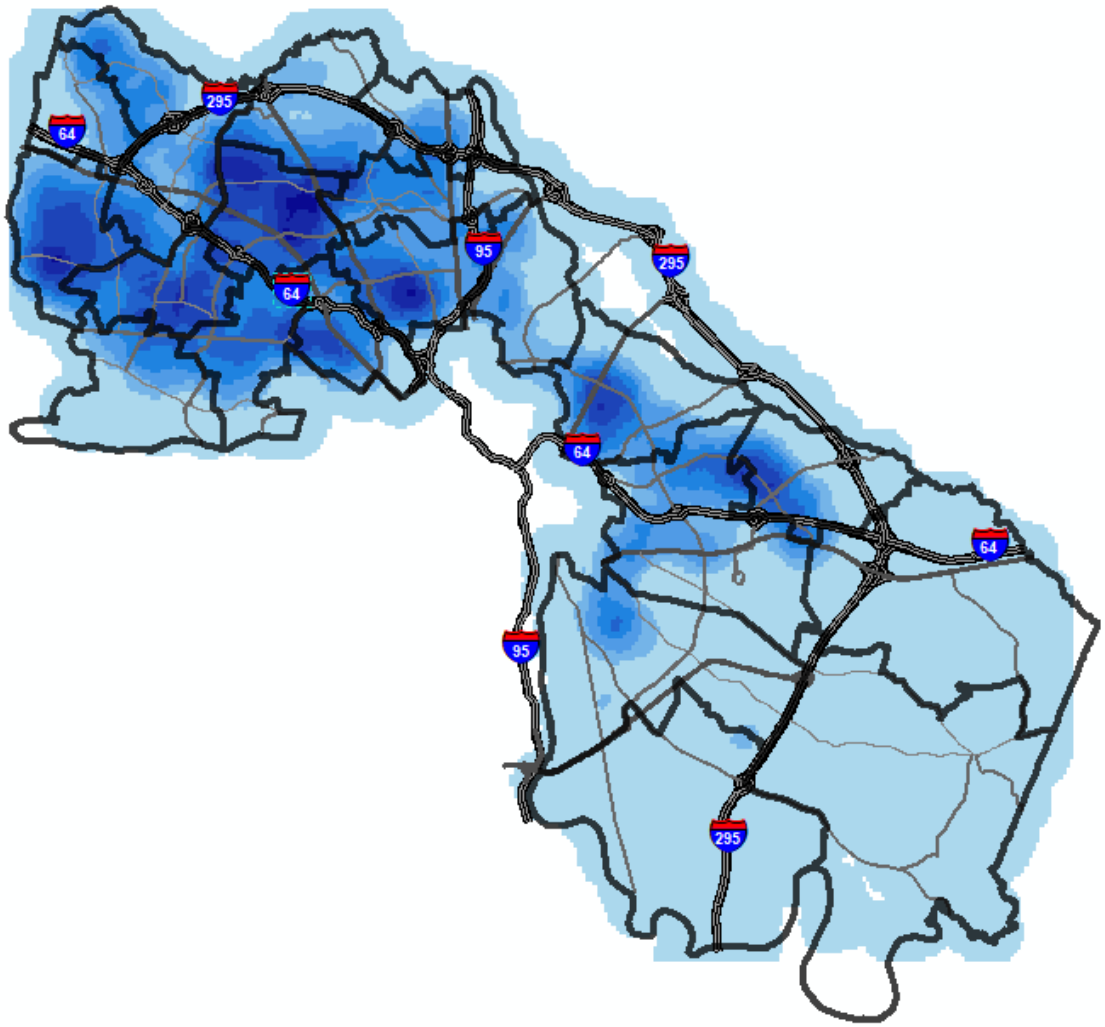


Henrico County, VA

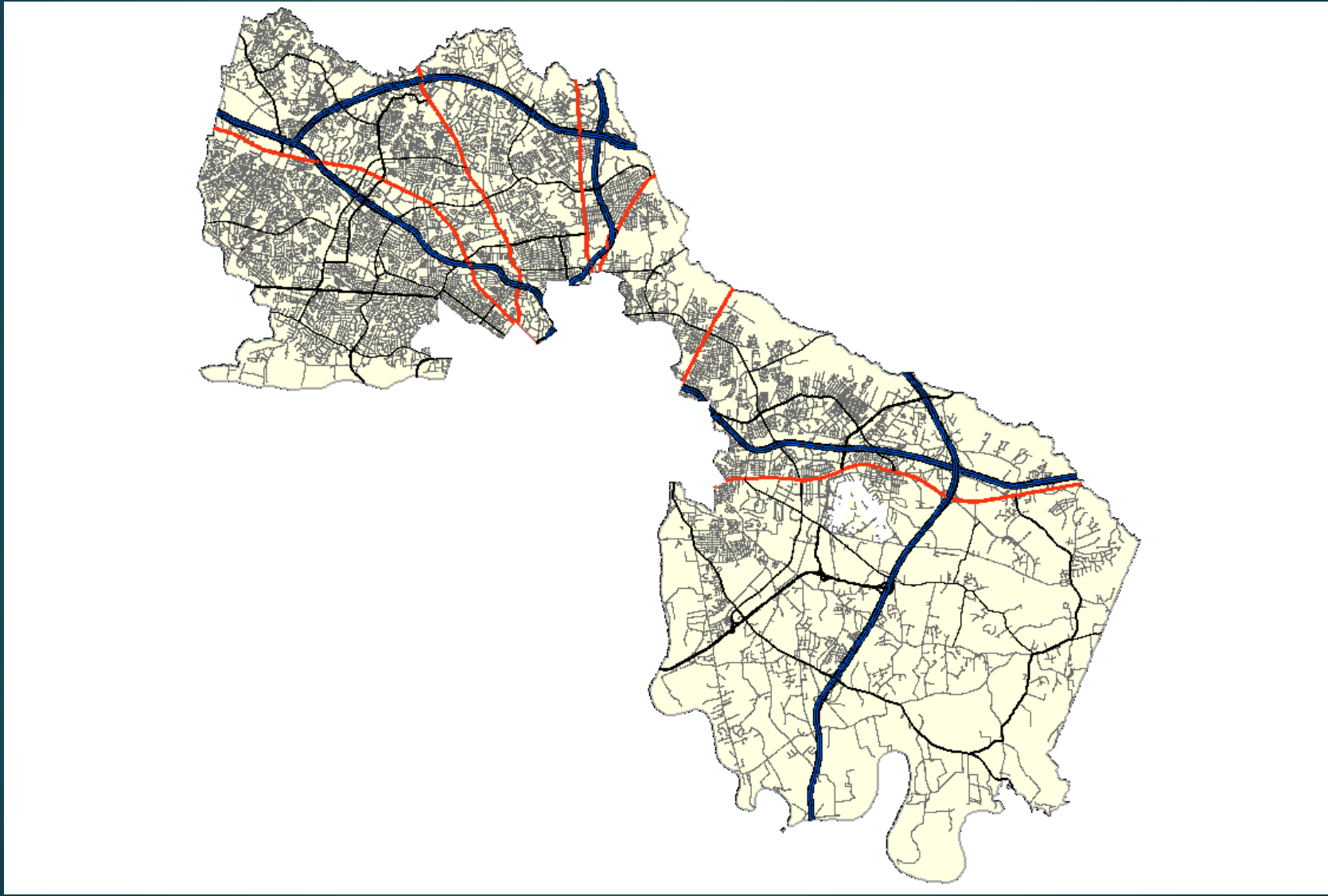
- 330,000 people
- 245 mi^2
- 2400 miles of roads
- 130,000 Addresses
- Urban and rural areas

Henrico County
VIRGINIA

Address distribution



Street Centerlines



Routing data

- Street centerlines & Addresses
  - Managed by GIS Office
  - Updated daily
- Network dataset
- Service consumed by CAD for routing

What is an Access Road?

"Any potentially navigable roadway that does not have a street name and has no address range."

Why create Access Roads?

- Routing issues reported from fire
  - Could not see the structure
  - Could not get to address from the road
  - Inefficient routing

- More robust road network

Problem Scenarios

1. Addresses closer to different street name
2. Long driveways (>150ft)
3. Complex parcels

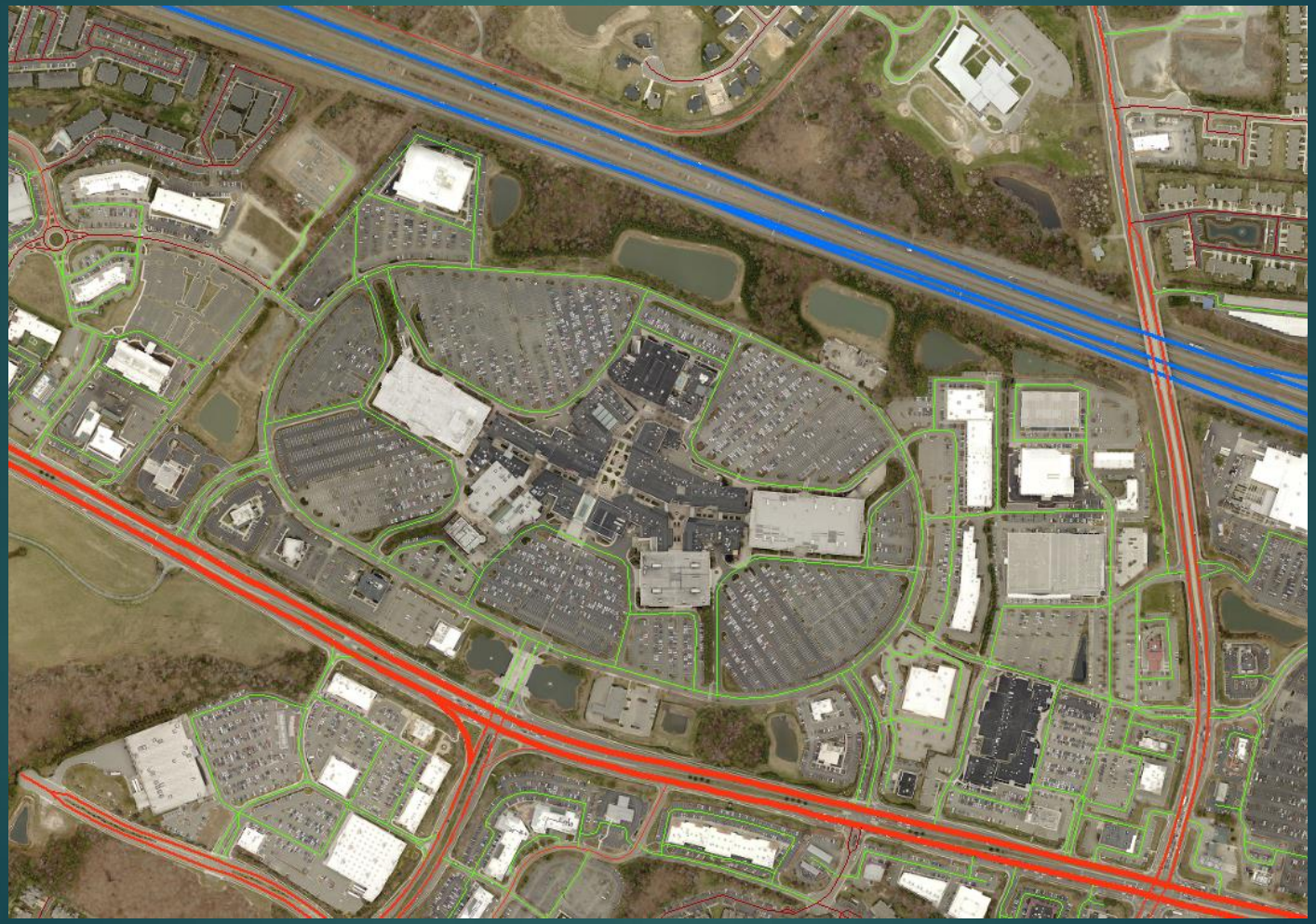
Wrong ‘nearest street’

Long driveway

Long driveway

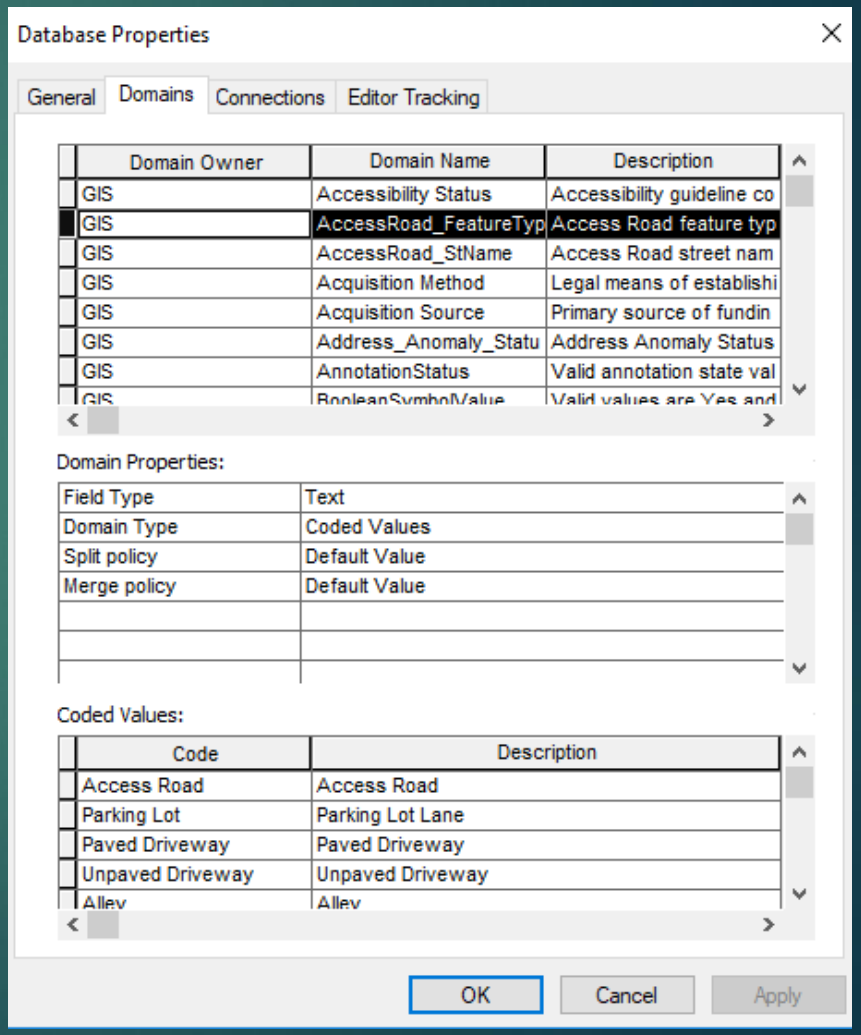
Complex parcels

Complex parcels



Categories

- Access road (default)
- Parking Lot Lane
- Unpaved Driveway
- Paved Driveway
- Alley

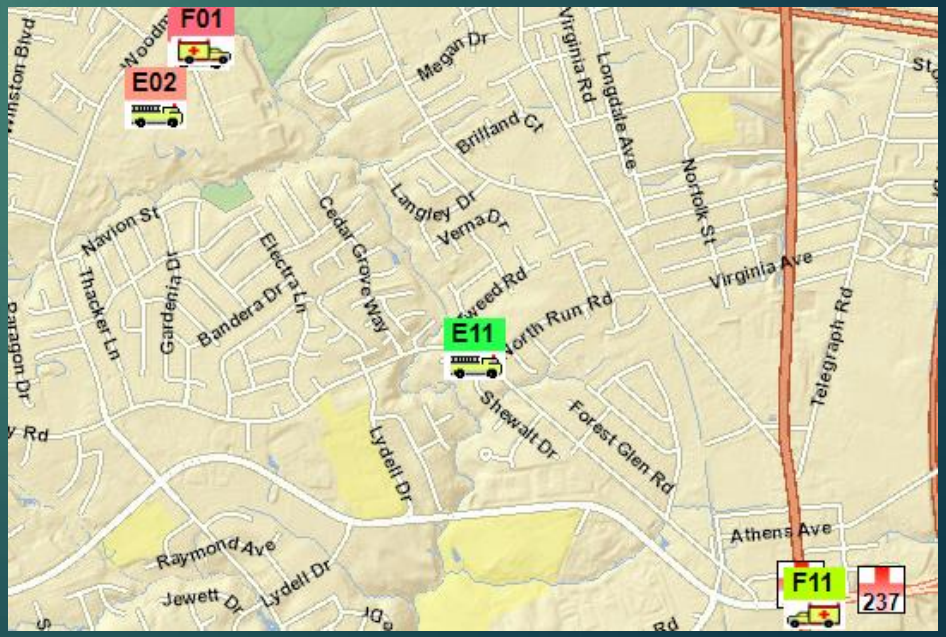


Process

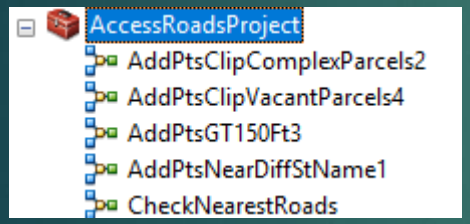
- Pilot project
- Selected target features
  - Different street name
  - Long driveways
  - Complex parcels
- Removed vacant parcels
- Used aerial imagery and street centerlines to digitize
  - Current ortho and oblique imagery

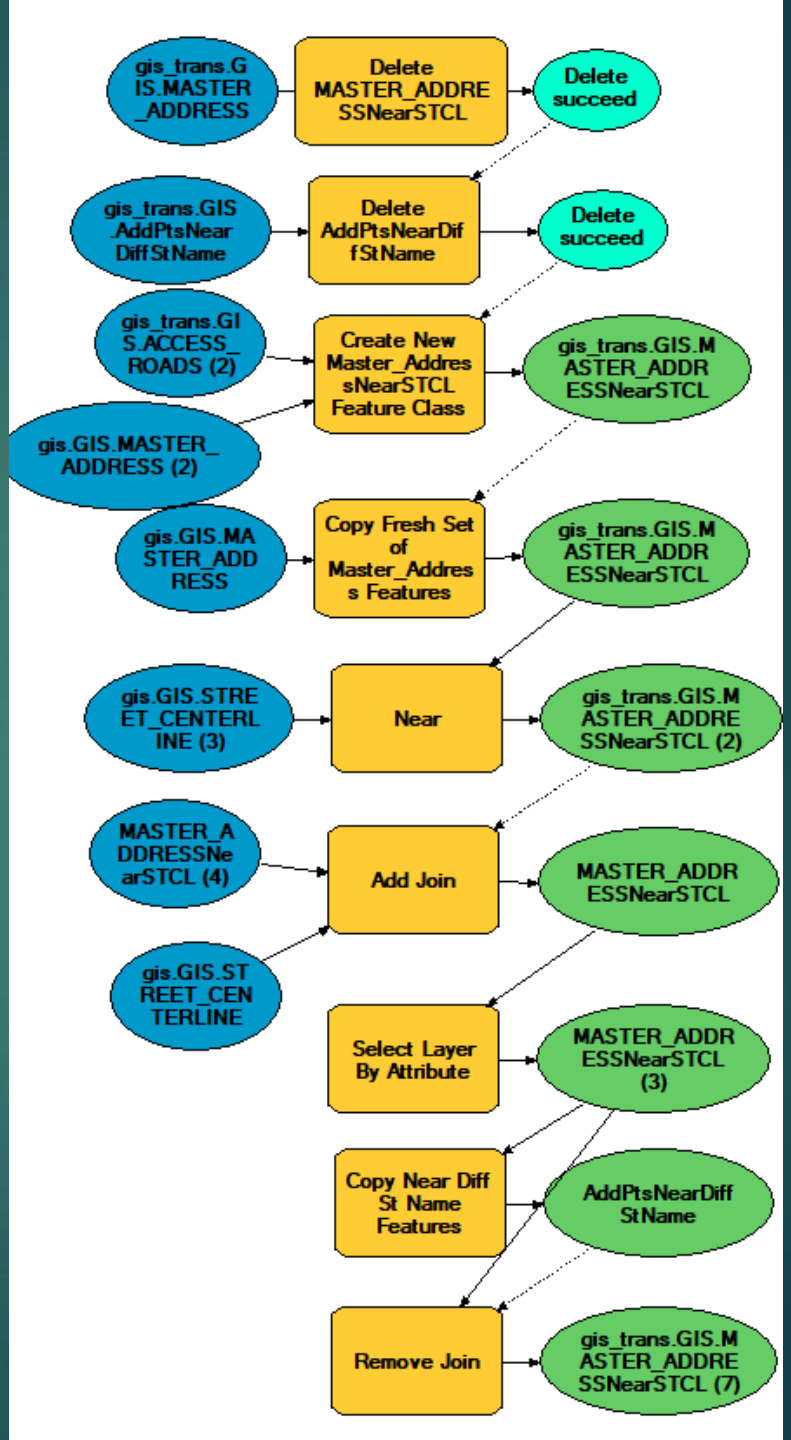
Process

- Added Access Roads to network dataset
- Incorporated into CAD
- Worked closely with Fire during testing
- Expanded project to entire county

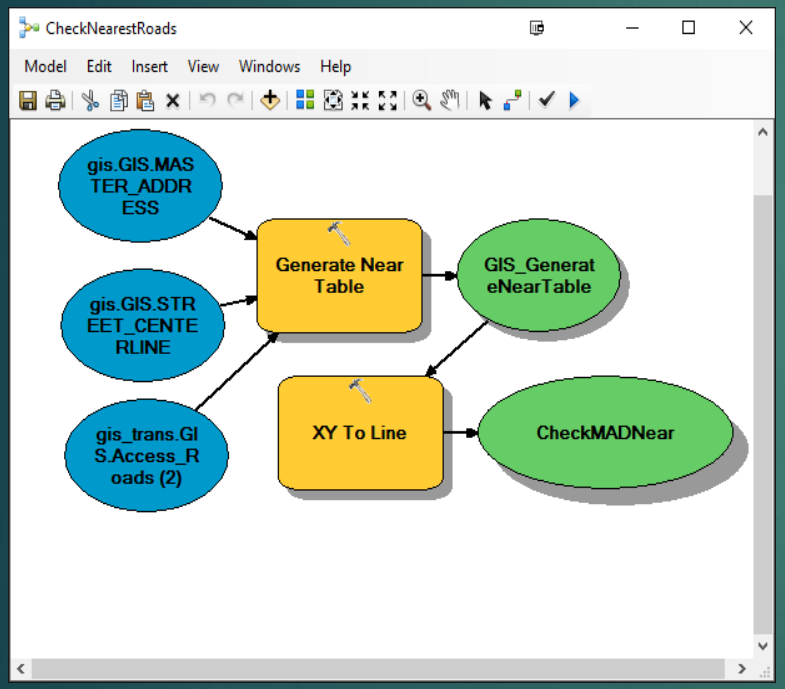


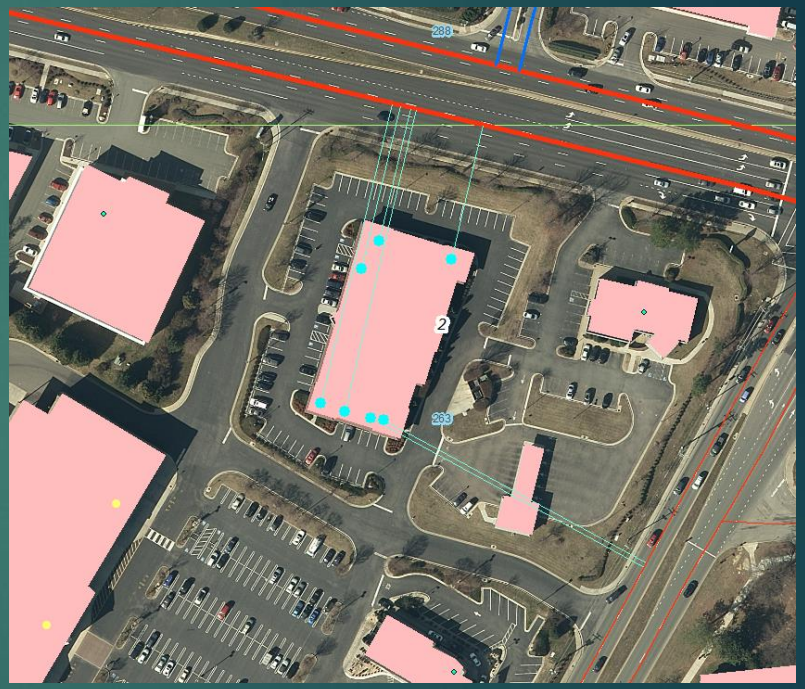
Tools


AccessRoadsProject
AddPtsClipComplexParcels2
AddPtsClipVacantParcels4
AddPtsGT150Ft3
AddPtsNearDiffStName1
CheckNearestRoads

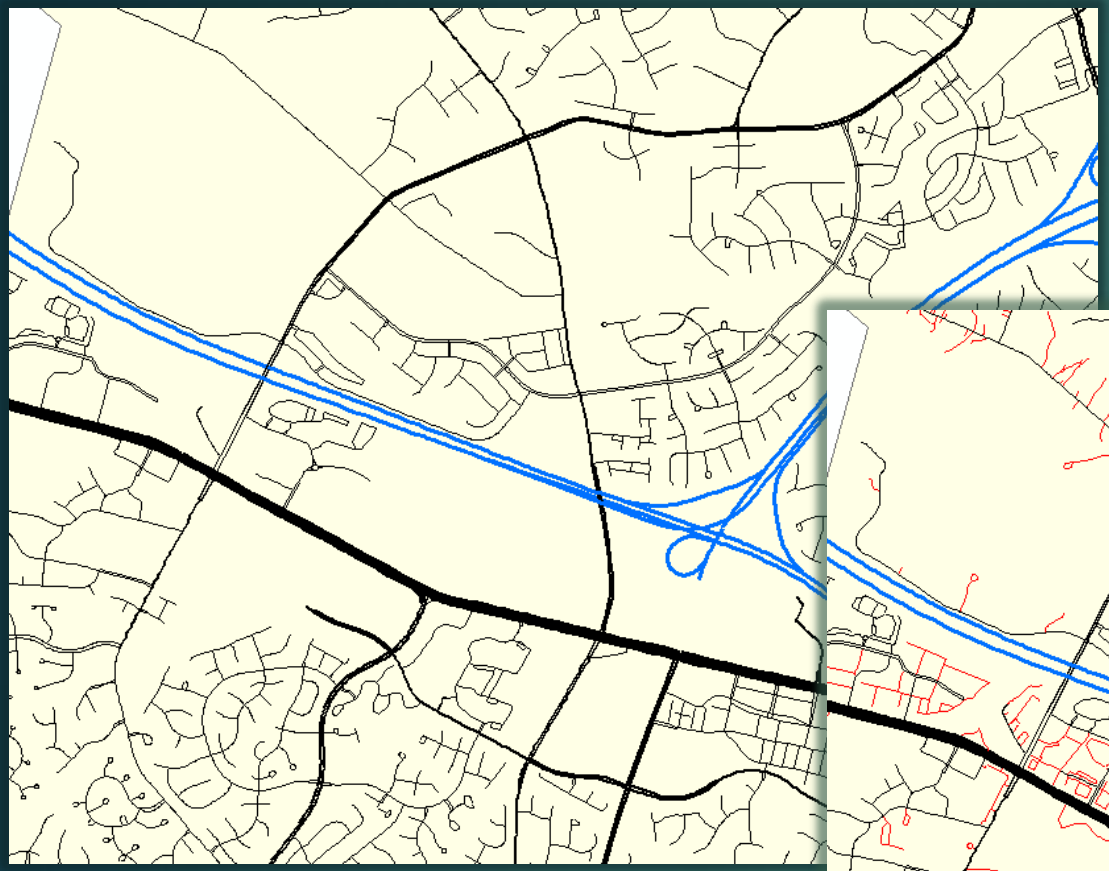

gis_trans.GIS.MASTER_ADDRESS
Delete MASTER_ADDRESSNearSTCL
Delete succeed
gis_trans.GIS.AddPtsNearDiffStName
Delete AddPtsNearDiffStName
Delete succeed
gis_trans.GIS.ACCESS_ROADS (2)
Create New Master_AddressNearSTCL Feature Class
gis_trans.GIS.MASTER_ADDRESSNearSTCL
gis.GIS.MASTER_ADDRESS (2)
gis.GIS.MASTER_ADDRESS
Copy Fresh Set of Master_Address Features
gis_trans.GIS.MASTER_ADDRESSNearSTCL
gis.GIS.STREET_CENTERLINE (3)
Near
gis_trans.GIS.MASTER_ADDRESSNearSTCL (2)
MASTER_ADDRESSNearSTCL (4)
Add Join
MASTER_ADDRESSNearSTCL
gis.GIS.STREET_CENTERLINE
Select Layer By Attribute
MASTER_ADDRESSNearSTCL (3)
Copy Near Diff St Name Features
AddPtsNearDiffStName
Remove Join
gis_trans.GIS.MASTER_ADDRESSNearSTCL (7)

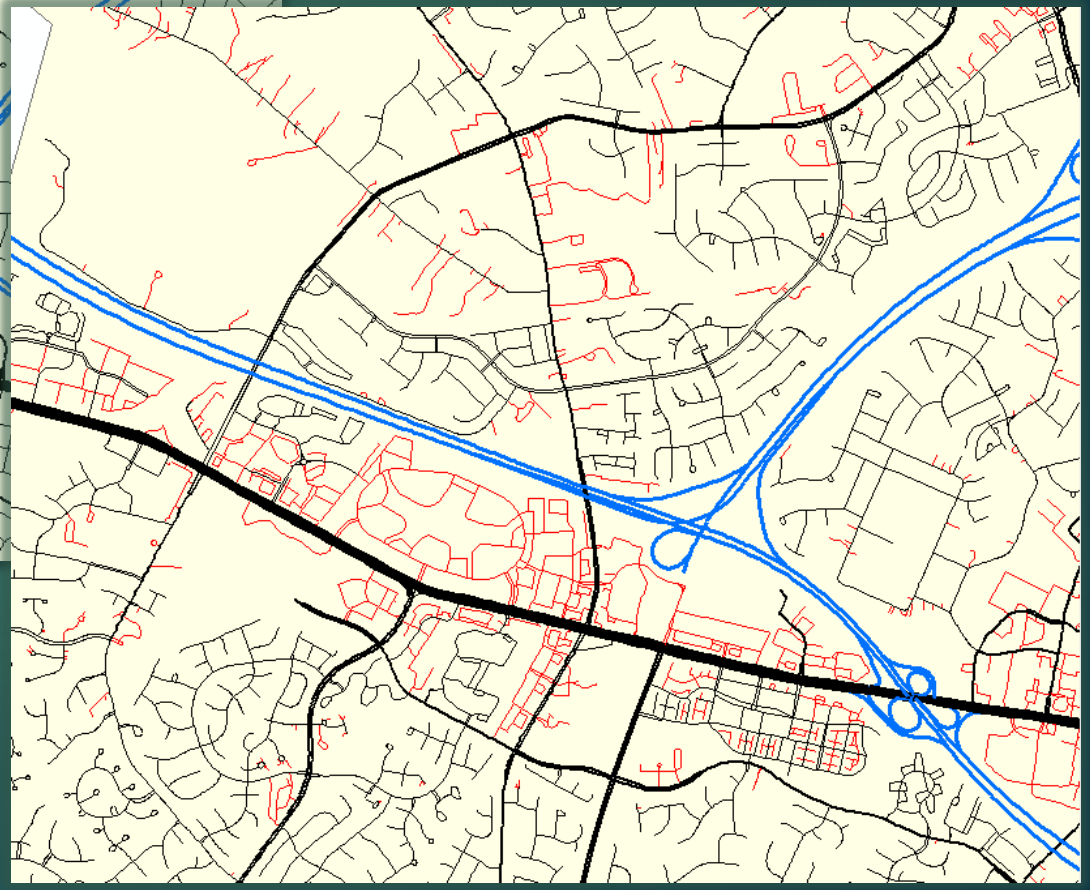
Nearest roads Model





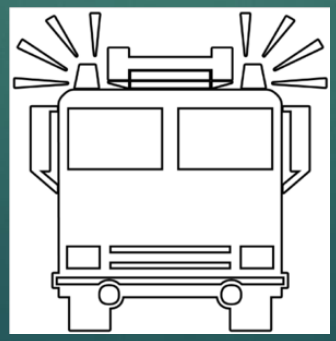
Results





Results

- Added 615 miles of ‘Access Roads’
- About 10,000 segments
- Estimate 800 hours of work
- 6 people working on it



Results

- A great product (that was a lot of work)
- Work is not done - continuously updated dataset

"Access roads data has allowed for optimal efficiency in getting ambulances and fire trucks on scene quickly."

-Henrico Fire

Questions