



911, What's Your GIS Emergency?

Using GIS to Help Emergency Response

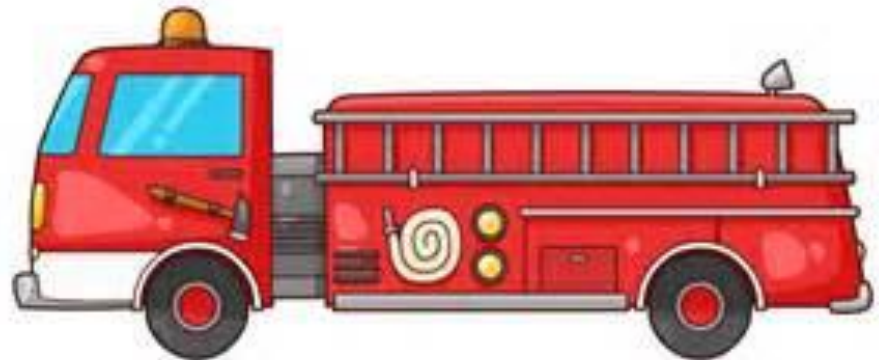


**Natalia
Austin,
GISP**

**RuthAnne
Harbison,
GISP**

Where is the Emergency?

- **Emergency communications dispatchers are unable to geocode addresses when police call in 100 blocks of any street.**



Address Verification in New World Systems CAD System

This was the call that started the conversation:

Officer: Merced Lincoln 12.

Dispatcher: Go ahead.

Officer: Can you put me back out at the 3300 Block of San Mateo Ct? I have a 36 on a mini bike by VIN when you're clear...

The screenshot shows the 'Address Verification' window. The search criteria are 'Location: Partial Match' and '3300 SAN MATEO CT'. The 'Qualifier' is set to 'Venue' and 'Venue' is set to '<None>'. The 'Location Type' is 'Address'. The 'Candidates' table is displayed below.

Seq	Score	Side	Range	Street	Venue	
2	68	Right	3340-3398	SAN MATEO CT	City of Merced	
3	63	Left	3341-3399	SAN MATEO CT	City of Merced	

Buttons: Show Map, Ignore invalid addresses, Select Location, Select Candidate, Cancel.

AREAS section:

Police Area	Fire Area	EMS Area	Station

Police ORI	Fire ORI	EMS ORI

Call Search in NWS

Cleared Call Search Last refresh: 5/6/2016 11:10:58 AM

Search Criteria
 ORI/FDID: Incident Number: Call Number: EMD Case Number: Phone Number: Drivers License:
 Police Fire EMS

Creation Date: and Exact Address Free Form Address
 Call Location: Verified Point Location Qualifier: Venue: Override
 Location Type: Address License State:

Person Last Name: Person First Name: Vehicle Plate #:

Call Types: Call Source: Call Priority: Unit: Officer: Disposition: Max Rows: 5000 Include Canceled Calls

Secondary Unit Location Information:

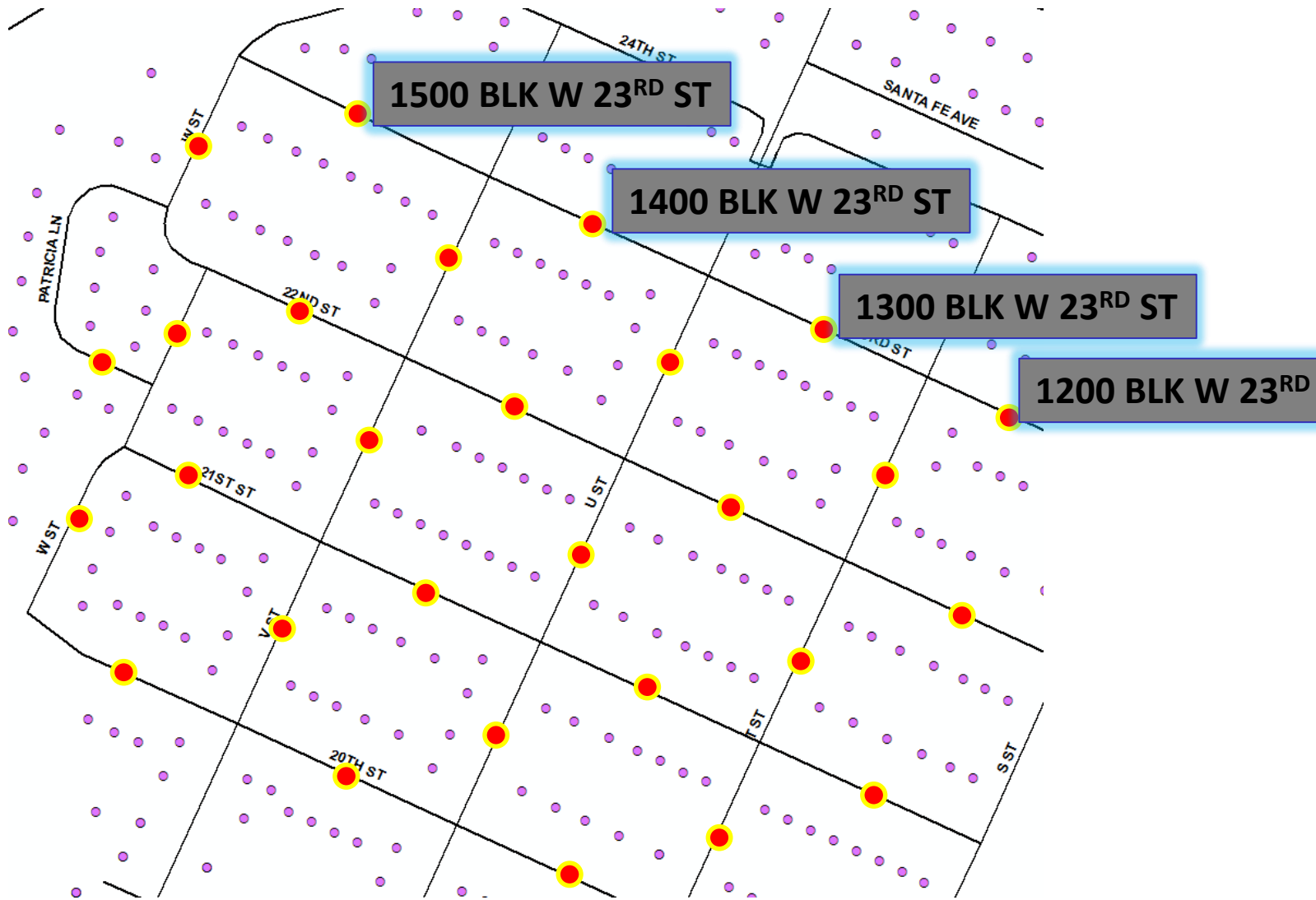
Narrative:

Call Number	Create Date/Time	Closed Date/Time	Call Type	Location	State	Primary Unit	Additional Units	Secondary Unit Location
683	03/19/2016 16:25:23	03/19/2016 16:27:37	FI	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	L12		
982	03/17/2016 02:56:40	03/17/2016 03:13:12	DISF 415V	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	X10		
457	02/27/2016 18:50:04	02/27/2016 19:17:35	SUPRPT	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	M33		
442	02/27/2016 17:53:22	02/27/2016 18:13:33	FOOT	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	L21		
434	02/27/2016 17:11:34	02/27/2016 18:04:25	FI	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	M33	✓	
818	02/20/2016 16:22:26	02/20/2016 17:05:13	DISF 415	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	L21	✓	
799	02/20/2016 14:59:20	02/20/2016 15:08:51	FOOT	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	L11	✓	
791	02/20/2016 13:54:18	02/20/2016 14:17:42	FOOT	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	M36	✓	
544	02/14/2016 22:39:25	02/14/2016 23:35:22	FI	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	X12	✓	JAIL
543	02/14/2016 22:38:57	02/14/2016 22:42:48	FI	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	A12		
850	02/11/2016 21:01:03	02/11/2016 21:09:09	FOOT	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	M33	✓	
151	02/08/2016 16:24:21	02/08/2016 16:35:44	FOOT	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	L11		
918	02/07/2016 18:52:50	02/07/2016 19:26:53	FOOT	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	L11	✓	
823	02/07/2016 11:34:13	02/07/2016 12:01:14	FI	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	L11		
356	01/26/2016 23:39:15	01/27/2016 01:37:50	DEBR	3300 BLK SAN MATEO CT, City of Merced	NWS Booking Charge AssocNum Type	E53	✓	

22 Results (Search took .115s)



What was needed?



Solution #1

■ ArcToolbox: Feature to Point tool

Line Feature



Point Feature



Table

Roads

FID	SPEED	LADD_FR	LADD_TO	RADD_FR	RADD_TO	MINADD	MAXADD	STREET
0	0	9501	10499	9500	10498	9500	10499	HWY 33
1	25	29001	29499	29000	29498	29000	29499	MARSHALL RD
2	25	9501	10499	9500	10498	9500	10499	NEWSOM RD
3	25	28501	28999	28500	28998	28500	28999	MARSHALL RD
4	0	10501	10999	10500	10998	10500	10999	HWY 33
5	0	0	0	0	0	10849	10849	I-5 OFF RAMP
6	0	0	0	0	0	10849	10849	I-5 ON RAMP
7	0	0	0	0	0	11000	11049	HWY 33
8	0	0	0	0	0	10850	10899	I-5 OFF RAMP
9	0	0	0	0	0	10850	10899	I-5
10	0	0	0	0	0	10850	10899	I-5
11	0	11051	11499	11050	11498	11050	11499	HWY 33
12	0	10901	11749	10900	11748	10900	11749	HEREFORD RD
13	25	14001	14699	14000	14698	14000	14699	BISIGNANI RD
14	25	13701	13999	13700	13998	13700	13999	BISIGNANI RD
15	0	10901	11999	10900	11998	10900	11999	WHITWORTH RD
16	0	29505	29999	29504	29998	29504	29999	MCCABE RD
17	0	11501	11999	11500	11998	11500	11999	HWY 33
18	25	29001	29299	29000	29298	29000	29299	MCCABE RD

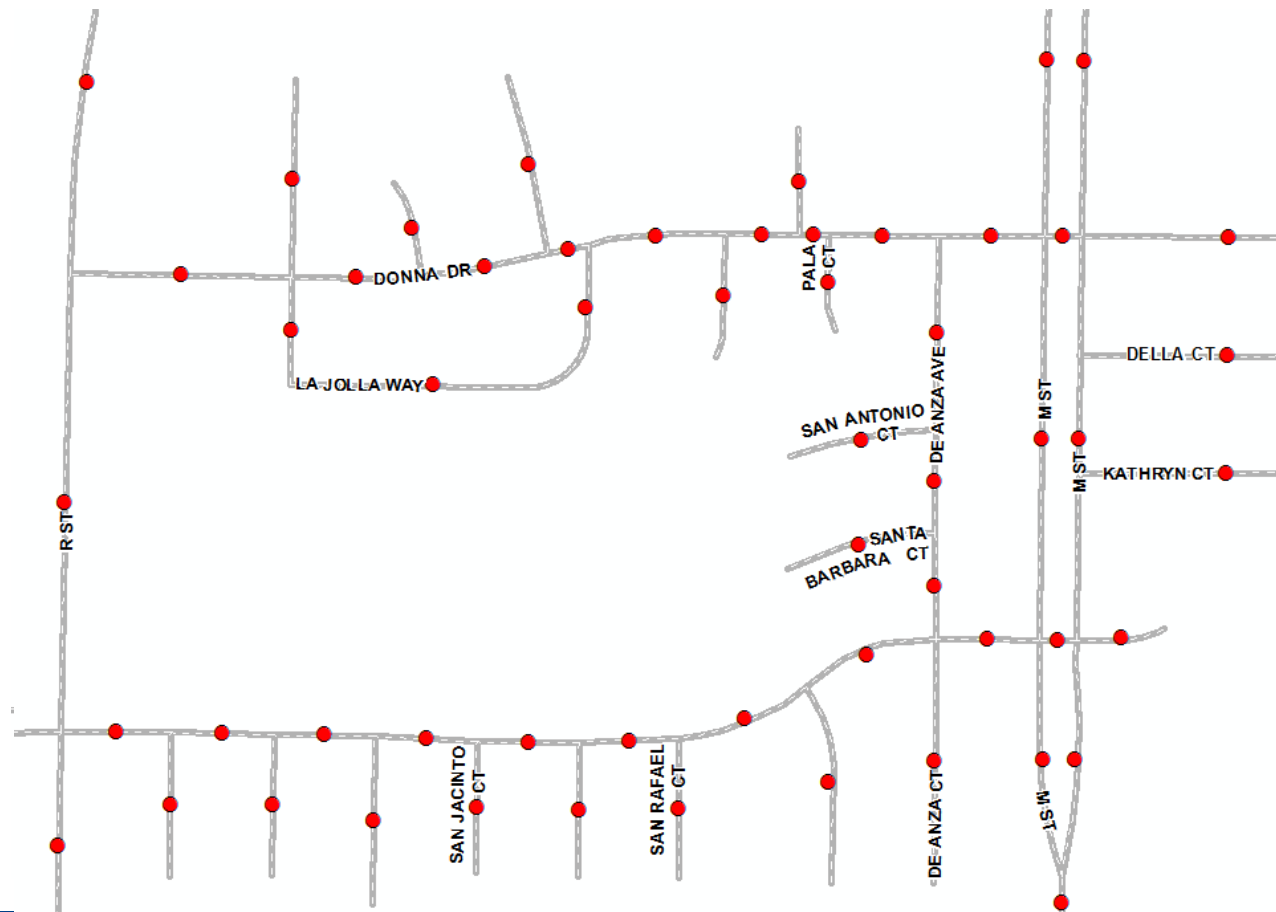
Table

Roads

FID	SPEED	LADD_FR	LADD_TO	RADD_FR	RADD_TO	MINADD	MAXADD	STREET
0	0	9501	10499	9500	10498	9500	10499	HWY 33
1	25	29001	29499	29000	29498	29000	29499	MARSHALL RD
2	25	9501	10499	9500	10498	9500	10499	NEWSOM RD
3	25	28501	28999	28500	28998	28500	28999	MARSHALL RD
4	0	10501	10999	10500	10998	10500	10999	HWY 33
5	0	0	0	0	0	10849	10849	I-5 OFF RAMP
6	0	0	0	0	0	10849	10849	I-5 ON RAMP
7	0	0	0	0	0	11000	11049	HWY 33
8	0	0	0	0	0	10850	10899	I-5 OFF RAMP
9	0	0	0	0	0	10850	10899	I-5
10	0	0	0	0	0	10850	10899	I-5
11	0	11051	11499	11050	11498	11050	11499	HWY 33
12	0	10901	11749	10900	11748	10900	11749	HEREFORD RD
13	25	14001	14699	14000	14698	14000	14699	BISIGNANI RD
14	25	13701	13999	13700	13998	13700	13999	BISIGNANI RD
15	0	10901	11999	10900	11998	10900	11999	WHITWORTH RD
16	0	29505	29999	29504	29998	29504	29999	MCCABE RD
17	0	11501	11999	11500	11998	11500	11999	HWY 33
18	25	29001	29299	29000	29298	29000	29299	MCCABE RD

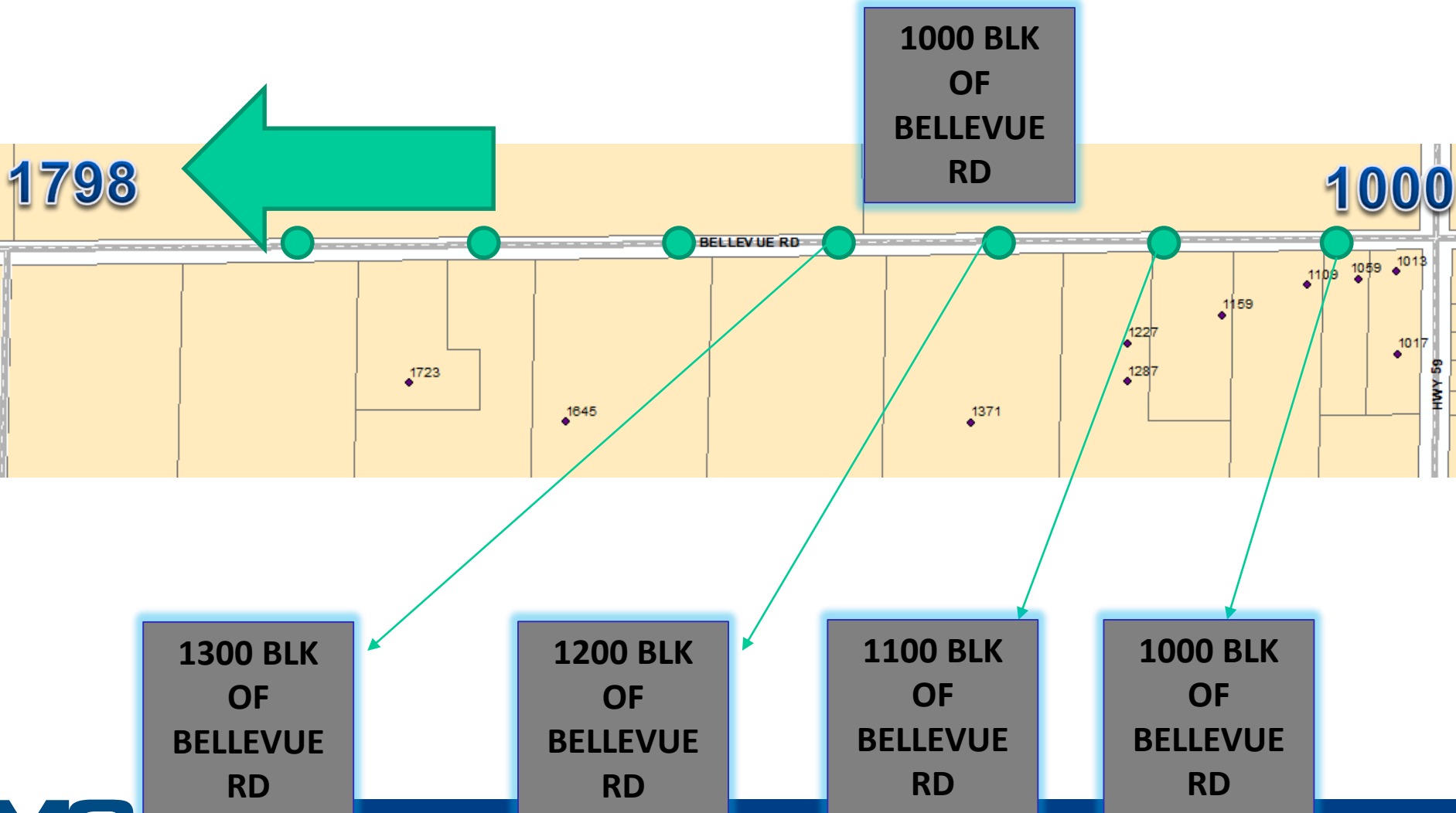
Result #1

■ ArcToolbox: Feature to Point tool

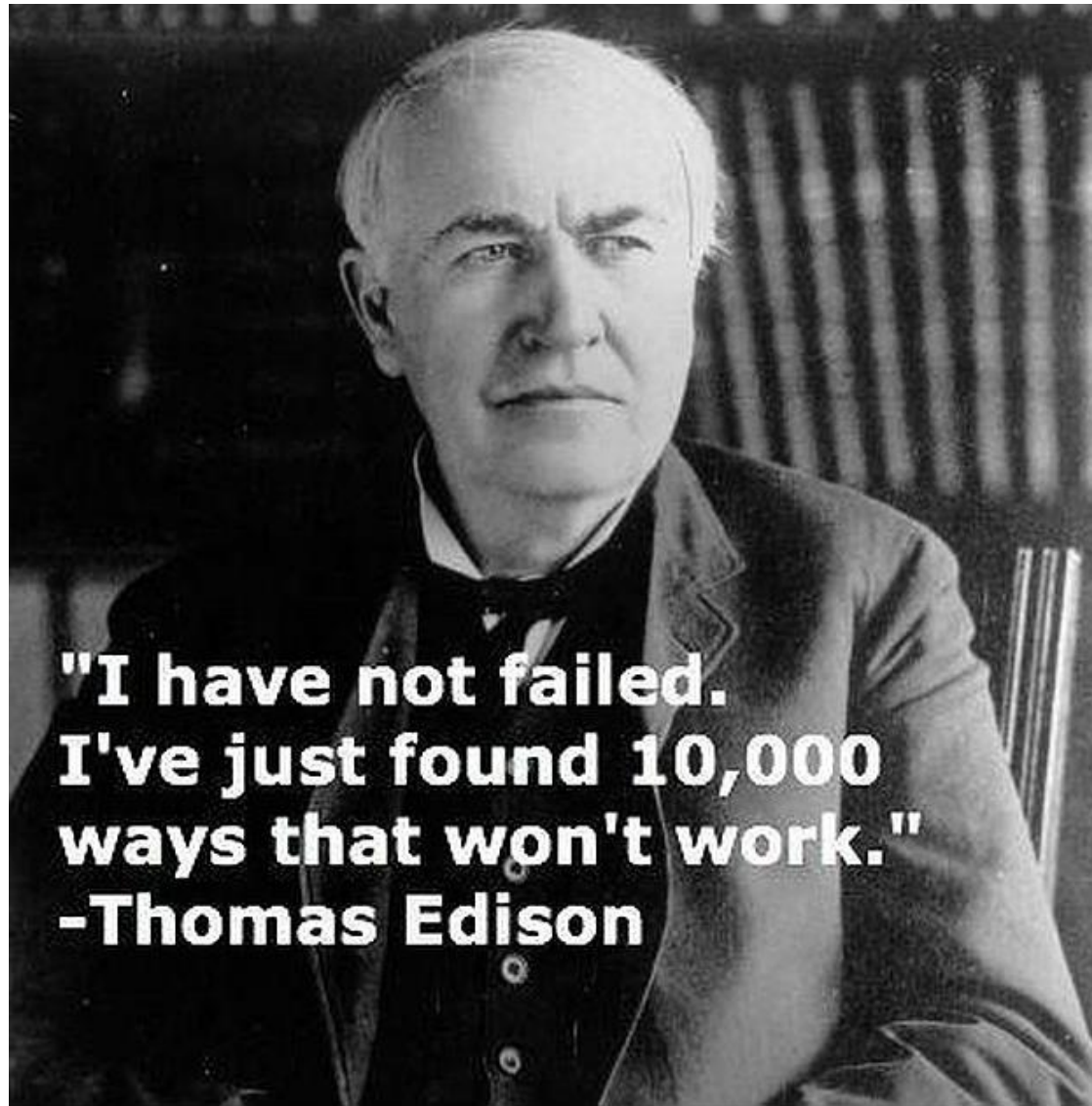




Bellevue Rd



Back to the drawing board!



**"I have not failed.
I've just found 10,000
ways that won't work."
-Thomas Edison**

Solution #2

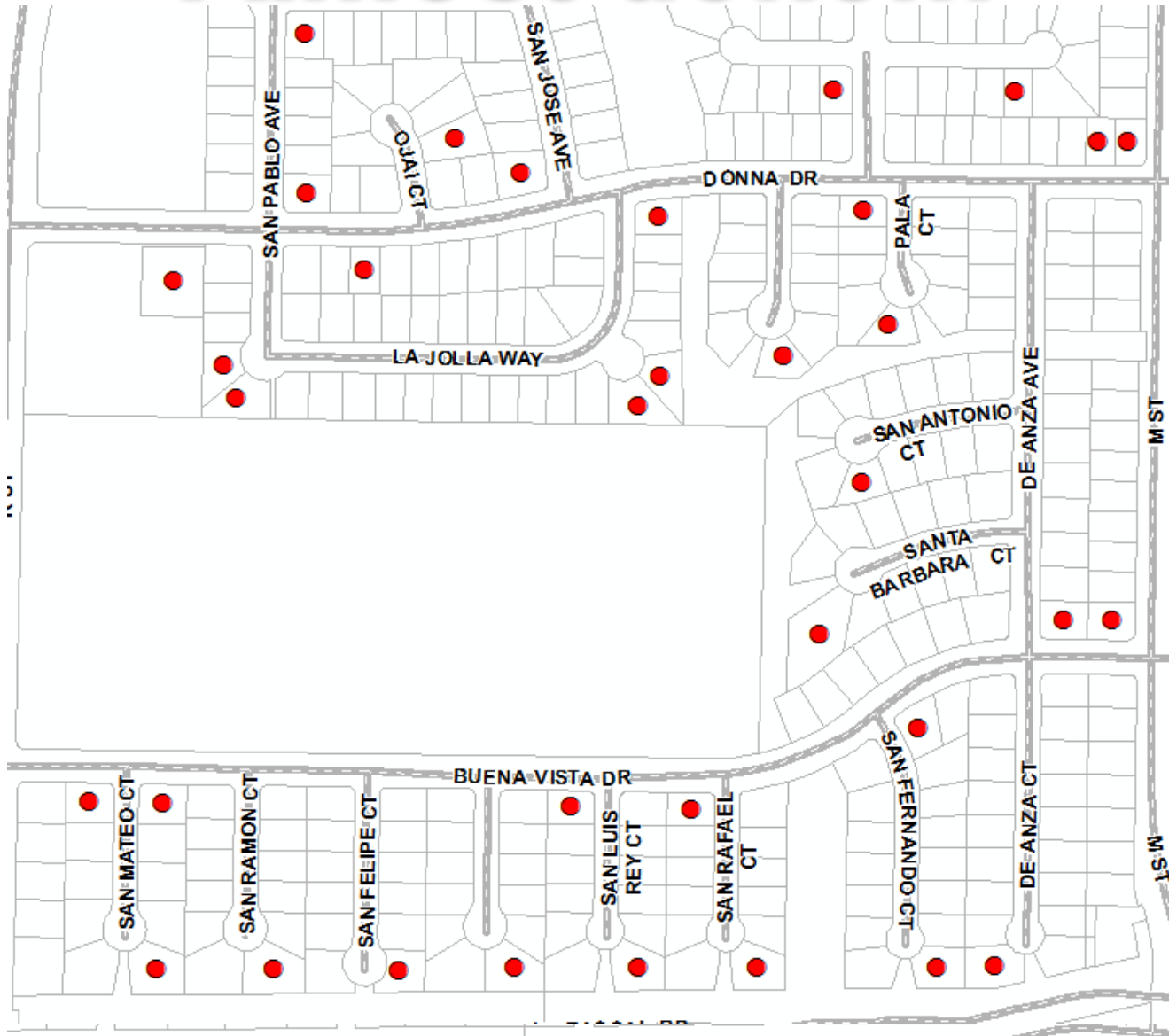
- Start with the address point file
- Perform simple field calculations
 - Add a **new field** called BLOCK
 - Populate the BLOCK field with **rounded values** of the HOUSE_NUM field
 - Add a **new field** called STREET2
 - Calculate STREET2 field using a **concatenation of existing street name and street type fields**

■ Perform simple field calculations

- Create a new field called BLK_ADDR
- Calculate BLK_ADDR field using this formula :
[BLOCK] &" " &"BLOCK OF" &" " & [STREET2]
- Delete records in the BLK_ADDR field that have identical values using the **DELETE IDENTICAL tool** in ArcToolbox

ADDRESS	HOUSE_NUM	BLOCK	STREET2	BLK_ADDR
1000 BUENA VISTA DR	1000	1000	BUENA VISTA DR	1000 BLOCK OF BUENA VISTA DR
3336 M ST	3336	3300	M ST	3300 BLOCK OF M ST
3340 R ST	3340	3300	R ST	3300 BLOCK OF R ST
3342 SAN JACINTO CT	3342	3300	SAN JACINTO CT	3300 BLOCK OF SAN JACINTO CT
3344 SAN FELIPE CT	3344	3300	SAN FELIPE CT	3300 BLOCK OF SAN FELIPE CT
3346 SAN RAMON CT	3346	3300	SAN RAMON CT	3300 BLOCK OF SAN RAMON CT
3351 DE ANZA CT	3351	3300	DE ANZA CT	3300 BLOCK OF DE ANZA CT
3352 SAN FERNANDO CT	3352	3300	SAN FERNANDO CT	3300 BLOCK OF SAN FERNANDO CT
3352 SAN LUIS REY CT	3352	3300	SAN LUIS REY CT	3300 BLOCK OF SAN LUIS REY CT
3352 SAN MATEO CT	3352	3300	SAN MATEO CT	3300 BLOCK OF SAN MATEO CT
3356 SAN RAFAEL CT	3356	3300	SAN RAFAEL CT	3300 BLOCK OF SAN RAFAEL CT
3400 DE ANZA AVE	3400	3400	DE ANZA AVE	3400 BLOCK OF DE ANZA AVE
3403 M ST	3403	3400	M ST	3400 BLOCK OF M ST

Almost done...



PYTHON!!




```

arcpy.env.overwriteOutput = True
arcpy.env.workspace = "M:/process/BlockAddresses/TEST"

point_layer = arcpy.MakeFeatureLayer_management("BlockAddresses.shp", "points_lyr")

field_points = "STREET2" #the name of the field for point selection

roads_layer = arcpy.MakeFeatureLayer_management("Roads.shp", "roads_lyr")

field_roads = "STREET" #the name of the field for the roads selection with same names as in point layer

#creating cursor for a list of all the names in point layer

cursor_points = arcpy.SearchCursor(point_layer, "", "", "STREET2")
row = cursor_points.next()
print "Snapping..."

for row in cursor_points:
    try:
        #create an expression based on the current row's field value
        where1 = '"STREET2" = ' + "'" + str(row.getValue("STREET2")) + "'"
        where2 = '"STREET" = ' + "'" + str(row.getValue("STREET2")) + "'"

        print 'Snapping points for ' + "'" + str(row.getValue("STREET2")) + "'"

        layer1 = arcpy.management.SelectLayerByAttribute(point_layer , "NEW_SELECTION", where1)
        layer2 = arcpy.management.SelectLayerByAttribute(roads_layer , "NEW_SELECTION", where2)

        snapEnv1 = [layer2, "EDGE", "1000 Feet"]

        arcpy.Snap_edit(layer1, [snapEnv1])

        arcpy.management.SelectLayerByAttribute(point_layer , "CLEAR_SELECTION")

        arcpy.management.SelectLayerByAttribute(roads_layer , "CLEAR_SELECTION")

    except:
        print 'Something went wrong handling ' + "'" + str(row.getValue("STREET2")) + "'"
        continue

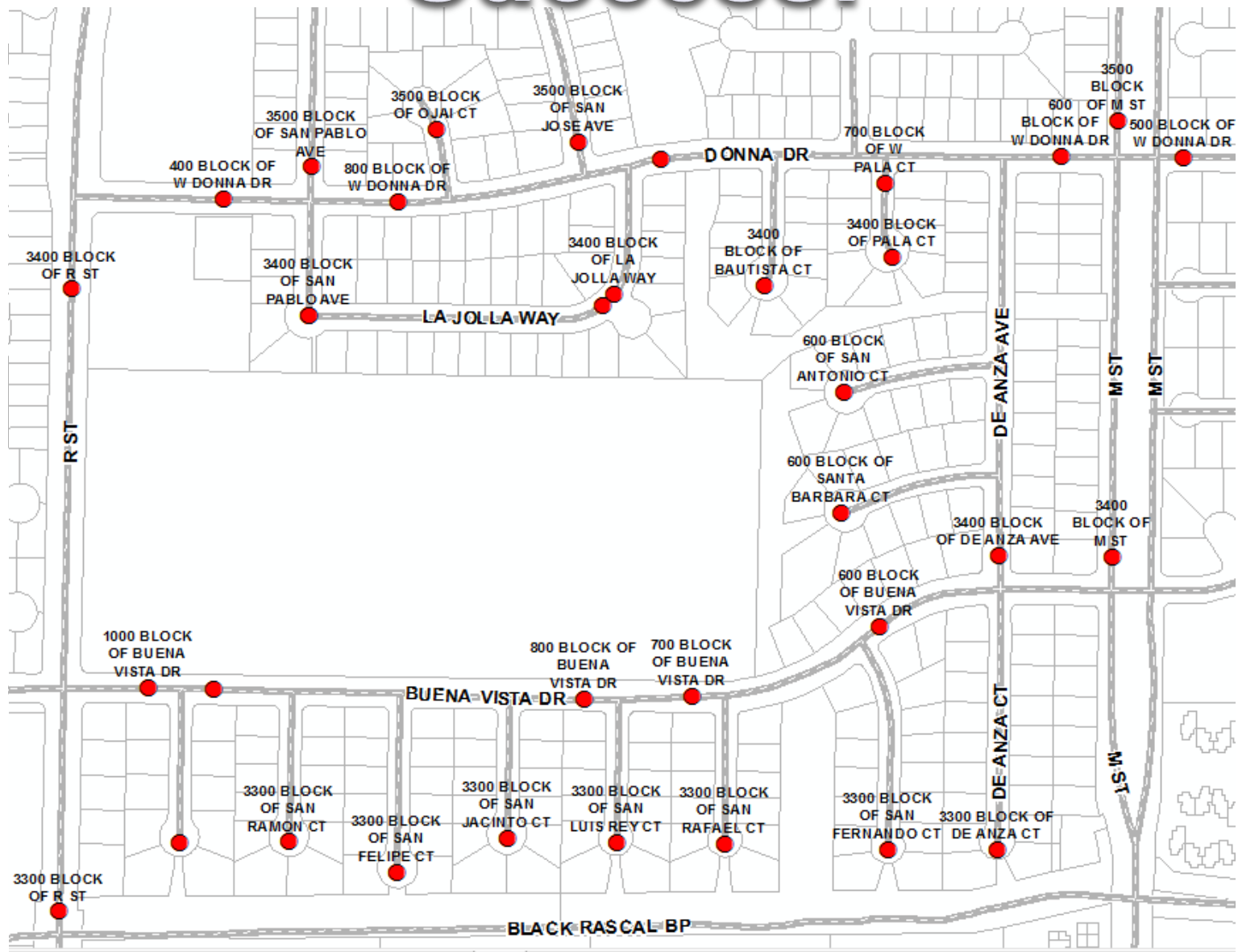
print "Finished!"

del point_layer

```

```
Python 2.7.8 Shell
File Edit Shell Debug Options Windows Help
Python 2.7.8 (default, Jun 30 2014, 16:03:49) [MSC v.1500 32 bit (Intel)] on win
32
Type "copyright", "credits" or "license()" for more information.
>>> ===== RESTART =====
>>>
Snapping...
Snapping points for 'R ST'
Snapping points for 'SAN FELIPE CT'
Snapping points for 'SAN FERNANDO CT'
Snapping points for 'DE ANZA CT'
Snapping points for 'SAN MATEO CT'
Snapping points for 'SAN RAFAEL CT'
Snapping points for 'SAN RAMON CT'
Snapping points for 'SAN JACINTO CT'
Snapping points for 'SAN LUIS REY CT'
Snapping points for 'BUENA VISTA DR'
Snapping points for 'BUENA VISTA DR'
Snapping points for 'BUENA VISTA DR'
Snapping points for 'BUENA VISTA DR'
Snapping points for 'BUENA VISTA DR'
Snapping points for 'M ST'
Snapping points for 'DE ANZA AVE'
Snapping points for 'SANTA BARBARA CT'
Snapping points for 'TERRI CT'
Snapping points for 'PUERTO VALLARTA CT'
Snapping points for 'KATHRYN CT'
Snapping points for 'SAN ANTONIO CT'
Snapping points for 'LA JOLLA WAY'
Snapping points for 'LA JOLLA WAY'
Snapping points for 'LA JOLLA WAY'
Snapping points for 'SAN PABLO AVE'
Snapping points for 'BAUTISTA CT'
Snapping points for 'DELLA CT'
Snapping points for 'PALA CT'
Snapping points for 'R ST'
Snapping points for 'DONNA DR'
Snapping points for 'DONNA DR'
Snapping points for 'DONNA DR'
Snapping points for 'DONNA DR'
Snapping points for 'PALA CT'
Ln: 46 Col: 4
```

Success!



Lessons Learned

#1



=

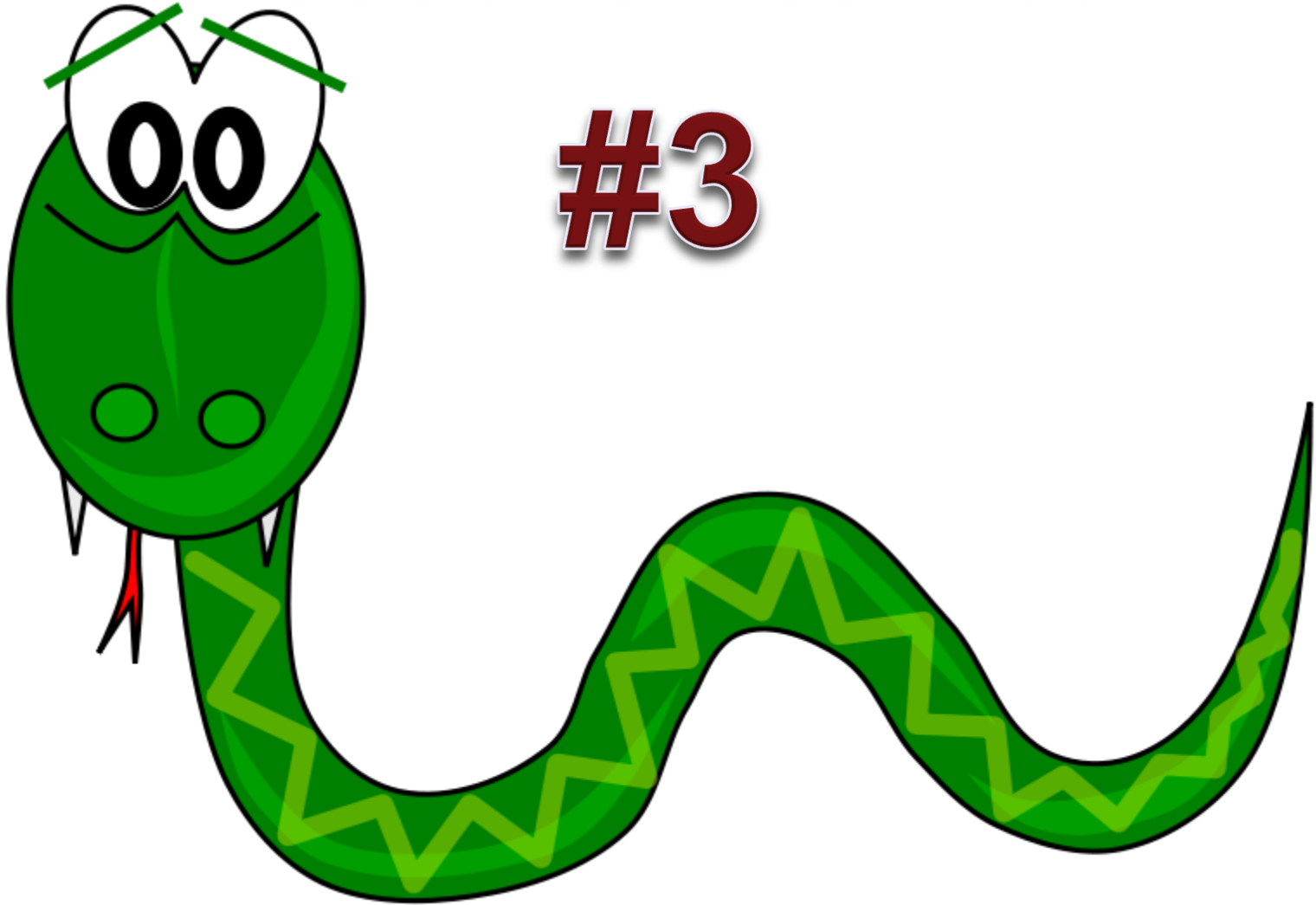


Lessons Learned

#2



Lessons Learned



In Conclusion:



Questions?

Natalia Austin, GISP

Merced County Association of Governments
natalia.austin@mcagov.org

RuthAnne Harbison, GISP

City of Merced

HarbisonR@cityofmerced.org

Thank you!