Finding the Needle in a Haystack: Query Filters and Thematic Rules in Autodesk AutoCAD Map 3D

Scott Mizsak
Application Engineer
scottm@cadtechnologycenter.com

Key learning objectives

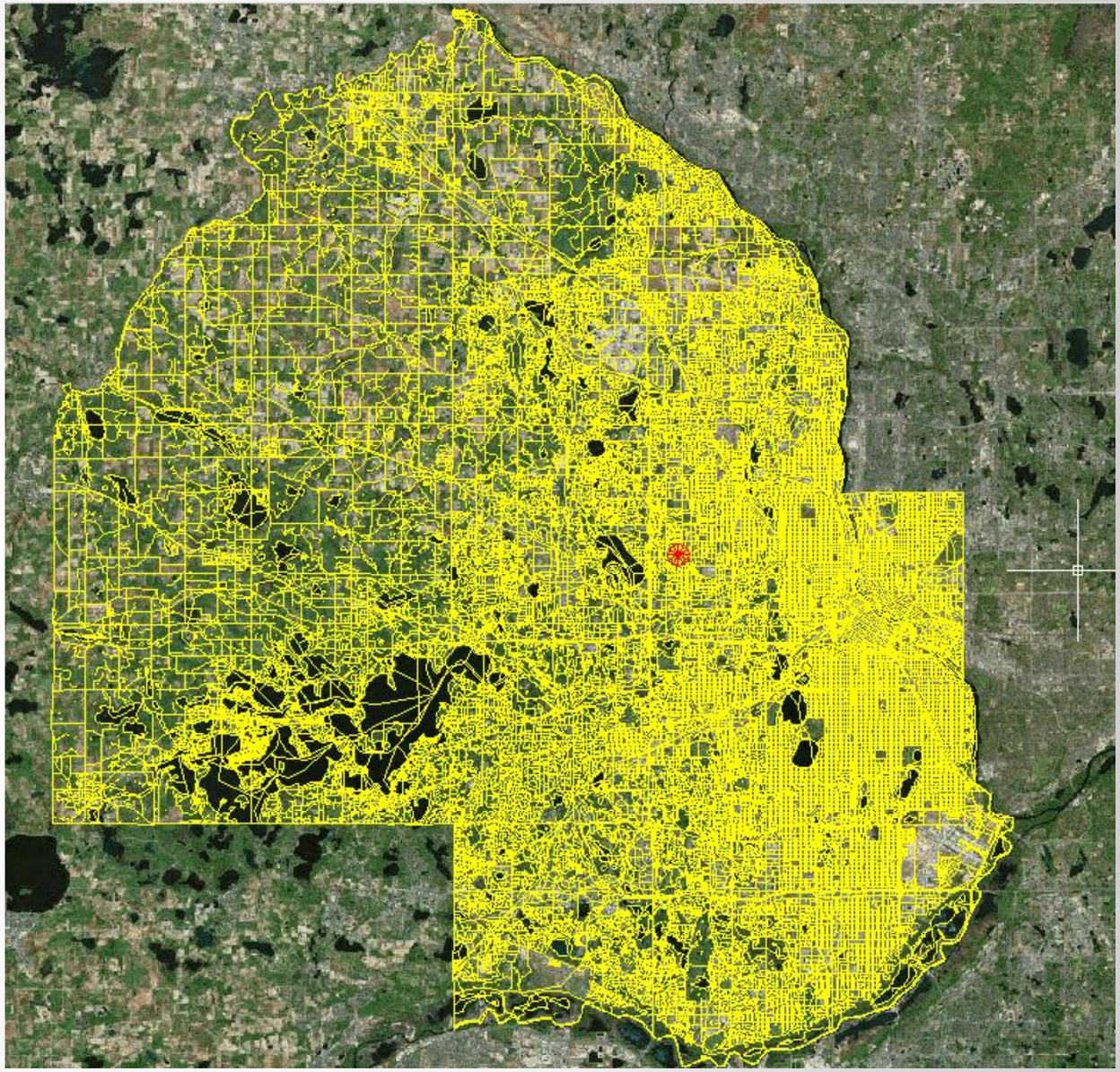
At the end of this discussion, you will be able to:

- Understand the process of using query filters
- Understand the hierarchy within the tool for complex filters
- Create maps that will tell the story without overwhelming the reader.
- Counters – When a feature has multiple values after a join.

Query Filter

16	27	053	43619456
17	27	053	43619450
18	27	053	43679396
19	27	053	43831821
20	27	053	43855815
21	27	053	43831606
22	27	053	43659824
23	27	053	43619268
24	27	053	43619296
25	27	053	43619516
26	27	053	43831598
27	27	053	43677157

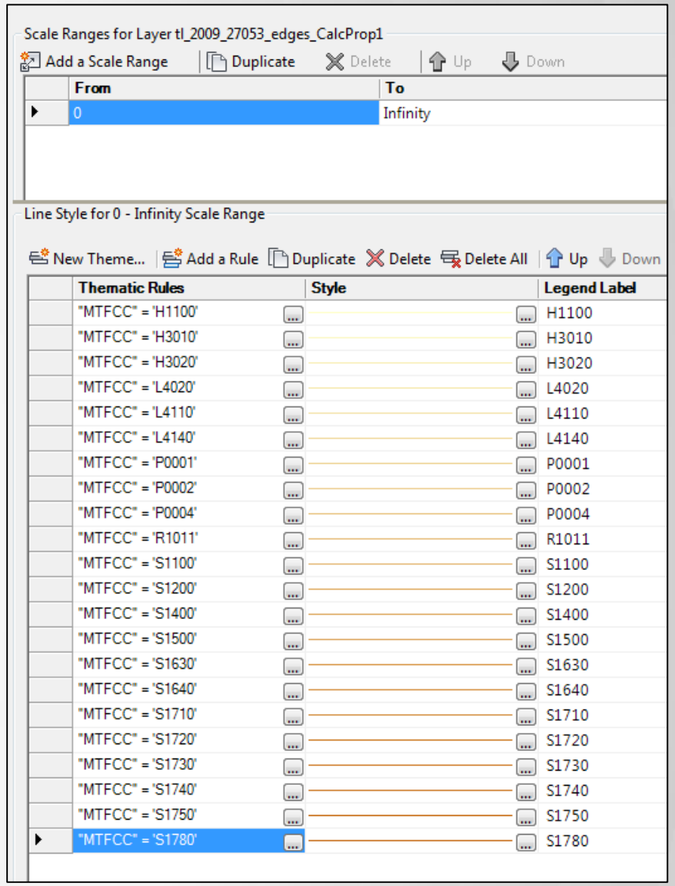
Row of 81892 | 0 Search to Select | Options



MTFCC Codes:

MTFCC Code	Feature Class	Super Class	Description
H1100	Connector	Hydrographic Features	Hydrographic connection between two nonadjacent water features
H3010	Stream/River	Hydrographic Features	A Natural flowing waterway
H3020	Canal, Ditch, Aqueduct	Hydrographic Features	An artificial Waterway constructed to transport water
L4020	Powerline	Misc. Linear Feature	One or more wires, often on elevated towers
L4110	Fence Line	Misc. Linear Feature	A man-made barrier enclosing or bordering a field, yard, etc
L4140	Property/Parcel Line	Misc. Linear Feature	A line defined as beginning at one location and ending at another
P0001	Nonvisible Linear Bnd.	Bounding Edges	A boundary line that does not correspond to visible feature (Shoreline)
P0002	Perennial Shoreline	Bounding Edges	Permanent boundary between land and water for a feature that exists year round
P0004	Non-visible edge	Bounding Edges	A bounding Edge that does not represent a legal boundary. (Bay meets an Ocean)
R1011	Railroad Feature	Rail Features	A line of fixed rails or tracks that carries mainstream railroad traffic.
S1100	Primary Road	Road/Path Features	Generally Divided, Limited Access Highways
S1200	Secondary Road	Road/Path Features	Main arteries, usually US Highway, State Highway or County Highway systems
S1400	Rural Roads	Road/Path Features	Generally a paved non arterial streets that has a single lane of traffic in each direction
S1500	Vehicular Trail	Road/Path Features	Unpaved dirt trail where a four-wheel drive vehicle is required
S1630	Ramp	Road/Path Features	Allows controlled access from adjacent roads onto a limited access highway
S1640	Service Drive	Road/Path Features	A road, usually paralleling a limited access highway
S1710	Walkway/Trail	Road/Path Features	A path used for walking
S1720	Stairway	Road/Path Features	A pedestrian passageway from one level to another by a series of steps
S1730	Alley	Road/Path Features	A service road that does not generally have associated addressed structures
S1740	Private Road	Road/Path Features	A road within private property that is privately maintained for service
S1750	Internal US Census Bureau	Road/Path Features	Internal US Census Bureau use
S1780	Parking Lot Road	Road/Path Features	the main travel route for vehicles through a paved parking area.

Complete list of all codes: https://www.census.gov/rdo/pdf/AttD_MAF_TIGER_Feature_Classification_Codes.pdf



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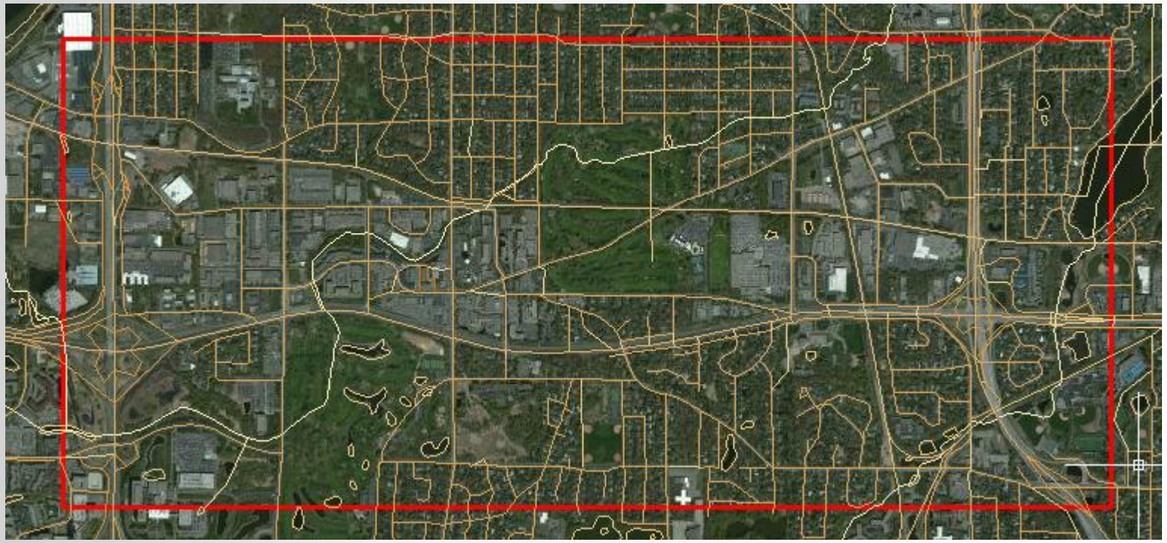
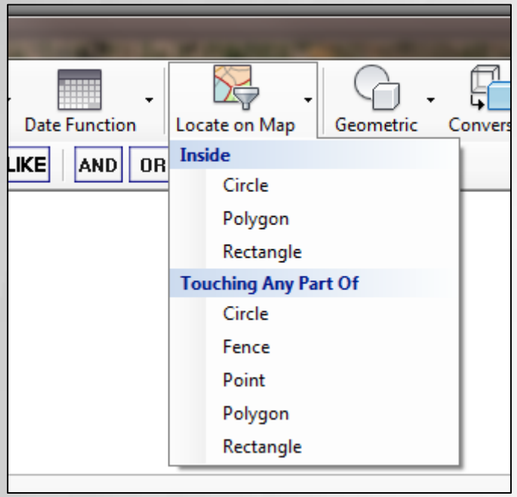
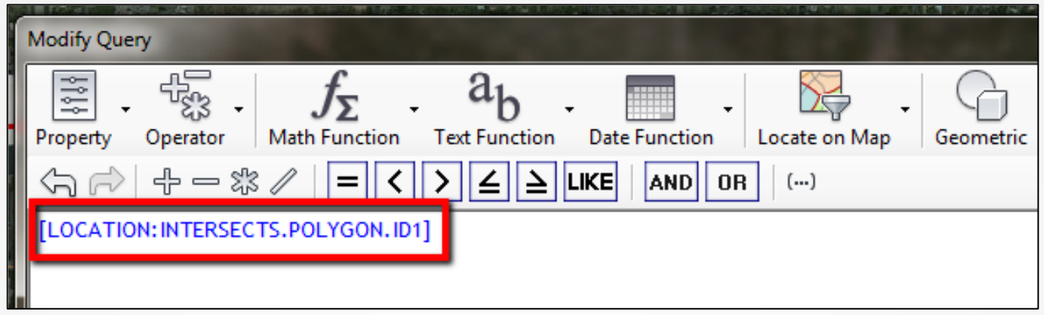


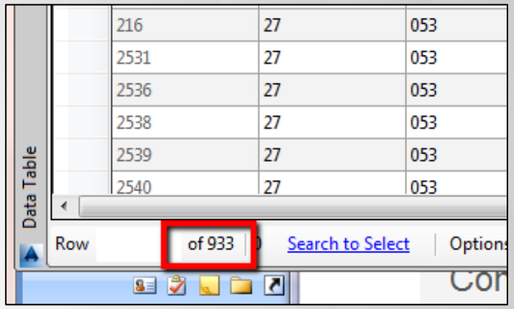
- Only Road that falls within the box
- Only road classified as
  - ‘S1100’
  - ‘S1200’
  - ‘S1400’
  - ‘S1630’

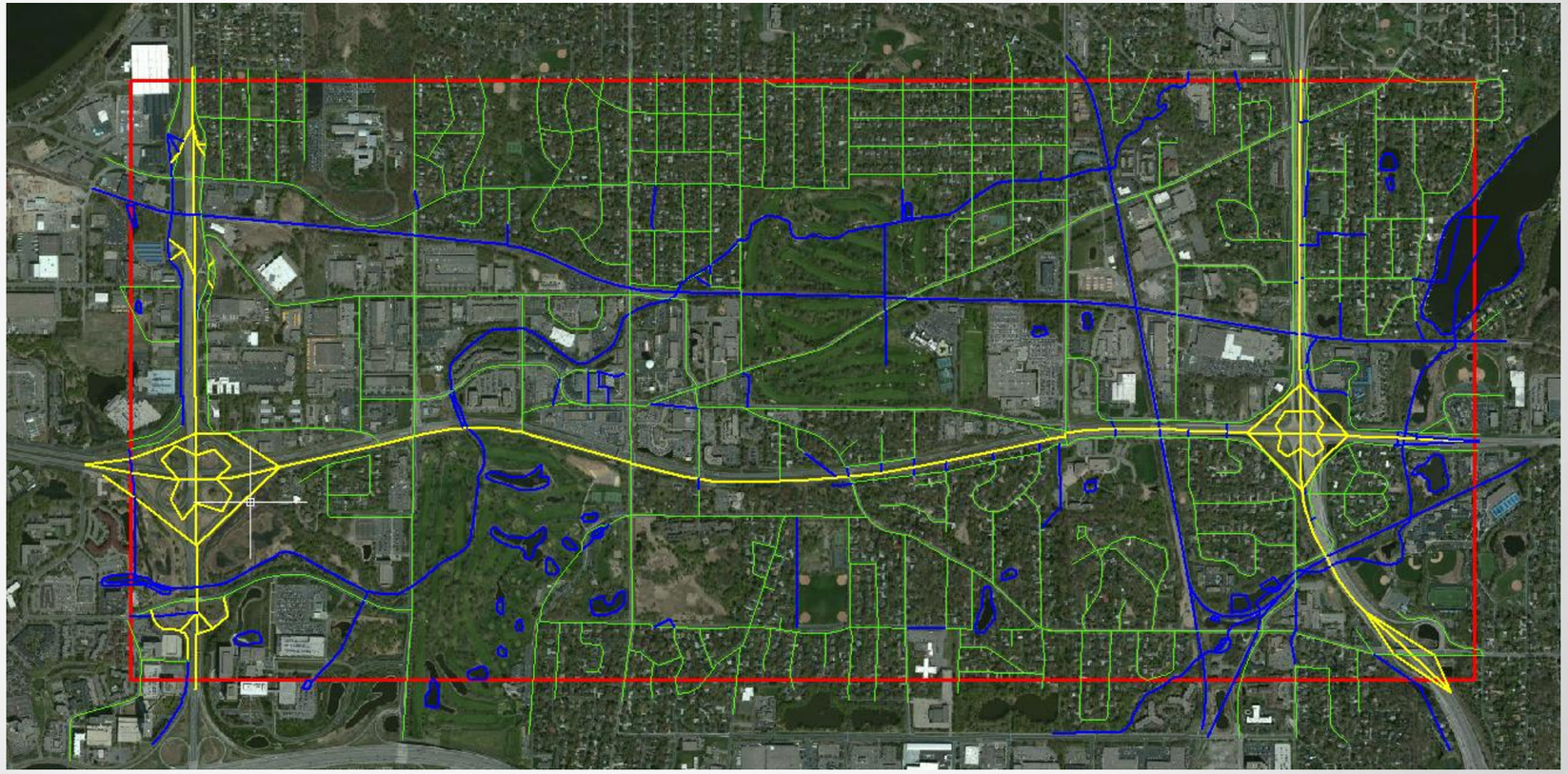
Now What?

Isolate all lines in the Polygon:

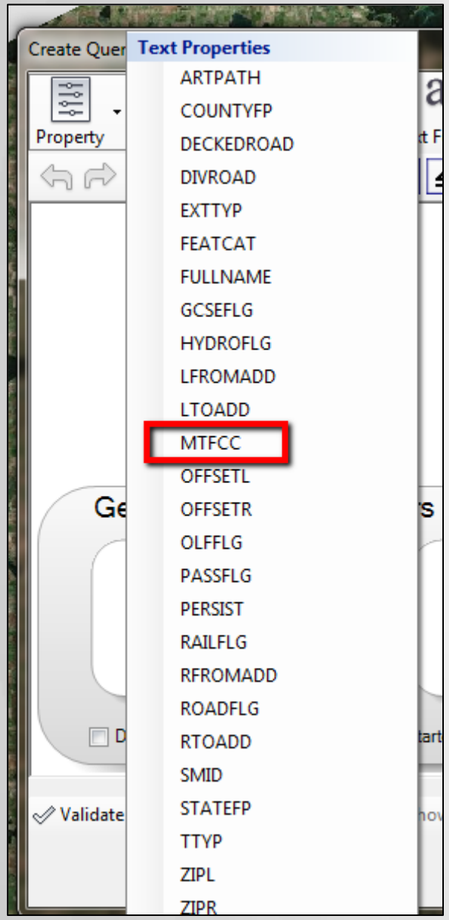


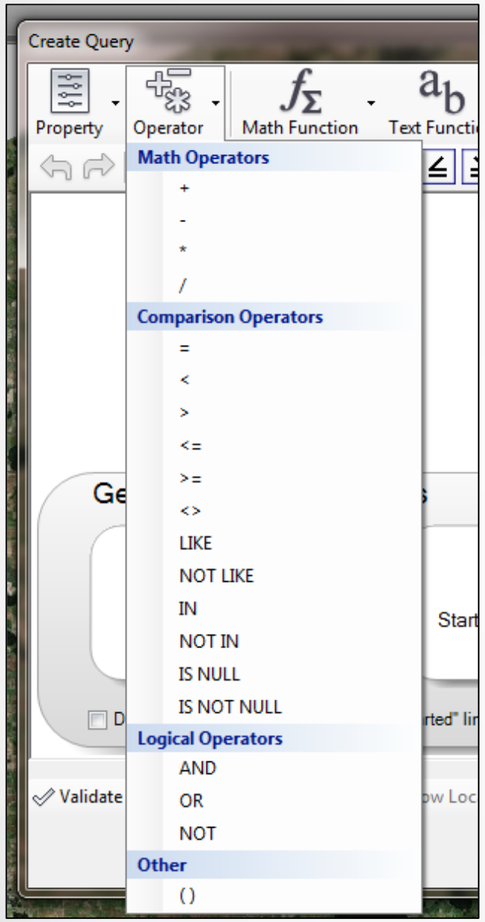


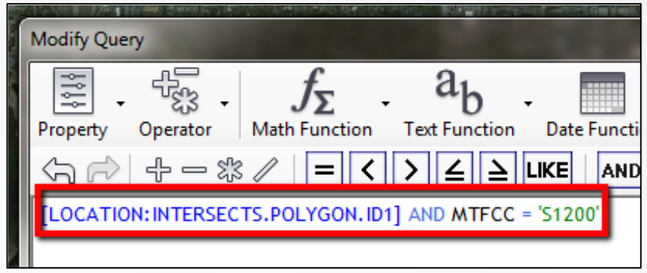


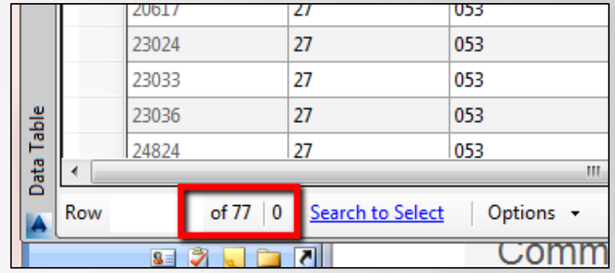


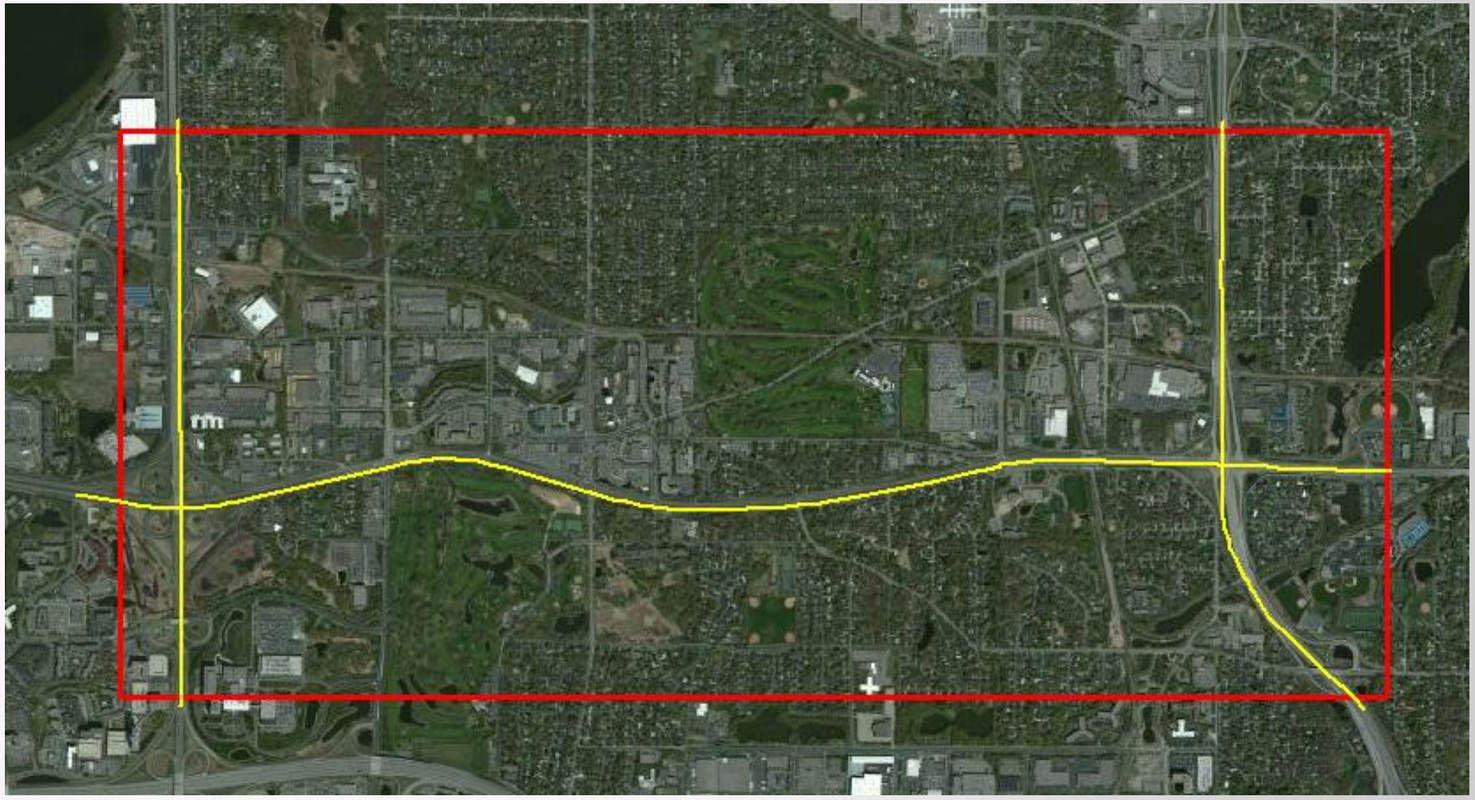
Isolate only the Roads: Compound Query



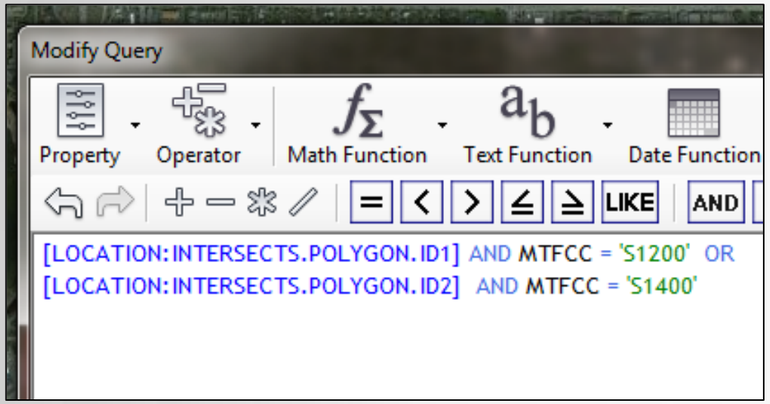


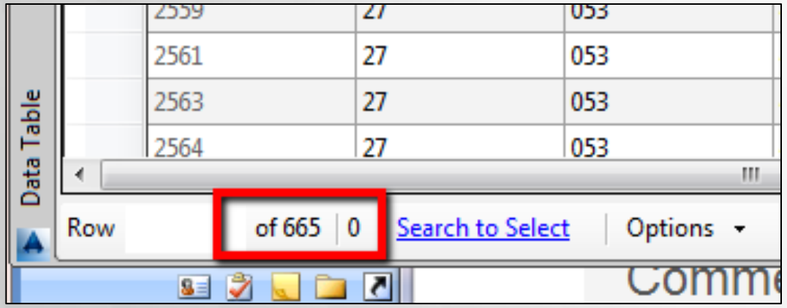


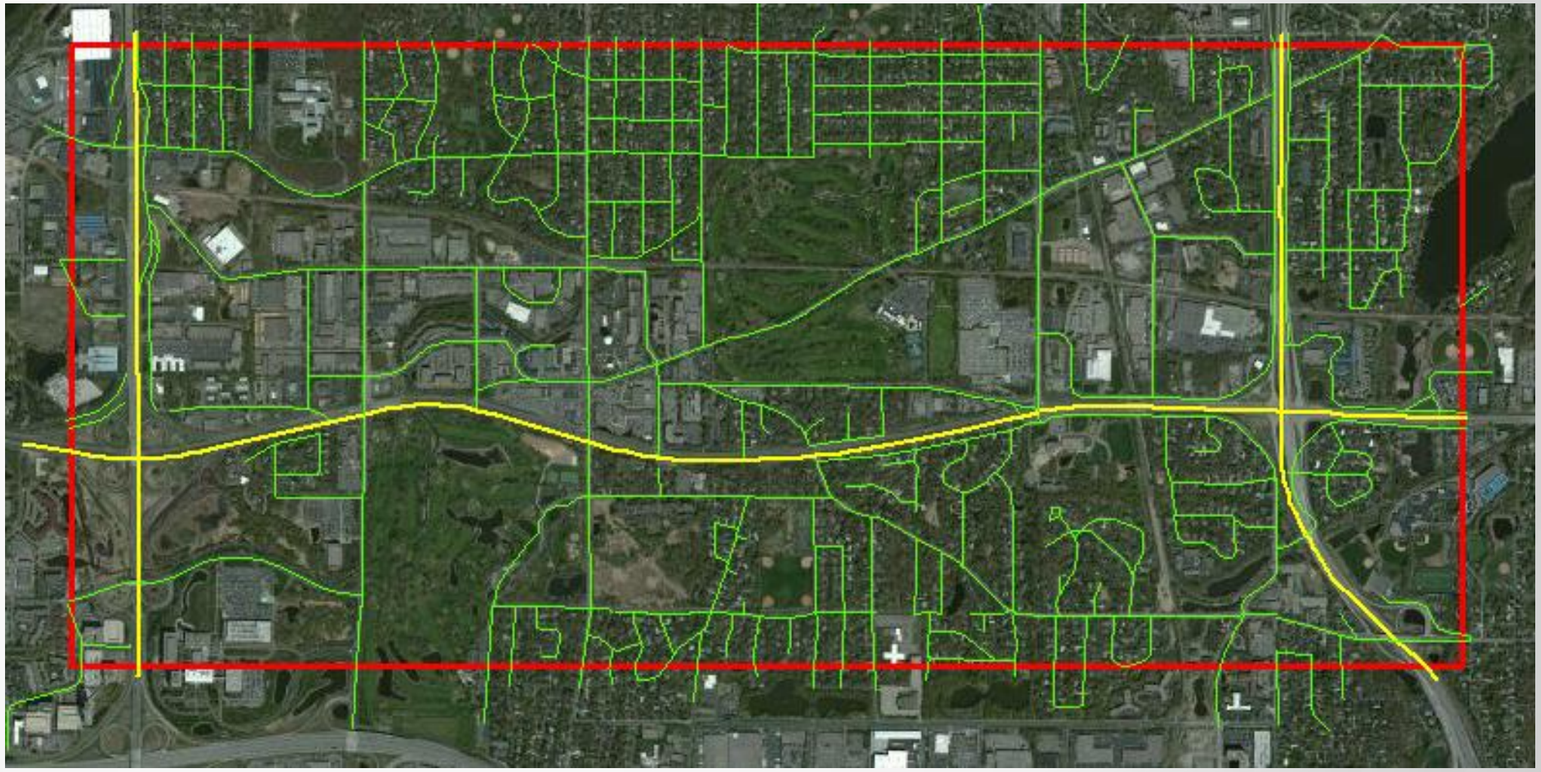




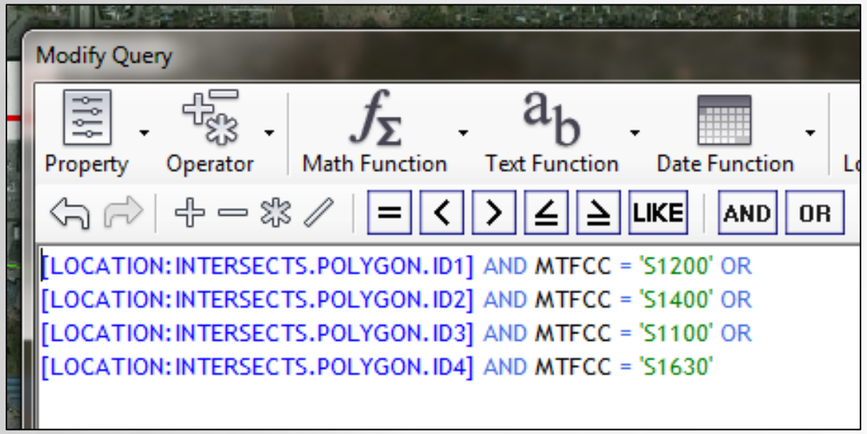
Isolating Roads: Compound - Complex Query

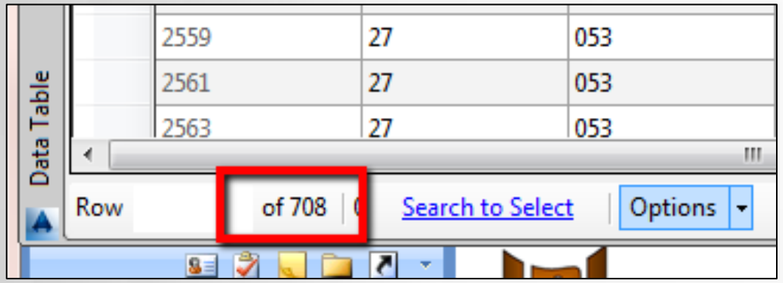


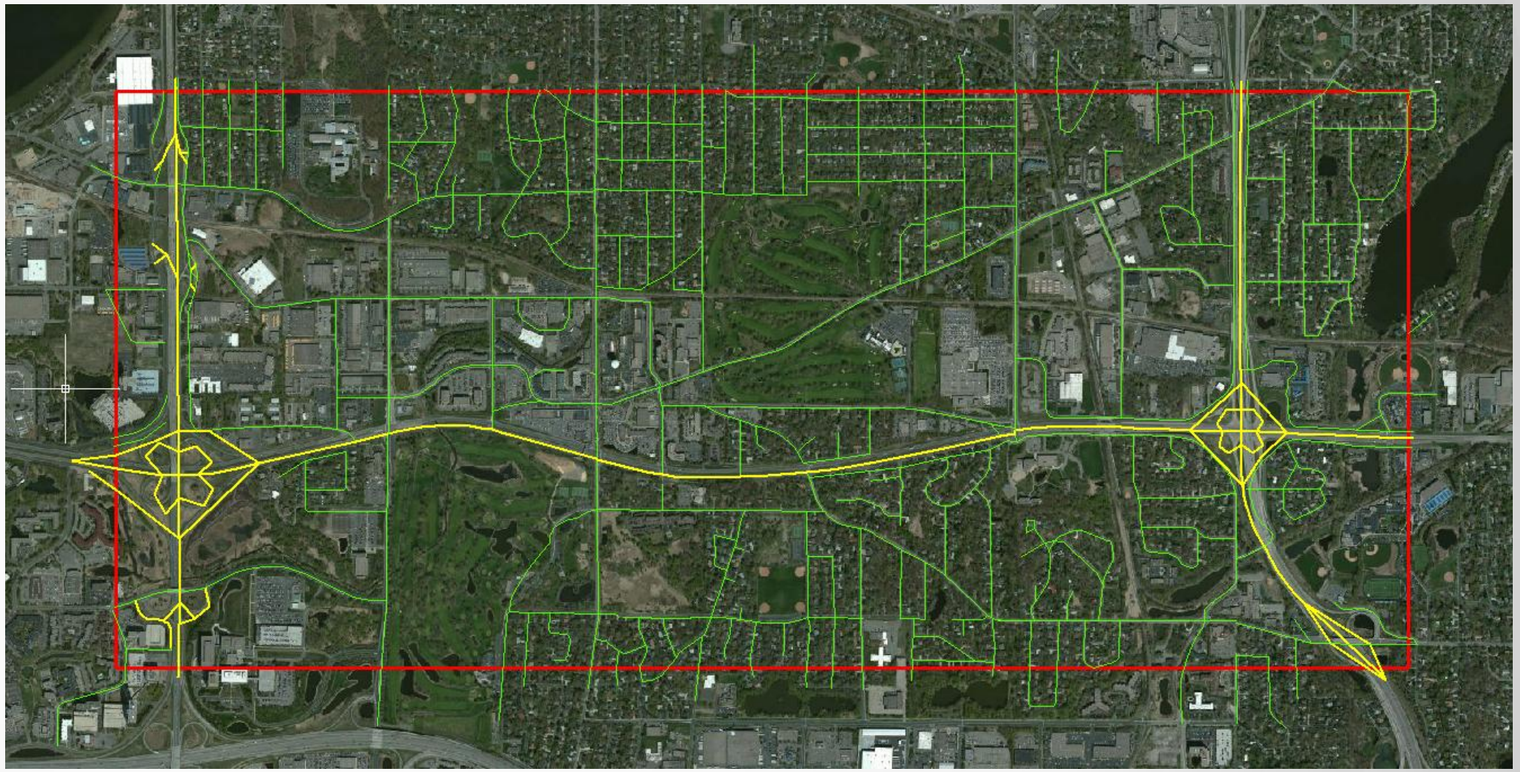


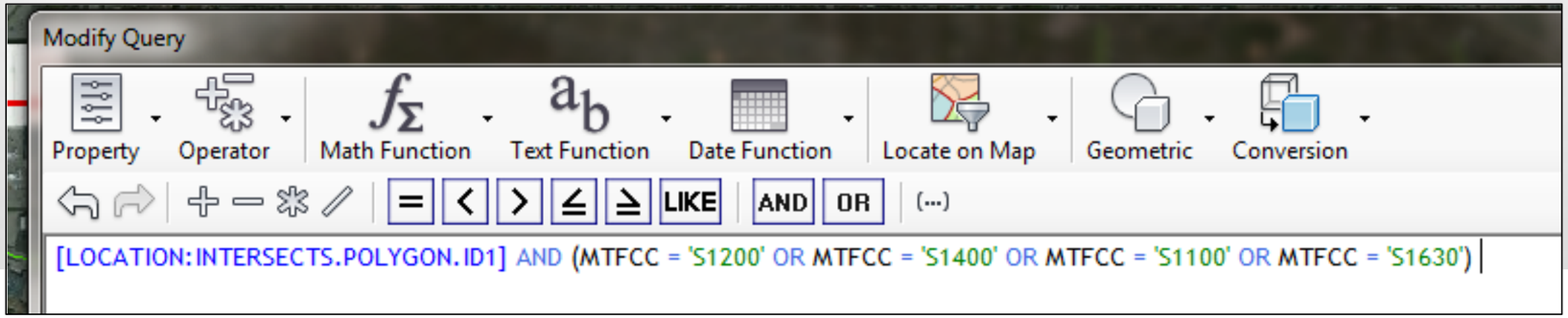


Isolating Roads: Completed Query



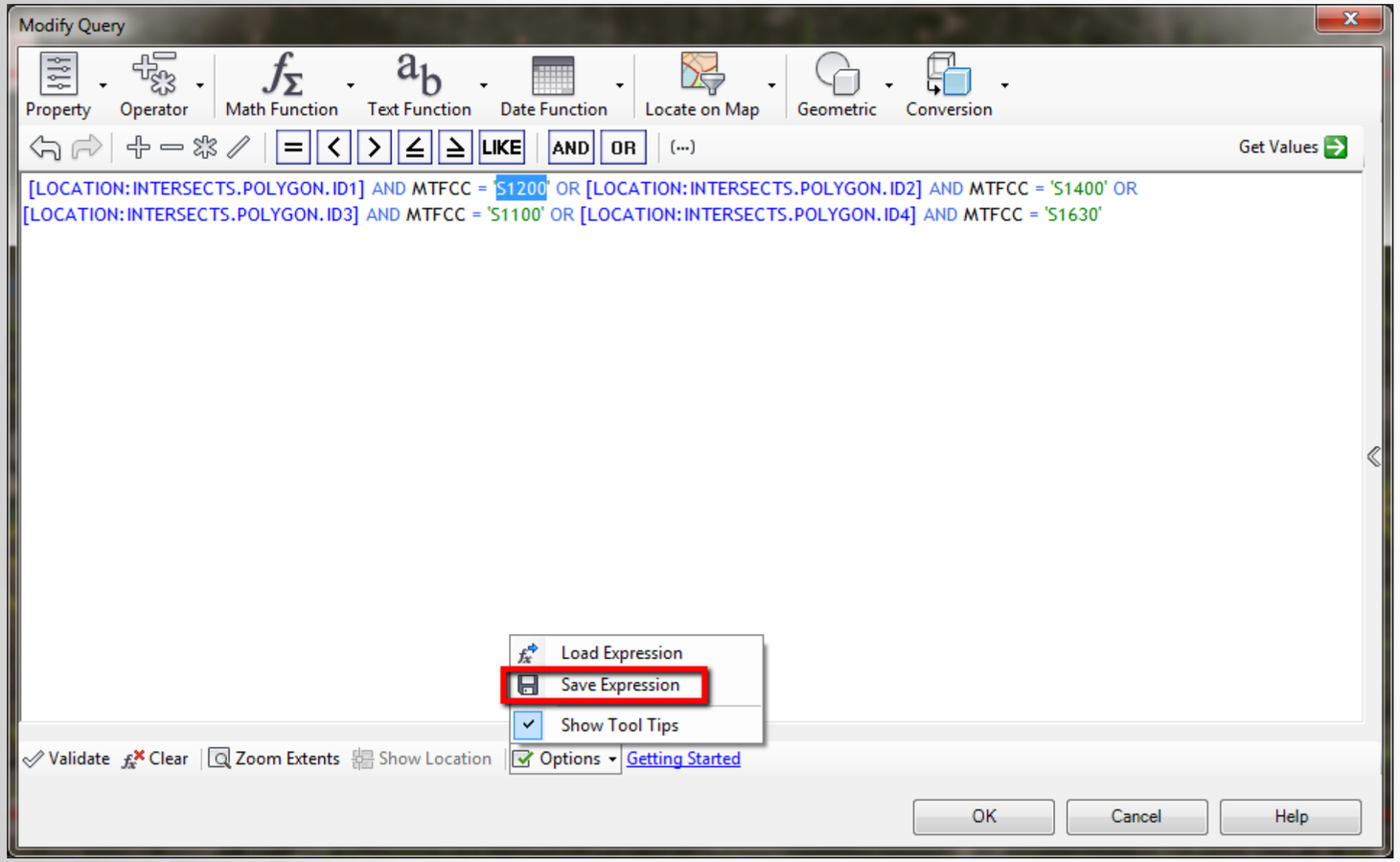


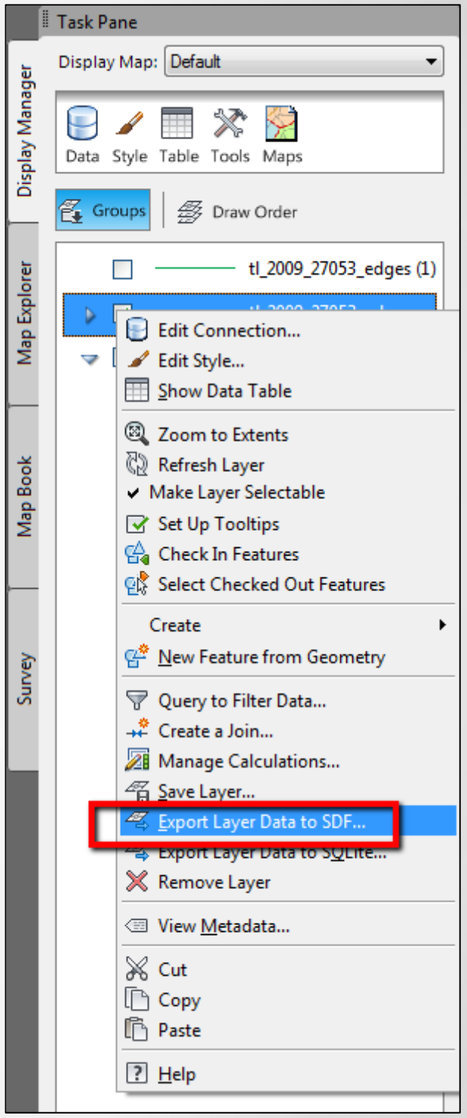




Now What?

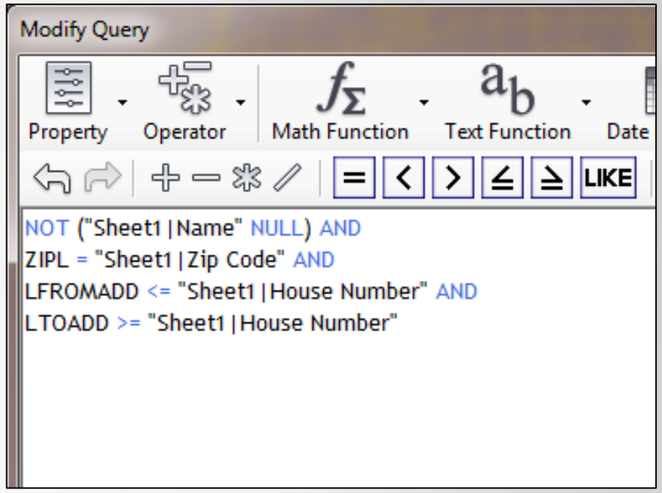
Save the Expression and Save the Results:





Other Complex Expressions:

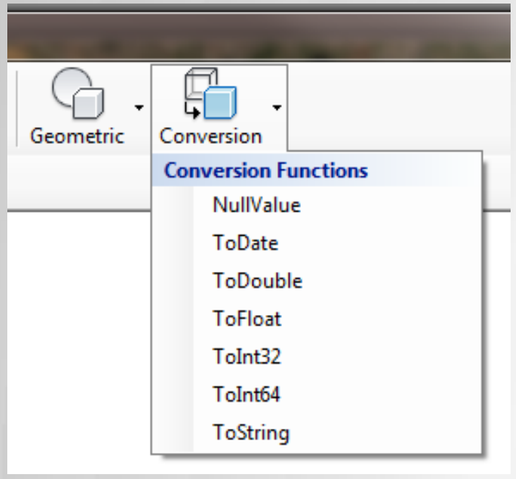
	Company	Name	House Number	Street Name	City	State	Zip code
2	Jesse Hagemeier	Jesse Hagemeier	27041	Cty. Rd. 23	Albany	MN	56307
3	Autodesk, Inc.	Rick Larson	1190	Schaller Rd. W	Albany	WI	53502
4	Design Tree Engineering	Jon Schuette	2510	S. Broadway St.	Alexandria	MN	56308
5	Advanced Engineering Concepts	Sean Bohan	635	Fairfax St.	Altoona	WI	54720
6	Hakanson Anderson	Brian Person	3601	Thurston Ave.	Anoka	MN	55303
7	Hakanson Anderson	Jeff Busse	3601	Thurston Ave.	Anoka	MN	55303
8	Dakota County	Bob Eibner	14955	Galaxie Ave.	Apple Valley	MN	55124
9	Dakota County	Jake Siebenaler	14955	Galaxie Ave.	Apple Valley	MN	55124
10	Widseth Smith Nolting	Juergen Brunkhorts	7804	Industrial Park Rd.	Baxter	MN	56425
11	City of Benson, MN	Elliot Nelson	1410	Kansas Ave.	Benson	MN	56215
12	Wright SWCD	Al Morris	306	Brighton Ave.	Buffalo	MN	55313
13	Wright SWCD	Ben Morris	306	Brighton Ave.	Buffalo	MN	55313
14	Wright SWCD	Bob Morris	306	Brighton Ave.	Buffalo	MN	55313
15	Wright SWCD	Jason Morris	306	Brighton Ave.	Buffalo	MN	55313
16	Wright SWCD	Luke Johnson	306	Brighton Ave.	Buffalo	MN	55313

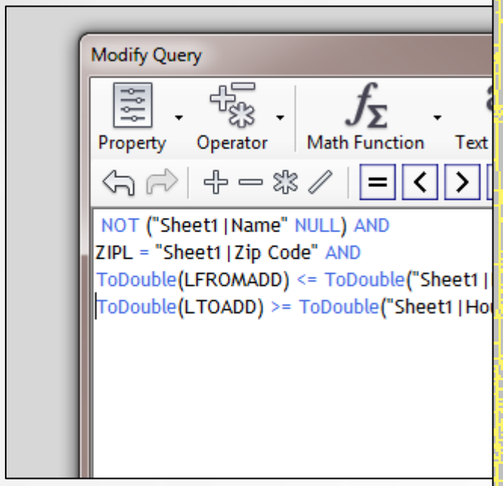


Data: tl_2009_27053_edges | Auto-Zoom | Auto-Scroll

FeatId	MTFCC	LFROMADD	LTOADD	ZIPL	ZIPR	FULLNAME	Sheet1|Name	Sheet1|House Number	Sheet1|Extra	Sheet1|Address	Sheet1|Company	Sheet1|City	Sheet1|State	Sheet1|Zip Code	ROA
2501	S1400	1975	2089	55422	<Null>	Lilac Dr N	John Rahkola	2055	<Null>	Lilac Dr N	MNDOT	Golden Valley	MN	55422	Y
18252	S1400	201	337	55422	55422	Lilac Dr N	John Rahkola	2055	<Null>	Lilac Dr N	MNDOT	Golden Valley	MN	55422	Y
52280	S1400	101	203	55405	55405	James Ave N	Catherine John...	175	<Null>	James Ave N	Water in Motio...	Minneaplois	MN	55405	Y
80867	S1400	1098	800	55422	<Null>	Lilac Dr N	John Rahkola	2055	<Null>	Lilac Dr N	MNDOT	Golden Valley	MN	55422	Y
1414	S1400	22	98	55402	55415	6th St S	Dan Kvall	50	Suite 1100	6th St S	Dunham Associ...	Minneaplois	MN	55402	Y
46996	S1400	3001	3099	55447	55447	Harbor Ln N	Russell Depuydt	3025	Suite 121	Harbor Ln N	H Z United LLC	Plymouth	MN	55447	Y
77823	S1400	301	699	55447	55447	Harbor Ln N	Russell Depuydt	3025	Suite 121	Harbor Ln N	H Z United LLC	Plymouth	MN	55447	Y
50350	S1400	10027	10549	55344	55344	Valley View Rd	Virginia Winberg	10250	Suite 123	Valley View Rd	EVS, Inc.	Eden Prairie	MN	55344	Y
46984	S1400	14501	15099	55447	55447	28th Ave N	Kirk Mohs	14800	Suite 140	28th Ave N	MFRA	Plymouth	MN	55447	Y
20239	S1400	6889	6999	55369	55369	E Fish Lake Rd	Steve Seibert	6901	Suite 184	E Fish Lake Rd	AE2S	Maple Grove	MN	55369	Y
22670	S1400	4801	5099	55416	55416	W 35th St	Matt Pavek	4931	Suite 200	W 35th St	Civil Site Group	St. Loius Park	MN	55416	Y

Solution:

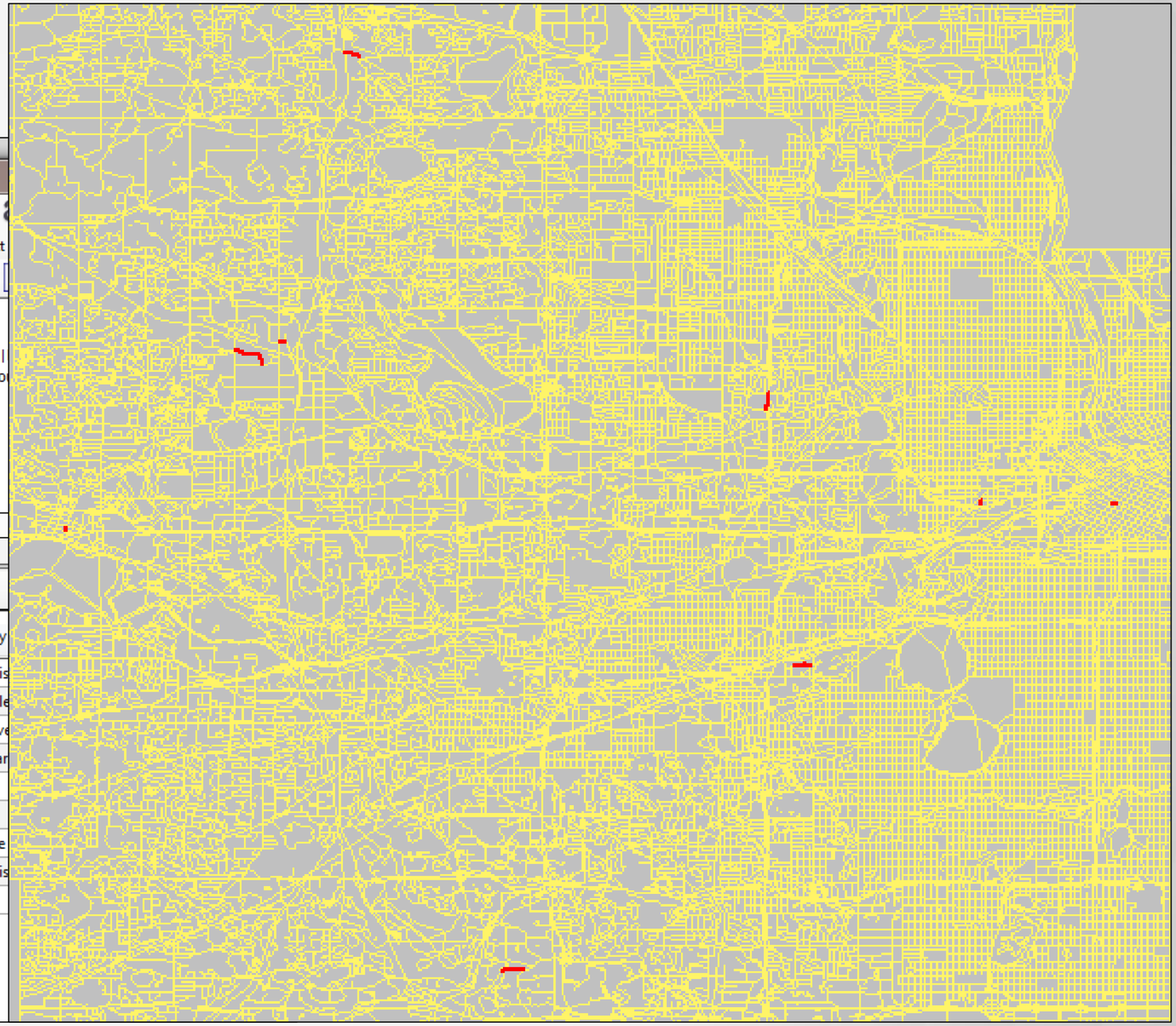




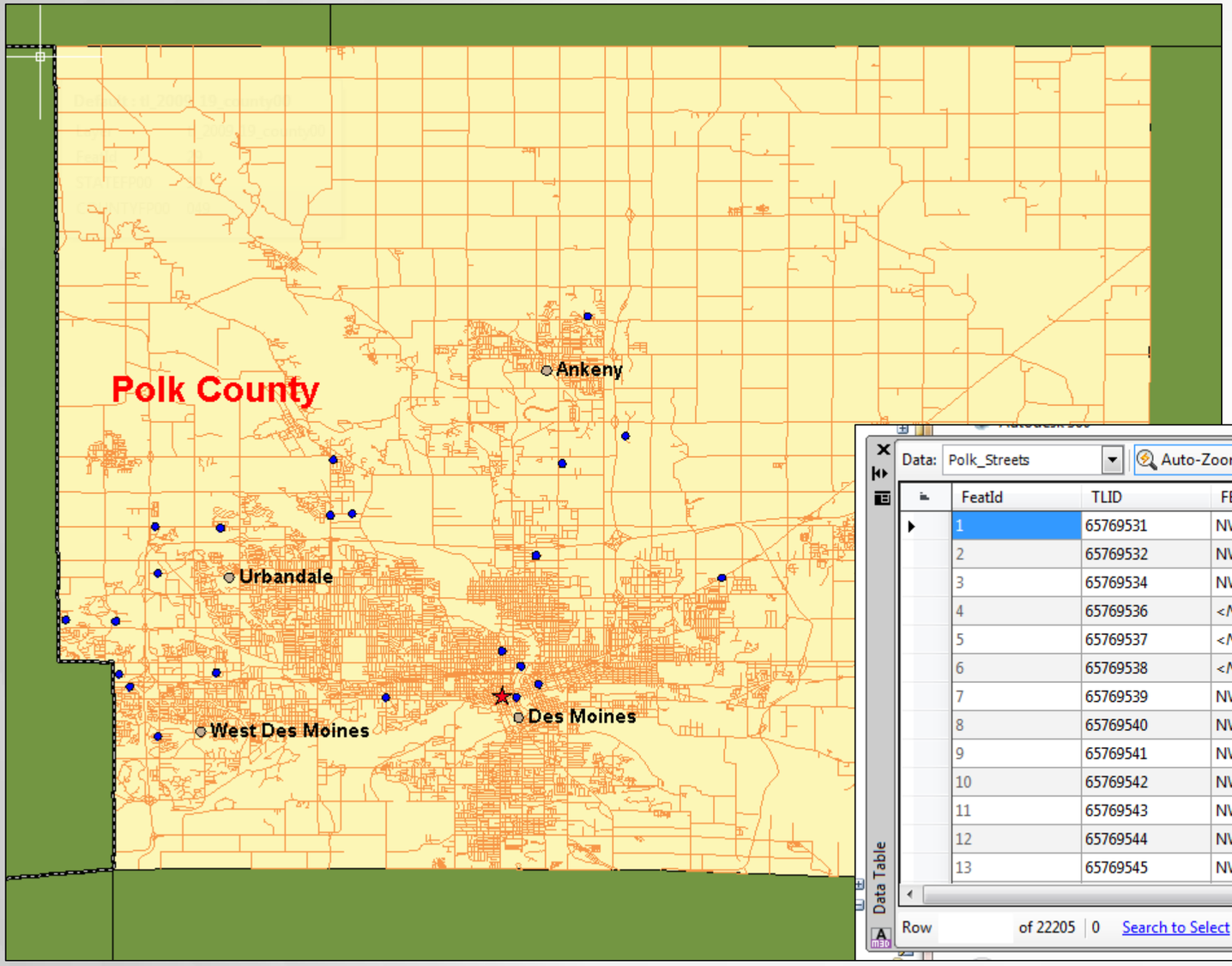
ve Tickets (22)

Auto-Scroll

	Sheet1|Company	Sheet1|Name	Sheet1|House Number	Sheet1|Extra	Sheet1|Address	Sheet1|City
	Dunham Associ...	Dan Kvall	50	Suite 1100	6th St S	Minneaplois
	MNDOT	John Rahkola	2055	<Null>	Lilac Dr N	Golden Valle
	AE2S	Steve Seibert	6901	Suite 184	E Fish Lake Rd	Maple Grove
	Civil Site Group	Matt Pavek	4931	Suite 200	W 35th St	St. Loius Par
	MFRA	Kirk Mohs	14800	Suite 140	28th Ave N	Plymouth
	H Z United LLC	Russell Depuydt	3025	Suite 121	Harbor Ln N	Plymouth
	EVS, Inc.	Virginia Winberg	10250	Suite 123	Valley View Rd	Eden Prairie
	Water in Motio...	Catherine John...	175	<Null>	James Ave N	Minneaplois
	Sathre-Bergqui...	Dave Pemberton	150	<Null>	Broadway Ave S	Wayzata



Manually:



Create/Modify Expressions

Property | Operator | Math Function | Text Function | Date Function | Locate on Map

LIKE | AND | OR | (...)

```
TLID  = 65810908  OR
TLID  = 65795626  OR
TLID  = 65800078  OR
TLID  = 65804586  OR
TLID  = 65790070  OR
TLID  = 65779054  OR
TLID  = 65783847  OR
TLID  = 65795588  OR
TLID  = 65776505  OR
TLID  = 65801839  OR
TLID  = 65775746  OR
TLID  = 65783884  OR
TLID  = 65808242
```

Data: Polk_Streets | Auto-Zoom | Auto-Scroll

FeatId	TLID	FEDIRP	FENAME	FETYPE	ZIPL	FRADDL	TOADDL
1	65769531	NW	166th	Ave	50156	12800	13094
2	65769532	NW	166th	Ave	50156	11400	11942
3	65769534	NW	166th	Ave	<Null>	<Null>	<Null>
4	65769536	<Null>	State Highway 17	<Null>	<Null>	<Null>	<Null>
5	65769537	<Null>	State Highway 17	<Null>	<Null>	<Null>	<Null>
6	65769538	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
7	65769539	NW	158th	Ave	50156	14098	14198
8	65769540	NW	128th	St	50156	15800	15916
9	65769541	NW	100th	St	50156	15800	16096
10	65769542	NW	158th	Ave	50156	12999	12801
11	65769543	NW	158th	Ave	50156	13000	13790
12	65769544	NW	114th	St	50156	15800	16598
13	65769545	NW	158th	Ave	50156	11399	10789

Data Table

Row of 22205 | 0 | Search to Select | Options

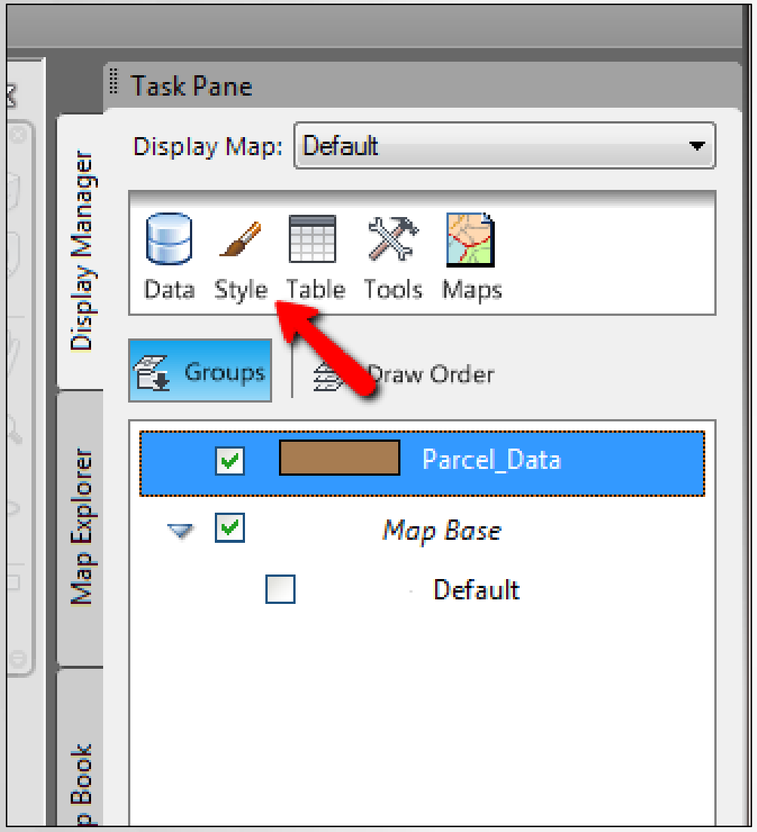
Started

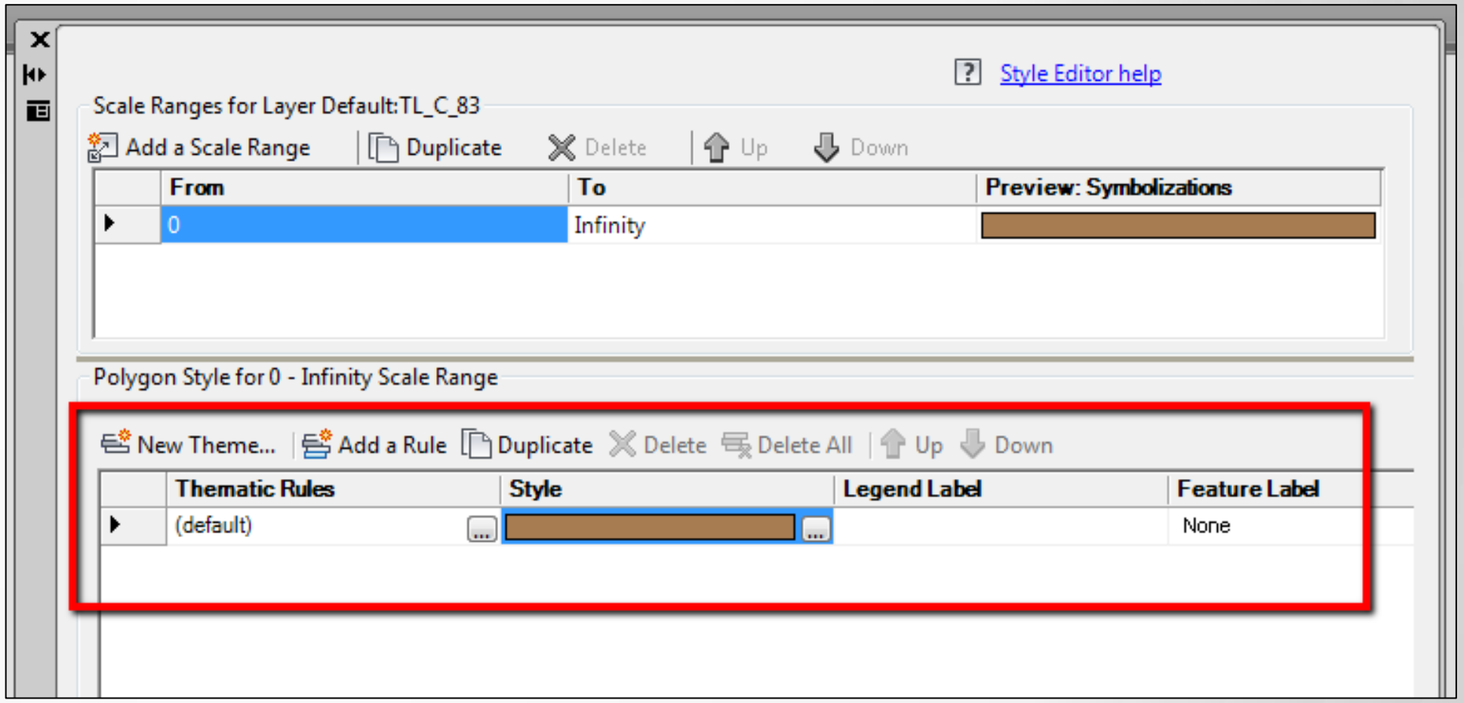
OK

Your Techniques?

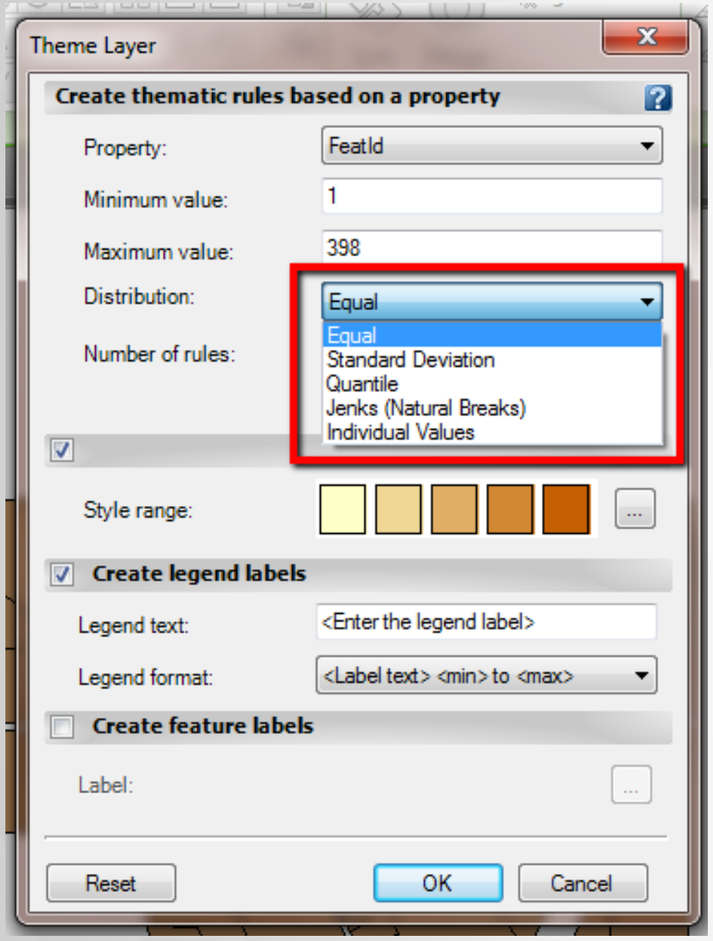
Thematic Themes

Thematic Themes





New Thematic Theme Setup:



Equal: The Difference between the max and the min values then divided by the number of rules. All ranges will be equal in size

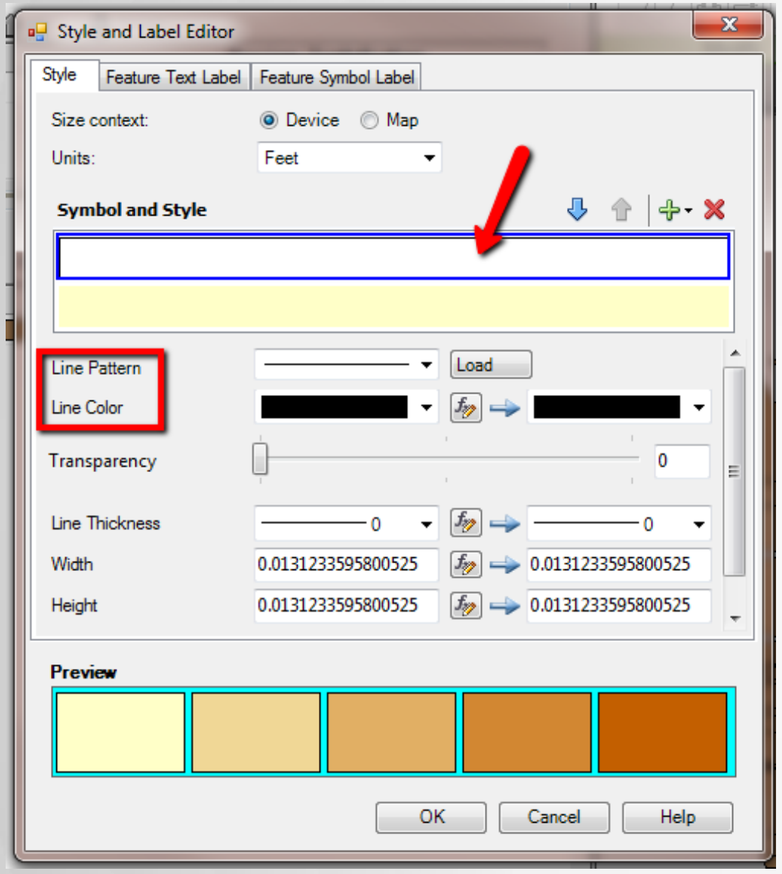
Standard Deviation: Based on how the values vary from the mean. The mean is calculated and then the standard deviation is added and subtracted from it.

Quantile: Each range will contain the same number of entities

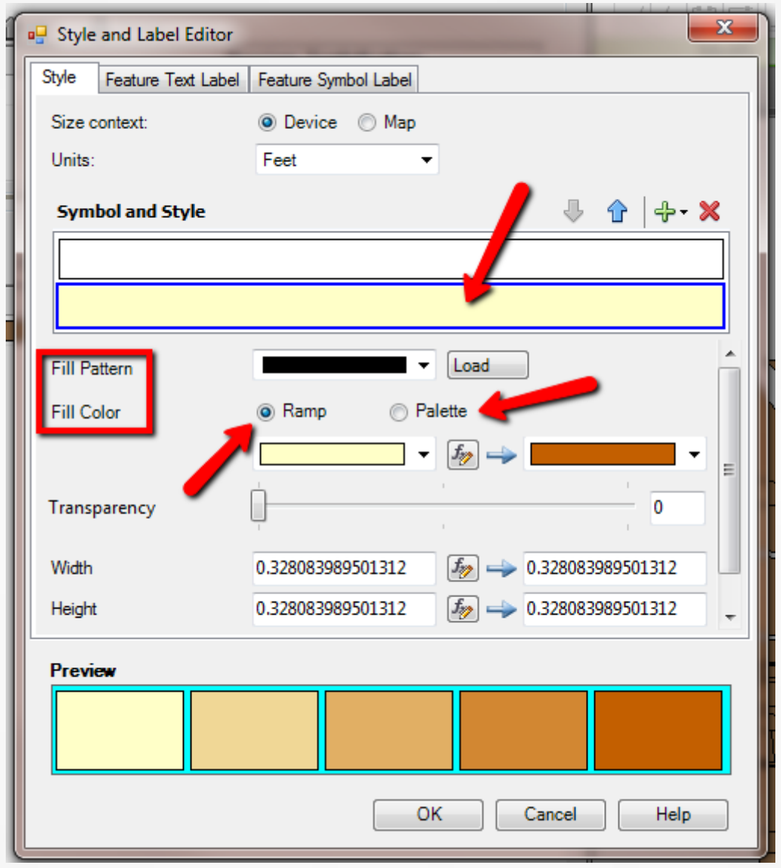
Jenks (Natural Breaks): Ranges are based on natural groupings

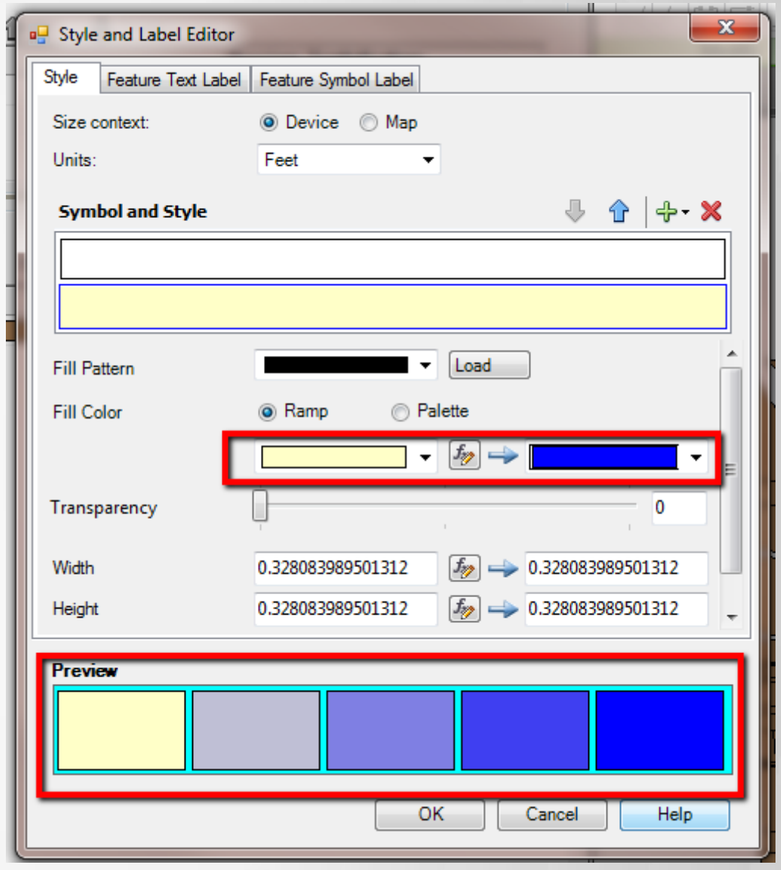
Individual Values: Features are not grouped.

Style Range:



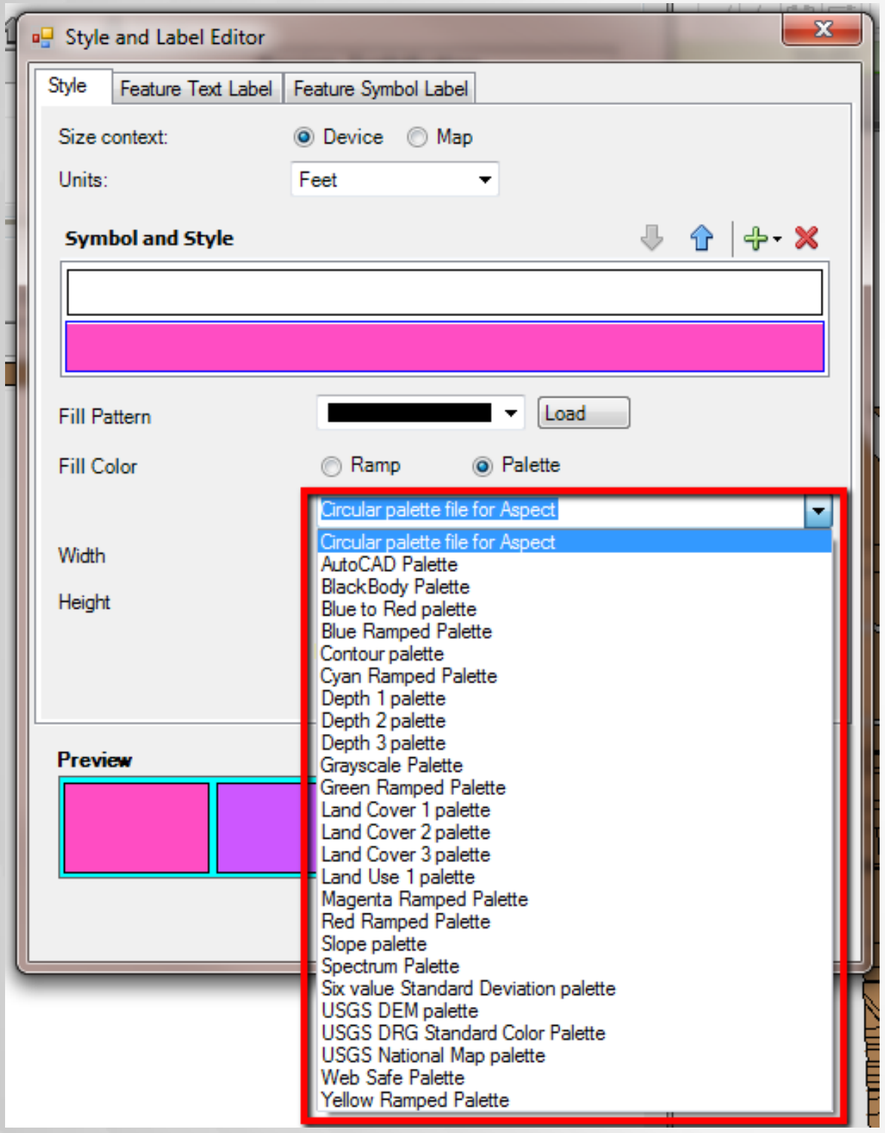
Line Pattern





Fill Pattern

Style Range: Fill Pattern Palettes



Circular Palette

AutoCAD Palette

Depth 2 Palette

Depth 3 Palette

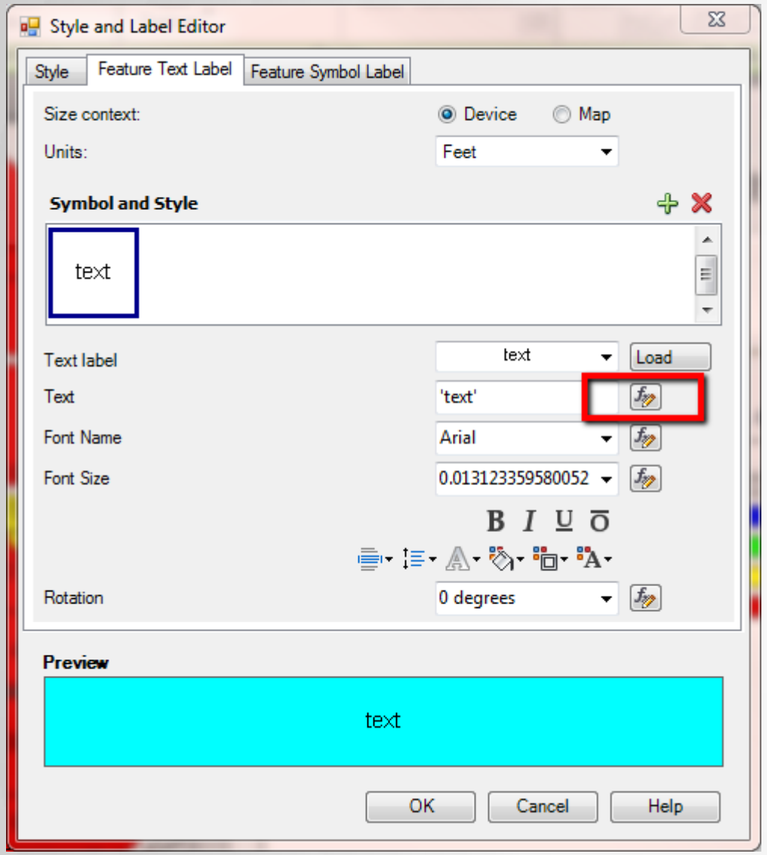
Slope Palette

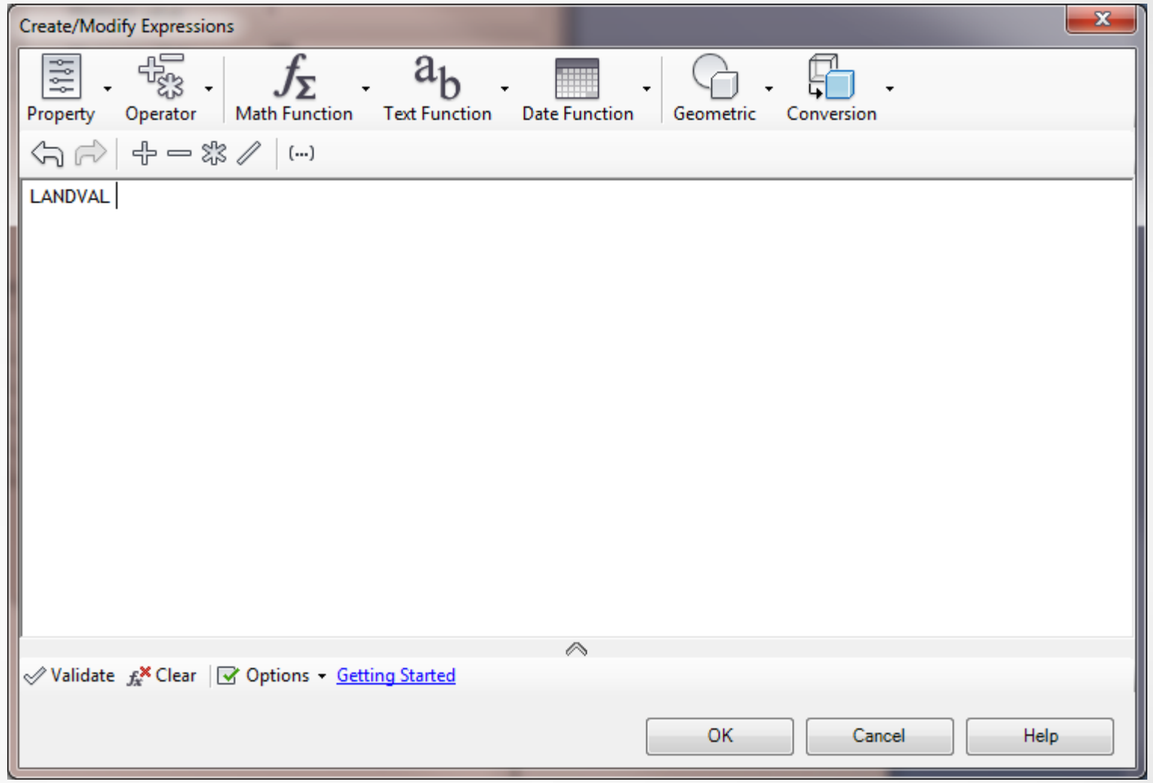
Six Value Std Dev

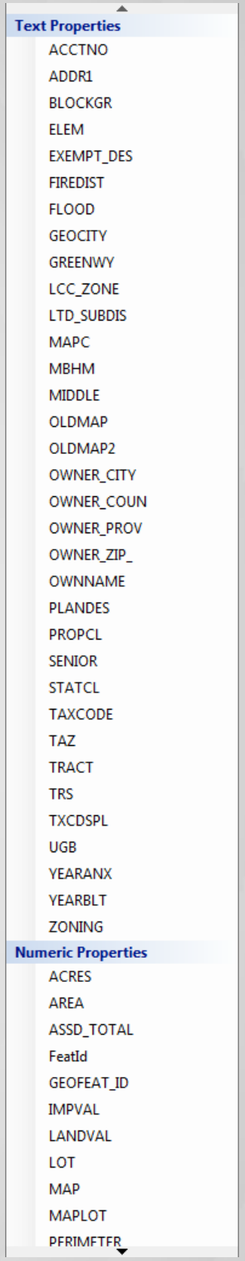
USGS DEM

USGS DRG

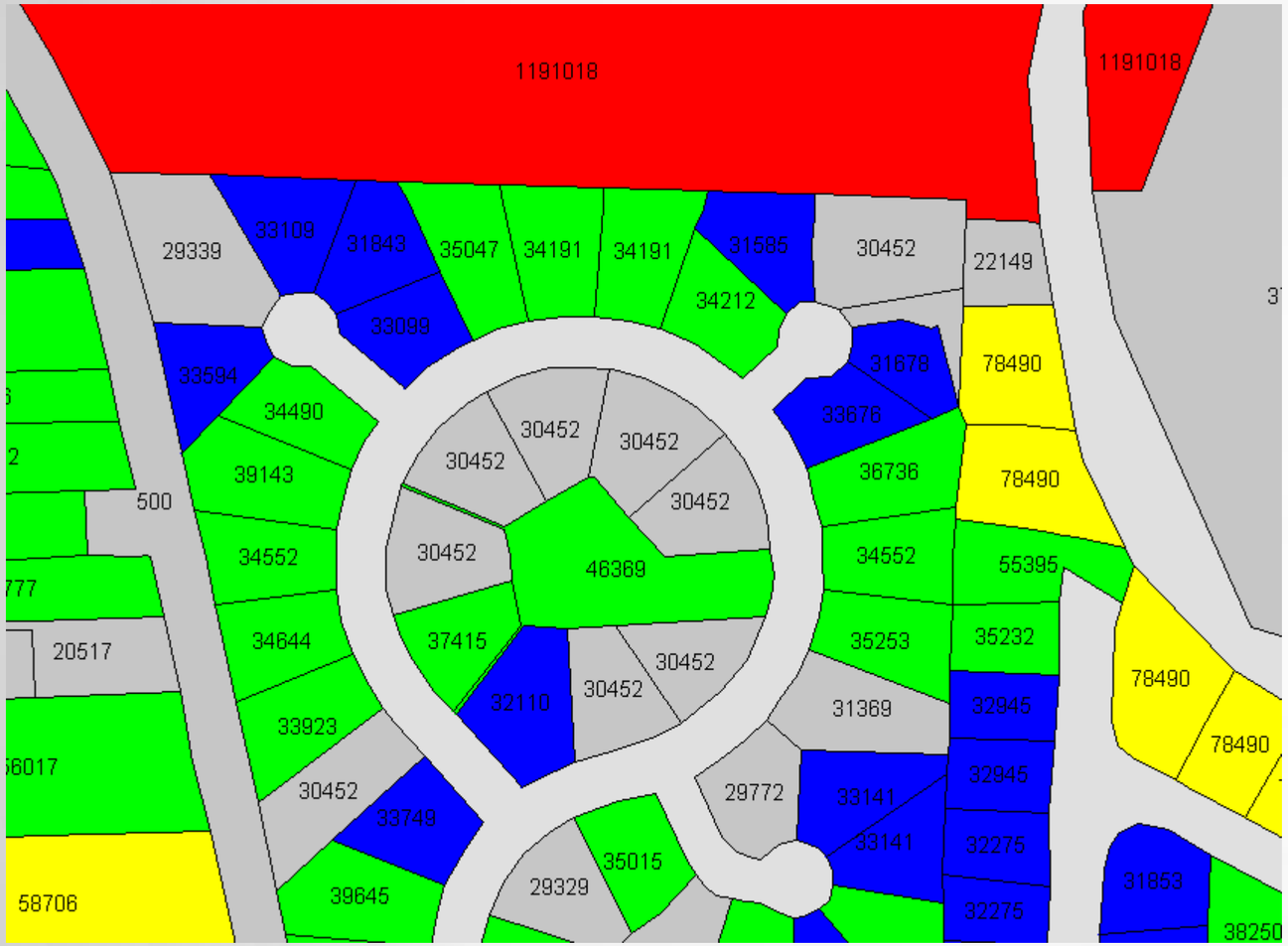
Displayed Text: Land Value

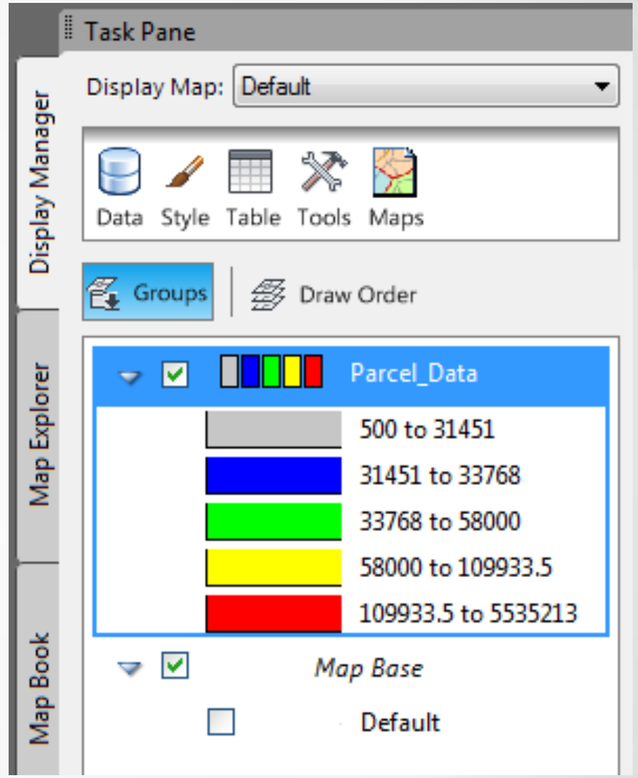




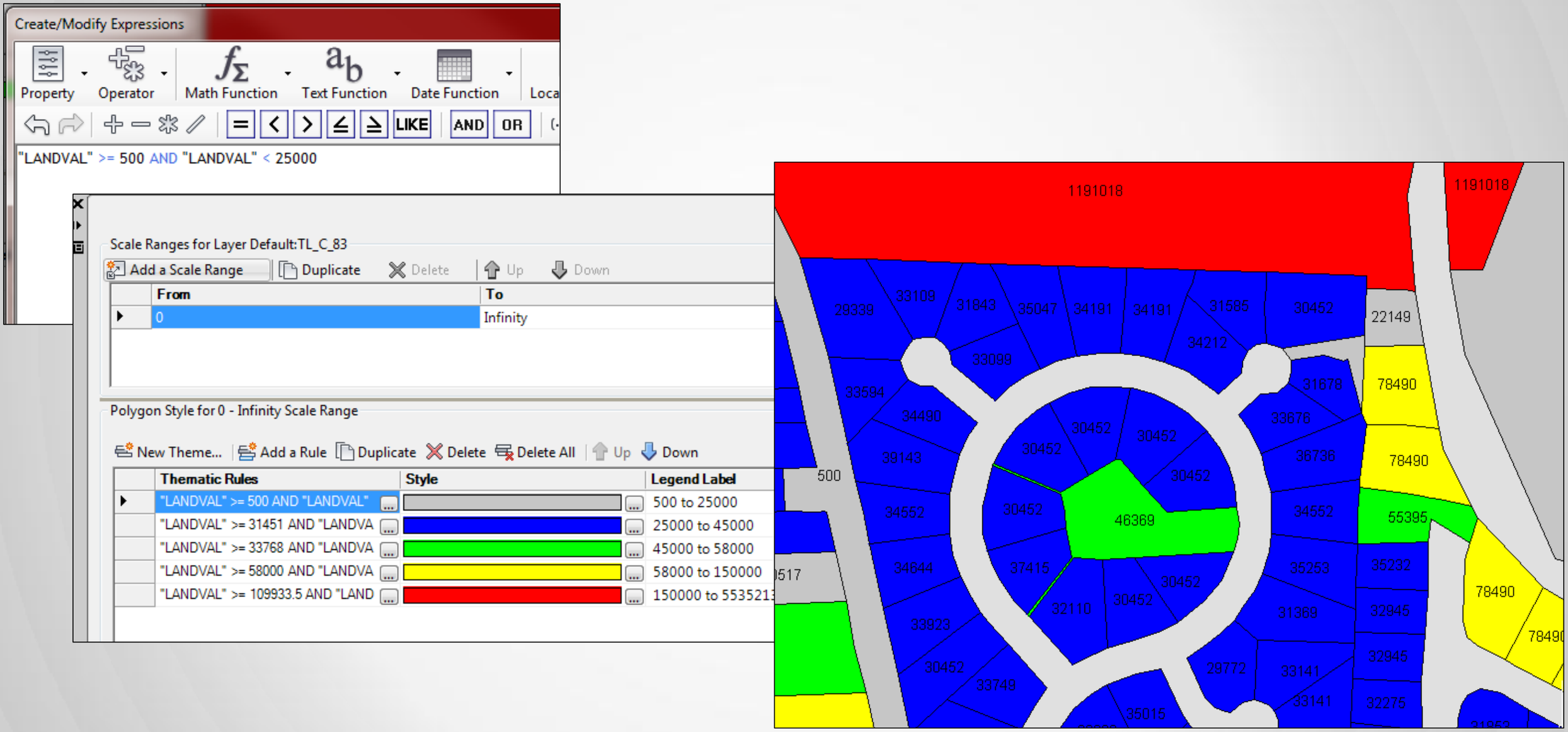


Results: “Quantile” with “Slope Palette”

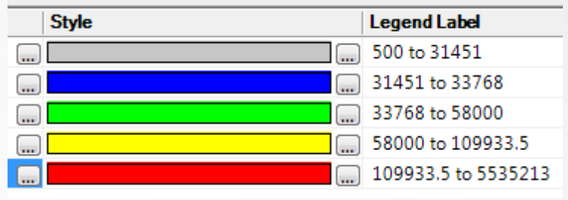


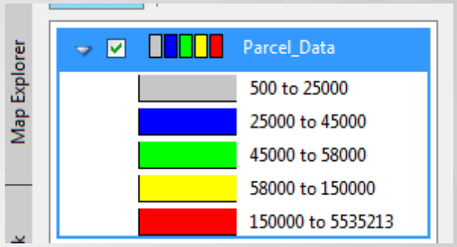


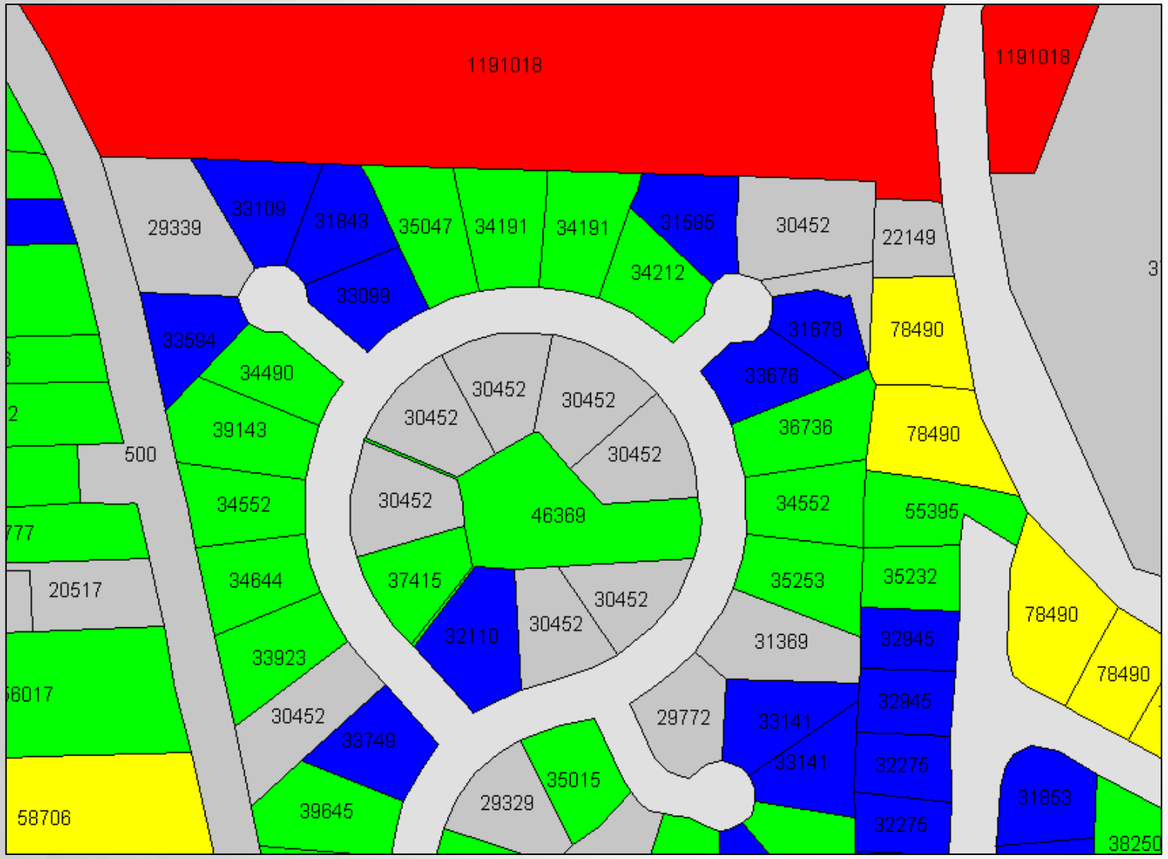
Manipulation: Manually Changing the Range

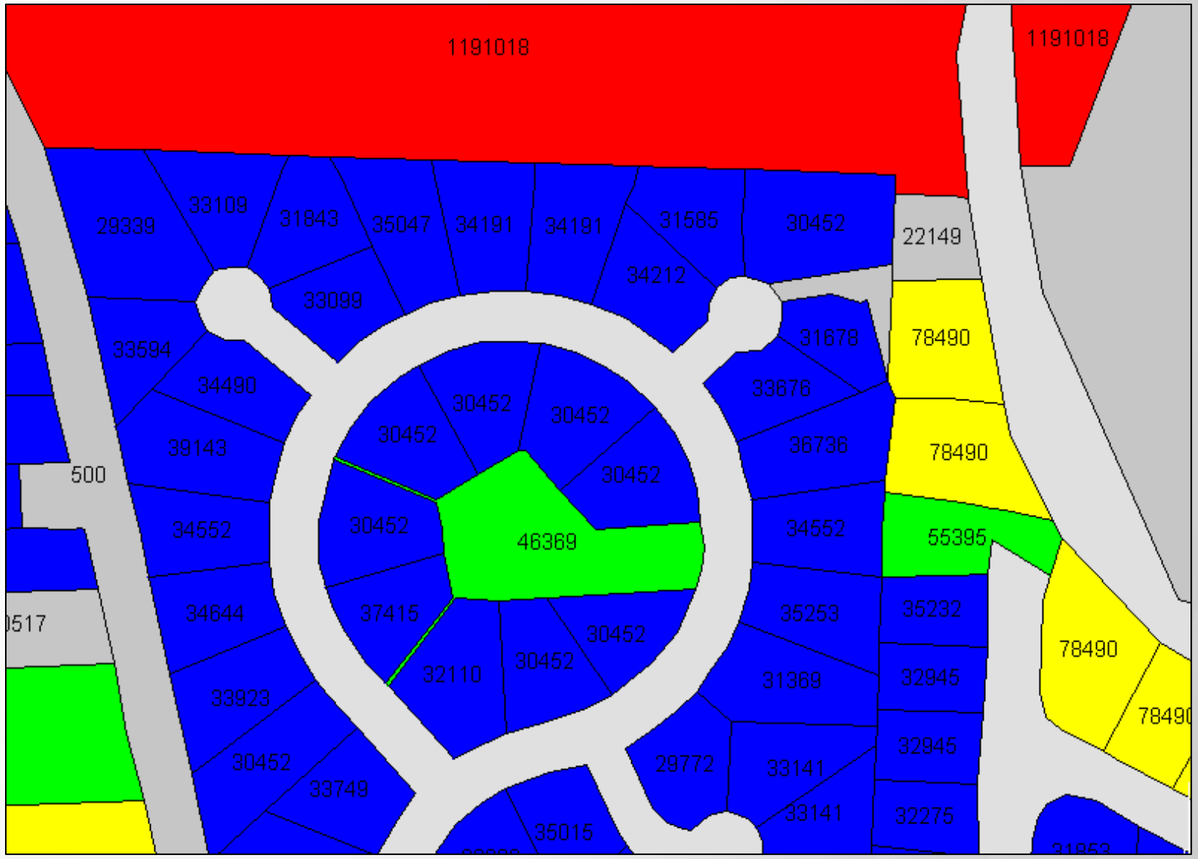


Manipulation: Appears to show more land values at the lower levels.

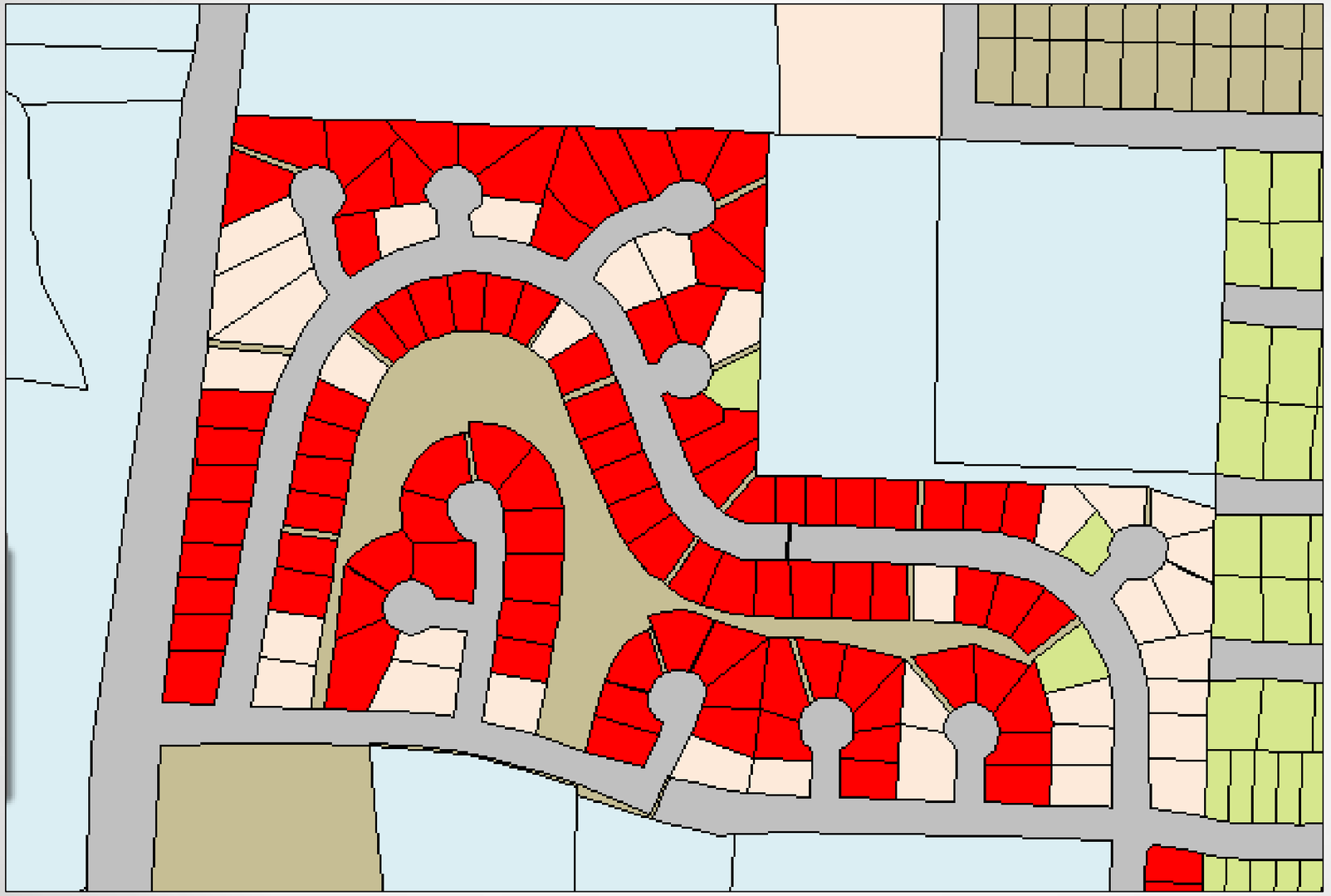








Manipulation: Colors; Vivid vs Dull



Your Techniques?

Class summary

- Sorting through the amount of data that you download can be tedious. Using Query Filters can reduce the amount of data displayed in the table to just the task at hand. Then applying Thematic Rules will group like attributes together and display them as such.

- To follow a golden rule of cartography: It is not what you put on a map that makes it useful. It's what you leave off. So come learn how to create a map that tells the story that you want told.

Don’t Forget to fill out your Survey

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Scott Mizsak

Application Engineer

scottm@cadtechnologycenter.com