How do librarians learn and improve their knowledge? A GIS Librarian's Perspective

Marcel Fortin
GIS and Map Librarian
University of Toronto Libraries
Data, Map, and GIS Centre
Robarts Library
www.library.utoronto.ca/maplib/

March 13, 2009

A GIS Librarian is part:

- Reference Librarian
- Archivist (at least in Canada)
- Systems Librarian (own IT support)
- Metadata Librarian
- GIS Analyst / Cartographer
- ***MacGyver*** ***** **(custom reference/collection development)**

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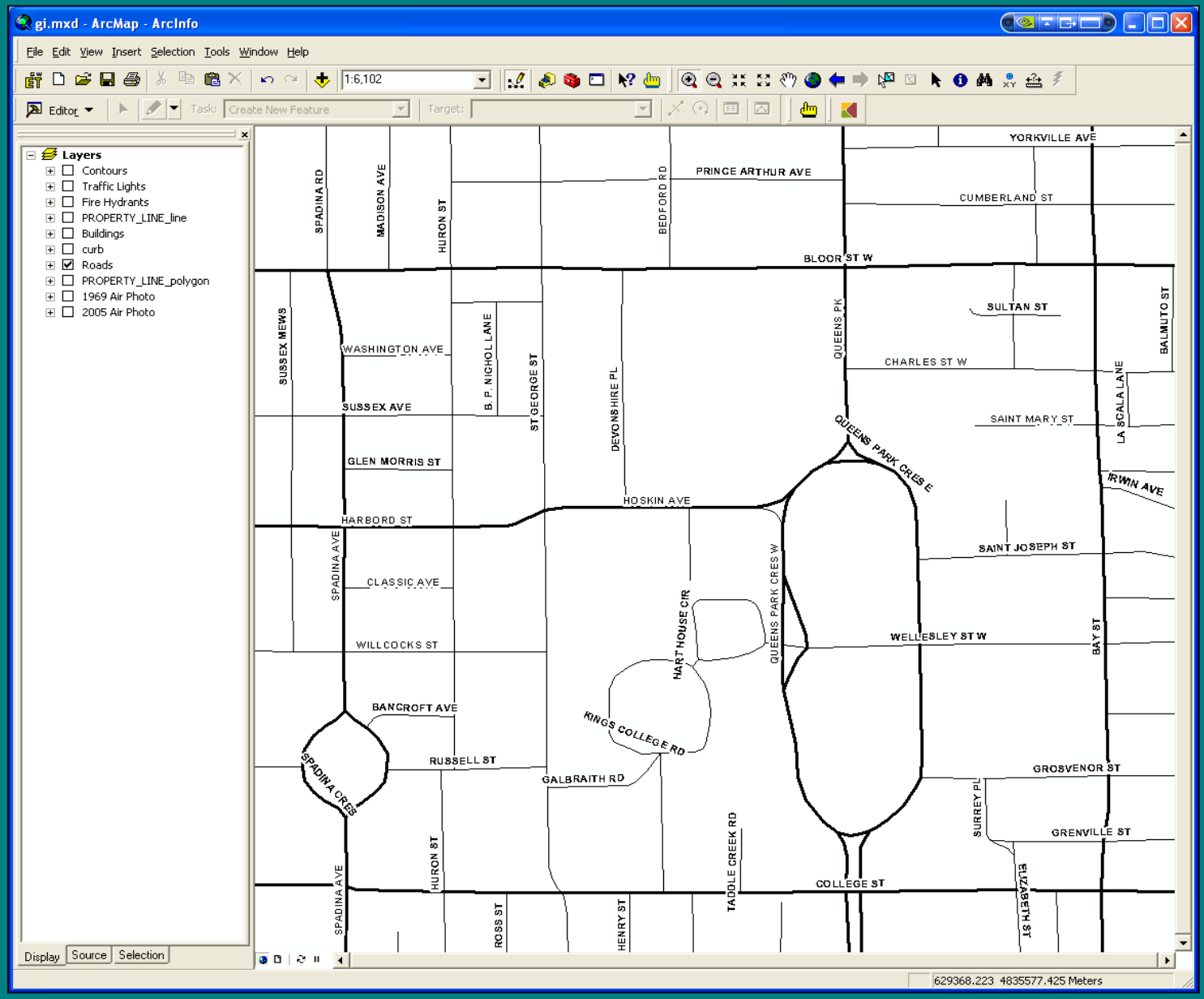
*(n.) Someone who can regularly cobble together solutions to problems using only the tools available at hand. Definition from urbandictionary.com

What is GIS?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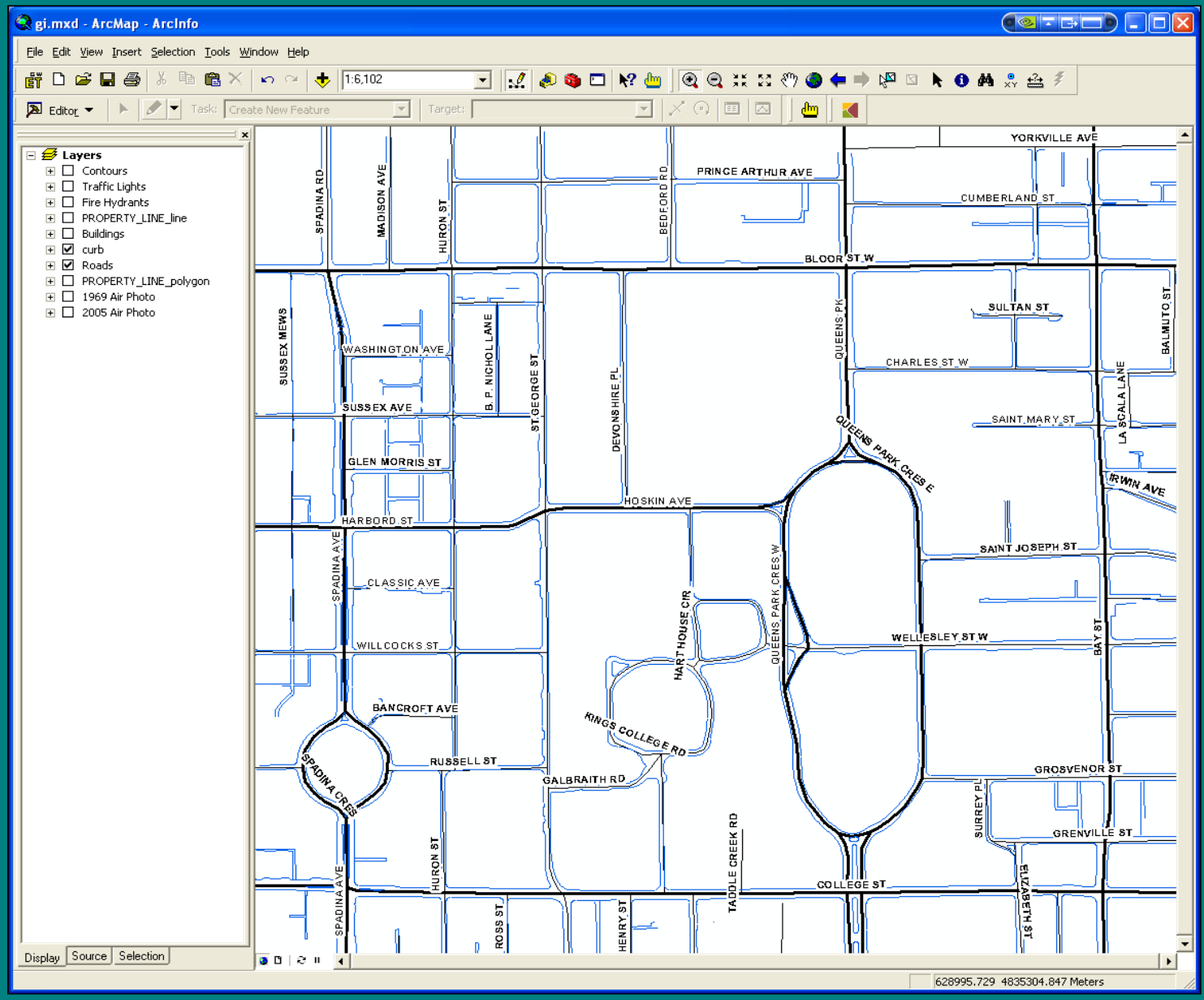
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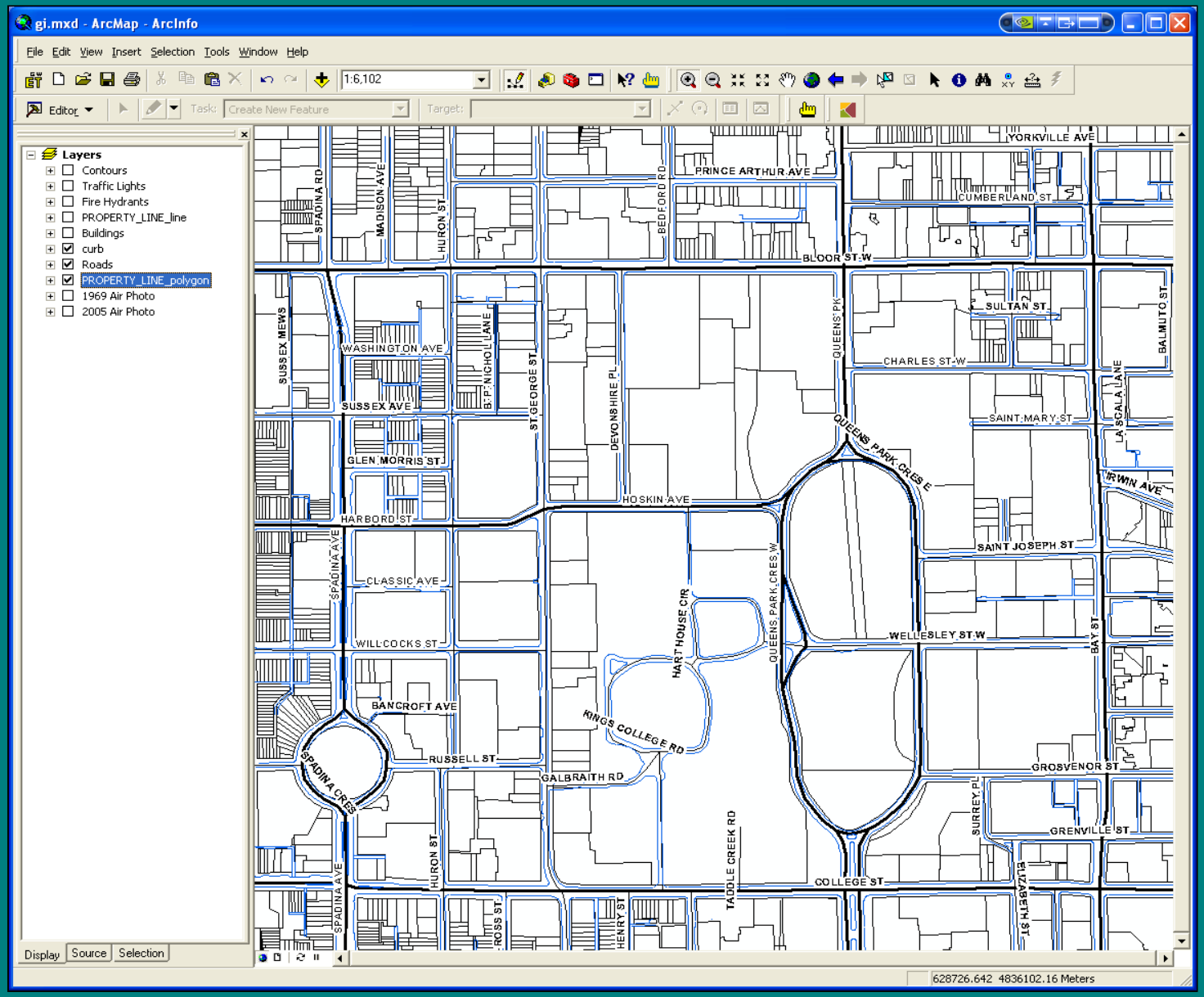
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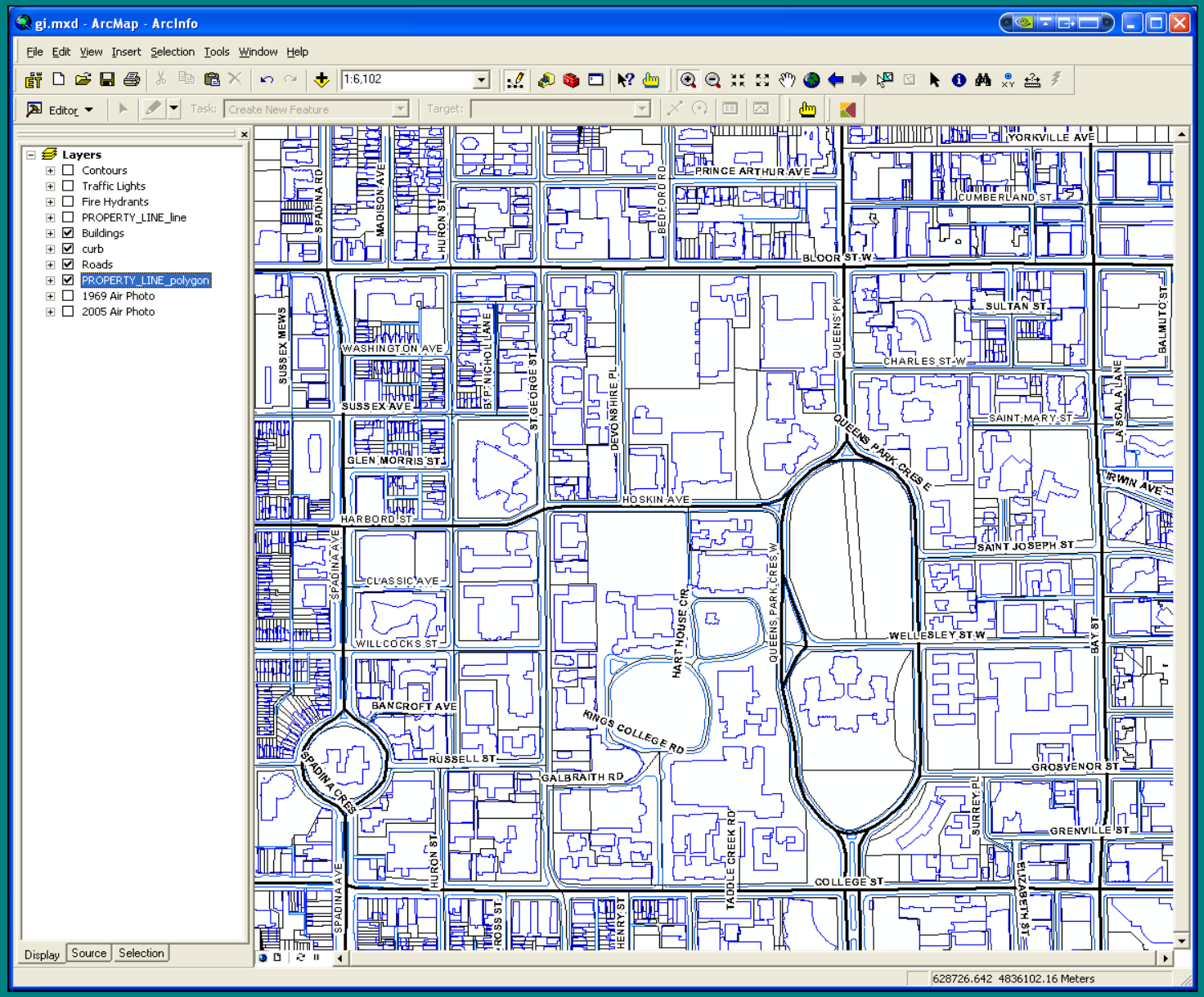
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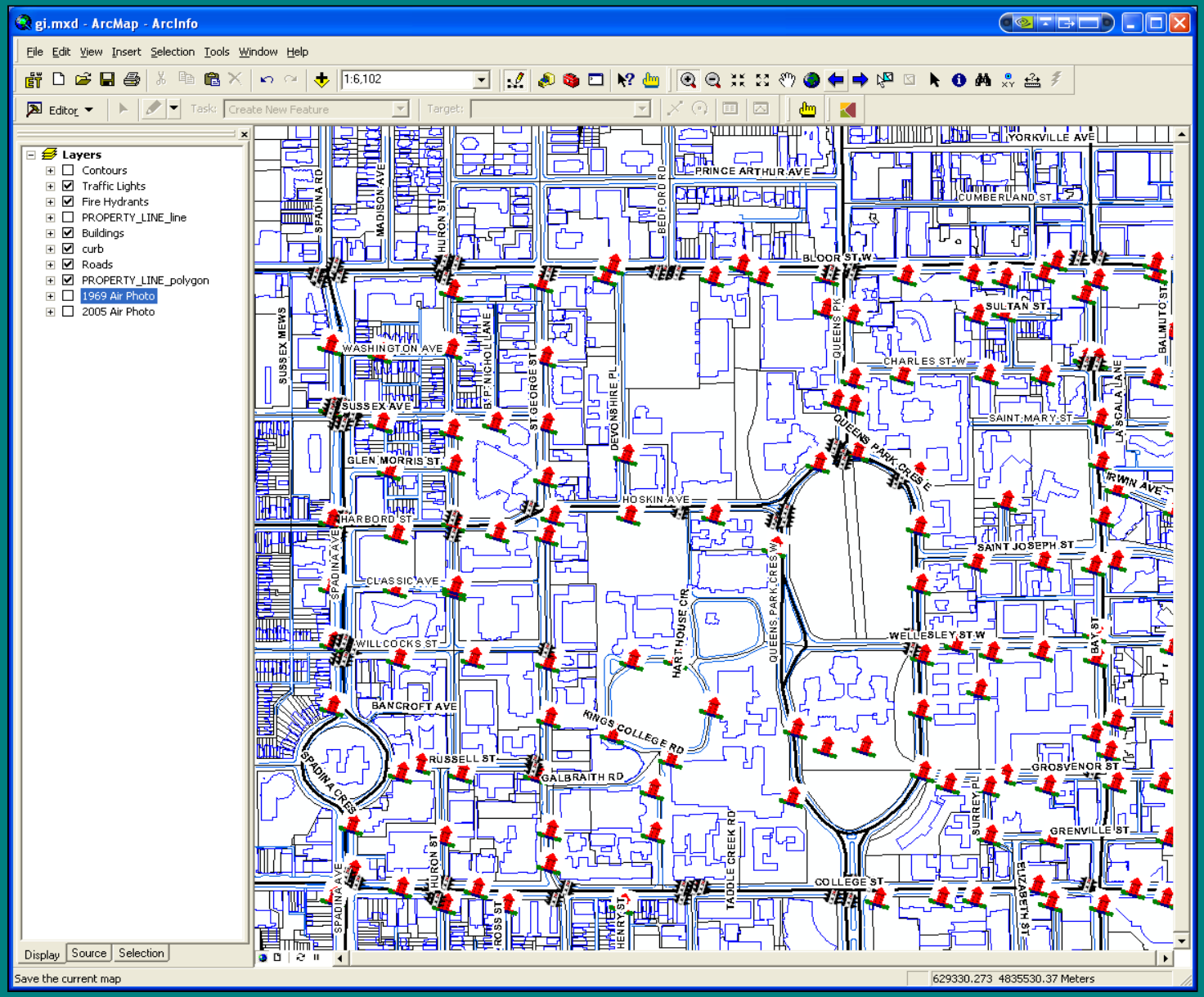
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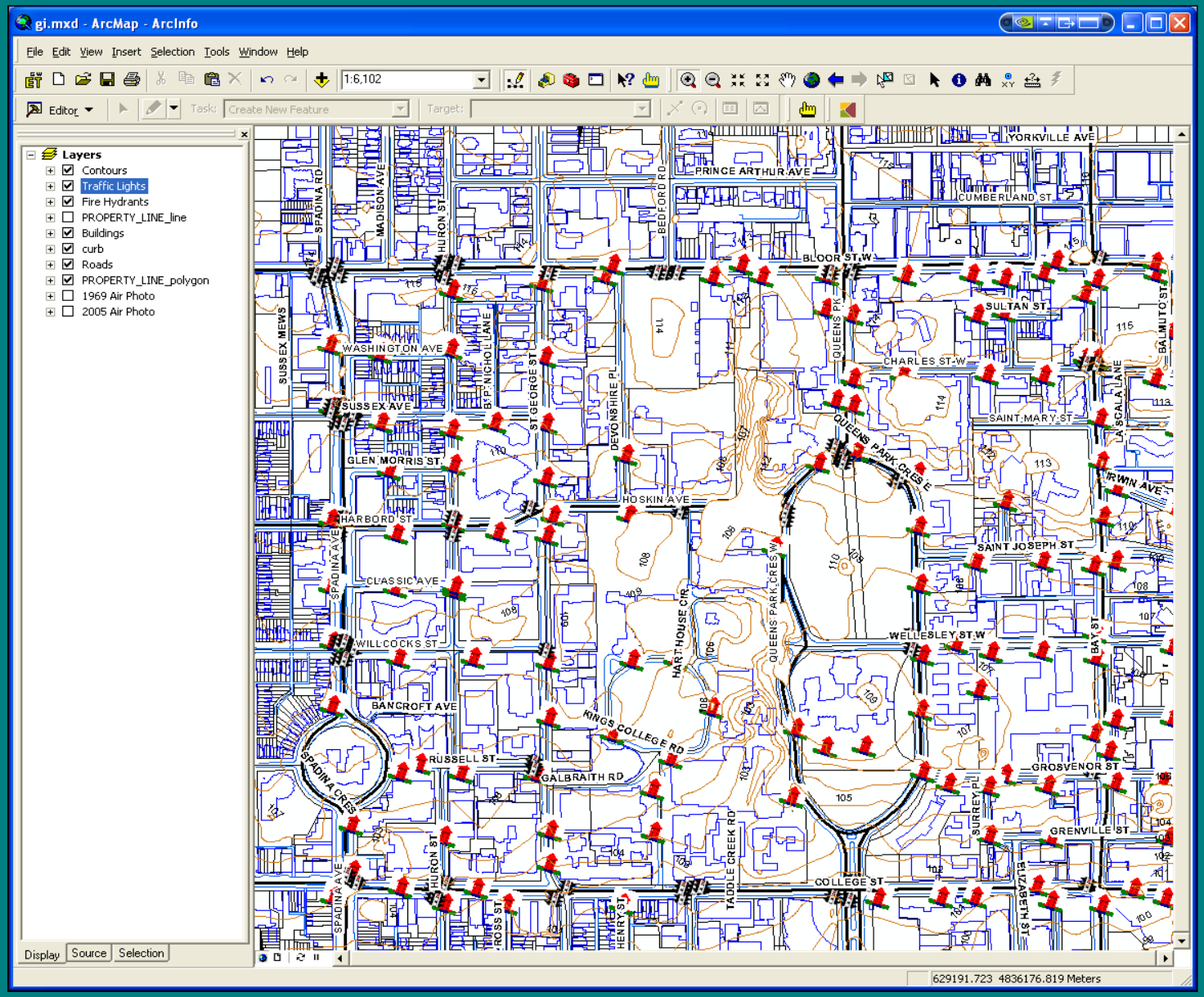
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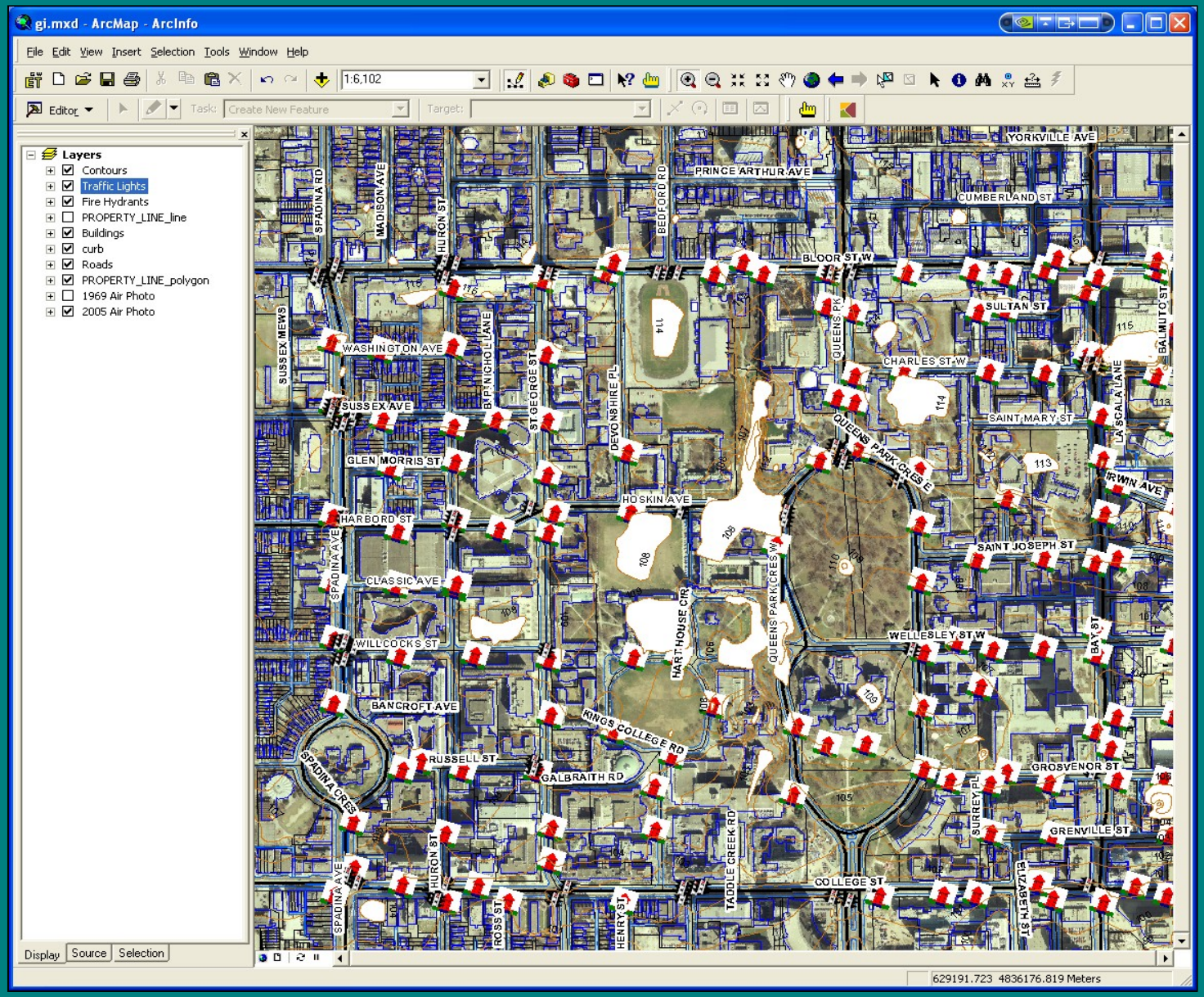
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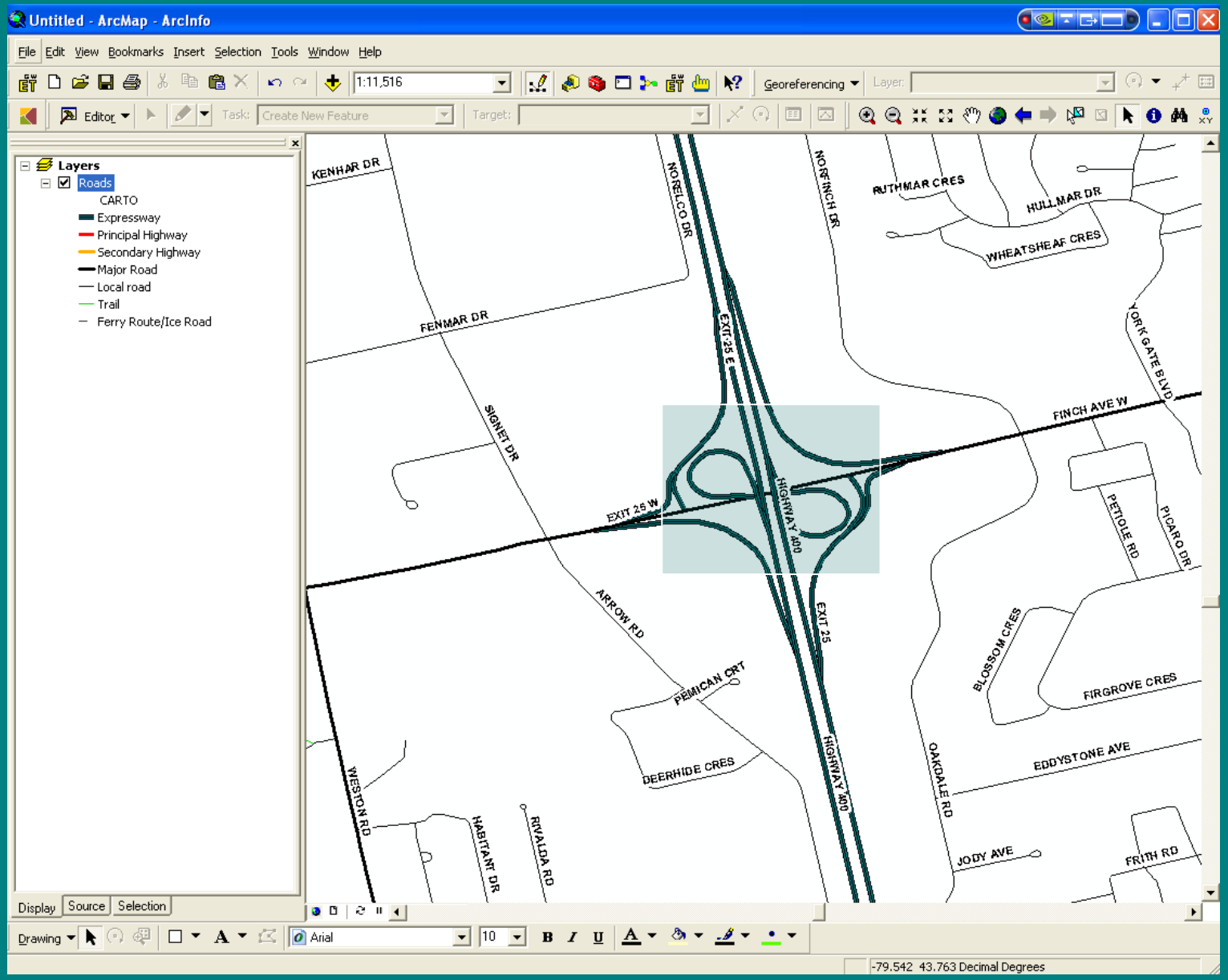
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PETIOLE RD
PICARO DR
ARROW RD
EXIT 25
BLOSSOM CRES
FIRGROVE CRES
PEMICAN CRT
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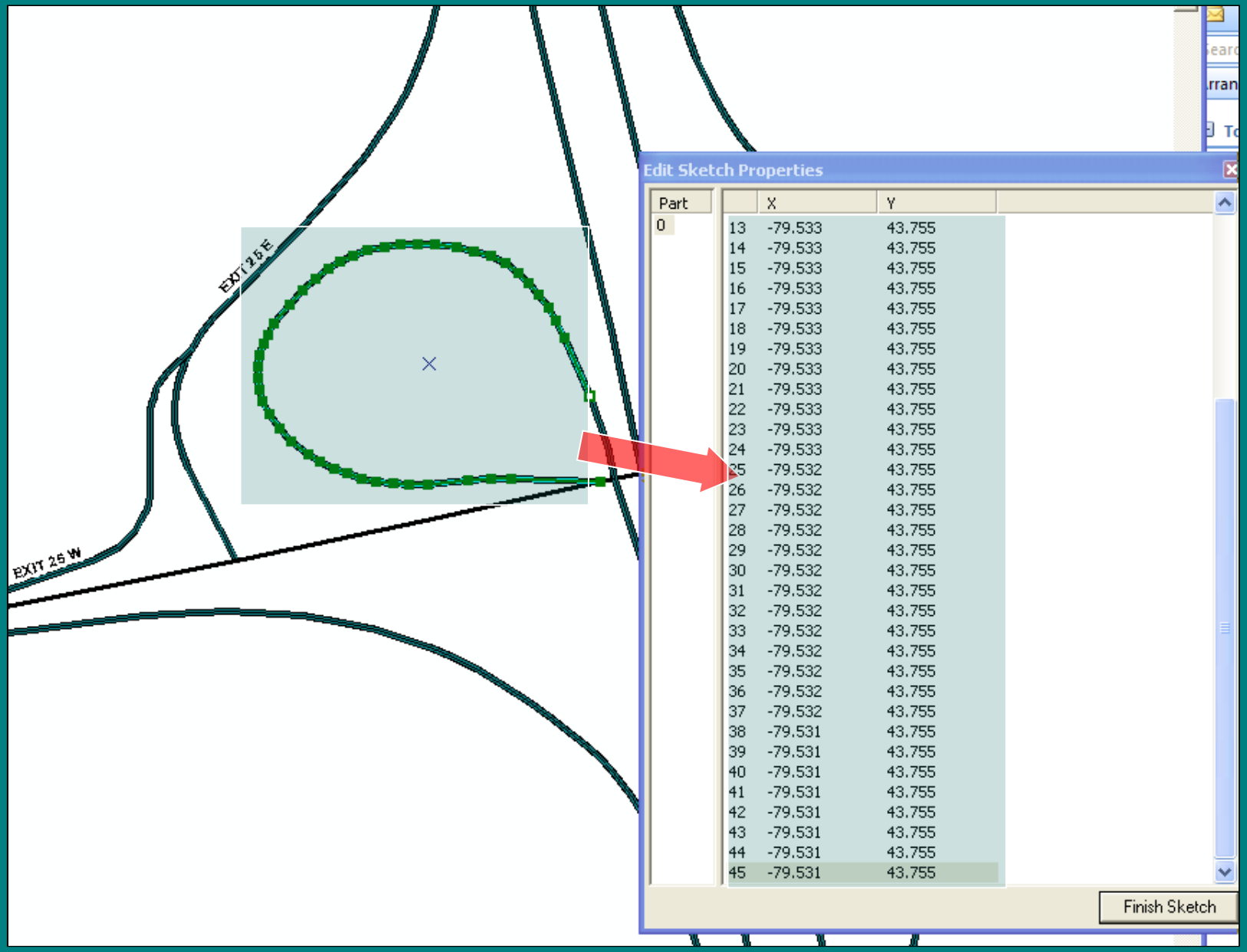
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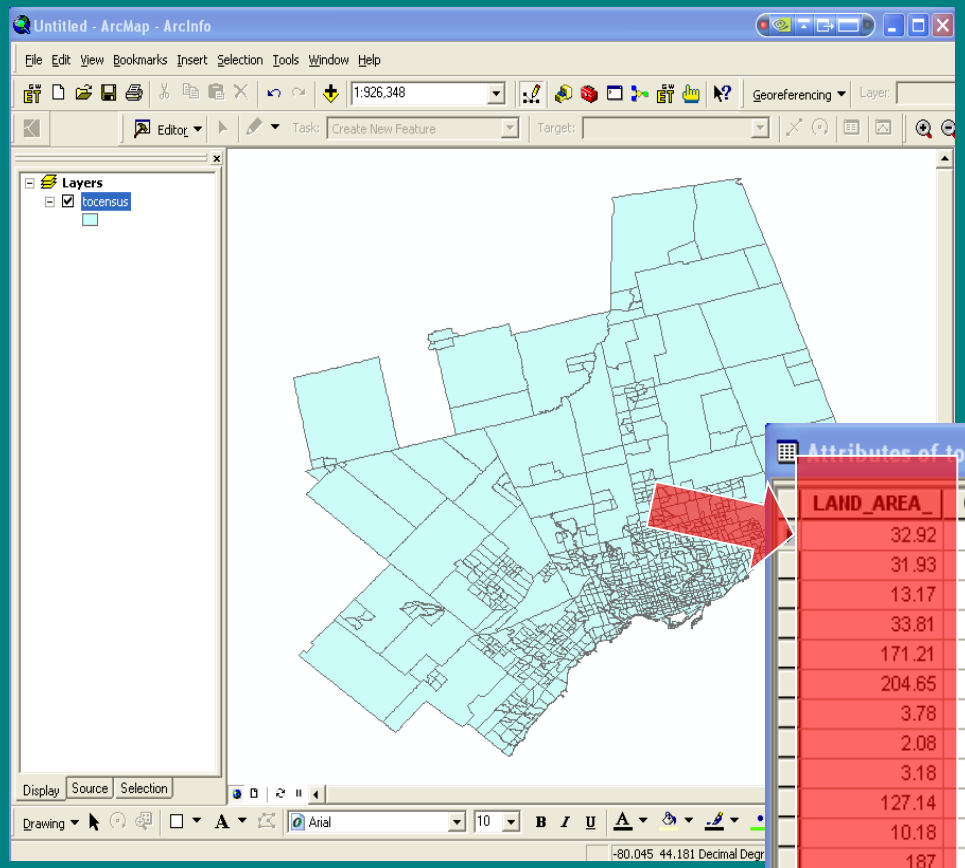
Finish Sketch

Population Density (Pop / Area)



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31.93	642	0474.00	4120	3860	0	240	15
13.17	643	0475.00	6150	5840	0	275	25
33.81	636	0470.00	2765	2585	0	175	0
171.21	637	0471.00	3525	3325	0	190	10
204.65	923	0832.00	4035	3820	0	220	0
3.78	639	0473.01	5035	4720	0	310	10
2.08	641	0473.03	3880	3625	0	260	0
3.18	640	0473.02	6685	6240	0	430	15
127.14	628	0455.00	5835	5525	0	275	30
10.18	638	0472.00	4495	4320	0	170	0
187	648	0482.00	5145	4810	0	300	30
61.86	629	0456.01	4730	4435	0	290	10
37.8	631	0456.03	4410	4210	0	195	0
183.83	650	0484.00	8560	8055	0	500	10
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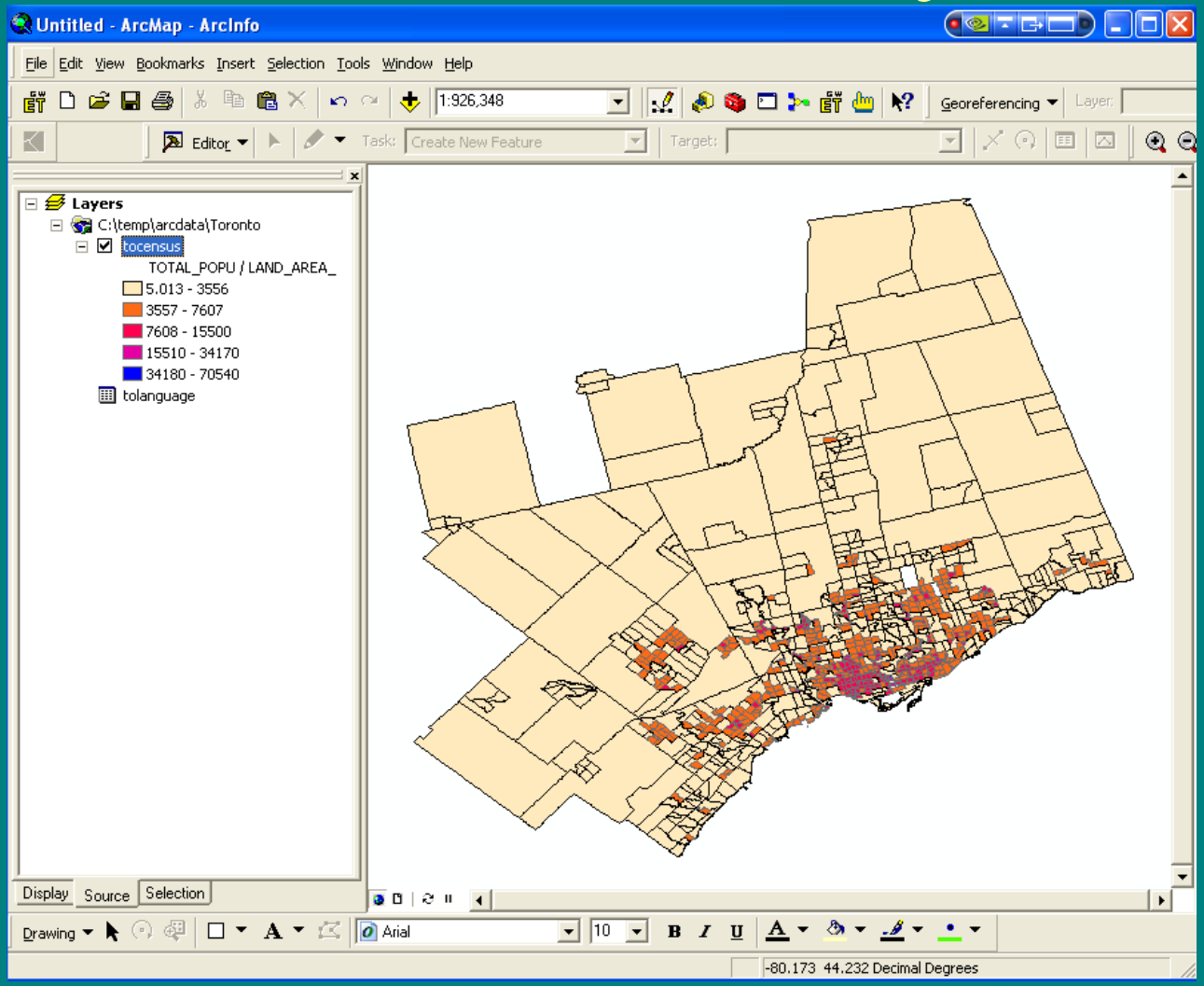
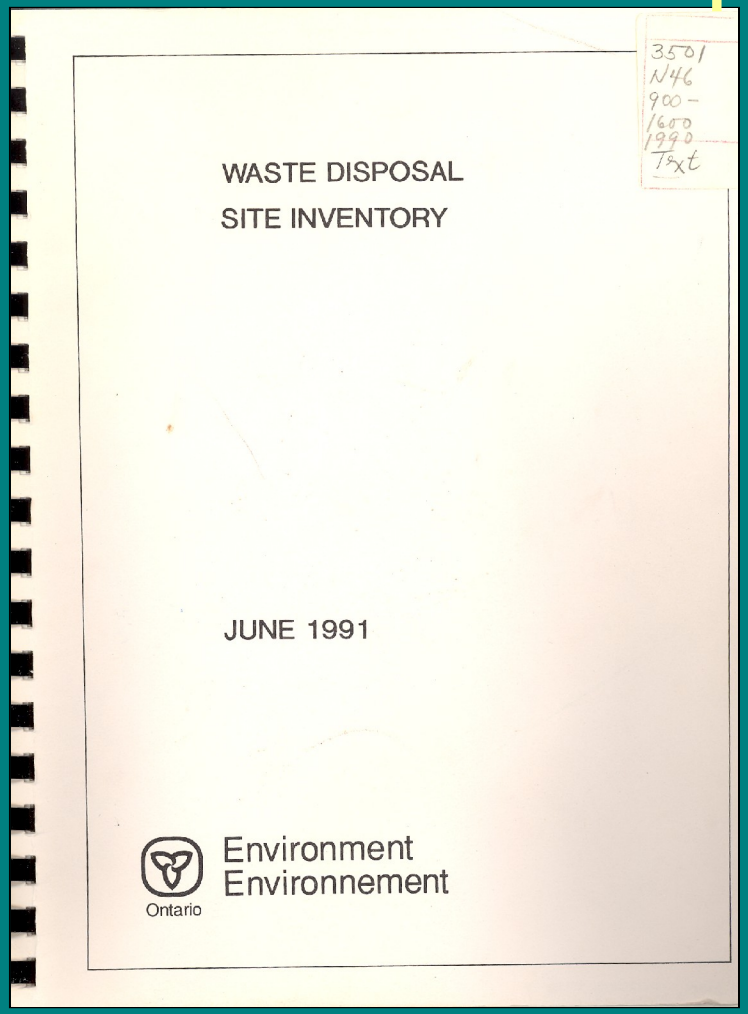
GIS is about Analysis



Population Density of Greater Toronto Area, Census Tract Level, 2006 Census of Canada

Custom Reference / Collection Development (MacGyver)



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4	A 510409	MUSKOKA	HUNTSVILLE	PT 12 W1/2	4	31E06	17	638050	5022700	0	0	0	0	0	0	0	3
5	A 510410	MUSKOKA	HUNTSVILLE	8-10	7	31E06	17	623200	5020000	45	15	4	0	0	36	0	1
6	A 510501	MUSKOKA	GEORGIAN BAY	PT 27	6	31D13	17	600500	4965850	45	45	10	0	0	0	0	1
7	A 510505	MUSKOKA	GEORGIAN BAY	PT 11	4	31E04	17	594740	4994800	45	45	10	0	0	0	0	1
8	A 510506	MUSKOKA	GEORGIAN BAY	PT 40-41	13	31E04	17	584900	4984850	97	0	3	0	0	0	0	1
9	A 510507	MUSKOKA	GEORGIAN BAY	PT 7-8	1-FREEM	31E04	17	597250	4991600	0	0	0	0	0	0	0	3
10	A 510601	MUSKOKA	LAKE OF BAYS	PT 4	5	31E06	17	654875	5031075	0	0	100	0	0	0	0	1
11	A 510602	MUSKOKA	LAKE OF BAYS	PT 17	9	31E03	17	647250	5002500	92	5	3	0	0	0	0	1
12	A 510603	MUSKOKA	LAKE OF BAYS	PT 9	7	31E07	17	660350	5036075	92	5	3	0	0	0	0	1
13	A 510605	MUSKOKA	LAKE OF BAYS	PT 1	10	31E02	17	664775	5009625	92	5	3	0	0	0	0	1
14	A 510610	MUSKOKA	LAKE OF BAYS	PT 4	8	31E07	17	659350	5020575	92	5	3	0	0	0	0	1
15	A 510735	MUSKOKA	MUSKOKA LAKES	21-23	1	31E04	17	609700	4993000	0	0	100	0	0	0	0	1
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2	A 310403	NORTHUMBER	PORT HOPE	PT 85-86	STEWART	30M16	17	716200	4870600	80	20	0	0	0	0	0	1
3	A 311104	NORTHUMBER	BRIGHTON	PT 31-32	2	31C04	18	280780	4886050	80	15	5	0	0	0	0	1
4	A 311502	NORTHUMBER	CRAMAHE	PT 30	1	30N13	18	269125	4875125	0	0	0	0	0	100	0	1
5	A 311503	NORTHUMBER	CRAMAHE	PT 31 S1/2	4	31C04	18	267450	4880225	75	15	5	0	0	5	0	1
6	A 311702	NORTHUMBER	HALDIMAND	PT 31-33	1	30M16	17	734400	4875260	45	5	10	0	0	40	1	1
7	A 311706	NORTHUMBER	HALDIMAND	PT 24 N1/2	1	31D01	17	737830	4875965	80	15	5	0	0	0	0	1
8	A 311801	NORTHUMBER	HAMILTON	PT 7-8	2	31D01	17	729850	4876500	0	0	0	0	0	0	0	3
9	A 311802	NORTHUMBER	HAMILTON	PT 28	8	31D01	17	715095	4884050	80	10	10	0	0	0	0	1
10	A 311903	NORTHUMBER	HOPE	PT 9	2	31D01	17	715050	4871810	0	0	100	0	0	0	0	1
11	A 311909	NORTHUMBER	HOPE	29	1	30M16	17	708029	4866041	0	0	0	0	0	100	0	1
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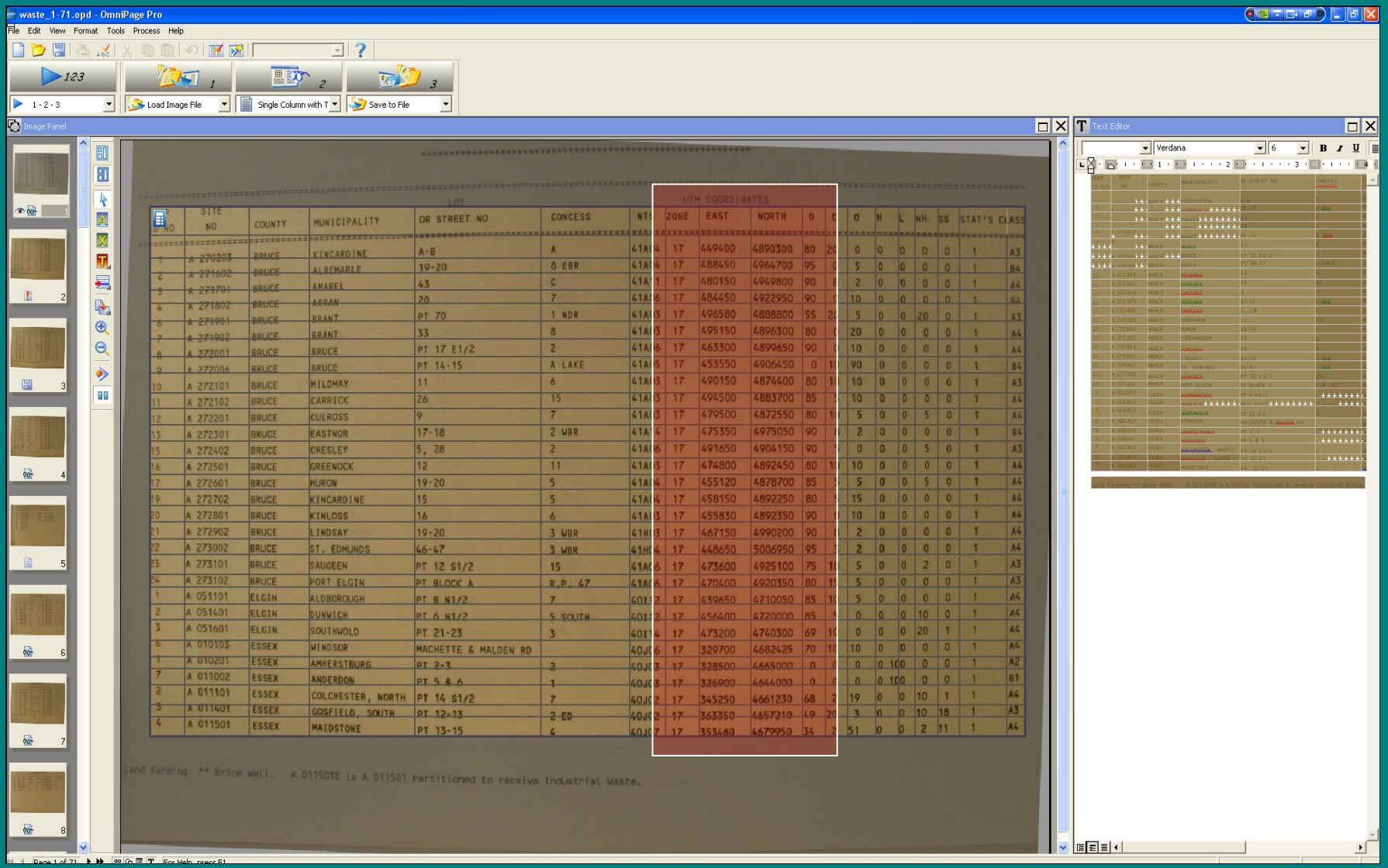
Optical Character Recognition



Convert to Database

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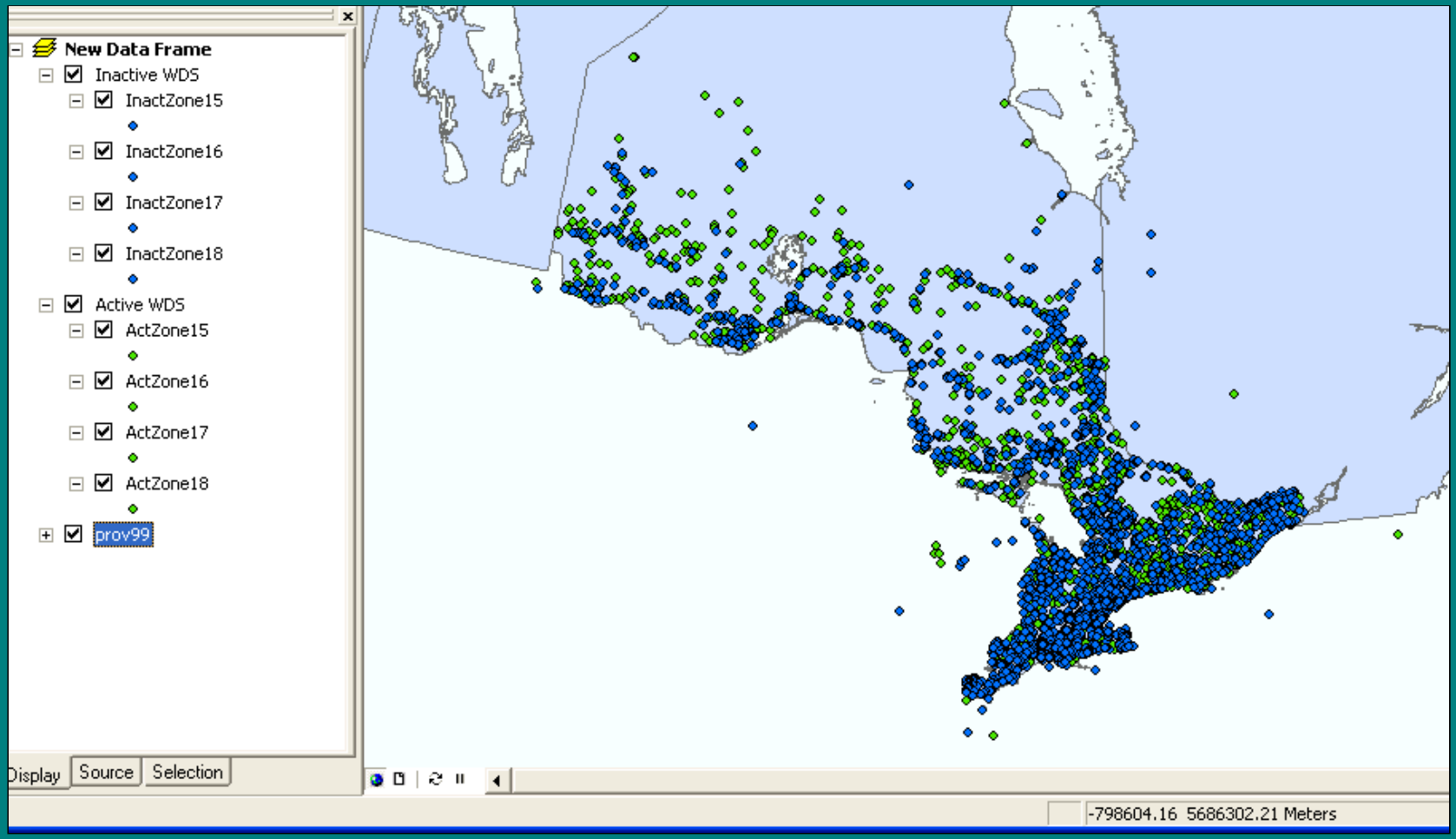
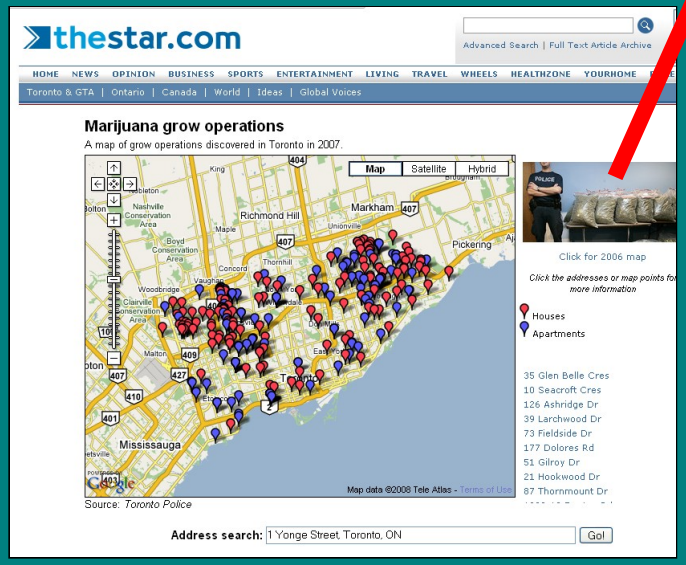
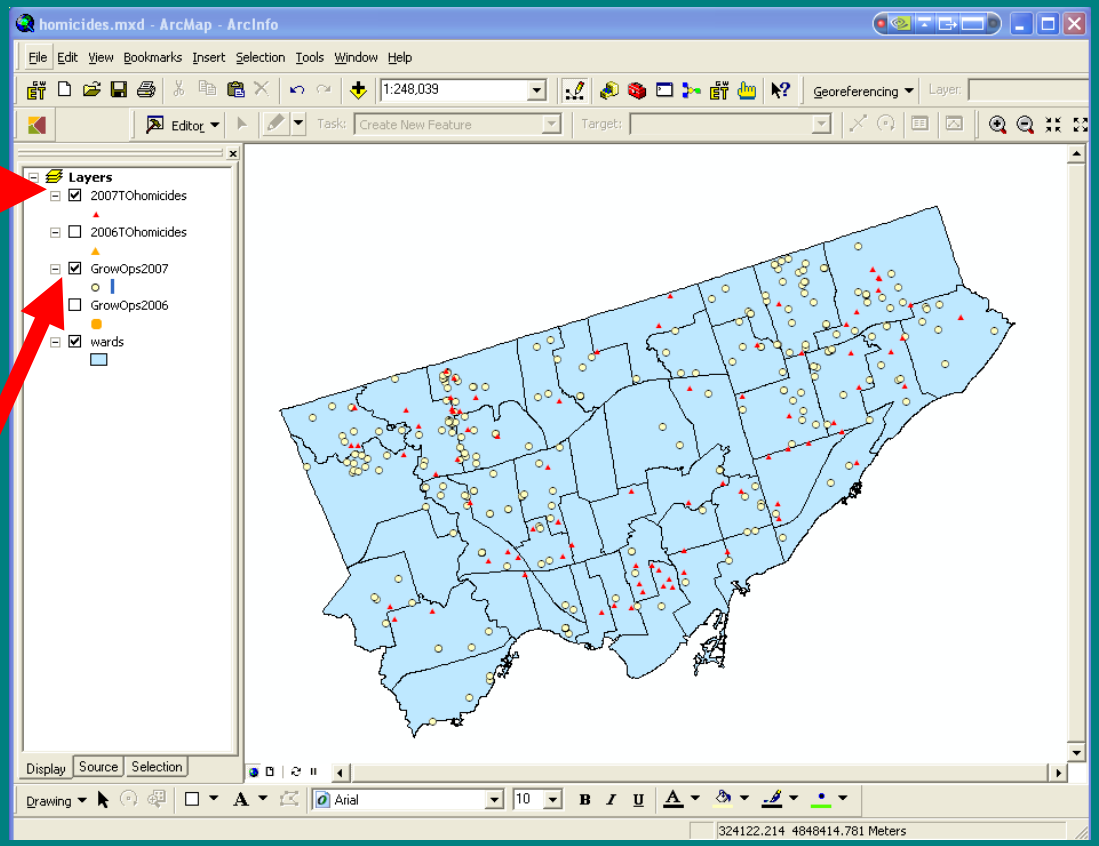
1	Point	160	511	1	A 470903	PRESCOTT	ALFRED	PT 3	4	18	505100	5045750	70	5	25	0	0	0	0	1	A4
2	Point	161	512	2	A 470904	PRESCOTT	ALFRED	PT 35 W1/2	3	18	503950	5046650	70	25	5	0	0	0	0	1	A4
3	Point	170	521	11	A 471504	PRESCOTT	HAWKESBURY, WEST	PT 15 1/2	4	18	525600	5043350	64	20	4	0	2	10	0	1	A2
4	Point	171	522	12	A 471506	PRESCOTT	HAWKESBURY, WEST	PT 1 E1/2	1	18	533300	5048500	60	25	15	0	0	0	0	1	A3
5	Point	172	523	13	A 471507	PRESCOTT	HAWKESBURY, WEST	PT 1 W1/2	1	18	533350	5048800	0	0	25	0	0	75	0	1	B4
6	Point	173	524	14	A 471601	PRESCOTT	LONGEUIL	PT 59	0	18	524110	5047375	80	5	15	0	0	0	0	1	B4
7	Point	214	567	32	A 413103	RENFREW	ROLPH, BUCHANAN,	PT 5	7	18	311460	5097720	90	0	10	0	0	0	0	1	B4
8	Point	215	568	33	A 413104	RENFREW	ROLPH, BUCHANAN,	PT 4 N1/2	10	18	310200	5100420	90	5	5	0	0	0	0	1	A3
9	Point	216	569	34	A 413105	RENFREW	ROLPH, BUCHANAN,	PT 21	0	18	316850	5101940	15	0	85	0	0	0	0	1	A3
10	Point	217	570	35	A 413106	RENFREW	ROLPH, BUCHANAN,	PT 6 S1/2	13	18	310060	5103250	85	11	3	0	0	0	1	1	B4
11	Point	168	519	9	A 471402	PRESCOTT	HAWKESBURY, EAST	PT 7	5	18	542420	5036010	85	5	10	0	0	0	0	1	B4
12	Point	169	520	10	A 471403	PRESCOTT	HAWKESBURY, EAST	PT 7-8	5	18	542360	5036060	10	0	0	0	0	0	0	1	B4
13	Point	240	593	12	A 481501	STORMONT	LOCHIEL	PT 7 N1/2	1	18	539700	5022100	75	20	5	0	0	0	0	1	A4
14	Point	207	558	21	A 412404	RENFREW	HEAD CLARA	PT 19 S1/2	0	18	280880	5118750	90	0	10	0	0	0	0	1	B4
15	Point	212	565	30	A 413101	RENFREW	ROLPH, BUCHANAN,	PT 13 N1/2	5	18	302175	5110790	90	0	10	0	0	0	0	1	B4
16	Point	213	566	31	A 413102	RENFREW	ROLPH, BUCHANAN,	PR 49 N1/2	0	18	292130	5115750	80	0	20	0	0	0	0	1	B4
17	Point	218	571	36	A 413107	RENFREW	ROLPH, BUCHANAN,	PT 44 N1/2	0	18	294620	5117850	90	0	10	0	0	0	0	1	A4
18	Point	227	580	45	A 413602	RENFREW	WESTMEATH	PT 30	0	18	352910	5072960	90	0	10	0	0	0	0	1	A4
19	Point	162	513	3	A 471003	PRESCOTT	CALEDONIA	PT 23 SE1/2	6	18	510750	5032100	90	5	5	0	0	0	0	1	B4
20	Point	175	526	16	A 471801	PRESCOTT	PLANTAGENET	PT 3	14	18	506900	5029130	70	5	25	0	0	0	0	1	A4

From paper to GIS

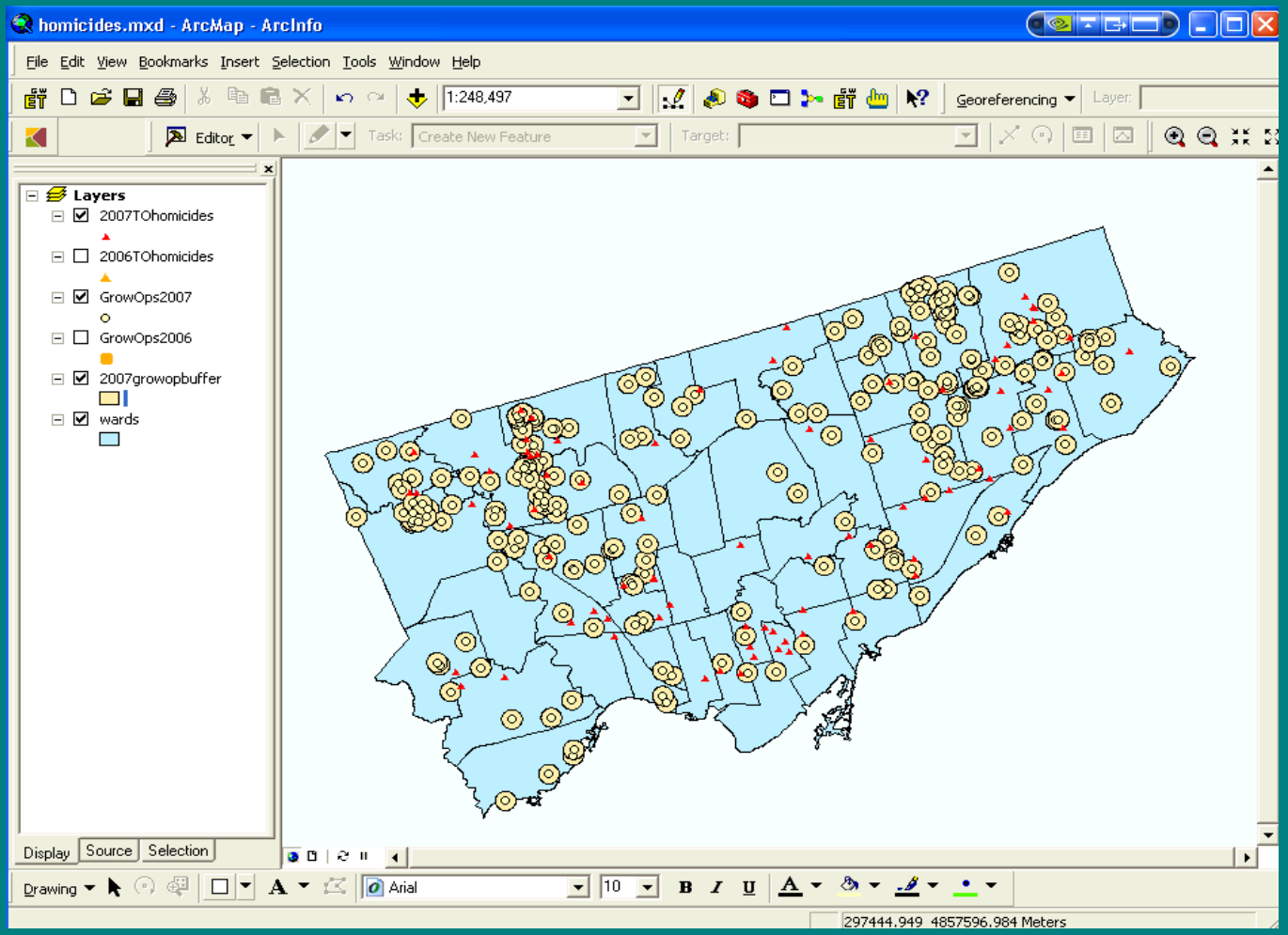


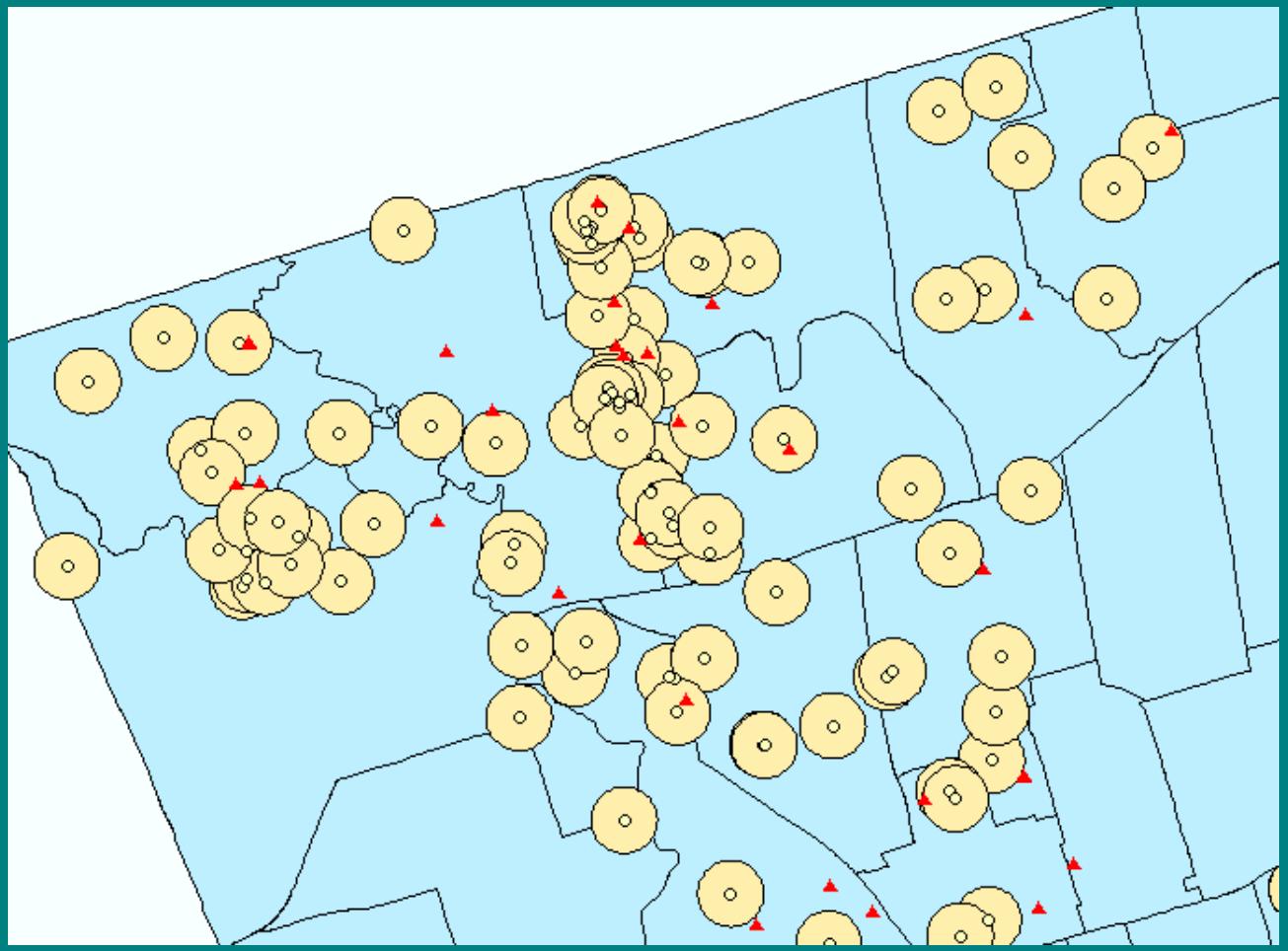
Gmap to GIS (Why and How)



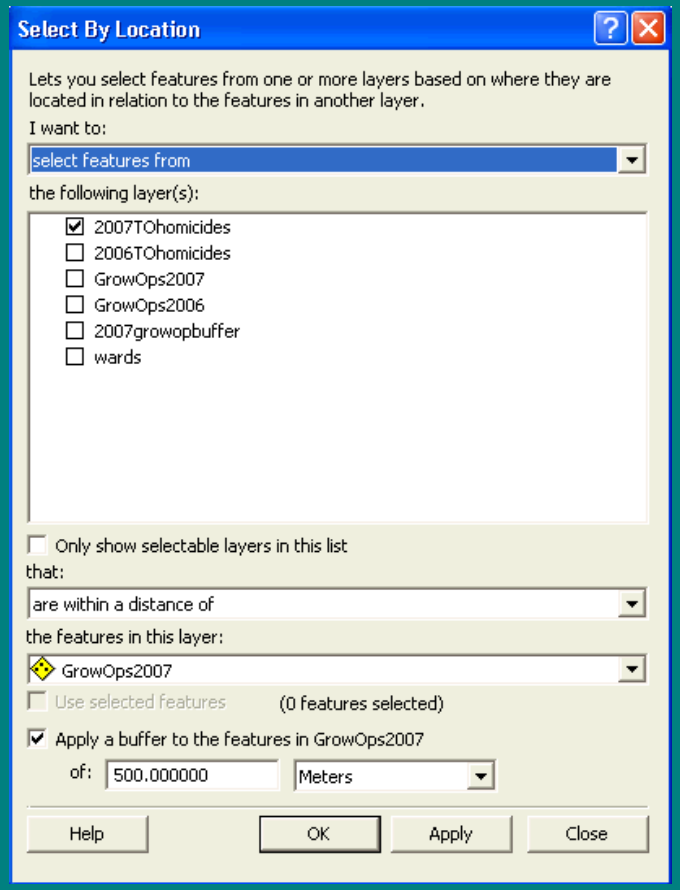


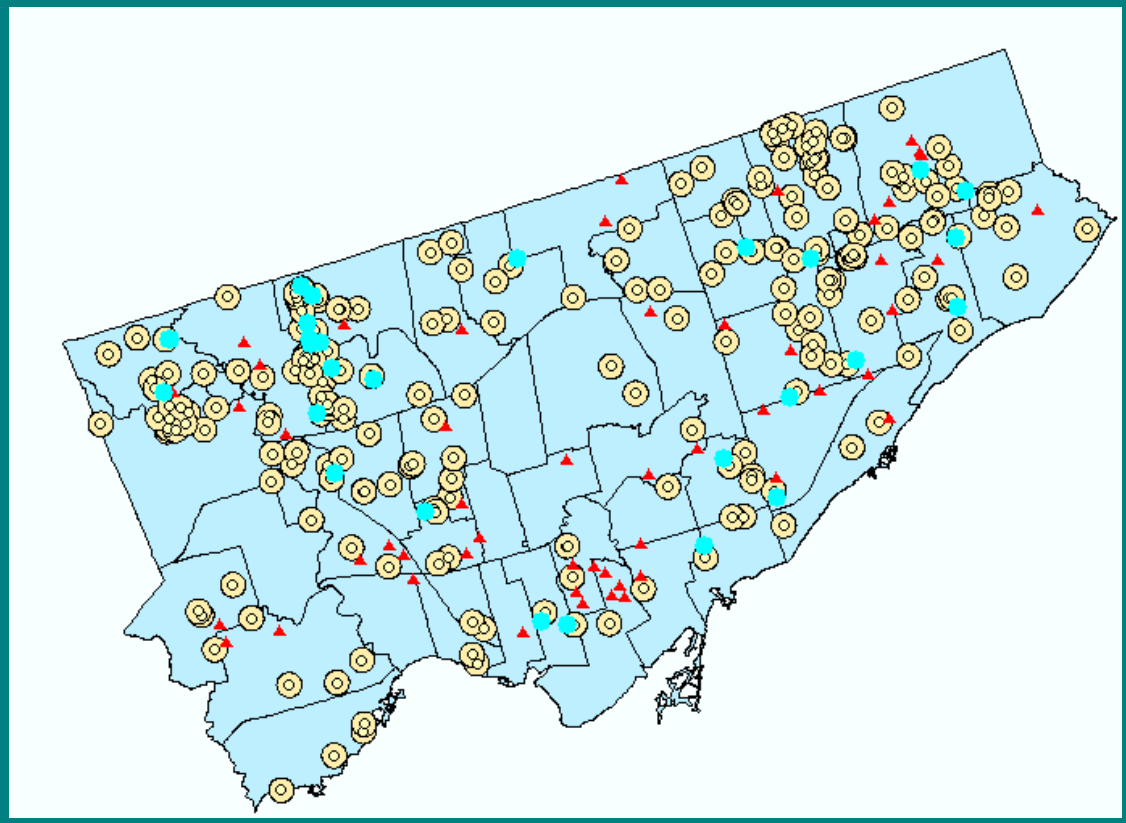
Correlation between two variables?



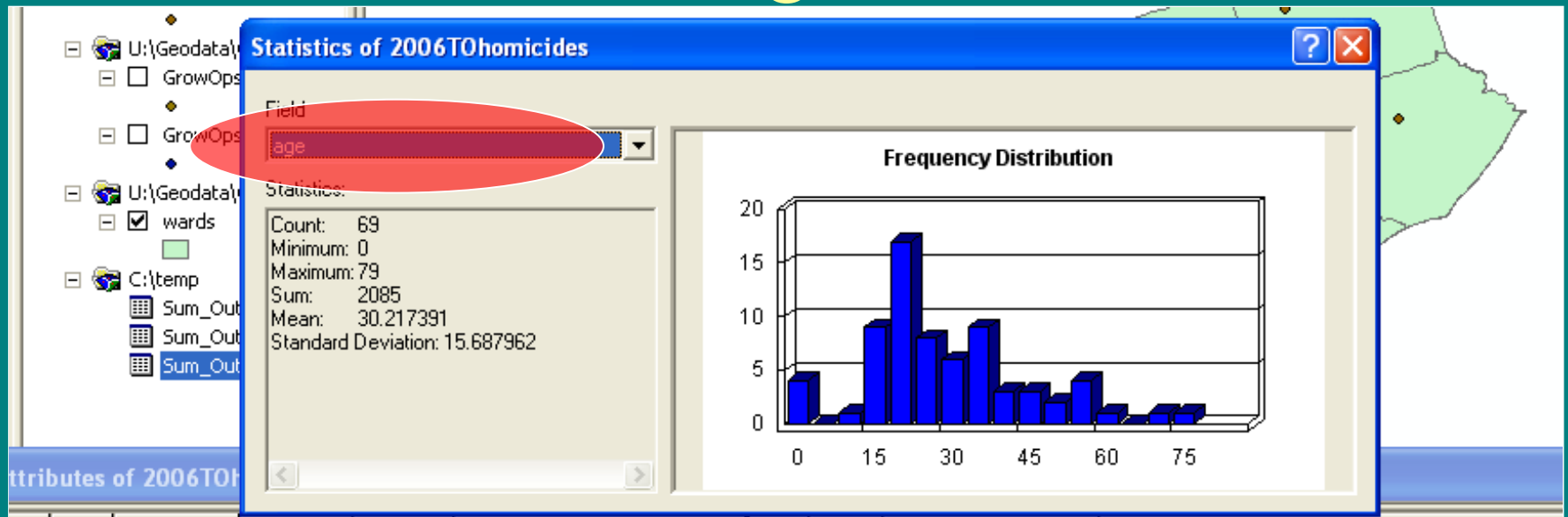


Analysis: 34-36% of homicides occur within 500 m of a Grow Op





Analysis Frequency Distribution by Age



FID	Shap	x	y	region	name	age	gende	date_	address
0	Point	-79.447331	43.696455	Toronto	Dillan Yhanike Anderson	21	M	Sun., Jan. 1 2006	Locksley Ave. and Eglinton Ave. W
1	Point	-79.414372	43.735104	Toronto	Rose Boroja	54	F	Thurs., Jan. 26 2006	Felbrigg Ave., near Avenue Rd. and Wilson Ave. W
2	Point	-79.500697	43.745351	Toronto	Chantel Daniellai Dunn	19	F	Mon., Feb. 6 2006	Jane Street/Sheppard Avenue West area W
3	Point	-79.330276	43.796791	Toronto	Shao-Sang Liang	38	F	Thurs., Feb. 9 2006	143 Chester Le Boulevard
4	Point	-79.330328	43.796856	Toronto	Vivian Yuen-Yee Chau	3	F	Thurs., Feb. 9 2006	143 Chester Le Boulevard
5	Point	-79.33036	43.796903	Toronto	Ian Chau	0	M	Thurs., Feb. 9 2006	143 Chester Le Boulevard
6	Point	-79.335275	43.717157	Toronto	Ryan Matthew Horlock	21	M	Mon., Feb. 28 2006	12 St. Dennis Dr., North York, near Eglinton Ave. E. a
7	Point	-79.292504	43.692856	Toronto	Dion Claude McDoom	42	M	Fri., Mar. 3 2006	Dentonia Park Avenue area
8	Point	-79.174272	43.79176	Toronto	Kevin Persaud	17	M	Sat., Mar. 4 2006	Morrish Rd., Scarborough
9	Point	-79.545473	43.74832	Toronto	Christopher Caldwell Pellew	22	M	Sun., Mar. 12 2006	Lindylou Rd., North York
10	Point	-79.21737	43.74453	Toronto	Andrew Latouche	28	M	Tues., Mar. 14 2006	Eglinton Ave. E. near Markham Rd.
11	Point	-79.374328	43.668734	Toronto	Wayne Christopher Hutchinson	31	M	Tues., Mar. 21 2006	275 Bleecker Street
12	Point	-79.497138	43.690373	Toronto	Romaine Lawrence	18		27 2006	1166 Weston Road near Eglinton Ave.
13	Point	-79.506485	43.748634	Toronto	Jermaine Lincoln Brown	22	M	Mon, Mar. 27 2006	235 Grandravine
14	Point	-79.551768	43.750146	Toronto	Yousif Youkhana	58	M	Fri., Apr. 7 2006	Country Bingo, 2424 Finch Avenue West

How? XML - XSL Transform to CSV

homicides2007_star.xml (\\192-27\DFS...\My Documents\Staff Conference) - GVIM

File Edit Tools Syntax Buffers Window Help

```
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                <overlay>
<location id="0">
<point lng="-79.228173494338999" lat="43.801022250653325" />
<icon image="white" size="small" />
<thumb url="http://www3.thestar.com/static/googlemaps/spacer1.gif" align="right" />
<info>
<vitals age="yellow" gender="blue" type="red" />
<region>Toronto</region>
<details><![CDATA[
<name>Jean Springer</name>
<br />60, F
<br /><b>Date: </b>Mon., Jan. 1<hide>
<br /><b>Location: </b>Snowball Cres., near Sheppard Ave. E. and Neilson Rd.</hide>
<br /><b>Details: </b>Shooting
]]></details>
</info>
</location>
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<region>Peel</region>
<details><![CDATA[
<name>Otis Johnson</name>
<br />34, M
<br /><b>Date: </b>Wed., Jan. 4<hide>
<br /><b>Location: </b>Hurontario St. and Queensway area</hide>
<br /><b>Details: </b>Shooting
]]></details>
</info>
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gardensmap.xsl (H:\My Documents\community garden\XMLtoCSV) - GVIM

File Edit Tools Syntax Buffers Window Help

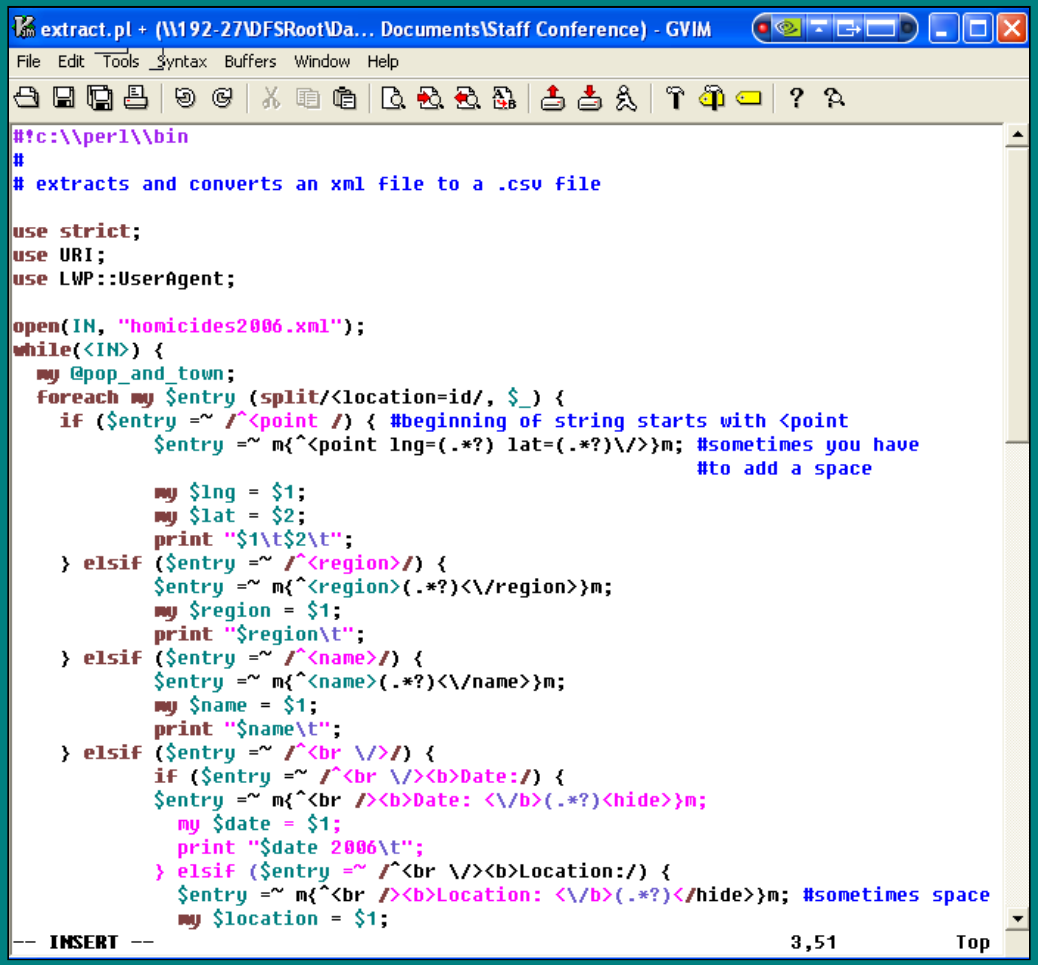
```
<?xml version="1.0" encoding="iso-8859-1"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">

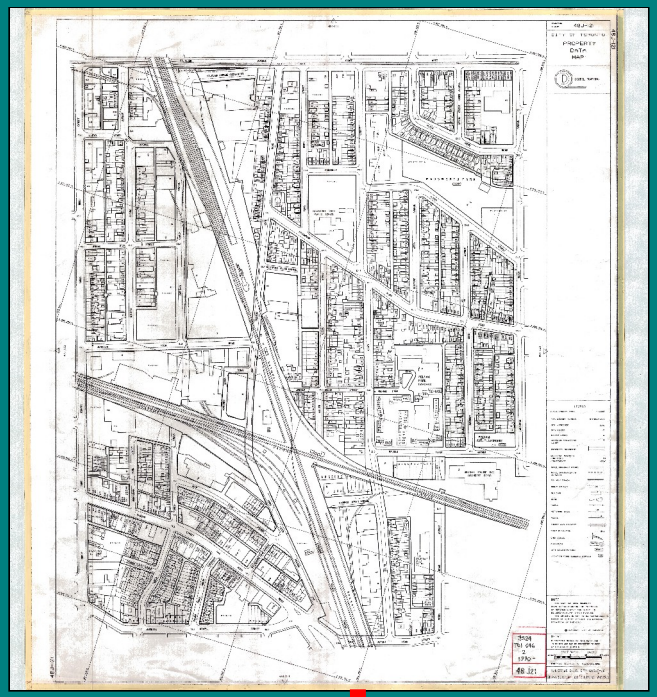
        <xsl:template match="/">
                <html><head>
                        <title><xsl:value-of select="kml/Folder/names" /
></title>
                </head><body>
                <xsl:apply-templates />
                </body></html>
        </xsl:template>

        <xsl:template match="gardens">
                Name,location,info,website,latitude,longitude<br />
                <xsl:for-each select="garden">
                        "<xsl:value-of select="location" />",
                        "<xsl:value-of select="info" />",
                        "<xsl:value-of select="website" />",
                        "<xsl:value-of select="latitude" />",
                        "<xsl:value-of select="longitude" />"<br />
                </xsl:for-each>
        </xsl:template>

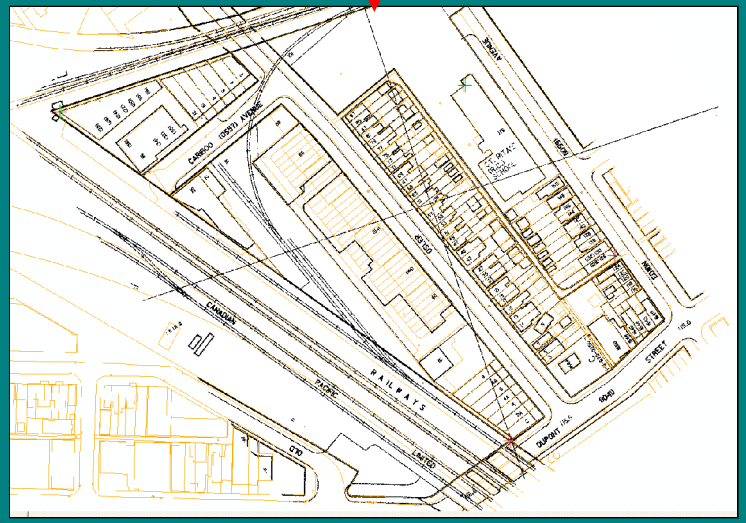
</xsl:stylesheet>
<ommunity garden\XMLtoCSV\gardensmap.xsl" 24L, 711C          6,61-89       Top
```

How? Perl/Python Scripting

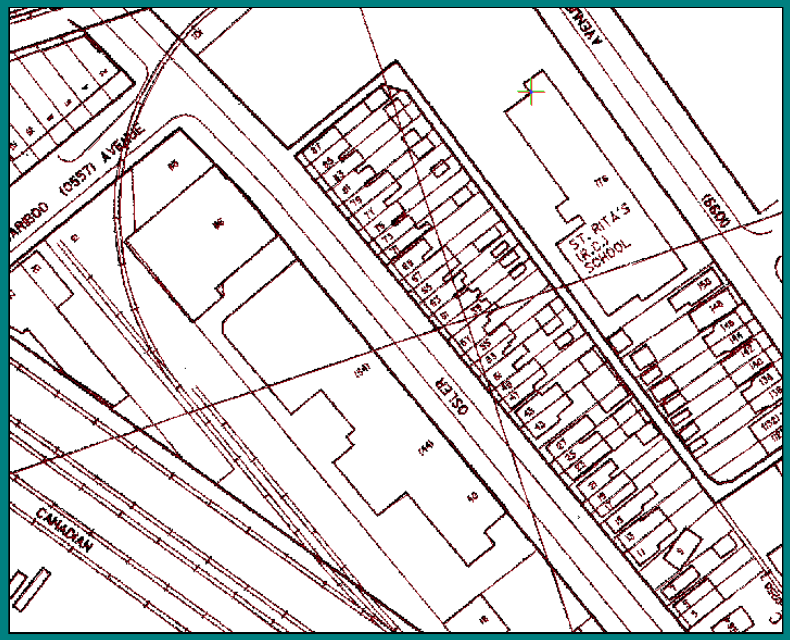




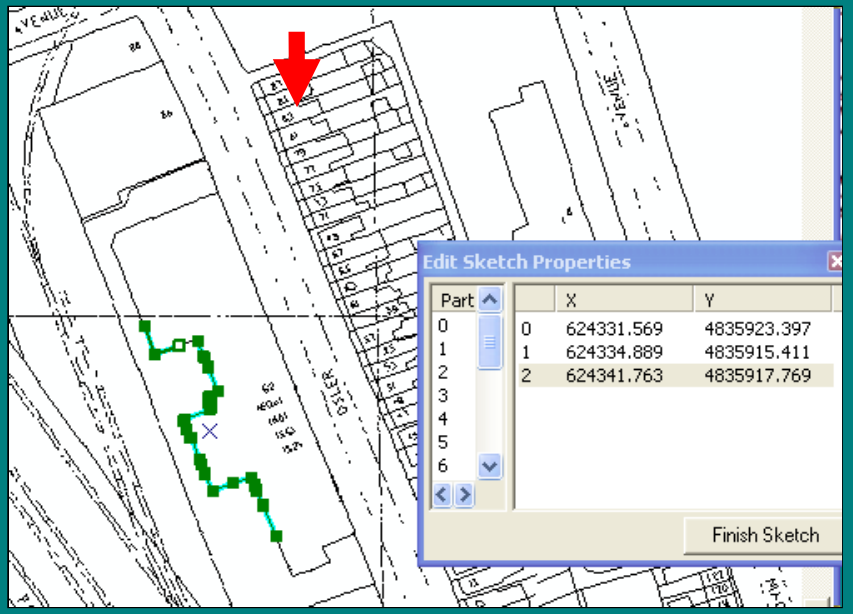
Scanned Map



Georeferenced Scanned Map



Vectorized Features from Scanned Map



GIS Features in Database

Why GIS?

- Public's Information and Scholars' Needs have Changed
  - more than just bibliographic information…they need and want:
    - Data
    - Geographic information (increased demand because of Google/Virtual Earth & Google Maps?)
    - Technical and Analytical support
    - Video? 3D models? Video Games? Music?
- **No information lives alone anymore**
  - Reflection of society in General
    - consider popularity of APIs (Application Programming Interfaces)

One last issue:
Licensing and Copyright