Chapter 7

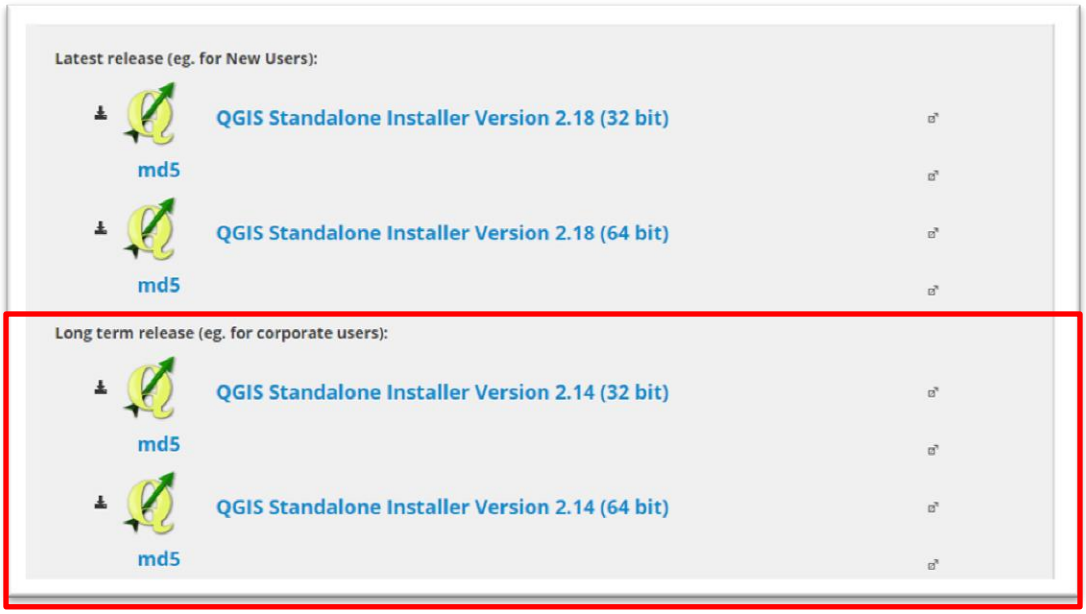
Buffering in QGIS Desktop

Summary: How far away is that? How many are too close? These are some of the most compelling mapping questions journalists can ask. A buffer is one of the most useful tools to provide answers. As we learned in Chapter 7's discussion on page 155, buffering is an analysis that can be used to determine what features are within a critical spatial distance from another feature. Journalists can draw buffers around points that represent polluting factories, and then see how many other points, such as daycares, are within close proximity. Or they can draw buffers along railways, to see how many homes are within a danger zone in the case of derailments, or buffers around sections of pipelines can locate First Nations communities that might have concerns about spills.

Specifically, the buffering tool allows you to draw circular boundaries around points, or rectangular boundaries on either side of lines or around the outside of polygons. The buffers are created as new shapefiles or feature classes. These new layers make it easier to identify, count or otherwise analyze other features that fall within the specified distance of the point, line or polygon features.

For this tutorial, we will see how close discarded contaminated needles and syringes come to play structures and parks. These are stories that the Toronto Star and CBC News have told, respectively.

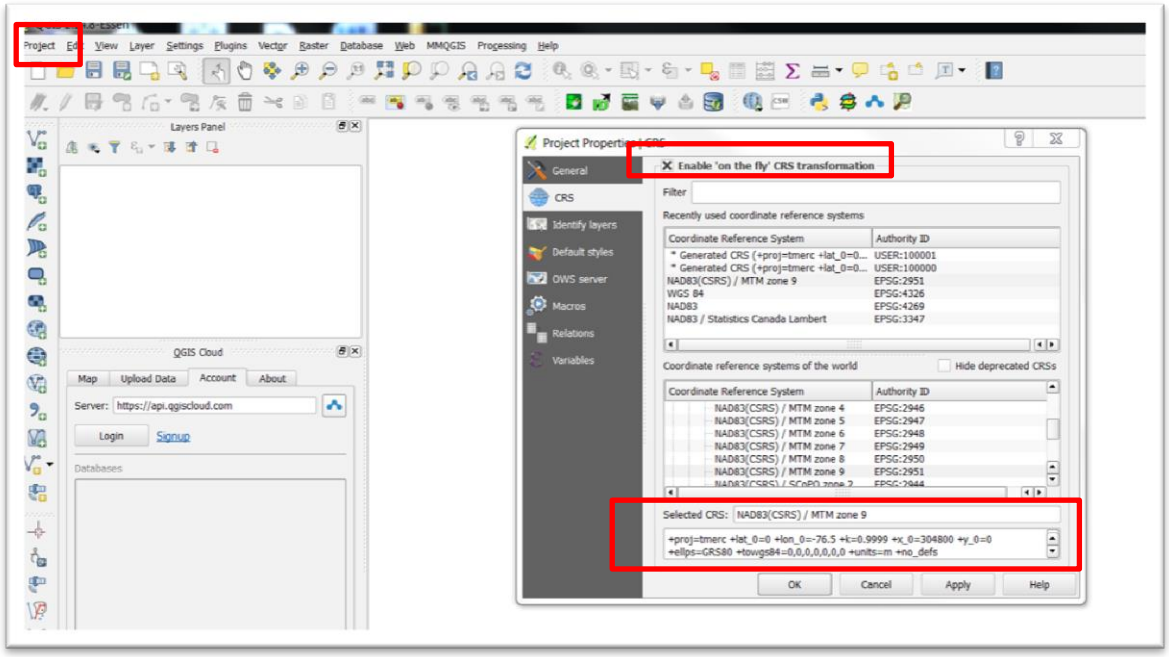
For this tutorial, please be sure to use the "Long term release version" 2.14.



Skills you will learn: This tutorial will show you how to create buffers in QGIS.

Open QGIS, name the project and save it. Select the "Project Properties" dialog box under "Project" from the menu below. Select the box to the left of the "Enable 'on the fly' CRS transformation" option.

The Coordinate Reference System for the wards is "NAD83(CSRS)/MTM zone 9 EPSG:2951"



Make sure the reference system appears in the Selected CRS section of the dialog box.

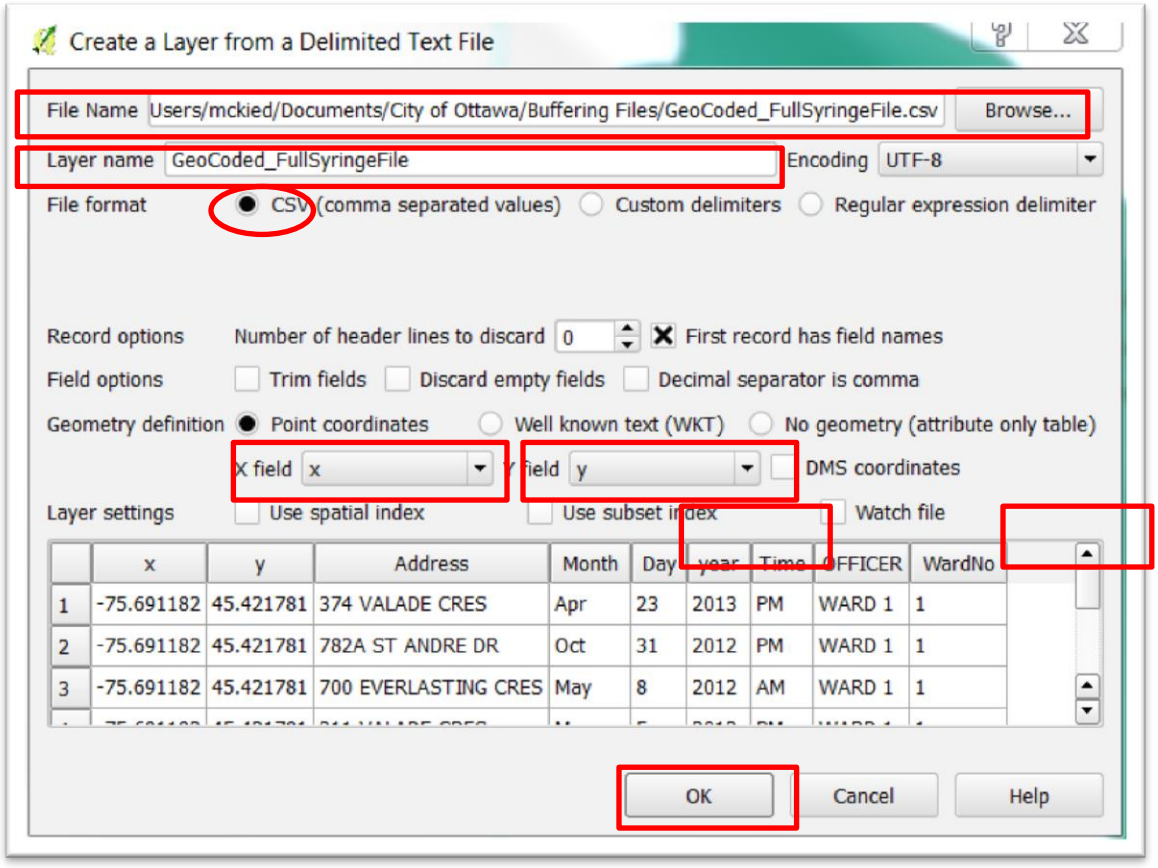
Select Apply, and then OK

Import the Ottawa wards shape file that should already be in one of your folders. If not, then you must download it from the city's open data website, and extract the wards shape file from the zip folder.

To Download the csv file, right-click on "GeoCoded_FullSyringeFile" and save it to your folder. If your browser opens the table to display the csv file, just use the browser's "save as" option.

Continue to save your entire QGIS project in the same folder that will contain your files and layers.

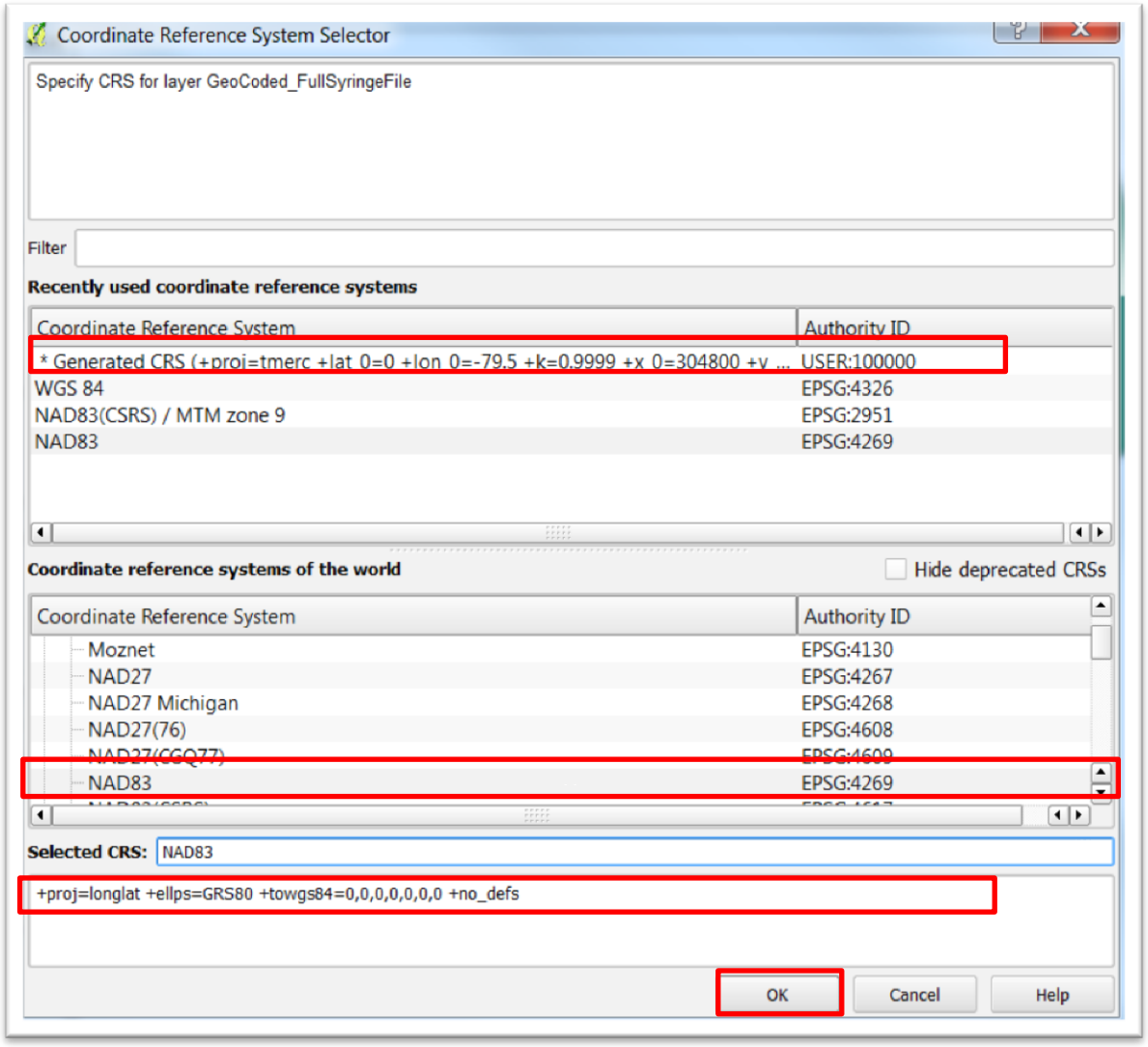
Upload the "GeoCoded_FullSyringeFile" to QGIS.



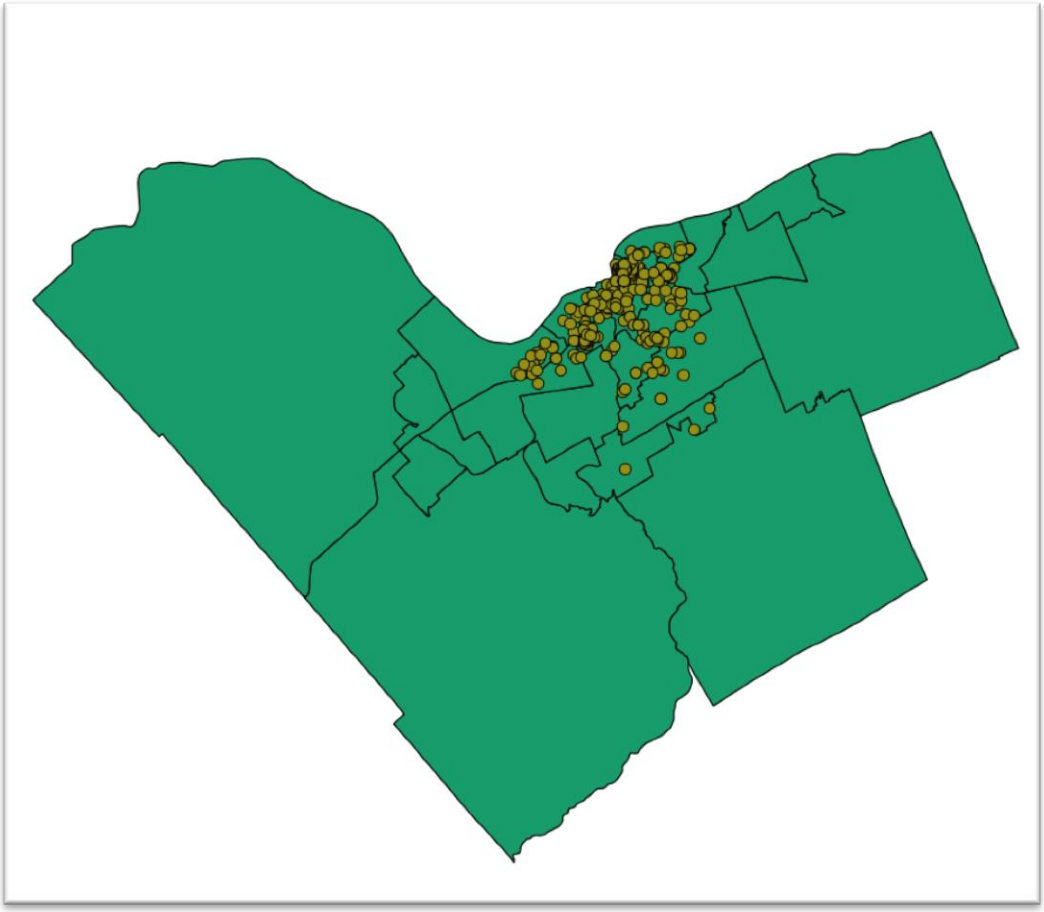
(**NOTE:** Fortunately, there is no need to create a "csvt" file as we did in the QGIS tutorial "7_13_SpatialJoinsQGISDesktop." This is because we don't want to convert

any of the numbers to text, or vice-versa. A "csvt" file is only necessary if you want to reformat the values to correspond with the values in a second file, or layer in QGIS.)

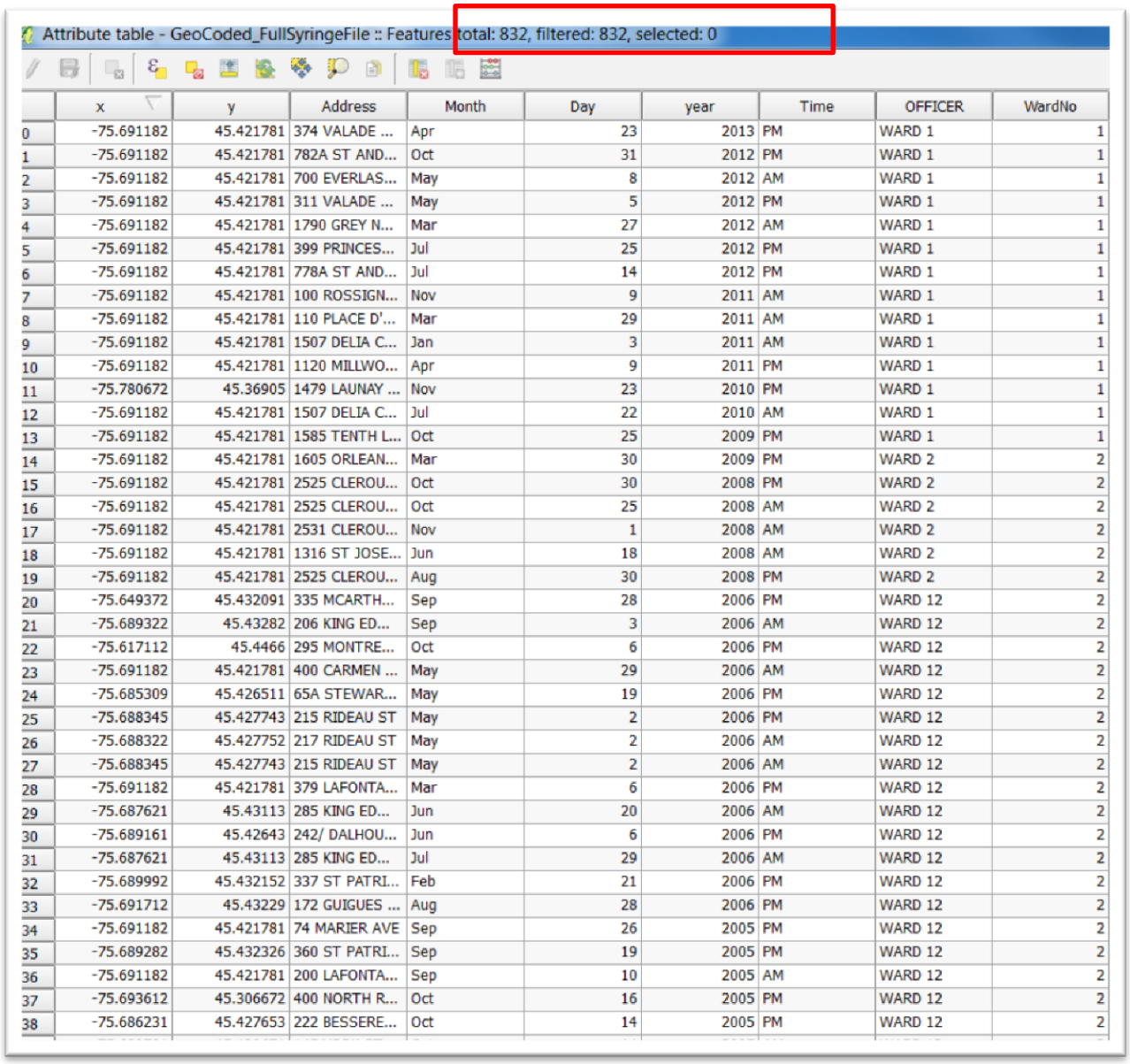
Selecting "OK" produces a second dialog box containing the file's coordinate system –NAD83 – which is different from that of the Ward. However, because we've told Qgis to project on the fly, it knows to force a match between the coordinate systems.



Select “OK” and save your project.



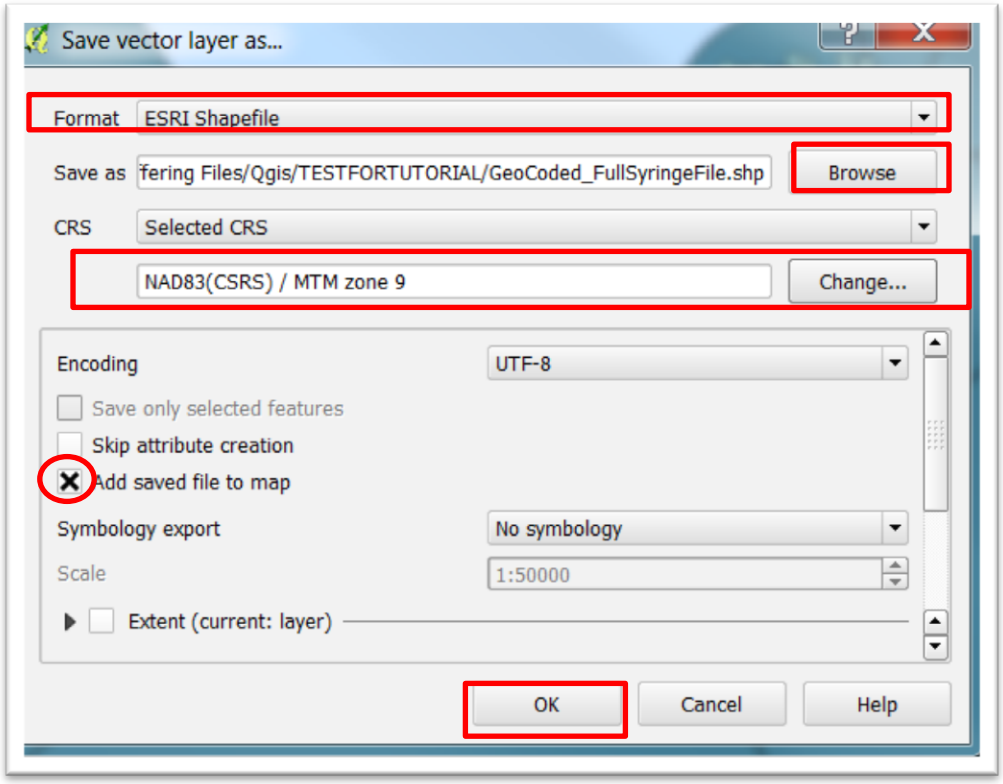
As is our custom when importing a file to QGIS or ArcMap, open the attribute table to ensure that you have all the values.


Attribute table - GeoCoded_FullSyringeFile :: Features total: 832, filtered: 832, selected: 0

	x	y	Address	Month	Day	year	Time	OFFICER	WardNo
0	-75.691182	45.421781	374 VALADE ...	Apr	23	2013	PM	WARD 1	1
1	-75.691182	45.421781	782A ST AND...	Oct	31	2012	PM	WARD 1	1
2	-75.691182	45.421781	700 EVERLAS...	May	8	2012	AM	WARD 1	1
3	-75.691182	45.421781	311 VALADE ...	May	5	2012	PM	WARD 1	1
4	-75.691182	45.421781	1790 GREY N...	Mar	27	2012	AM	WARD 1	1
5	-75.691182	45.421781	399 PRINCES...	Jul	25	2012	PM	WARD 1	1
6	-75.691182	45.421781	778A ST AND...	Jul	14	2012	PM	WARD 1	1
7	-75.691182	45.421781	100 ROSSIGN...	Nov	9	2011	AM	WARD 1	1
8	-75.691182	45.421781	110 PLACE D'...	Mar	29	2011	AM	WARD 1	1
9	-75.691182	45.421781	1507 DELIA C...	Jan	3	2011	AM	WARD 1	1
10	-75.691182	45.421781	1120 MILLWO...	Apr	9	2011	PM	WARD 1	1
11	-75.780672	45.36905	1479 LAUNAY ...	Nov	23	2010	PM	WARD 1	1
12	-75.691182	45.421781	1507 DELIA C...	Jul	22	2010	AM	WARD 1	1
13	-75.691182	45.421781	1585 TENTH L...	Oct	25	2009	PM	WARD 1	1
14	-75.691182	45.421781	1605 ORLEAN...	Mar	30	2009	PM	WARD 2	2
15	-75.691182	45.421781	2525 CLEROU...	Oct	30	2008	PM	WARD 2	2
16	-75.691182	45.421781	2525 CLEROU...	Oct	25	2008	AM	WARD 2	2
17	-75.691182	45.421781	2531 CLEROU...	Nov	1	2008	AM	WARD 2	2
18	-75.691182	45.421781	1316 ST JOSE...	Jun	18	2008	AM	WARD 2	2
19	-75.691182	45.421781	2525 CLEROU...	Aug	30	2008	PM	WARD 2	2
20	-75.649372	45.432091	335 MCARTH...	Sep	28	2006	PM	WARD 12	2
21	-75.689322	45.43282	206 KING ED...	Sep	3	2006	AM	WARD 12	2
22	-75.617112	45.4466	295 MONTRE...	Oct	6	2006	PM	WARD 12	2
23	-75.691182	45.421781	400 CARMEN ...	May	29	2006	AM	WARD 12	2
24	-75.685309	45.426511	65A STEWAR...	May	19	2006	PM	WARD 12	2
25	-75.688345	45.427743	215 RIDEAU ST	May	2	2006	PM	WARD 12	2
26	-75.688322	45.427752	217 RIDEAU ST	May	2	2006	AM	WARD 12	2
27	-75.688345	45.427743	215 RIDEAU ST	May	2	2006	AM	WARD 12	2
28	-75.691182	45.421781	379 LAFONTA...	Mar	6	2006	PM	WARD 12	2
29	-75.687621	45.43113	285 KING ED...	Jun	20	2006	AM	WARD 12	2
30	-75.689161	45.42643	242/ DALHOU...	Jun	6	2006	PM	WARD 12	2
31	-75.687621	45.43113	285 KING ED...	Jul	29	2006	AM	WARD 12	2
32	-75.689992	45.432152	337 ST PATRI...	Feb	21	2006	PM	WARD 12	2
33	-75.691712	45.43229	172 GUIGUES ...	Aug	28	2006	PM	WARD 12	2
34	-75.691182	45.421781	74 MARIER AVE	Sep	26	2005	PM	WARD 12	2
35	-75.689282	45.432326	360 ST PATRI...	Sep	19	2005	PM	WARD 12	2
36	-75.691182	45.421781	200 LAFONTA...	Sep	10	2005	AM	WARD 12	2
37	-75.693612	45.306672	400 NORTH R...	Oct	16	2005	PM	WARD 12	2
38	-75.686231	45.427653	222 BESSERE...	Oct	14	2005	PM	WARD 12	2

There are **832** discarded syringes or needles (two terms we'll use interchangeably), an important number to keep in mind.

Right-click on the GeoCoded_FullSyringeFile layer and select the "Save As" option.



We want to save the layer as a shape file, browse to the appropriate folder and – THIS IS KEY – change the projection system under "Selected CRS" to "NAD83(CRS)/MTM zone 9", the coordinate system that corresponds with that of the coordinate system for the wards and parks file that we will eventually import.

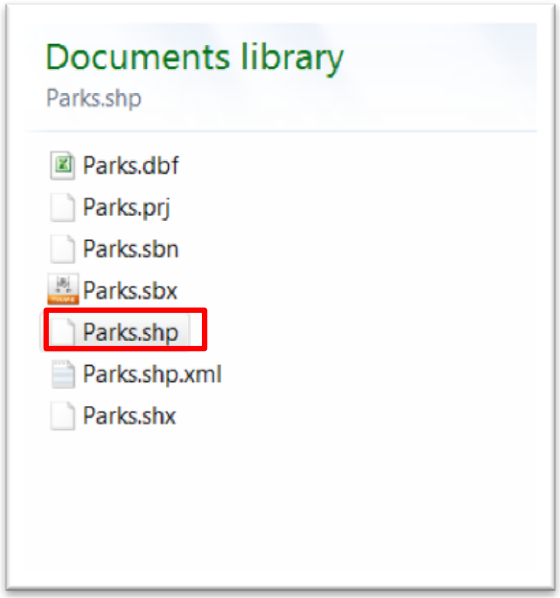
Now that you have the shape file. You can remove the GeoCoded_FullSyringe csv version.

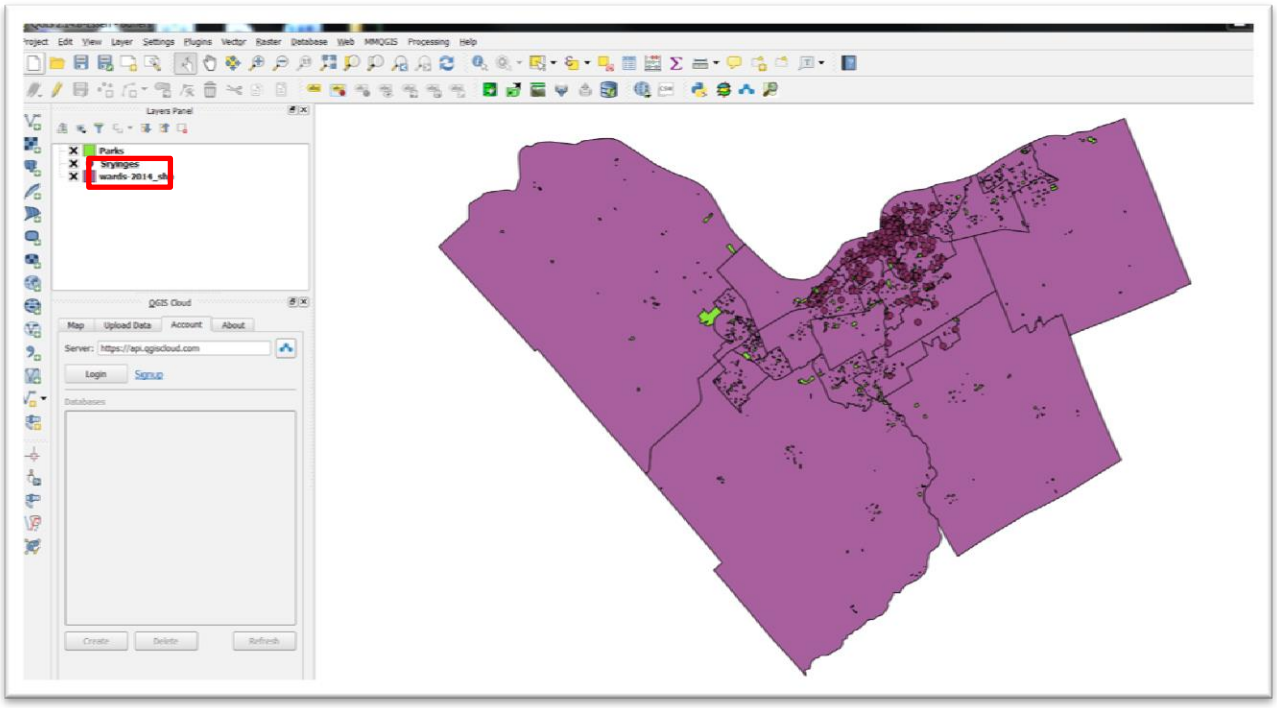
Now let's import the shape file that contains all the park locations in Ottawa.

To do this, we'll have to visit the city's open data portal, and navigate to parks.

Download the shape file ("Parks:SHP"), and save it in the same folder that contains your other files for this QGIS tutorial.

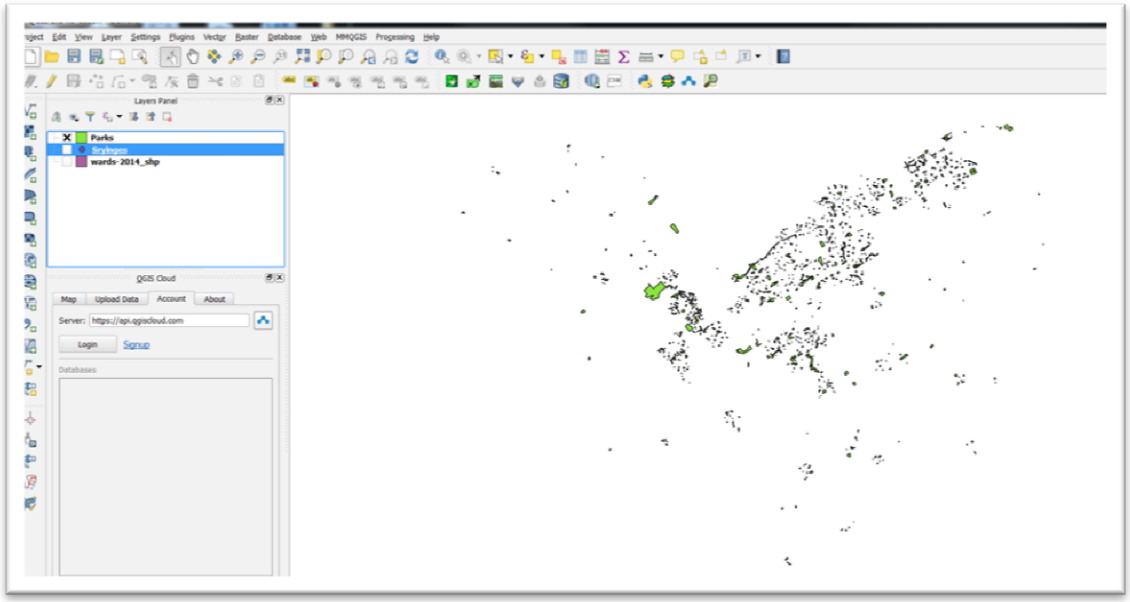
Unzip the folder, select the shape file, and then upload the shape file to QGIS



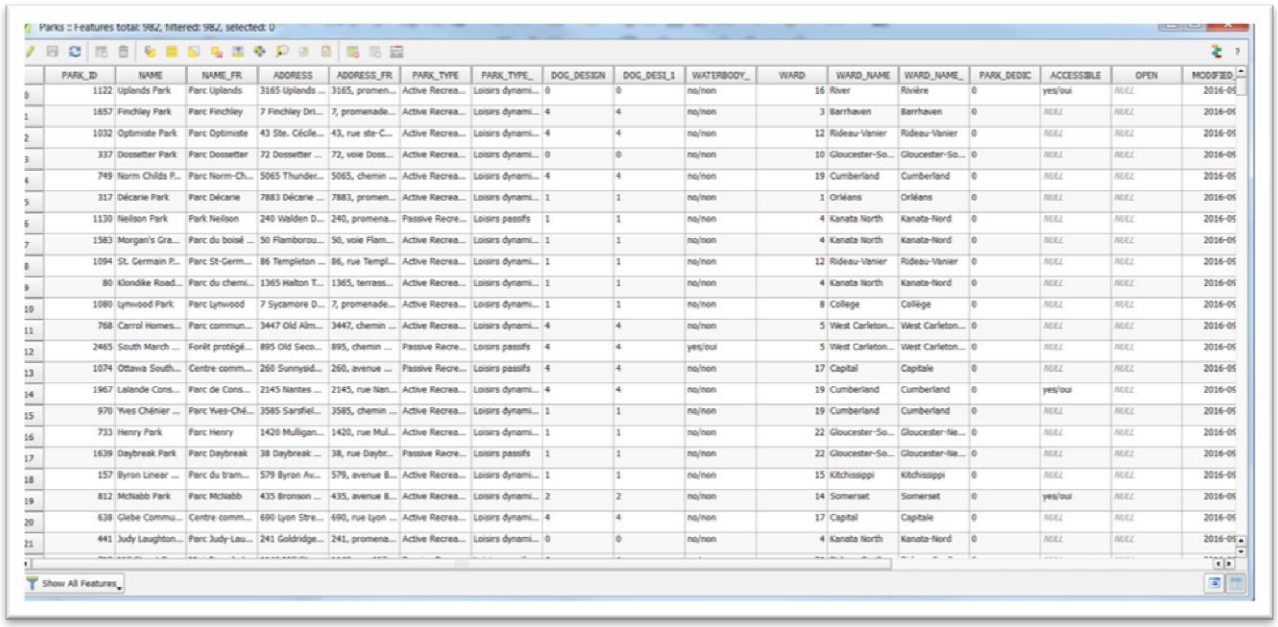


If the parks don't appear, as in the screen grab above, open the Parks layer's attribute table to select the correct projection, which in this case is the same as the "Wards_2014 file".

De-select the other two layers to get a closer look at the park locations.



Open the attribute table to look at the data.

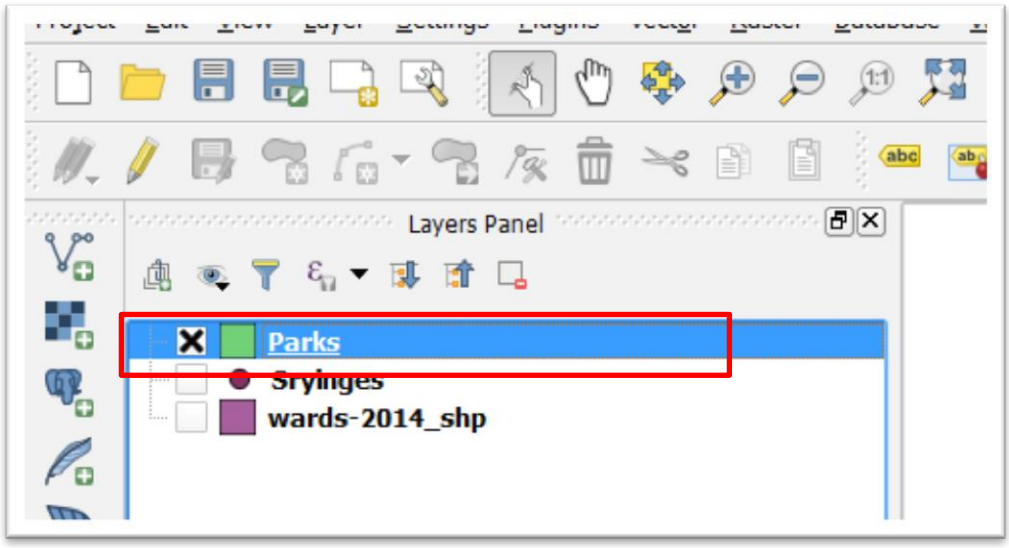


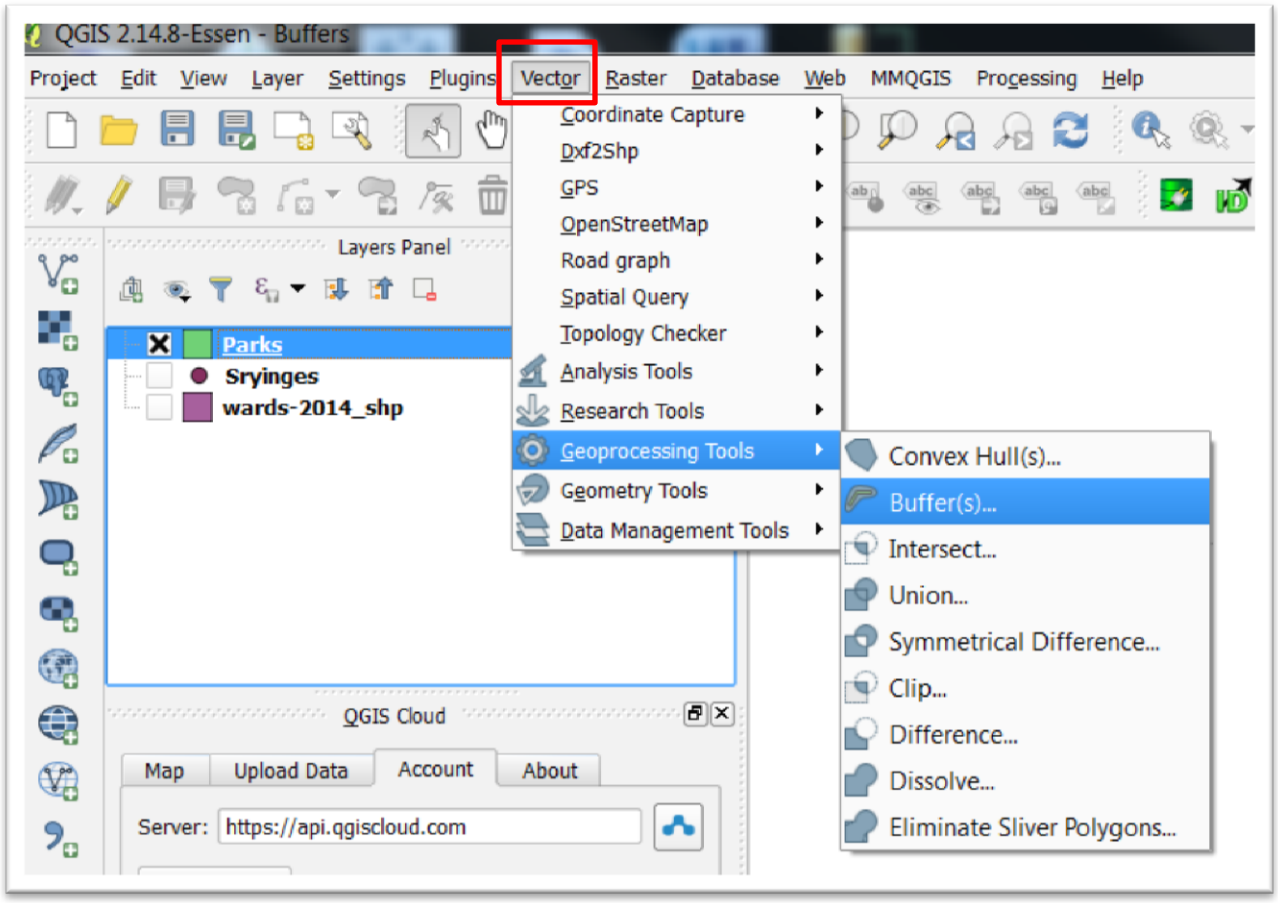
We have useful information, especially addresses, which will come in handy when we want to test our data in the field by visiting the parks and speaking to parents in nearby homes who have young children.

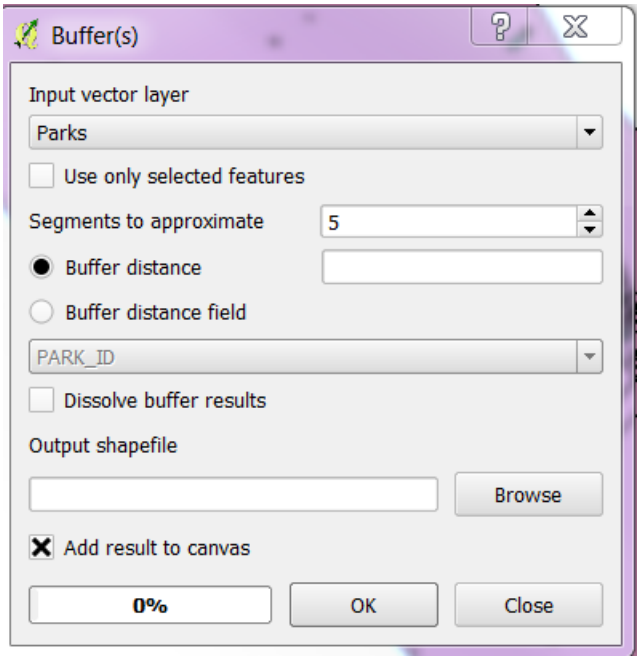
The idea is to find out how many of the 832 discarded needles were close to parks where children play.

You can turn the other layers back on. It's now time to create the buffers around the parks, setting a distance of 50 metres.

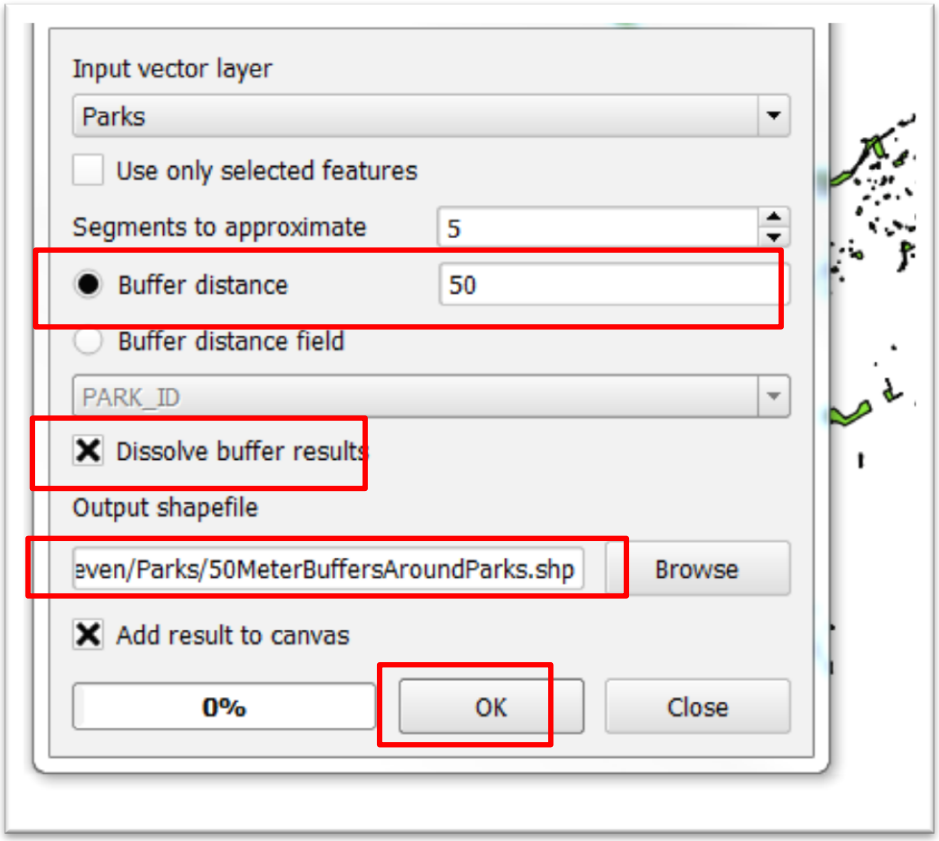
To do this, select the "Parks" layer, go to the "Vector" section in the menu above, "Geoprocessing tools", and then "Buffer(s)".




QGIS 2.14.8-Essen - Buffers
Project Edit View Layer Settings Plugins Vector Raster Database Web MMQGIS Processing Help
Coordinate Capture
Dxf2Shp
GPS
OpenStreetMap
Road graph
Spatial Query
Topology Checker
Analysis Tools
Research Tools
Geoprocessing Tools
Geometry Tools
Data Management Tools
Convex Hull(s)...
Buffer(s)...
Intersect...
Union...
Symmetrical Difference...
Clip...
Difference...
Dissolve...
Eliminate Sliver Polygons...
Layers Panel
Parks
Sryinges
wards-2014_shp
QGIS Cloud
Map
Upload Data
Account
About
Server: https://api.qgiscloud.com

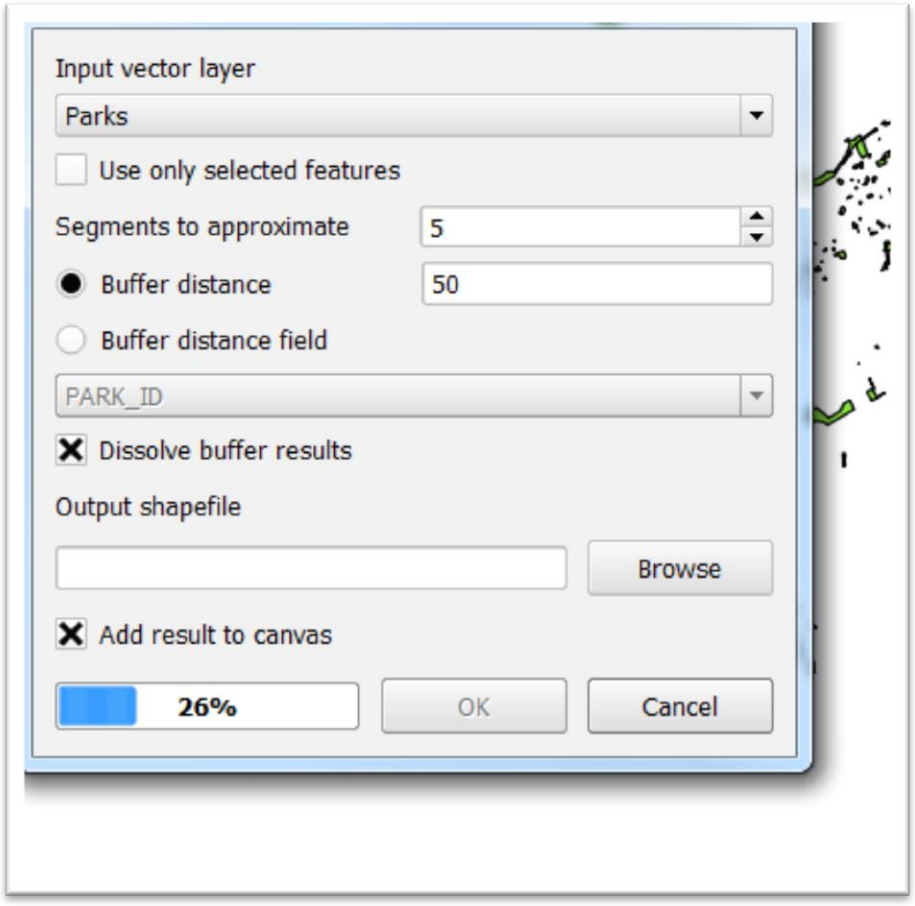

Buffer(s)
Input vector layer
Parks
Use only selected features
Segments to approximate
5
Buffer distance
Buffer distance field
PARK_ID
Dissolve buffer results
Output shapefile
Browse
Add result to canvas
0%
OK
Close

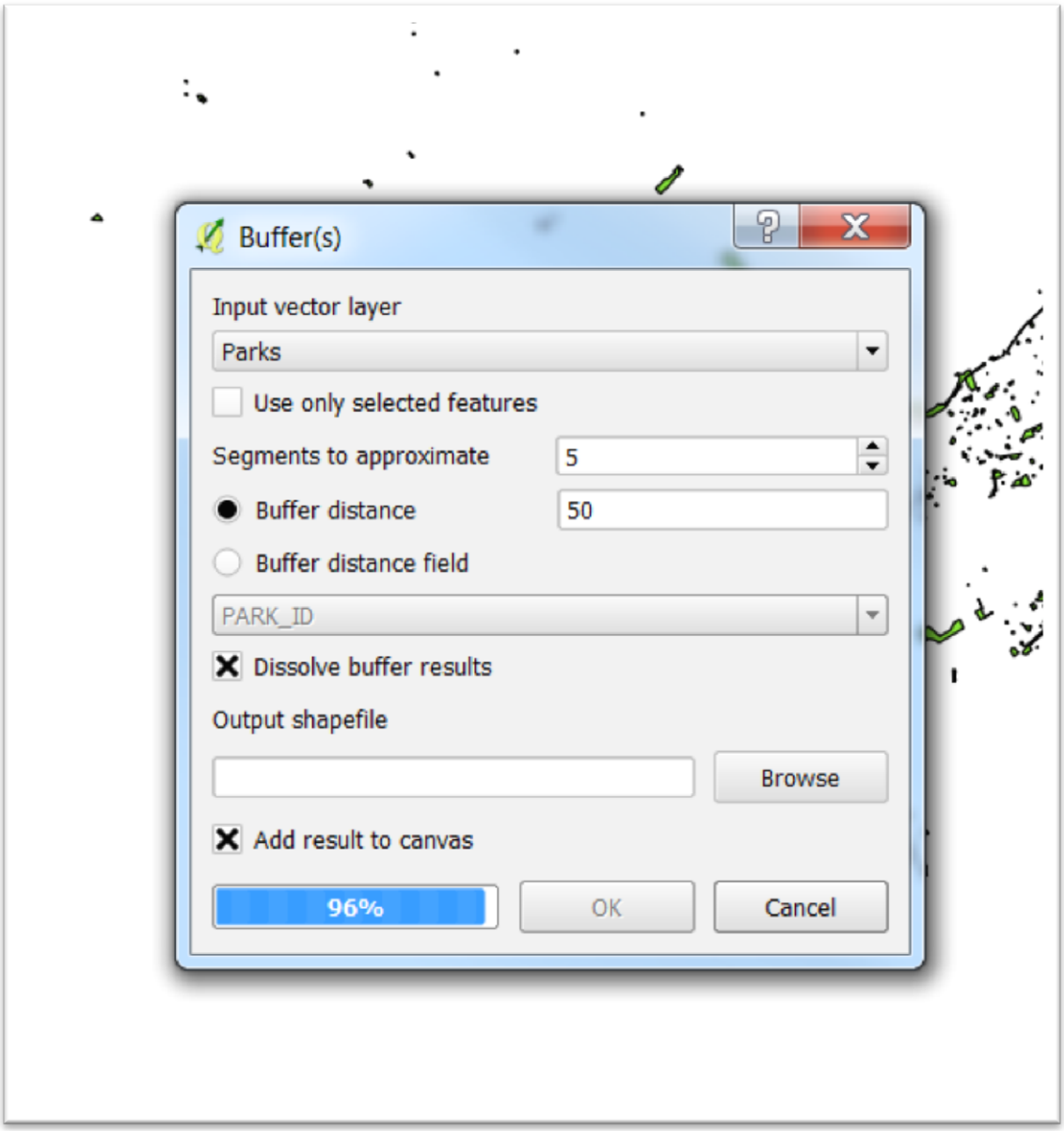
Make sure radio button to the left of "Buffer distance" is selected, and plug in 50 (for 50 metres). Also, select the radio button to the left of "Dissolve buffer results." Browse to the section where you're saving the files, and name this one "50MetresbufferAroundParks", or something similar. In other words, a title – albeit, a long one -- that indicates the contents of the file.



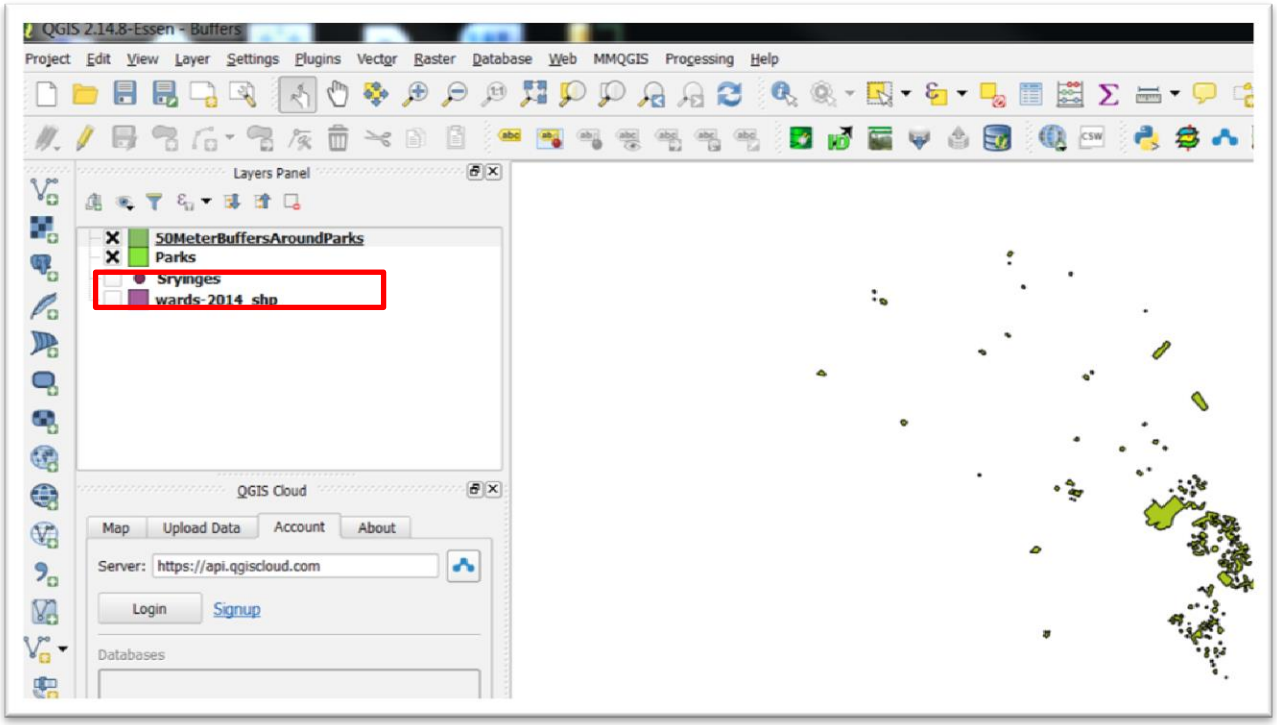
Browse to location where you want to store the file and save it.

Save your project, which is something you should do regularly.




Buffer(s)
Input vector layer
Parks
Use only selected features
Segments to approximate
5
Buffer distance
50
Buffer distance field
PARK_ID
Dissolve buffer results
Output shapefile
Browse
Add result to canvas
96%
OK
Cancel

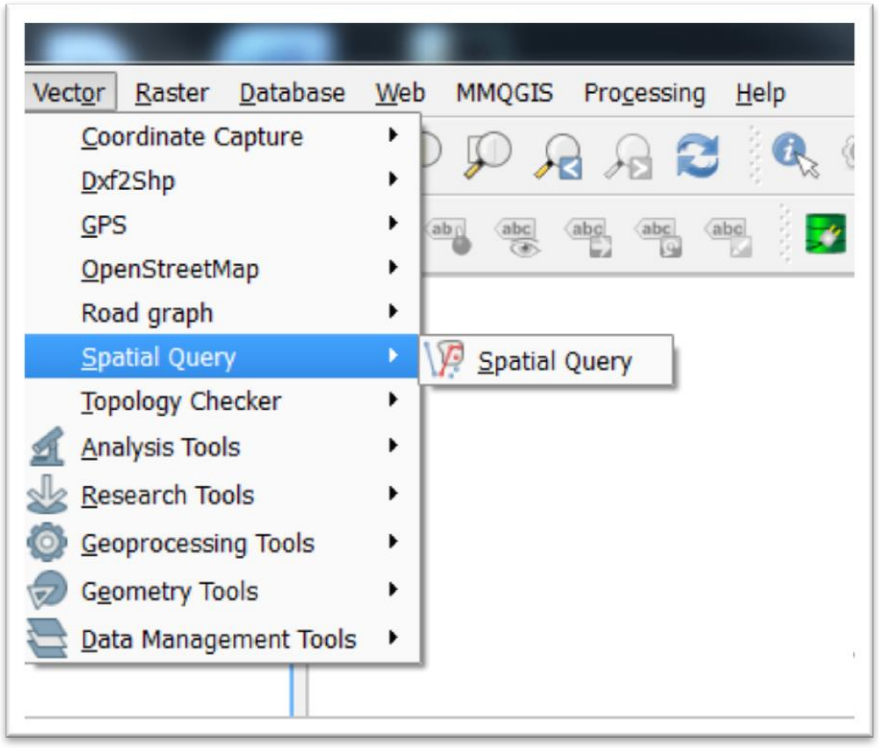
Once it's done, close the dialogue box, and you'll see the layer added to your menu.



Now we have created a 50m buffer around all the city of Ottawa parks.

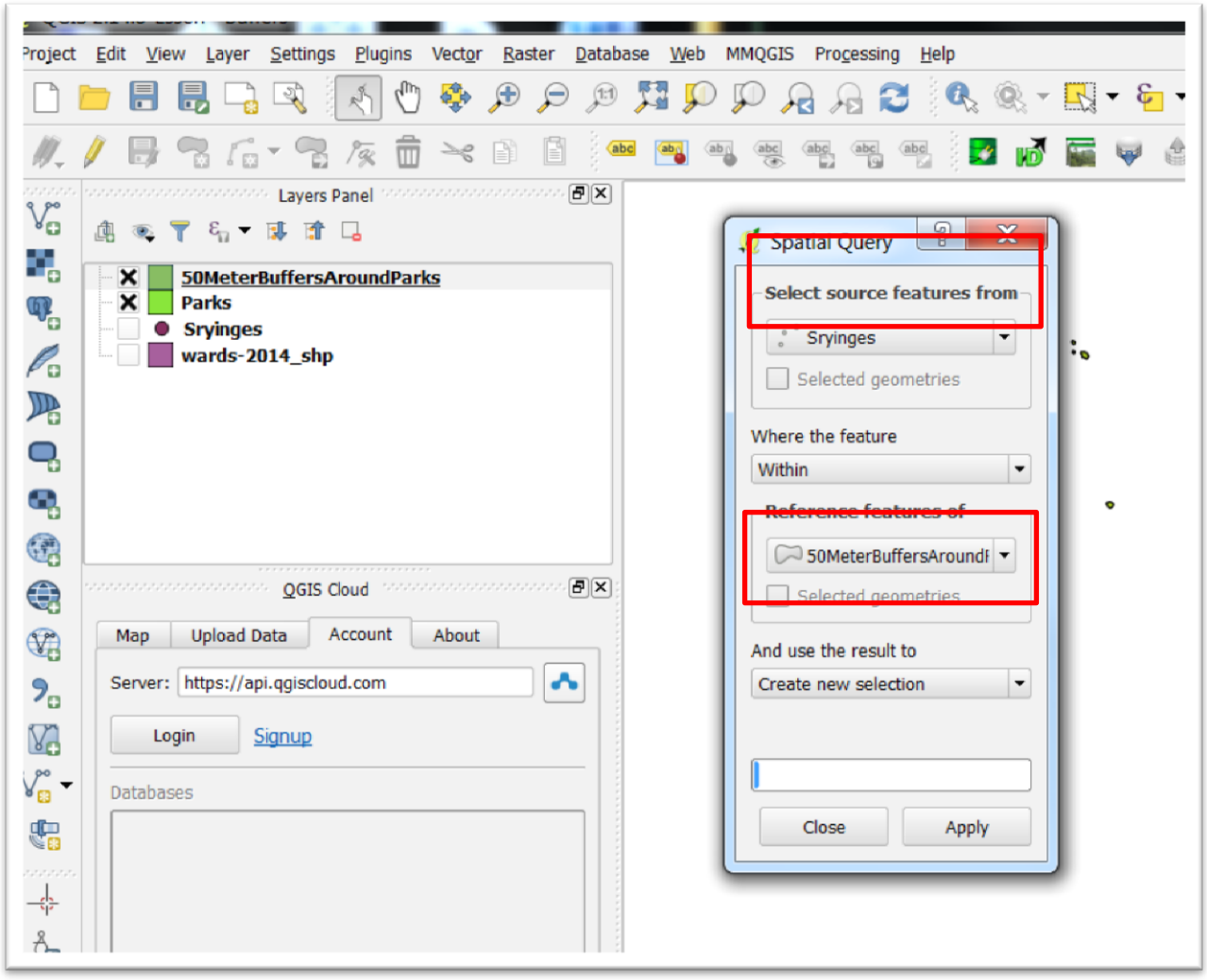
We'll use a query that will place the discarded needles or syringes within those 50 metre buffers. Select the new buffered layer, "BufferedParks50M". Right-click on this layer to make sure the projection system is ""NAD83(CSRS)/MTM zone 9 EPSG:2951".

Go to “Vector” in your menu above, and then “Spatial Query”.

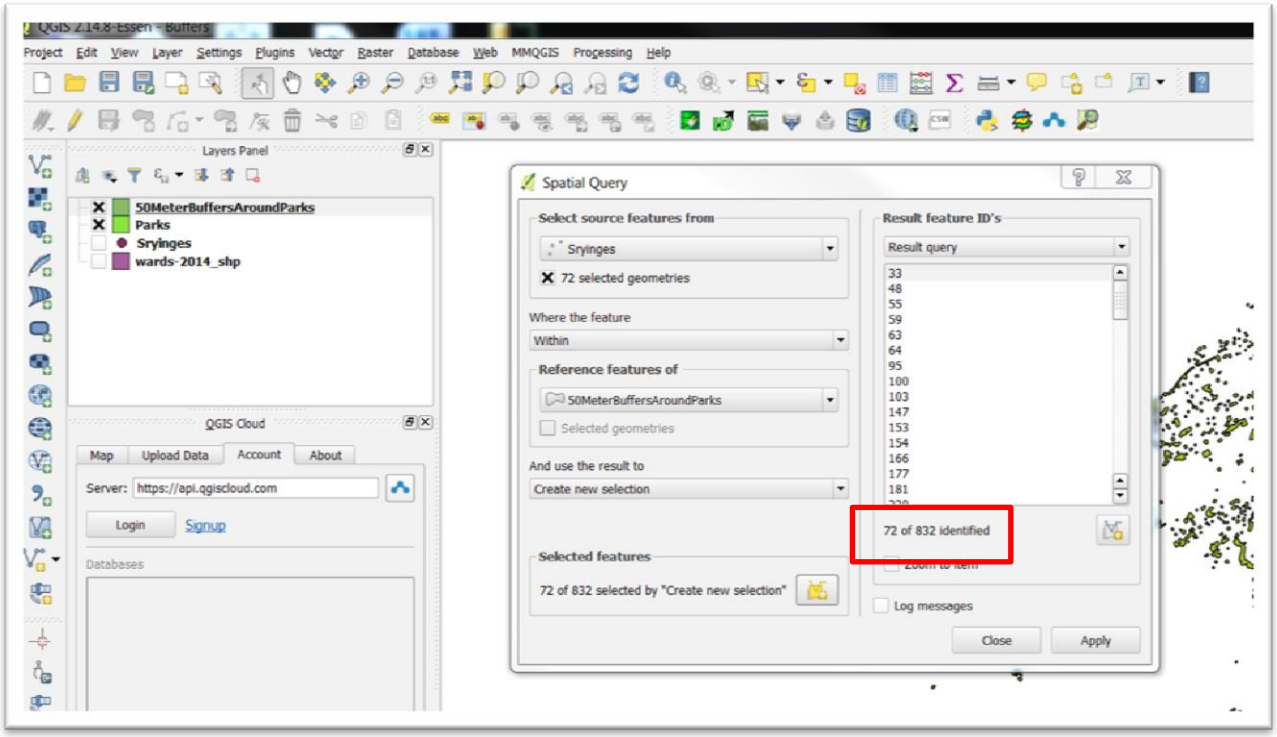


In the screen grab below, your “source layer” is the syringe shape file. Under the dialog box’s “Where the feature” section, select “Within”; that is, you want all the locations where the discarded items are within the 50M buffers. Your “Reference features of” section is the newly-created parks layer with the buffers.

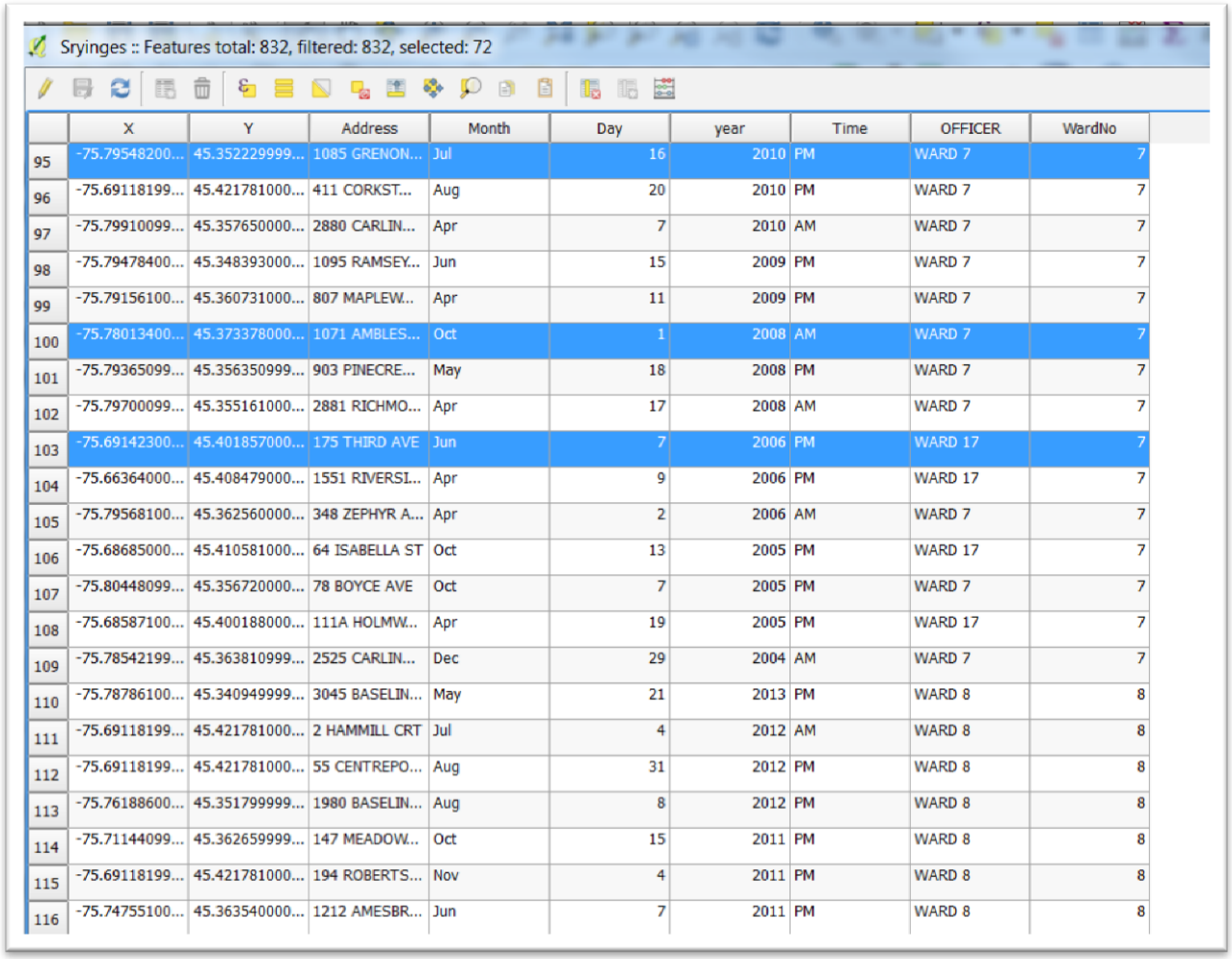
Note: If you're using version 2.18.0, you may have to install a spatial query plug-in if it doesn't appear in your menu.



Select Apply.



QGIS has selected72 discarded syringes that are within 50 metres of the city parks. Close the dialogue box, and right-click on the "GeoCoded_FullSyringeFile" and open the attribute table.



	X	Y	Address	Month	Day	year	Time	OFFICER	WardNo
95	-75.79548200...	45.352229999...	1085 GRENON...	Jul	16	2010	PM	WARD 7	7
96	-75.69118199...	45.421781000...	411 CORKST...	Aug	20	2010	PM	WARD 7	7
97	-75.79910099...	45.357650000...	2880 CARLIN...	Apr	7	2010	AM	WARD 7	7
98	-75.79478400...	45.348393000...	1095 RAMSEY...	Jun	15	2009	PM	WARD 7	7
99	-75.79156100...	45.360731000...	807 MAPLEW...	Apr	11	2009	PM	WARD 7	7
100	-75.78013400...	45.373378000...	1071 AMBLES...	Oct	1	2008	AM	WARD 7	7
101	-75.79365099...	45.356350999...	903 PINECRE...	May	18	2008	PM	WARD 7	7
102	-75.79700099...	45.355161000...	2881 RICHMO...	Apr	17	2008	AM	WARD 7	7
103	-75.69142300...	45.401857000...	175 THIRD AVE	Jun	7	2006	PM	WARD 17	7
104	-75.66364000...	45.408479000...	1551 RIVERSI...	Apr	9	2006	PM	WARD 17	7
105	-75.79568100...	45.362560000...	348 ZEPHYR A...	Apr	2	2006	AM	WARD 7	7
106	-75.68685000...	45.410581000...	64 ISABELLA ST	Oct	13	2005	PM	WARD 17	7
107	-75.80448099...	45.356720000...	78 BOYCE AVE	Oct	7	2005	PM	WARD 7	7
108	-75.68587100...	45.400188000...	111A HOLMW...	Apr	19	2005	PM	WARD 17	7
109	-75.78542199...	45.363810999...	2525 CARLIN...	Dec	29	2004	AM	WARD 7	7
110	-75.78786100...	45.340949999...	3045 BASELIN...	May	21	2013	PM	WARD 8	8
111	-75.69118199...	45.421781000...	2 HAMMILL CRT	Jul	4	2012	AM	WARD 8	8
112	-75.69118199...	45.421781000...	55 CENTREPO...	Aug	31	2012	PM	WARD 8	8
113	-75.76188600...	45.351799999...	1980 BASELIN...	Aug	8	2012	PM	WARD 8	8
114	-75.71144099...	45.362659999...	147 MEADOW...	Oct	15	2011	PM	WARD 8	8
115	-75.69118199...	45.421781000...	194 ROBERTS...	Nov	4	2011	PM	WARD 8	8
116	-75.74755100...	45.363540000...	1212 AMESBR...	Jun	7	2011	PM	WARD 8	8

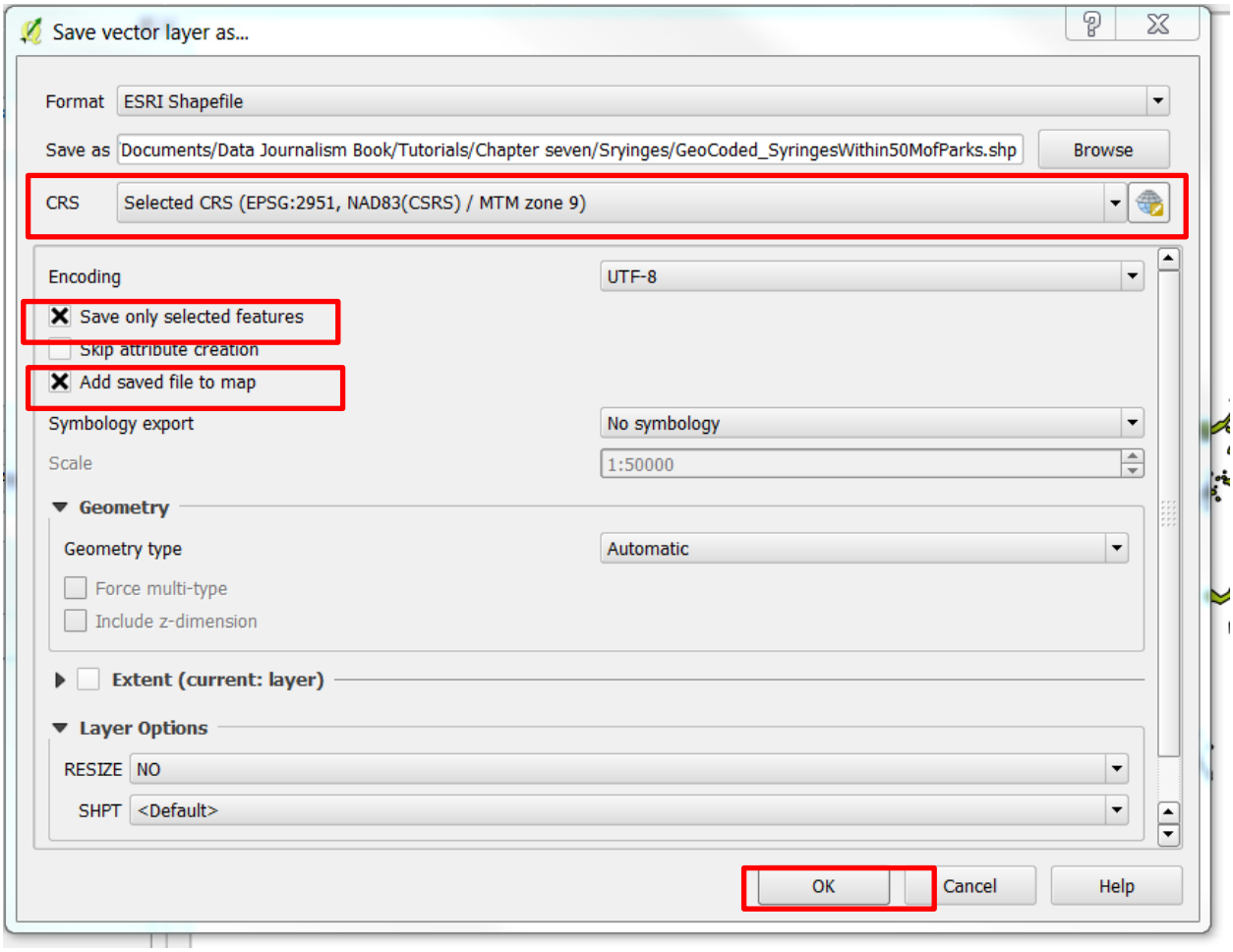
The query has highlighted the relevant syringe locations.

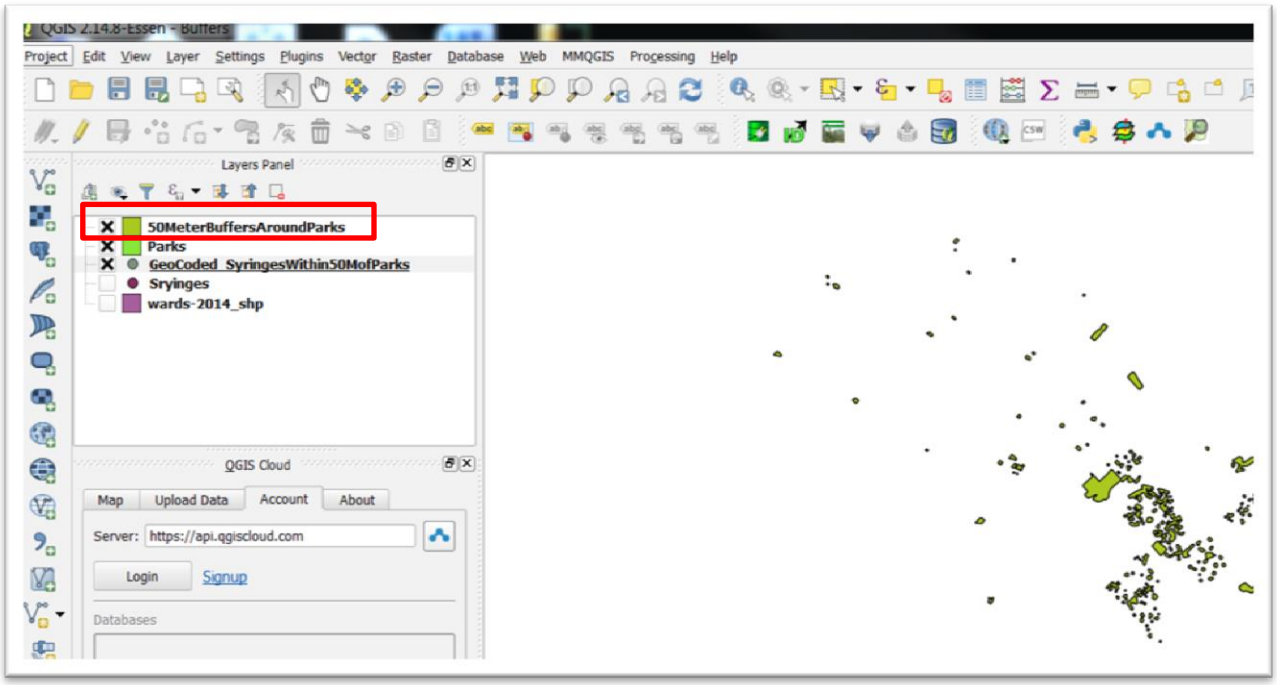
Close the attribute table.

We will now create a new layer of these selected files. To do this, right-click on the layer and choose the "Save as" option.

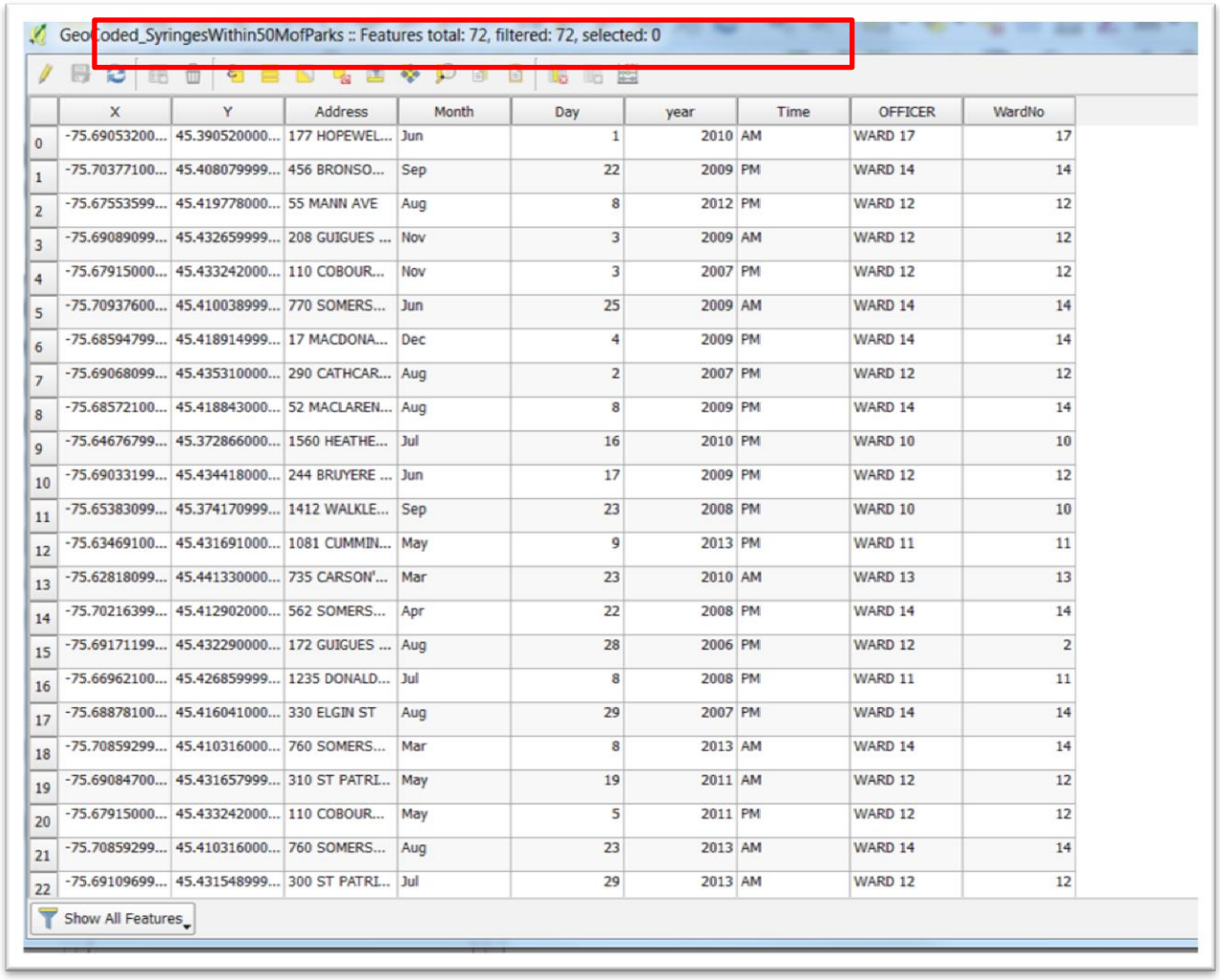
Call the new file "GeoCoded_SyringesWithin50MofParks" and hit the "Save" tab.

Now – AND THIS IS KEY -- we want to select the "Save only selected features" option in the dialog box's "Encoding" section. You'll also notice that the projection corresponds to the projection for the parks and wards. If it doesn't, change the setting to make sure it does.


Save vector layer as...
Format
ESRI Shapefile
Save as
Documents/Data Journalism Book/Tutorials/Chapter seven/Sryinges/GeoCoded_SyringesWithin50MofParks.shp
Browse
CRS
Selected CRS (EPSG:2951, NAD83(CSRS) / MTM zone 9)
Encoding
UTF-8
Save only selected features
Skip attribute creation
Add saved file to map
Symbology export
No symbology
Scale
1:50000
Geometry
Geometry type
Automatic
Force multi-type
Include z-dimension
Extent (current: layer)
Layer Options
RESIZE
NO
SHPT
<Default>
OK
Cancel
Help


QGIS 2.14.8-Essen - Buffers
Project Edit View Layer Settings Plugins Vector Raster Database Web MMQGIS Processing Help
Layers Panel
50MeterBuffersAroundParks
Parks
GeoCoded_SyringesWithin50MofParks
Sryinges
wards-2014_shp
QGIS Cloud
Map Upload Data Account About
Server: https://api.qgiscloud.com
Login Signup
Databases

Open the new file's attribute table


GeoCoded_SyringesWithin50MofParks :: Features total: 72, filtered: 72, selected: 0

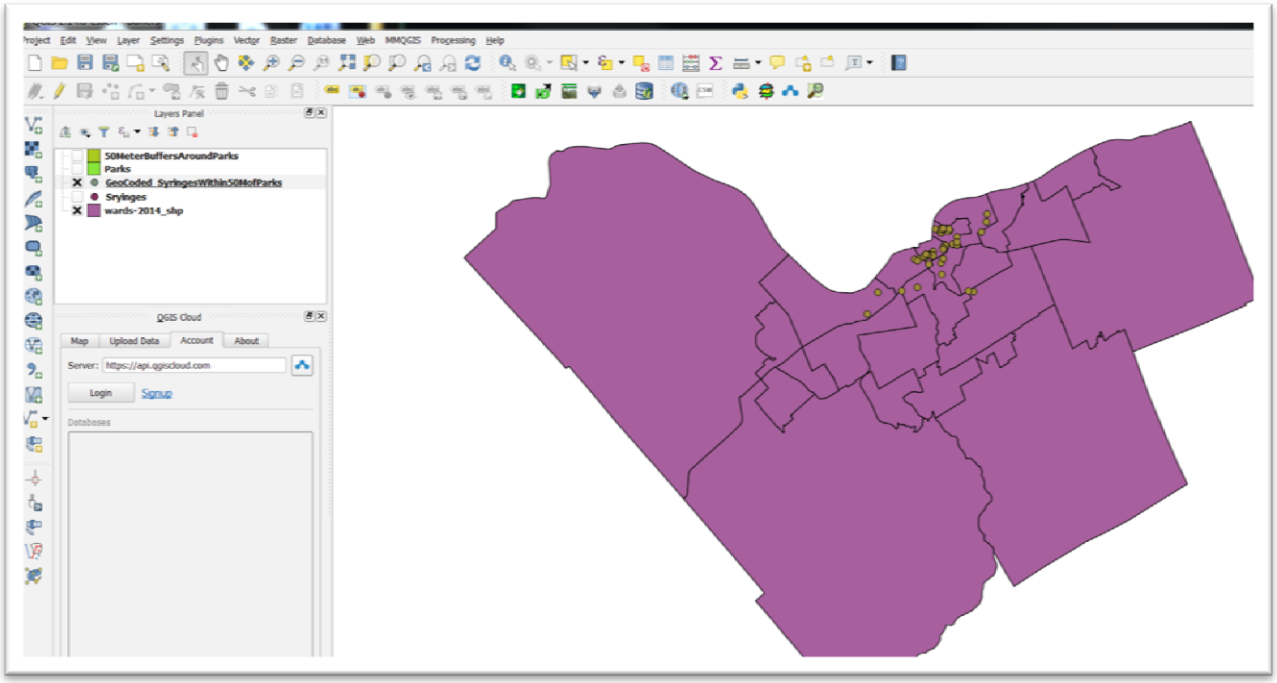
	X	Y	Address	Month	Day	year	Time	OFFICER	WardNo
0	-75.69053200...	45.390520000...	177 HOPEWEL...	Jun	1	2010	AM	WARD 17	17
1	-75.70377100...	45.408079999...	456 BRONSO...	Sep	22	2009	PM	WARD 14	14
2	-75.67553599...	45.419778000...	55 MANN AVE	Aug	8	2012	PM	WARD 12	12
3	-75.69089099...	45.432659999...	208 GUIGUES ...	Nov	3	2009	AM	WARD 12	12
4	-75.67915000...	45.433242000...	110 COBOUR...	Nov	3	2007	PM	WARD 12	12
5	-75.70937600...	45.410038999...	770 SOMERS...	Jun	25	2009	AM	WARD 14	14
6	-75.68594799...	45.418914999...	17 MACDONA...	Dec	4	2009	PM	WARD 14	14
7	-75.69068099...	45.435310000...	290 CATHCAR...	Aug	2	2007	PM	WARD 12	12
8	-75.68572100...	45.418843000...	52 MACLAREN...	Aug	8	2009	PM	WARD 14	14
9	-75.64676799...	45.372866000...	1560 HEATHE...	Jul	16	2010	PM	WARD 10	10
10	-75.69033199...	45.434418000...	244 BRUYERE ...	Jun	17	2009	PM	WARD 12	12
11	-75.65383099...	45.374170999...	1412 WALKLE...	Sep	23	2008	PM	WARD 10	10
12	-75.63469100...	45.431691000...	1081 CUMMIN...	May	9	2013	PM	WARD 11	11
13	-75.62818099...	45.441330000...	735 CARSON'...	Mar	23	2010	AM	WARD 13	13
14	-75.70216399...	45.412902000...	562 SOMERS...	Apr	22	2008	PM	WARD 14	14
15	-75.69171199...	45.432290000...	172 GUIGUES ...	Aug	28	2006	PM	WARD 12	2
16	-75.66962100...	45.426859999...	1235 DONALD...	Jul	8	2008	PM	WARD 11	11
17	-75.68878100...	45.416041000...	330 ELGIN ST	Aug	29	2007	PM	WARD 14	14
18	-75.70859299...	45.410316000...	760 SOMERS...	Mar	8	2013	AM	WARD 14	14
19	-75.69084700...	45.431657999...	310 ST PATRI...	May	19	2011	AM	WARD 12	12
20	-75.67915000...	45.433242000...	110 COBOUR...	May	5	2011	PM	WARD 12	12
21	-75.70859299...	45.410316000...	760 SOMERS...	Aug	23	2013	AM	WARD 14	14
22	-75.69109699...	45.431548999...	300 ST PATRI...	Jul	29	2013	AM	WARD 12	12

Show All Features

The query has joined the syringes that fall within a 50-metre radius of parks to the actual parks themselves, allowing us to visit those locations and the houses nearby to talk to people who may have seen the discarded items.

You can export save the layer as a csv file that has now become a tip sheet for locating parks where syringes have been found. The Toronto Star and CBC News used this technique tell their stories.

Make sure that only the Wards_2014 and the "Needles50MetresFromParks" layers are selected to see what the points look like on the map



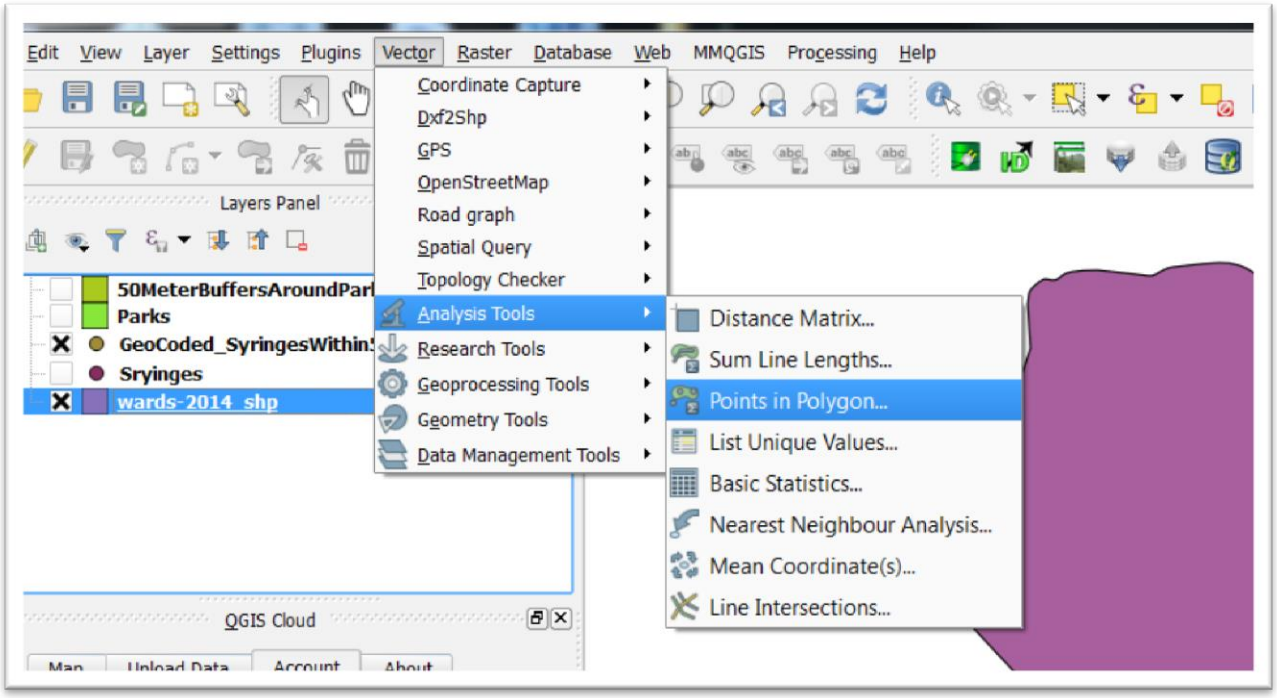
This buffer distance is arbitrary. If, for instance, you discover after a bit of research that 100M is a better distance, then you can always perform a second spatial query to obtain more results.

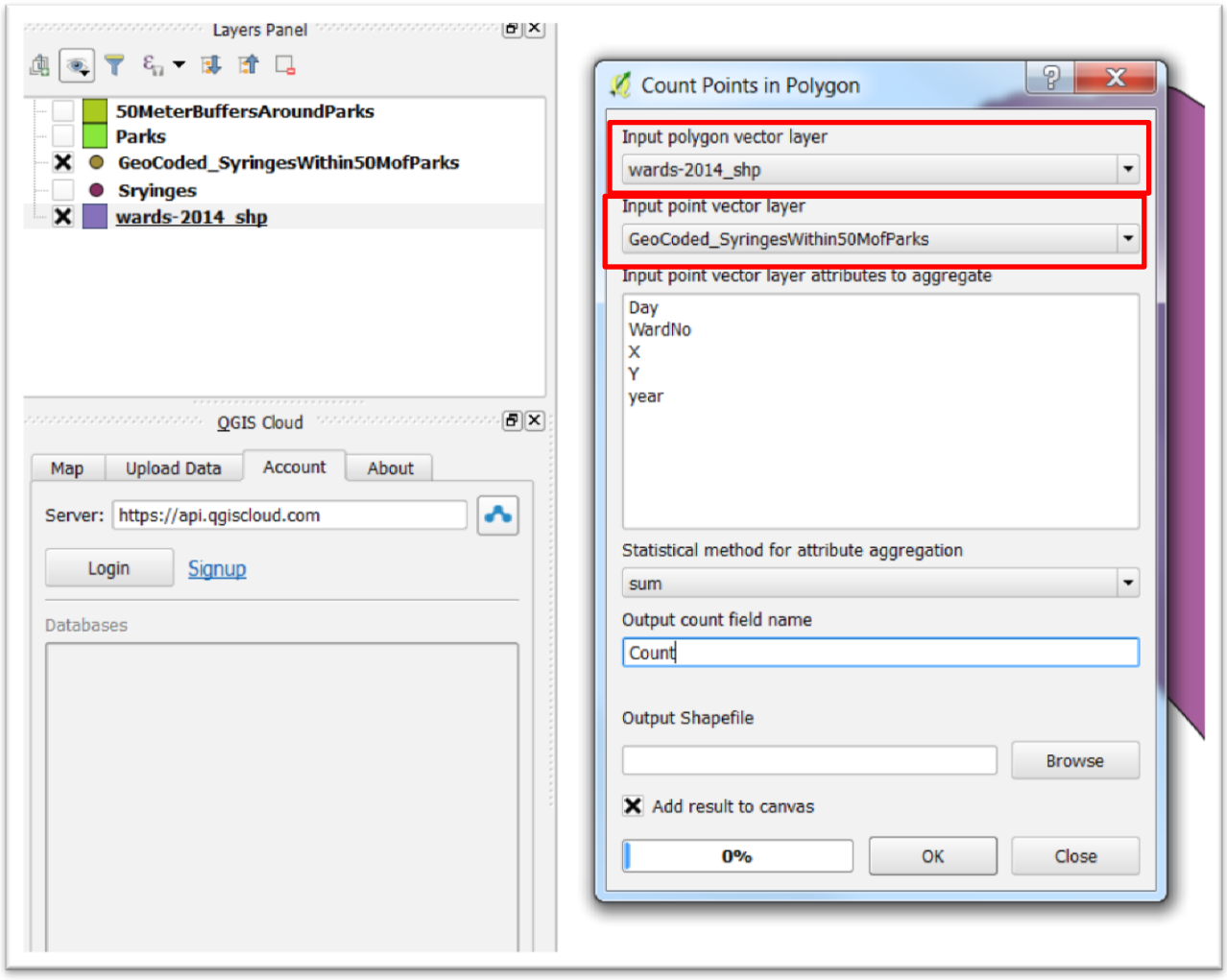
Buffer can also be erected around play structures, a layer located on the city's open data portal, daycare locations, or schools. In short, areas where children play. By themselves, the locations of parks mean very little. However, when we locate them close to features like discarded needles, then you have a potential story.

For one last query, let's determine which wards have the highest number of needles within a 50-metre walking distance to parks.

To do this, we'll select the two layers that are highlighted: "GeoCoded_SyringesWithin50MofParks" and "Wards_2014".

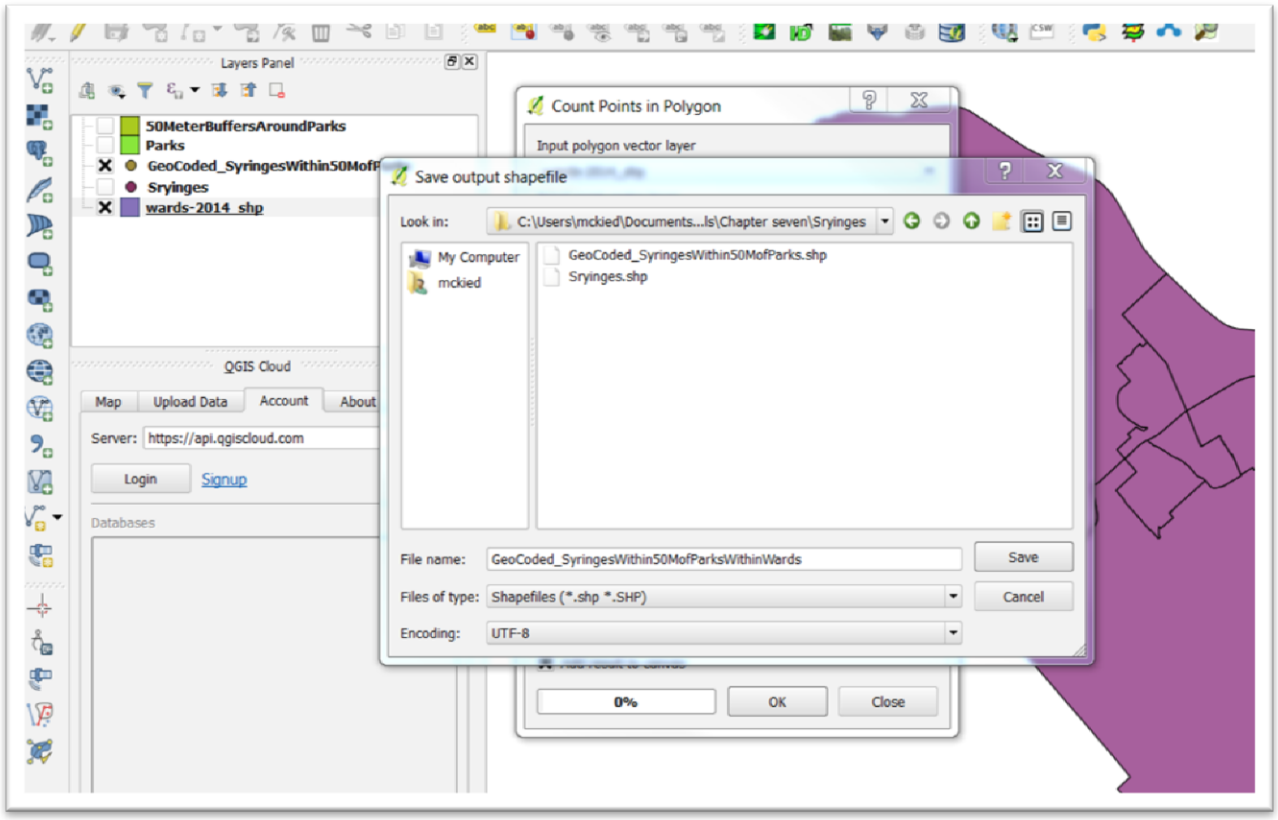
Right click on “Wards_2014”, go to “Vector” on the menu at the top, select “Analysis tools”, and then “Points in Polygon(s)”.



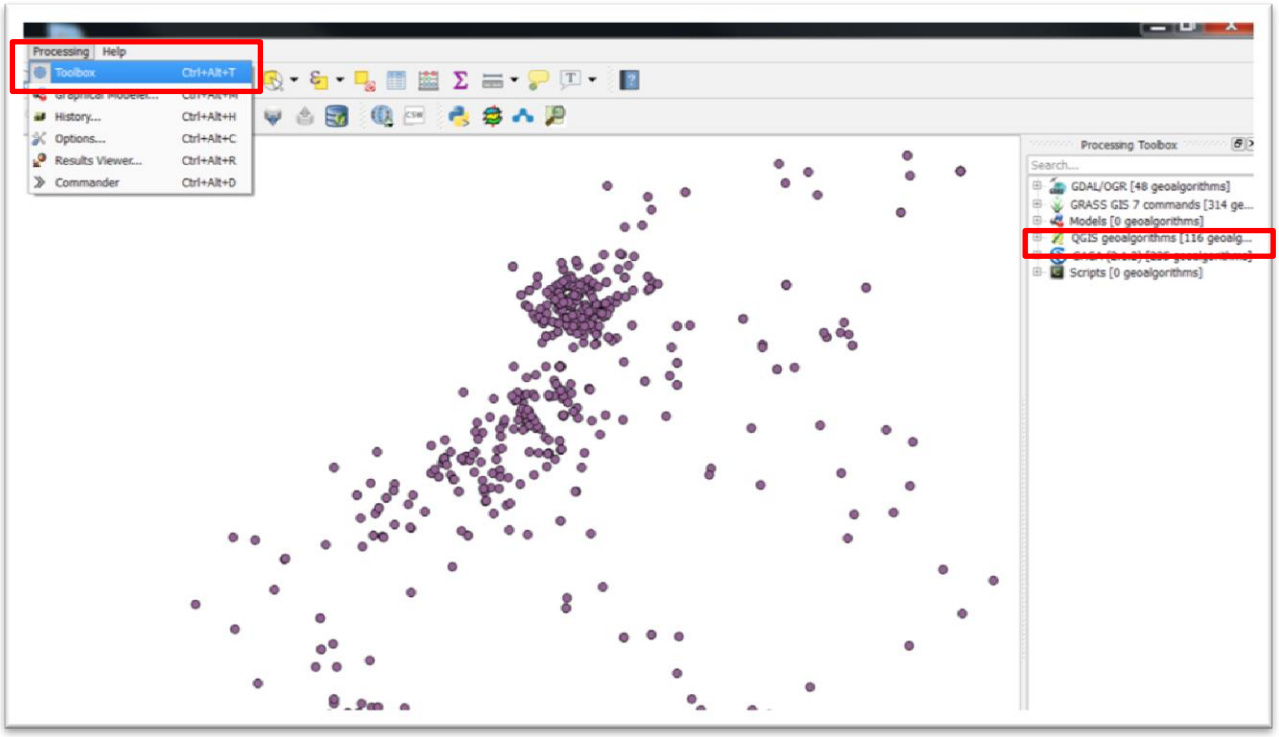


Your "Input polygon vector layer is your "wards-2014_shp". Your "Input point vector layer" is your "GeoCoded_SyringsWithin50MofParks". Your "Statistical method for attribute aggregation" is "sum." Just below the "Output count field name" change the default "PNT CNT" (point count) to a label that makes more sense, such as "COUNT".

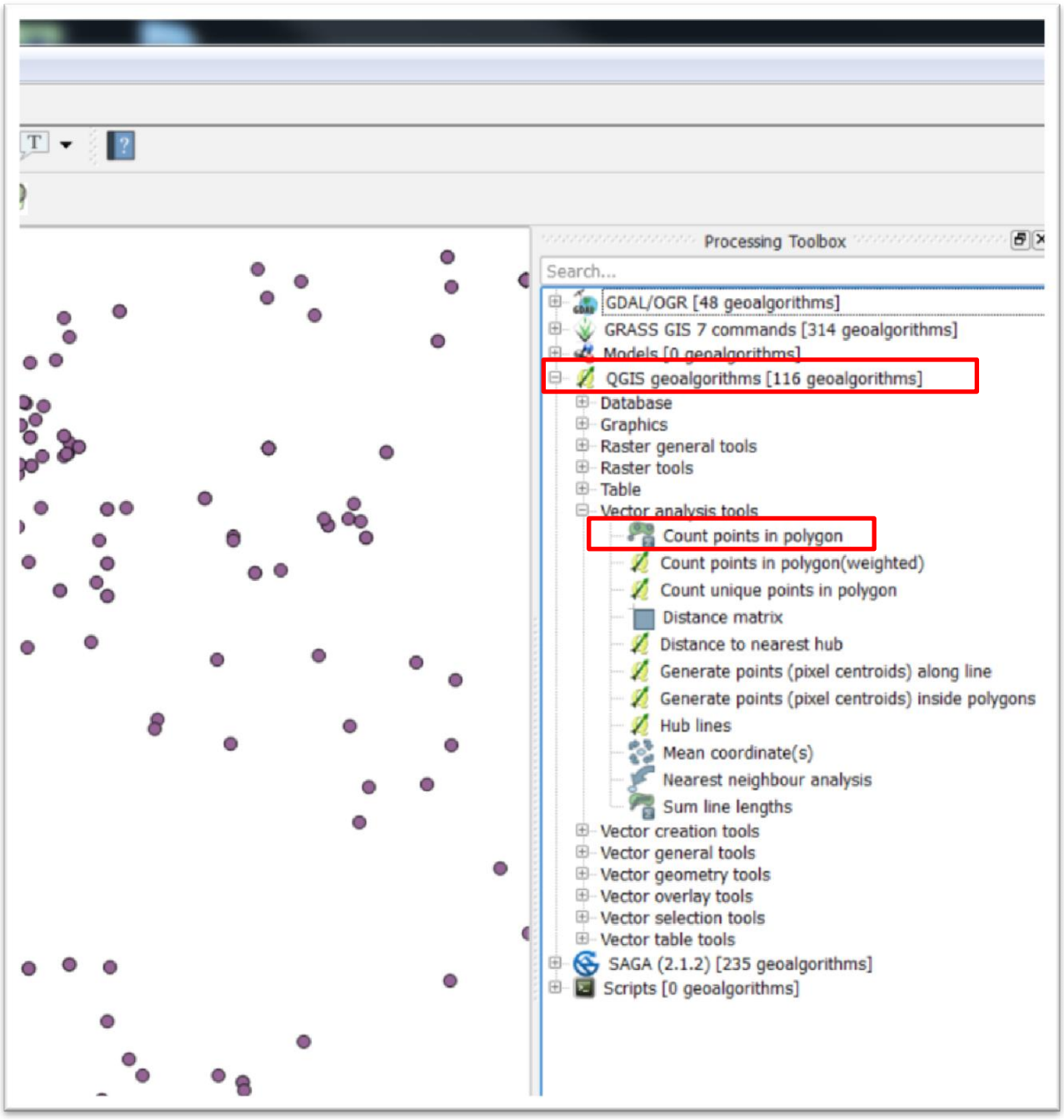
Browse to the correct folder, and give the new layer a title that reveals the information about the contents, something like "GeoCoded_SyringesWithin50MofParksWithinWards".

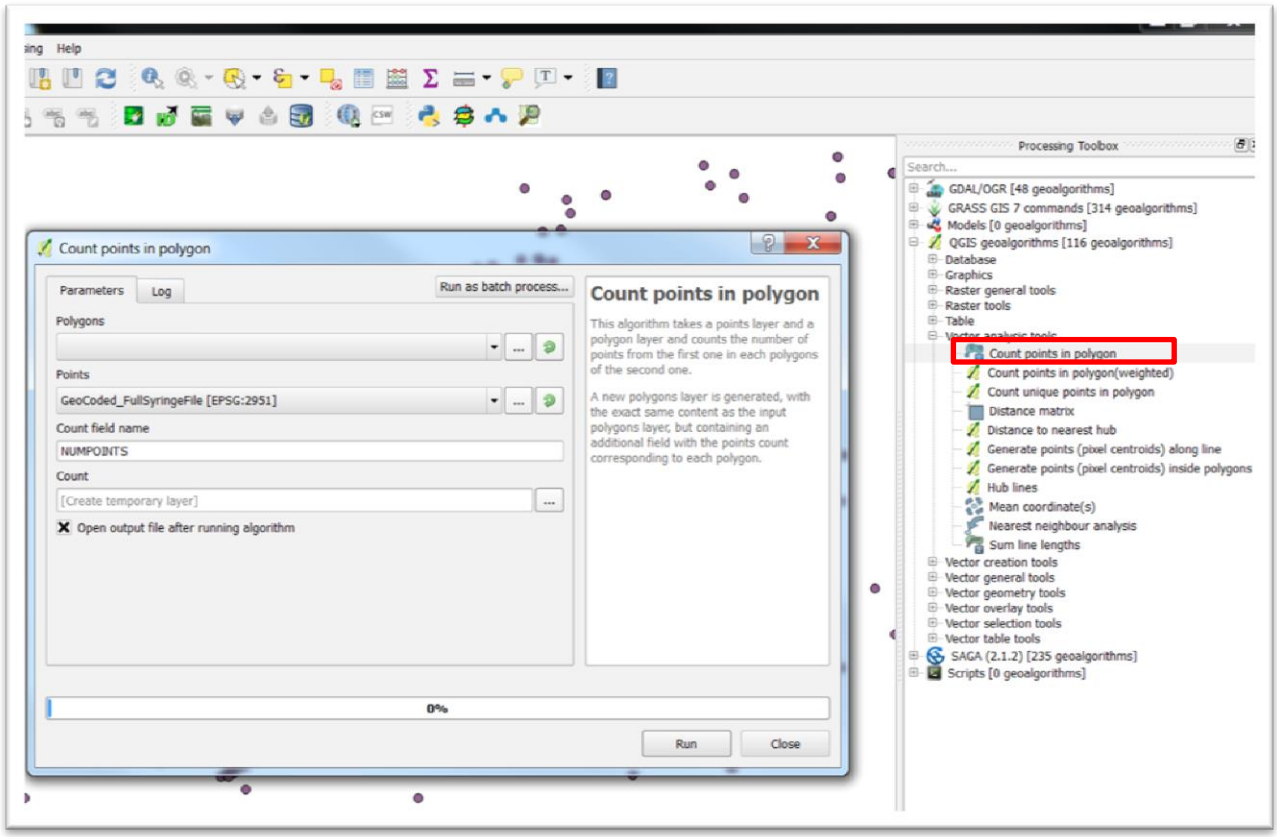


If you're using Qgis version 2.18.0, the process for obtaining the count-in-polygon tool is slightly different. This version does not have the "vector>analysis" section. Instead, you must go to "Processing", then "Toolbox, which opens opens a toolbox on the right side.

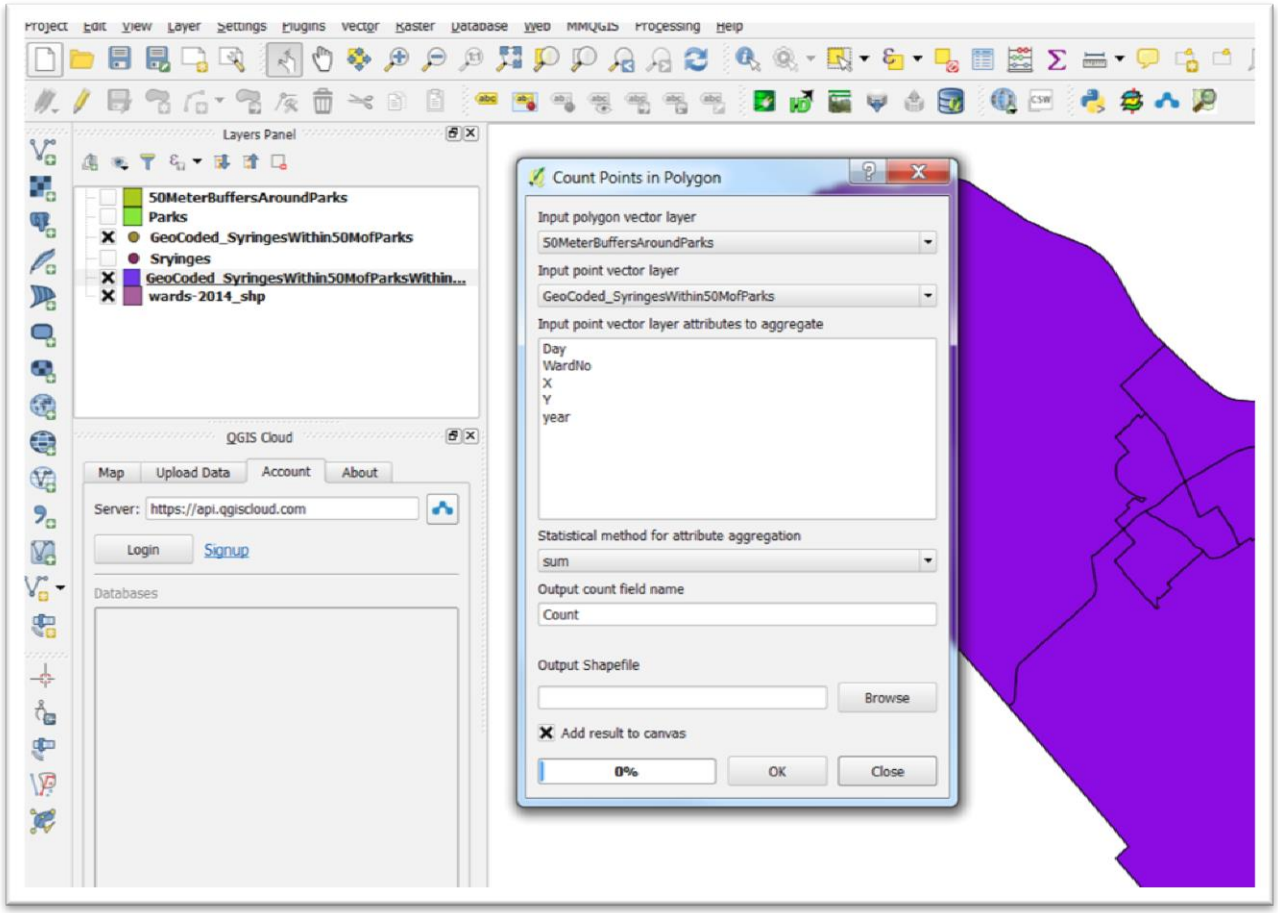


From there go to "QGIS geoalgorithms", "vector analysis tools", and finally "Count points in polygon".

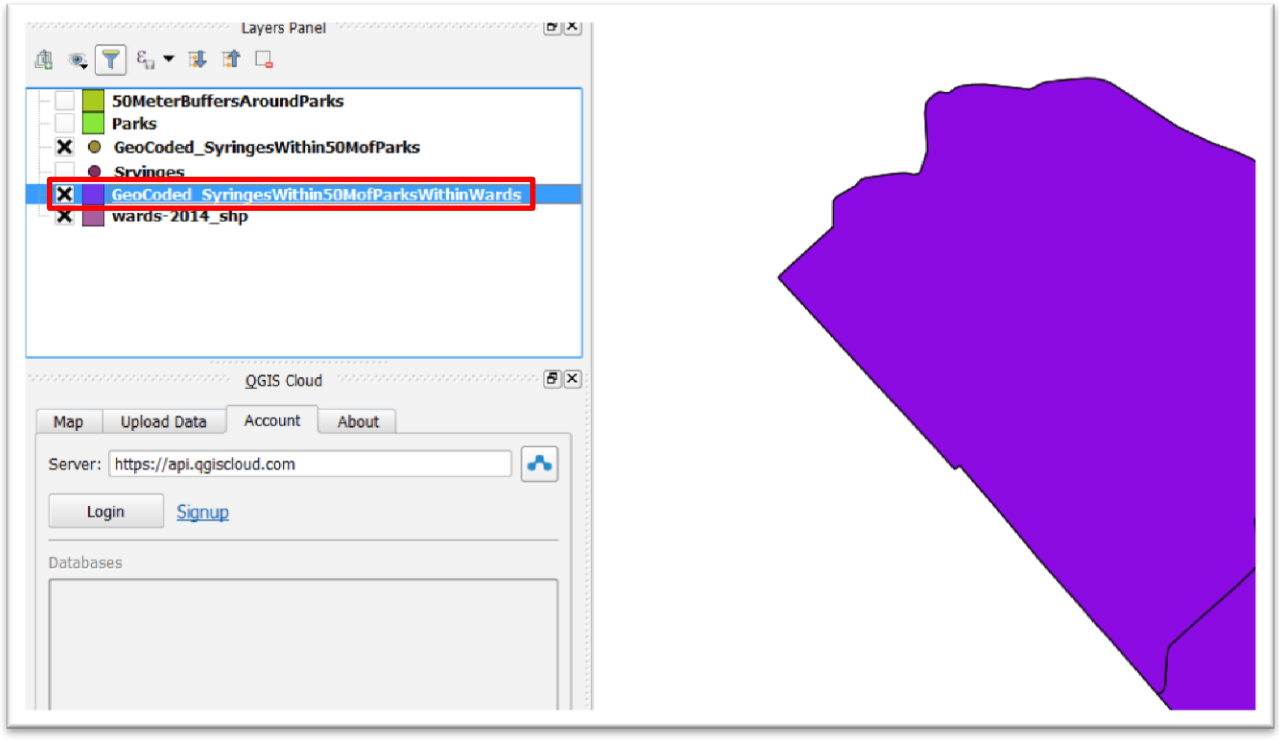

Processing Toolbox
Search...
GDAL/OGR [48 geoalgorithms]
GRASS GIS 7 commands [314 geoalgorithms]
Models [0 geoalgorithms]
QGIS geoalgorithms [116 geoalgorithms]
Database
Graphics
Raster general tools
Raster tools
Table
Vector analysis tools
Count points in polygon
Count points in polygon(weighted)
Count unique points in polygon
Distance matrix
Distance to nearest hub
Generate points (pixel centroids) along line
Generate points (pixel centroids) inside polygons
Hub lines
Mean coordinate(s)
Nearest neighbour analysis
Sum line lengths
Vector creation tools
Vector general tools
Vector geometry tools
Vector overlay tools
Vector selection tools
Vector table tools
SAGA (2.1.2) [235 geoalgorithms]
Scripts [0 geoalgorithms]


Help
Processing Toolbox
Search...
GDAL/OGR [48 geoalgorithms]
GRASS GIS 7 commands [314 geoalgorithms]
Models [0 geoalgorithms]
QGIS geoalgorithms [116 geoalgorithms]
Database
Graphics
Raster general tools
Raster tools
Table
Count points in polygon
Count points in polygon(weighted)
Count unique points in polygon
Distance matrix
Distance to nearest hub
Generate points (pixel centroids) along line
Generate points (pixel centroids) inside polygons
Hub lines
Mean coordinate(s)
Nearest neighbour analysis
Sum line lengths
Vector creation tools
Vector general tools
Vector geometry tools
Vector overlay tools
Vector selection tools
Vector table tools
SAGA (2.1.2) [235 geoalgorithms]
Scripts [0 geoalgorithms]
Count points in polygon
Parameters
Log
Run as batch process...
Polygons
Points
GeoCoded_FullSyringeFile [EPSG:2951]
Count field name
NUMPOINTS
Count
[Create temporary layer]
Open output file after running algorithm
Count points in polygon
This algorithm takes a points layer and a polygon layer and counts the number of points from the first one in each polygons of the second one.
A new polygons layer is generated, with the exact same content as the input polygons layer, but containing an additional field with the points count corresponding to each polygon.
0%
Run
Close

Which ever version you're using, save the file, and then select "OK" when you return to the "Count Points in Polygon" dialogue box.



Close the box, and check out the new layer.

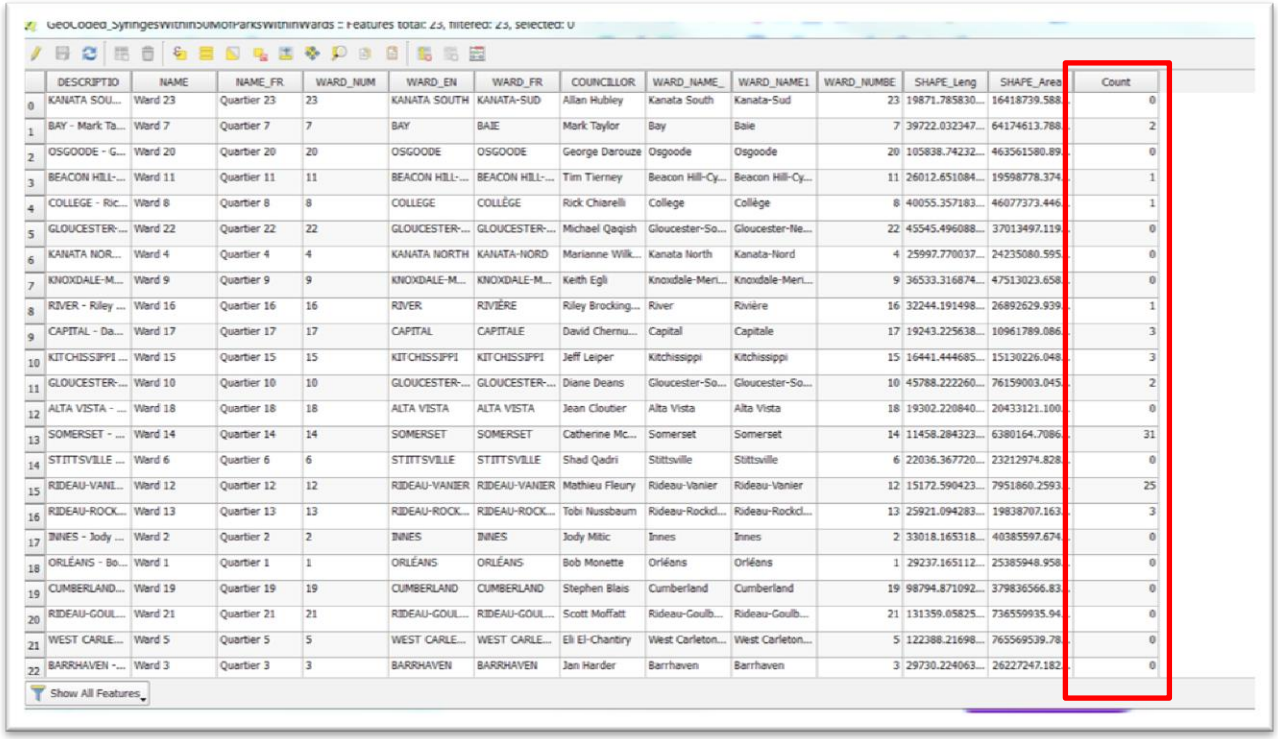


De-select all the other layers.

As we saw in the Fusion Table, and previous Qgis tutorials, when we merge tables, as we have done with this points-points-in-polygon query, we obtain a uniform colour on our file's layer.

Opening the attribute table reveals that there actually is data behind this bland exterior.

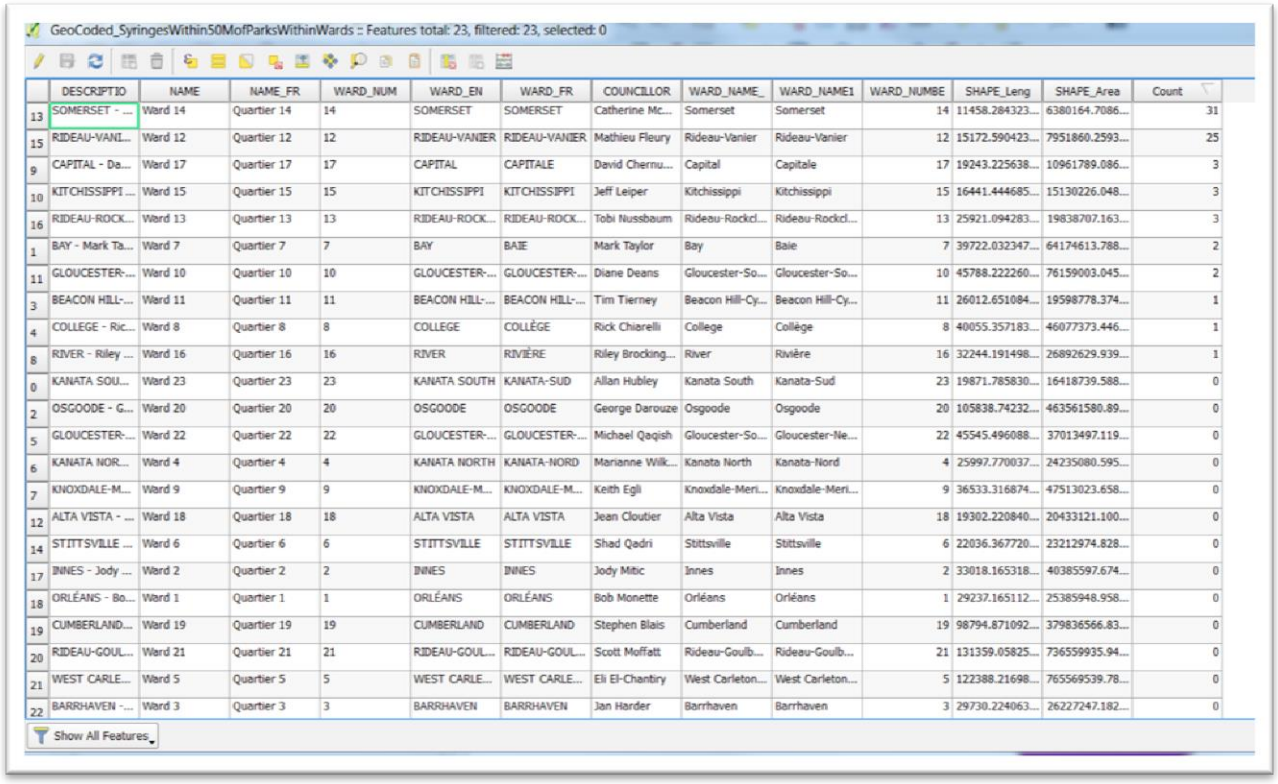
Sort the COUNT column in descending order.



	DESCRIPTIO	NAME	NAME_FR	WARD_NUM	WARD_EN	WARD_FR	COUNCILLOR	WARD_NAME_	WARD_NAME1	WARD_NUMBE	SHAPE_Leng	SHAPE_Area	Count
0	KANATA SOU...	Ward 23	Quartier 23	23	KANATA SOUTH	KANATA-SUD	Allan Hubley	Kanata South	Kanata-Sud	23	19871.785830...	16418739.588...	0
1	BAY - Mark Ta...	Ward 7	Quartier 7	7	BAY	BAIE	Mark Taylor	Bay	Baie	7	39722.032347...	64174613.786...	2
2	OSGOODE - G...	Ward 20	Quartier 20	20	OSGOODE	OSGOODE	George Darouze	Osgoode	Osgoode	20	105838.74232...	463561580.89...	0
3	BEACON HILL-...	Ward 11	Quartier 11	11	BEACON HILL-...	BEACON HILL-...	Tim Tierney	Beacon Hill-Cy...	Beacon Hill-Cy...	11	26012.651084...	19598778.374...	1
4	COLLEGE - Ric...	Ward 8	Quartier 8	8	COLLEGE	COLLÈGE	Rick Chiarelli	College	Collège	8	40055.357183...	46077373.446...	1
5	GLOUCESTER-...	Ward 22	Quartier 22	22	GLOUCESTER-...	GLOUCESTER-...	Michael Qaqish	Gloucester-So...	Gloucester-Ne...	22	45545.496088...	37013497.119...	0
6	KANATA NOR...	Ward 4	Quartier 4	4	KANATA NORTH	KANATA-NORD	Marianne Wilk...	Kanata North	Kanata-Nord	4	25997.770037...	24235080.595...	0
7	KNOXDALE-M...	Ward 9	Quartier 9	9	KNOXDALE-M...	KNOXDALE-M...	Keith Egli	Knoxdale-Meri...	Knoxdale-Meri...	9	36533.316874...	47513023.658...	0
8	RIVER - Riley ...	Ward 16	Quartier 16	16	RIVER	RIVIÈRE	Riley Brocking...	River	Rivière	16	32244.191498...	26892629.939...	1
9	CAPITAL - Da...	Ward 17	Quartier 17	17	CAPITAL	CAPITALE	David Chernu...	Capital	Capitale	17	19243.225638...	10961789.086...	3
10	KITCHISSIPPI ...	Ward 15	Quartier 15	15	KITCHISSIPPI	KITCHISSIPPI	Jeff Leiper	Kitchissippi	Kitchissippi	15	16441.444685...	15130226.048...	3
11	GLOUCESTER-...	Ward 10	Quartier 10	10	GLOUCESTER-...	GLOUCESTER-...	Diane Deans	Gloucester-So...	Gloucester-So...	10	45788.222260...	76159003.045...	2
12	ALTA VISTA - ...	Ward 18	Quartier 18	18	ALTA VISTA	ALTA VISTA	Jean Cloutier	Alta Vista	Alta Vista	18	19302.220840...	20433121.100...	0
13	SOMERSET - ...	Ward 14	Quartier 14	14	SOMERSET	SOMERSET	Catherine Mc...	Somerset	Somerset	14	11458.284323...	6380164.7086...	31
14	STITTSVILLE ...	Ward 6	Quartier 6	6	STITTSVILLE	STITTSVILLE	Shad Qadri	Stittsville	Stittsville	6	22036.367720...	23212974.828...	0
15	RIDEAU-VANI...	Ward 12	Quartier 12	12	RIDEAU-VANIER	RIDEAU-VANIER	Mathieu Fleury	Rideau-Vanier	Rideau-Vanier	12	15172.590423...	7951860.2593...	25
16	RIDEAU-ROCK...	Ward 13	Quartier 13	13	RIDEAU-ROCK...	RIDEAU-ROCK...	Tobi Nussbaum	Rideau-Rockcl...	Rideau-Rockcl...	13	25921.094283...	19838707.163...	3
17	INNES - Jody ...	Ward 2	Quartier 2	2	INNES	INNES	Jody Mitic	Innes	Innes	2	33018.165318...	40385597.674...	0
18	ORLÉANS - Bo...	Ward 1	Quartier 1	1	ORLÉANS	ORLÉANS	Bob Monette	Orléans	Orléans	1	29237.165112...	25385948.958...	0
19	CUMBERLAND...	Ward 19	Quartier 19	19	CUMBERLAND	CUMBERLAND	Stephen Blais	Cumberland	Cumberland	19	98794.871092...	379836566.83...	0
20	RIDEAU-GOUL...	Ward 21	Quartier 21	21	RIDEAU-GOUL...	RIDEAU-GOUL...	Scott Moffatt	Rideau-Goulb...	Rideau-Goulb...	21	131359.05825...	736559935.94...	0
21	WEST CARLE...	Ward 5	Quartier 5	5	WEST CARLE...	WEST CARLE...	Eli El-Chantiry	West Carleton...	West Carleton...	5	122388.21698...	765569539.78...	0
22	BARRHAVEN -...	Ward 3	Quartier 3	3	BARRHAVEN	BARRHAVEN	Jan Harder	Barrhaven	Barrhaven	3	29730.224063...	26227247.182...	0

Show All Features

Sort the “Count” column in descending order.

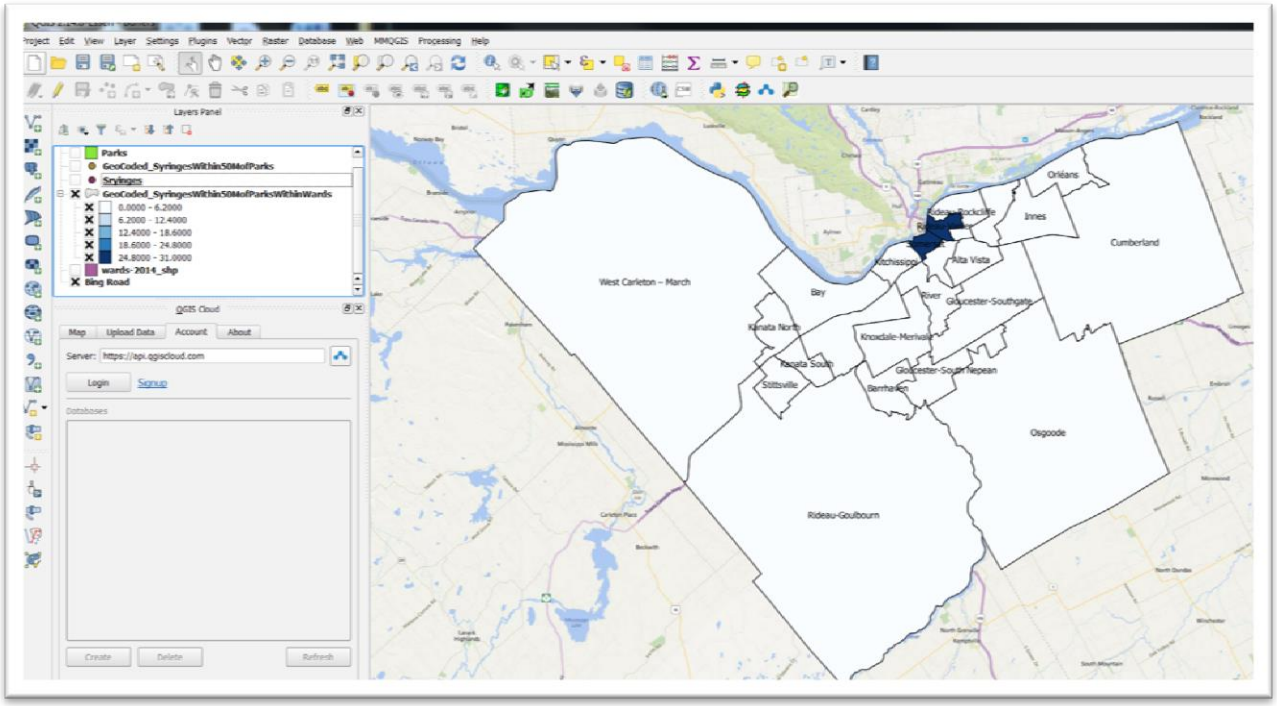

GeoCoded_SyringesWithin50MofParksWithinWards :: Features total: 23, filtered: 23, selected: 0

	DESCRIPTIO	NAME	NAME_FR	WARD_NUM	WARD_EN	WARD_FR	COUNCILLOR	WARD_NAME_	WARD_NAME1	WARD_NUMBE	SHAPE_Leng	SHAPE_Area	Count
13	SOMERSET - ...	Ward 14	Quartier 14	14	SOMERSET	SOMERSET	Catherine Mc...	Somerset	Somerset	14	11458.284323...	6380164.7086...	31
15	RIDEAU-VANI...	Ward 12	Quartier 12	12	RIDEAU-VANIER	RIDEAU-VANIER	Mathieu Fleury	Rideau-Vanier	Rideau-Vanier	12	15172.590423...	7951860.2593...	25
9	CAPITAL - Da...	Ward 17	Quartier 17	17	CAPITAL	CAPITALE	David Chernu...	Capital	Capitale	17	19243.225638...	10961789.086...	3
10	KITCHISSIPPI ...	Ward 15	Quartier 15	15	KITCHISSIPPI	KITCHISSIPPI	Jeff Leiper	Kitchissippi	Kitchissippi	15	16441.444685...	15130226.048...	3
16	RIDEAU-ROCK...	Ward 13	Quartier 13	13	RIDEAU-ROCK...	RIDEAU-ROCK...	Tobi Nussbaum	Rideau-Rockcl...	Rideau-Rockcl...	13	25921.094283...	19838707.163...	3
1	BAY - Mark Ta...	Ward 7	Quartier 7	7	BAY	BAIE	Mark Taylor	Bay	Baie	7	39722.032347...	64174613.788...	2
11	GLOUCESTER-...	Ward 10	Quartier 10	10	GLOUCESTER-...	GLOUCESTER-...	Diane Deans	Gloucester-So...	Gloucester-So...	10	45788.222260...	76159003.045...	2
3	BEACON HILL-...	Ward 11	Quartier 11	11	BEACON HILL-...	BEACON HILL-...	Tim Tierney	Beacon Hill-Cy...	Beacon Hill-Cy...	11	26012.651084...	19598778.374...	1
4	COLLEGE - Ric...	Ward 8	Quartier 8	8	COLLEGE	COLLÈGE	Rick Chiarelli	College	Collège	8	40055.357183...	46077373.446...	1
8	RIVER - Riley ...	Ward 16	Quartier 16	16	RIVER	RIVIÈRE	Riley Brocking...	River	Rivière	16	32244.191498...	26892629.939...	1
0	KANATA SOU...	Ward 23	Quartier 23	23	KANATA SOUTH	KANATA-SUD	Allan Hubley	Kanata South	Kanata-Sud	23	19871.785830...	16418739.588...	0
2	OSGOODE - G...	Ward 20	Quartier 20	20	OSGOODE	OSGOODE	George Darouze	Osgoode	Osgoode	20	105838.74232...	463561580.89...	0
5	GLOUCESTER-...	Ward 22	Quartier 22	22	GLOUCESTER-...	GLOUCESTER-...	Michael Qaqish	Gloucester-So...	Gloucester-Ne...	22	45545.496088...	37013497.119...	0
6	KANATA NOR...	Ward 4	Quartier 4	4	KANATA NORTH	KANATA-NORD	Marianne Wilk...	Kanata North	Kanata-Nord	4	25997.770037...	24235080.595...	0
7	KNOXDALE-M...	Ward 9	Quartier 9	9	KNOXDALE-M...	KNOXDALE-M...	Keith Egli	Knoxdale-Meri...	Knoxdale-Meri...	9	36533.316874...	47513023.658...	0
12	ALTA VISTA - ...	Ward 18	Quartier 18	18	ALTA VISTA	ALTA VISTA	Jean Cloutier	Alta Vista	Alta Vista	18	19302.220840...	20433121.100...	0
14	STITTSVILLE ...	Ward 6	Quartier 6	6	STITTSVILLE	STITTSVILLE	Shad Qadri	Stittsville	Stittsville	6	22036.367720...	23212974.828...	0
17	INNES - Jody ...	Ward 2	Quartier 2	2	INNES	INNES	Jody Mitic	Innes	Innes	2	33018.165318...	40385597.674...	0
18	ORLÉANS - Bo...	Ward 1	Quartier 1	1	ORLÉANS	ORLÉANS	Bob Monette	Orléans	Orléans	1	29237.165112...	25385948.958...	0
19	CUMBERLAND...	Ward 19	Quartier 19	19	CUMBERLAND	CUMBERLAND	Stephen Blais	Cumberland	Cumberland	19	98794.871092...	379836566.83...	0
20	RIDEAU-GOUL...	Ward 21	Quartier 21	21	RIDEAU-GOUL...	RIDEAU-GOUL...	Scott Moffatt	Rideau-Goulb...	Rideau-Goulb...	21	131359.05825...	736559935.94...	0
21	WEST CARLE...	Ward 5	Quartier 5	5	WEST CARLE...	WEST CARLE...	Eli El-Chantiry	West Carleton...	West Carleton...	5	122388.21698...	765569539.78...	0
22	BARRHAVEN -...	Ward 3	Quartier 3	3	BARRHAVEN	BARRHAVEN	Jan Harder	Barrhaven	Barrhaven	3	29730.224063...	26227247.182...	0

Show All Features

Somerset and Rideau-Vanier are the wards with the highest number of syringes within 50 metres of parks. No surprise, given those wards are in busy downtown areas. Nonetheless, we now know where to go to begin interviewing people.

Using the steps we learned in the "MakingChoroplethinQgis" tutorial, let's colour code the map, give it labels, and then import a base map.



Buffering has allowed us to locate areas of the city where discarded syringes and needles obtained through a freedom-of-information request have become problematic, and worthy of further investigation.

Using the steps from the ArcGIS Online tutorial, we could upload the colour-coded layer, or layers with the geographic coordinates of the discarded syringes, to ArcGIS Online.

It should be noted that QGIS has an option for uploading files to the cloud and symbolizing them. However, it is the opinion of these authors that the QGIS option is still a work in progress, and therefore not as user-friendly as ArcGIS Online.

One of the advantages to learning different methods for visualization data, is that can use various combinations to obtain the results we want.