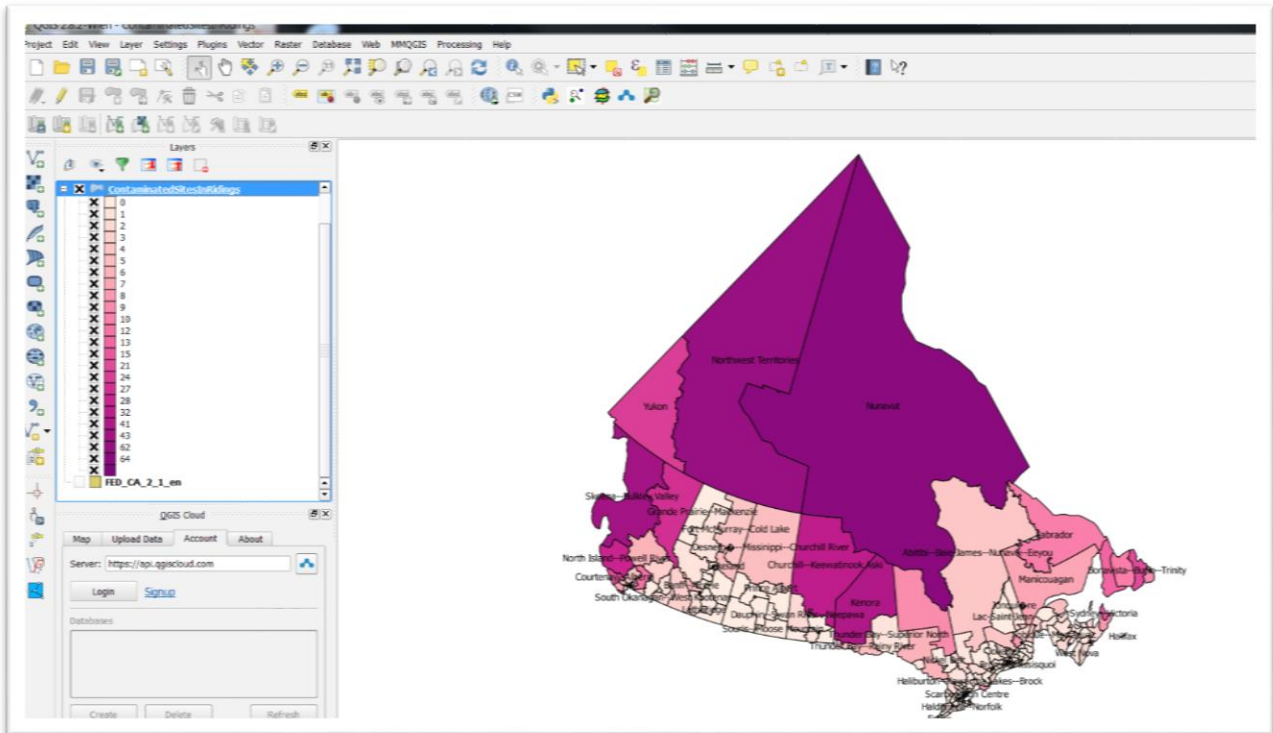


Tutorial for mapping federal contaminated sites

The federal government maintains an inventory of [contaminated sites](#) at different stages of clean up. In this exercise, we will determine which federal ridings have the highest number of contaminated sites, producing a map that looks something like this:



So let's get started.

- 1) Go to the [Natural Resources Canada site](#) that contains the new federal districts and download the "SHP" file, which is the first one

in the list.

Data and Resources

The following files are available for download.



Download english file in SHAPE through HTTP

[SHP >](#) 6.94 MB



Download french file in SHAPE through HTTP

[SHP >](#) 6.94 MB



Download english file in GML through HTTP

[GML >](#) 7.47 MB



Download french file in GML through HTTP

[GML >](#) 7.47 MB



Download english file in KML through HTTP

[KML >](#) 29.4 MB



Download french file in KML through HTTP

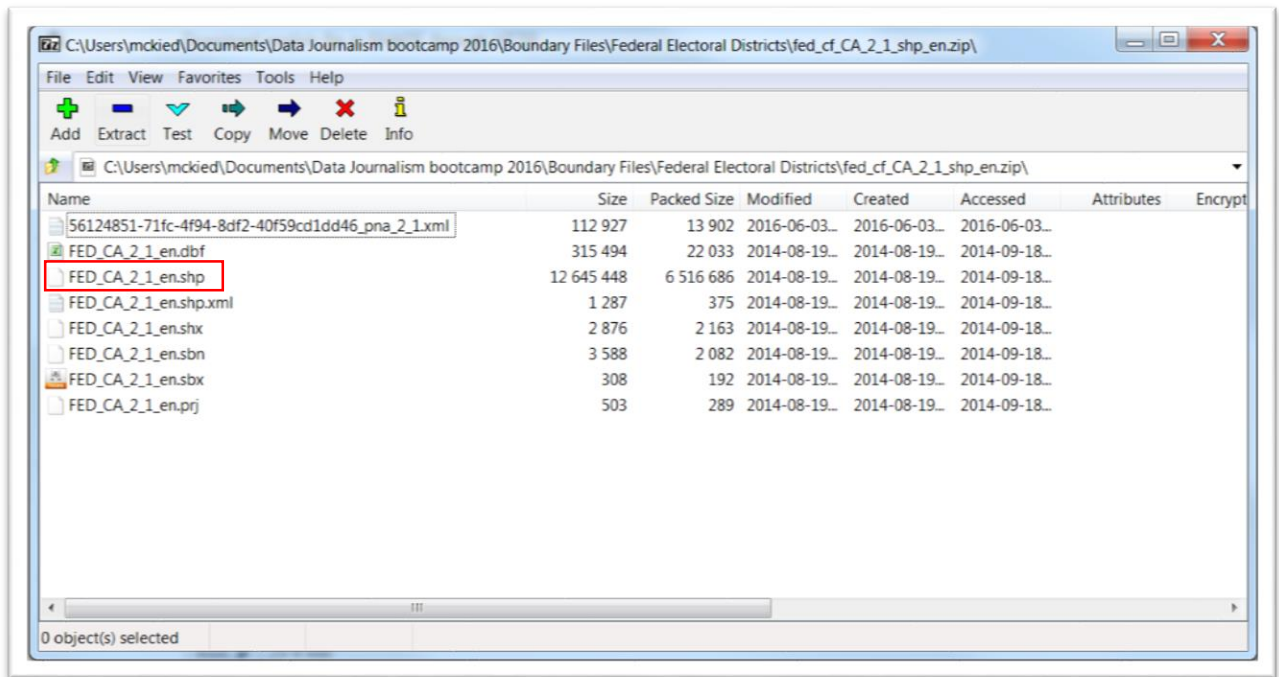
[KML >](#) 29.4 MB



Download file Federal Electoral Districts - Data Product Specifications through HTTP

[PDF >](#) 167.94 KB

2) Download the shape file, which will be in a zipped folder. When opened, it looks like this:



3) As we explained in the voter turnout tutorial, a shape file comes with a number of “helper” files. Mapping programs like Qgis or ArcGIS use this information to place the file’s boundaries on a map. It is one of reasons that all the files must be in the same folder. So when extracting the files, make sure they’re all in one place.

4) Now let’s download the contaminated sites file at the Treasury Board [website](#).

5) Choose the first classification type “High Priority for Action”. We want the “Active” files. So click on the number below the “Active” title.

Find Sites by Classification

The table below summarizes the number of sites in the inventory by the the [National Classification System](#) of the Canadian Council of Ministers

Classification Type	<u>Suspected</u>	<u>Active</u>	<u>Closed</u>	Total
<u>High Priority for Action</u>	<u>3</u>	<u>726</u>	<u>912</u>	1,641
<u>Medium Priority for Action</u>	<u>3</u>	<u>1,764</u>	<u>1,351</u>	3,118
<u>Low Priority for Action</u>	<u>1</u>	<u>1,407</u>	<u>921</u>	2,329
<u>Insufficient Information</u>	<u>2</u>	<u>106</u>	<u>369</u>	477
<u>Not a Priority for Action</u>	<u>2</u>	<u>395</u>	<u>2,352</u>	2,749
<u>Site(s) not yet classified</u>	<u>2,357</u>	<u>957</u>	<u>9,448</u>	12,762
Total	2,368	5,355	15,353	23,076

Search Results

Search Results Summary

Criteria:	<ul style="list-style-type: none">• Classification: High Priority for Action• Limited to Active Sites Select Additional Criteria...
Sort Key:	Federal Site Identifier (ascending)
Sites Found:	726

Alternate Views

Choose an alternate view:

6) Select the “CSV” tab.

Text File

Export Search Results to Text File

[Return to Query Results](#)

This screen allows you to export the results of your query into comma-delimited ASCII Text files, which can be imported into many software packages for you to perform further analysis of the results.

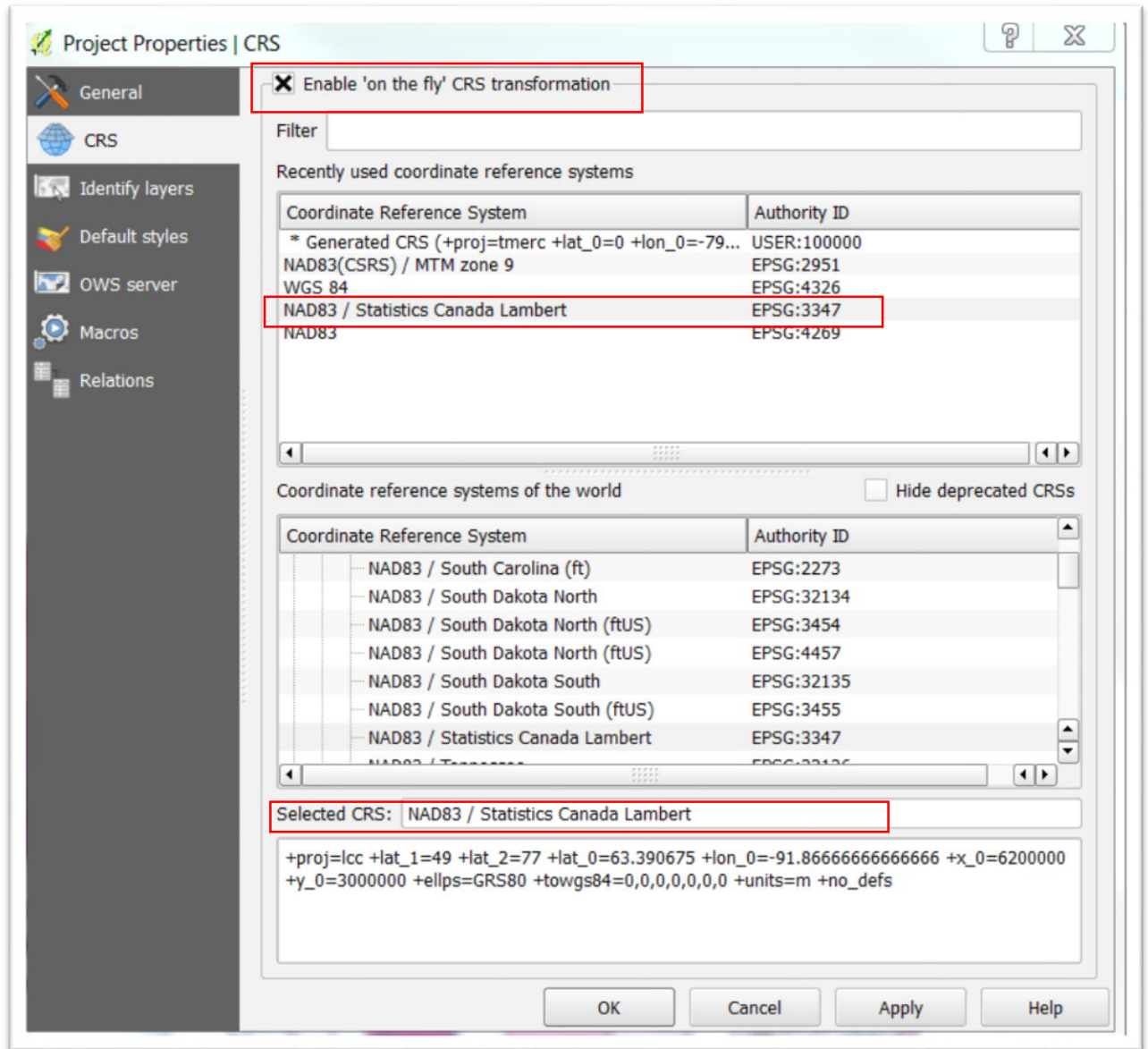
1. [Tombstone Data](#) - this file contains tombstone data records returned by your search query.
2. [Annual Data](#) - this file contains annual data records returned by your search query.
3. [Combined Data](#) - this file combines tombstone data records with corresponding annual data records.

7) Select “Tombstone Data”, making sure to save the csv file in the same folder as your federal electoral boundaries shape file.

8) Open a new Qgis file.

9) To ensure that these two files have the same geographic coordinates, we are click on the “Project” section in the menu

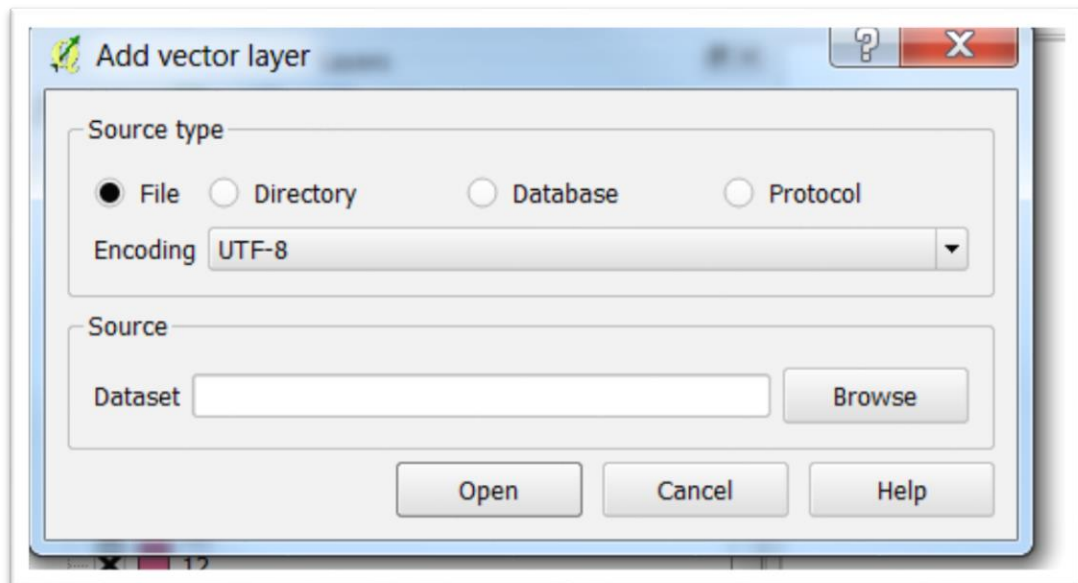
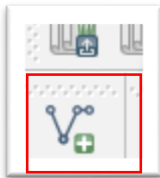
above, and “Project Properties” to obtain a dialog box.



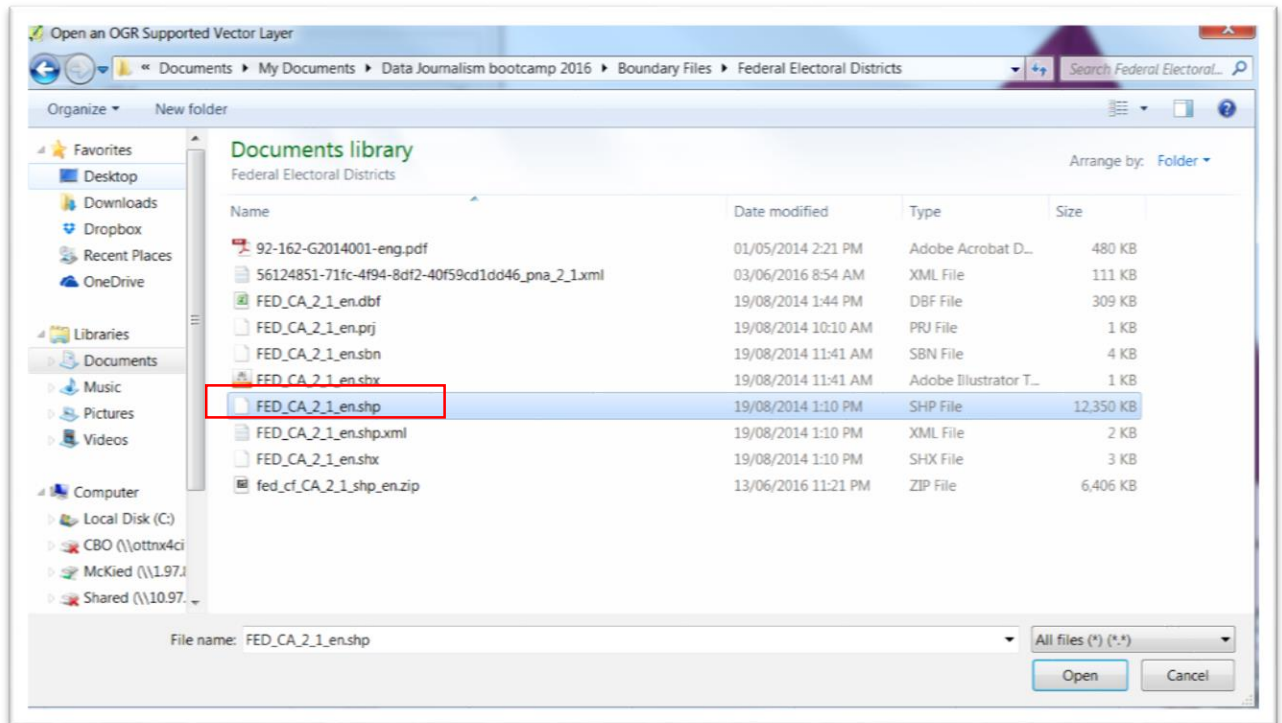
- 10) Check the box to the left of the “Enable ‘on the fly’ CRS transformation” prompt. Selecting this option temporarily re-projects the shapefiles so that both can be viewed in the same space. When doing any form of geoprocessing (joins, clip), both shapefiles **MUST** be in the same coordinate system. Enabling ‘on the fly’ ensures that the shape file and the csv file have the same [projection](#), which allows the mapping software to display a polygon, point, or line on a flat surface. Or put another way,

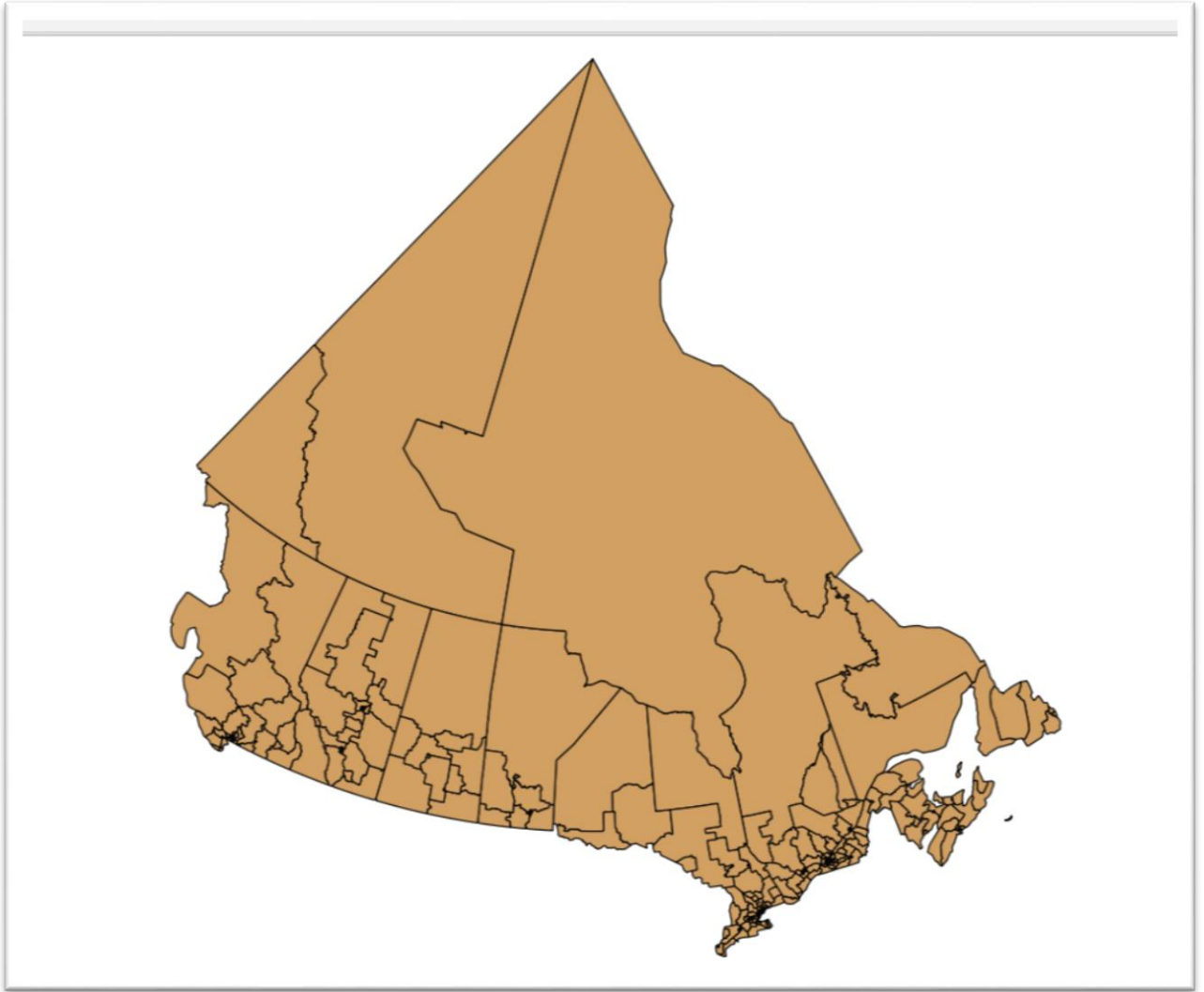
projections use geometry and mathematical calculations to take what is really a sphere and lay it flat out. Having the same projection allows these features to be joined spatially. Features on open data websites like the city of Toronto or Ottawa of the federal government usually have the same coordinate systems. However, as journalists, we are frequently combining features that were not necessarily meant to be joined, which is why we must take the time to understand the concept of projections.

- 11) Enough about projections. Onward!
- 12) Select the “Add vector layer” tab to browse for the shape file, just like we did in the voter-turnout tutorial.”



13) Browse for the federal electoral boundary shape file.





- 14) You can open the attribute table to see the files (the file with the “dbf” extension) that contain information Qgis needs to display

the map.

	NID	FEDNUM	ENNAME	FRNAME	PROVCODE	CREADT	REVDT	REORDER	DECPOPCNT	QUIPOPCNT	ENLEGALDSC	FRLEGALDSC
1	{80A17501-2...	48010	Calgary Rocky...	Calgary Rocky...	AB	20131005	NULL	2013	108901	0	http://www.el...	http://www.el...
1	{8A9CD102-4...	48012	Calgary Signa...	Calgary Signa...	AB	20131005	NULL	2013	109647	0	http://www.el...	http://www.el...
1	{3ACC1704-8...	48013	Calgary Skyview	Calgary Skyview	AB	20131005	NULL	2013	110189	0	http://www.el...	http://www.el...
1	{70716827-A...	12003	Cumberland-...	Cumberland-...	NS	20131005	NULL	2013	82321	0	http://www.el...	http://www.el...
1	{6F16783C-F...	12009	South Shore-...	South Shore-...	NS	20131005	NULL	2013	92561	0	http://www.el...	http://www.el...
1	{61601286-33...	12008	Sackville--Pre...	Sackville--Pre...	NS	20131005	NULL	2013	85583	0	http://www.el...	http://www.el...
1	{5E24304C-2...	24009	Bancour-...	Bancour-...	QC	20131005	NULL	2013	93779	0	http://www.el...	http://www.el...
7	{9FEF06FB-48...	24012	Berthier--Mas...	Berthier--Mas...	QC	20131005	NULL	2013	98590	0	http://www.el...	http://www.el...
1	{5737F403-F...	24011	Beloel--Cham...	Beloel--Cham...	QC	20131005	NULL	2013	109955	0	http://www.el...	http://www.el...
1	{D1F45580-F...	24010	Bellechasse-...	Bellechasse-...	QC	20131005	NULL	2013	112385	0	http://www.el...	http://www.el...
10	{9F7E0F95-3...	59014	Kelowna--Lak...	Kelowna--Lak...	BC	20131005	NULL	2013	110051	0	http://www.el...	http://www.el...
11	{30248901-C...	59017	Mission--Mats...	Mission--Mats...	BC	20131005	NULL	2013	90871	0	http://www.el...	http://www.el...
12	{38889771-4F...	59020	North Okanag...	North Okanag...	BC	20131005	NULL	2013	121474	0	http://www.el...	http://www.el...
13	{68075853-EF...	59022	Pitt Meadows-...	Pitt Meadows-...	BC	20131005	NULL	2013	94111	0	http://www.el...	http://www.el...
14	{68CF0C04-8...	47012	Saskatoon West	Saskatoon-Ou...	SK	20131005	NULL	2013	76704	0	http://www.el...	http://www.el...
15	{19AECAD7-7...	24016	Brome--Missis...	Brome--Missis...	QC	20131005	NULL	2013	98616	0	http://www.el...	http://www.el...
16	{44CD97A2-A...	59033	Surrey--Newton	Surrey--Newton	BC	20131005	NULL	2013	105183	0	http://www.el...	http://www.el...
17	{388ED70F6-8...	59034	Vancouver Ce...	Vancouver Ce...	BC	20131005	NULL	2013	102480	0	http://www.el...	http://www.el...
18	{B38F7825-84...	24030	Hull--Aylmer	Hull--Aylmer	QC	20131005	NULL	2013	103447	0	http://www.el...	http://www.el...
19	{5888F048-F6...	35028	Etobicoke--La...	Etobicoke--La...	ON	20131005	NULL	2013	115437	0	http://www.el...	http://www.el...
19	{0C3C679D-1...	59019	New Westmin...	New Westmin...	BC	20131005	NULL	2013	108652	0	http://www.el...	http://www.el...
11	{1873E23D-D...	24039	Laurier--Saint...	Laurier--Saint...	QC	20131005	NULL	2013	107034	0	http://www.el...	http://www.el...
12	{AB926171-6...	12004	Dartmouth--C...	Dartmouth--C...	NS	20131005	NULL	2013	91212	0	http://www.el...	http://www.el...
13	{94538187-0...	24004	Alfred-Pellan	Alfred-Pellan	QC	20131005	NULL	2013	98045	0	http://www.el...	http://www.el...
14	{091A4423-6...	24024	Dorval--Lachi...	Dorval--Lachi...	QC	20131005	20140619	2013	106886	0	http://www.el...	http://www.el...
15	{3D3E29E6-3...	24073	Sherbrooke	Sherbrooke	QC	20131005	NULL	2013	107988	0	http://www.el...	http://www.el...
16	{9D922476-8...	35064	Nepean	Nepean	ON	20131005	NULL	2013	104775	0	http://www.el...	http://www.el...

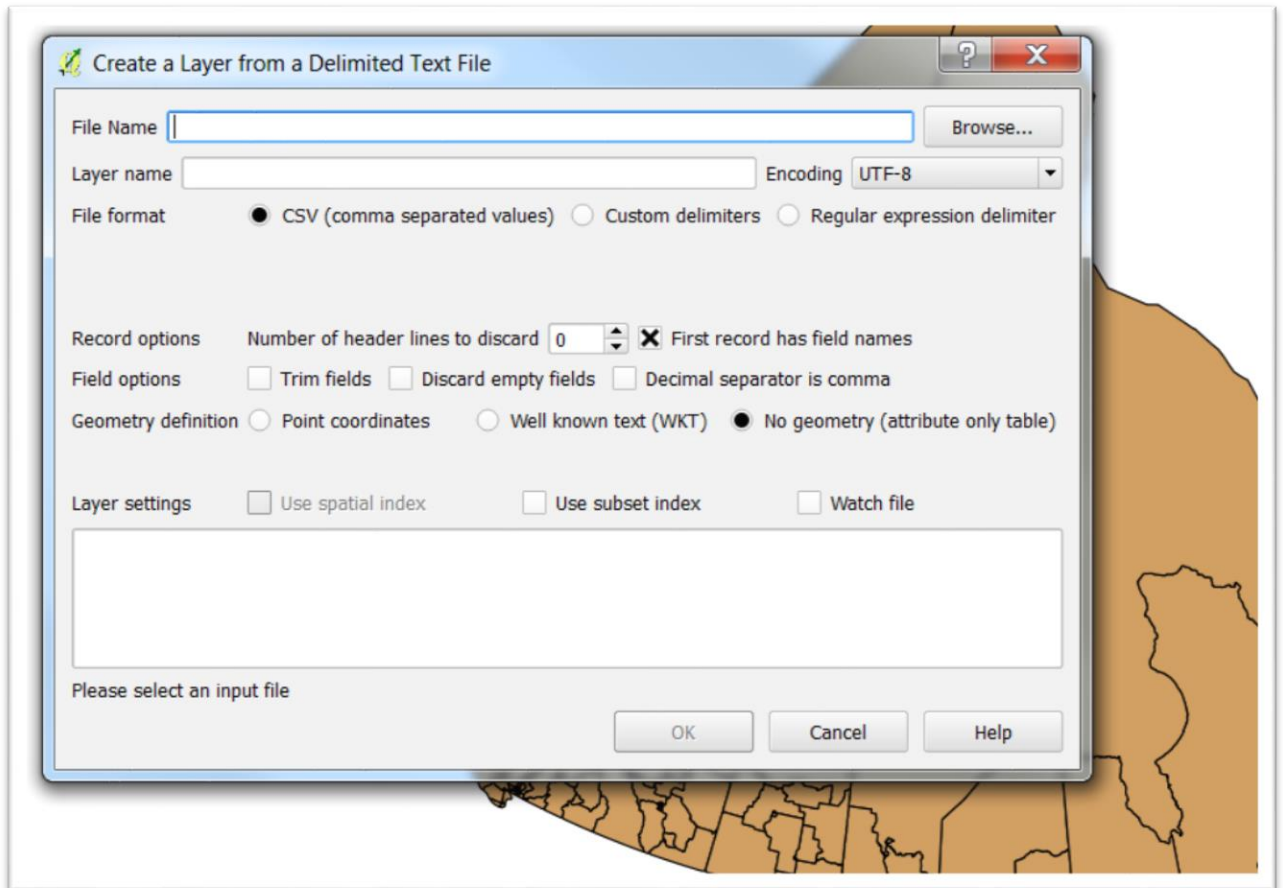
15) Now we'll import the federal contaminated sites file using



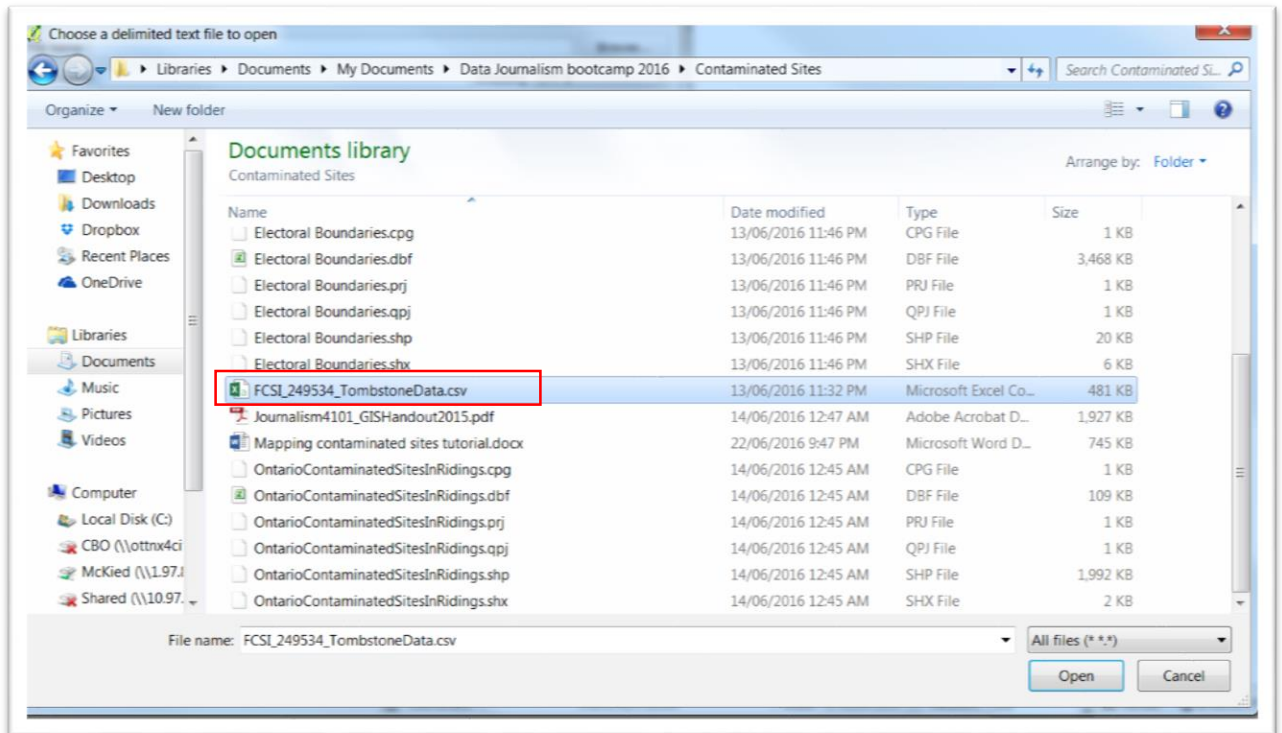
the “Add Delimited Text Layer” icon

that should be in

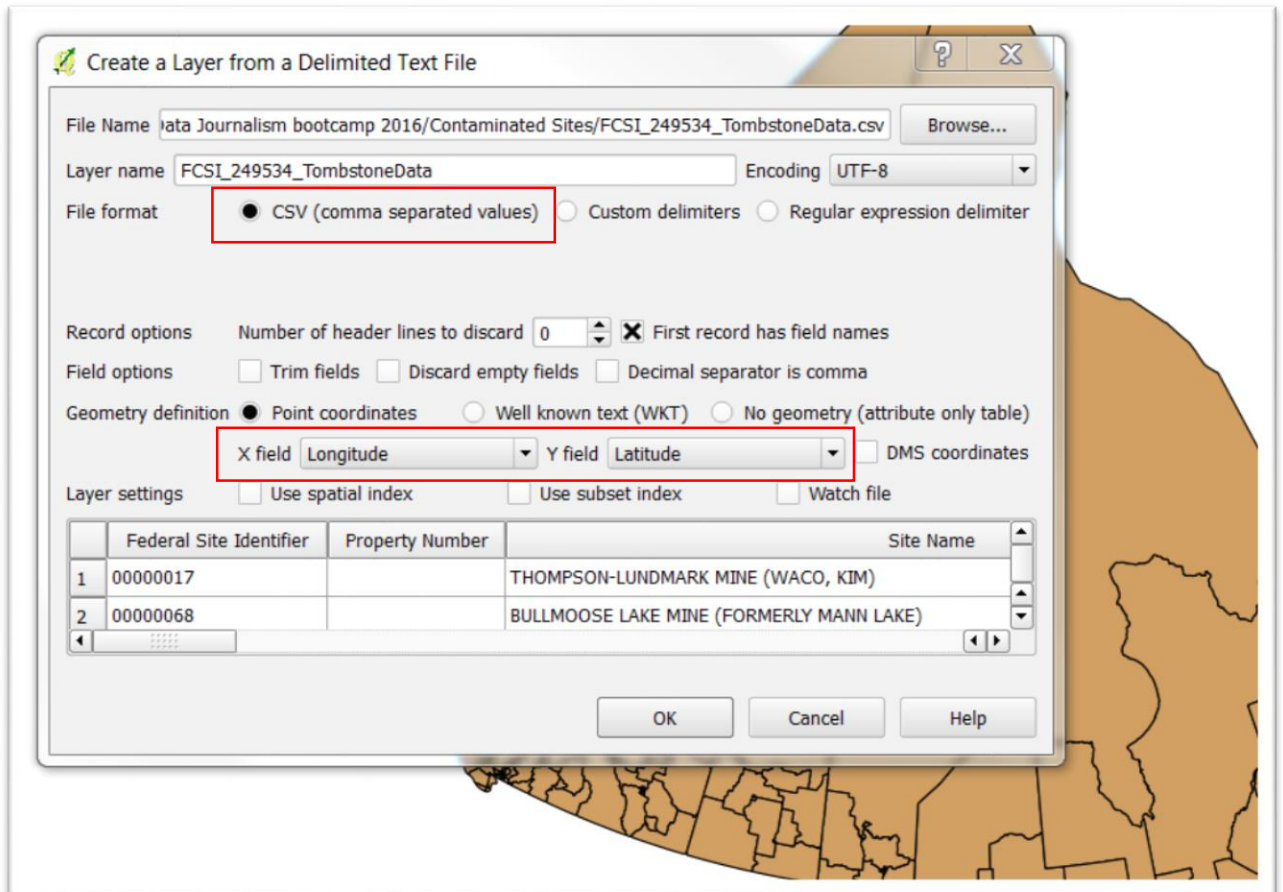
the menu on the left-hand side.



16) Browse for the csv file.

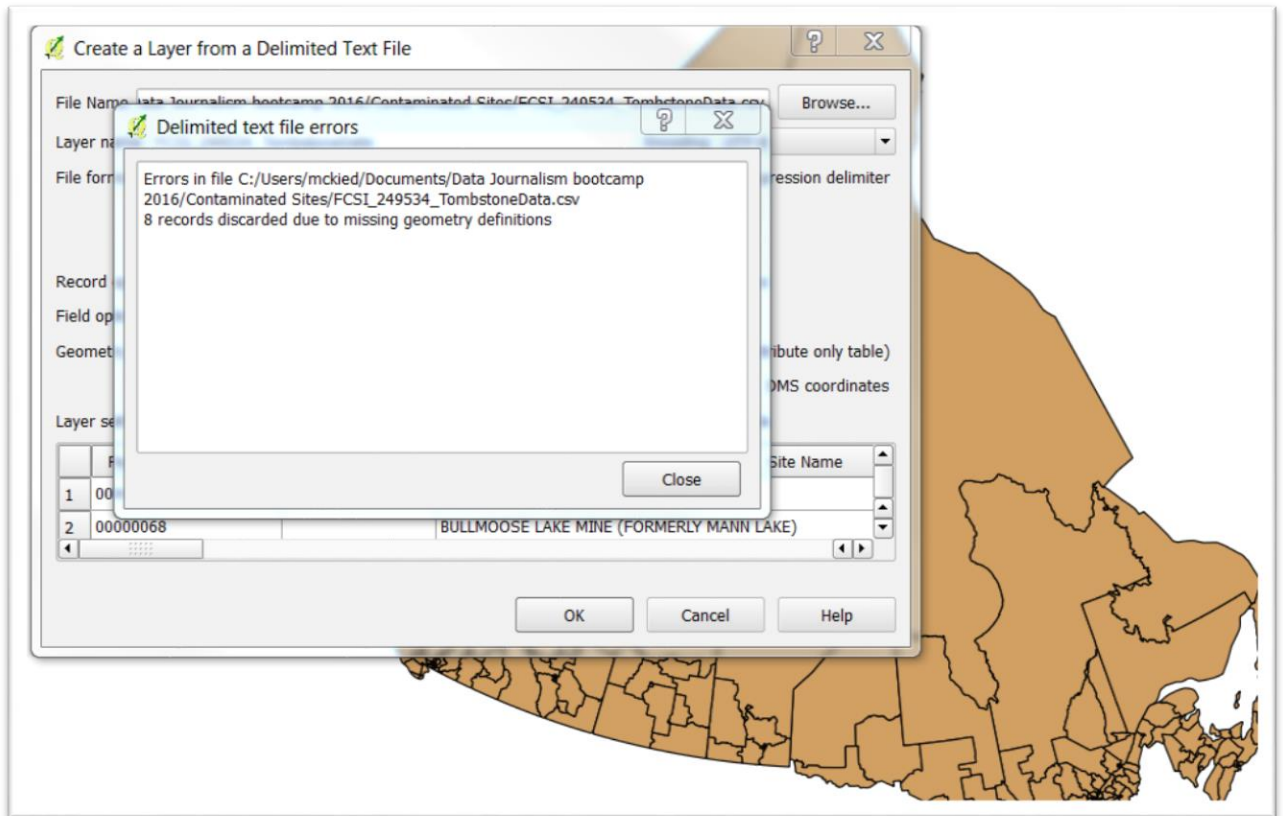


- 17) Select the Okay tab to obtain a “Create a Layer from Delimited Text File” dialog box.



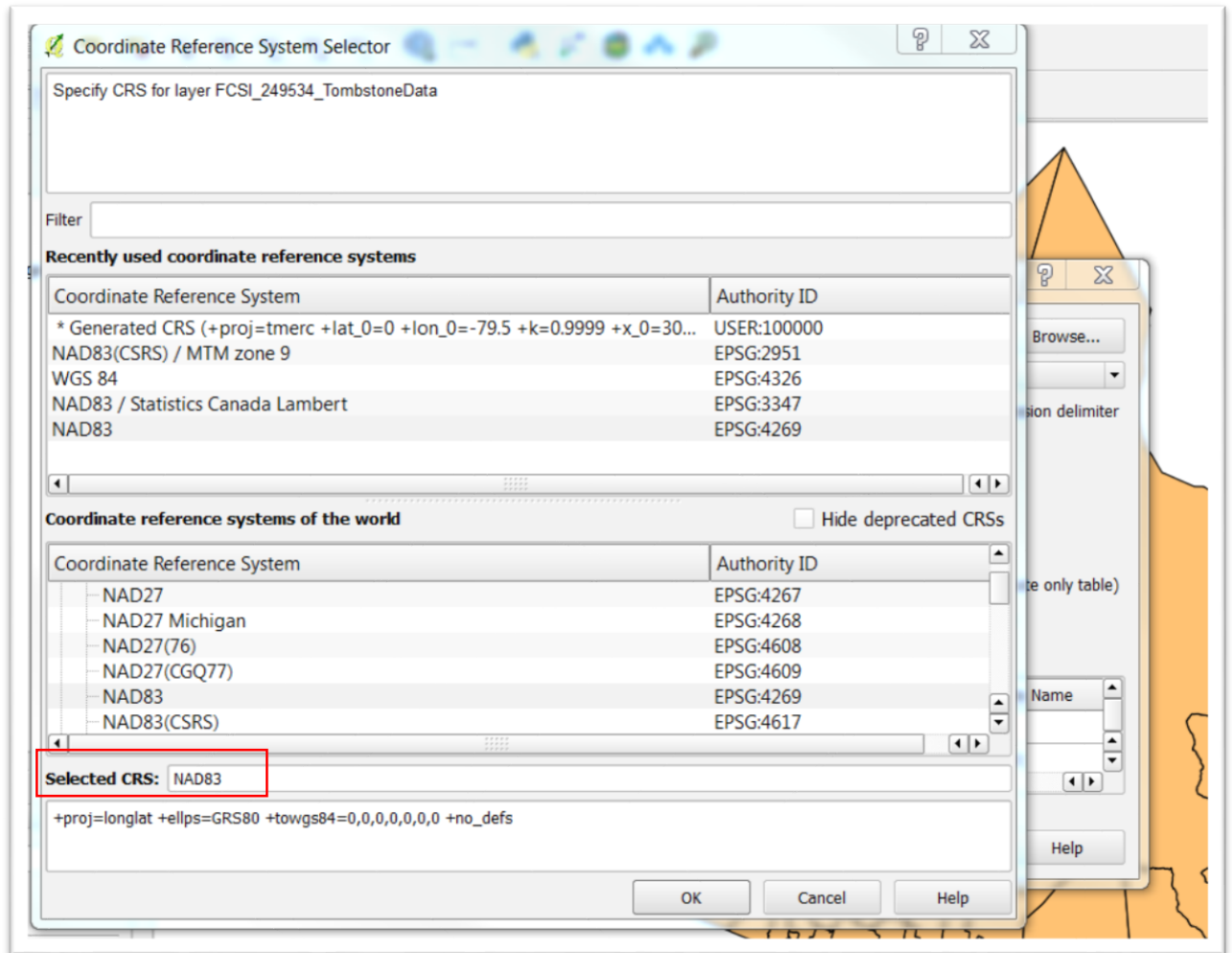
- 18) Qgis has recognized it as a “csv” file, as well as the longitude and latitude coordinates. Using the vertical scroll bar at the bottom of the table, allows you to ensure that all the information is present.
- 19) Select the OK tab. You may see an error message telling us that eight records are problematic. (NOTE: If you have trouble saving the file, it’s because of the Null values for longitude and latitude. To fix the problem, simply return the csv file, remove the records with null values for longitude and latitude, and repeat the

process of importing and saving the point contaminated sites file.)



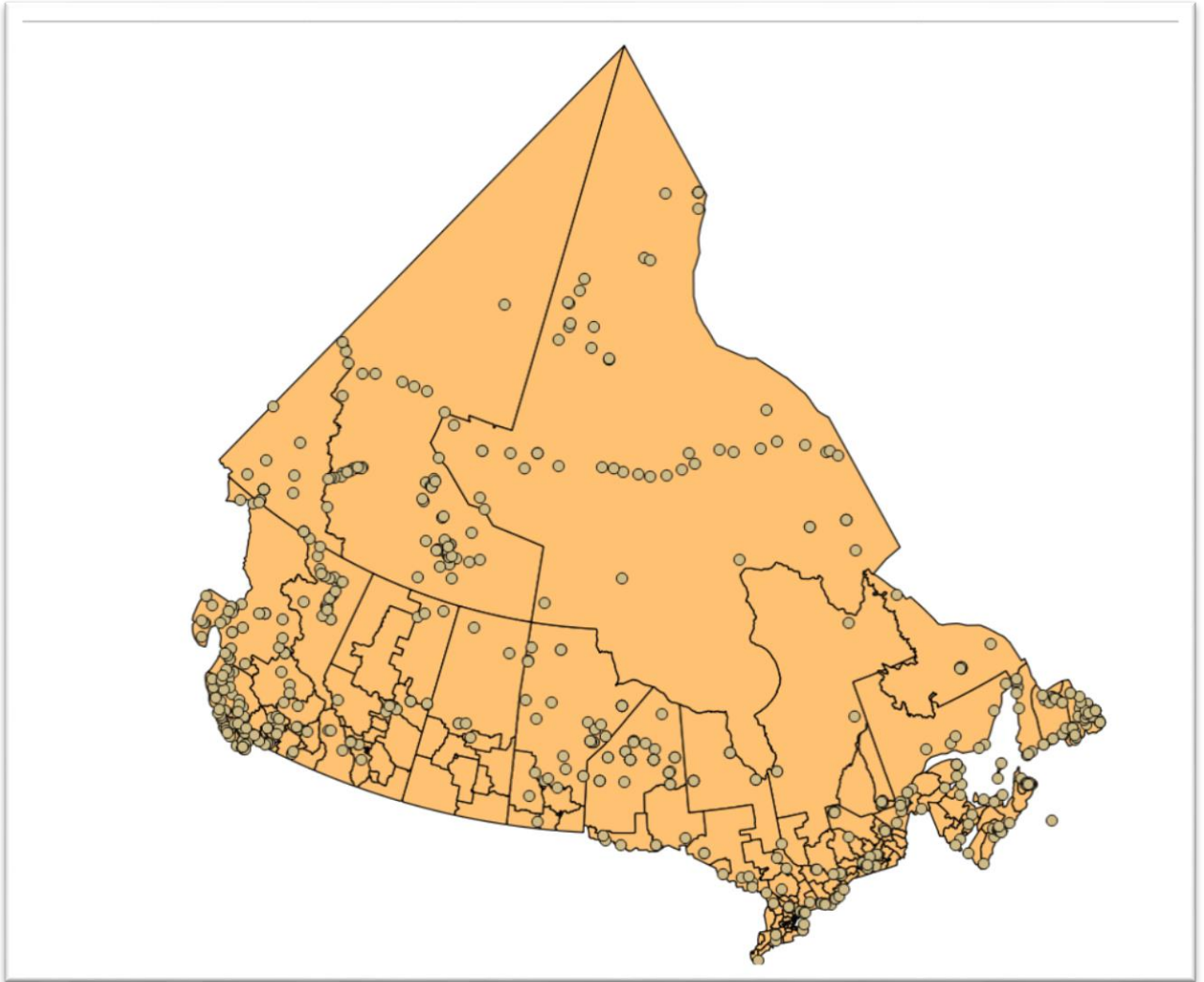
- 20) We could also identify which ones and fix the problem, but for the purposes of this tutorial, select the “Close” tab and continue. (NOTE: Downloading files from open data websites, always presents challenging in that the datasets can be quite dirty and in need of clean-up.).
- 21) Selecting the OK tab produces a dialog box that specifies the coordinate reference system Qgis will use to project the sites on to

the map.



- 22) In this case, the coordinate system – NAD83– is slightly different from federal electoral boundaries. But remember, because we enabled Qgis’ “on the fly option” in the earlier step, both files

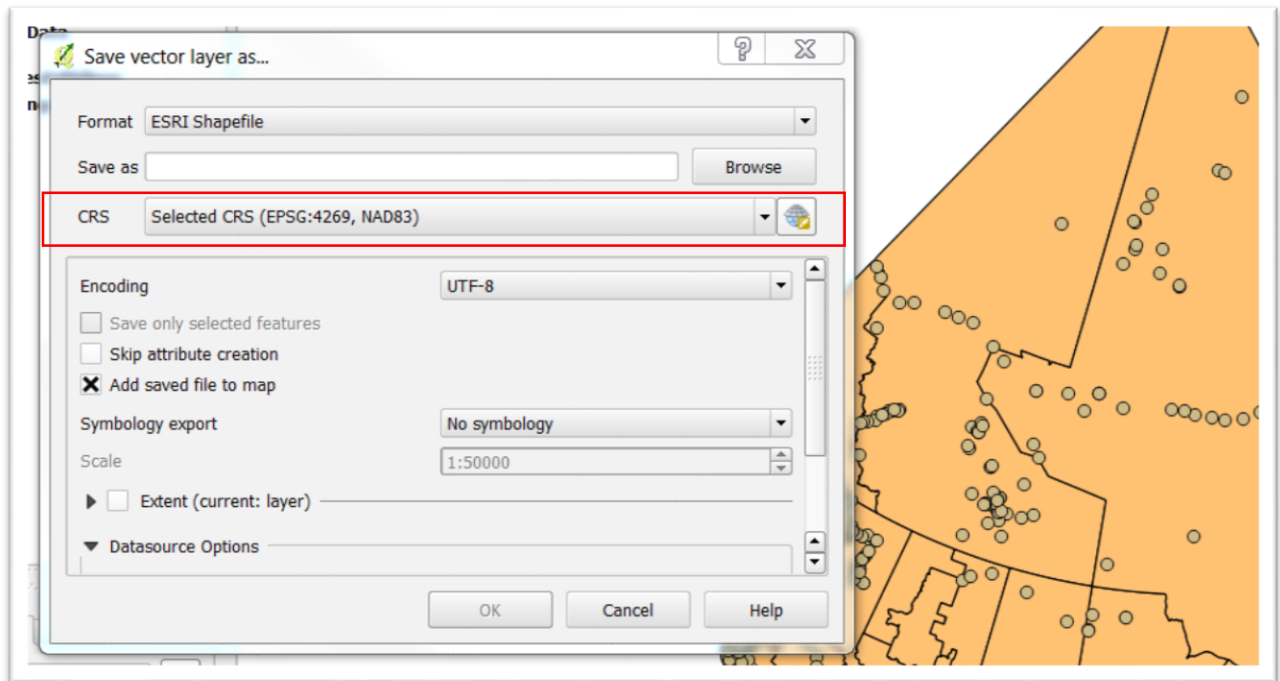
will line-up for now in the same space. Select the OK tab.



23) Open the new layer's attribute table and use the horizontal scroll bar at the bottom to navigate the contents.

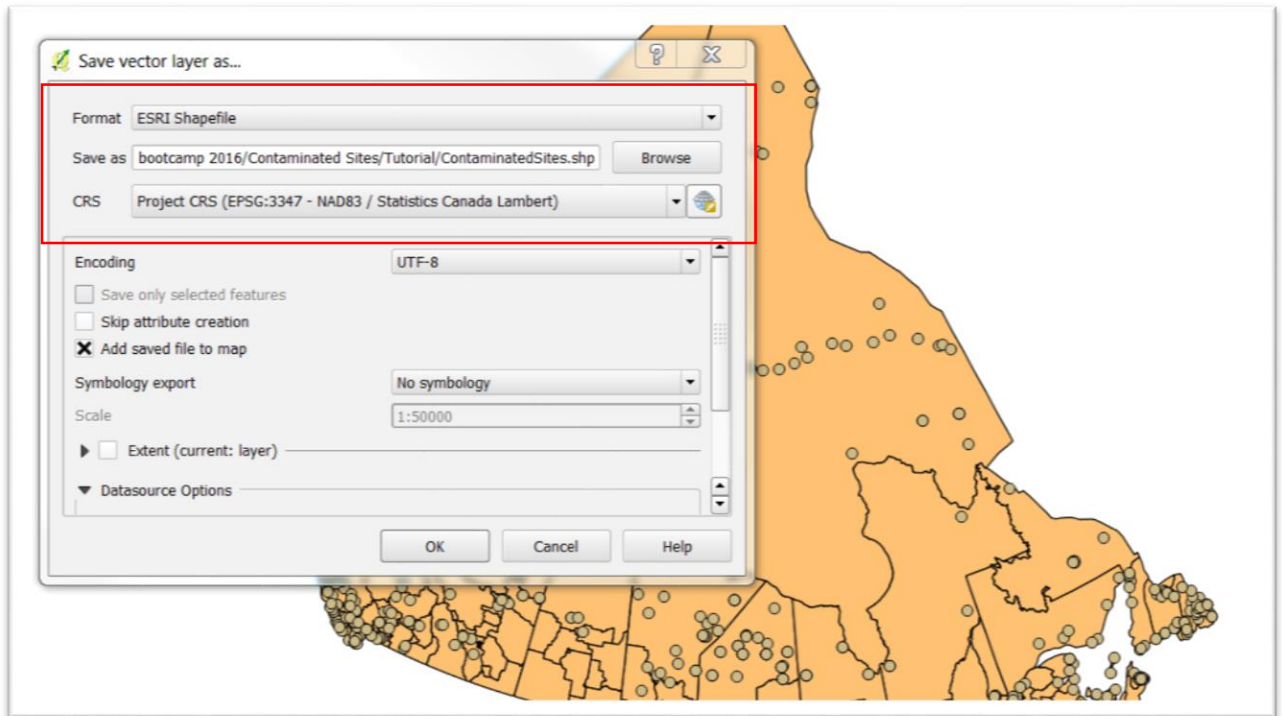
Real Site Id	Property Number	Site Name	Status	Site Status	Class	Origin Organa	Involvement	Property Type	Management Strat	Additional Informa	Action Plan	Federal Owner	Judicial Meters Co	Hectares Cont	Lead Tons Contain	Sum Contamin	Station At Radius	Station At Rg	
00000017	NEEL	THOMPSON L...	Initial testing	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	1190	0	0	0	0	0	0
00000068	NEEL	BULLMOOSE L...	Remedial acti...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Remediation	NEEL	NEEL	NEEL	112422	0	0	0	0	0	0
00000069	NEEL	BEEN LAKE/D...	Initial testing	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Other	NEEL	NEEL	NEEL	81611	0	0	0	0	0	0
00000076	NEEL	EL BOWMANCA	Detailed testin...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Remediation	NEEL	NEEL	NEEL	5500	0	0	0	0	0	0
00000154	NEEL	CANTUNG MG...	Initial testing	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	NEEL	NEEL	NEEL	NEEL	0	0	0	0	0	0	16
00000162	NEEL	CAMEAREN MG...	Detailed testin...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	73129	0	0	0	0	0	0
00000230	NEEL	THOR ISLAND	Detailed testin...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	6000	0	0	0	0	0	15
00000232	NEEL	REA POINT (1...	Detailed testin...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	36500	0	0	0	0	0	15
00000244	NEEL	DEASE POINT	Detailed testin...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	5500	0	0	0	0	0	0
00000266	NEEL	Bethune Islan...	Remedial acti...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	900	0	0	0	0	0	15
00000282	NEEL	Bethune Islan...	Remedial acti...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	1800	0	0	0	0	0	15
00000288	NEEL	Laughed Islan...	Detailed testin...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	2250	0	0	0	0	0	15
00000311	NEEL	CAVE BARGE...	Remedial acti...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	1415	0	0	0	0	0	15
00000352	NEEL	GOODROCK M...	Detailed testin...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Remediation	NEEL	NEEL	NEEL	420	0	0	0	0	0	0
00000379	NEEL	BAR C - TURK...	Remediation /...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	23500	0	0	0	0	0	0
00000386	NEEL	O'CONNOR L...	Detailed testin...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	1	0	0	0	0	0	0
00000387	NEEL	COPPER PASS...	Detailed testin...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Remediation	NEEL	NEEL	NEEL	0	10	0	0	0	0	0
00000400	NEEL	High Andic - ...	Detailed testin...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	1000	0	0	0	0	0	15
00000402	NEEL	BLANCHET IS...	Remediation /...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	0	0	0	0	0	0	0
00000403	NEEL	SAWELL BAY...	Remedial acti...	Active	High Priority L...	Indigenous an...	Other Canada...	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	655	0	0	0	0	0	0
00000418	NEEL	209 - Kitchen...	Detailed testin...	Active	High Priority L...	Indigenous an...	A reserve as	Canada Lands	Additional ass...	NEEL	NEEL	NEEL	866	0	0	0	0	0	7
00000437	NEEL	539 - Nuxalk	Confirmatory	Active	High Priority L...	Indigenous an...	A reserve as	Canada Lands	Other, Remed...	NEEL	NEEL	NEEL	188	0	0	0	0	0	91

- 24) As we did in the voter turnout tutorial, we want to find out which riding, or polygon, contains the highest number of the thing we care about the most, in this case, contaminated sites.
- 25) Before doing so, we must save the contaminated sites file as a shape file.
- 26) To do so, right click on the “Browse” icon.



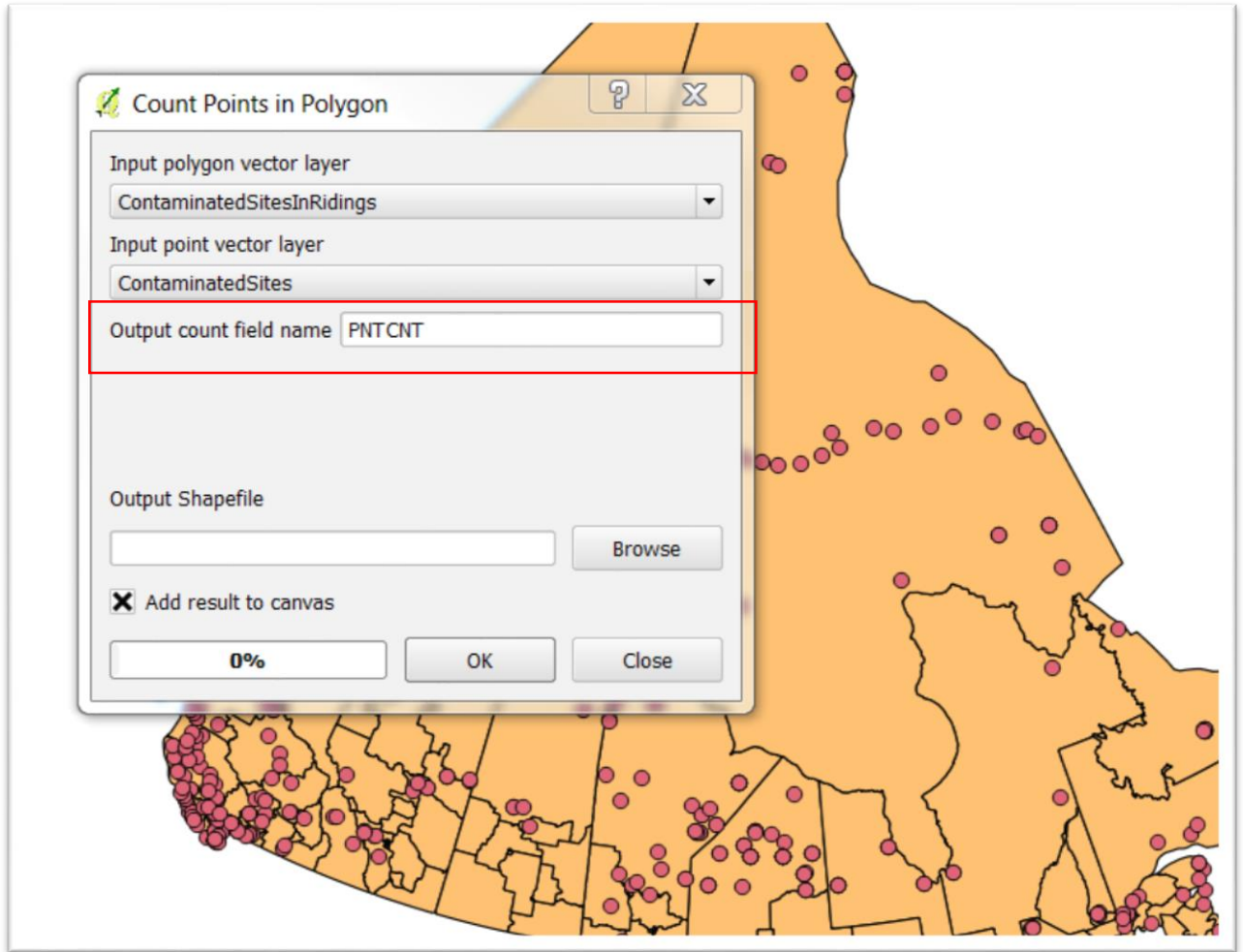
- 27) Browse to the location where you want to save the file, calling it something like “ContaminatedSites”. (NOTE: Naming conventions when dealing with databases dictate that you avoid using spaces in titles. You can connect words using underscores.).
- 28) Next, make sure that the CRS (spatial reference system) corresponds to that of the electoral boundaries file, which is “EPSG:3347 – NAD/ Statistics Canada Lambert). If you inadvertently leave the original CRS, the geoprocessing tools won’t work. Shapefiles **MUST BE IN THE SAME** coordinate system in order for geoprocessing operations to work. Before selecting the OK tab to create your layer, be sure that your dialog

box looks like this:



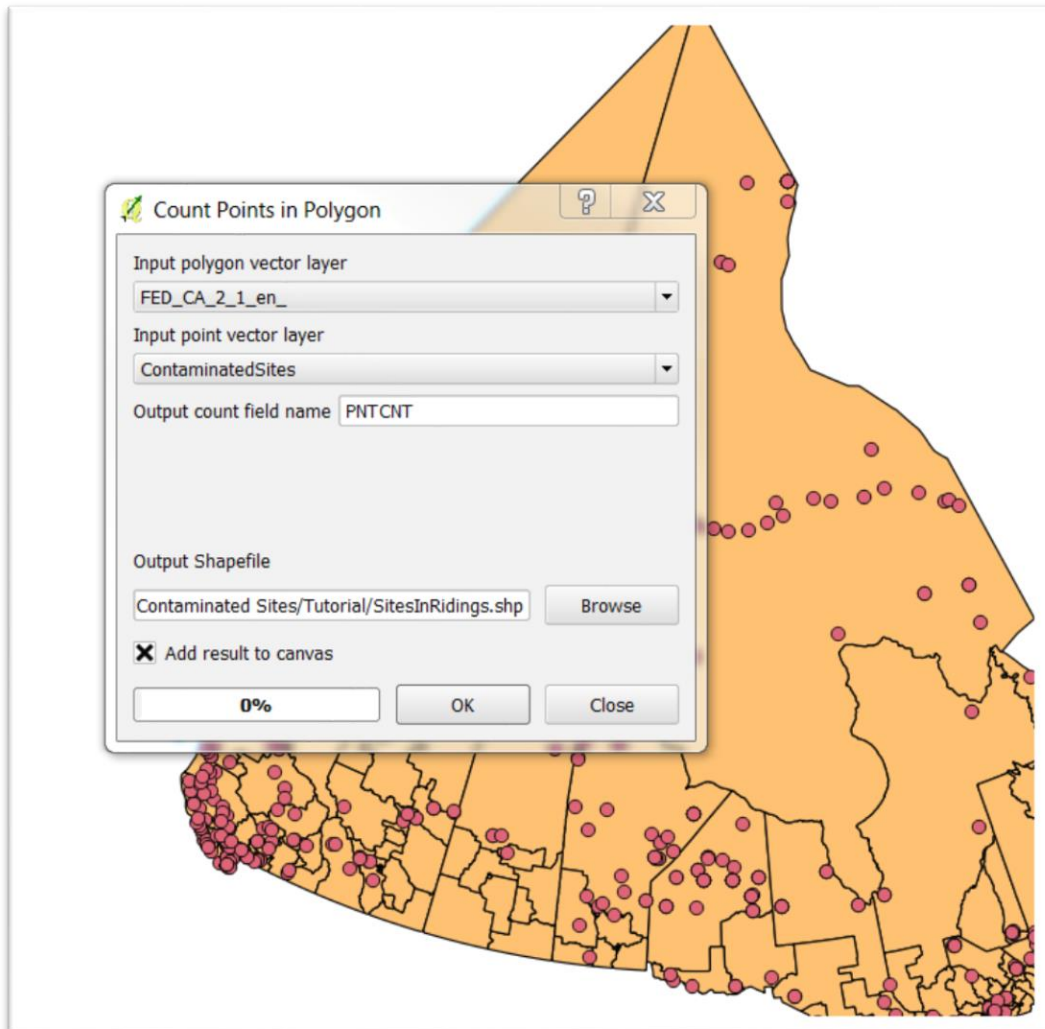
- 29) Select the OK tab to add the new layer to your map.
- 30) You can either delete the csv file from your menu to the left, or turn it off by de-selecting it.
- 31) We will now create yet another layer that groups and then counts the number of contaminated sites in each federal riding.
- 32) Click on the federal electoral boundary icon, then the “Vector” section from the menu at the top, “Analysis Tools”, and

“Points in Polygon”.



- 33) Your “Input polygon vector layer” is the electoral boundaries file. The “Input point vector layer” is the shape file we created, “ContaminatedSites”. The “Output count field name” can be renamed as “Count”, but in this case, we can leave it as is, “PNTCNT.” Browse to the location where you want to deposit the new layer, which you can call “SitesInRidings”. Before selecting

the OK tab, make sure your dialog box looks like this:



34) Select the OK tab, then the CLOSE tab, once the counting is finished.

NID	FEDNUM	ENNAME	FRNAME	PROVCODE	CREADT	REVDT	REPORDER	DECPPOCNT	QUIPOPCNT	ENLEGALDSC	FRLEGALDSC	PNTCNT	
1	80A17501-2...	48010	Calgary Rocky...	Calgary Rocky...	AB	20131005	NULL	2013	108901	0	http://www.el...	http://www.el...	0
1	8A9CD102-4...	48012	Calgary Signe...	Calgary Signe...	AB	20131005	NULL	2013	109647	0	http://www.el...	http://www.el...	0
1	3AC11704-8...	48013	Calgary Skyview	Calgary Skyview	AB	20131005	NULL	2013	110189	0	http://www.el...	http://www.el...	0
1	70716827-A...	12003	Cumberland...	Cumberland...	NS	20131005	NULL	2013	82321	0	http://www.el...	http://www.el...	0
1	8F16783C-F...	12009	South Shore...	South Shore...	NS	20131005	NULL	2013	92561	0	http://www.el...	http://www.el...	2
1	61601286-33...	12008	Sackville-Pre...	Sackville-Pre...	NS	20131005	NULL	2013	85583	0	http://www.el...	http://www.el...	0
1	5E24304C-2...	24009	Bancour...	Bancour...	QC	20131005	NULL	2013	93779	0	http://www.el...	http://www.el...	0
7	9F8F06F8-4B...	24012	Berthier-Mas...	Berthier-Mas...	QC	20131005	NULL	2013	98590	0	http://www.el...	http://www.el...	0
1	5737F403-F...	24011	Beloeil-Cham...	Beloeil-Cham...	QC	20131005	NULL	2013	109955	0	http://www.el...	http://www.el...	0
1	D1F4558D-F...	24010	Bellechasse...	Bellechasse...	QC	20131005	NULL	2013	112385	0	http://www.el...	http://www.el...	0
10	9F7E0F95-3...	59014	Kelowna-Lak...	Kelowna-Lak...	BC	20131005	NULL	2013	110051	0	http://www.el...	http://www.el...	0
11	30248901-C...	59017	Mission-Mats...	Mission-Mats...	BC	20131005	NULL	2013	90871	0	http://www.el...	http://www.el...	12
12	3B889771-4F...	59020	North Okanog...	North Okanog...	BC	20131005	NULL	2013	121474	0	http://www.el...	http://www.el...	1
13	68875853-EF...	59022	Pitt Meadows...	Pitt Meadows...	BC	20131005	NULL	2013	94111	0	http://www.el...	http://www.el...	4
14	68FC0C04-B...	47012	Saskatoon West	Saskatoon-Ou...	SK	20131005	NULL	2013	76704	0	http://www.el...	http://www.el...	0
15	19AECAD7-7...	24016	Brome-Missis...	Brome-Missis...	QC	20131005	NULL	2013	98616	0	http://www.el...	http://www.el...	1
16	44CD97A2-A...	59033	Surrey-Newton	Surrey-Newton	BC	20131005	NULL	2013	105183	0	http://www.el...	http://www.el...	0
17	88ED70F6-8...	59034	Vancouver Ce...	Vancouver-Ce...	BC	20131005	NULL	2013	102480	0	http://www.el...	http://www.el...	0
18	83B7825-84...	24030	Hull-Aylmer	Hull-Aylmer	QC	20131005	NULL	2013	103447	0	http://www.el...	http://www.el...	3
19	588F048-F6...	35028	Etobicoke-La...	Etobicoke-La...	ON	20131005	NULL	2013	115437	0	http://www.el...	http://www.el...	0
19	0C3C679D-1...	59019	New Westmin...	New Westmin...	BC	20131005	NULL	2013	108652	0	http://www.el...	http://www.el...	0
11	1873E23D-D...	24039	Laurier-Saint...	Laurier-Saint...	QC	20131005	NULL	2013	107034	0	http://www.el...	http://www.el...	0
12	AB926171-6...	12004	Dartmouth-C...	Dartmouth-C...	NS	20131005	NULL	2013	91212	0	http://www.el...	http://www.el...	12
13	94538187-0...	24004	Alfred-Pellan	Alfred-Pellan	QC	20131005	NULL	2013	98045	0	http://www.el...	http://www.el...	0
14	091A4423-6...	24024	Dorval-Lachi...	Dorval-Lachi...	QC	20131005	20140619	2013	106886	0	http://www.el...	http://www.el...	1
15	3D3E29E6-3...	24073	Sherbrooke	Sherbrooke	QC	20131005	NULL	2013	107988	0	http://www.el...	http://www.el...	0

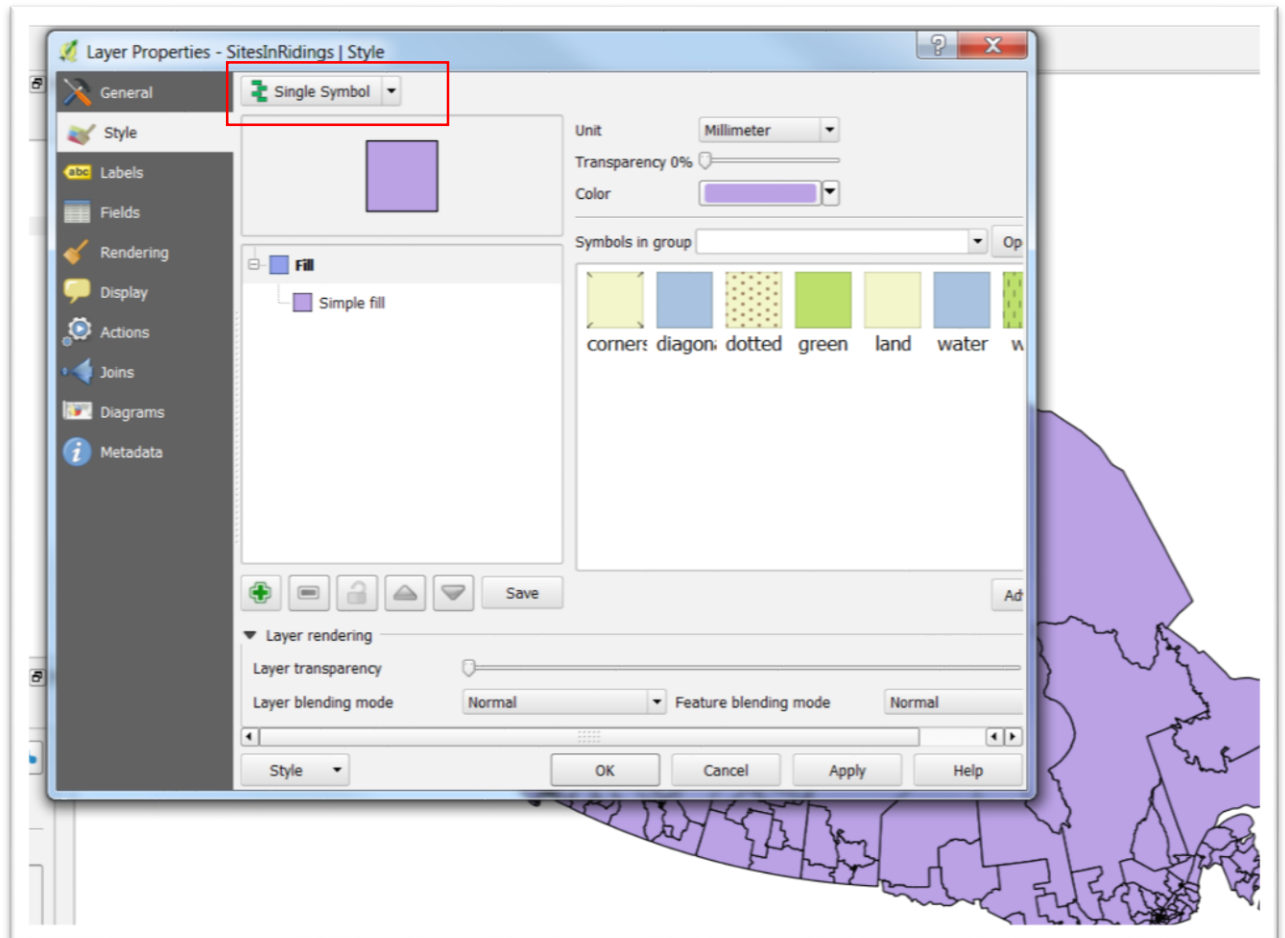
35) You can see the new count field to the far right. Double click on the “PNTCNT” label to sort the values in descending order.

NID	FEDNUM	ENNAME	FRNAME	PROVCODE	CREADT	REVDT	REPORDER	DECPPOCNT	QUIPOPCNT	ENLEGALDSC	FRLEGALDSC	PNTCNT	
180	15888F88-45...	62001	Nunavut	Nunavut	NU	20131005	NULL	2013	31906	0	http://www.el...	http://www.el...	64
13	95CF3C08-4...	61001	Northwest Ter...	Territoires du ...	NT	20131005	20140619	2013	41462	0	http://www.el...	http://www.el...	62
178	E70C7ABF-8...	59028	Skeena-Bulk...	Skeena-Bulk...	BC	20131005	NULL	2013	90586	0	http://www.el...	http://www.el...	43
12	7CDD3070-A...	35042	Kenora	Kenora	ON	20131005	NULL	2013	55977	0	http://www.el...	http://www.el...	41
75	147F1038-49...	46003	Churchill-Kee...	Churchill-Kee...	MB	20131005	NULL	2013	85148	0	http://www.el...	http://www.el...	32
177	26F60A22-C...	59037	North Island...	North Island...	BC	20131005	20140619	2013	103458	0	http://www.el...	http://www.el...	28
12	868830CF-7...	59024	Prince George...	Prince George...	BC	20131005	NULL	2013	107382	0	http://www.el...	http://www.el...	27
127	AAC7901B-4...	60001	Yukon	Yukon	YT	20131005	NULL	2013	33897	0	http://www.el...	http://www.el...	24
135	8C48698B-5...	10002	Bonavista-Bu...	Bonavista-Bu...	NL	20131005	NULL	2013	76704	0	http://www.el...	http://www.el...	21
107	70E825E8-2...	12010	Sydney-Victo...	Sydney-Victo...	NS	20131005	NULL	2013	73328	0	http://www.el...	http://www.el...	15
104	31B74557-75...	59009	Courtenay-Al...	Courtenay-Al...	BC	20131005	NULL	2013	110391	0	http://www.el...	http://www.el...	15
18	A125A630-8...	59026	Esquimalt-Sa...	Esquimalt-Sa...	BC	20131005	20140619	2013	113004	0	http://www.el...	http://www.el...	13
148	9FC7794C-0...	10005	Long Range M...	Long Range M...	NL	20131005	NULL	2013	87592	0	http://www.el...	http://www.el...	13
11	30248901-C...	59017	Mission-Mats...	Mission-Mats...	BC	20131005	NULL	2013	90871	0	http://www.el...	http://www.el...	12
12	AB926171-6...	12004	Dartmouth-C...	Dartmouth-C...	NS	20131005	NULL	2013	91212	0	http://www.el...	http://www.el...	12
144	AB3E079-3...	10003	Coast of Bays...	Coast of Bays...	NL	20131005	NULL	2013	78092	0	http://www.el...	http://www.el...	10
146	D03F37A5-9...	10004	Labrador	Labrador	NL	20131005	NULL	2013	26728	0	http://www.el...	http://www.el...	10
171	302FD31B-2...	35107	Timmins-Jam...	Timmins-Jam...	ON	20131005	NULL	2013	83104	0	http://www.el...	http://www.el...	9
134	9C019E89-4...	10001	Avalon	Avalon	NL	20131005	NULL	2013	81540	0	http://www.el...	http://www.el...	9
10	88830732-93...	35006	Bay of Quinte	Beie de Quinte	ON	20131005	NULL	2013	109488	0	http://www.el...	http://www.el...	8
15	53610ABA-3...	35044	Kingston end L...	Kingston et le...	ON	20131005	NULL	2013	116996	0	http://www.el...	http://www.el...	8
105	F8D02ADF-A...	12001	Cape Breton...	Cape Breton...	NS	20131005	NULL	2013	75247	0	http://www.el...	http://www.el...	8
171	37C700EA-8...	24058	Portneuf-Jacq...	Portneuf-Jacq...	QC	20131005	NULL	2013	104394	0	http://www.el...	http://www.el...	8
11	6887F21A-3...	59041	Victoria	Victoria	BC	20131005	NULL	2013	110942	0	http://www.el...	http://www.el...	7
128	3D3E29E6-3...	24046	Manicouagan	Manicouagan	QC	20131005	NULL	2013	94766	0	http://www.el...	http://www.el...	7
176	700E7E3A-4...	59010	Cowichan-M...	Cowichan-M...	BC	20131005	NULL	2013	99160	0	http://www.el...	http://www.el...	7

36) Nunavut has the highest number.

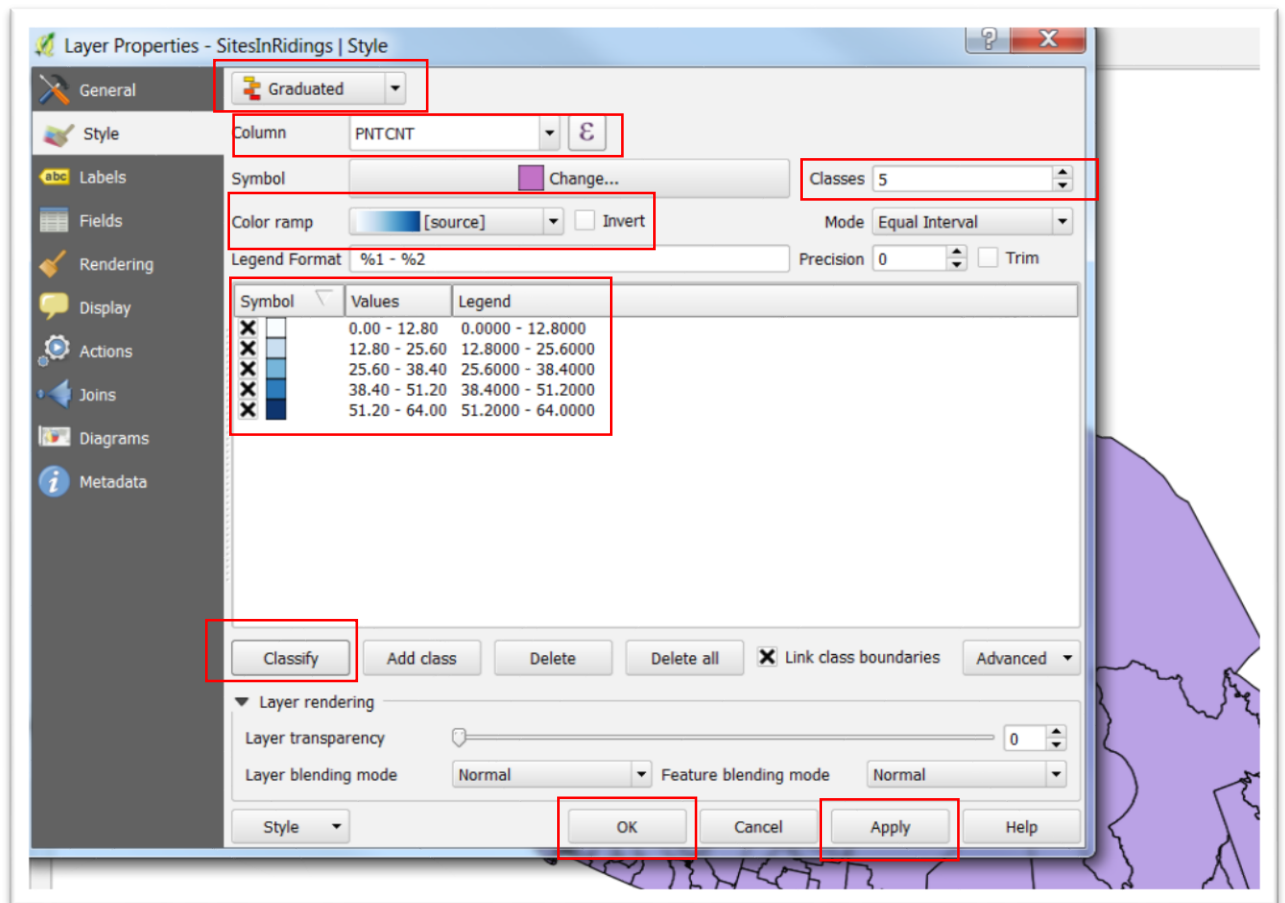
37) Now we want to visualize this using the same kind of thematic map in the voter turnout tutorial. So close the attribute table to return to the map of the new layer, which will be the same uniform colour.

- 38) We want to create a thematic map, with the darkest colours representing the ridings with the highest number of contaminated sites.
- 39) Right click the “SitesInRidings” layer and select “Properties” from the drop-down menu.

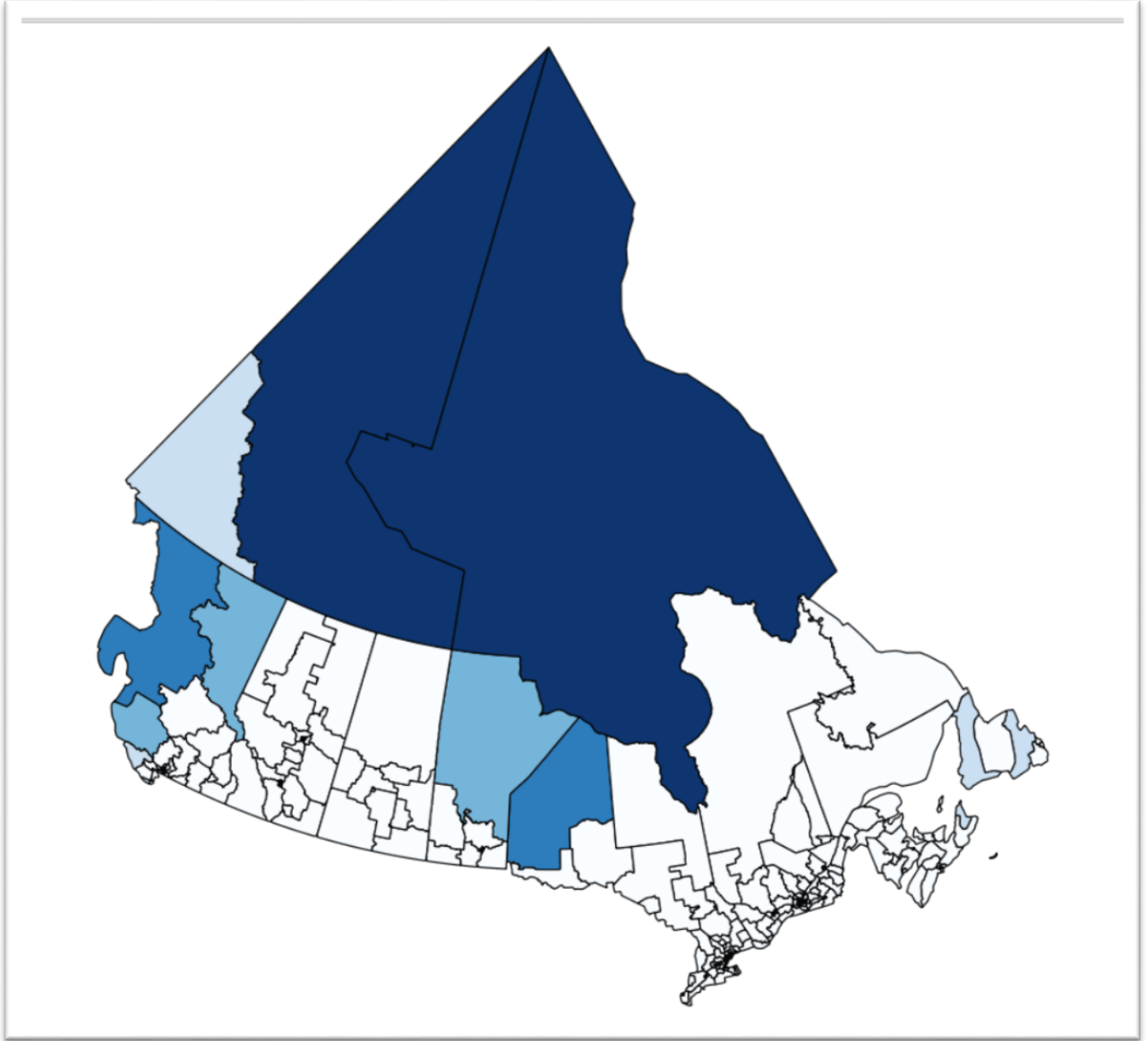


- 40) Qgis defaults to “Single Symbol”. However, we want a visualization option that reflects that we’ve just done. Click on the arrow to the right of “Single Symbol” and select “Graduated.” In the “Column”, select “PNTCNT”.
- 41) As we saw in the voter turnout tutorial, Qgis defaults to five classes which divvies up the classes into equal intervals. You can always change the categories to better reflect your data, but let’s just leave things as is for this tutorial. Chose your “Color ramp”, and then click on the “Classify” tab towards the bottom on the left-

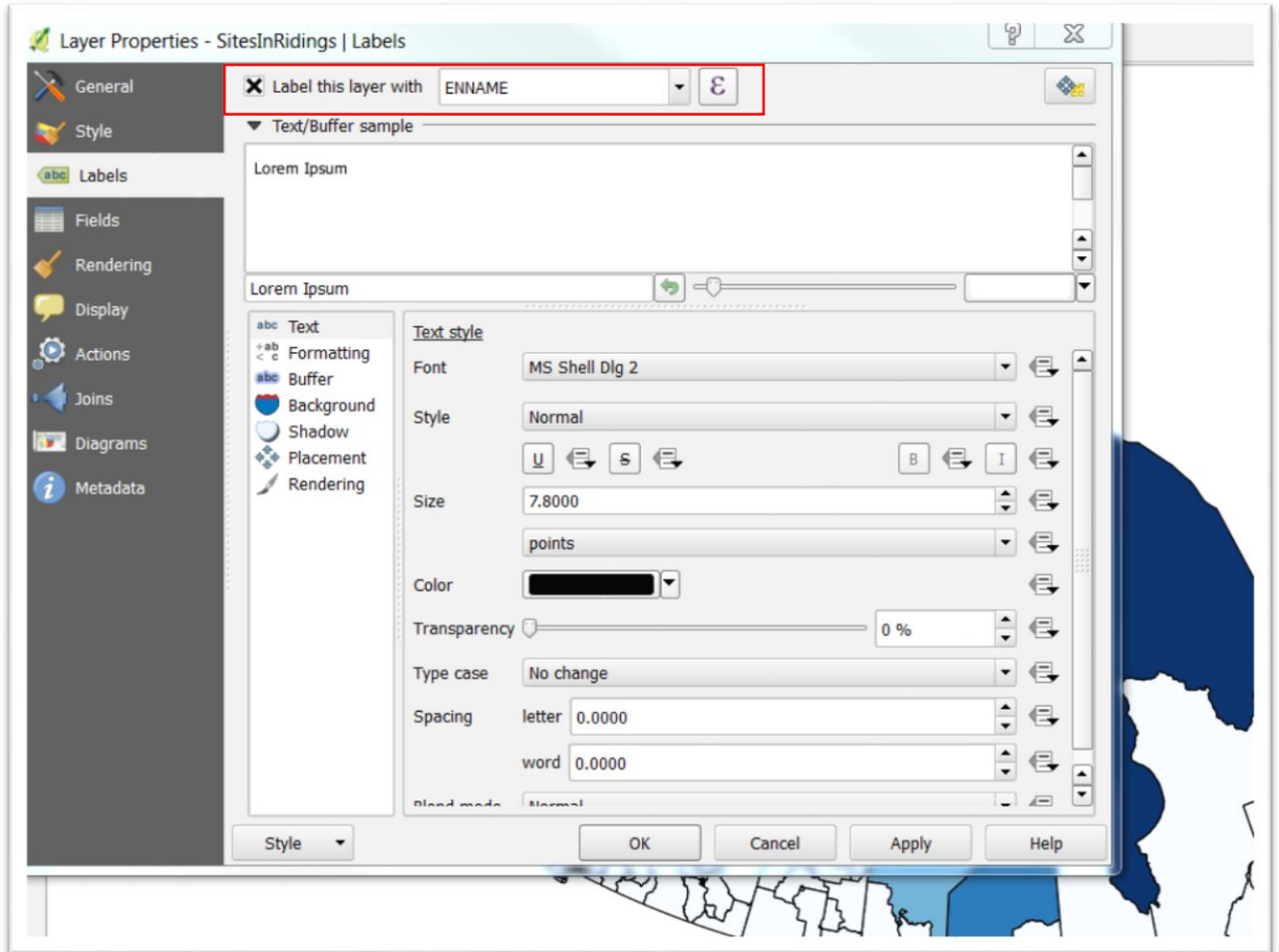
hand side. Before selecting the “Apply” and “OK” tabs, check to see that your dialog box looks like this:

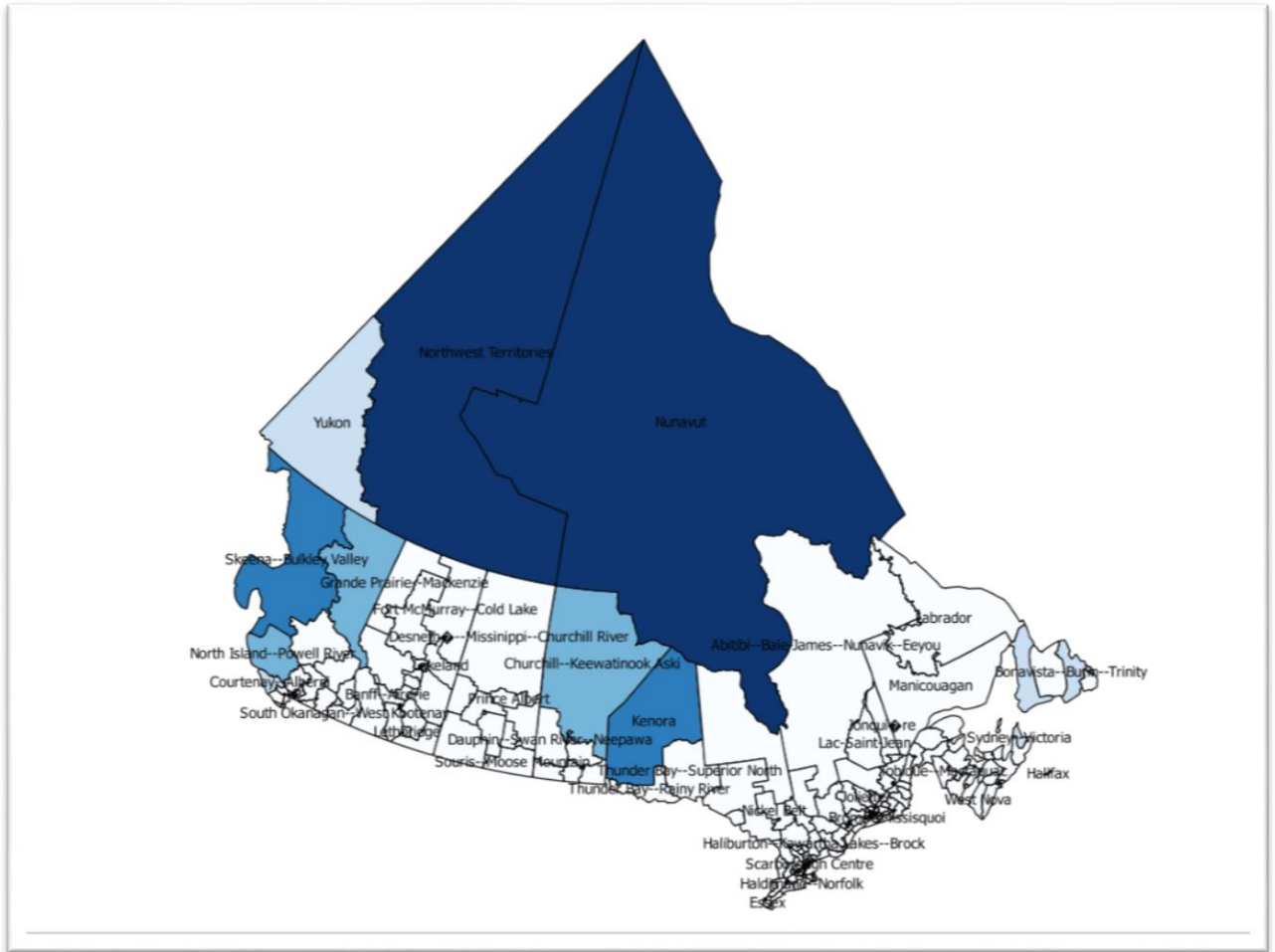


42) Select the “Apply” and “OK” tabs.

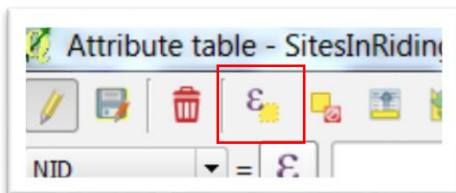


43) Return to “Properties” to get the labels for ridings.



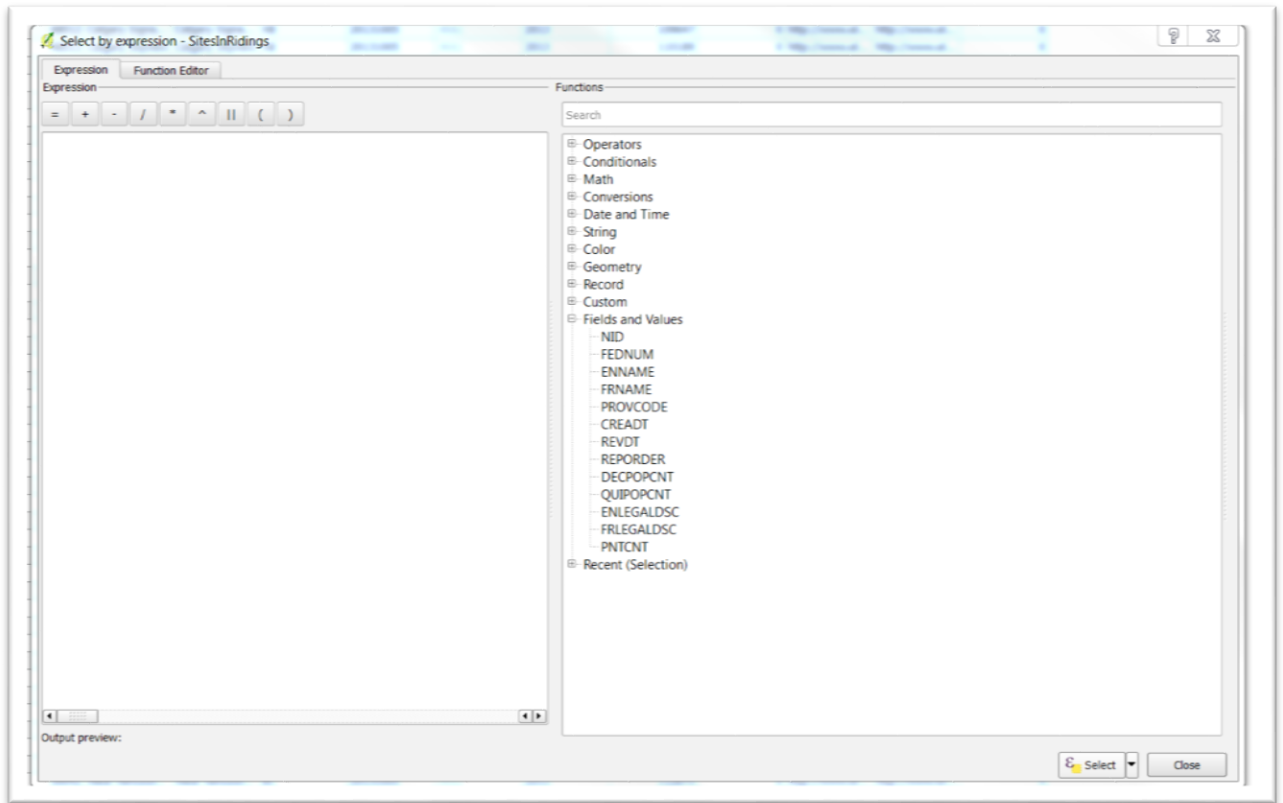


- 44) Now let's say that we didn't want all the provinces, but only Ontario.
- 45) Open the attribute table.
- 46) Click on the "Select features using an expression" icon at the top left. (NOTE: this will make more sense when we get to MySQL)

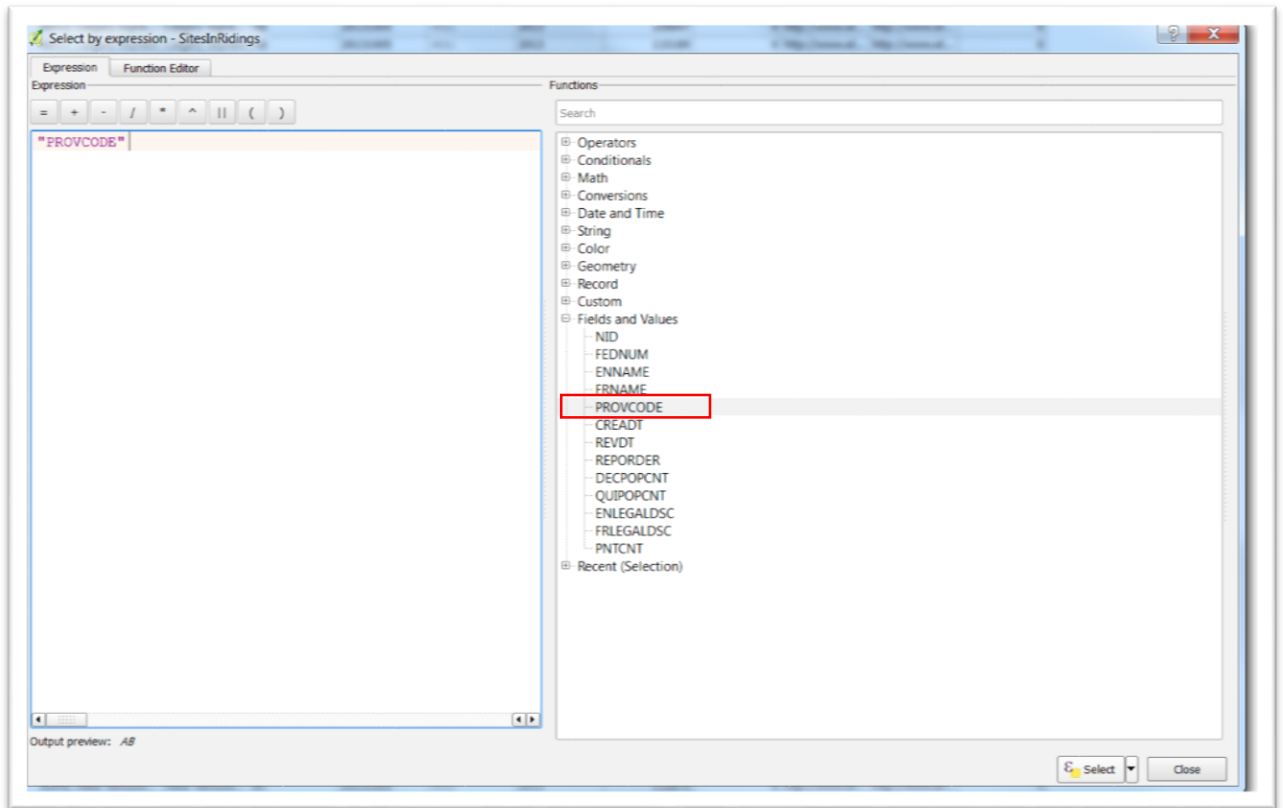


- 47) For this operation, we will specify that we only want the Ontario records, which are defined by "ON" in the "PROVCODE"

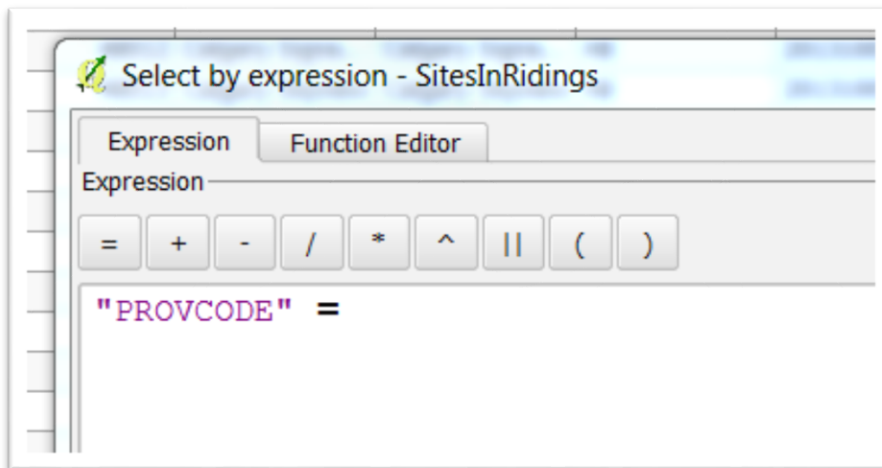
column. Select “Fields and Values”.



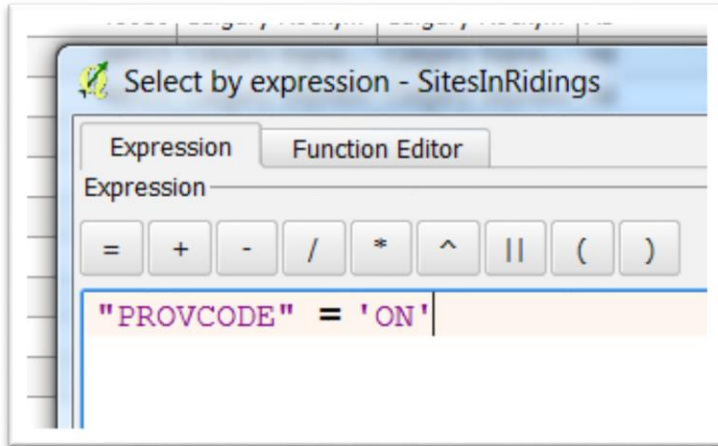
48) Double click on "PROVCODE".



49) Then the "=" sign.

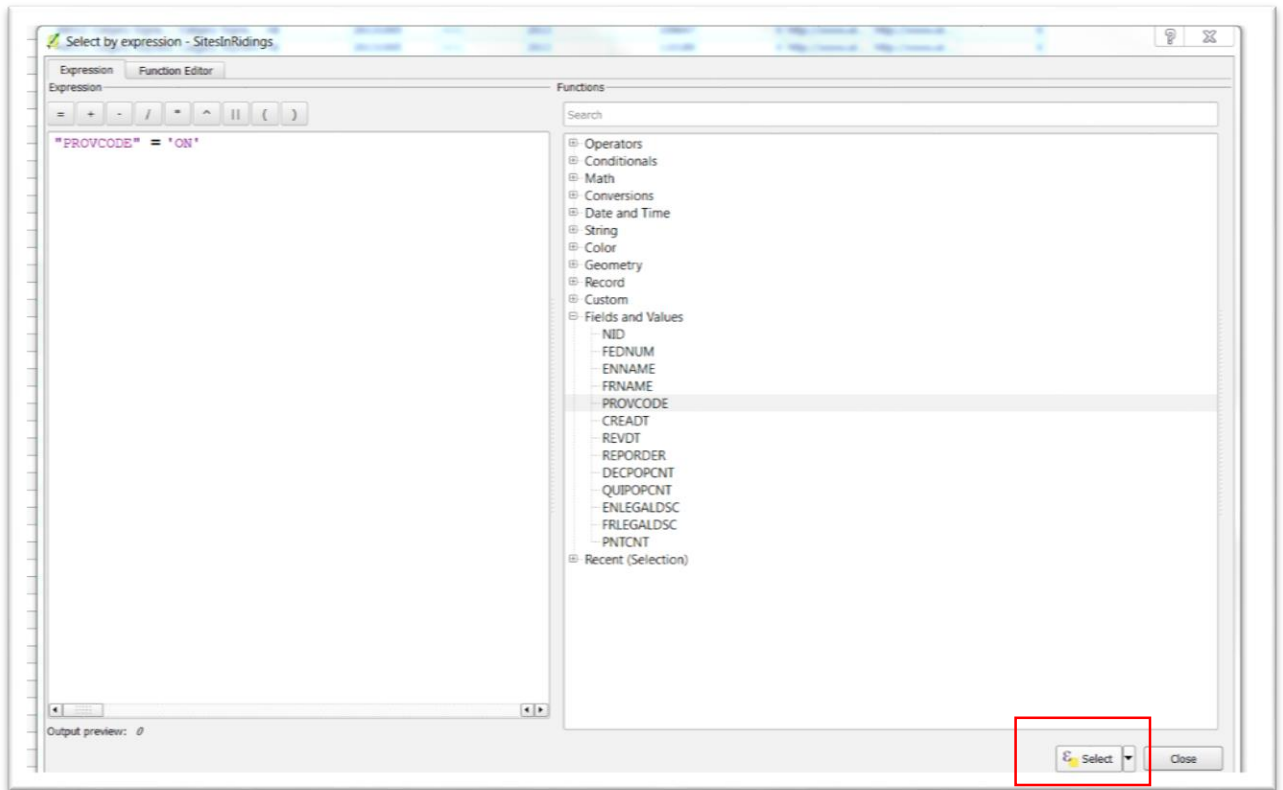


50) Type 'ON' (NOTE: Make sure that the acronym for Ontario



is in single quotes.)

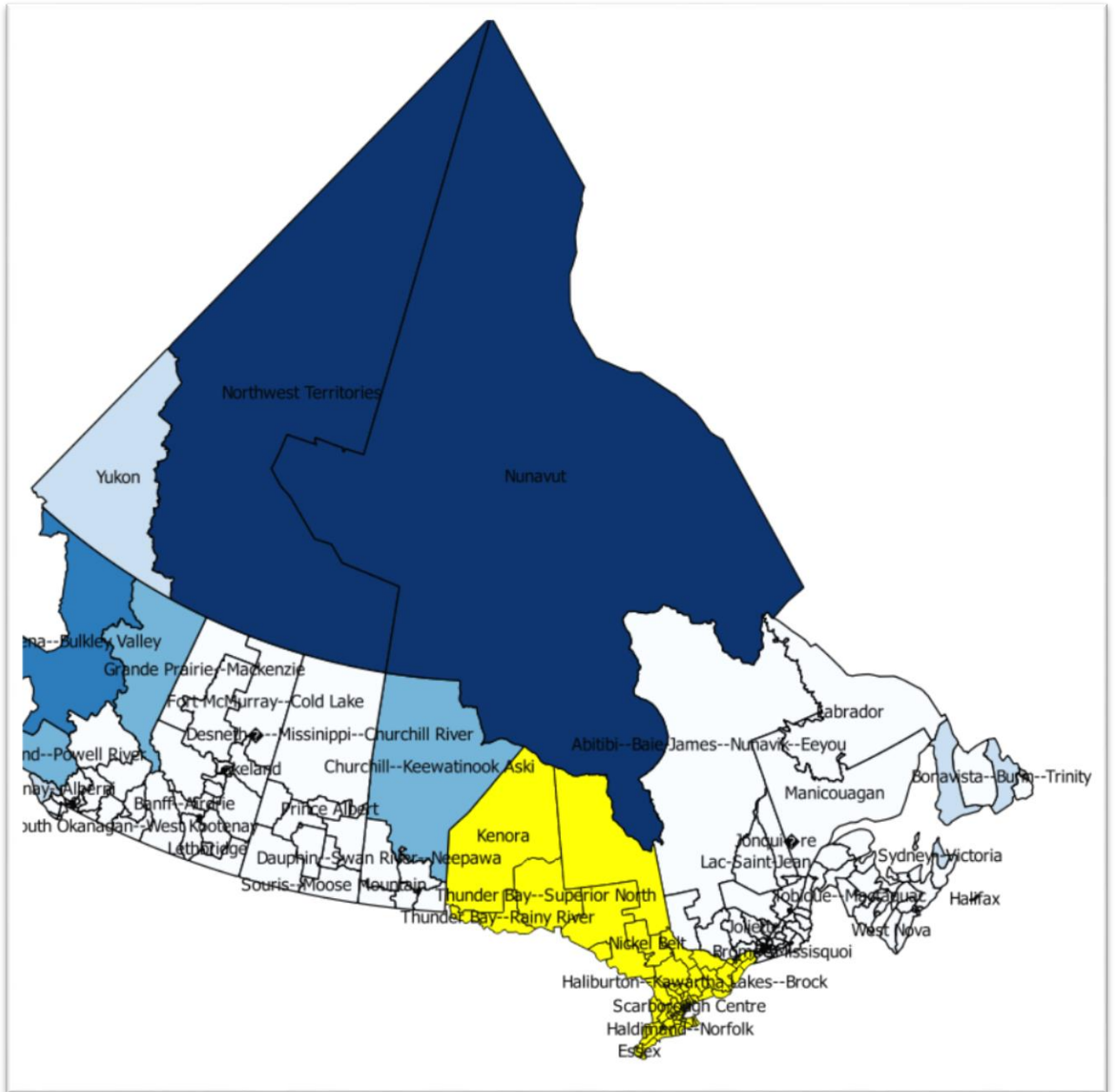
51) Click the "Select" icon to the bottom right.



52) Close the dialog box to see that all the Ontario rows have been selected.

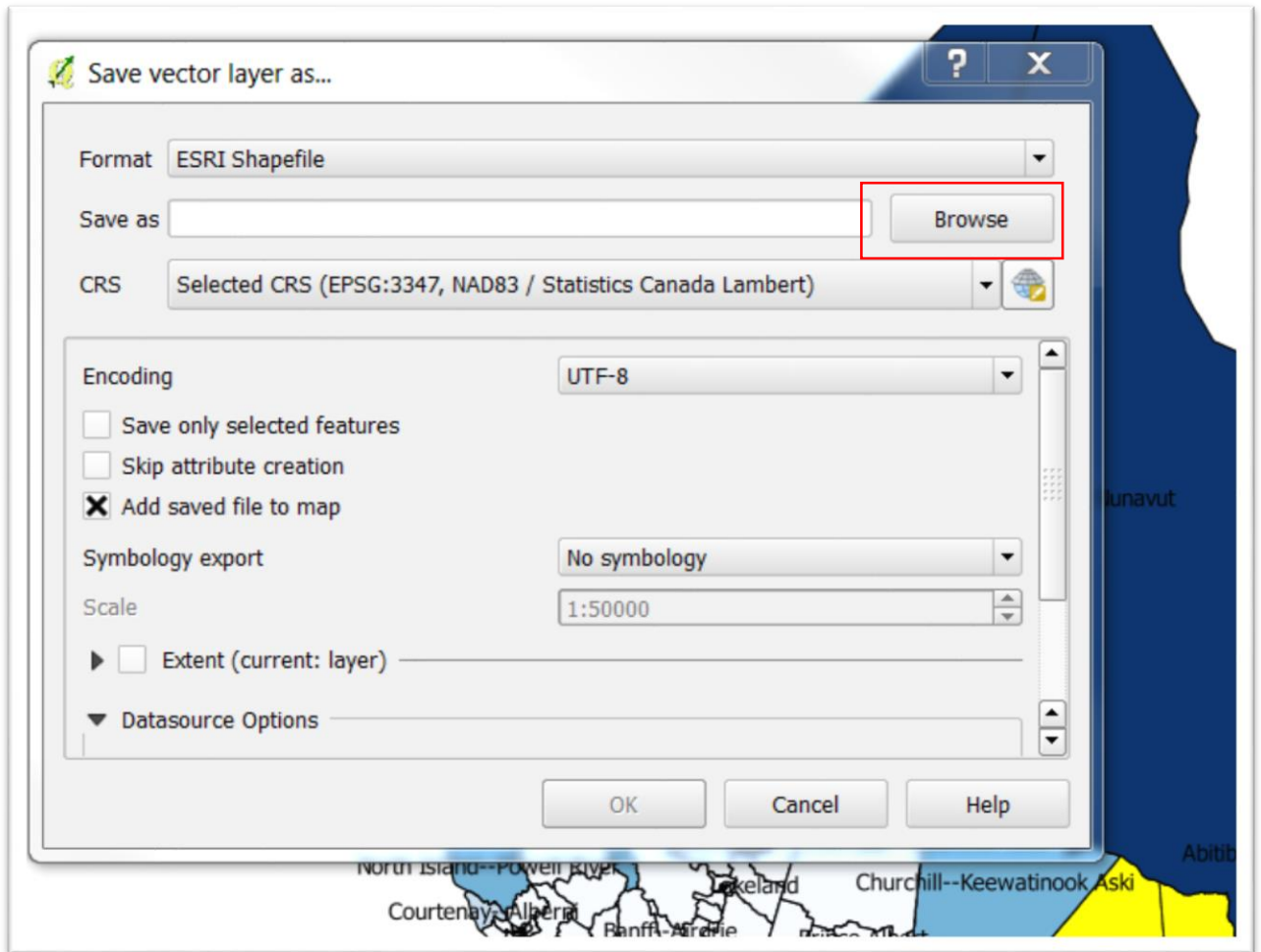
NID	FEDNUM	ENNAME	FRNAME	PROVCODE	CREADT	REVDT	REPORTER	DEPOPCNT	QUIPOPCNT	ENLEGALDSC	FRLEGALDSC	PNTCNT
	59009	Courtenay-Al...	Courtenay-Al...	BC	20131005	NULL	2013	110391	0	http://www.el...	http://www.el...	15
	12010	Sydney-Victo...	Sydney-Victo...	NS	20131005	NULL	2013	73328	0	http://www.el...	http://www.el...	15
	59026	Esquimalt-Sa...	Esquimalt-Sa...	BC	20131005	20140619	2013	113004	0	http://www.el...	http://www.el...	13
	10005	Long Range M...	Long Range M...	NL	20131005	NULL	2013	87592	0	http://www.el...	http://www.el...	13
	59017	Mission-Mats...	Mission-Mats...	BC	20131005	NULL	2013	90871	0	http://www.el...	http://www.el...	12
	12004	Dartmouth-C...	Dartmouth-C...	NS	20131005	NULL	2013	91212	0	http://www.el...	http://www.el...	12
	10003	Coast of Bays...	Coast of Bays...	NL	20131005	NULL	2013	78092	0	http://www.el...	http://www.el...	10
	10004	Labrador	Labrador	NL	20131005	NULL	2013	26728	0	http://www.el...	http://www.el...	10
	10001	Avalon	Avalon	NL	20131005	NULL	2013	81540	0	http://www.el...	http://www.el...	9
	35107	Timmins-Jam...	Timmins-Bal...	ON	20131005	NULL	2013	83104	0	http://www.el...	http://www.el...	9
	12001	Cape Breton-...	Cape Breton-...	NS	20131005	NULL	2013	75247	0	http://www.el...	http://www.el...	8
	35006	Bay of Quinte	Bay de Quinte	ON	20131005	NULL	2013	109488	0	http://www.el...	http://www.el...	8
	35044	Kingston and L...	Kingston et le...	ON	20131005	NULL	2013	116996	0	http://www.el...	http://www.el...	8
	24058	Portneuf-Jacq...	Portneuf-Jacq...	QC	20131005	NULL	2013	104394	0	http://www.el...	http://www.el...	8
	59041	Victoria	Victoria	BC	20131005	NULL	2013	110942	0	http://www.el...	http://www.el...	7
	59010	Cowichan-M...	Cowichan-M...	BC	20131005	NULL	2013	99160	0	http://www.el...	http://www.el...	7
	24046	Manicouagan	Manicouagan	QC	20131005	NULL	2013	94766	0	http://www.el...	http://www.el...	7
	59004	Cariboo-Frin...	Cariboo-Frin...	BC	20131005	NULL	2013	108252	0	http://www.el...	http://www.el...	6
	35002	Algoma-Mani...	Algoma-Mani...	ON	20131005	NULL	2013	79801	0	http://www.el...	http://www.el...	6
	24077	Ville-Marie-L...	Ville-Marie-L...	QC	20131005	20140619	2013	103070	0	http://www.el...	http://www.el...	6
	48001	Banff-Airdrie	Banff-Airdrie	AB	20131005	NULL	2013	105442	0	http://www.el...	http://www.el...	5
	48025	Lakeland	Lakeland	AB	20131005	NULL	2013	104616	0	http://www.el...	http://www.el...	5
	59018	Nanaimo-Lad...	Nanaimo-Lad...	BC	20131005	NULL	2013	114998	0	http://www.el...	http://www.el...	5
	35077	Ottawa South	Ottawa-Sud	ON	20131005	NULL	2013	121894	0	http://www.el...	http://www.el...	5
	35105	Thunder Bay...	Thunder Bay...	ON	20131005	NULL	2013	82984	0	http://www.el...	http://www.el...	5
	24026	Gaspésie-Le...	Gaspésie-Le...	QC	20131005	NULL	2013	78833	0	http://www.el...	http://www.el...	5
	24034	La Prairie	La Prairie	QC	20131005	NULL	2013	99811	0	http://www.el...	http://www.el...	5
	47003	Desnethé-M...	Desnethé-M...	SK	20131005	NULL	2013	69471	0	http://www.el...	http://www.el...	5
	48023	Fort McMurre...	Fort McMurre...	AB	20131005	NULL	2013	101538	0	http://www.el...	http://www.el...	4
	59022	Pitt Meadows...	Pitt Meadows...	BC	20131005	NULL	2013	94111	0	http://www.el...	http://www.el...	4
	59042	West Vancouv...	West Vancouv...	BC	20131005	NULL	2013	112875	0	http://www.el...	http://www.el...	4
	10006	St. John's East	St. John's-Est	NL	20131005	NULL	2013	81936	0	http://www.el...	http://www.el...	4
	10007	St. John's Sou...	St. John's-Su...	NL	20131005	NULL	2013	81944	0	http://www.el...	http://www.el...	4
	35075	Ottawa Centre	Ottawa-Centre	ON	20131005	NULL	2013	113619	0	http://www.el...	http://www.el...	4
	24001	Abitibi-Baie-3...	Abitibi-Baie-3...	QC	20131005	NULL	2013	85475	0	http://www.el...	http://www.el...	4

53) Close the dialog box.

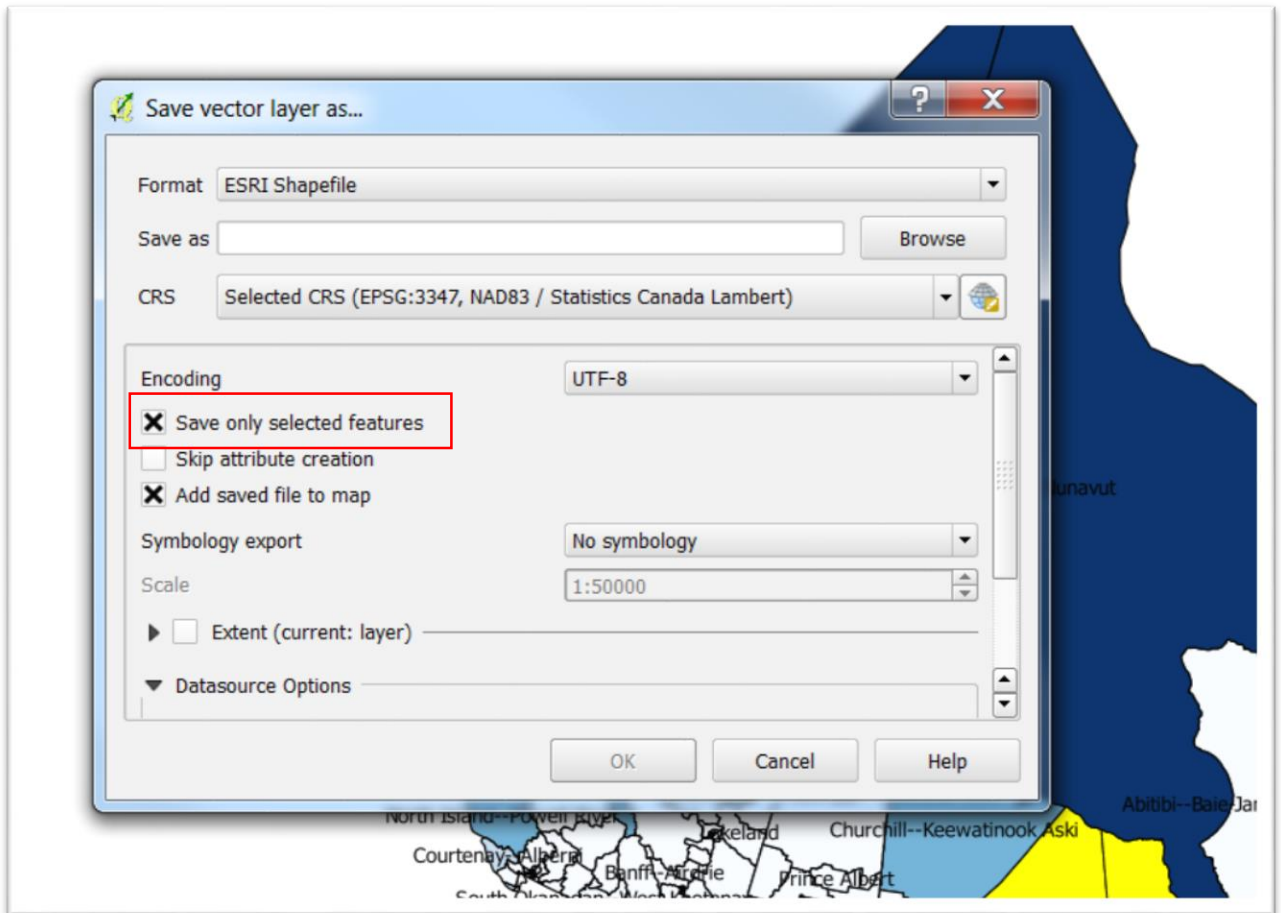


54) You can see that Ontario is highlighted.

55) We can now save Ontario, by right-clicking on the “SitesInRidings” layer and selecting “Save As”.

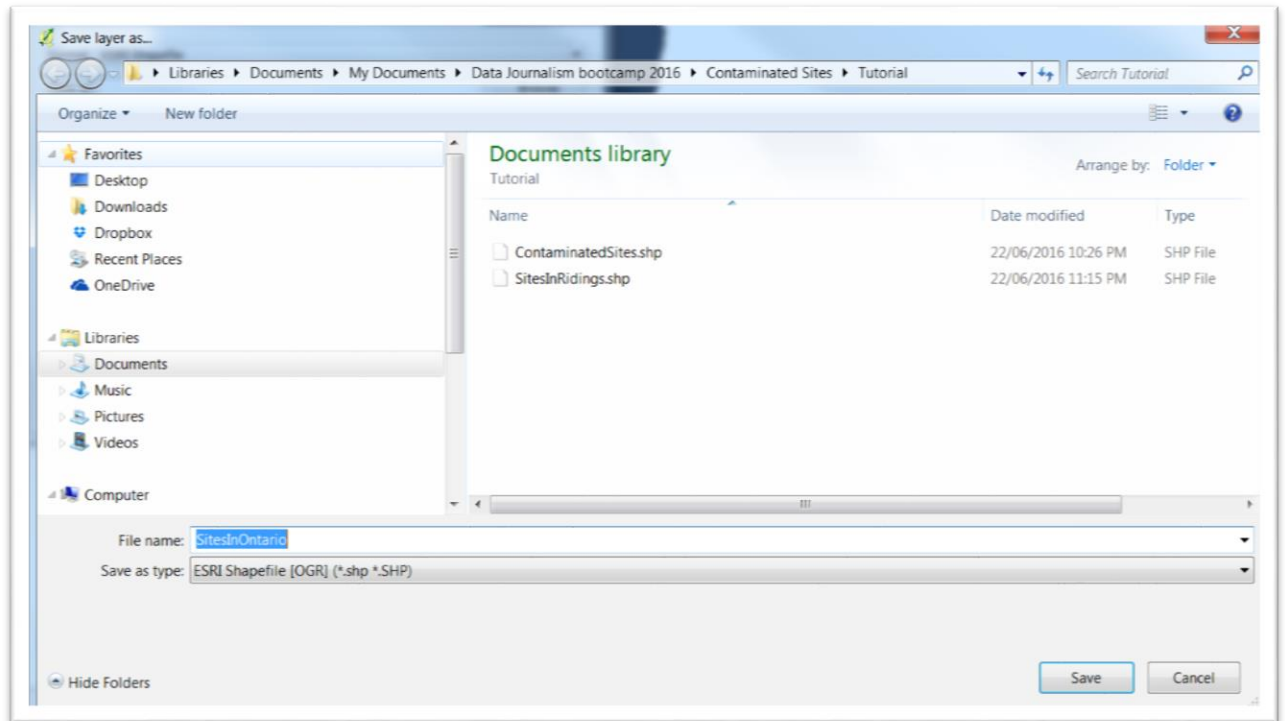


56) Click the box to the left of the “Save only selected features” option.



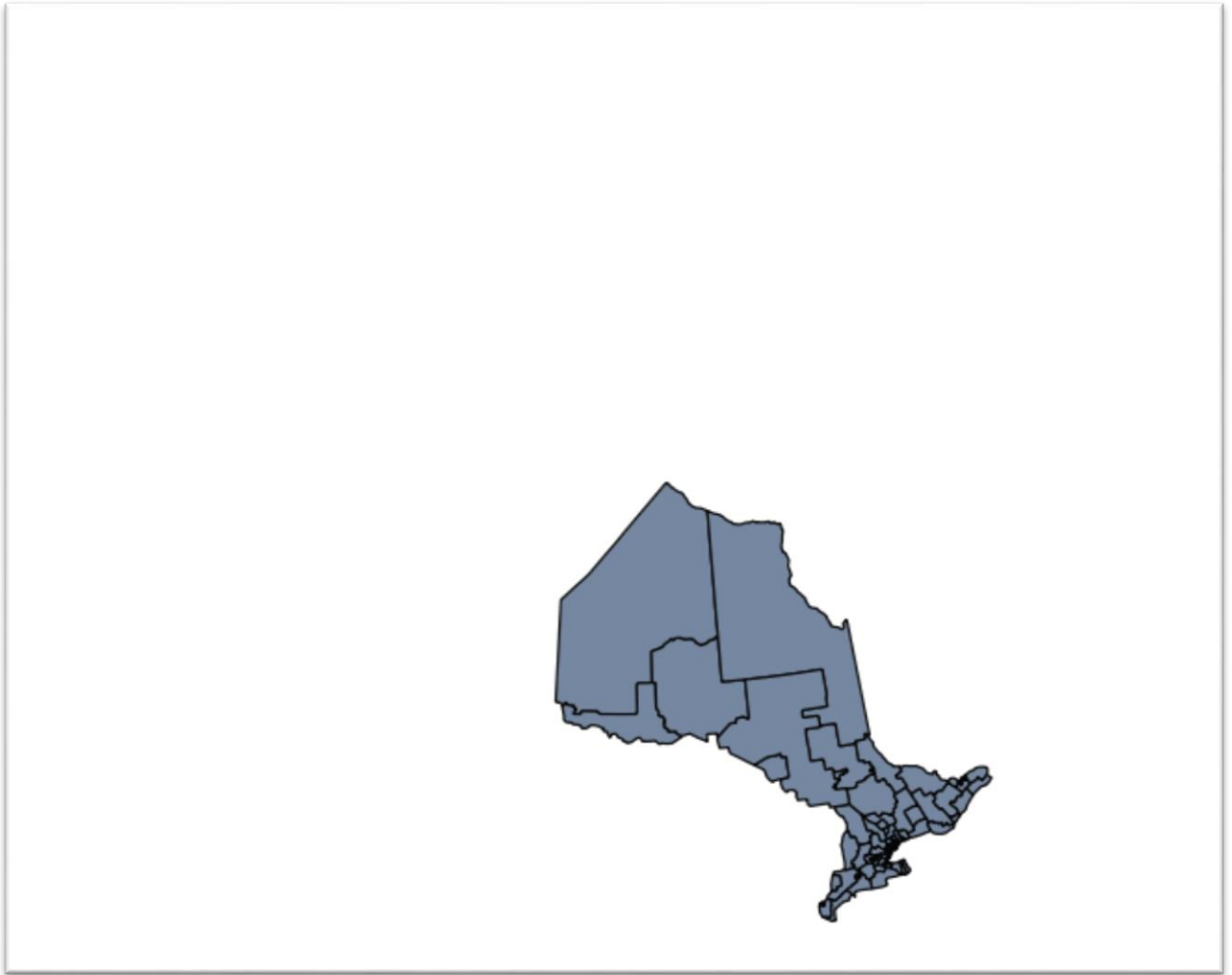
57) We are going to create a new layer for Ontario. (NOTE: We must turn each layer we create into a shape file) So browse to the location where you want to place the Ontario file, and call it

something like “SitesInOntario”.

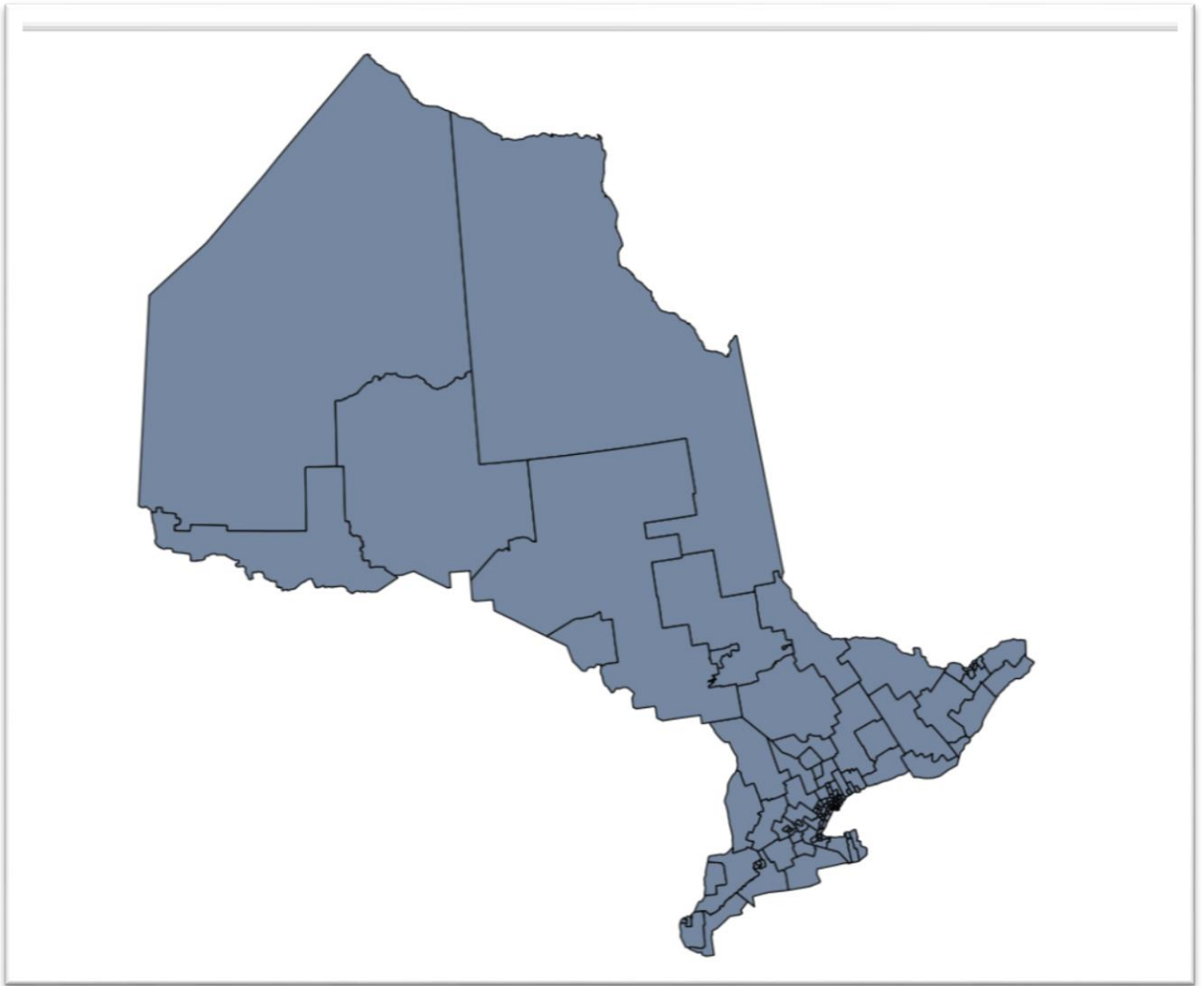


58) Select the “Save”, and then “OK”.

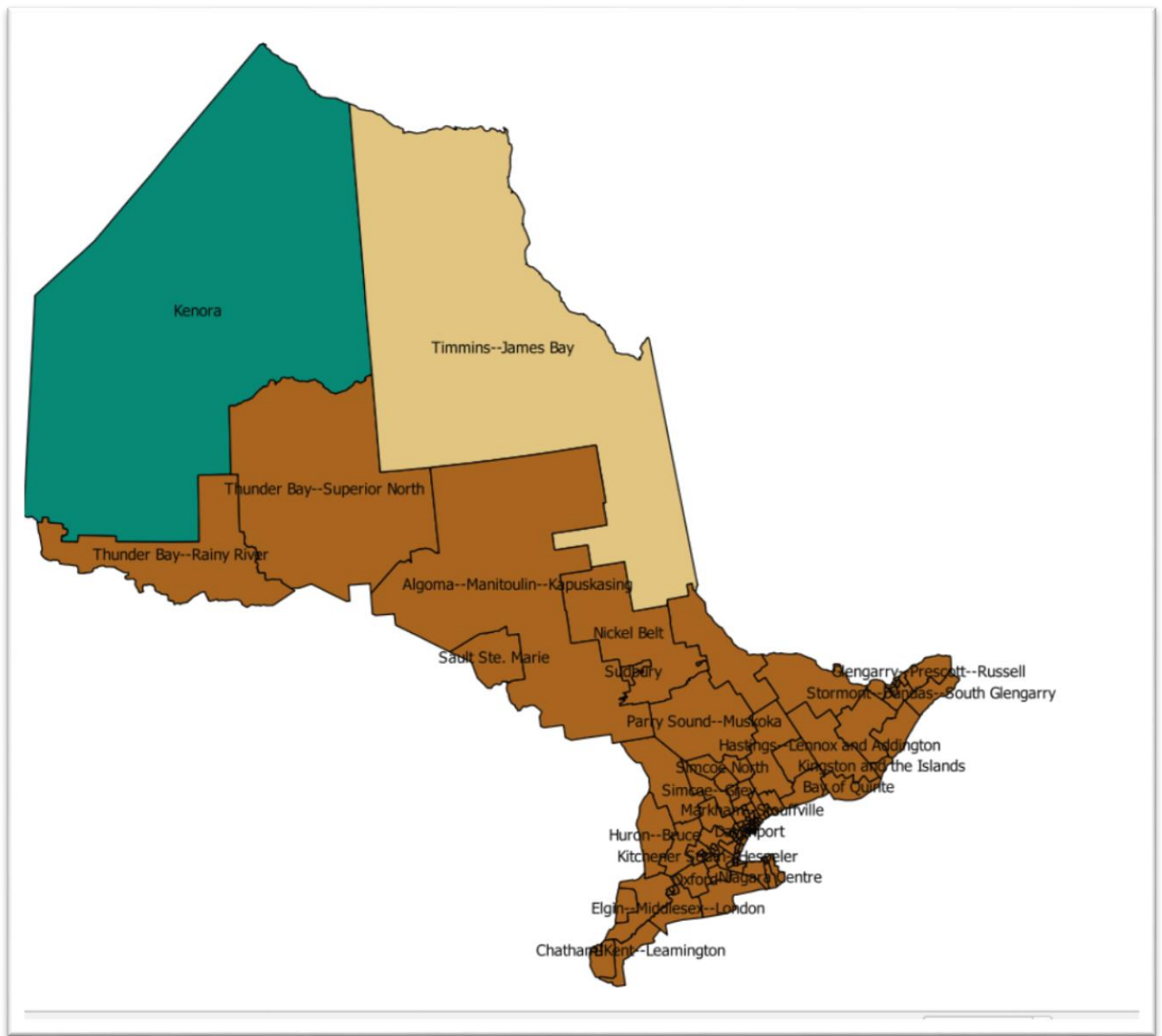
59) Deselect the “SitesInRidings” layer to see the new Ontario map.



60) To make it bigger, right-click on the “SitesInOntario” layer, and select the “Zoom to Layer” option.



61) That's better. Now repeat the steps from 37 to 40 to create your thematic map.



62) The Ontario riding with the highest number of active federal contaminated sites is Kenora.

63) To display this map in ArcGIS or Fusion Tables, please refer to the steps towards the end of the voter turnout tutorial.