Cheap Geology

- Exploring OGS & OCC data
- Spotting wells from legal descriptions
- Computer contours & raster maps
- Using MCGL's online system
- Getting started with QGIS
- *The Future*

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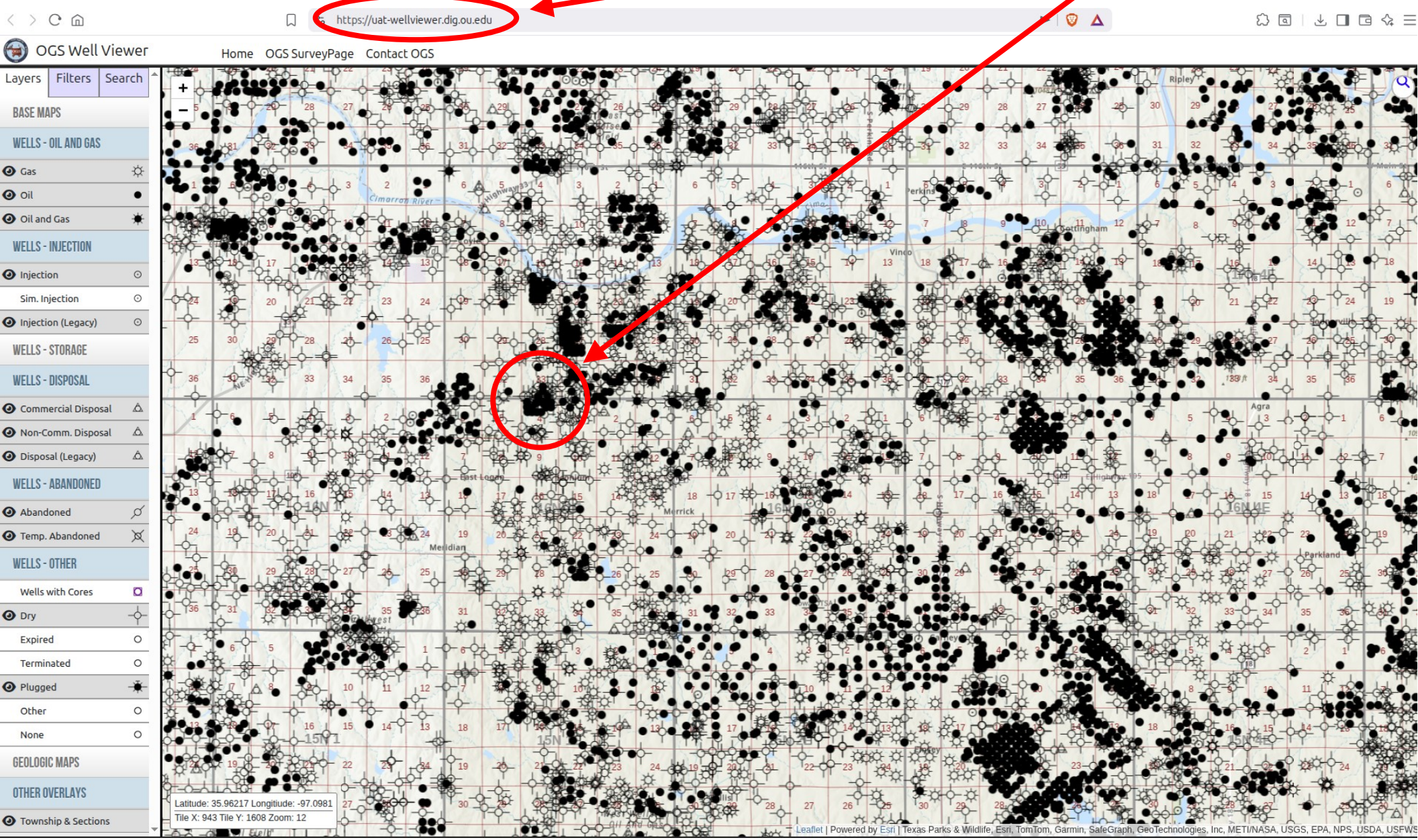
Let's go out to the Oklahoma Geological Survey Well Viewer site and pull up Iconium field in 17N-1E



OGS has a nice site, with readable well symbols that appear to be properly spotted.

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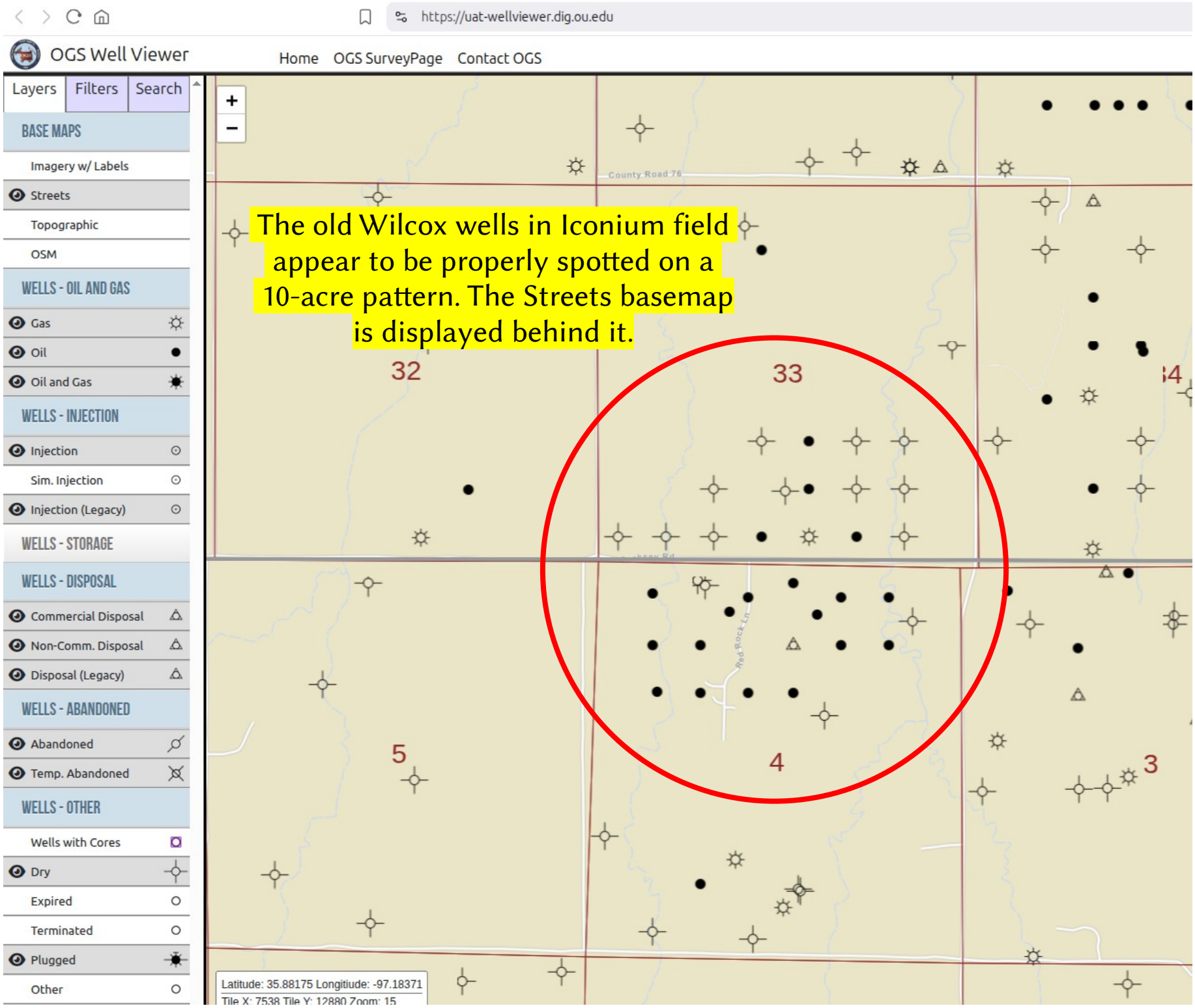

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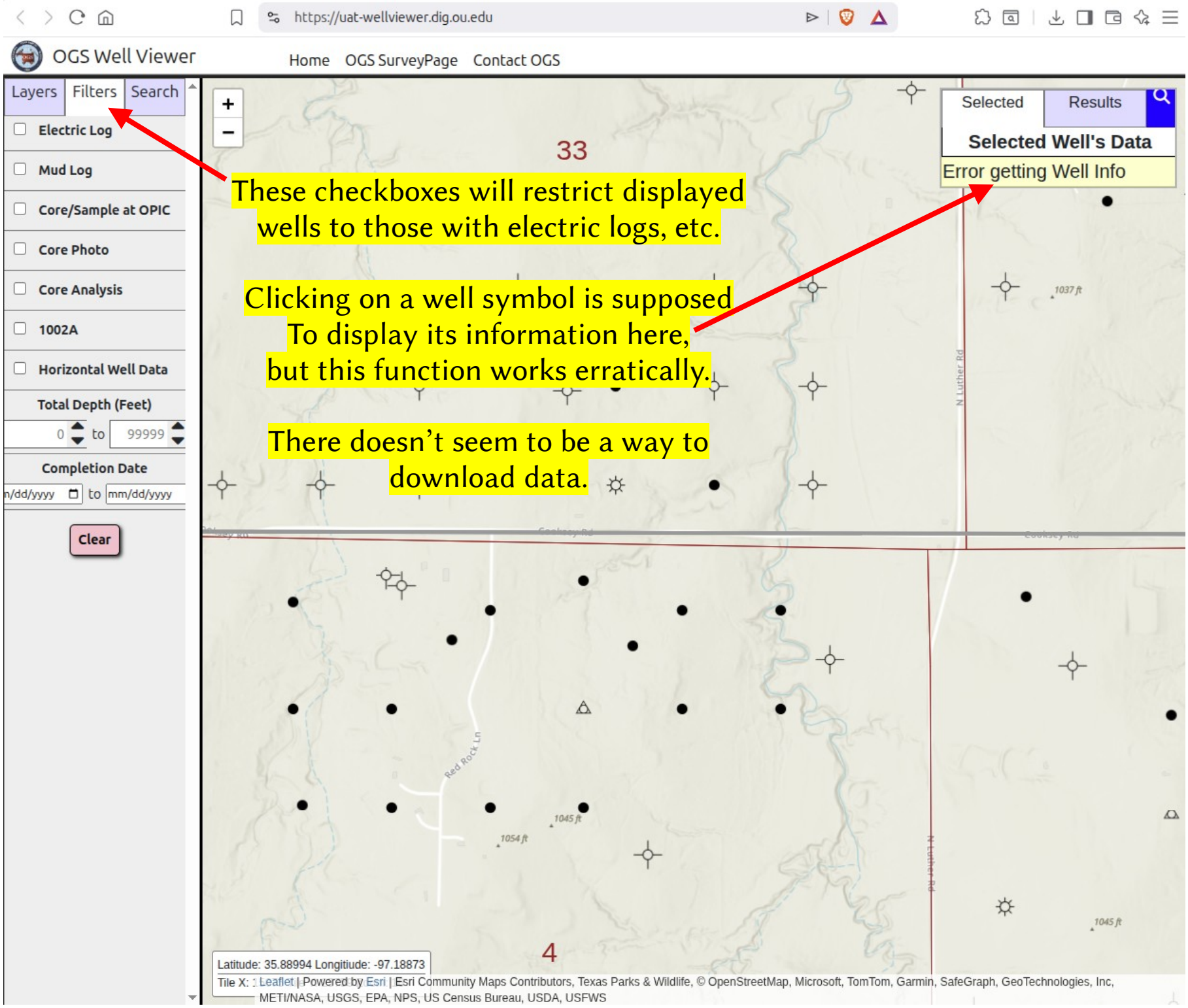

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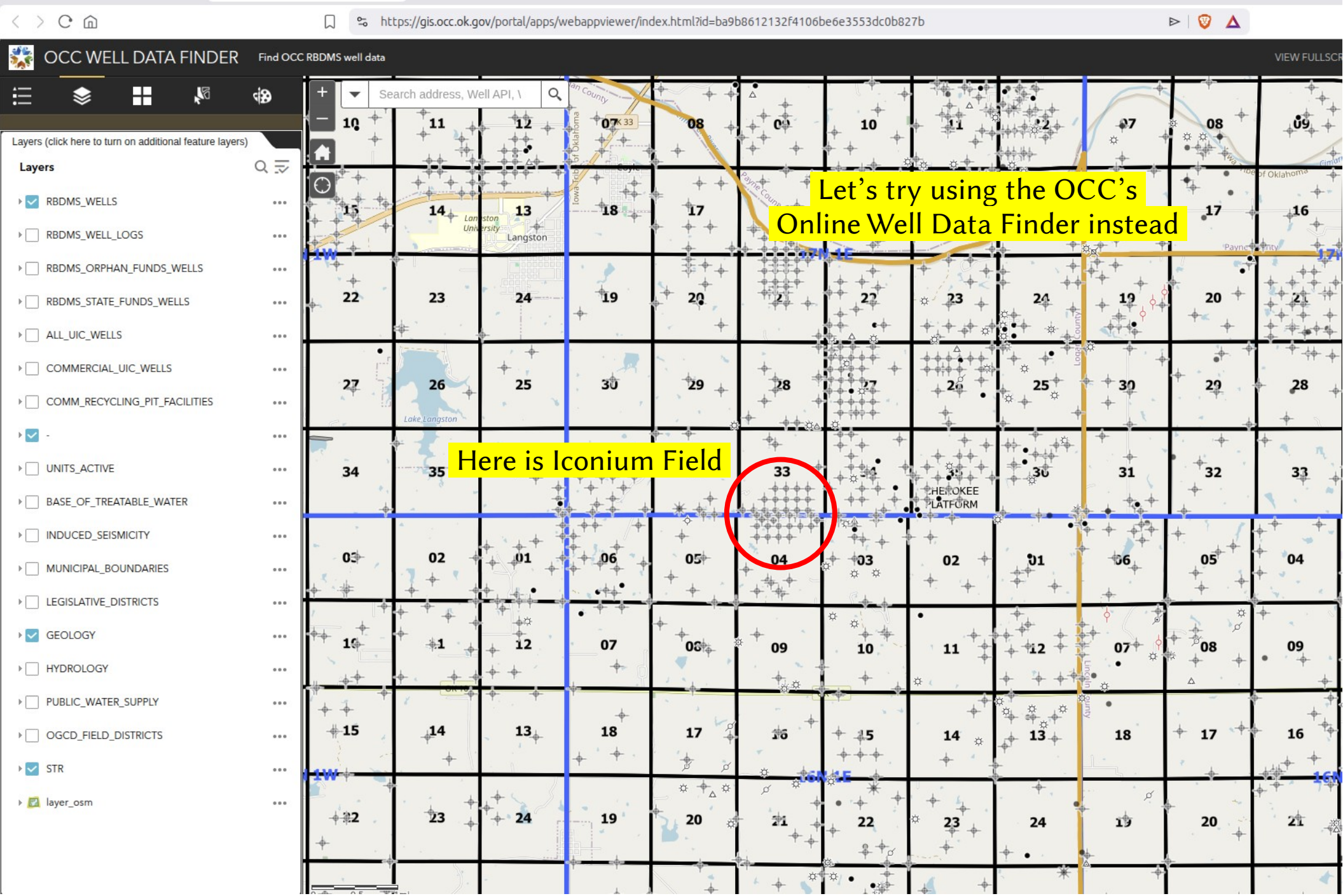

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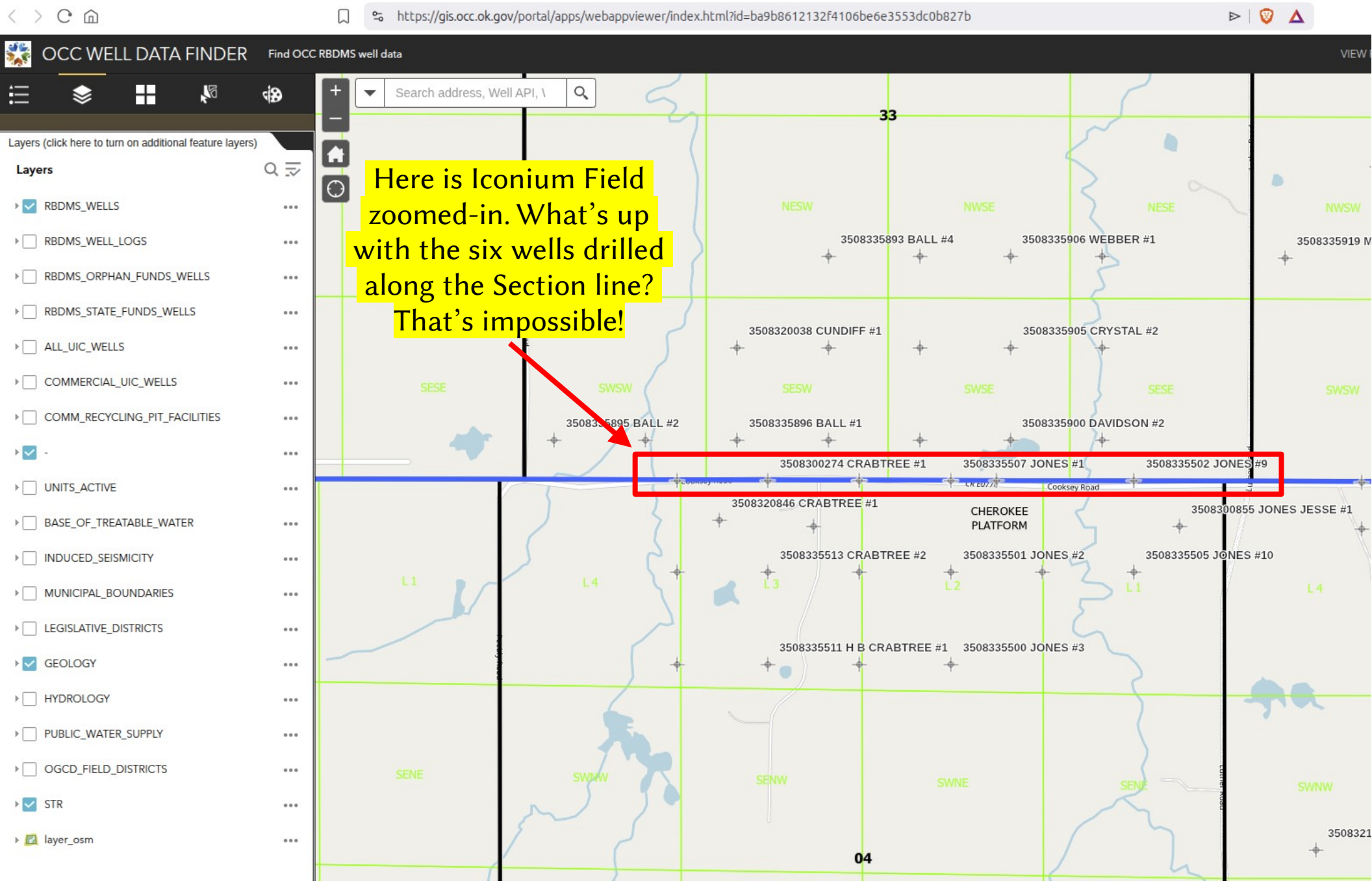

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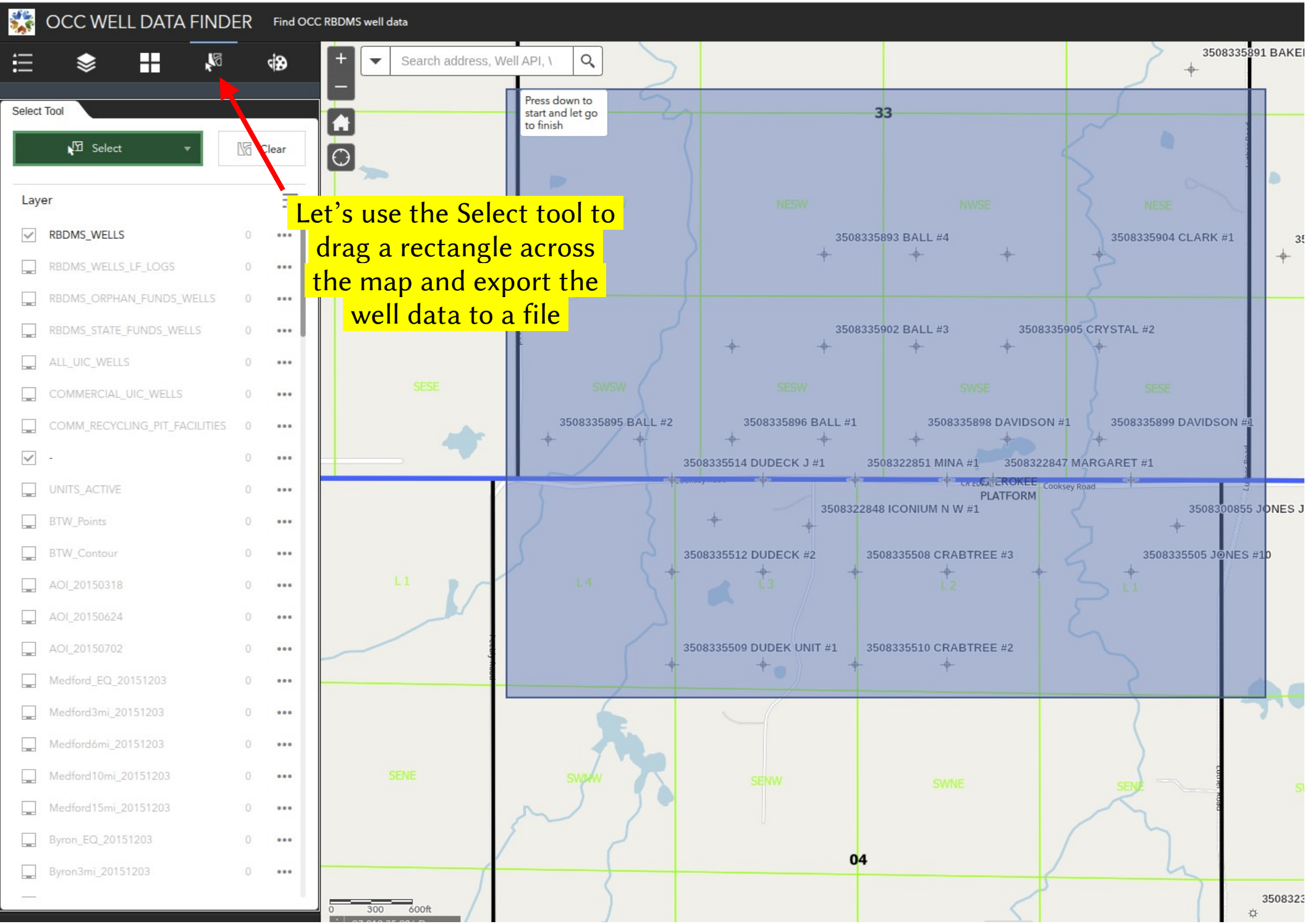

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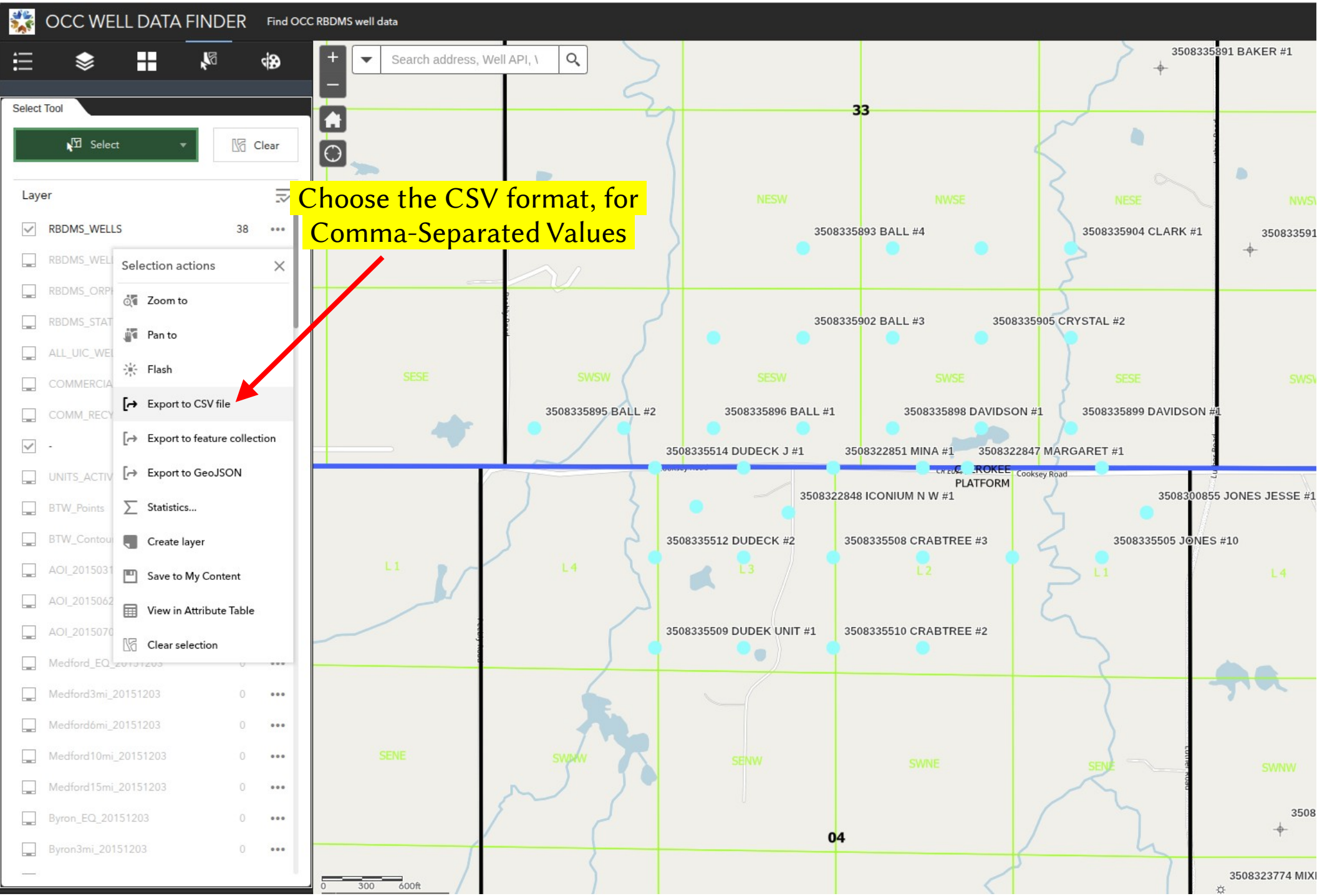

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Here's the downloaded file. You get operator and well names, locations, and little else.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	OBJECTID	API	WELL_NAME	WELL_NUM	OPERATOR	WELLSTATUS	WELLTYPE	SYMBOL_CLASS	SH_LAT	SH_LON	COUNTY	SECTION	TOWNSHIP	RANGE	QTR4	QTR3	QTR2	QTR1	PM	FOOTAGE_EW	EW
2	201422	3508300274	CRABTREE	#1	HOEN EXPLORATION COMPANY INC	PA	DRY	PLUGGED	35.8985718	-97.205608	LOGAN	4	16N	01E		NW	NE	NW	IM	990	E
3	201610	3508300481	JONES	#1	OTC/OCC NOT ASSIGNED	PA	NT	PLUGGED	35.8976659	-97.1955828	LOGAN	4	16N	01E			CNE	NE	IM	660	E
4	201913	3508300855	JONES JESSE	#1	OTC/OCC NOT ASSIGNED	PA	DRY	PLUGGED	35.8976659	-97.1955828	LOGAN	4	16N	01E			CNE	NE	IM	660	W
5	201993	3508320038	CUNDIFF	#1	OTC/OCC NOT ASSIGNED	PA	DRY	PLUGGED	35.9011931	-97.2063685	LOGAN	33	17N	01E		NW	SE	SW	IM	0	
6	202750	3508320846	CRABTREE	#1	OTC/OCC NOT ASSIGNED	PA	NT	PLUGGED	35.8978	-97.2068	LOGAN	4	16N	01E			NE	NW	IM	2080	W
7	204537	3508322847	MARGARET	#1	BOBWHITE PRODUCTION CO INC	PA	NT	PLUGGED	35.8985722	-97.2000385	LOGAN	4	16N	01E		N2	NW	NE	IM	660	W
8	204538	3508322848	ICONIUM N W	#1	BOYCE PRODUCING CORPORATION	PA	TM	PLUGGED	35.8976654	-97.2044941	LOGAN	4	16N	01E			CNE	NW	IM	1980	W
9	204540	3508322851	MINA	#1	BOBWHITE PRODUCTION CO INC	PA	NT	PLUGGED	35.898572	-97.2033802	LOGAN	4	16N	01E		NE	NE	NW	IM	2053	W
10	206589	3508335500	JONES	#3	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.8949462	-97.2011524	LOGAN	4	16N	01E		NW	SW	NE	IM	330	W
11	206590	3508335501	JONES	#2	OTC/OCC NOT ASSIGNED	PA	SWD	PLUGGED	35.8967592	-97.2011524	LOGAN	4	16N	01E		SW	NW	NE	IM	0	
12	206591	3508335502	JONES	#9	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.8985723	-97.1966967	LOGAN	4	16N	01E		NW	NE	NE	IM	990	E
13	206592	3508335503	JONES	#5	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.8985721	-97.2011524	LOGAN	4	16N	01E		NW	NW	NE	IM	990	W
14	206593	3508335504	JONES	#6	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.8967593	-97.1989246	LOGAN	4	16N	01E		SE	NW	NE	IM	990	W
15	206594	3508335505	JONES	#10	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.8967594	-97.1966967	LOGAN	4	16N	01E		SW	NE	NE	IM	990	E
16	206595	3508335506	CRABTREE	#4	OTC/OCC NOT ASSIGNED	PA	NT	PLUGGED	35.898572	-97.2033802	LOGAN	4	16N	01E		NE	NE	NW	IM	330	E
17	206596	3508335507	JONES	#1	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.8985721	-97.2011524	LOGAN	4	16N	01E		NW	NW	NE	IM	330	W
18	206597	3508335508	CRABTREE	#3	OTC/OCC NOT ASSIGNED	PA	NT	PLUGGED	35.896759	-97.2033802	LOGAN	4	16N	01E		SE	NE	NW	IM	330	E
19	206598	3508335509	DUDEK UNIT	#1	AMERADA HESS CORPORATION	PA	OIL	PLUGGED	35.8949456	-97.2078358	LOGAN	4	16N	01E		NE	SW	NW	IM	990	W
20	206599	3508335510	CRABTREE	#2	AMERADA HESS CORPORATION	PA	OIL	PLUGGED	35.894946	-97.2033802	LOGAN	4	16N	01E	C	NE	SE	NW	IM	2310	W
21	206600	3508335511	H B CRABTREE	#1	AMERADA HESS CORPORATION	PA	OIL	PLUGGED	35.8949458	-97.205608	LOGAN	4	16N	01E		NW	SE	NW	IM	990	E
22	206601	3508335512	DUDECK	#2	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.8967585	-97.2078358	LOGAN	4	16N	01E		SE	NW	NW	IM	990	W
23	206602	3508335513	CRABTREE	#2	OTC/OCC NOT ASSIGNED	PA	NT	PLUGGED	35.8967588	-97.205608	LOGAN	4	16N	01E		SW	NE	NW	IM	990	E
24	206603	3508335514	DUDECK J	#1	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.8985715	-97.2078358	LOGAN	4	16N	01E		NE	NW	NW	IM	990	W
25	206948	3508335892	WEBBER	#1	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.9030064	-97.2019121	LOGAN	33	17N	01E		SW	NW	SE	IM	330	W
26	206949	3508335893	BALL	#4	OTC/OCC NOT ASSIGNED	PA	DRY	PLUGGED	35.9030063	-97.2041403	LOGAN	33	17N	01E		SE	NE	SW	IM	330	E
27	206950	3508335894	BALL	#2	BOBWHITE PRODUCTION CO INC	PA	NT	PLUGGED	35.8993804	-97.2041403	LOGAN	33	17N	01E		SE	SE	SW	IM	330	E
28	206951	3508335895	BALL	#2	BLACKWELL GAS COMPANY	PA	NT	PLUGGED	35.8993796	-97.2108249	LOGAN	33	17N	01E		SW	SW	SW	IM	330	W
29	206952	3508335896	BALL	#1	OTC/OCC NOT ASSIGNED	PA	DRY	PLUGGED	35.8993802	-97.2063685	LOGAN	33	17N	01E		SW	SE	SW	IM	990	E
30	206953	3508335897	M BALL	#1	BLACKWELL GAS COMPANY	PA	DRY	PLUGGED	35.8993799	-97.2085967	LOGAN	33	17N	01E		SE	SW	SW	IM	1035	W
31	206954	3508335898	DAVIDSON	#1	OTC/OCC NOT ASSIGNED	PA	GAS	PLUGGED	35.8993805	-97.2019121	LOGAN	33	17N	01E		SW	SW	SE	IM	330	W
32	206955	3508335899	DAVIDSON	#1	OTC/OCC NOT ASSIGNED	PA	DRY	PLUGGED	35.8993807	-97.1974557	LOGAN	33	17N	01E		SW	SE	SE	IM	990	E
33	206956	3508335900	DAVIDSON	#2	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.8993807	-97.1996839	LOGAN	33	17N	01E		SE	SW	SE	IM	990	W
34	206957	3508335901	CRYSTAL	#1	OTC/OCC NOT ASSIGNED	PA	OIL	PLUGGED	35.9011935	-97.2019121	LOGAN	33	17N	01E		NW	SW	SE	IM	0	
35	206958	3508335902	BALL	#3	OTC/OCC NOT ASSIGNED	PA	DRY	PLUGGED	35.9011933	-97.2041403	LOGAN	33	17N	01E		NE	SE	SW	IM	330	E
36	206959	3508335903	FRUIN	#1	OTC/OCC NOT ASSIGNED	PA	DRY	PLUGGED	35.9011937	-97.1974557	LOGAN	33	17N	01E		NW	SE	SE	IM	990	E
37	206960	3508335904	CLARK	#1	OTC/OCC NOT ASSIGNED	PA	DRY	PLUGGED	35.9030066	-97.1974557	LOGAN	33	17N	01E		SW	NE	SE	IM	990	E
38	206961	3508335905	CRYSTAL	#2	OTC/OCC NOT ASSIGNED	PA	DRY	PLUGGED	35.9011936	-97.1996839	LOGAN	33	17N	01E		NE	SW	SE	IM	990	W
39	206962	3508335906	WEBBER	#1	OTC/OCC NOT ASSIGNED	PA	DRY	PLUGGED	35.9030065	-97.1996839	LOGAN	33	17N	01E		SE	NW	SE	IM	990	W
40																					
41																					

How accurate are the state's lat/longs for well locations?

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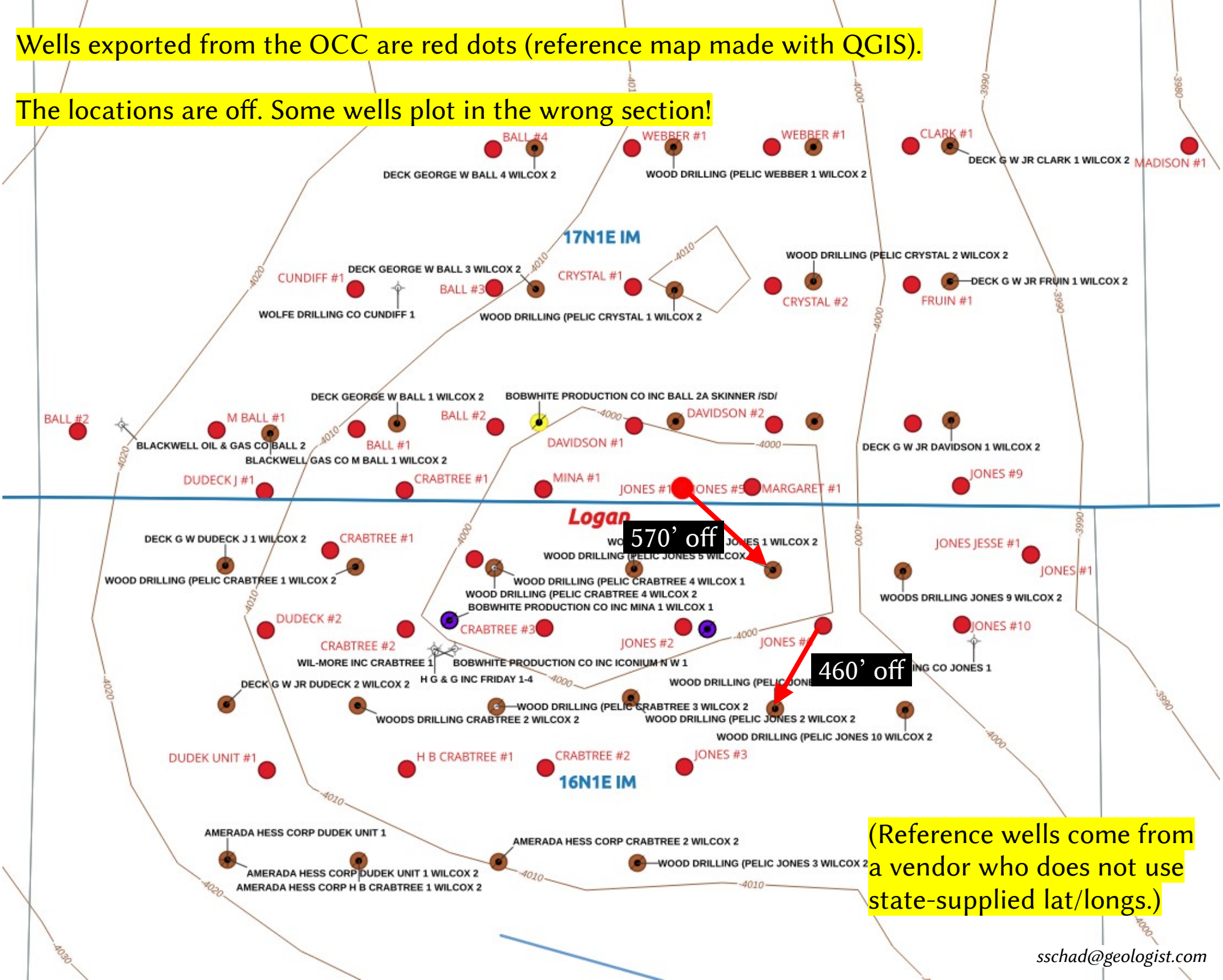
Wells exported from the OCC are red dots (reference map made with QGIS).
The locations are off. Some wells plot in the wrong section!
BALL #4
DECK GEORGE W BALL 4 WILCOX 2
WEBBER #1
WOOD DRILLING (PELIC WEBBER 1 WILCOX 2
WEBBER #1
CLARK #1
DECK G W JR CLARK 1 WILCOX 2
MADISON #1
17N1E IM
CUNDIFF #1
DECK GEORGE W BALL 3 WILCOX 2
WOLFE DRILLING CO CUNDIFF 1
BALL #3
CRYSTAL #1
WOOD DRILLING (PELIC CRYSTAL 1 WILCOX 2
WOOD DRILLING (PELIC CRYSTAL 2 WILCOX 2
CRYSTAL #2
FRUIN #1
DECK G W JR FRUIN 1 WILCOX 2
DECK GEORGE W BALL 1 WILCOX 2
BOBWHITE PRODUCTION CO INC BALL 2A SKINNER /SD/
BALL #2
M BALL #1
BLACKWELL OIL & GAS CO BALL 2
BLACKWELL GAS CO M BALL 1 WILCOX 2
BALL #1
BALL #2
DAVIDSON #1
DAVIDSON #2
DECK G W JR DAVIDSON 1 WILCOX 2
DUDECK J #1
CRABTREE #1
MINA #1
JONES #1
JONES #5
MARGARET #1
JONES #9
Logan
570’ off
DECK G W DUDECK J 1 WILCOX 2
CRABTREE #1
WOOD DRILLING (PELIC CRABTREE 1 WILCOX 2
WOOD DRILLING (PELIC JONES 5 WILCOX
WOOD DRILLING (PELIC CRABTREE 4 WILCOX 1
WOOD DRILLING (PELIC CRABTREE 4 WILCOX 2
BOBWHITE PRODUCTION CO INC MINA 1 WILCOX 1
JONES JESSE #1
JONES #1
WOODS DRILLING JONES 9 WILCOX 2
DUDECK #2
CRABTREE #3
JONES #10
CRABTREE #2
WIL-MORE INC CRABTREE 1
BOBWHITE PRODUCTION CO INC ICONIUM N W 1
H G & G INC FRIDAY 1-4
JONES #2
JONES #
460’ off
DECK G W JR DUDECK 2 WILCOX 2
WOODS DRILLING CRABTREE 2 WILCOX 2
WOOD DRILLING (PELIC CRABTREE 3 WILCOX 2
WOOD DRILLING (PELIC JONES 2 WILCOX 2
WOOD DRILLING (PELIC JONES 10 WILCOX 2
DUDEK UNIT #1
H B CRABTREE #1
CRABTREE #2
JONES #3
16N1E IM
AMERADA HESS CORP DUDEK UNIT 1
AMERADA HESS CORP DUDEK UNIT 1 WILCOX 2
AMERADA HESS CORP H B CRABTREE 1 WILCOX 2
AMERADA HESS CORP CRABTREE 2 WILCOX 2
WOOD DRILLING (PELIC JONES 3 WILCOX 2
(Reference wells come from a vendor who does not use state-supplied lat/longs.)
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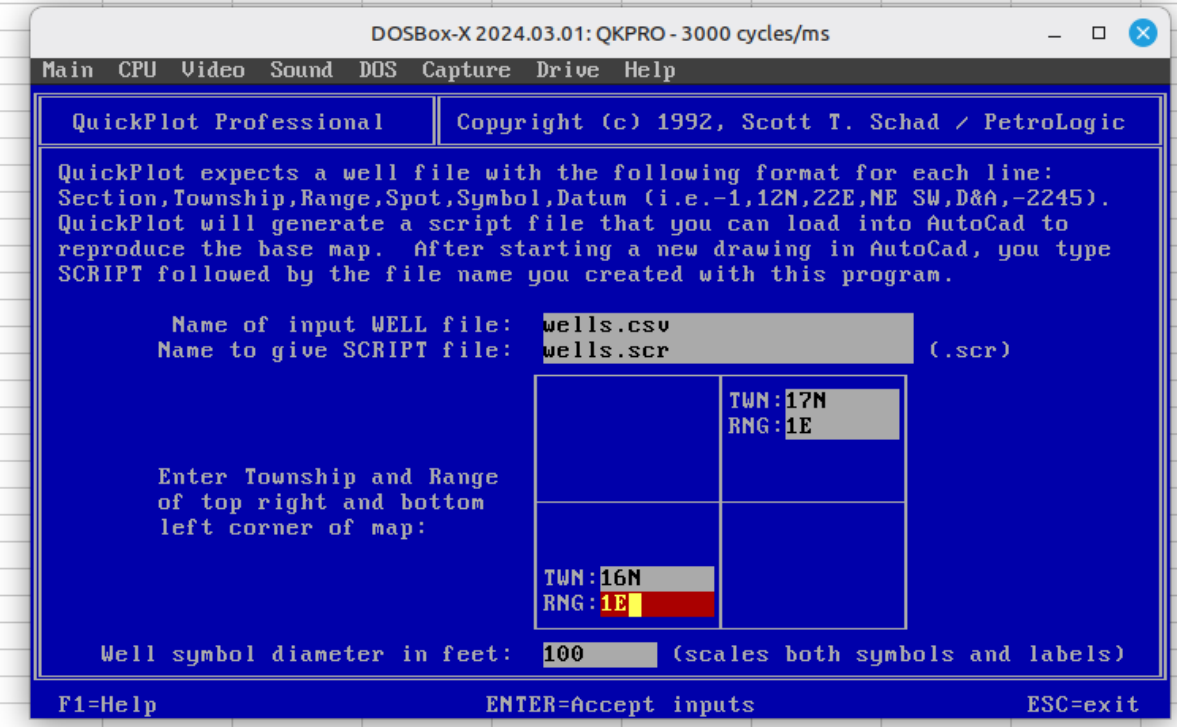
Let's take the data file exported from the OCC, clean it up a bit, and use a program that I wrote thirty years ago to spot wells from their legal descriptions.

	A	B	C	D	E	F
1	SECTION	TOWNSHIP	RANGE	SPOT	STATUS	WELLNAME
2	4	16N	01E	NW NE NW	D&A	CRABTREE #1
3	4	16N	01E	NE NE	AOIL	JONES #1
4	4	16N	01E	NE NE	D&A	JONES JESSE #1
5	33	17N	01E	NW SE SW	D&A	CUNDIFF #1
6	4	16N	01E	2080FWL 1980FSL	AOIL	CRABTREE #1
7	4	16N	01E	660FWL 2072FSL	AOIL	MARGARET #1
8	4	16N	01E	NE NW	TM	ICONIUM N W #1
9	4	16N	01E	2053FWL 2112FSL	AOIL	MINA #1
10	4	16N	01E	NW SW NE	AOIL	JONES #3
11	4	16N	01E	SW NW NE	ASWD	JONES #2
12	4	16N	01E	NW NE NE	AOIL	JONES #9
13	4	16N	01E	NW NW NE	AOIL	JONES #5
14	4	16N	01E	SE NW NE	AOIL	JONES #6
15	4	16N	01E	SW NE NE	AOIL	JONES #10
16	4	16N	01E	NE NE NW	AOIL	CRABTREE #4
17	4	16N	01E	NW NW NE	AOIL	JONES #1
18	4	16N	01E	SE NE NW	AOIL	CRABTREE #3
19	4	16N	01E	NE SW NW	AOIL	DUDEK UNIT #1
20	4	16N	01E	NE SE NW	AOIL	CRABTREE #2
21	4	16N	01E	NW SE NW	AOIL	H B CRABTREE #1
22	4	16N	01E	SE NW NW	AOIL	DUDECK #2
23	4	16N	01E	SW NE NW	AOIL	CRABTREE #2
24	4	16N	01E	NE NW NW	AOIL	DUDECK J #1
25	33	17N	01E	SW NW SE	AOIL	WEBBER #1
26	33	17N	01E	SE NE SW	D&A	BALL #4
27	33	17N	01E	SE SE SW	AOIL	BALL #2
28	33	17N	01E	SW SW SW	AOIL	BALL #2
29	33	17N	01E	SW SE SW	D&A	BALL #1
30	33	17N	01E	1035FWL 285FSL	D&A	M BALL #1
31	33	17N	01E	SW SW SE	AGAS	DAVIDSON #1
32	33	17N	01E	SW SE SE	D&A	DAVIDSON #1
33	33	17N	01E	SE SW SE	AOIL	DAVIDSON #2
34	33	17N	01E	NW SW SE	AOIL	CRYSTAL #1
35	33	17N	01E	330FEL 960FSL	D&A	BALL #3
36	33	17N	01E	NW SE SE	D&A	FRUIN #1
37	33	17N	01E	SW NE SE	D&A	CLARK #1
38	33	17N	01E	NE SW SE	D&A	CRYSTAL #2
39	33	17N	01E	SE NW SE	D&A	WEBBER #1
40						



My DOS program converts CSV files into Autocad script files. It asks for file input and output names, the township extents to draw, and size to use for well symbols.

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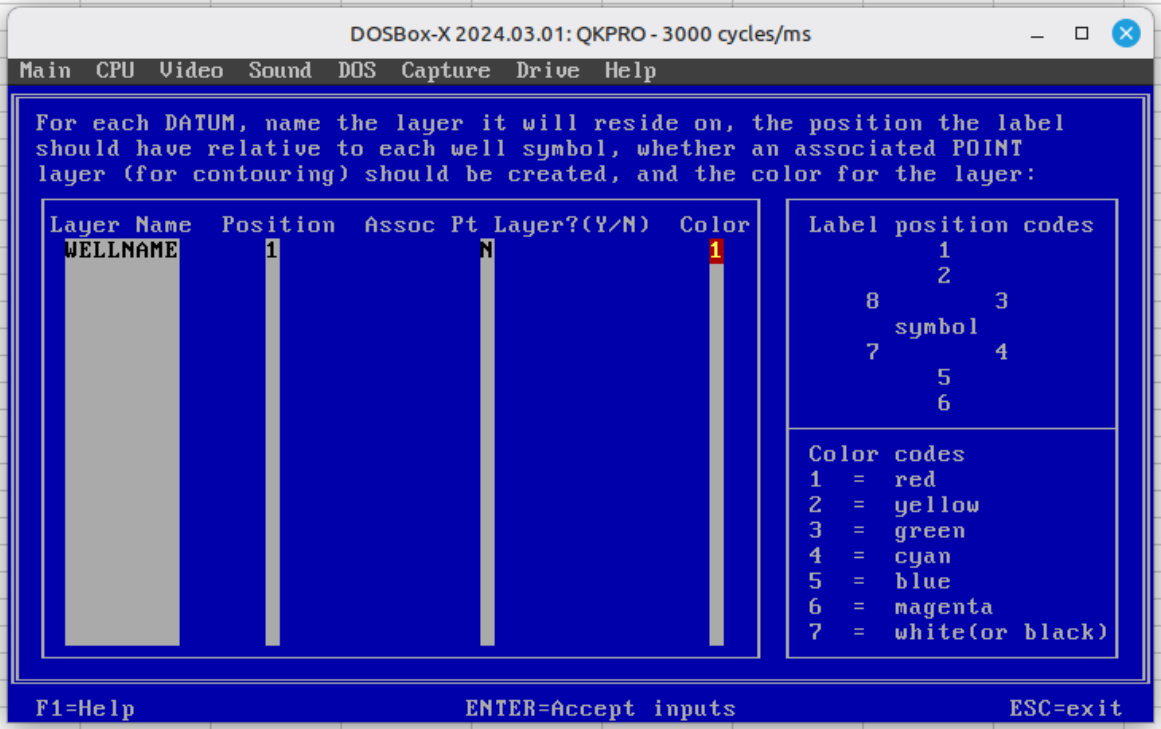
You can specify up to 16 labels for each well, where to place them around the symbol, whether to create a point (x,y,z) layer (if the label is subsea value), and the color to use.

	A	B	C	D	E	F
1	SECTION	TOWNSHIP	RANGE	SPOT	STATUS	WELLNAME
2	4	16N	01E	NW NE NW	D&A	CRABTREE #1
3	4	16N	01E	NE NE	AOIL	JONES #1
4	4	16N	01E	NE NE	D&A	JONES JESSE #1
5	33	17N	01E	NW SE SW	D&A	CUNDIFF #1
6	4	16N	01E	2080FWL 1980FSL	AOIL	CRABTREE #1
7	4	16N	01E	660FWL 2072FSL	AOIL	MARGARET #1
8	4	16N	01E	NE NW	TM	ICONIUM N W #1
9	4	16N	01E	2053FWL 2112FSL	AOIL	MINA #1
10	4	16N	01E	NW SW NE	AOIL	JONES #3
11	4	16N	01E	SW NW NE	ASWD	JONES #2
12	4	16N	01E	NW NE NE	AOIL	JONES #9
13	4	16N	01E	NW NW NE	AOIL	JONES #5
14	4	16N	01E	SE NW NE	AOIL	JONES #6
15	4	16N	01E	SW NE NE	AOIL	JONES #10
16	4	16N	01E	NE NE NW	AOIL	CRABTREE #4
17	4	16N	01E	NW NW NE	AOIL	JONES #1
18	4	16N	01E	SE NE NW	AOIL	CRABTREE #3
19	4	16N	01E	NE SW NW	AOIL	DUDEK UNIT #1
20	4	16N	01E	NE SE NW	AOIL	CRABTREE #2
21	4	16N	01E	NW SE NW	AOIL	H B CRABTREE #1
22	4	16N	01E	SE NW NW	AOIL	DUDECK #2
23	4	16N	01E	SW NE NW	AOIL	CRABTREE #2
24	4	16N	01E	NE NW NW	AOIL	DUDECK J #1
25	33	17N	01E	SW NW SE	AOIL	WEBBER #1
26	33	17N	01E	SE NE SW	D&A	BALL #4
27	33	17N	01E	SE SE SW	AOIL	BALL #2
28	33	17N	01E	SW SW SW	AOIL	BALL #2
29	33	17N	01E	SW SE SW	D&A	BALL #1
30	33	17N	01E	1035FWL 285FSL	D&A	M BALL #1
31	33	17N	01E	SW SW SE	AGAS	DAVIDSON #1
32	33	17N	01E	SW SE SE	D&A	DAVIDSON #1
33	33	17N	01E	SE SW SE	AOIL	DAVIDSON #2
34	33	17N	01E	NW SW SE	AOIL	CRYSTAL #1
35	33	17N	01E	330FEL 960FSL	D&A	BALL #3
36	33	17N	01E	NW SE SE	D&A	FRUIN #1
37	33	17N	01E	SW NE SE	D&A	CLARK #1
38	33	17N	01E	NE SW SE	D&A	CRYSTAL #2
39	33	17N	01E	SE NW SE	D&A	WEBBER #1
40						



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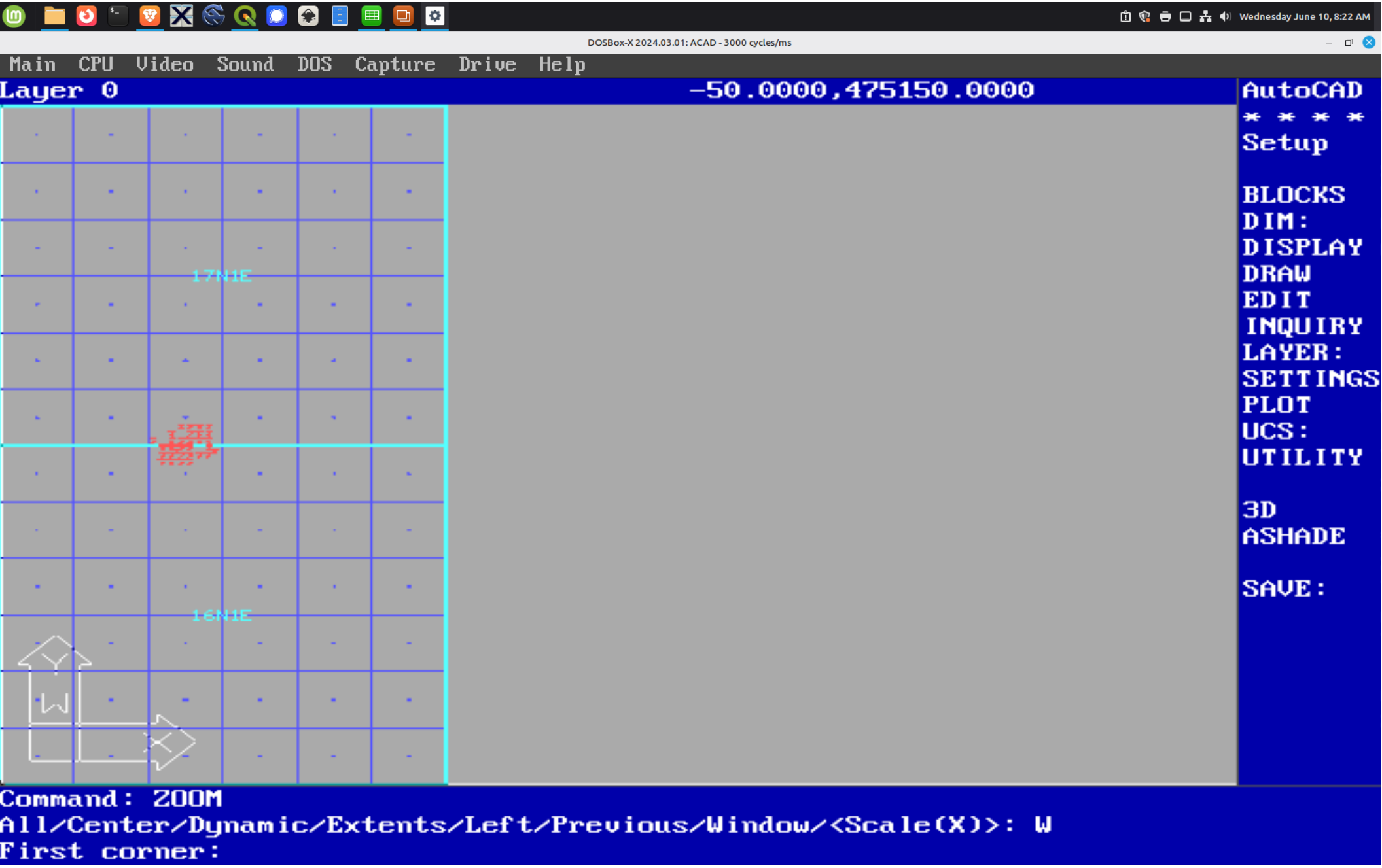
Here is the map it creates in an antique version of Autocad. It looks a bit squashed due to the limitations of the DOS emulator that I'm running on my Linux machine.



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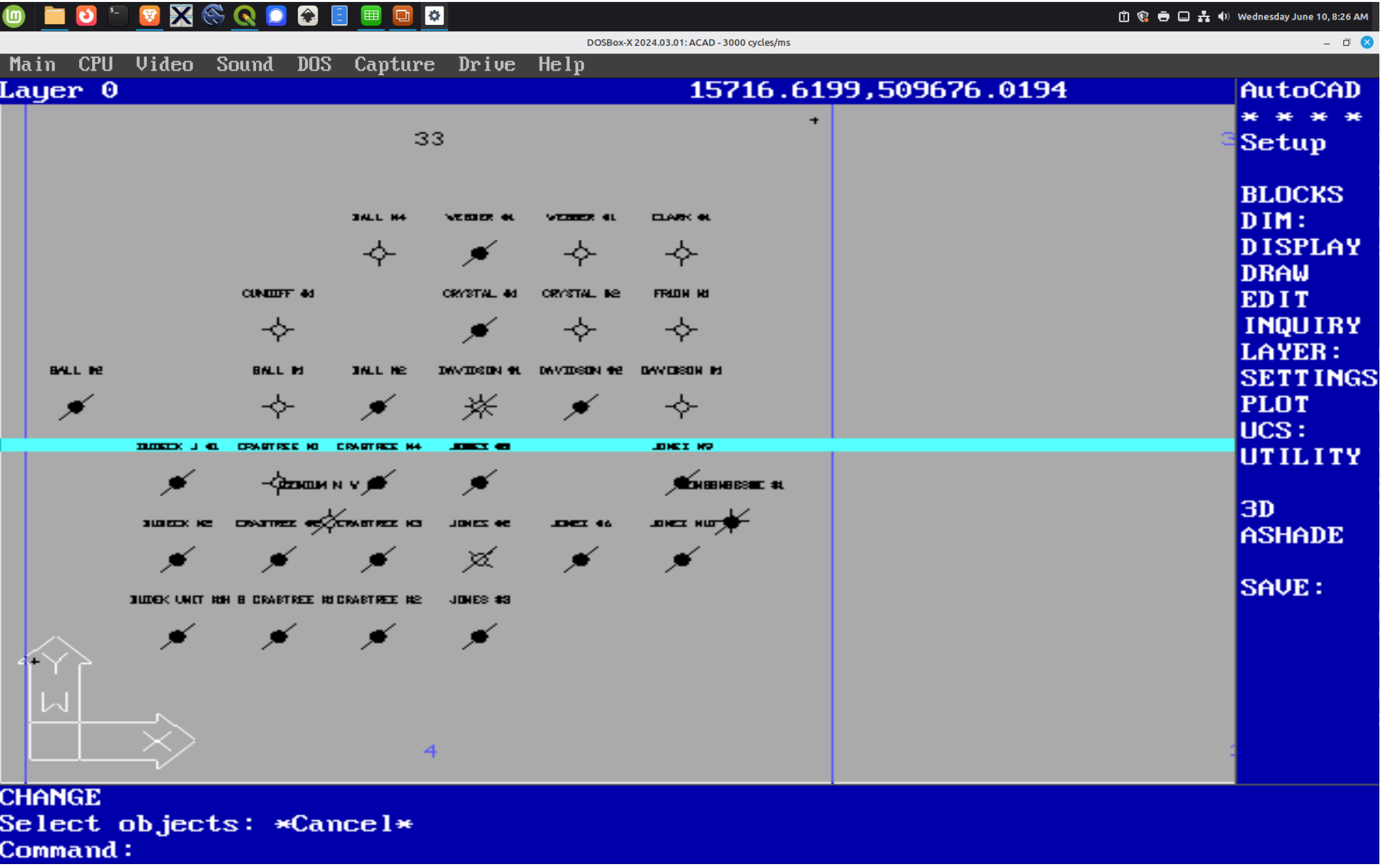
Here is a zoomed-in view of the wells in Iconium Field, spotted from their legal descriptions. It's a heckuva lot closer to reality than a map made using the OCC's lat/longs.



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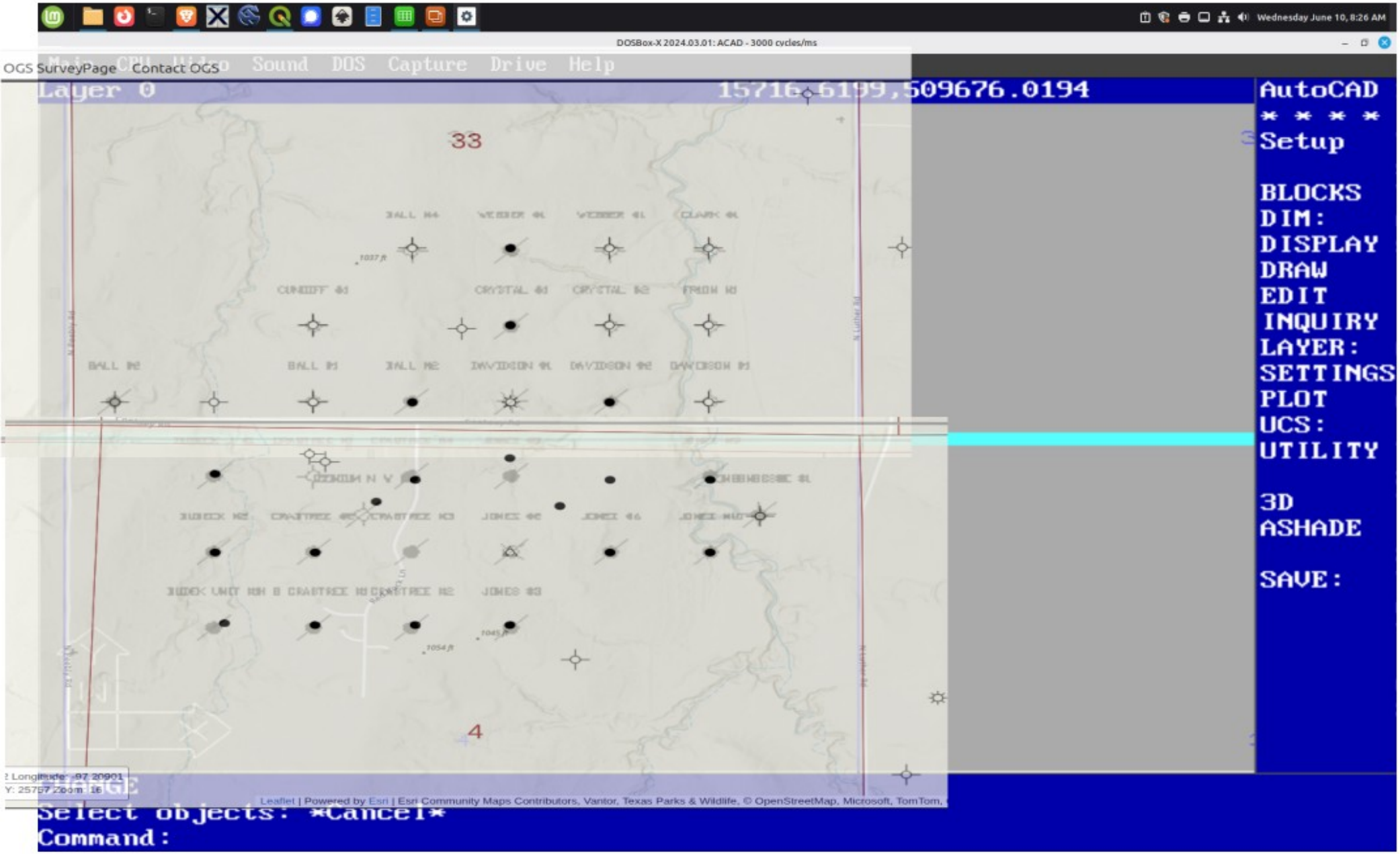
Overlay a screenshot of the OGS map, adjust for scale (since the sections aren't square), and the match isn't too bad. I'd guess that OGS locations were originally calculated from legal descriptions.



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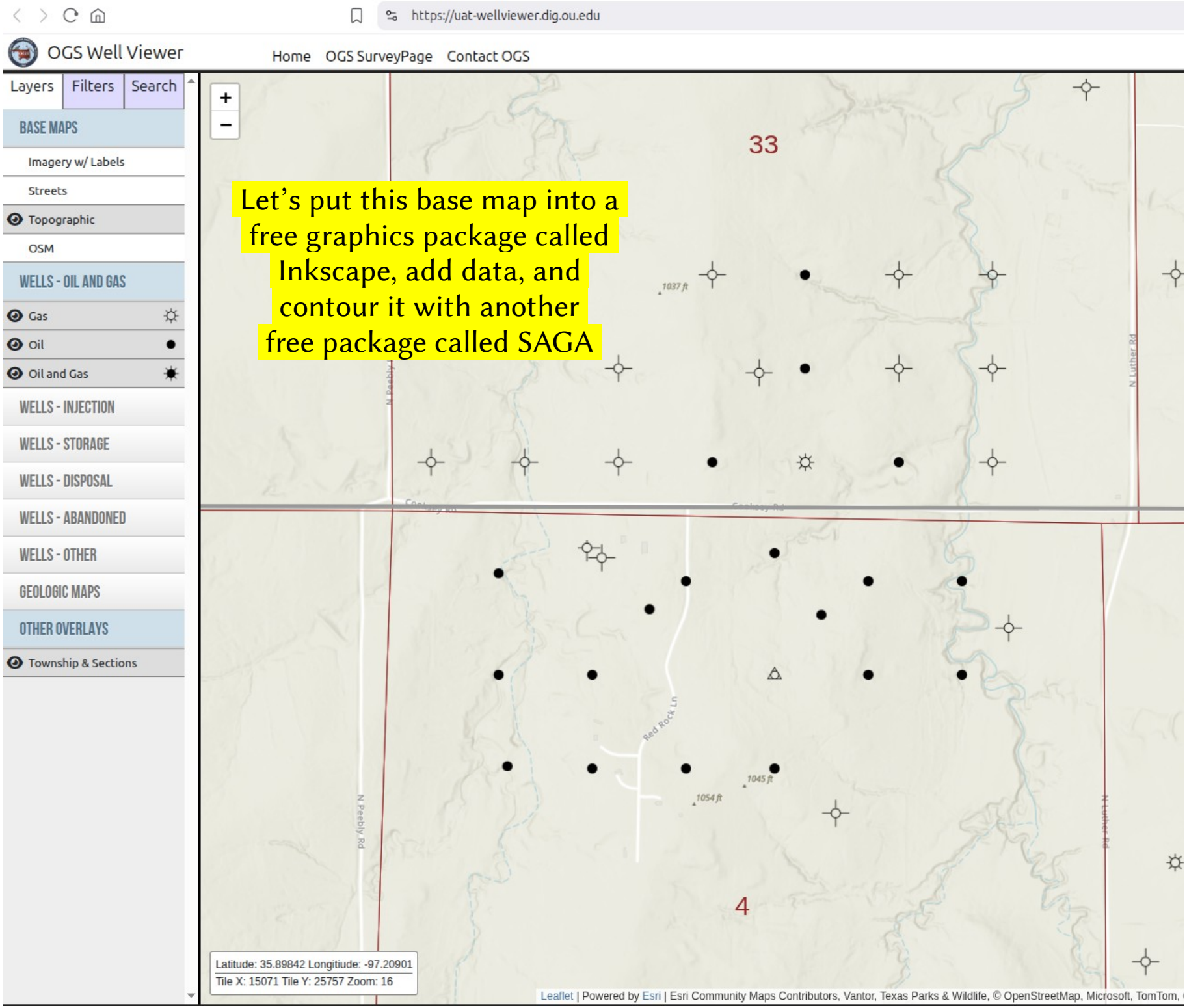

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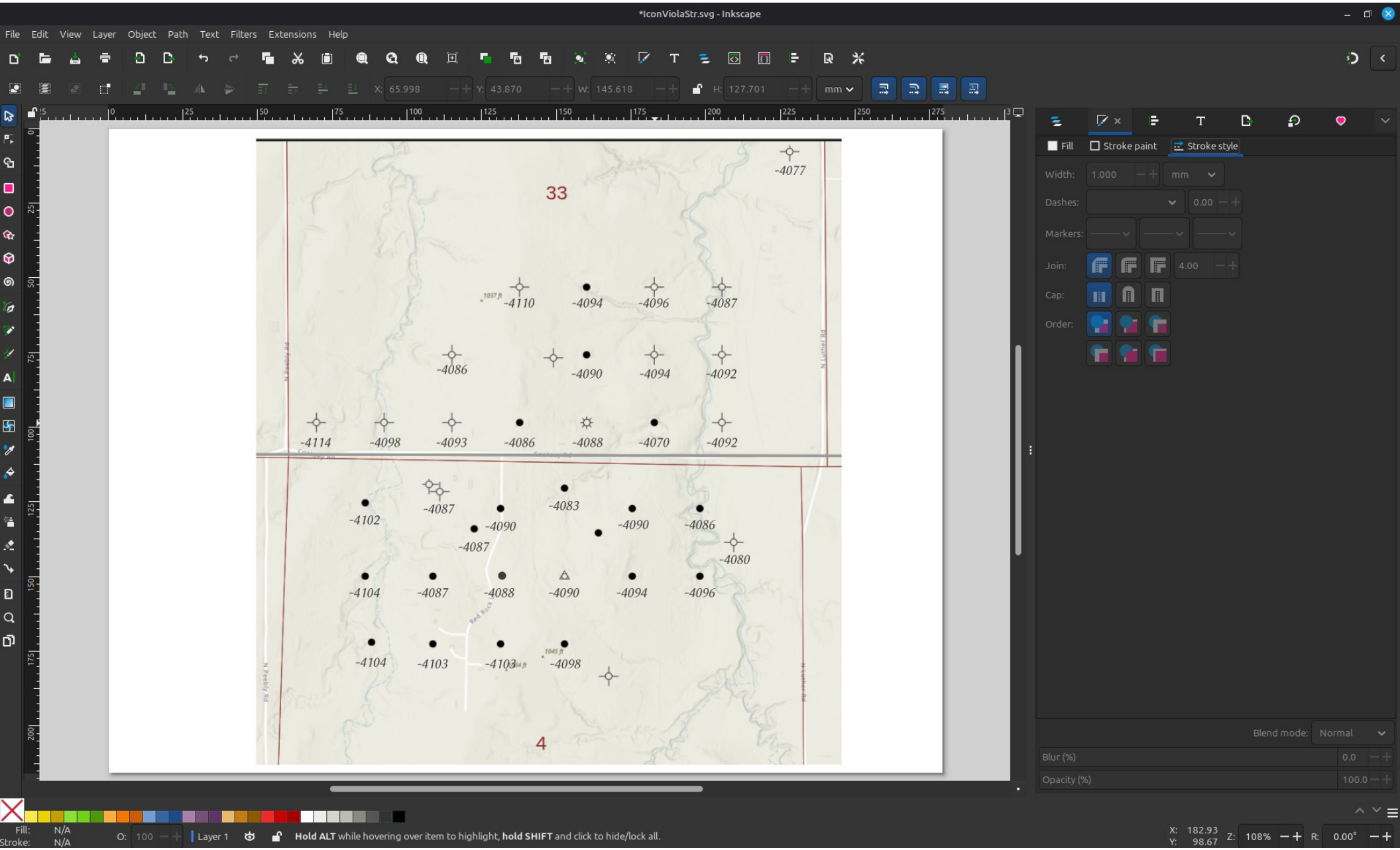
Here the basemap image loaded into Inkscape. I've added Viola tops as text labels. Let's extract them.



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Inkscape uses the SVG (Scaled Vector Graphics) file format.

SVG is an XML document, which is a pure text file.

You can open and edit it with a text editor.

Let's find the coordinates of the well labels and extract them to a file.

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!-- Created with Inkscape (http://www.inkscape.org/) -->

<svg
   width="11in"
   height="8.5in"
   viewBox="0 0 279.4 215.9"
   version="1.1"
   id="svg1"
   xml:space="preserve"
   inkscape:version="1.4.4 (dcaf3e7d9e, 2026-05-05)"
   sodipodi:docname="IconViolaStr.svg"
   xmlns:inkscape="http://www.inkscape.org/namespaces/inkscape"
   xmlns:sodipodi="http://sodipodi.sourceforge.net/DTD/sodipodi-0.dtd"
   xmlns:xlink="http://www.w3.org/1999/xlink"
   xmlns="http://www.w3.org/2000/svg"
   xmlns:svg="http://www.w3.org/2000/svg"><sodipodi:namedview
     id="namedview1"
     pagecolor="#ffffff"
     bordercolor="#000000"
     borderopacity="0.25"
     inkscape:showpageshadow="2"
     inkscape:pageopacity="0.0"
     inkscape:pagecheckerboard="0"
     inkscape:deskcolor="#d1d1d1"
     inkscape:document-units="mm"
     inkscape:zoom="1.0833333"
     inkscape:cx="527.53846"
     inkscape:cy="408"
     inkscape:window-width="1920"
     inkscape:window-height="1128"
     inkscape:window-x="0"
     inkscape:window-y="40"
     inkscape:window-maximized="1"
     inkscape:current-layer="layer1" /><defs
     id="defs1"><clipPath
       clipPathUnits="userSpaceOnUse"
       id="clipPath1"><rect
```

sschad@geologist.com

You can do this with a text editor that lets you record macros. The macro I use looks for each [id=”text] element and extracts the X, Y, and text labels. It also makes the “Y” values negative. Why?

```
      id="image1"
      x="4.5488043"
      y="2.7018044"
      clip-path="url(#clipPath
      transform="matrix(1.1574
      xml:space="preserve"
      style="font-size:4.9389p
      x="137.99"
      y="53.97"
      id="text2"><tspan
        sodipodi:role="line"
        id="tspan2"
        style="font-style:ital
        x="137.99"
        y="53.97">-4110</tspan
      xml:space="preserve"
      style="font-size:4.9389p
      x="177.06732"
      y="59.958652"
      id="text4"><tspan
        sodipodi:role="line"
        id="tspan4"
        style="font-style:ital
```

```
    IW   viola.csv
x,y,viola
228.11,-8.79,-4077
137.99,-53.97,-4110
129.97,-54.46,-4094
182.93,-53.73,-4096
205.89,-53.49,-4087
115.28,-75.96,-4086
159.73,-76.69,-4090
183.17,-76.44,-4094
205.15,-76.44,-4092
69.61,-98.42,-4114
92.56,-98.91,-4098
115.03,-98.18,-4093
137.26,-98.91,-4086
159.97,-99.4,-4088
182.44,-99.16,-4070
205.64,-99.16,-4092
86.46,-125.53,-4102
110.64,-121.63,-4087
131.15,-127.49,-4090
152.16,-121.14,-4083
174.87,-127.98,-4090
 Joe's Own Editor 4.6 (utf-8)
```

Graphics packages use a coordinate system that puts the origin (0,0) at the upper left corner of the page. By negating the Y values, I flip the coordinate system to be at the lower left, which is what my contouring package will expect.

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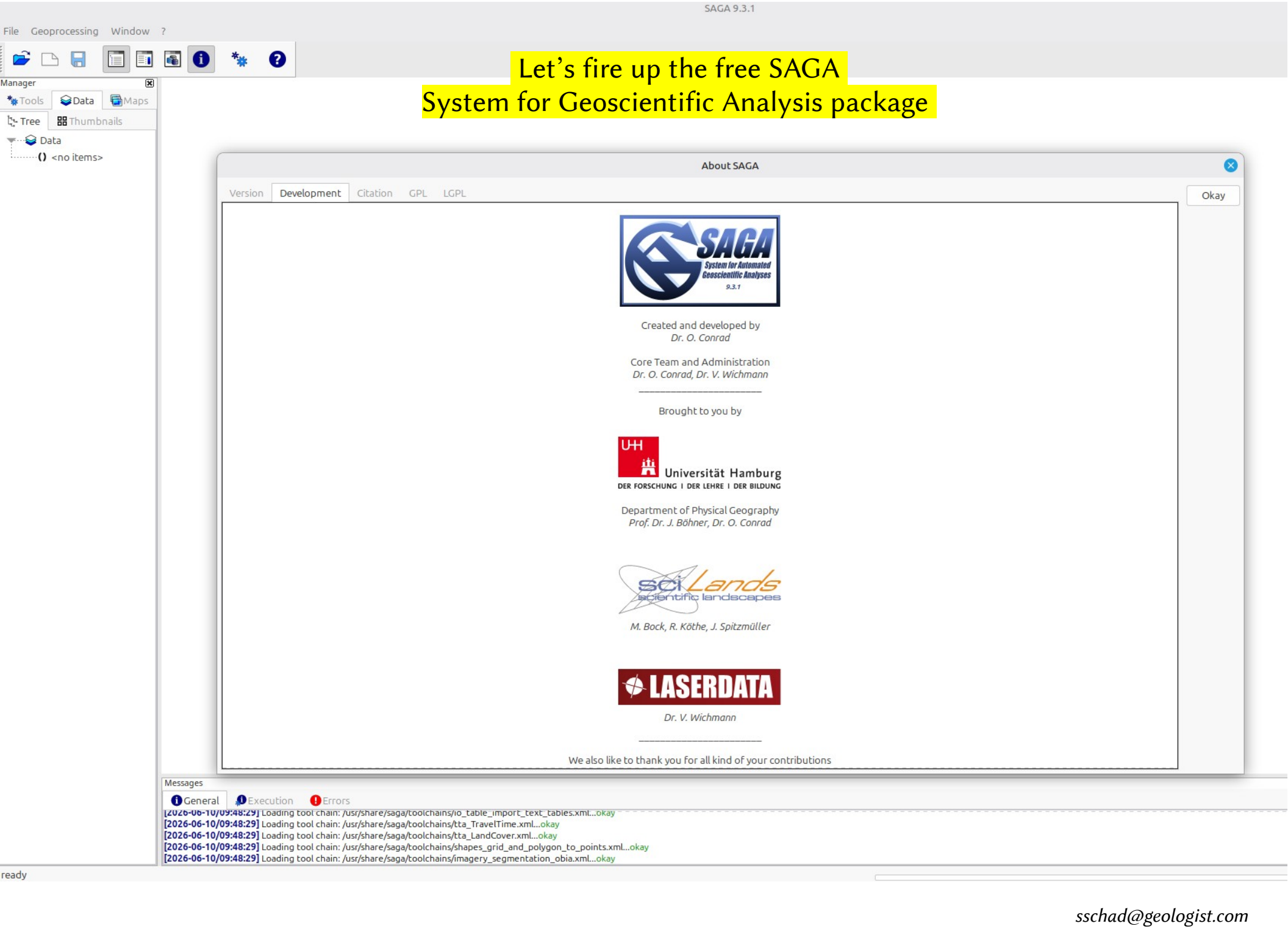

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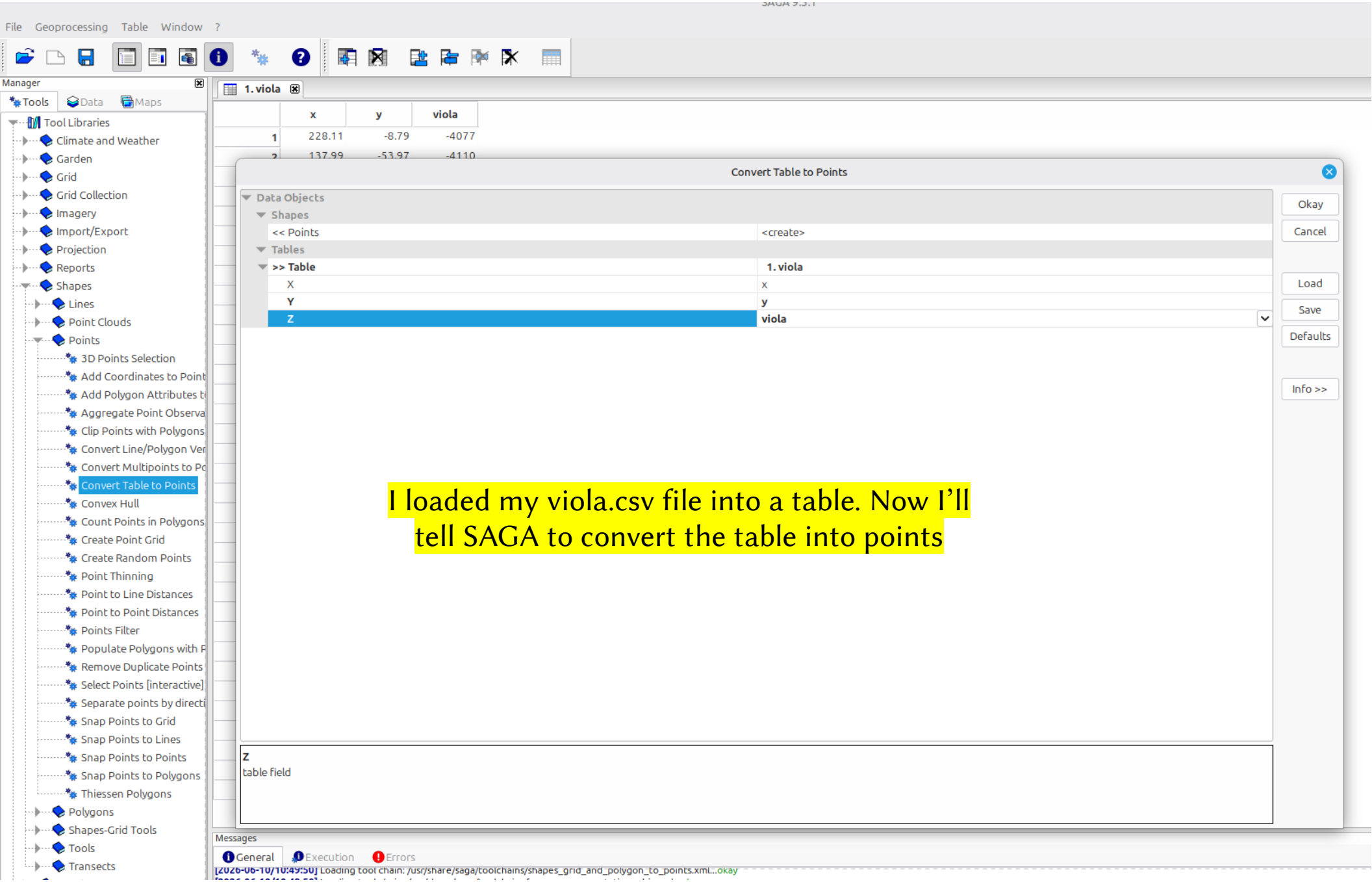

I loaded my viola.csv file into a table. Now I'll tell SAGA to convert the table into points

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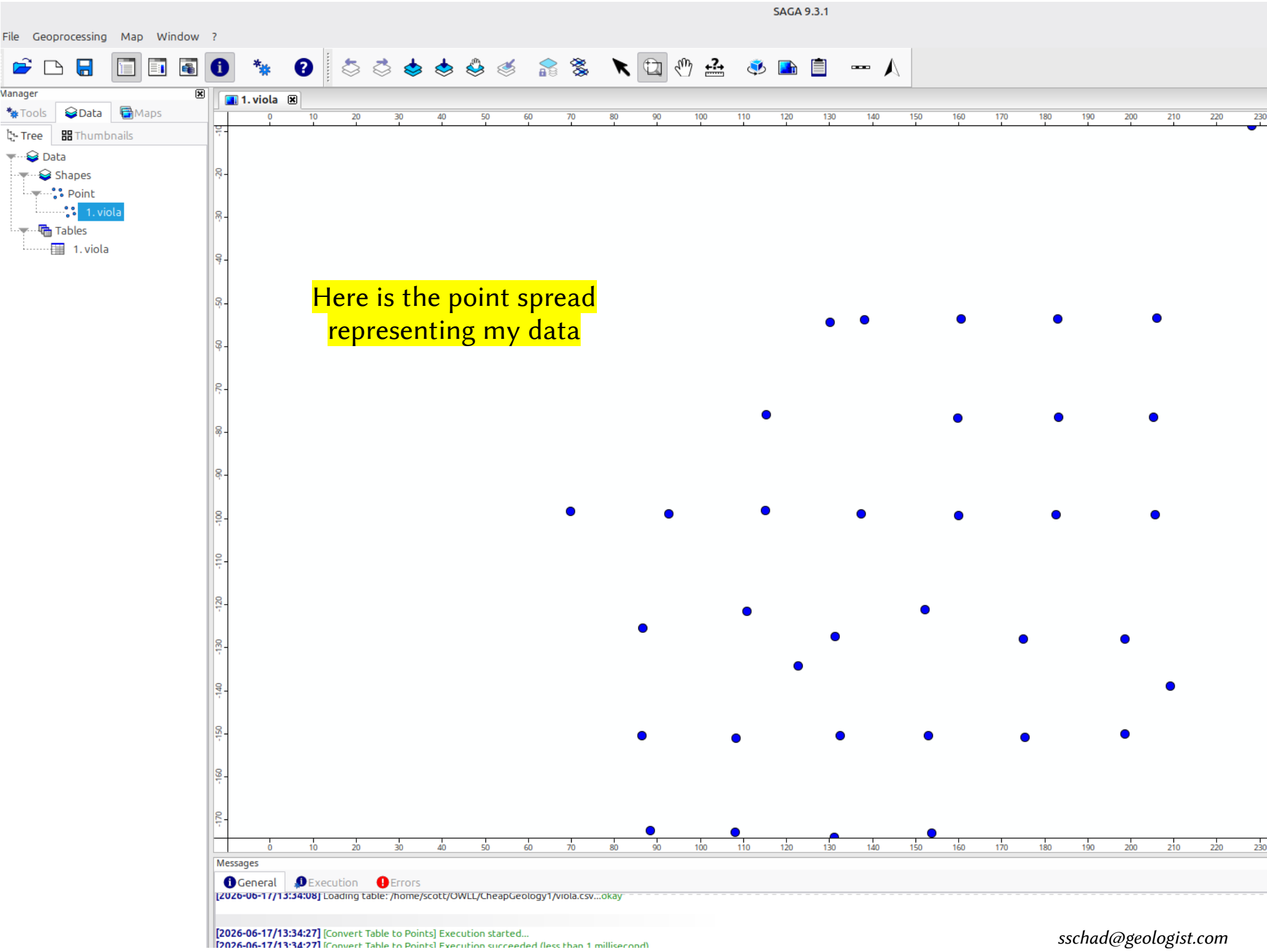

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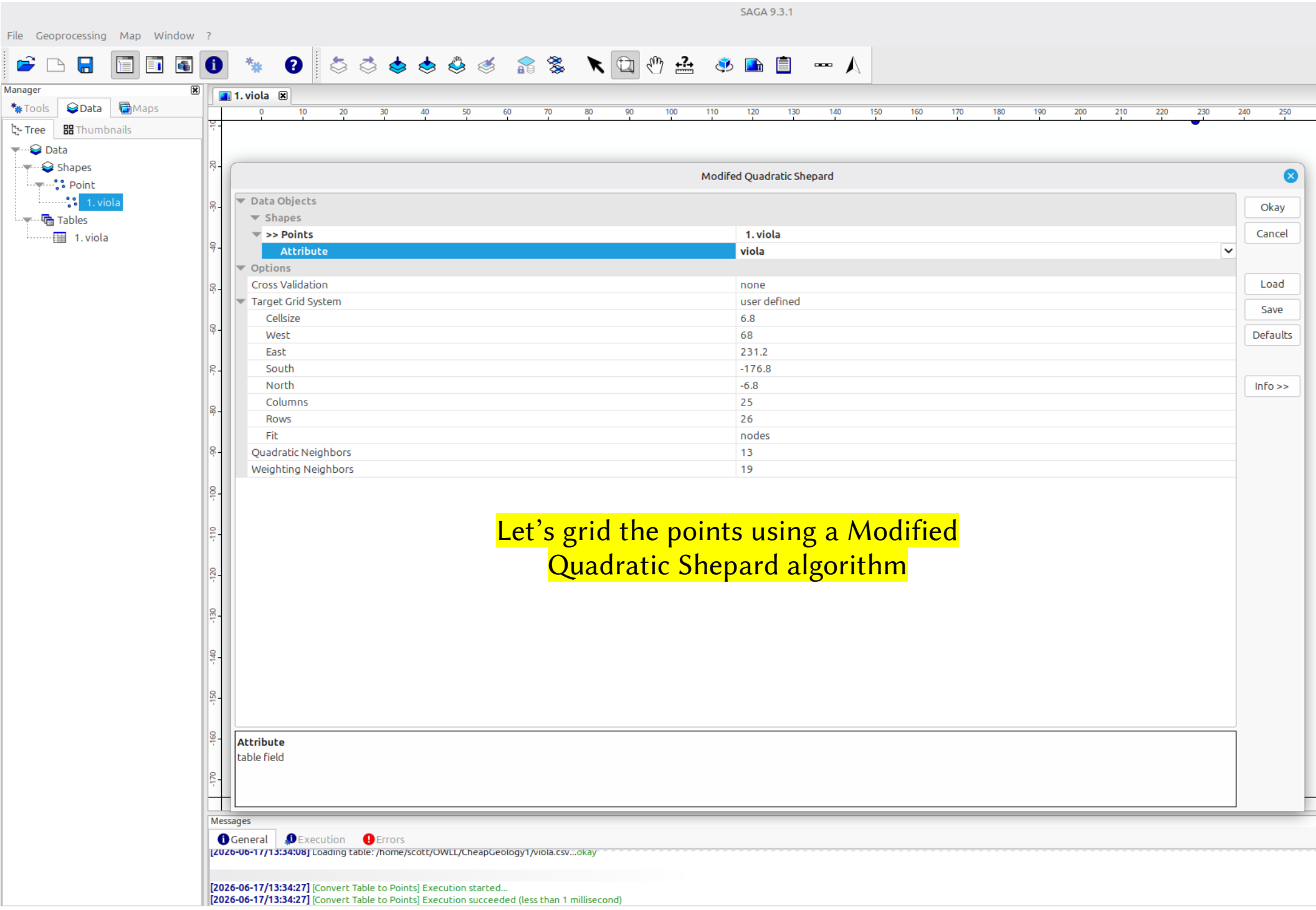

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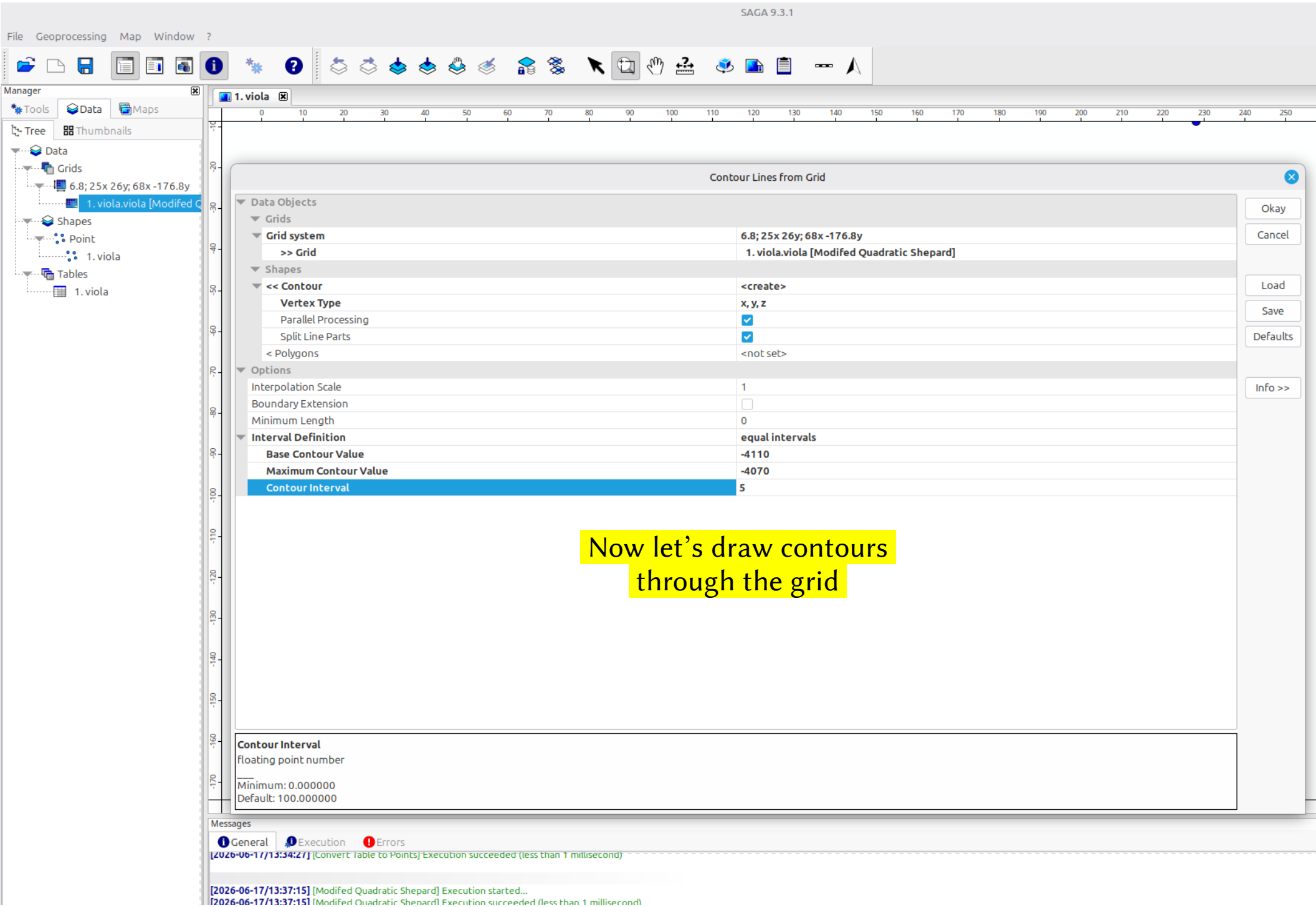

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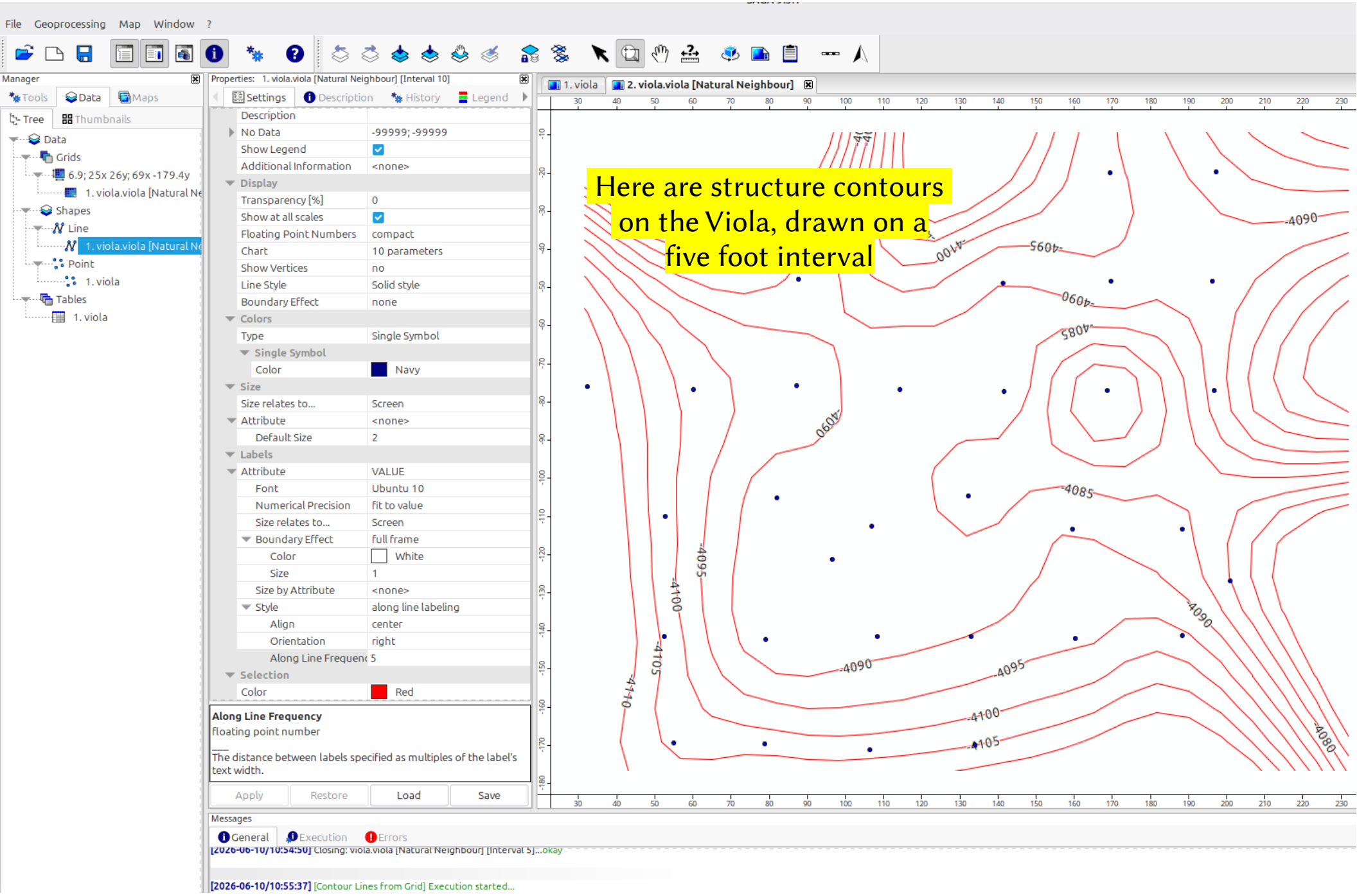

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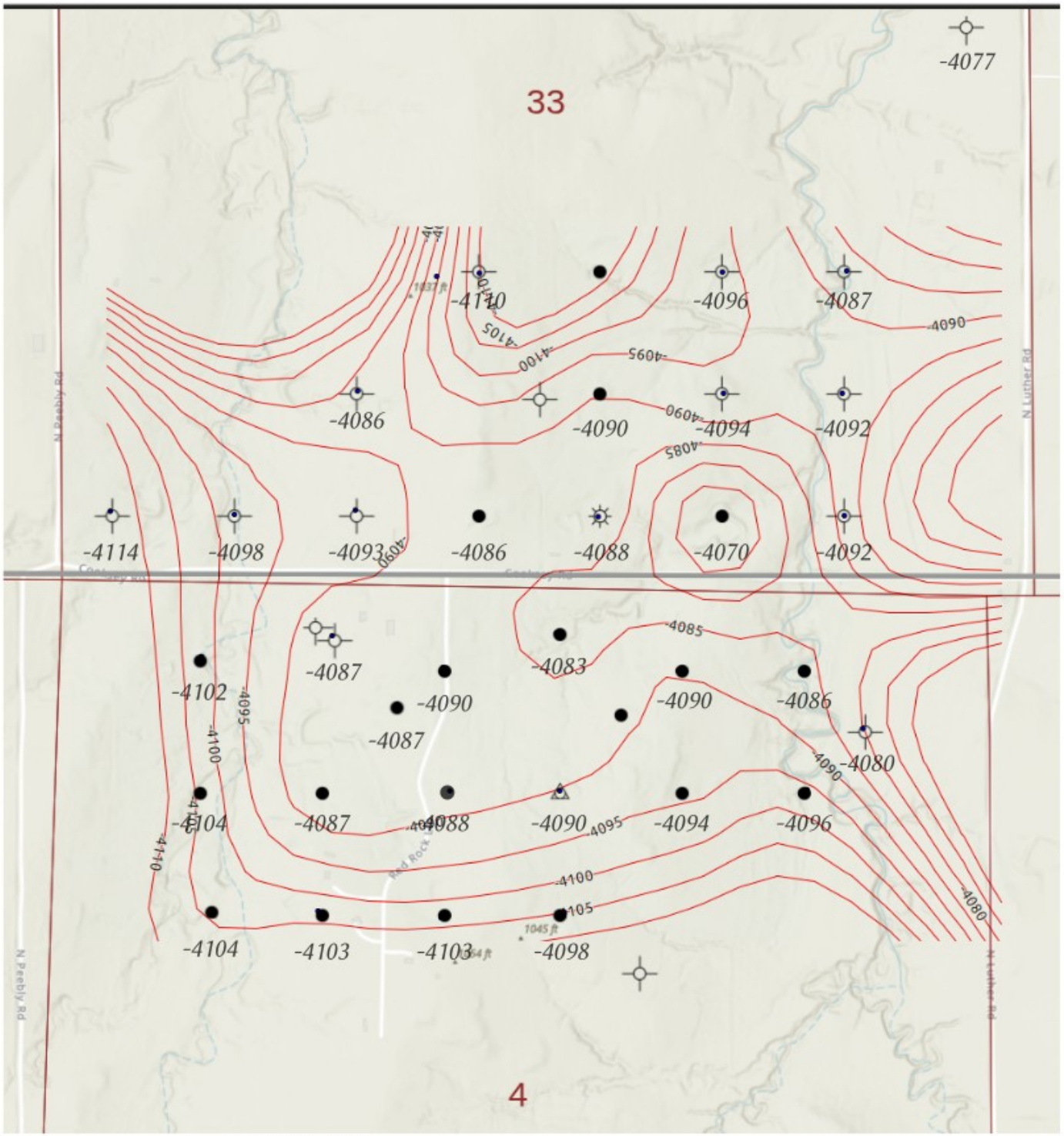
I took a screen capture of the contours placed them on top of the basemap in Inkscape.

If I set the layer blend mode to “multiply,” the basemap and wells show through the contour image.

I’ll show you an even faster way to do this at the end of the talk...



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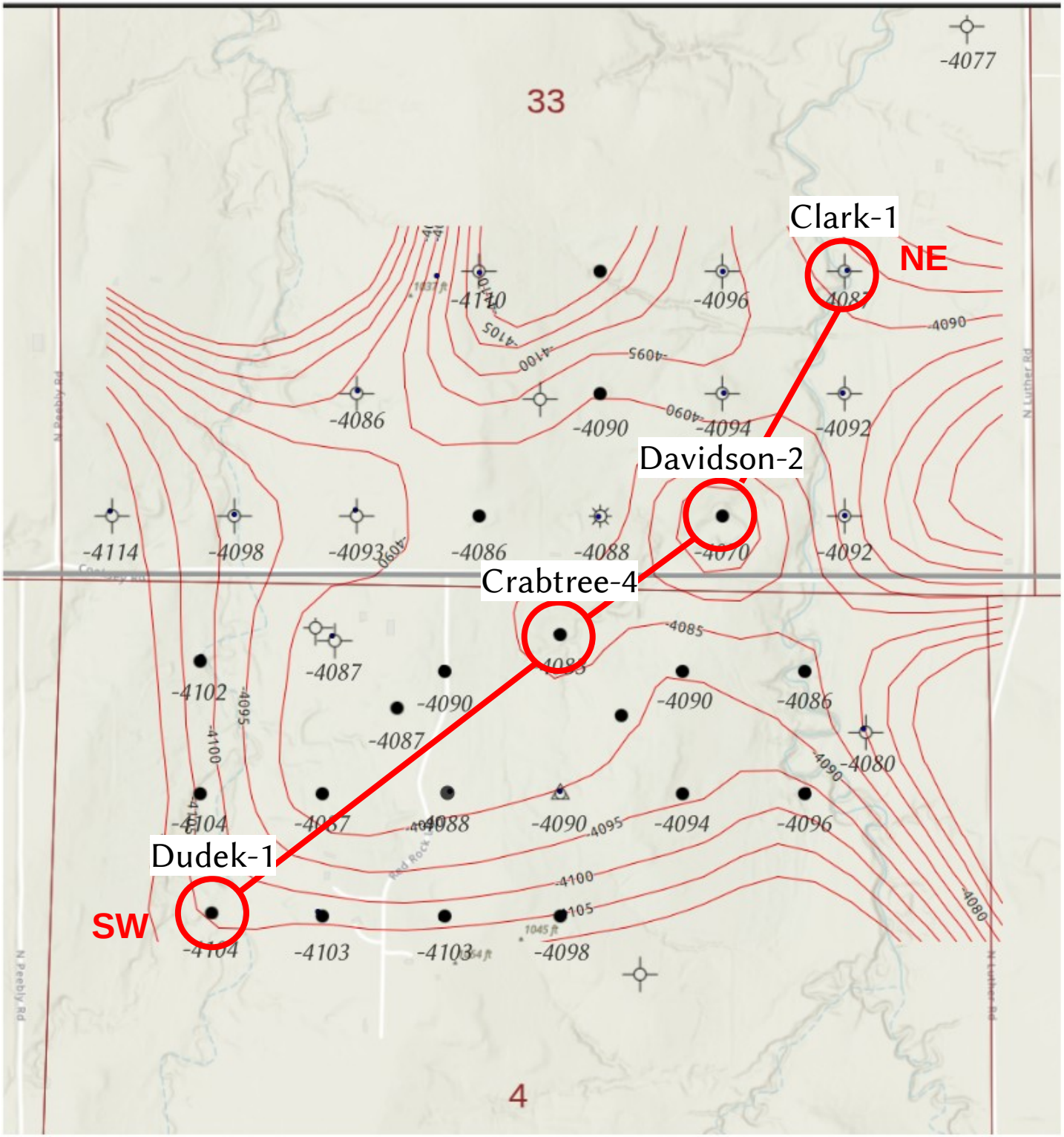
Now let's make this cross-section through the field using logs from MCGL's online system



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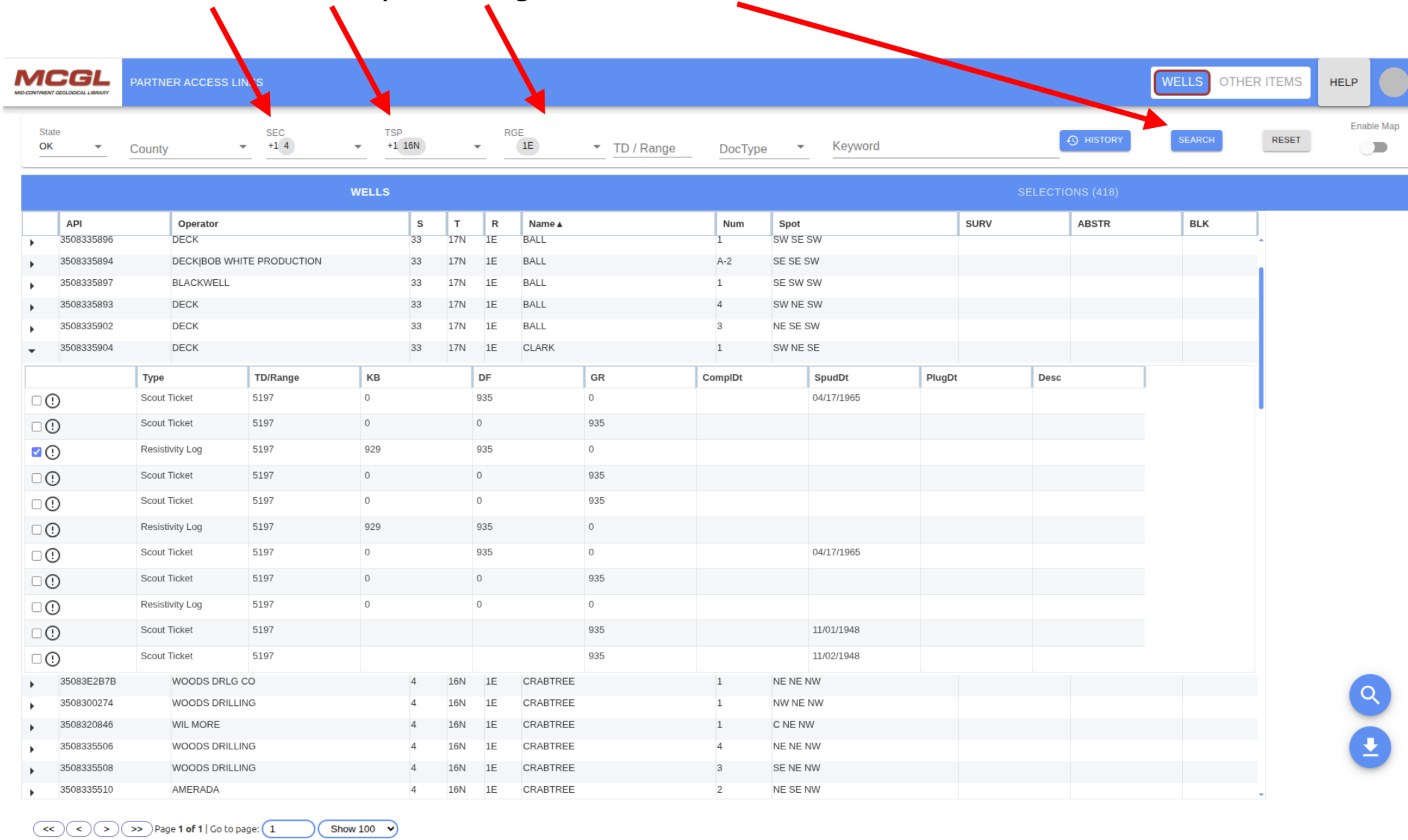
MCGL's website is: https://mcglonline.com/auth

Enter the section, township, and range, then click Search.



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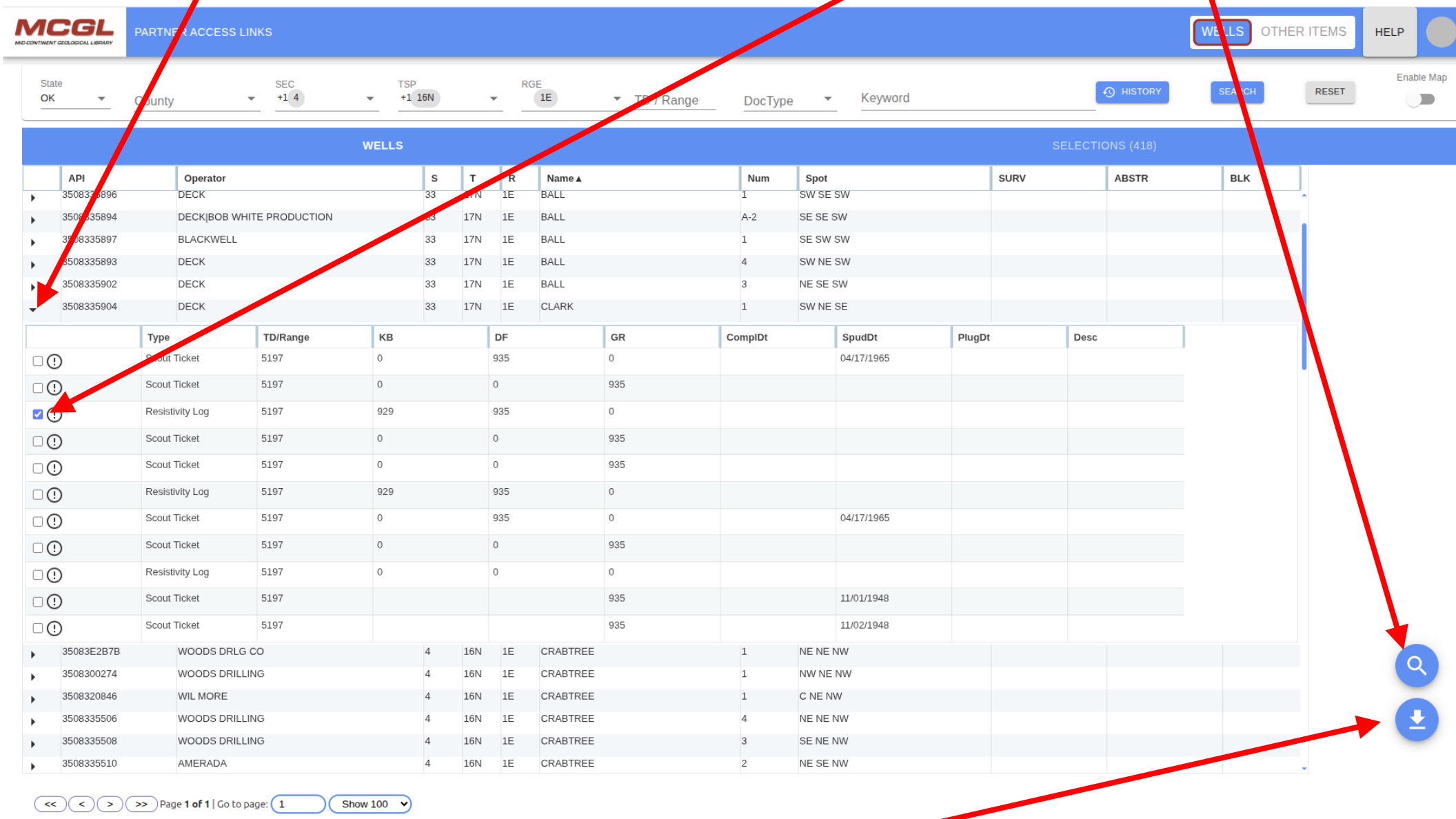
Click on a triangle to open the data for a well. Select up to 4 checkboxes, then click here:



If you want to buy a TIFF image, click the down arrow here. You'll be prompted to enter a credit card number for the transaction. This is purely an MCGL function (it doesn't involve OWLL).

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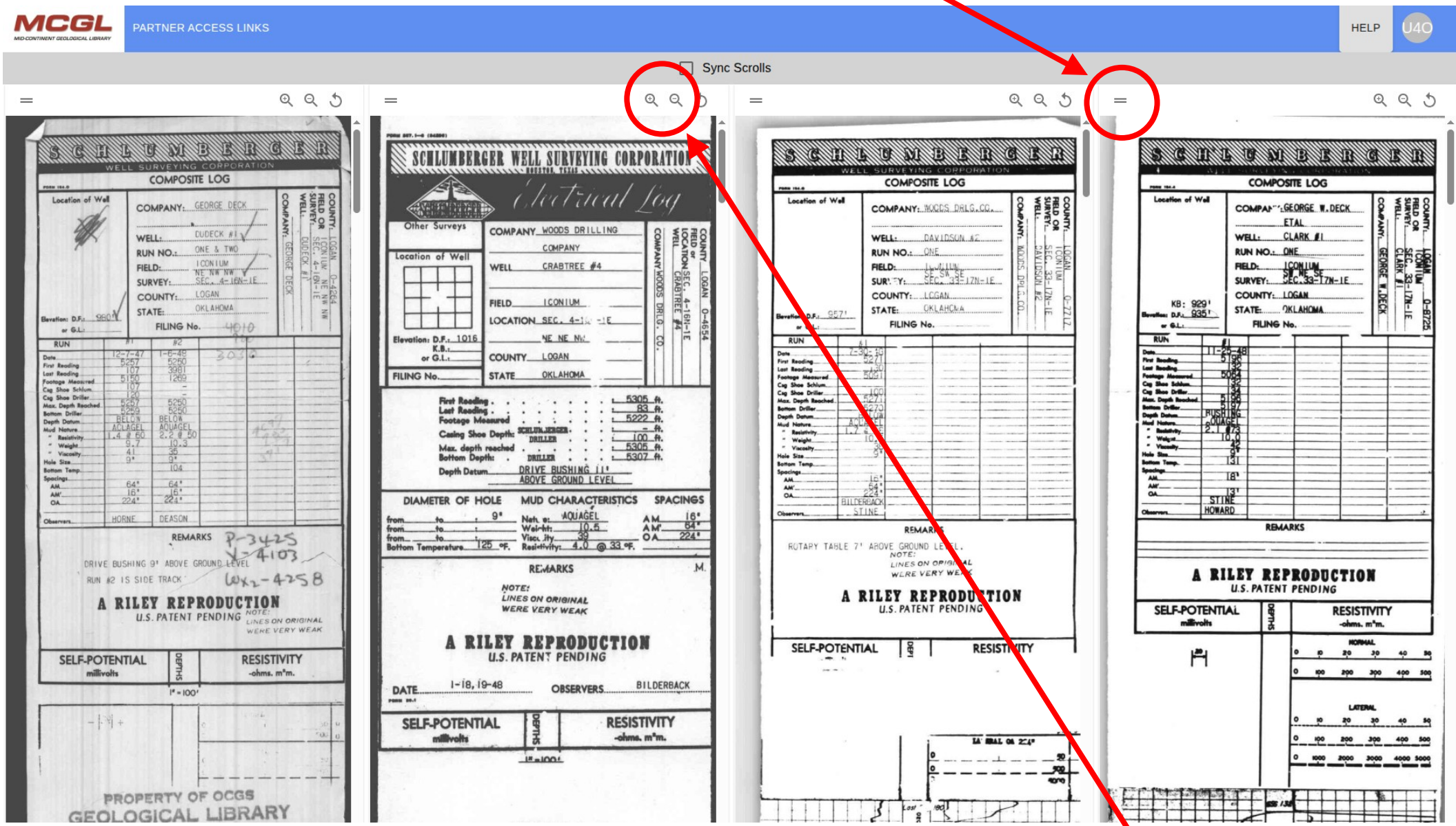
You can rearrange logs from left-to-right by dragging these markers sideways with the mouse



All the logs come in at the same scale. You can make logs bigger or smaller with these controls

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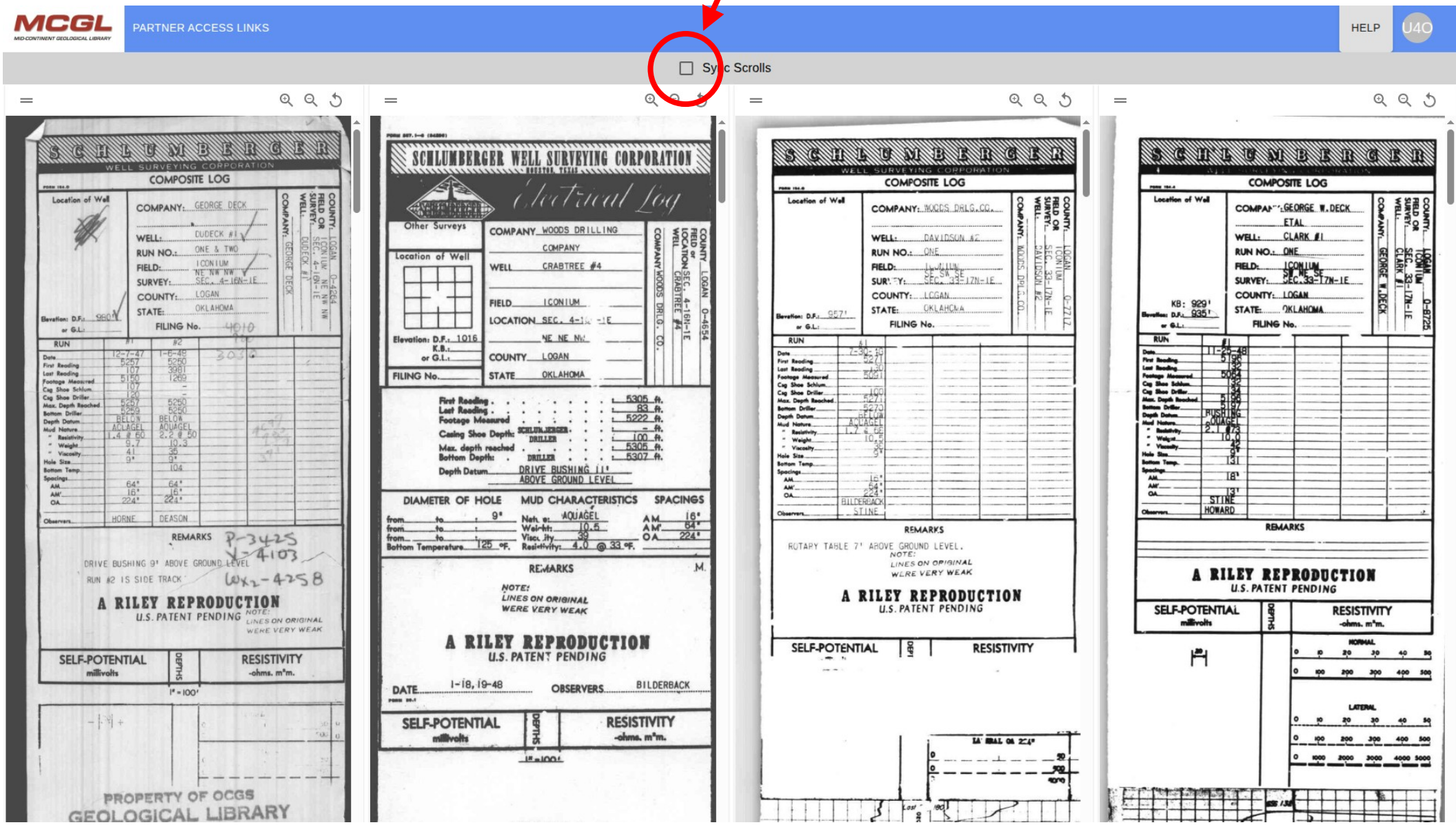
When you align the logs (by scrolling up/down), this checkbox will let you scroll them all in unison



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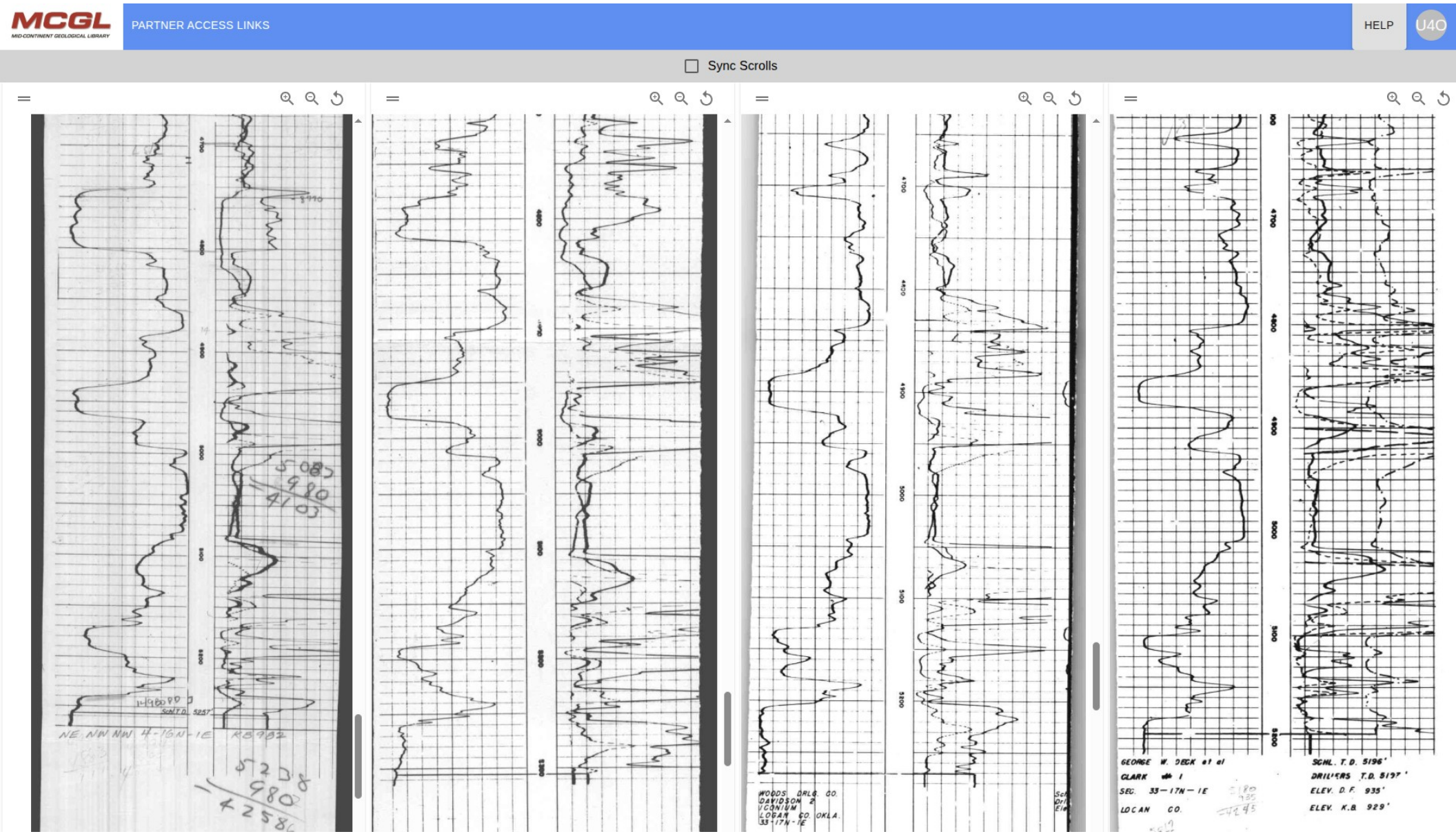
I’ve aligned the small scale electric logs on the top of the Hunton. Let’s take a screenshot and turn it into a cross-section in Inkscape



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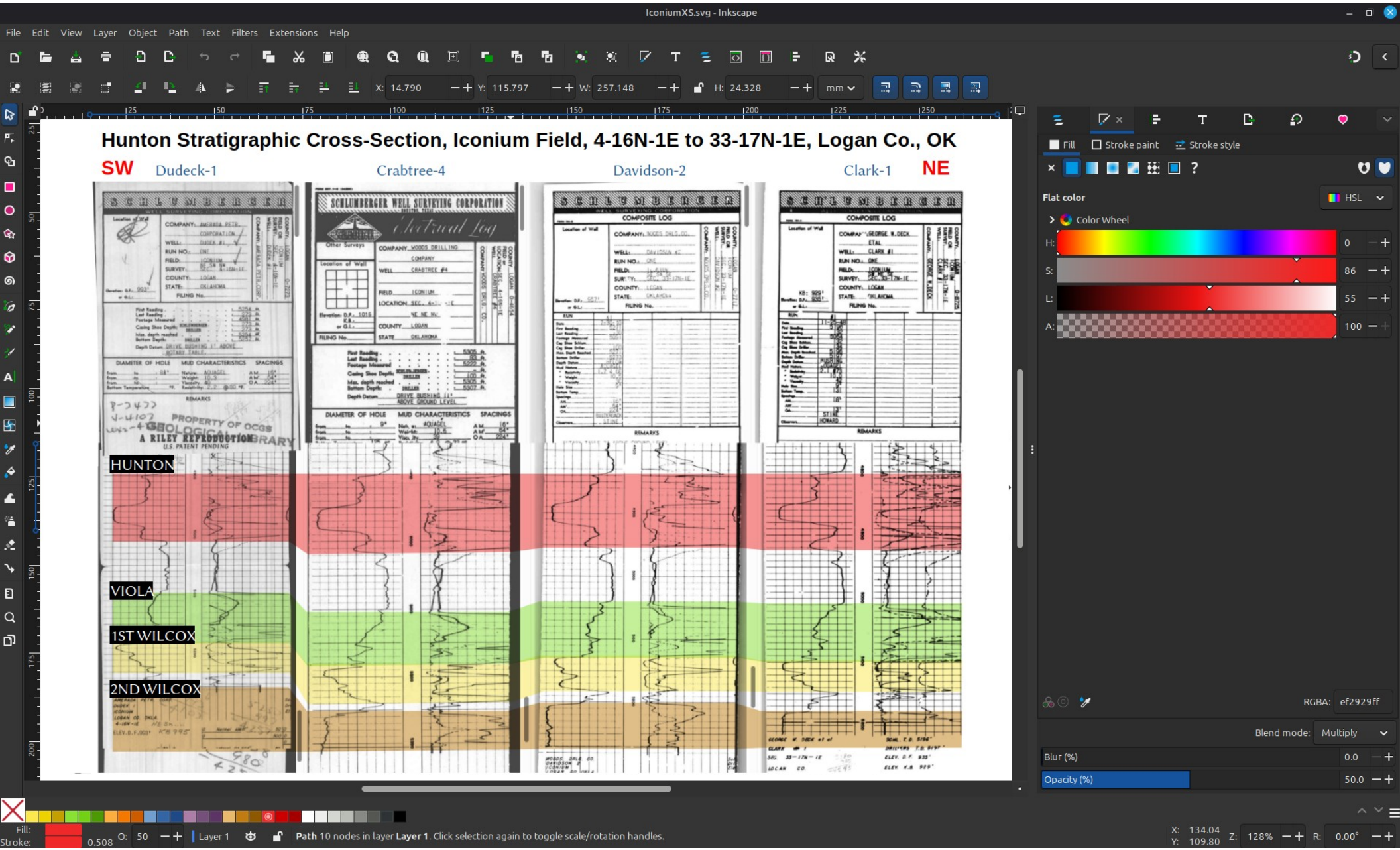
I pasted the screen capture into Inkscape and added formation colors and labels



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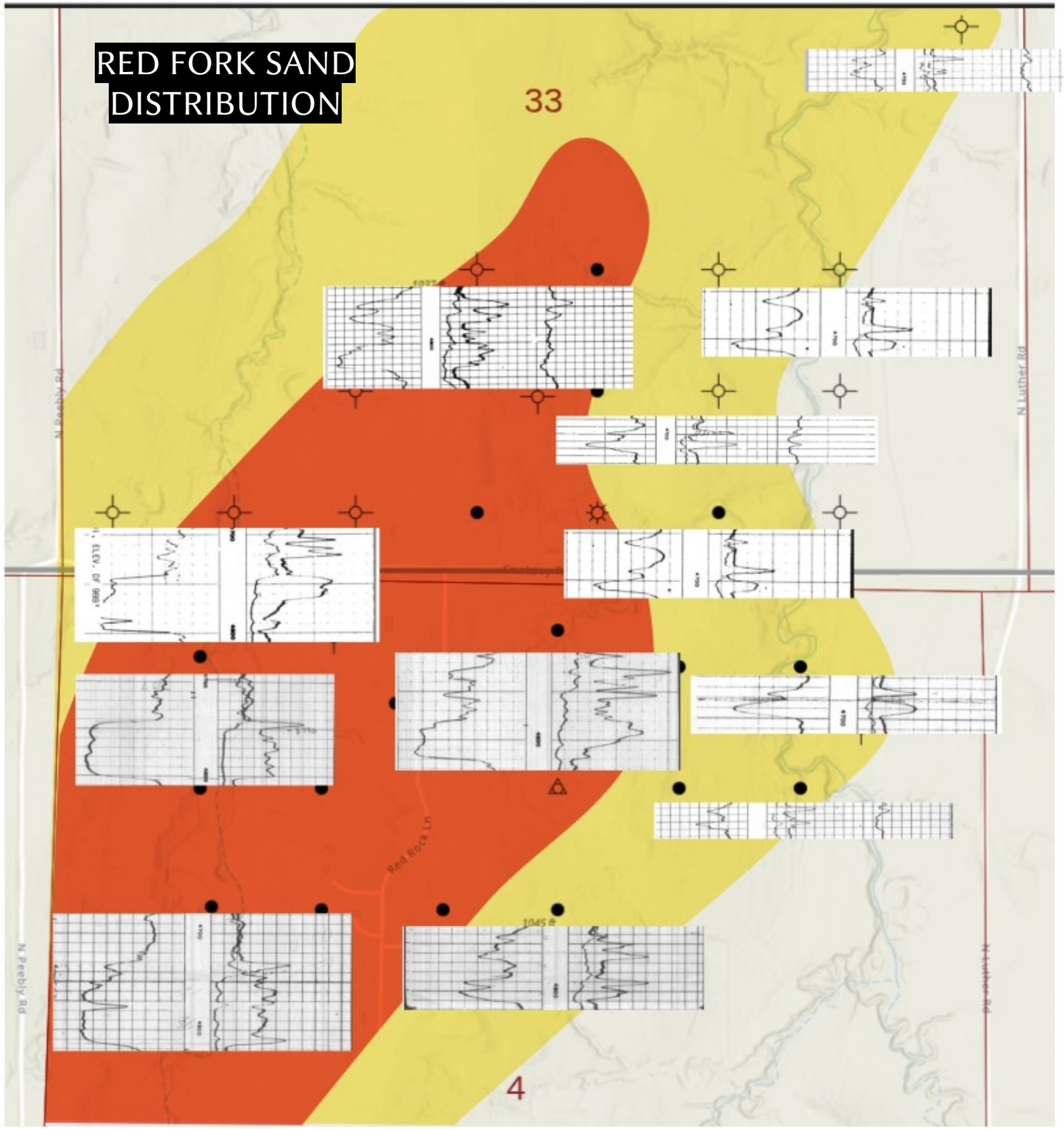
You can also make log motif maps:

- Use MCGL to call up small-scale electric logs for key wells

- Screen capture the Red Fork in each well log and paste it on top of the field base map in Inkscape

- Draw polygons to outline the channel sand in color, setting the blend mode of each to multiply

- Move the channel outlines below the logs and above the basemap



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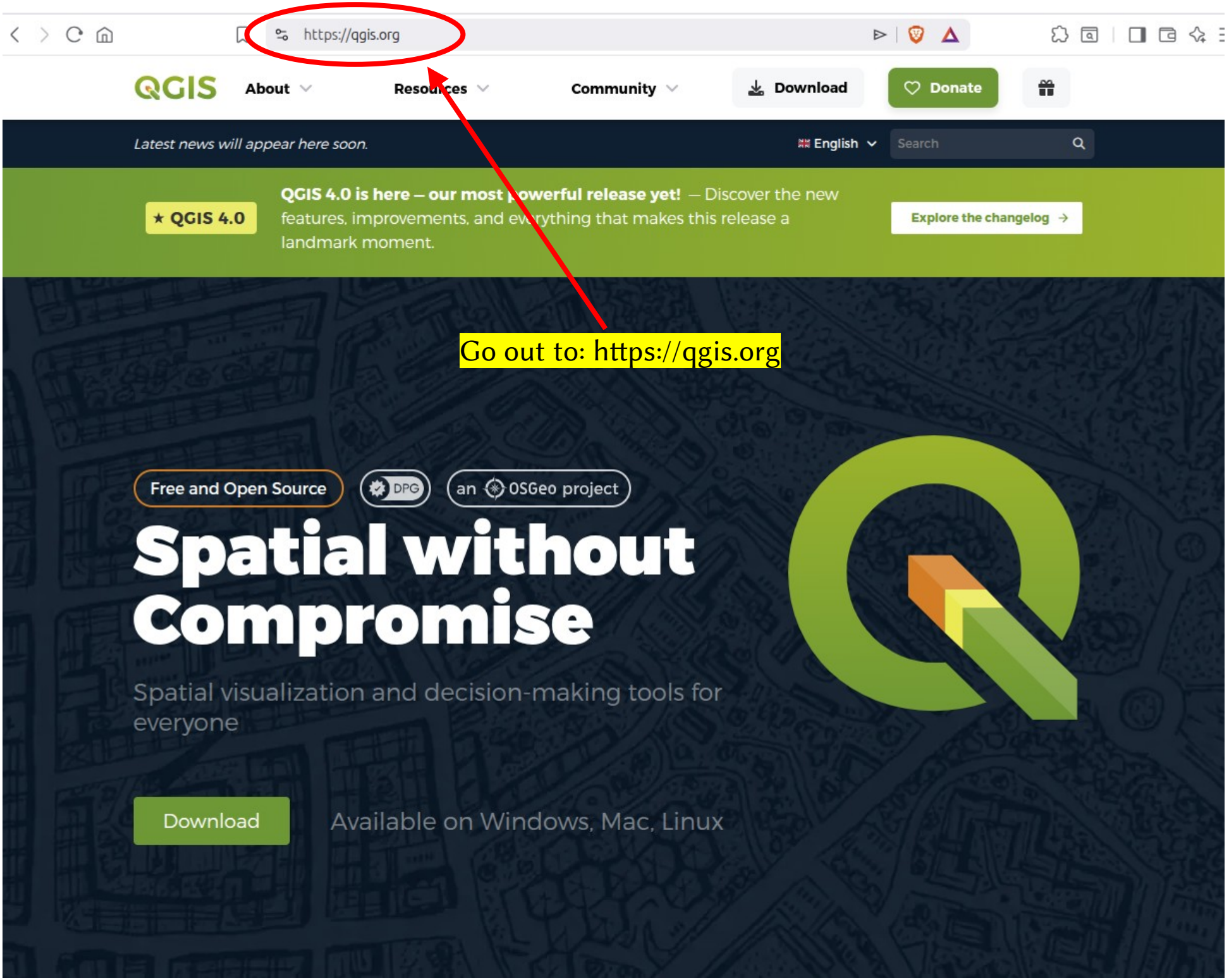

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https://qgis.org/resources/installation-guide/#linux

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QGIS Installers

QGIS is available on Windows, macOS, Linux, FreeBSD, OpenBSD, Android and iOS.

Click on the Download button to get the QGIS installation file for your

We recommend installing the Long Term Release (LTR) packages sin undergo more rigorous testing before release and receive at least or updates.

See also **the main installers page**.

To evaluate the upcoming release and to allow non-developers to support development we also provide testing packages (note the **warning**).

In the feature frozen phase preceding a release (see **Release schedule**) these packages are effectively **pre-releases, which we strongly urge users to test**.

Windows

There are two options for installing on Windows:

Offline (Standalone) installers

Standalone installers include everything QGIS needs in a single download. Once you have the installer, no internet is required to complete the installation. When a new release is available, you need to download the complete installer again in order to upgrade. For beginners, the standalone installer is probably the easiest way to install QGIS:

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https://oklahoma.gov/occ/divisions/oil-gas/oil-gas-data.html

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OKLAHOMA Corporation Commission

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OCC > Divisions > Oklahoma Oil and Gas Conservation Division > Oil and Gas Data Files

Oil and Gas Data Files

Oil & Gas Production

Looking for crude oil or natural gas production data? The Oklahoma Tax Commission is the official recordkeeper for the state.

VISIT OTC >

Let's go to the OCC and download digital well information

Below are downloadable files that include information regarding oil, gas and underground injection wells, as well as historical files.

Oil and Gas Well Information (includes Incident Data and RBDMS Well Data)

Underground Injection Control Well Information

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Download the shapefile

Oil and Gas Well Information (includes Incident Data and RBDMS Well Data)

SUBJECT	DESCRIPTION	UPDATED	FILE TYPE
RBDMS Well Data Data Dictionary for RBDMS Well Data	RBDMS Well Data in .CSV format	Nightly	.csv
RBDMS Wells shapefile (zipped) for GIS	RBDMS Wells shapefile for GIS	Nightly	.zip
Incident Report Archive	List of all Incident Reports	Daily	.csv
Orphan Well List Data Dictionary for Orphan Well List	Oil and Gas Orphaned Wells - All Districts	Every Thursday	xlsx
State Funds Well List Data Dictionary for State Funds Well List	List of wells with State Funds Plugging Orders	Every Thursday	xlsx
Intent to Drill - Last 7 Days Data Dictionary for Intent to Drill Files	Intent to Drill Past 7 days	Daily	.xlsx

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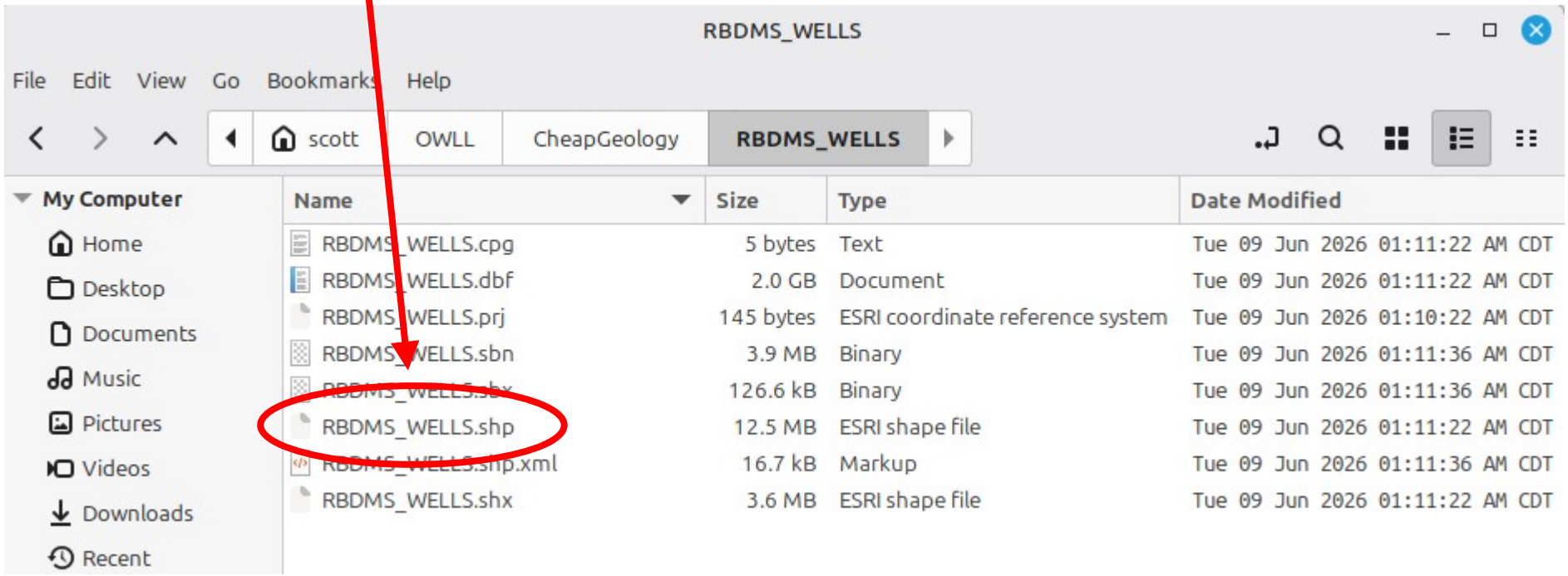
The RBDMS shape file is zipped and contains a number of files. Extract it to a directory so that you'll be able to find this file



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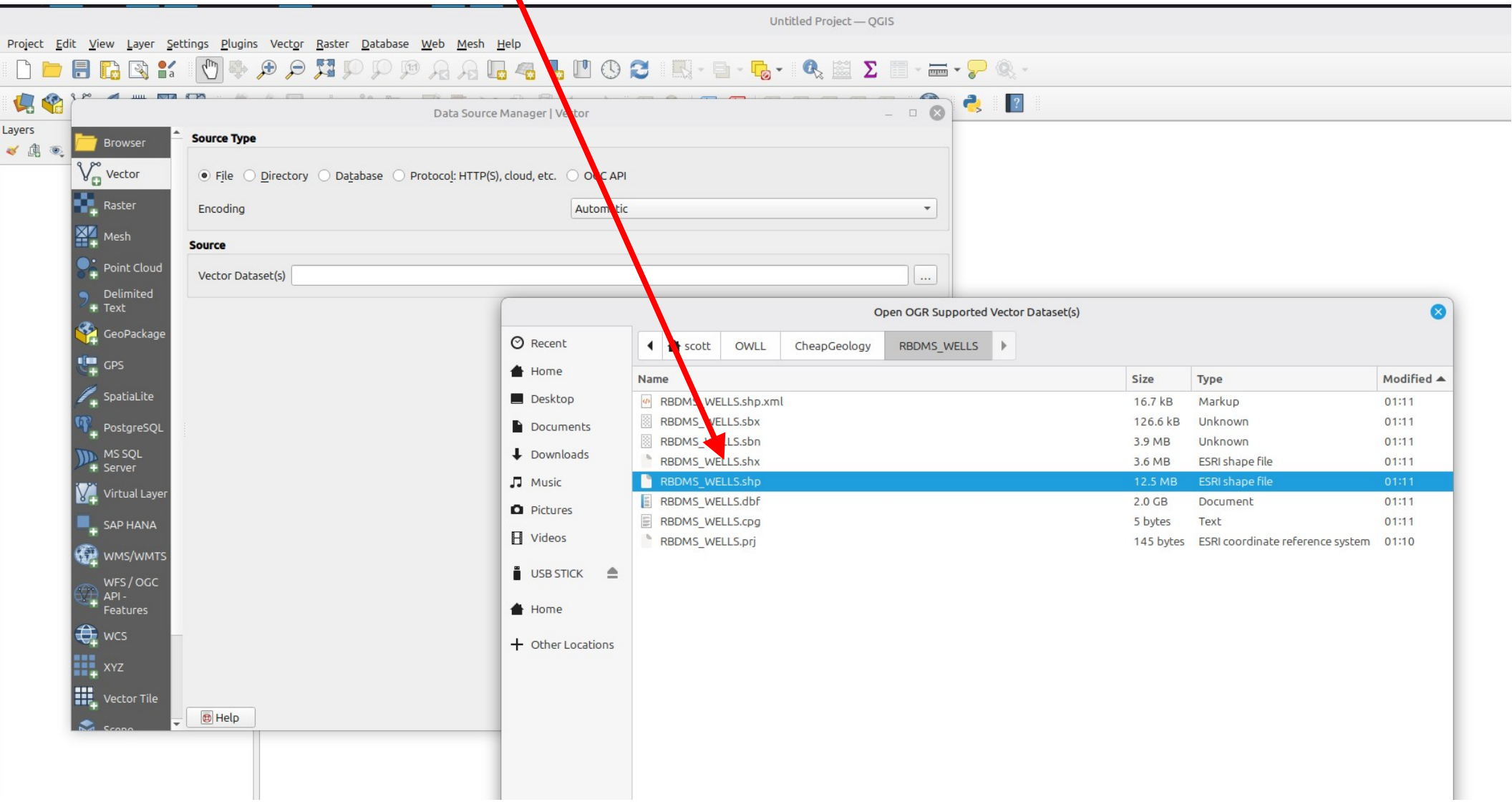
Open QGIS, create a new vector layer, and link it to the RBDMS shape file of Oklahoma well data



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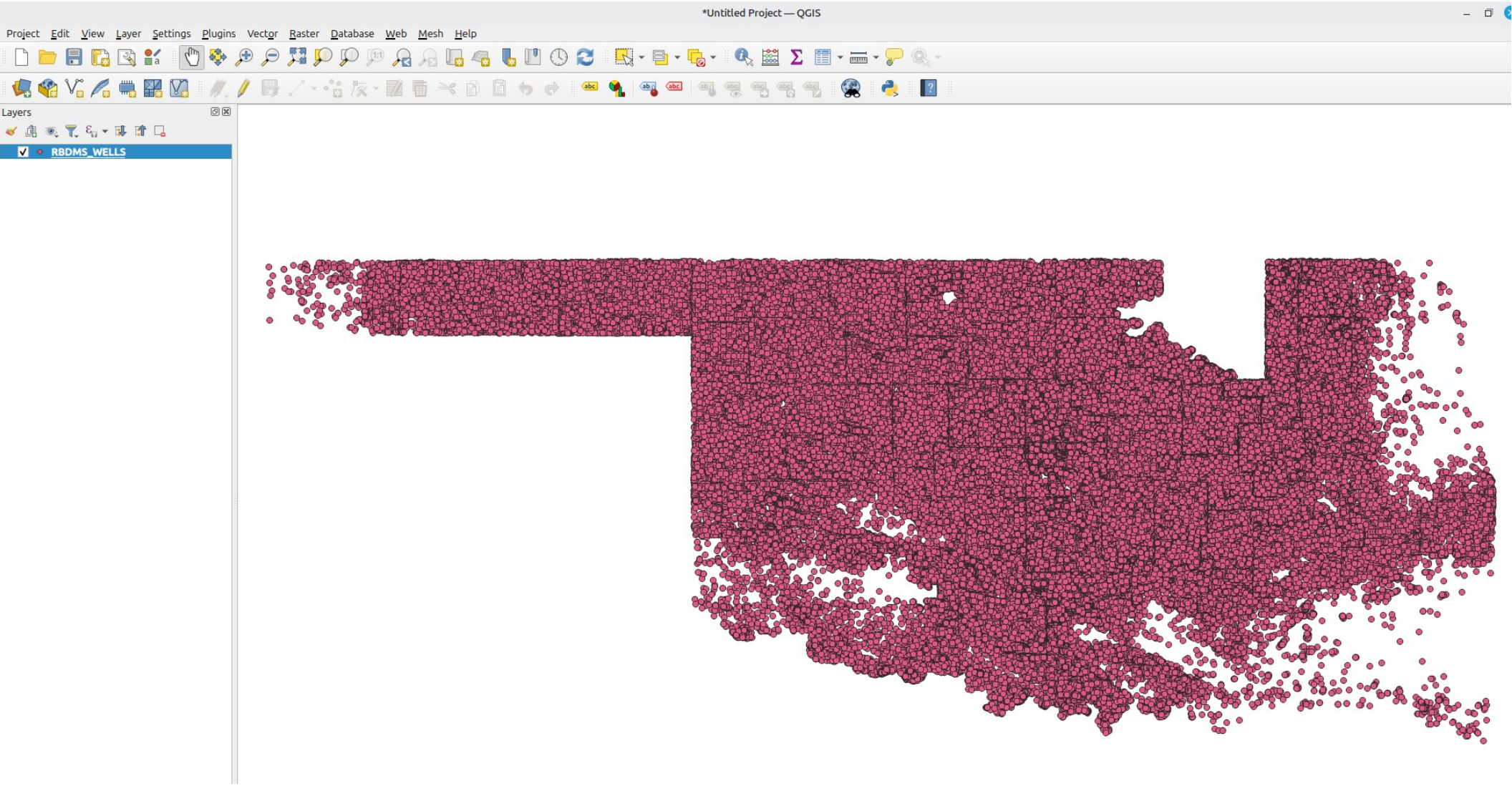
QGIS will display the well data as a single symbol type.



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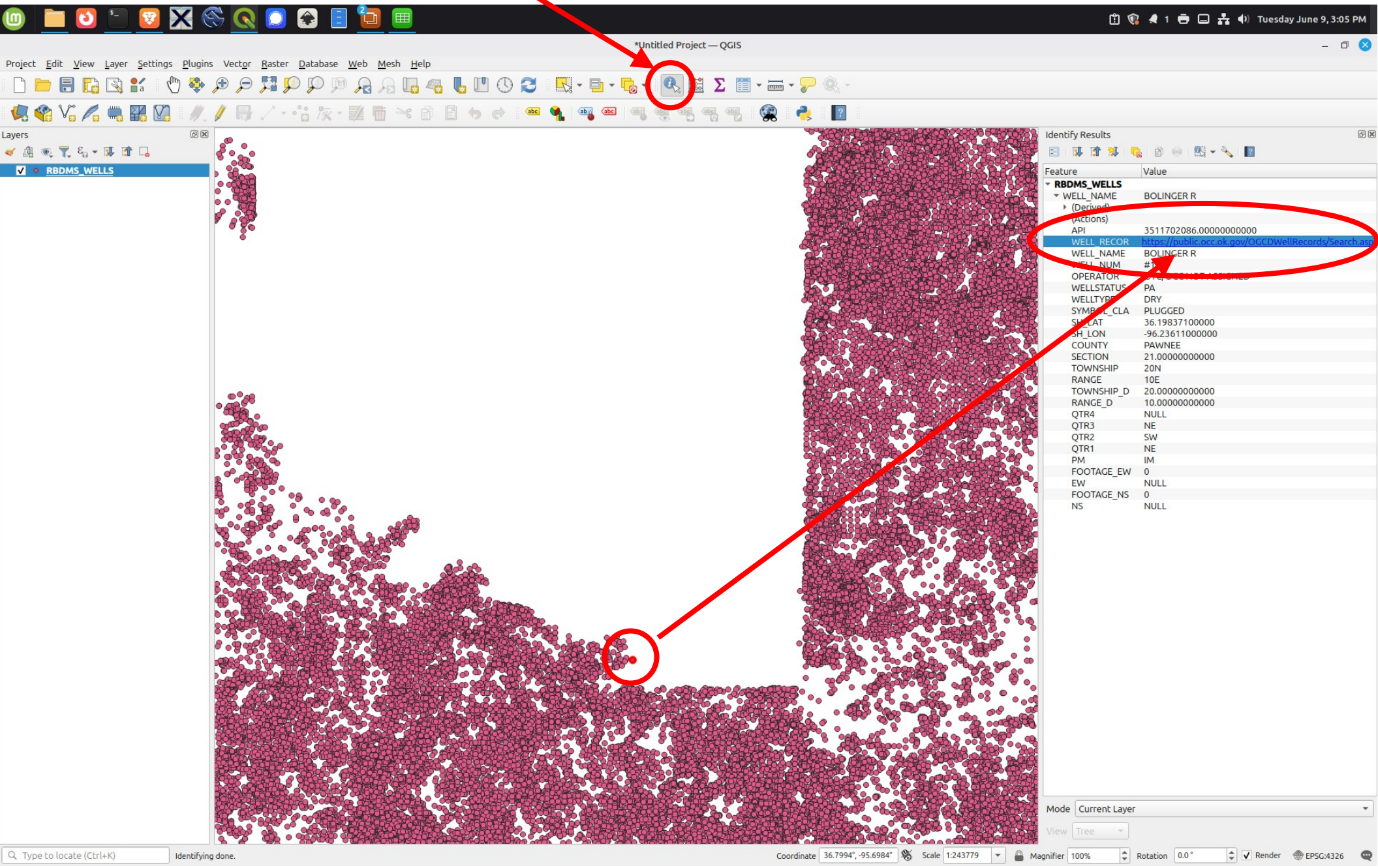
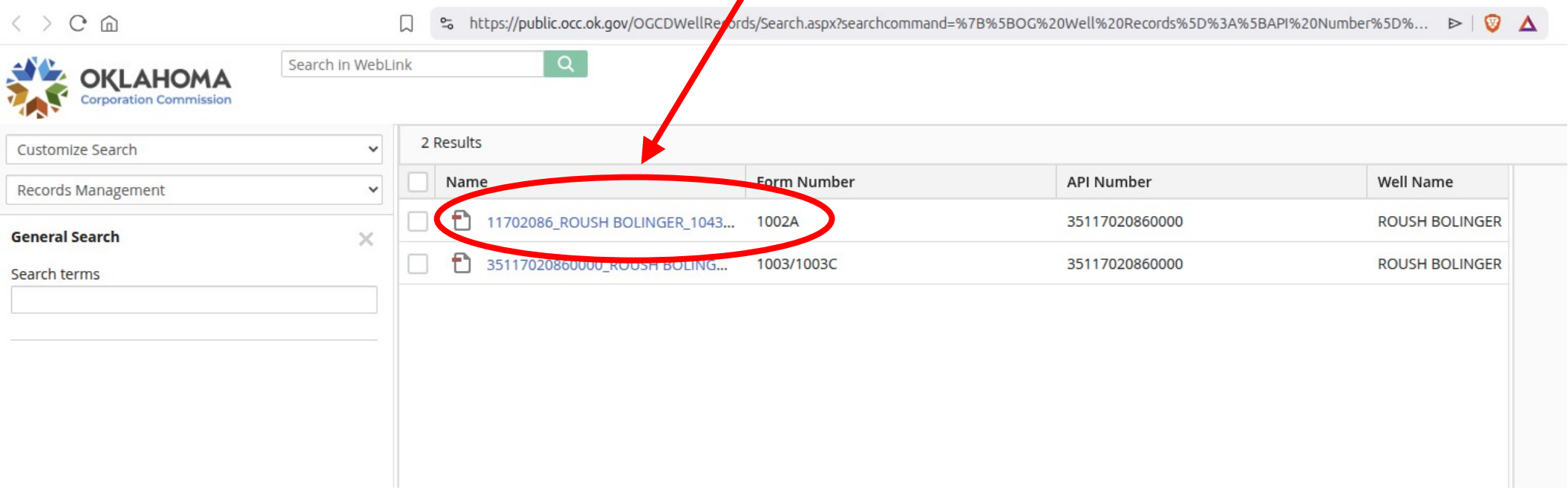
Use this tool to click on a well and see its information



Clicking on WELL_RECORD takes you to the OCC's info page for the well

sschad@geologist.com

Here is the information page for the selected well. Click here to see the 1002A completion form.



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https://public.occ.ok.gov/OGCDWellRecords/DocView.aspx?id=1994968&dbid=0&repo=OCC&searchid=32ed6c4d-e6f8-4d23-9dd0-b4f1e0b8cb2f

OKLAHOMA Corporation Commission

Search in document

11702086_ROUSH BOLINGER_1043704

1 of 2 — Automatic Zoom

7 9 0 0 0 0 1 8 0 1 8 89285

Form 1002—10 M—6-19

WELL RECORD

Mail to Corporation Commission, Oklahoma City, Okla.

Pawnee County. Company Selby Oil & Gas Company

Farm R. Bolinger Lot Section 21 Township 20 Range 10 Well No. 1

Drilling Commenced Feb. 11th, 19 20. Drilling Completed April 30, 19 20.

Correspondence regarding this well should be sent to Name Selby Oil & Gas Co. Address Tulsa, Okla.

CASING RECORD

SIZE	PUT IN WELL Ft.	PUT IN WELL In.	PULLED OUT Ft.	PULLED OUT In.	LEFT IN WELL Ft.	LEFT IN WELL In.	PACKERS AND SHOES
12½"	45	Left	in hole				
8"	1635		1635				
6-5/8"	2057		2057				

Character of well Dry Hole

Oil Well, Initial production

Elevation above sea level at top of casing

Details | Annotations

Entry Properties

Tags: LookupComplete, Migration Data Sweep

Modified 9/7/2023 10:39:50 AM

Created 4/20/2022 8:13:07 AM

Template

OG Well Records

Group 1:

Location 2120N10EIM NE SW NE

API Number 35117020860000

Well Name ROUSH BOLINGER

District 1

County Pawnee

Fields

DocID 1043704

Operator Number 09998

Effective Date 4/30/1920

Form Number 1002A

Scan 8/19/1999

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You can add many free datasets to QGIS:

Find county outlines and section/township/range data on this site:

https://csagis-uok.opendata.arcgis.com/

Get oil & gas field outlines, well data, and more, on this site:

https://gisdata-occokc.opendata.arcgis.com/

Retrieve digitized fault traces from either of these sites:

https://www.ou.edu/ogs/data/fault
https://home-owrb.opendata.arcgis.com/datasets/fault-lines/about

Link QGIS to seamless topo maps using this pathname:

https://services.arcgisonline.com/arcgis/rest/services/USA_Topo_Maps/MapServer/WMTS/1.0.0/WMTSCapabilities.xml,layer=USA_Topo_Maps,tilematrixset=default028mm

Link QGIS to seamless street maps with this pathname:

https://tile.openstreetmap.org/{z}/{x}/{y}.png

Link QGIS to seamless Google imagery with this pathname:

https://mt1.google.com/vt/lyrs=y&x={x}&y={y}&z={z}

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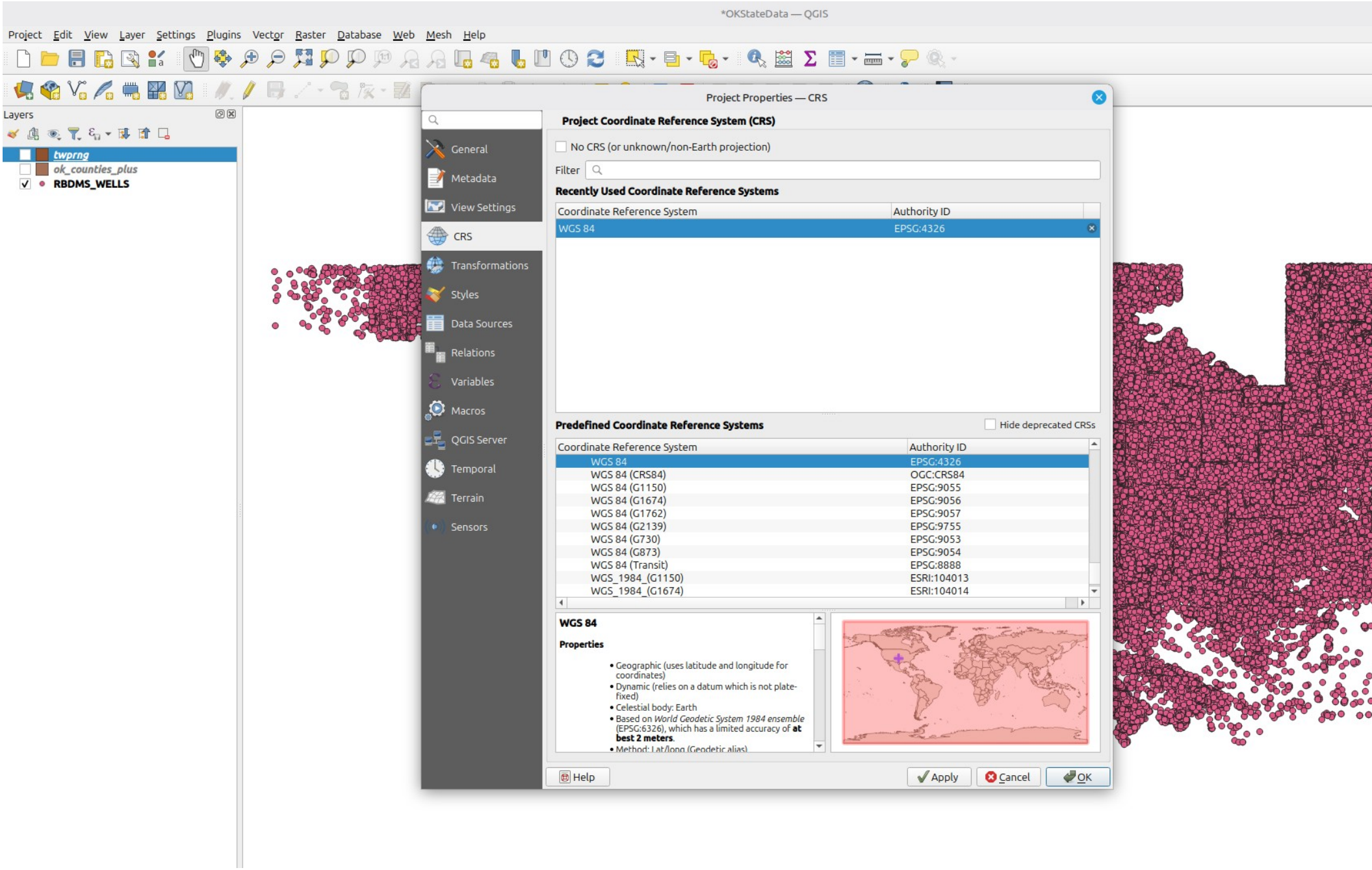
Don’t forget to set a global coordinate system for the project:



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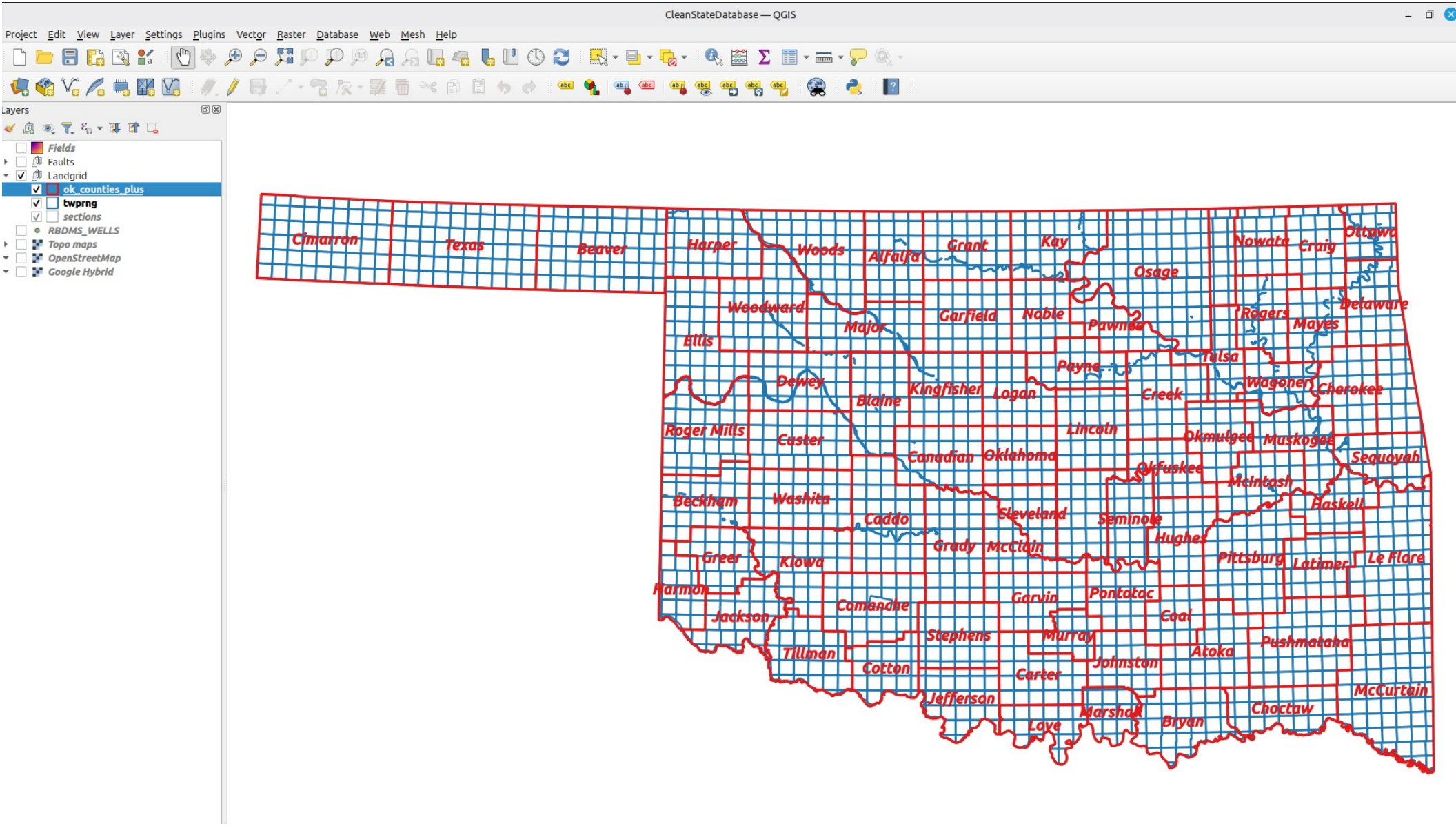
This is a (cleaned-up) QGIS database that uses all of this free information.



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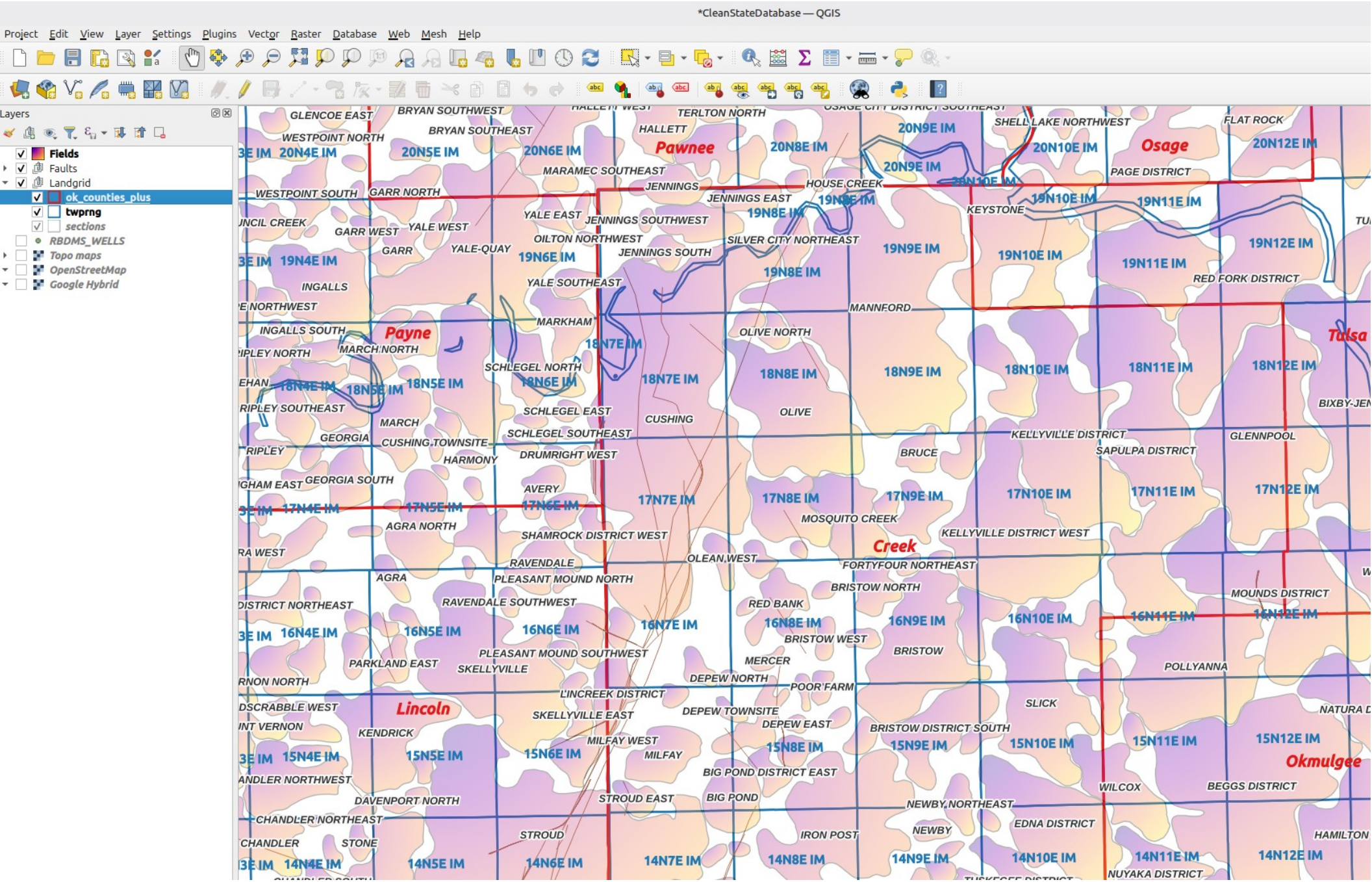
Here is a view of the Cushing area of Creek County with oil and gas fields shown



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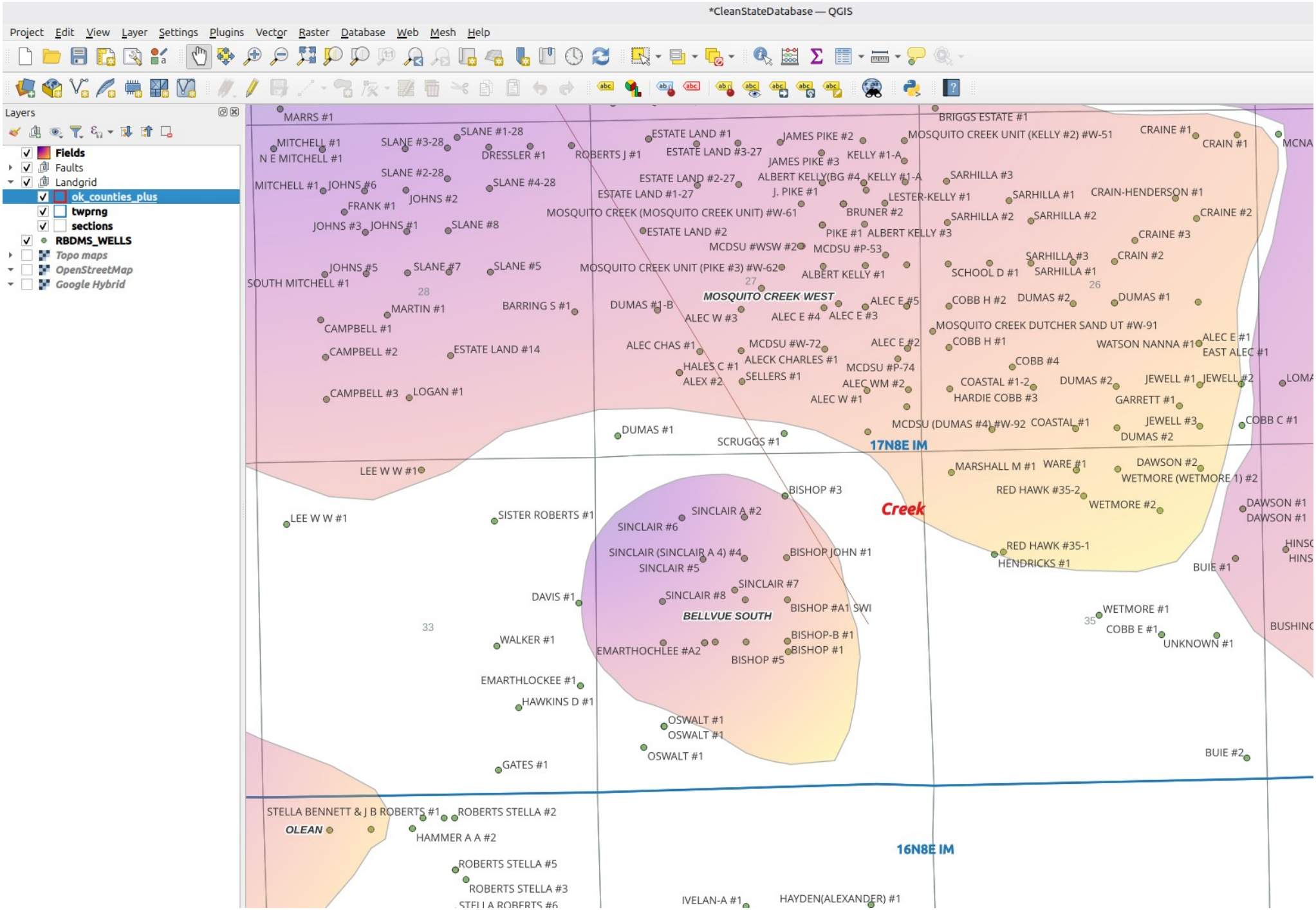
Let’s zoom in to South Bellvue field



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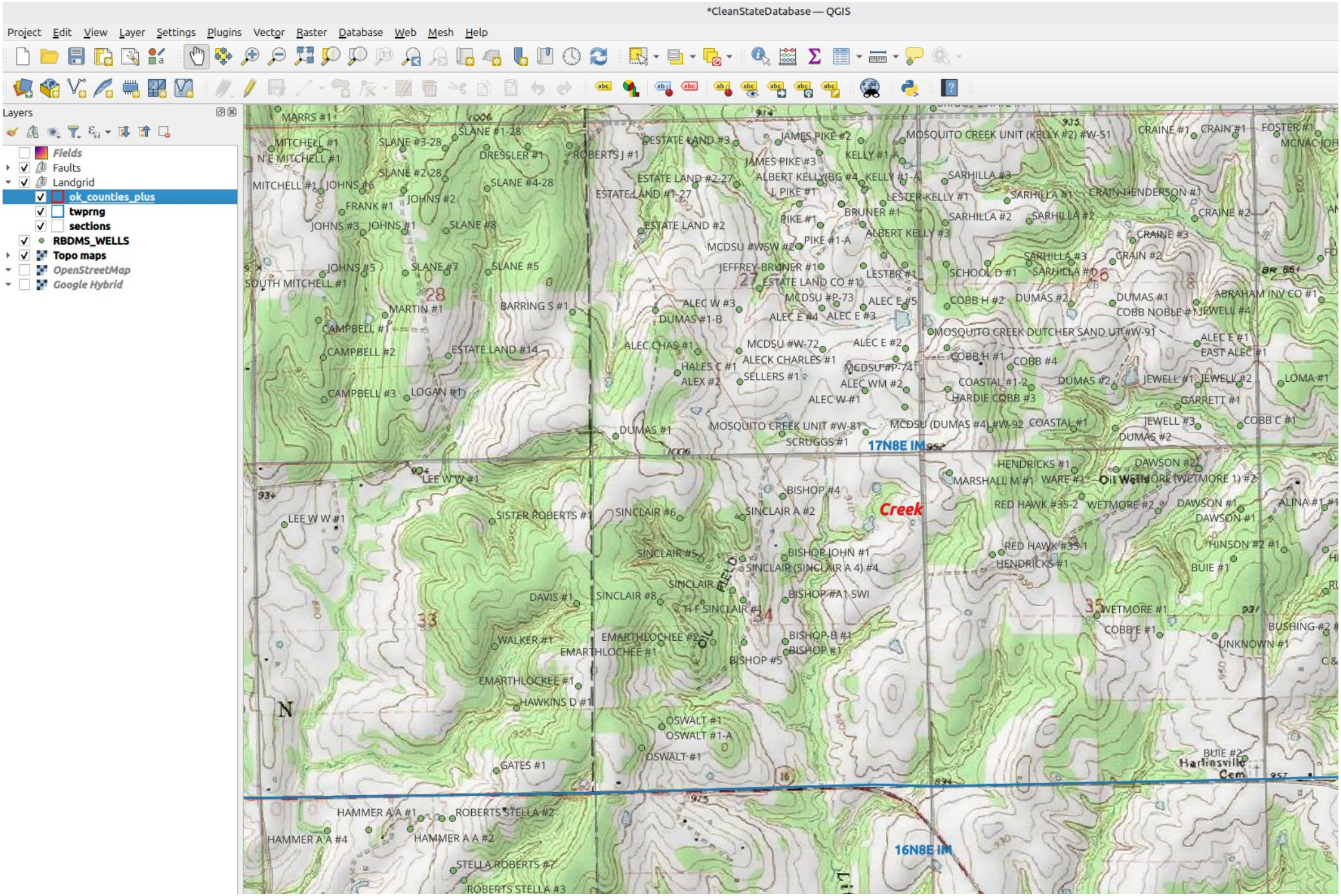
Same view with seamless topo maps displayed



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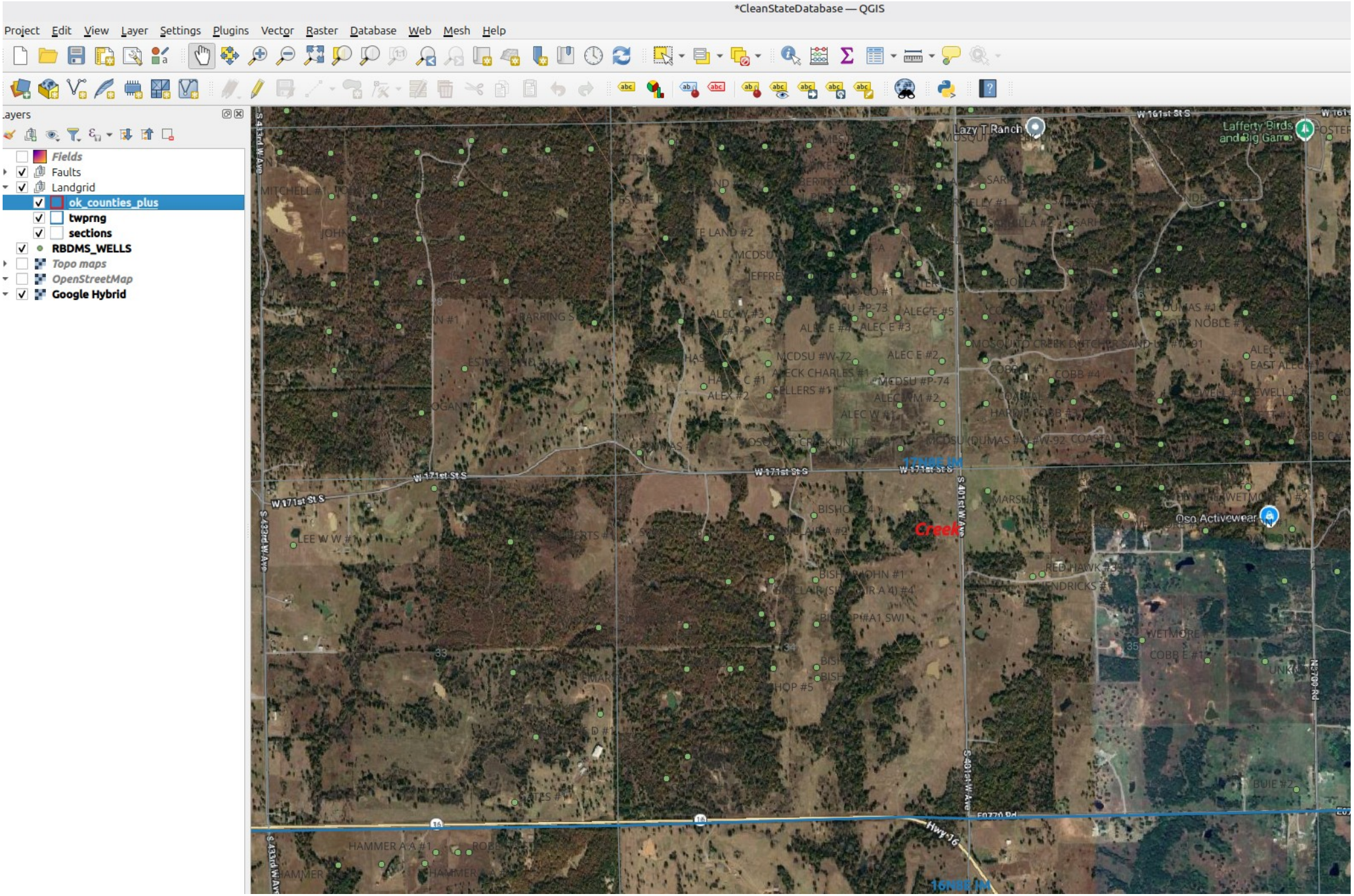
Same view with seamless Google hybrid images displayed



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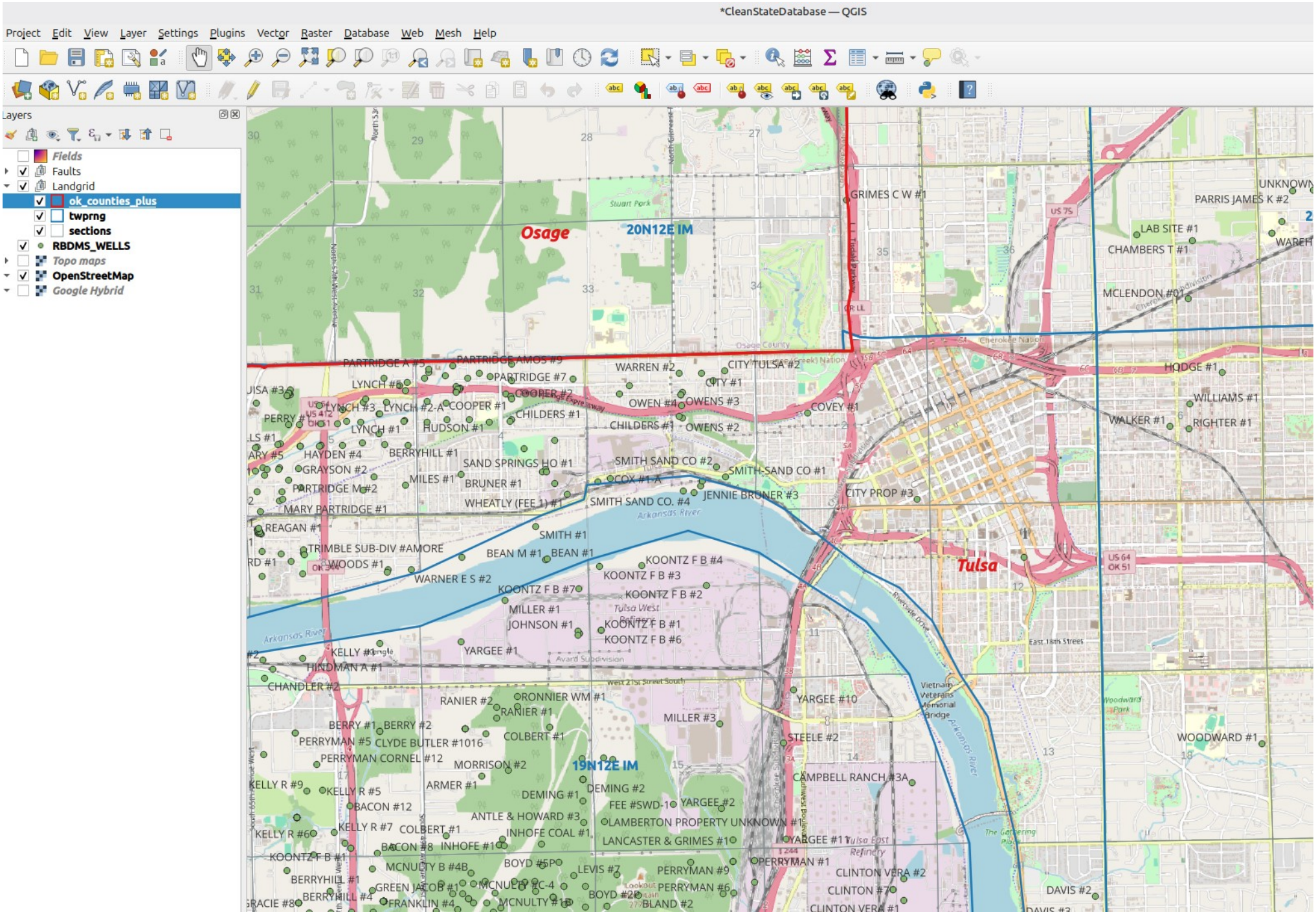
Seamless open street maps displayed behind well data near Tulsa



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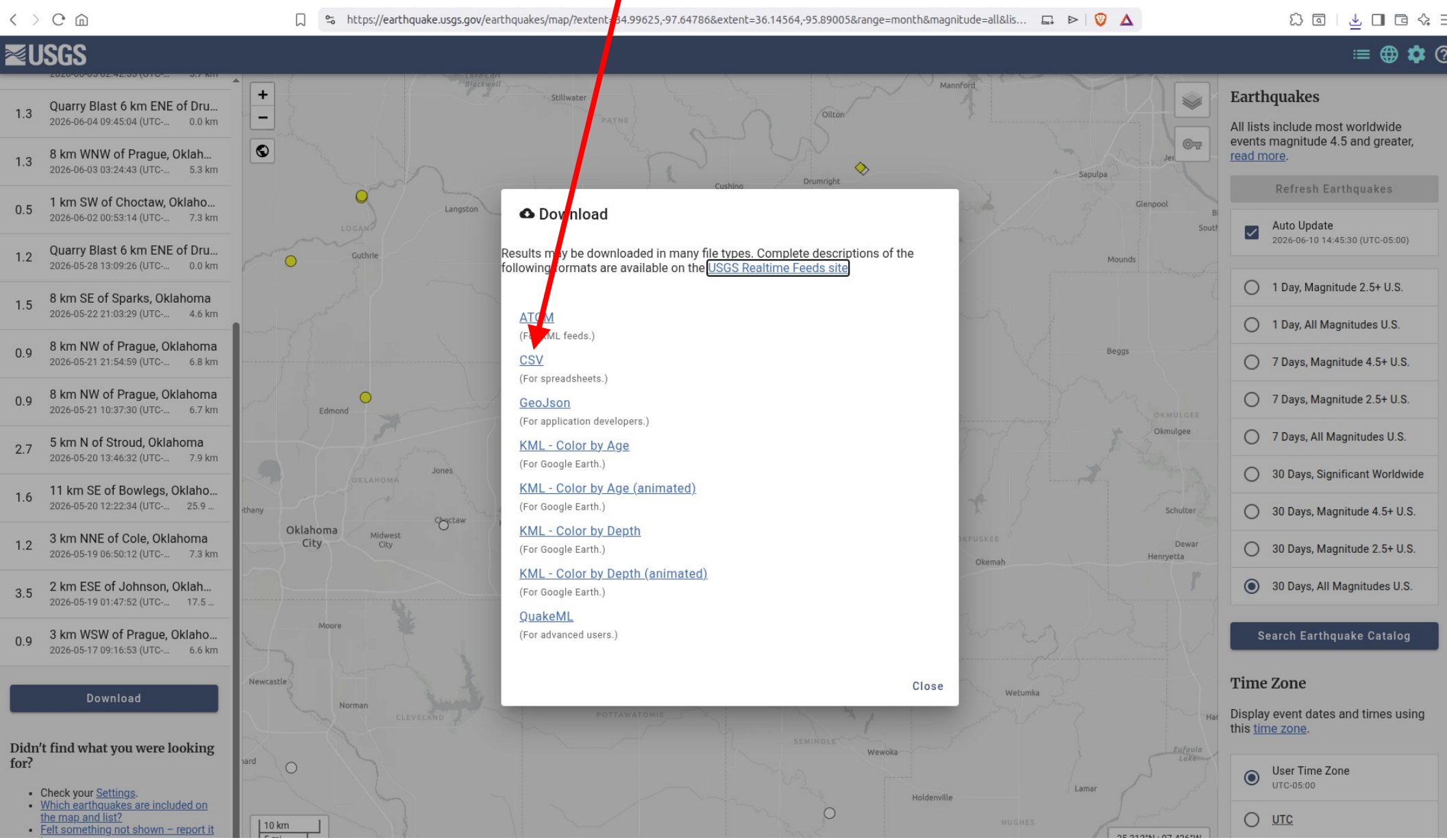
Fetch some earthquake data data as a CSV file, from https://earthquake.usgs.gov/earthquakes



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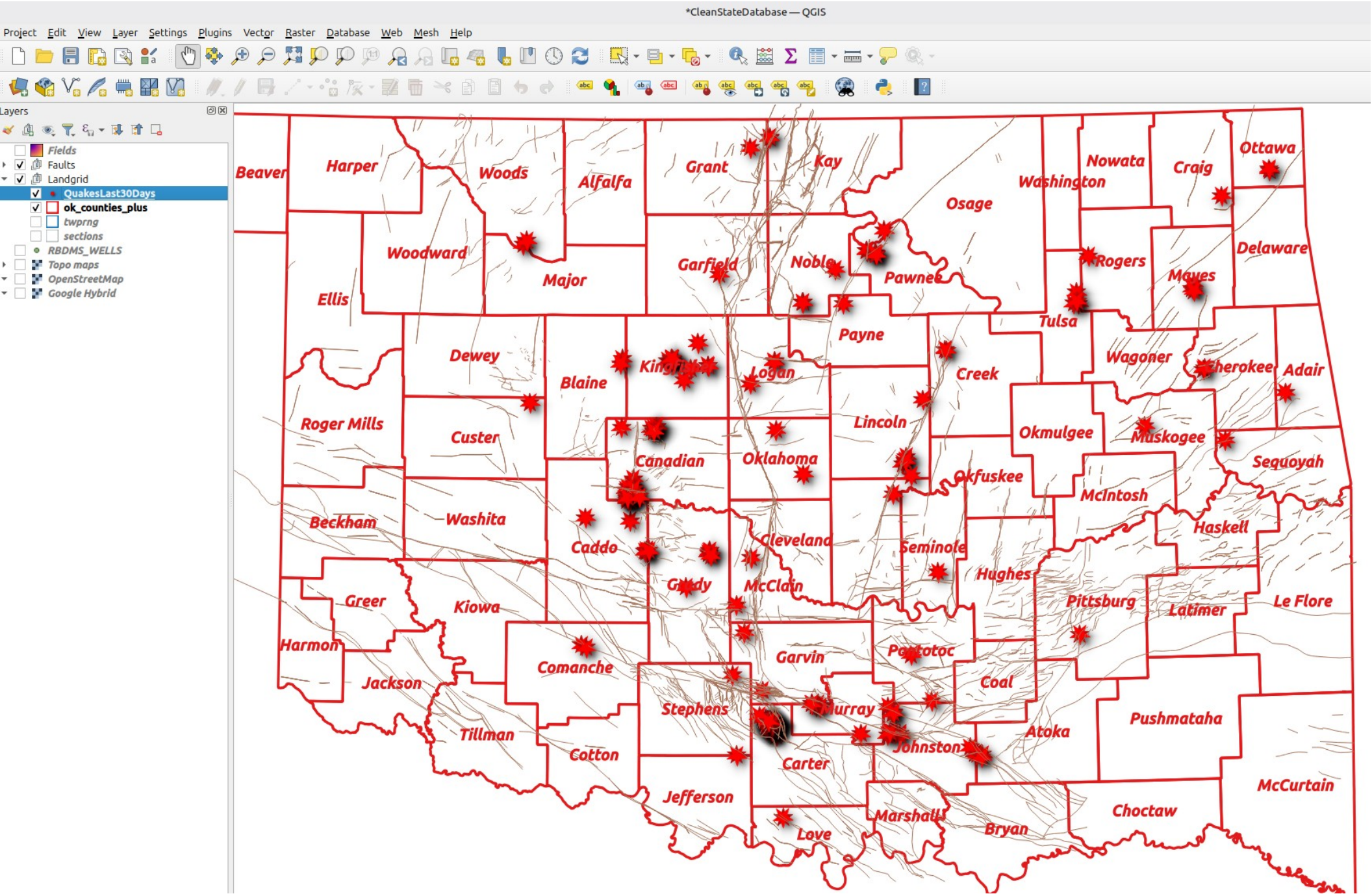
Quakes for the last 30 days added as a delimited text layer, with known faults shown.



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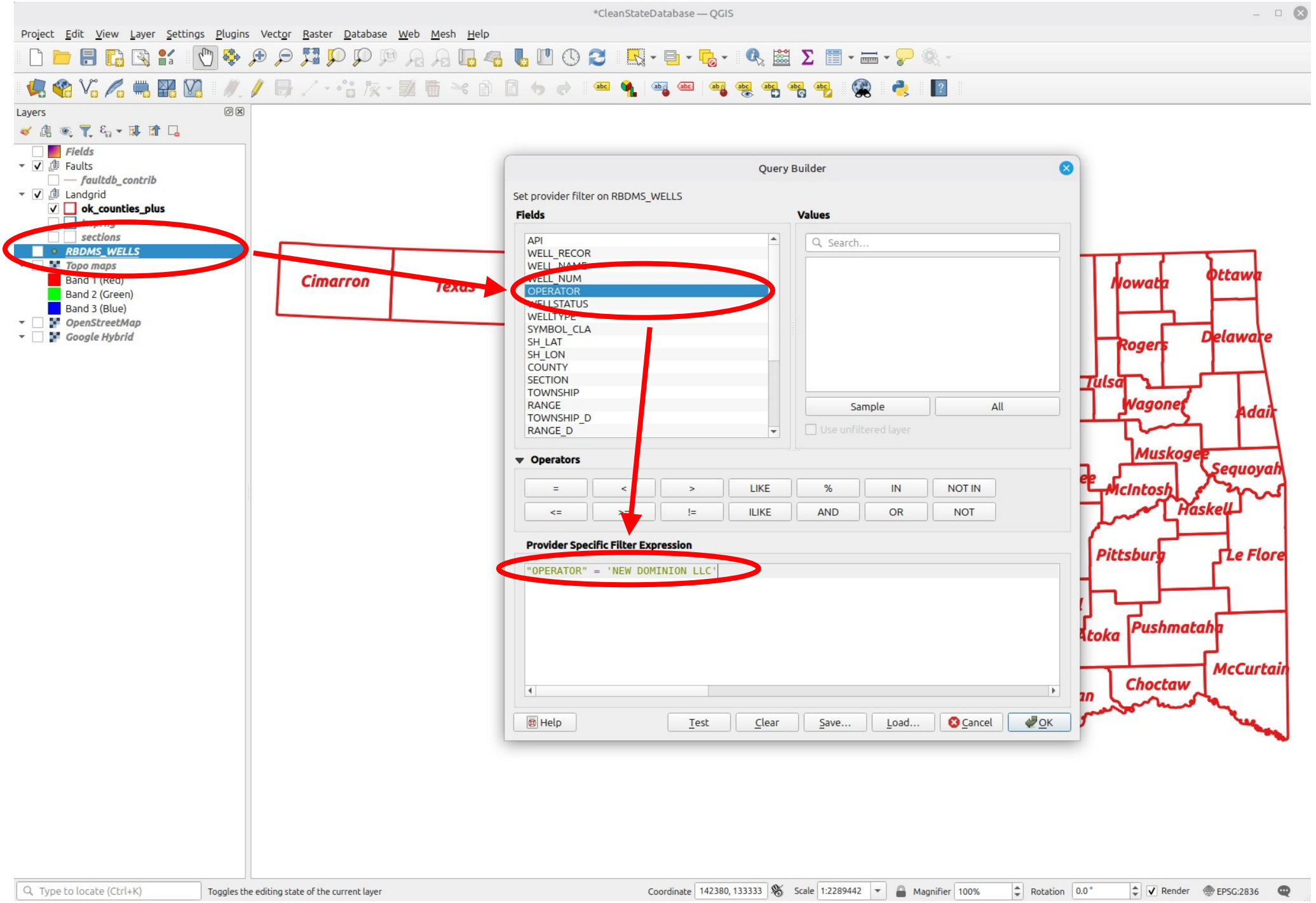
If you right-click on the RBDMS_WELLS layer and select “Filter,” you can locate wells by operator



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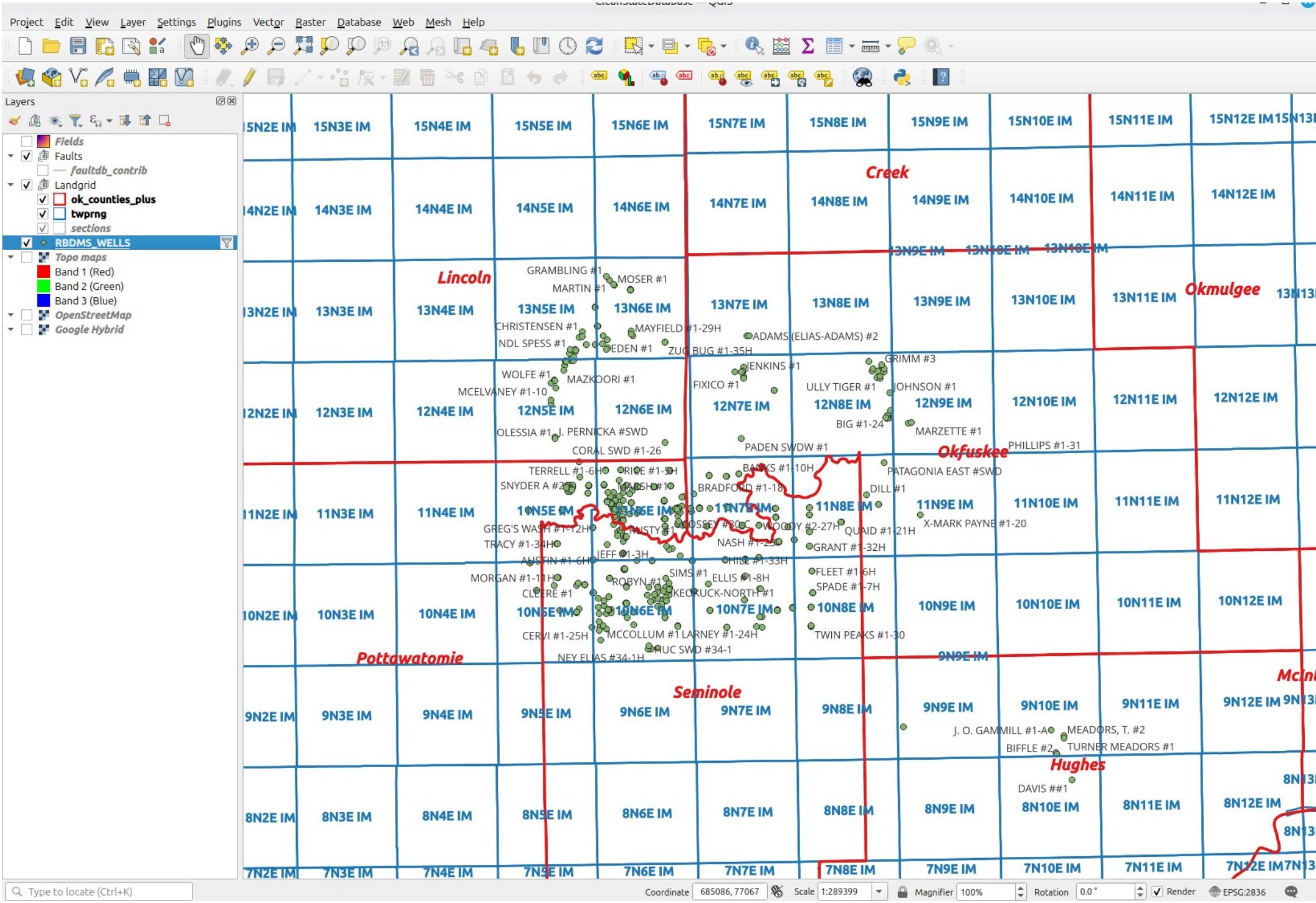
Zoomed-in view of matching wells:



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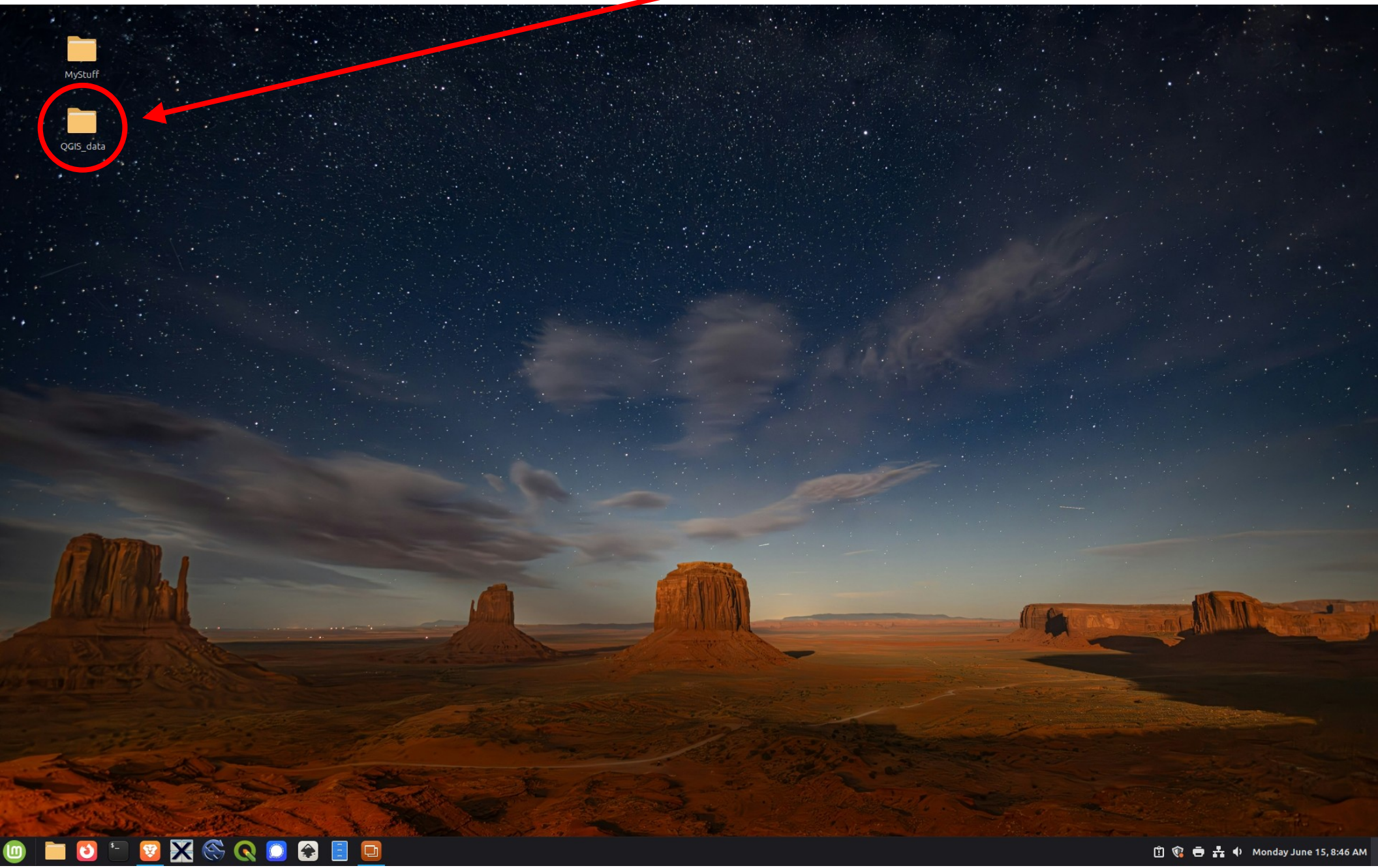
You are welcome to copy this demo QGIS project off one of the library's MCGL machines



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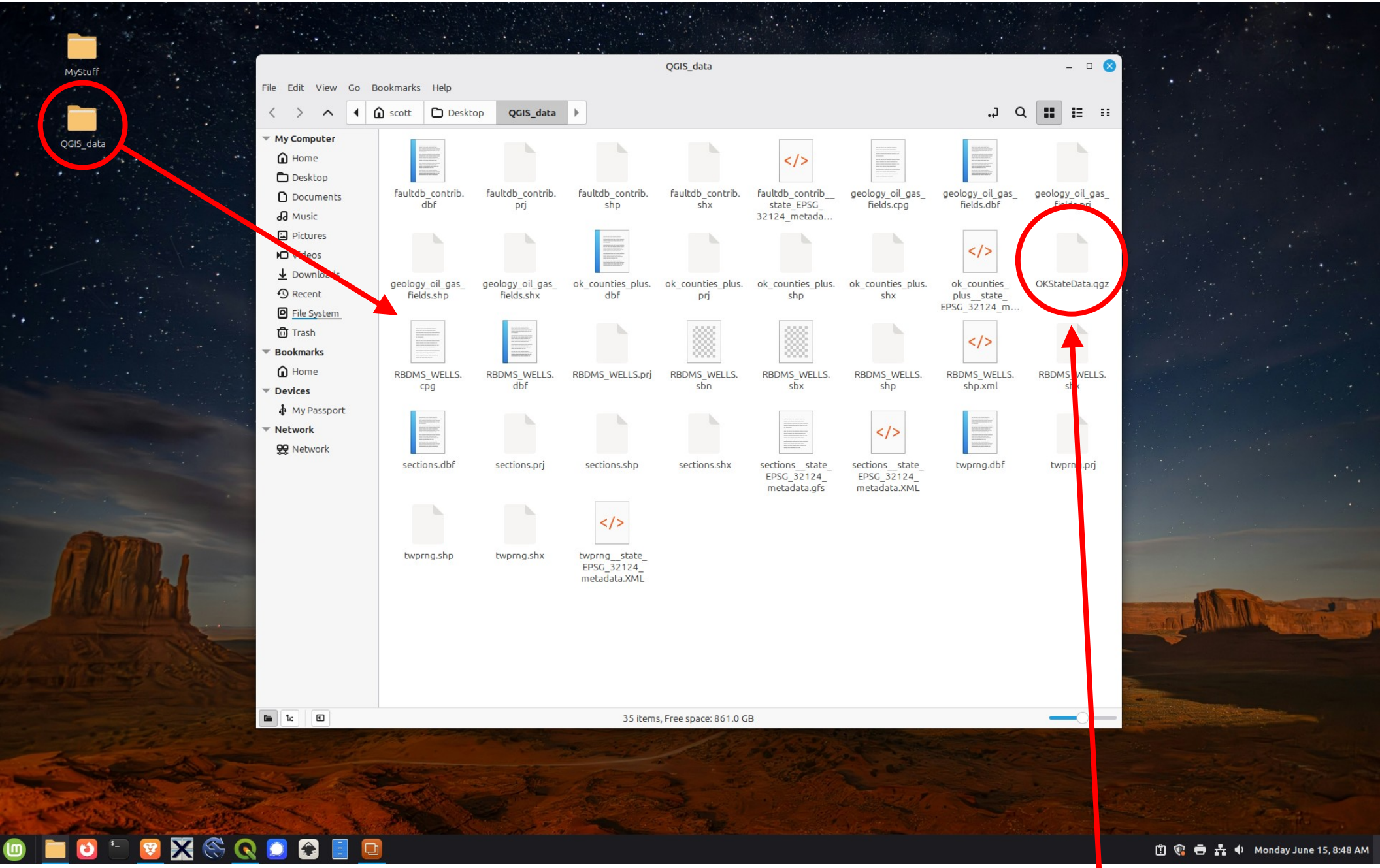
Double-click the QGIS_data folder to see the support files for the demo project



Copy the entire directory to your laptop and then use QGIS to open the OKStateData.qgz file

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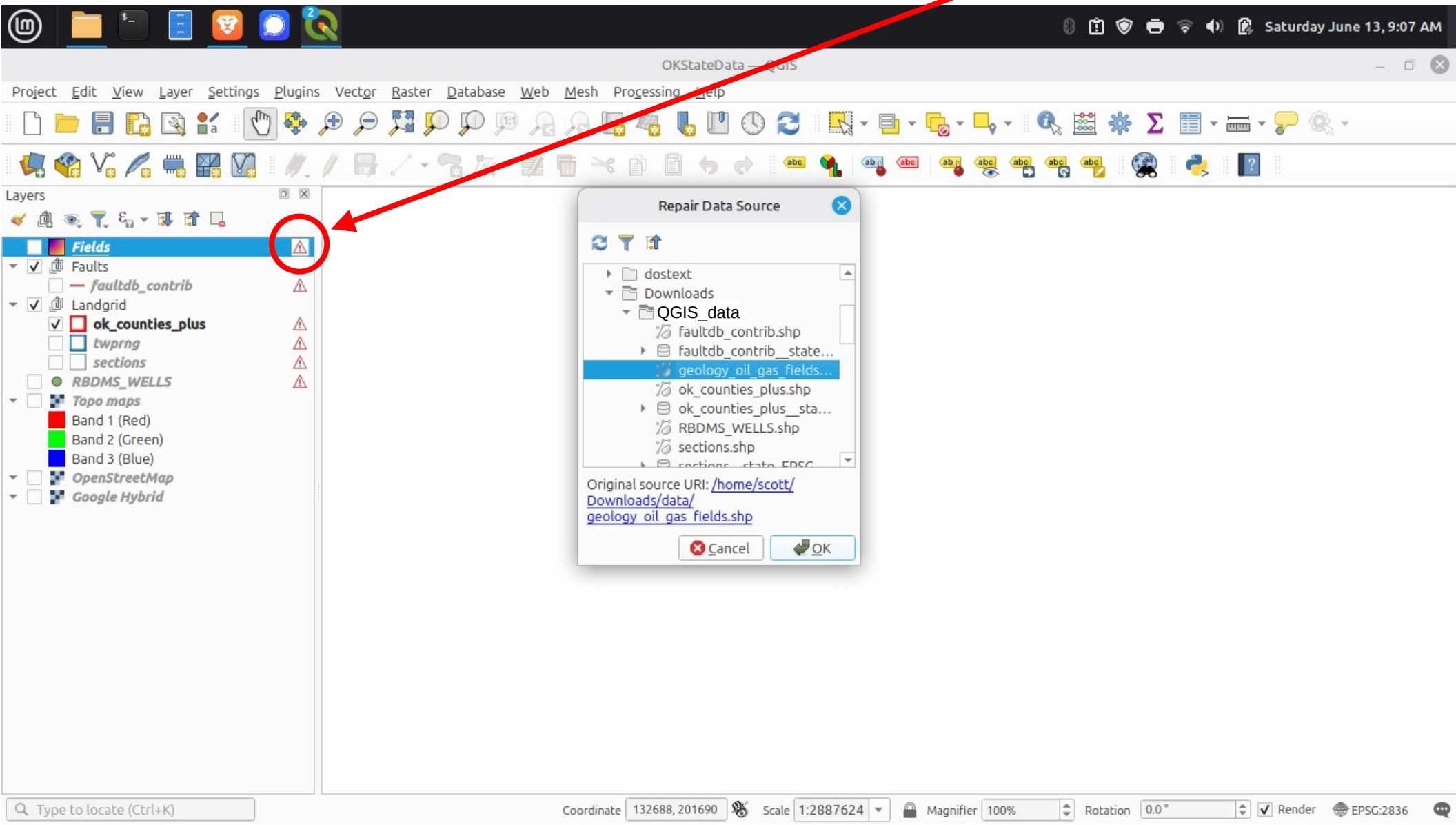
You may need to re-link or "repair" the data sources for the layers. The small red triangles next to the layer names indicate repairs that need to be made.



Click the red triangle, navigate in the pop-up window to the location where you have the layer file installed, and relink it. After you relink each layer to its data source, you're good to go!

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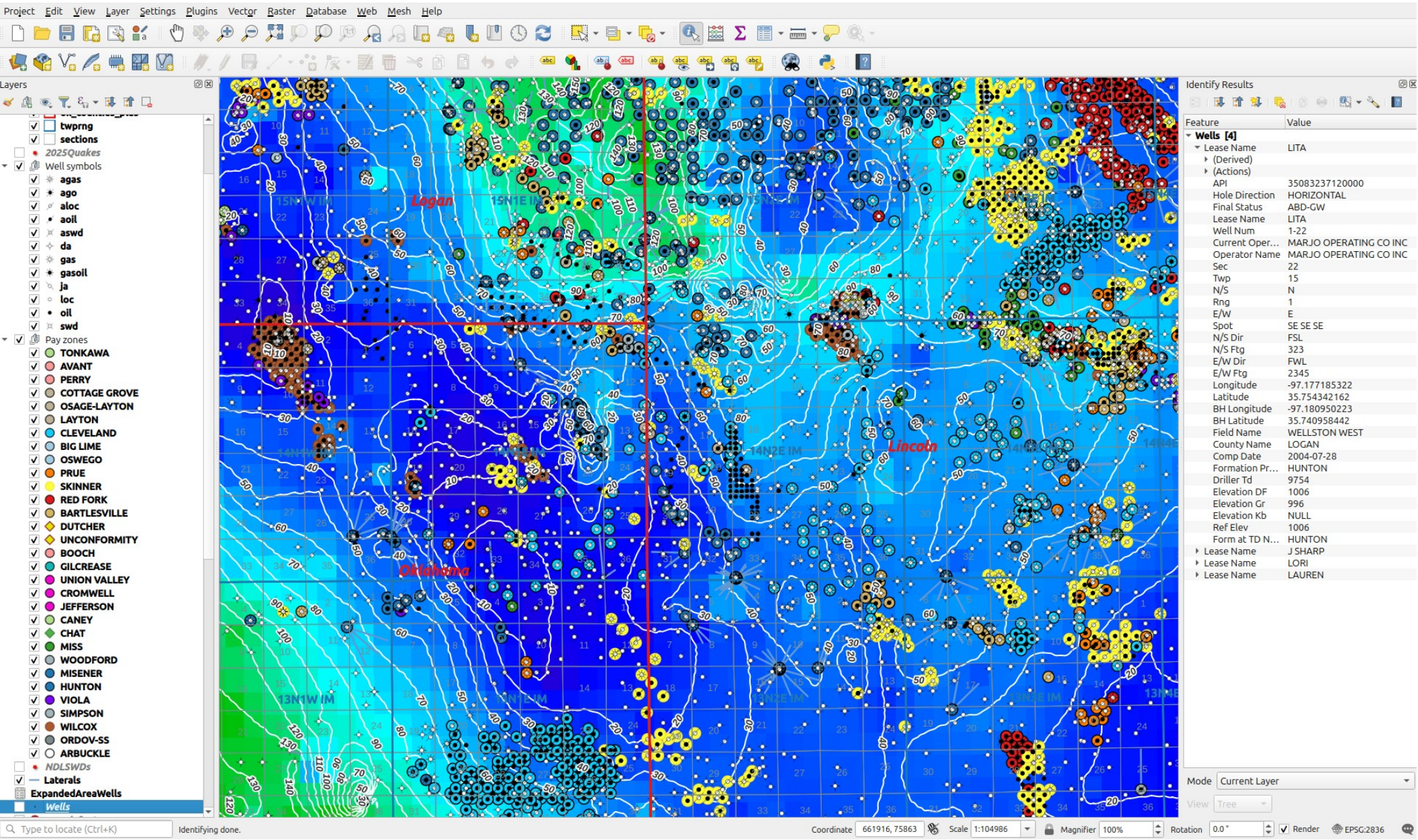
QGIS can display data from many sources. It will label contours for you, measure distances and areas in different units, and handle scales from tiny to huge. It's not bad for a completely free tool!



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Cheap Geology

- Exploring OGS & OCC data
- Spotting wells from legal descriptions
- Computer contours & raster maps
- Using MCGL's online system
- Getting started with QGIS
- *The Future…*

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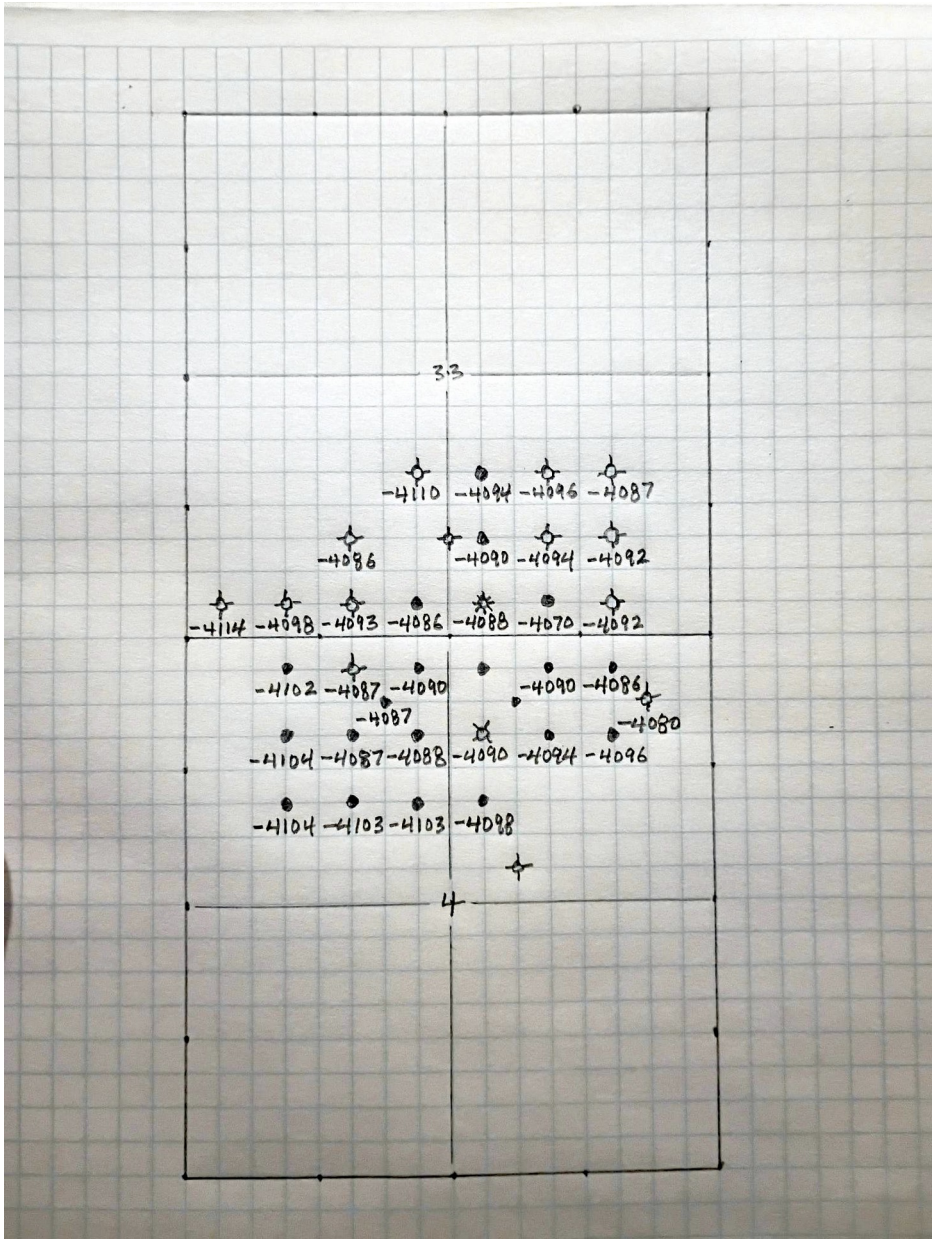
Here is a base map of Iconium field that I drew while sitting in the log library.
I used graph paper, a #2 pencil, and a stack of scout tickets.



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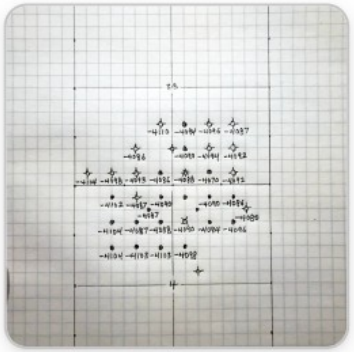
Claude

I took a picture of the map with my phone
and uploaded it to the Claude A.I.

My instructions to Claude are in red.



Can you convert this map image into a vector SVG file?

Looking at your hand-drawn map, I can see:

- A rectangular boundary with sections labeled "33" (top) and "4" (bottom)
- Various survey/elevation points marked with crosshair symbols (◎) and dots
- Elevation readings (negative values like -4110, -4094, -4086, etc.)
- Points arranged in a roughly grid-like pattern across the upper section

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Claude

Here's your vectorized map. I've faithfully reproduced:

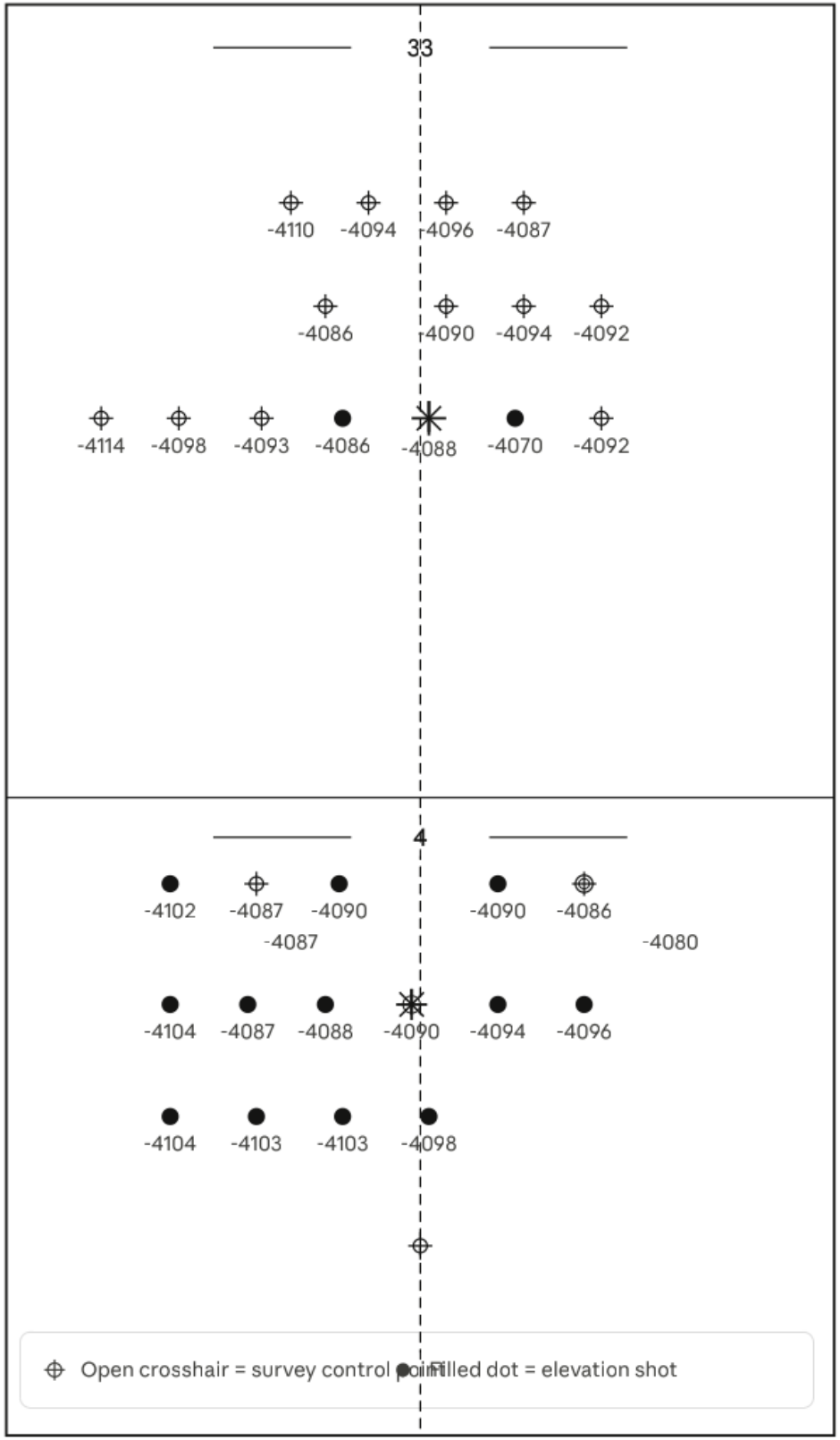
- The outer boundary rectangle with the dashed vertical center line
- The **"33"** and **"4"** section labels with their horizontal tick marks
- The horizontal dividing line separating the two sections
- All **survey points** with their correct marker styles — open crosshairs (○) for control points, filled dots (●) for elevation shots, and the starburst symbol for the special point
- All **elevation readings** (the negative values like -4110, -4087, etc.) in their approximate original positions

If any of the elevation values or point positions look off from your original, just let me know and I can make corrections.

sschad@geologist.com

Claude

This was Claude's first attempt.
It was a bit rough, so I opened
the file in Inkscape and tweaked it.



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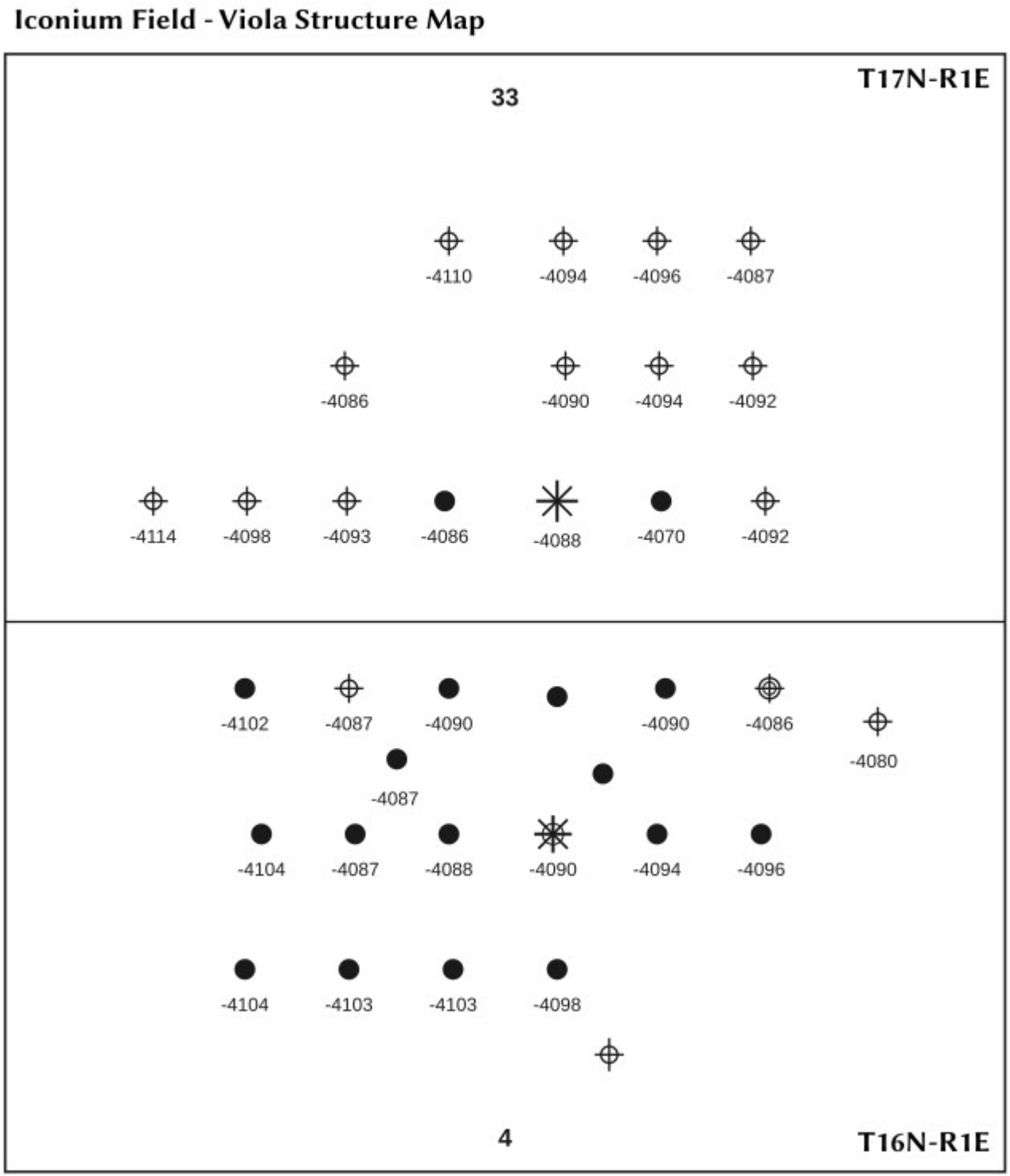
Here is the cleaned-up drawing that I resubmitted to Claude.



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Claude

survey_map.svg

SVG

I've uploaded a corrected survey map. The labels represent depth below sea level for each of the circular symbols. I'd like you to draw contours through the points on a 5 foot contour interval. I'd like you to label the contour lines. I'd like to save the result as an SVG file.

Let me first read the uploaded SVG to understand the exact point positions and values.

Read the uploaded corrected survey map SVG >

Now I have all the point coordinates and depths. Let me extract them carefully and compute the contours.

sschad@geologist.com

Claude

Good, the paths look clean now. Let me now build the full SVG with contours overlaid on the existing map:

Ran 2 commands, read a file >

Here's the contoured survey map. Here's what was done:

Interpolation: I used a thin-plate spline (RBF) interpolation across all 35 survey points to create a smooth continuous depth surface, then applied marching squares to extract the contour lines at each 5-foot interval.

Contour levels drawn: -4110, -4105, -4100, -4095, -4090, -4085, -4080, and -4075 ft.

Styling:

- **Thicker dark blue lines** = index contours at every 10 ft (-4110, -4100, -4090, -4080)
- **Thinner lighter blue lines** = intermediate 5-ft contours
- Each contour is labeled along its path with a white knockout background for readability

The contours reflect the general shape of the survey area — the deepest zone (around -4114) is in the upper-left of section 33, with the terrain rising (becoming shallower) toward the -4070 area in the right-center. If any contour positions look wrong based on your field knowledge, let me know and I can adjust the interpolation.

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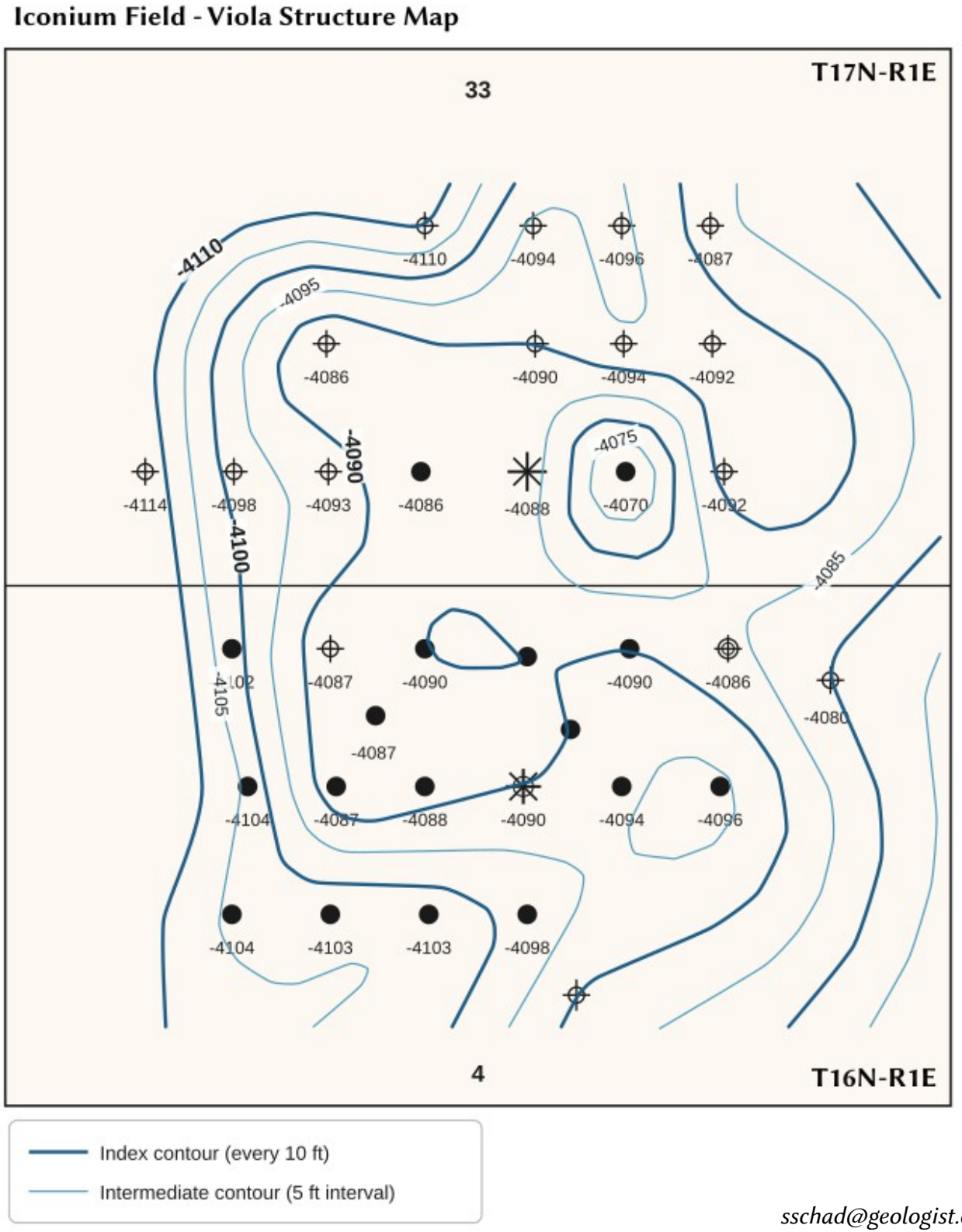
Here is the final map.

It's not static: anything on it can be edited and changed because it is a drawing (SVG) file.

Does it get any cheaper, easier, or faster than this?



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