

Fishnet Creation and Area Calculation in ArcMap

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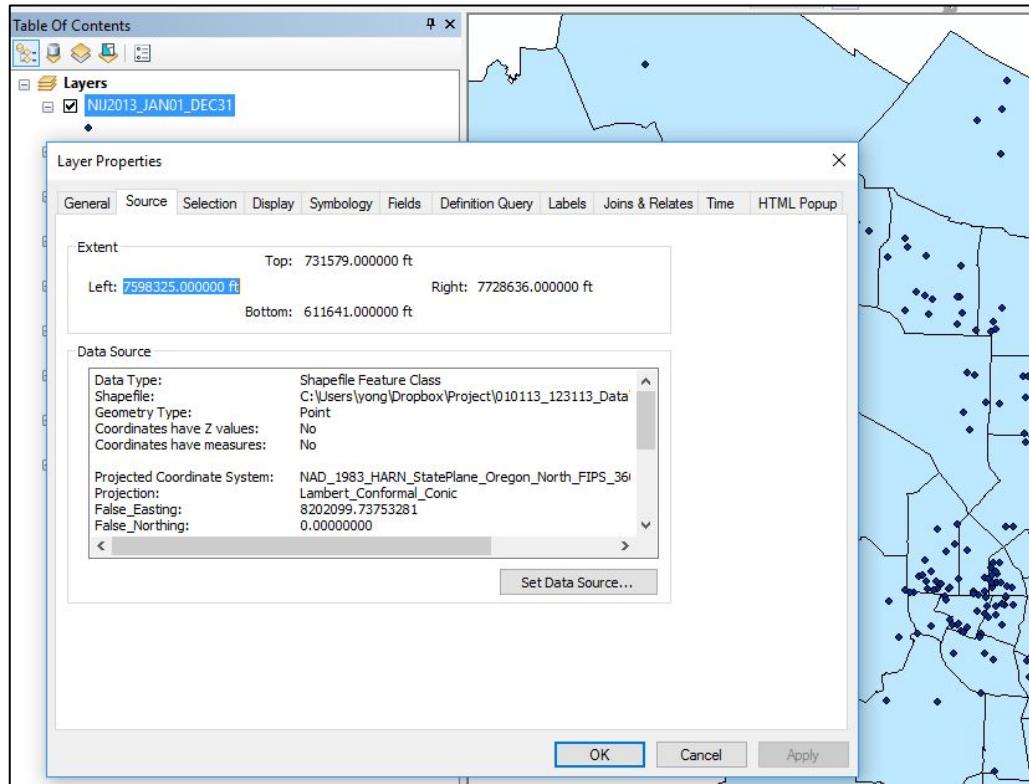
Goal

Create a fishnet layer with a certain cell size, which can cover the map of Portland.

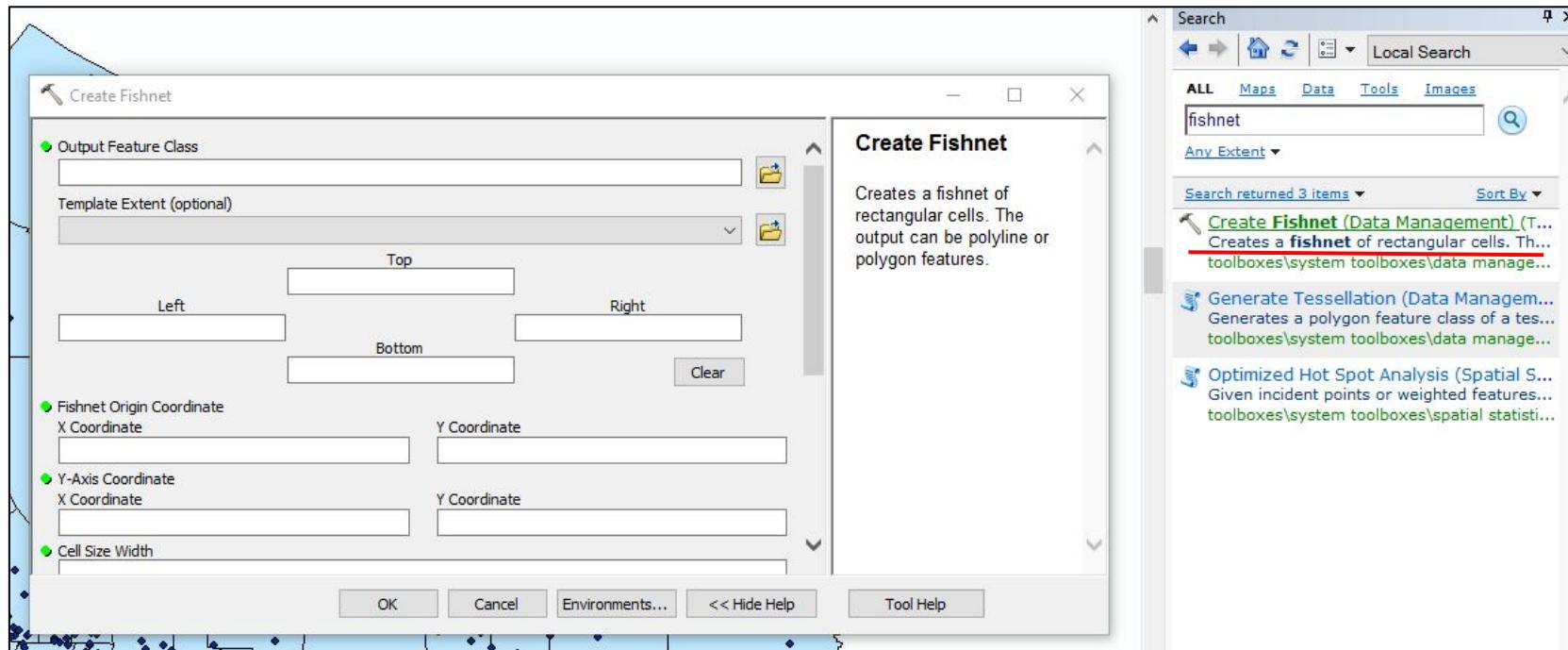
Merge the fishnet layer and Portland map.

Calculate the area of each polygon.

Get the extent of the layer

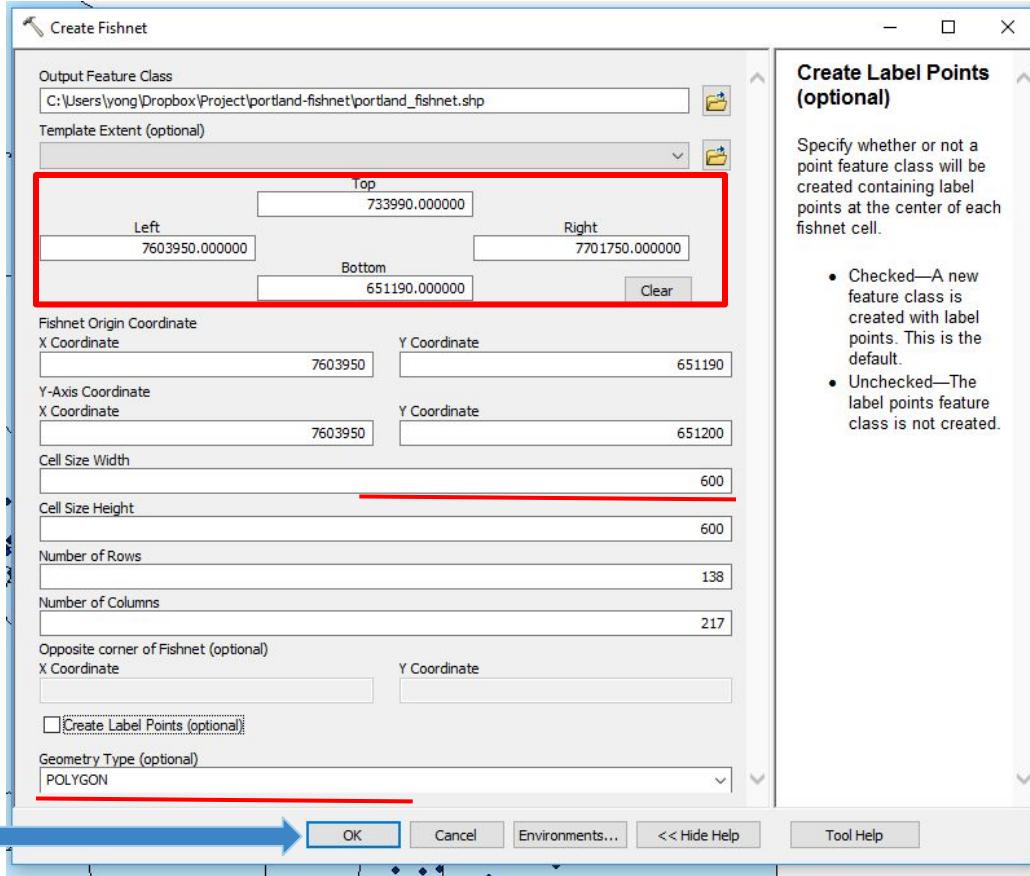


Open the fishnet tool



Create your fishnet

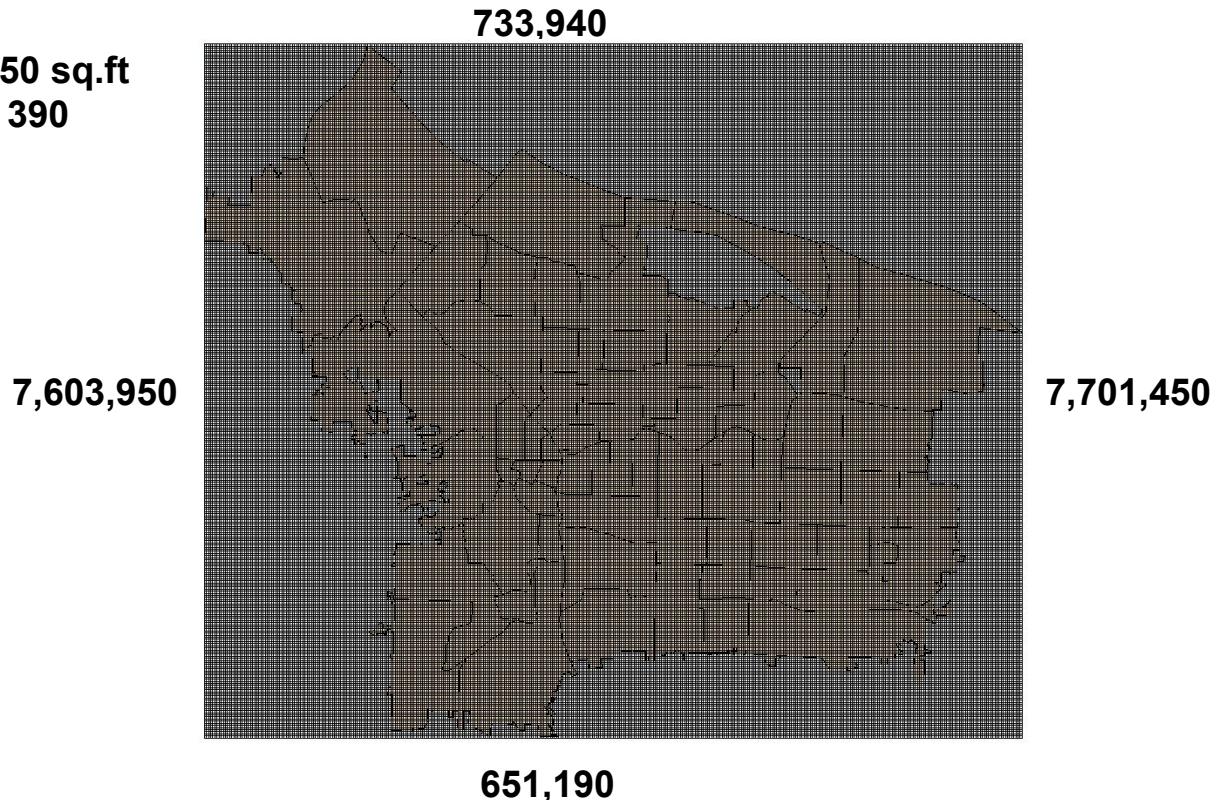
Choose a reasonable extent which can be divided by the size of cell.



Click OK

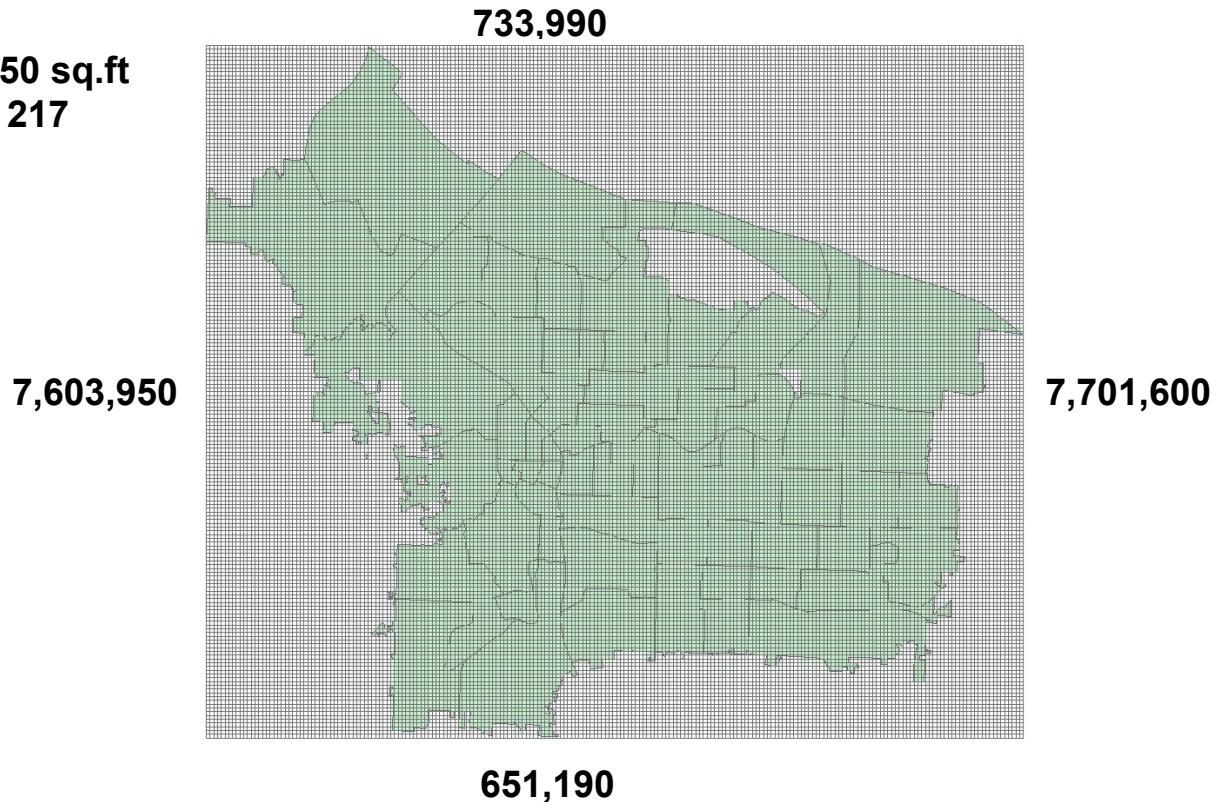
Grid overlays Portland

Cell Size: 250*250 sq.ft
Grid Size: 331 * 390



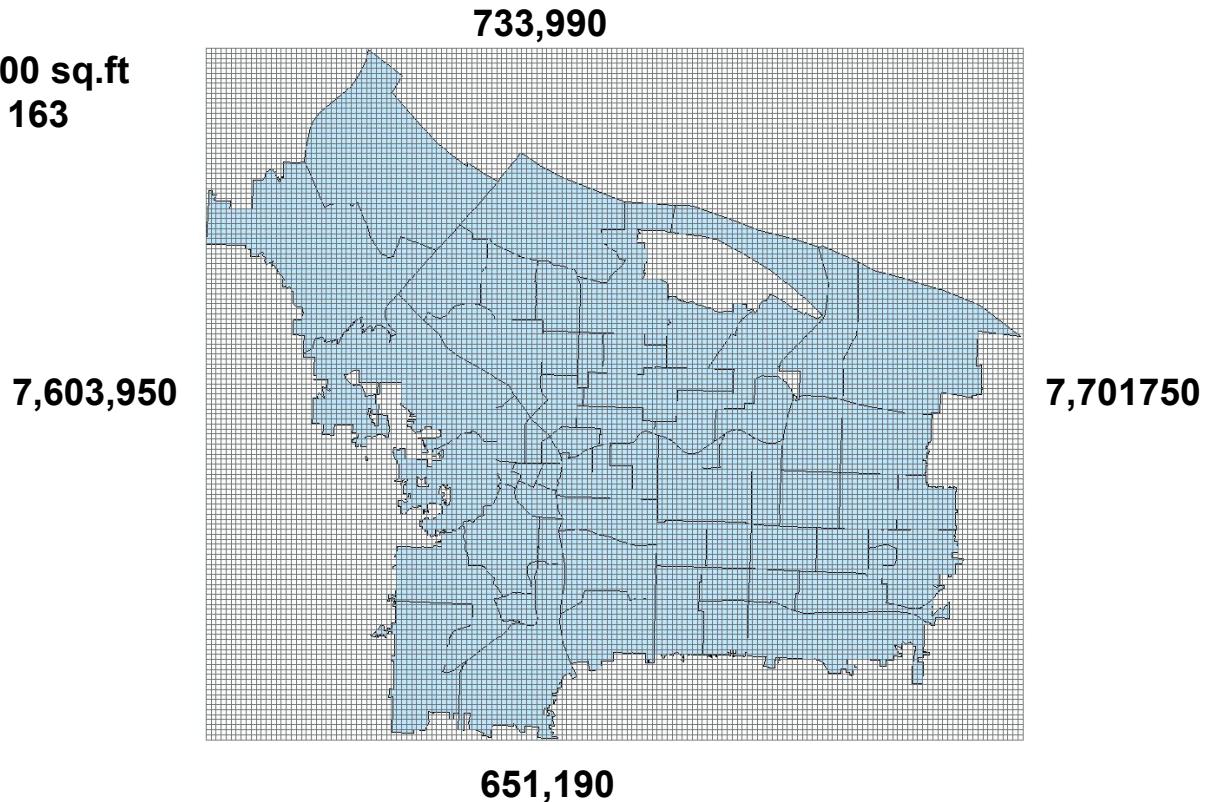
Grid overlays Portland

Cell Size: 450*450 sq.ft
Grid Size: 184 * 217



Grid overlays Portland

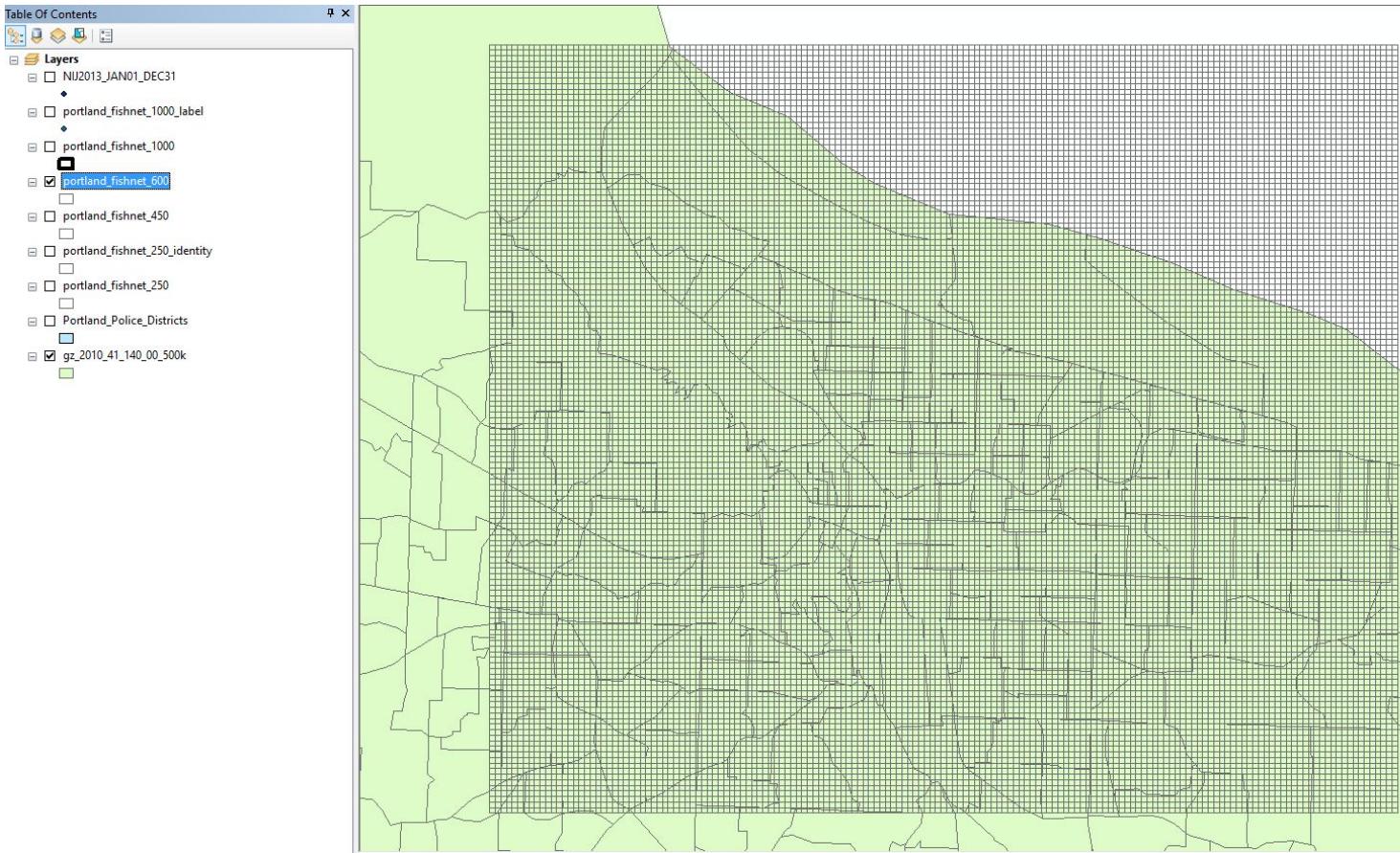
Cell Size: 600*600 sq.ft
Grid Size: 138 * 163



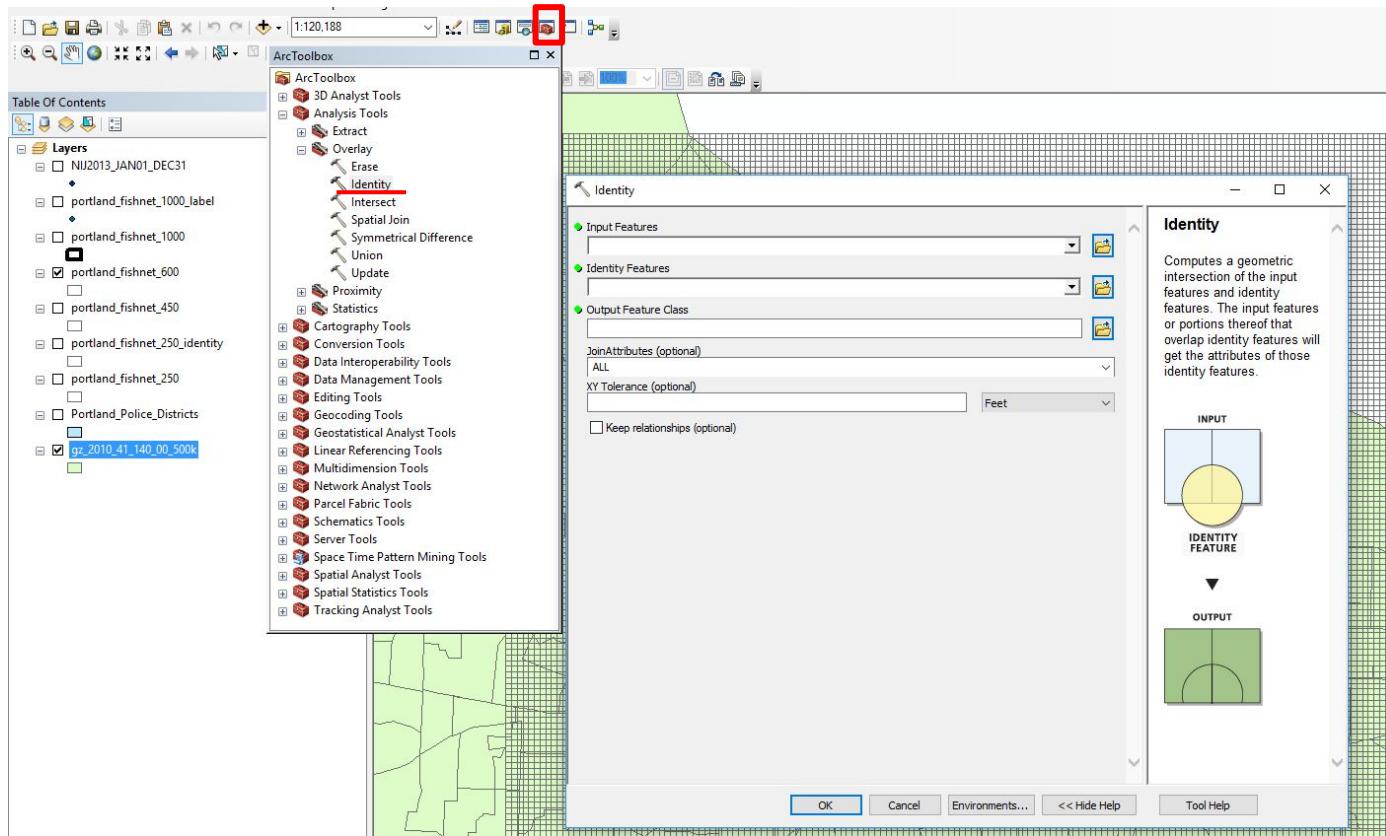
Overlay the grid on a polygon layer

For example, we want to overlay our fishnet layer on the polygon layer

“gz_2010_41_140_00_500k”

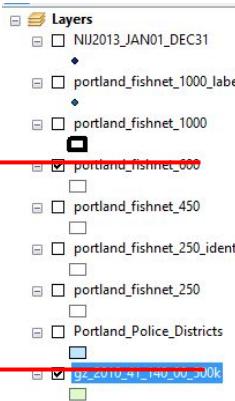


Open Identity tool in tool box



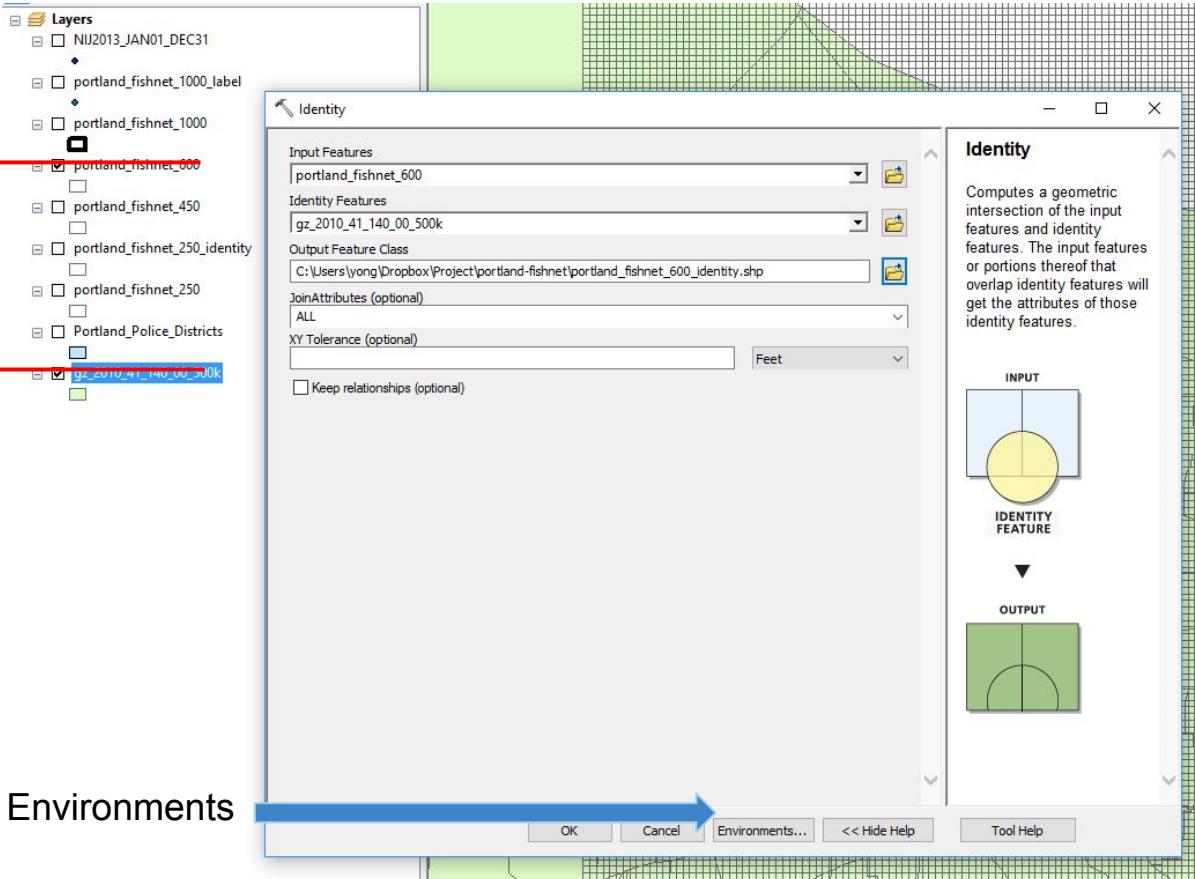
Fill in the form

Choose the fishnet layer as input features



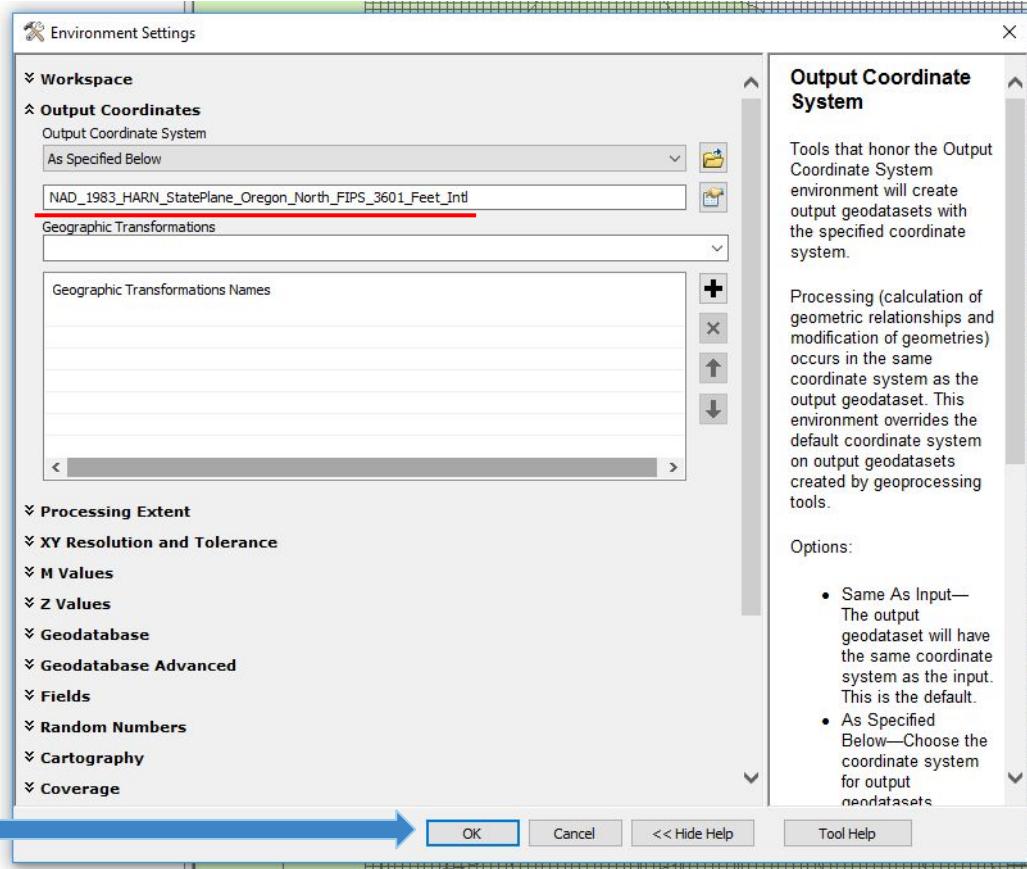
Choose the "gz_2010_41_140_00_500k" layer as identity features

Click Environments



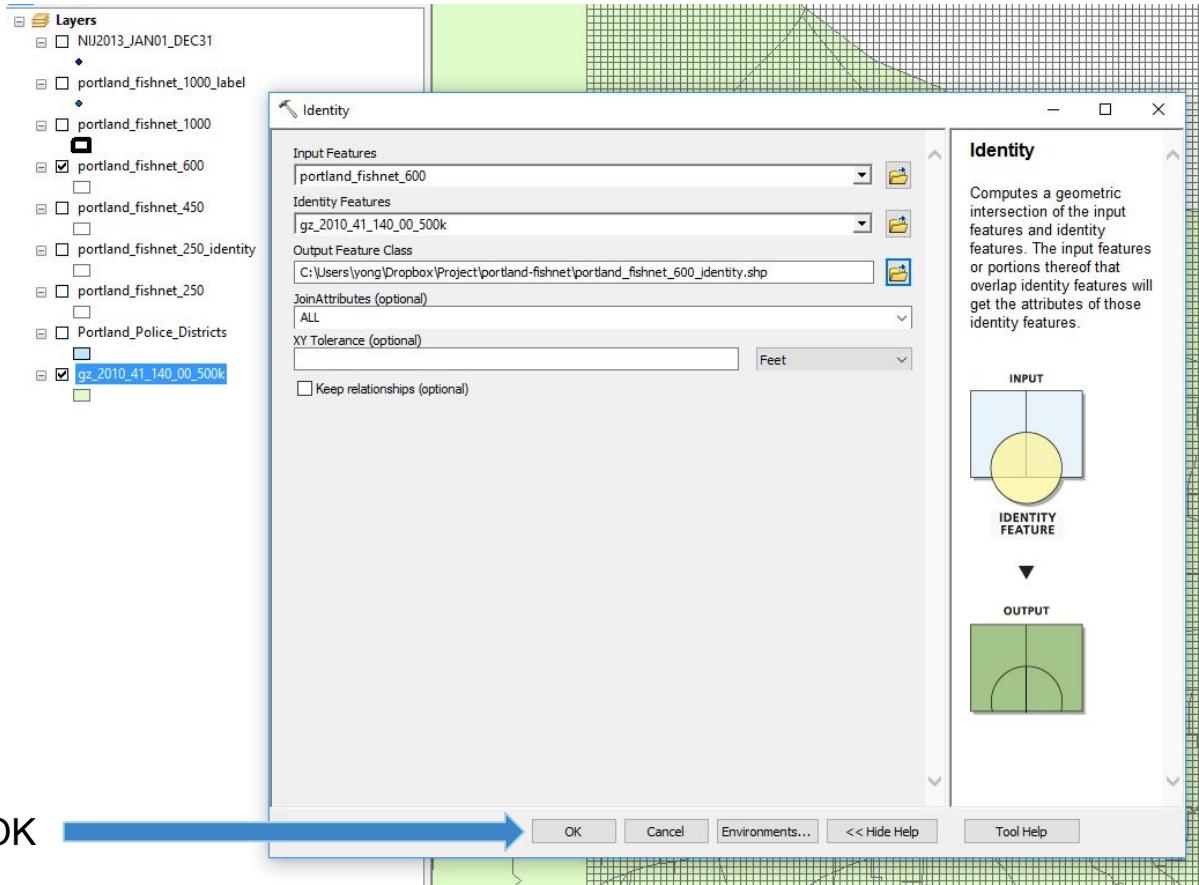
Choose the coordinate system

Choose the coordinate system of output layer, in this example, we choose NAD_1983_HARN



Click OK

Create your output layer



Click OK

Create your output layer



The image shows a GIS application window with a toolbar at the top and a 'Layers' panel on the left. The 'Layers' panel is expanded, showing a hierarchical list of data sources:

- NU2013_JAN01_DEC31
- portland_fishnet_1000_label
- portland_fishnet_600_identity** (selected)
- portland_fishnet_1000
- portland_fishnet_600
- portland_fishnet_450
- portland_fishnet_250_identity
- portland_fishnet_250
- Portland_Police_Districts
- gz_2010_41_140_00_500k

The main map area displays a city map of Portland, Oregon, with a large, uniform grid overlaid across the entire area. Several polygonal boundaries are visible, representing different administrative or geographical units. The 'Portland_Police_Districts' layer is shown as a blue patterned polygon, while other layers appear as solid black outlines.

Open the attribute table of the output layer

The screenshot illustrates the process of opening the attribute table for a specific output layer in ArcGIS. On the left, the 'Layers' panel displays several layers, with 'portland_fishnet_600_identity' selected and highlighted in blue. A context menu is open over this layer, with 'Open Attribute Table' highlighted in blue. To the right, the 'Table' window shows the attribute table for 'portland_fishnet_600_identity'. The table has 38 rows and 11 columns, with the first row being the header. The columns are: FID, Shape *, FID_portia, Id, FID_gz_201, GEO_ID, STATE, COUNTY, TRACT, NAME, LSAD, and CENSUSAREA. All values in the 'CENSUSAREA' column are 0.

FID	Shape *	FID_portia	Id	FID_gz_201	GEO_ID	STATE	COUNTY	TRACT	NAME	LSAD	CENSUSAREA
0	Polygon	13039	0	-1							0
1	Polygon	13201	0	-1							0
2	Polygon	13202	0	-1							0
3	Polygon	13363	0	-1							0
4	Polygon	13364	0	-1							0
5	Polygon	13365	0	-1							0
6	Polygon	13524	0	-1							0
7	Polygon	13525	0	-1							0
8	Polygon	13526	0	-1							0
9	Polygon	13527	0	-1							0
10	Polygon	13528	0	-1							0
11	Polygon	13686	0	-1							0
12	Polygon	13687	0	-1							0
13	Polygon	13688	0	-1							0
14	Polygon	13689	0	-1							0
15	Polygon	13690	0	-1							0
16	Polygon	13691	0	-1							0
17	Polygon	13848	0	-1							0
18	Polygon	13849	0	-1							0
19	Polygon	13850	0	-1							0
20	Polygon	13851	0	-1							0
21	Polygon	13852	0	-1							0
22	Polygon	13853	0	-1							0
23	Polygon	13854	0	-1							0
24	Polygon	14010	0	-1							0
25	Polygon	14011	0	-1							0
26	Polygon	14012	0	-1							0
27	Polygon	14013	0	-1							0
28	Polygon	14014	0	-1							0
29	Polygon	14015	0	-1							0
30	Polygon	14016	0	-1							0
31	Polygon	14017	0	-1							0
32	Polygon	14171	0	-1							0
33	Polygon	14172	0	-1							0
34	Polygon	14173	0	-1							0
35	Polygon	14174	0	-1							0
36	Polygon	14175	0	-1							0
37	Polygon	14176	0	-1							0
38	Polygon	14177	0	-1							0

Add a new field

The screenshot shows a GIS application window titled "Table". A context menu is open, with the "Add Field..." option highlighted. A red arrow points to the "Add Field..." button in the menu bar.

Table

portland_fishnet_600_identity

Find and Replace...
Select By Attributes...
Clear Selection
Switch Selection
Select All
Add Field...
Turn A Add Field
 Show Adds a new field to the table.
Arrange Tables
Restore Default Column Widths
Restore Default Field Order
Joins and Relates
Related Tables
Create Graph...
Add Table to Layout
Reload Cache
Print...
Reports
Export...
Appearance...

Z	Polygon	GEO_ID	STATE	COUNTY	TRACT	NAME	LSAD	CENSUSAREA
27	Polygon	14013	U	-1				0
28	Polygon	14014	0	-1				0
29	Polygon	14015	0	-1				0
30	Polygon	14016	0	-1				0
31	Polygon	14017	0	-1				0
32	Polygon	14171	0	-1				0
33	Polygon	14172	0	-1				0
34	Polygon	14173	0	-1				0
35	Polygon	14174	0	-1				0
36	Polygon	14175	0	-1				0
37	Polygon	14176	0	-1				0
38	Polygon	14177	0	-1				0

1 < > (0 out of 27292 Selected)
portland_fishnet_600_identity

Add a new field

Table

portland_fishnet_600_identity

FID	Shape *	FID_portia	Id	FID_gz_201	GEO_ID	STATE	COUNTY	TRACT	NAME	LSAD	CENSUSAREA
0	Polygon	13039	0	-1							0
1	Polygon	13201	0	-1							0
2	Polygon	13202	0	-1							0
3	Polygon	13363	0	-1							0
4	Polygon	13364	0	-1							0
5	Polygon	13365	0	-1							0
6	Polygon	13524	0	-1							0
7	Polygon	13525	0	-1							0
8	Polygon	13526	0	-1							0
9	Polygon	13527	0	-1							0
10	Polygon	13528	0	-1							0
11	Polygon	13686	0	-1							0
12	Polygon	13687	0	-1							0
13	Polygon	13688	0	-1							0
14	Polygon	13689	0	-1							0
15	Polygon	13690	0	-1							0
16	Polygon	13691	0	-1							0
17	Polygon	13848	0	-1							0
18	Polygon	13849	0	-1							0
19	Polygon	13850	0	-1							0
20	Polygon	13851	0	-1							0
21	Polygon	13852	0	-1							0
22	Polygon	13853	0	-1							0
23	Polygon	13854	0	-1							0
24	Polygon	14010	0	-1							0
26	Polygon	14012	0	-1							0
27	Polygon	14013	0	-1							0
28	Polygon	14014	0	-1							0
29	Polygon	14015	0	-1							0
30	Polygon	14016	0	-1							0
31	Polygon	14017	0	-1							0
32	Polygon	14171	0	-1							0
33	Polygon	14172	0	-1							0
34	Polygon	14173	0	-1							0
35	Polygon	14174	0	-1							0
36	Polygon	14175	0	-1							0
37	Polygon	14176	0	-1							0
38	Polygon	14177	0	-1							0

(0 out of 27292 Selected)

portland_fishnet_600_identity

Add Field

Name: AREA

Type: Double

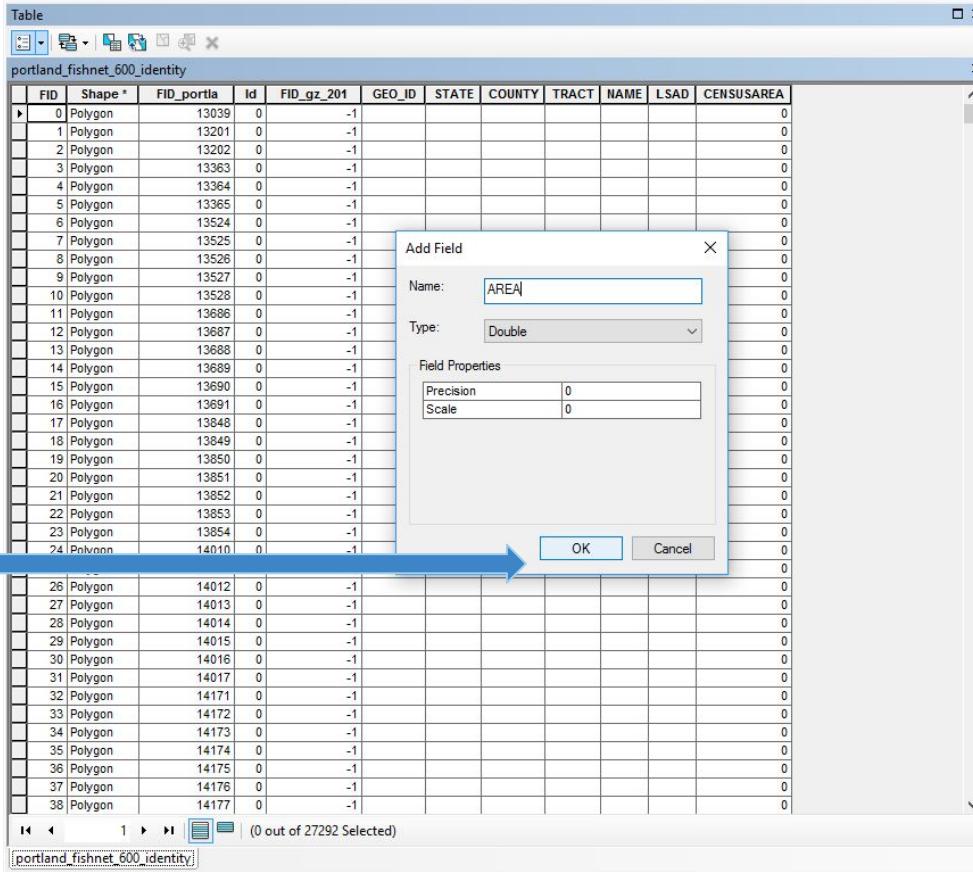
Field Properties

Precision: 0

Scale: 0

OK Cancel

Click OK



Calculate the area of each polygon

Screenshot of a Microsoft Excel table window titled "portland_fishnet_600_identity". The table contains 27,292 rows of data, mostly empty, with some populated fields like FID, Shape, and CENSUSAREA. A context menu is open over the last column (Area). The menu items include:

- Sort Ascending
- Sort Descending
- Advanced Sorting...
- Summarize...
- Σ Statistics...
- Field Calculator...
- Calculate Geometry...** (highlighted)
- Turn Field Off
- Freeze/Unfreeze
- Delete Field
- Properties...

A tooltip for "Calculate Geometry..." provides the following description:

Calculate Geometry
Populate or update the values of this field to be geometric values derived from the features that the table represents such as area, perimeter, length, etc. The dialog that appears lets you choose whether all the records will be calculated or just the selected records. This command is disabled if the table is not the attribute table of a feature class or shapefile.

FID	Shape *	FID_portia	Id	FID_gz_201	GEO_ID	STATE	COUNTY	TRACT	NAME	LSAD	CENSUSAREA	Area
0	Polygon	13039	0	-1							0	0
1	Polygon	13201	0	-1							0	0
2	Polygon	13202	0	-1							0	0
3	Polygon	13363	0	-1							0	0
4	Polygon	13364	0	-1							0	0
5	Polygon	13365	0	-1							0	0
6	Polygon	13524	0	-1							0	0
7	Polygon	13525	0	-1							0	0
8	Polygon	13526	0	-1							0	0
9	Polygon	13527	0	-1							0	0
10	Polygon	13528	0	-1							0	0
11	Polygon	13686	0	-1							0	0
12	Polygon	13687	0	-1							0	0
13	Polygon	13688	0	-1							0	0
14	Polygon	13689	0	-1							0	0
15	Polygon	13690	0	-1							0	0
16	Polygon	13691	0	-1							0	0
17	Polygon	13848	0	-1							0	0
18	Polygon	13849	0	-1							0	0
19	Polygon	13850	0	-1							0	0
20	Polygon	13851	0	-1							0	0
21	Polygon	13852	0	-1							0	0
22	Polygon	13853	0	-1							0	0
23	Polygon	13854	0	-1							0	0
24	Polygon	14010	0	-1							0	0
25	Polygon	14011	0	-1							0	0
26	Polygon	14012	0	-1							0	0
27	Polygon	14013	0	-1							0	0
28	Polygon	14014	0	-1							0	0
29	Polygon	14015	0	-1							0	0
30	Polygon	14016	0	-1							0	0
31	Polygon	14017	0	-1							0	0
32	Polygon	14171	0	-1							0	0
33	Polygon	14172	0	-1							0	0
34	Polygon	14173	0	-1							0	0
35	Polygon	14174	0	-1							0	0
36	Polygon	14175	0	-1							0	0
37	Polygon	14176	0	-1							0	0
38	Polygon	14177	0	-1							0	0

Calculate the area of each polygon

Click OK

Calculate Geometry

Property: Area

Coordinate System

Use coordinate system of the data source:
PCS: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl

Use coordinate system of the data frame:
PCS: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl

Units: Square Feet US [sq ft]

Calculate selected records only

OK Cancel

FID	Shape *	FID_portla	Id	FID_gz_201	GEO_ID	STATE	COUNTY	TRACT	NAME	LSAD	CENSUSAREA	AREA
0	Polygon	13039	0	-1							0	0
1	Polygon	13201	0	-1							0	0
2	Polygon	13202	0	-1							0	0
3	Polygon	13363	0	-1							0	0
4	Polygon	13364	0	-1							0	0
5	Polygon	13365	0	-1							0	0
6	Polygon	13524	0	-1							0	0
7	Polygon	13525	0								0	0
8	Polygon	13526	0								0	0
9	Polygon	13527	0								0	0
10	Polygon	13528	0								0	0
11	Polygon	13686	0								0	0
12	Polygon	13687	0								0	0
13	Polygon	13688	0								0	0
14	Polygon	13689	0								0	0
15	Polygon	13690	0								0	0
16	Polygon	13691	0								0	0
17	Polygon	13848	0								0	0
18	Polygon	13849	0								0	0
19	Polygon	13850	0								0	0
20	Polygon	13851	0								0	0
21	Polygon	13852	0								0	0
22	Polygon	13853	0								0	0
23	Polygon	13854	0								0	0
25	Polygon	14011	0								0	0
26	Polygon	14012	0	-1							0	0
27	Polygon	14013	0	-1							0	0
28	Polygon	14014	0	-1							0	0
29	Polygon	14015	0	-1							0	0
30	Polygon	14016	0	-1							0	0
31	Polygon	14017	0	-1							0	0
32	Polygon	14171	0	-1							0	0
33	Polygon	14172	0	-1							0	0
34	Polygon	14173	0	-1							0	0
35	Polygon	14174	0	-1							0	0
36	Polygon	14175	0	-1							0	0
37	Polygon	14176	0	-1							0	0
38	Polygon	14177	0	-1							0	0

(0 out of 27292 Selected)

portland_fishnet_600_identity

Calculate the area of each polygon

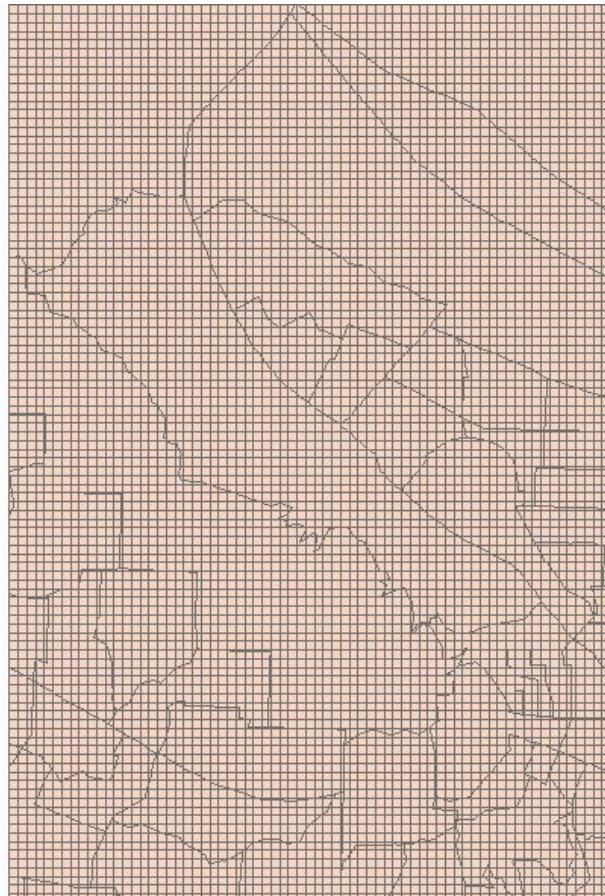
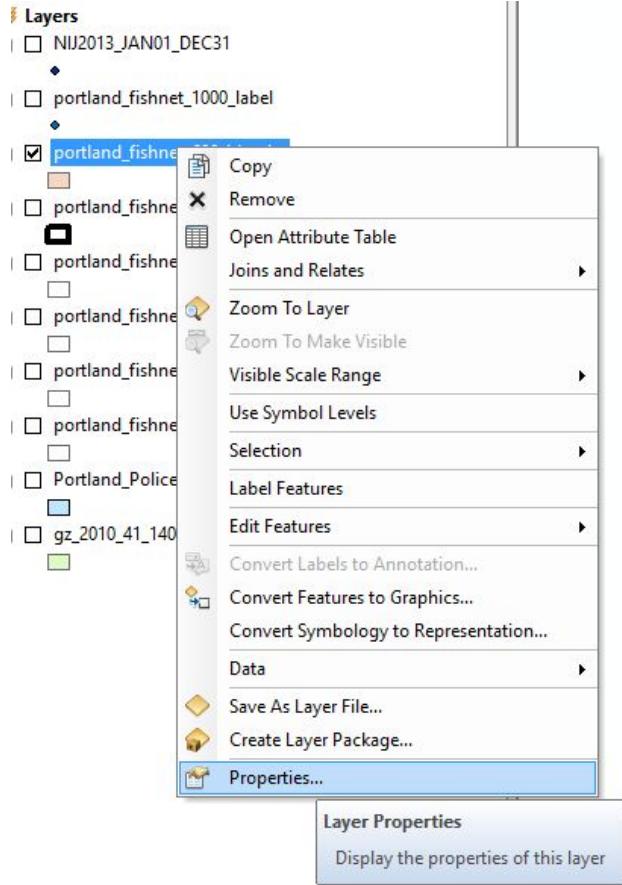
Table

portland_fishnet_500_identity

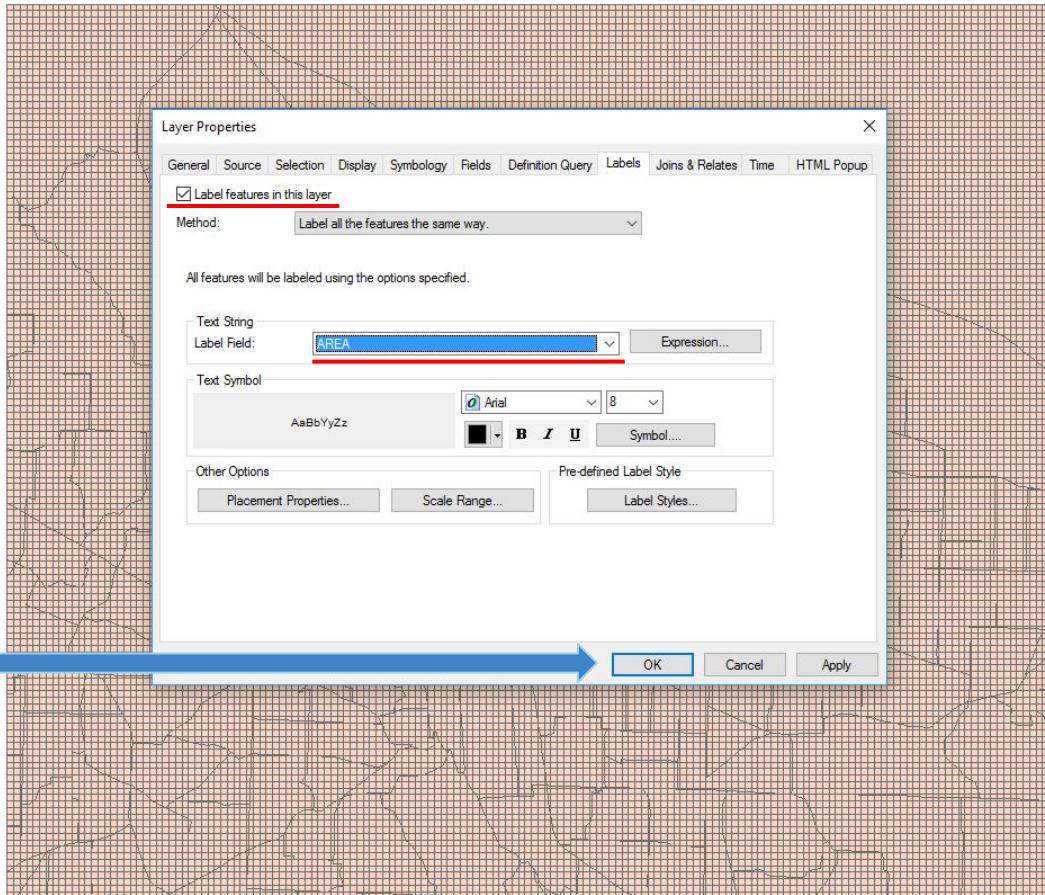
FID	Shape *	FID_portia	Id	FID_gz_201	GEO_ID	STATE	COUNTY	TRACT	NAME	LSAD	CENSUSAREA	AREA
0	Polygon	13039	0	-1							0	25319.
1	Polygon	13201	0	-1							0	66581.
2	Polygon	13202	0	-1							0	312230
3	Polygon	13363	0	-1							0	127411
4	Polygon	13364	0	-1							0	345683
5	Polygon	13365	0	-1							0	359998
6	Polygon	13524	0	-1							0	6112.1
7	Polygon	13525	0	-1							0	201696
8	Polygon	13526	0	-1							0	359568
9	Polygon	13527	0	-1							0	359998
10	Polygon	13528	0	-1							0	359998
11	Polygon	13686	0	-1							0	31362.
12	Polygon	13687	0	-1							0	270298
13	Polygon	13688	0	-1							0	359998
14	Polygon	13689	0	-1							0	359998
15	Polygon	13690	0	-1							0	359998
16	Polygon	13691	0	-1							0	359998
17	Polygon	13648	0	-1							0	76179.
18	Polygon	13849	0	-1							0	319763
19	Polygon	13850	0	-1							0	359998
20	Polygon	13851	0	-1							0	359998
21	Polygon	13852	0	-1							0	359998
22	Polygon	13853	0	-1							0	359998
23	Polygon	13854	0	-1							0	359998
24	Polygon	14010	0	-1							0	140564
25	Polygon	14011	0	-1							0	349661
26	Polygon	14012	0	-1							0	359998
27	Polygon	14013	0	-1							0	359998
28	Polygon	14014	0	-1							0	359998
29	Polygon	14015	0	-1							0	359998
30	Polygon	14016	0	-1							0	359998
31	Polygon	14017	0	-1							0	359998
32	Polygon	14171	0	-1							0	34956.
33	Polygon	14172	0	-1							0	221166
34	Polygon	14173	0	-1							0	359990
35	Polygon	14174	0	-1							0	359998
36	Polygon	14175	0	-1							0	359998
37	Polygon	14176	0	-1							0	359998
38	Polygon	14177	0	-1							0	359998

(0 out of 2729 Selected)

Show it in map



Show it in map



Zoom in and check it

Cell b is split into two part (b1 and b2).

Area of b1 =103088.3

Area of b2 =256910.2

Area of cell b =
103088.3+256910.2
=359998.5

The area of a complete cell (cell a) is 359998.5

So , well done.

359998.560014	359998.559998	116610.167126	243388.392888	359998.559998
359998.559999	Cell a	Cell b1	Cell b2	359998.559982
359998.559982		103088.361741	256910.198257	
359998.560014	359998.559998	91001.133331	268997.426682	359998.559998
282167.703783	293091.451125	66937.542917	77134.697972	110422.190123

Thank You!

