



A Process: Preparing GIS (LiDAR) Data for the Engineers

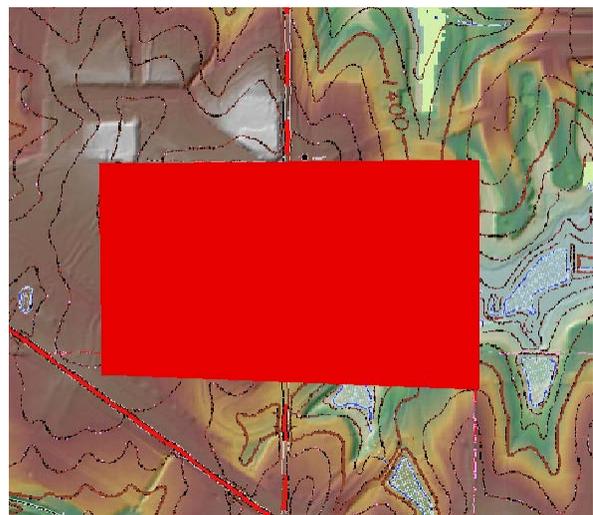
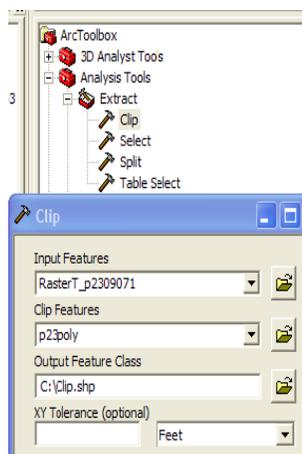
One of my responsibilities involves preparing geospatial data for other users in my immediate department. We have a number of AutoCAD Engineers who, on occasion, have need to access various forms of GIS data, which sometimes creates issues in the conversion process. Since LiDAR is becoming a more common dataset in use, I thought I would share the conversion process I worked out recently for my colleague, Mr. Mike Holle, who is an Engineering Technician II with Lancaster County Engineering Department. Should any of my readers have a more elegant process, please feel free to contact Mike or myself.

The process is really quite simple and we worked it out over the course of one day. It involves accessing our Lancaster County LiDAR raster data, clipping a portion of that, dropping that out to a point file and adding x-y coordinates to the elevations, then exporting a dbf file of those attributes for use into Mikes Carlson Civil Suite software. Mike would open the dbf file in Excel and save it as a .txt file and import that to his 'surface' program in a similar manner as if he was importing field surveyed topographic data.

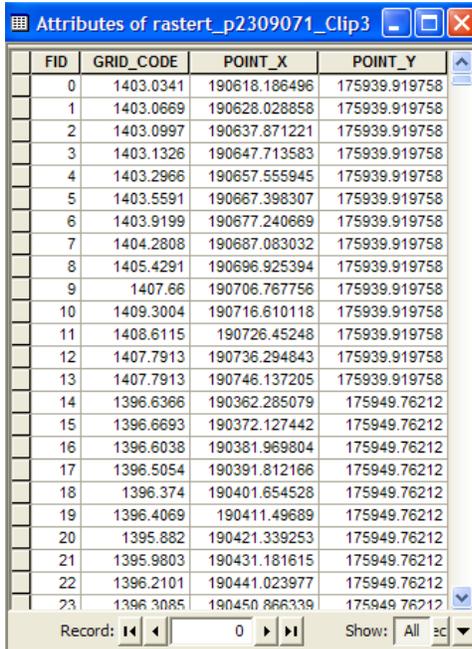
Initially, Mike tried to access the original data files in x,y,z format, but they were so massive his computer would freeze in various attempts. It was much easier for us to display the data in a GIS, determine what portion of the data he needed, clipping that data, then going through the process steps outlined below.

To 'clip' or extract an area from the LiDAR, a previously created polygon of the region desired is defined and both the LiDAR dataset and polygon area are opened in ArcMap. In this figure, the LiDAR is shown with the clip polygon in red.

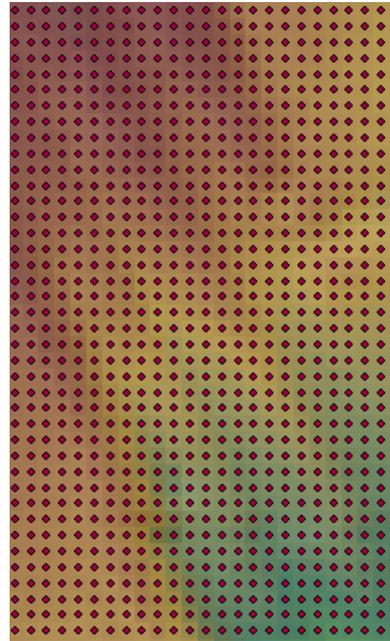
ArcToolBox → Analysis Tools → Extract → Clip



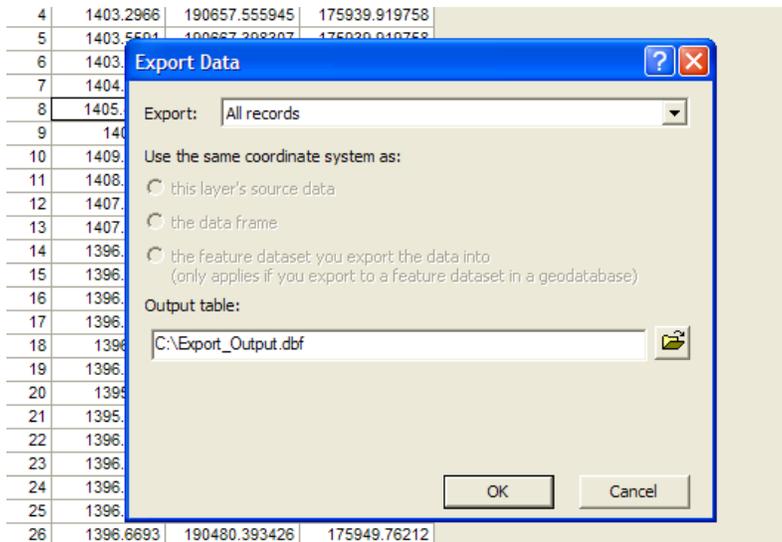
The result of this is a shapefile of points with an elevation (Grid_Code), x, and y coordinate:



FID	GRID_CODE	POINT_X	POINT_Y
0	1403.0341	190618.186496	175939.919758
1	1403.0669	190628.028858	175939.919758
2	1403.0997	190637.871221	175939.919758
3	1403.1326	190647.713583	175939.919758
4	1403.2966	190657.555945	175939.919758
5	1403.5591	190667.398307	175939.919758
6	1403.9199	190677.240669	175939.919758
7	1404.2808	190687.083032	175939.919758
8	1405.4291	190696.925394	175939.919758
9	1407.66	190706.767756	175939.919758
10	1409.3004	190716.610118	175939.919758
11	1408.6115	190726.45248	175939.919758
12	1407.7913	190736.294843	175939.919758
13	1407.7913	190746.137205	175939.919758
14	1396.6366	190362.285079	175949.76212
15	1396.6693	190372.127442	175949.76212
16	1396.6038	190381.969804	175949.76212
17	1396.5054	190391.812166	175949.76212
18	1396.374	190401.654528	175949.76212
19	1396.4069	190411.496889	175949.76212
20	1395.882	190421.339253	175949.76212
21	1395.9803	190431.181615	175949.76212
22	1396.2101	190441.023977	175949.76212
23	1396.3085	190450.866339	175949.76212



Export to a dbf file and pass it over to Mike:



Export Data

Export: All records

Use the same coordinate system as:

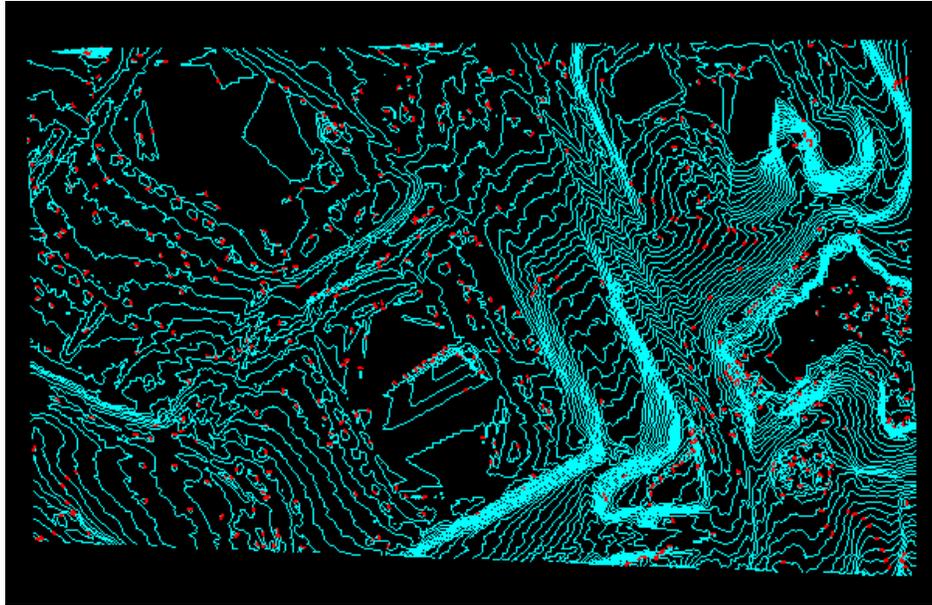
- this layer's source data
- the data frame
- the feature dataset you export the data into
(only applies if you export to a feature dataset in a geodatabase)

Output table:

C:\Export_Output.dbf

OK Cancel

Mike will open the dbf file in Excel and save it in txt format, then add it to his Carlson software and surface program:



One of the benefits of GIS is that it exposes one too many other people who work in tangent fields that are doing similar work. I have had the fortunate opportunity to work with a wide variety of professions ranging from emergency management personnel, police and fire department officers, to landuse planners, surveyors, engineers, and geodesists, geographers, geologists as well as a wide variety of other individuals interested in geospatial data. There are software changes and there is always some new conversion or data challenges that lie ahead. GIS is truly a dynamic field!

That said, the longer I work in the GIS field, the more ways I find to do the same thing. If anyone can suggest a better way, please contact us. My thanks to Mike for working through the process with me and providing excellent communication and coordination skills!

Please address questions or suggestions:

Scott Robinson: srobinson@lancaster.ne.us

Mike Holle: mholle@lancaster.ne.us

June 2010