Moving Valmeyer

You are an analyst working in the assessor's office of Monroe County, Illinois. A town in your county recently took the nearly unprecedented step of moving the entire town from one location to another in order to mitigate its risk from flood in the Mississippi River floodplain. This town, named Valmeyer, determined that due to the repeated losses of life and property from floods, it was time to move to higher ground.

Your job is to manage and maintain a GIS layer of parcel information, which describes property boundaries and locations, and which other staff in the assessor's office use in property appraisals, for the county. Because the town moved, this parcel information is now out of date and needs to be updated. In addition, you'll be adding some information to the parcels to help the state department of emergency management in its analysis of the town's move so it can better handle future disasters.

You have an old and a new parcels layer. The new parcels layer needs to be updated with current data so it can be compared to the old data. The data you'll need to attach as new attributes to the parcels layers includes:

- The mean, minimum, and maximum elevation of each parcel
- The mean, minimum, and maximum slope, in degrees, of each parcel

You'll also need to add the mean distance to the location of the old town, in meters – this will help the office of emergency management understand what is involved in these types of town relocations.

Ultimately, you usually make the county's data available as a web map, so that the public can explore the data in an accessible format. You will do that with these datasets as well.

Digitize lines for roads in new valmeyer

The county also needs a new roads layer covering the new area of Valmeyer, Indiana, since its old one became outdated when all the homes moved. The official TIGER road lines from the US Census Bureau won't be updated for a while, and the county needs a rough sense of where the roads are for routing emergency vehicles. The road lines don't need to be exact, but need to go to the approximate location.

Digitize a new roads layer for the county by drawing lines between all of the parcels, where there are gaps. A screenshot is below, showing the roads in black. You don't need to match it exactly – just digitize the lines between the parcels, in a relatively quick manner. While not required, it'd be a good idea to make your roads connect to each other so that transportation networks can be built. This may be difficult with the parcel layers turned on since the digitizing tools will snap to the parcels too, so you may be interested in using the classic snapping method.

As of right now, this layer doesn't need any attributes added to it – once you create it, it will be passed off to someone with more local knowledge who will add in names and address ranges to make it a more complete roads layer.
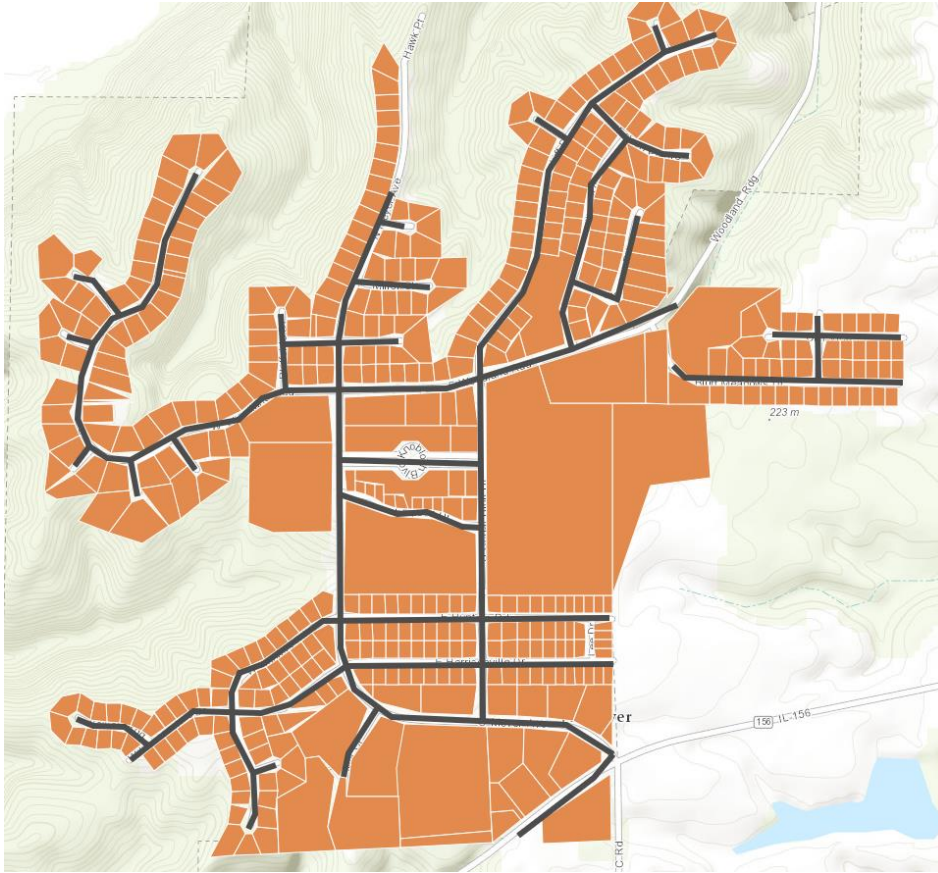
What we are providing you with

We are providing you a zipped geodatabase with three items inside of it. A feature class of parcels from old Valmeyer with the elevation and slope attributes attached already, a feature class of the parcels in the new location of Valmeyer, without the appropriate attributes, and finally, a raster digital elevation model covering the area. You will need to derive any other layers necessary for this project.

What you will need to produce

You will need to produce a *publically available* web map (**not** a map package like last course, but a map viewable in the browser – see lesson 8) on ArcGIS Online with three layers in addition to whatever basemap you choose:

1. The old parcel layer, symbolized with a single color
2. The new parcel layer, symbolized by mean elevation of each parcel
3. A new roads layer in the web map that you digitized, based on the gaps in the parcels data

The new parcels layer will need to have the new attributes attached. You need to add the attributes, before you upload for mean, minimum, and maximum elevation and mean, minimum, and maximum slope (in degrees) to each parcel layer. The fields will come out of zonal stats named MIN, MAX, and MEAN. Name them appropriately so that the viewer knows what the fields are – do not use aliases to rename them because those won't display in ArcGIS Online – instead use ArcCatalog or some other method to rename the fields. Name them min_elev, max_elev, and mean_elev for the fields representing the minimum, maximum, and mean elevation (respectively), and min_slope, max_slope,

and mean_slope for the slope fields. These names are short since you will use shapefiles (13 character field name limit) to upload to ArcGIS Online.

The parcels layer for the new town should also have an additional attribute describing the mean distance from the old town, in meters. When generating your distance raster, use a maximum distance of 5000, an output cell size of 10m, and set the "Snap Raster" and "Extent" environment variables to the digital elevation model so the cells align and we all get the same results. This environment setting is under the Processing Extent section. You can use zonal statistics again to attach the mean distance. Name the field "move_dist".

The web map should also label "Old Valmeyer" and "New Valmeyer" using map notes (see screenshot). Positioning doesn't matter in this case, and you won't be evaluated on how nice it looks, but do your best.
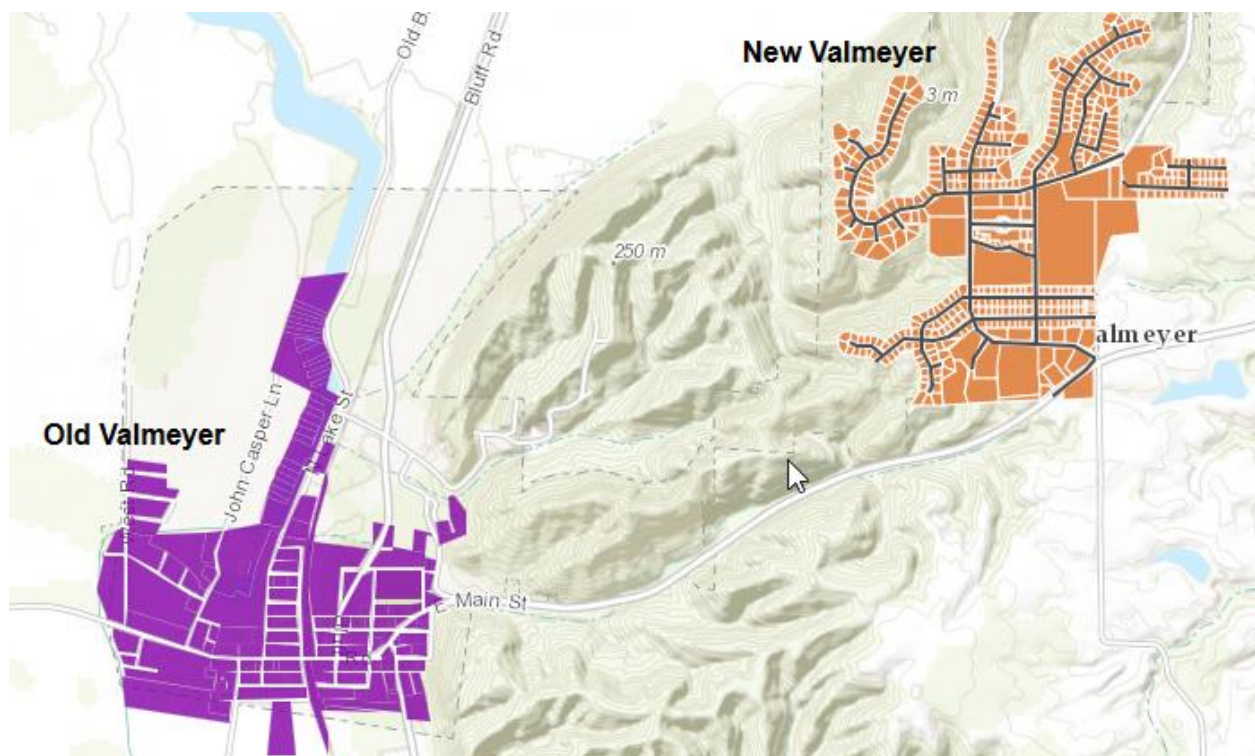
You will also need to take a quiz, following this assignment, where you will be asked for specific values from your generated attributes to validate your results.

Some tips to keep in mind for trickier moments

The digitizing we're doing isn't too fancy or too hard, so don't overthink it. In this case, it's not important that you get the digitizing right – just that you can do it at a basic level. For the road intersections, you will probably want to use Classic Snapping so that you can snap only to other roads, but not to the parcels (since the parcels are so close together). An alternative is to set the snapping distance to something very small using the options on the snapping toolbar.

When running the zonal statistics calculations, it will keep your data cleaner if you choose the MIN_MAX_MEAN Statistics Type.

To reiterate it, when generating your distance raster, use a maximum distance of 5000, an output cell size of 10m, and set the "Snap Raster" and "Extent" environment variables to the digital elevation model so the cells align (and we all get the same results). This environment setting is under the Processing Extent section. If you're having trouble with environment variables, review that lecture in the first course.

Make sure to make your webmap public. If you're using an account from your organization, you may have trouble doing this because you may not have permissions to make public maps – try creating a personal account and making your map inside of it instead. You should then be able to share it publicly.

Topics you might want to review

Spatial Analyst tools

Zonal Statistics

Digitizing

Joins and relates

ArcGIS Online

Environment Variables (course 1)