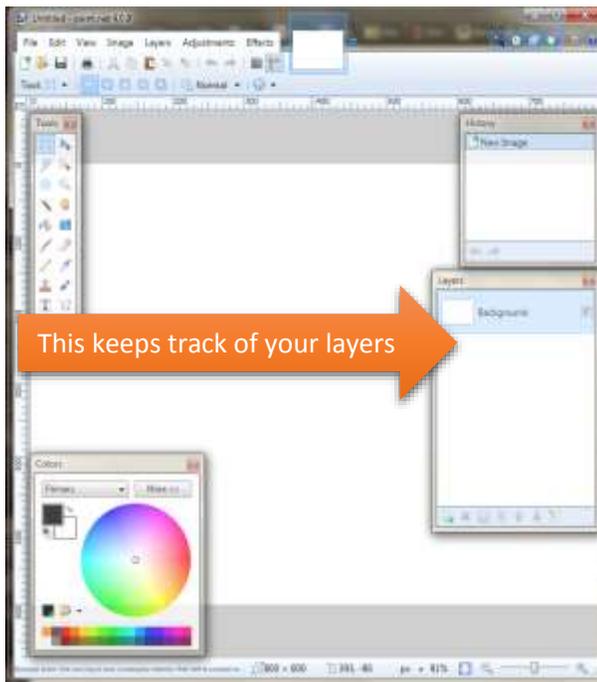
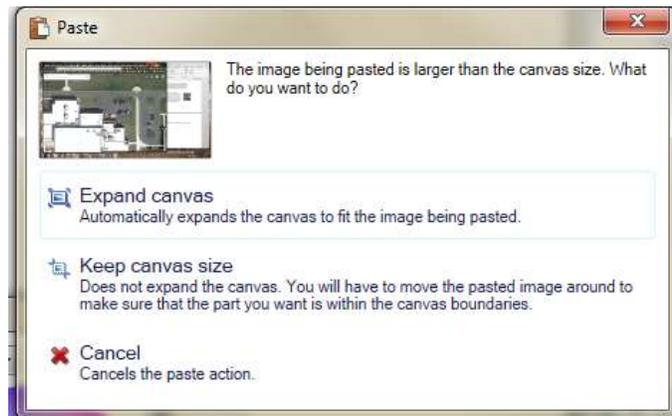


## Making adjustable maps using paint.net

Paint.net is photo manipulation shareware (free software, donations encouraged) similar to Adobe Photoshop. Layering is key feature that allows easy creation of adjustable maps. Layers are similar to good, old-fashioned transparencies. You choose the layer you wish to manipulate, and draw, paint, cut, paste, or otherwise only that layer. By selecting the opacity (how clear or not) the layer is, you can really replicate the transparency experience.

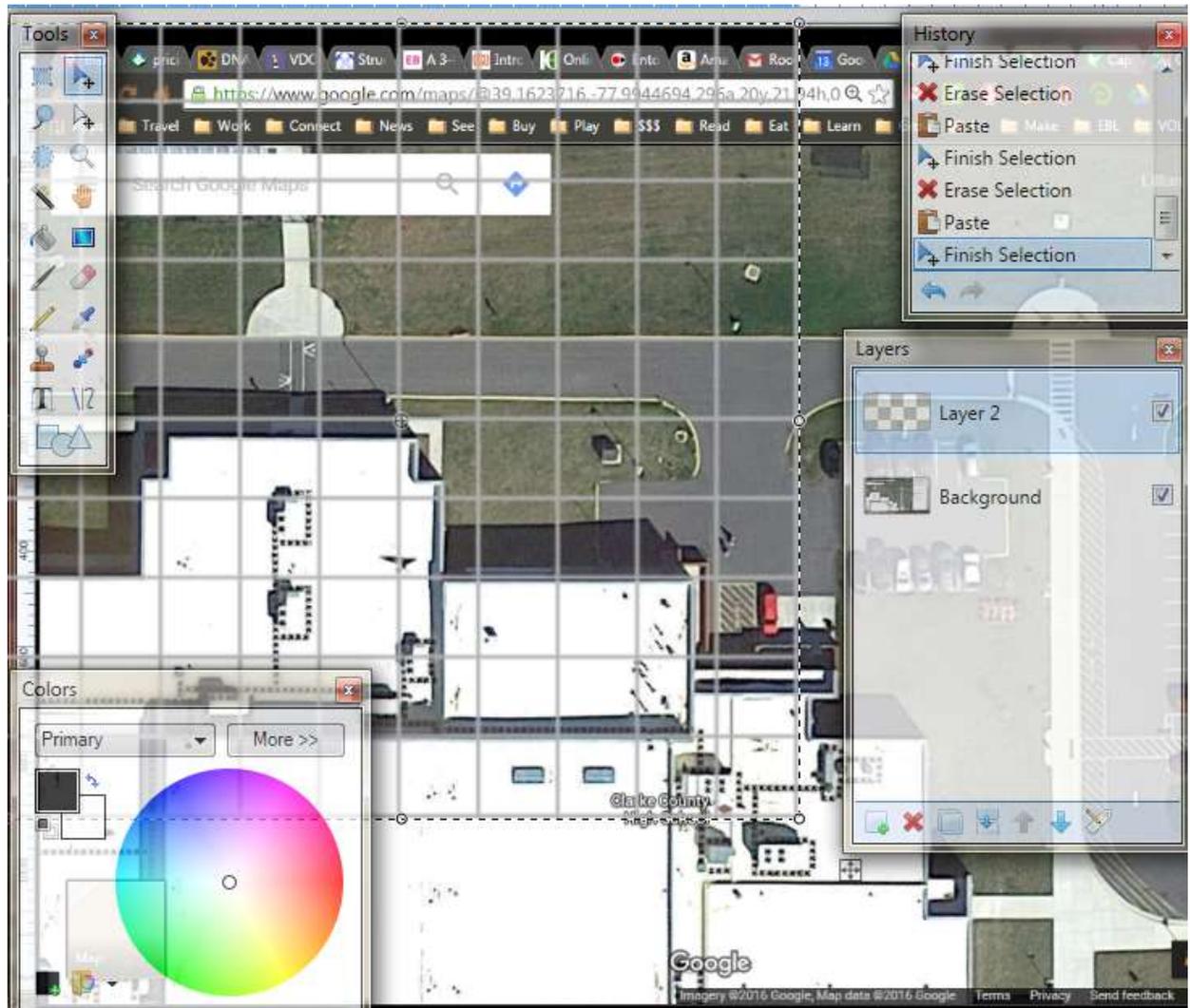
1. Download, install, and open [Paint.net](http://www.getpaint.net/index.html) <http://www.getpaint.net/index.html> (if you have Photoshop, use that, though the details will be a bit different)
2. Open [Google Maps](#) and type in the desired address in the “Search Google Maps” box. When your school appears, click on the tiny satellite image with the word “Earth” in the lower lefthand corner of the map. The map will change to give you an aerial image of the area. Adjust the centering and zoom until you have the part you wish to map as clear as possible. (for help using Google maps, check out their [help center](#))
3. Take a screenshot of the selection using the “PrtScn” key on the keyboard and paste it into Paint.net. When prompted, expand the canvas.



This keeps track of your layers

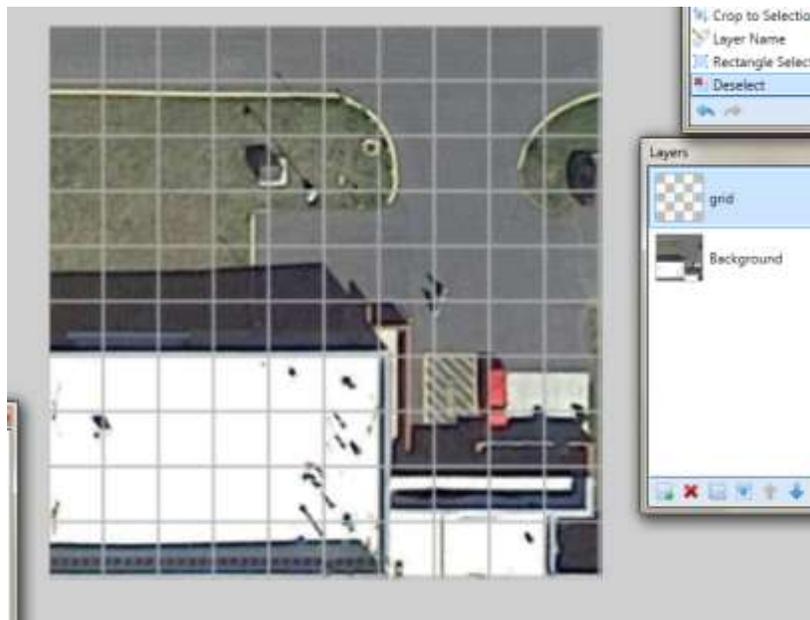
4. Create a new layer by clicking the small square with a green plus in the “layers” toolbox. (You can also click on Layers in the menu bar, and select “Add New Layer” in the dropdown menu”
5. Double click the new layer to open a “Layer Properties” box, and change the layer name to “Grid”

6. With the Grid layer selected (just click on it in the Layers toolbox, it should be light blue), copy and paste the attached grid.png file (png files allow transparent spaces, so the grid can overlay the aerial image)
7. You should have something that looks like this (although your history won't have as much in it)



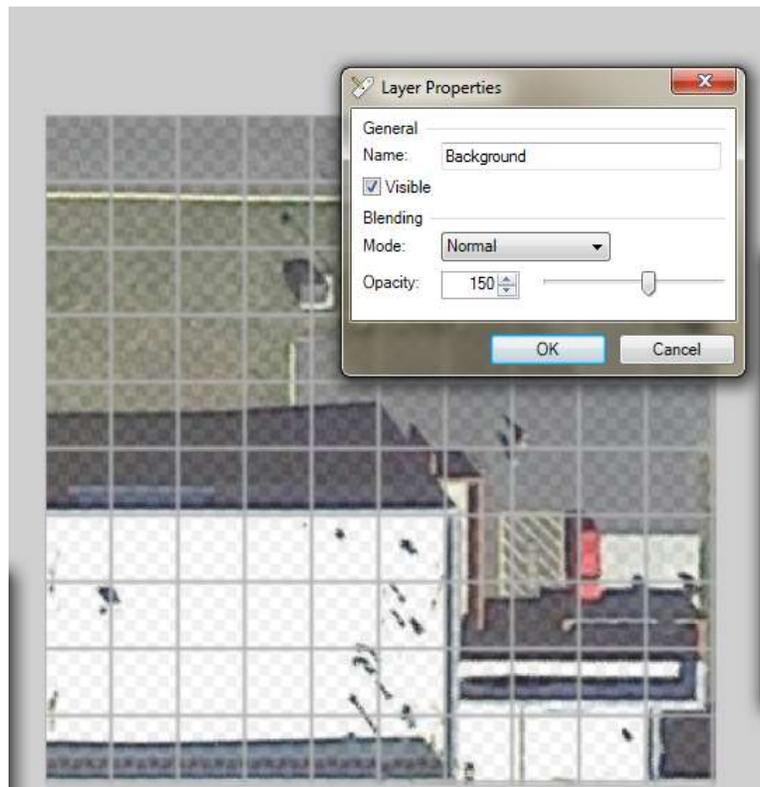
8. The moving dotted line around the grid means that you can move it to your liking. Slide it around to capture the part of the image you wish to map. To change the size, hover the cursor over a corner and a two-ended diagonal arrow will appear. **IMPORTANT:** hold the shift key while clicking and dragging to change the size. Holding the shift key keeps it a square, otherwise it will stretch into rectangles. (TIP: Pay attention to where the grid lines fall on the image. This way you can control the complexity of the fraction/decimal component of the map).

9. When you are pleased with the overlay of the grid and aerial image, click the “crop” icon in the menu bar (Looks like this, , and is next to the tiny clipboard). This should fit your entire image down to a square the size of the 10x10 grid, like so:



10. Double click on the “background” layer to open Layer Properties, and adjust the opacity down to somewhere around 150. You should still be able to easily see the outline of the structures you wish to map, but a black line over top would be distinct.

11. Create another layer, and name this one “lines”. (You can adjust which layer is on top of the others by selecting one in the layer toolbox and using the blue arrows on the bottom to move it up or down the list.)



12. Click the  icon in the “Tools” toolbar. This draws straight or curvy lines.

13. Above the image, below the crop button, a “brush width” option will appear. I find 2 to be a good setting.

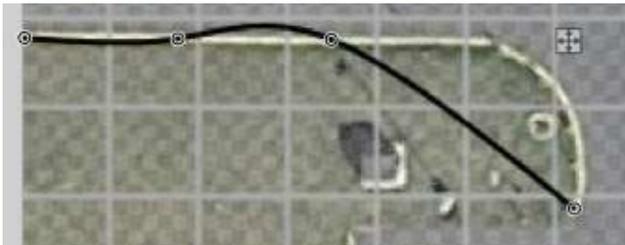


14. **Straight lines:** Choose a straight edge to outline. Make SURE that the “Lines” layer is highlighted! Click to start the line, hold the mouse down and move the line to the end point. This tool makes a line segment and will not “draw” as you move the mouse. (To force lines to be horizontal or vertical, press and hold the Shift key BEFORE releasing the mouse and ending the line.)



The line can be moved by clicking and holding the box with 4 arrows. Drag to a new position.

15. **Curved lines:** Each line will have 4 dots on it. The center two dots can be moved to accommodate curves, while the end dots remain the endpoint for the line. For example, in the above image, I can stretch the end dot into the curve, then adjust the middle dots to follow. These images show a step-by-step progression.



I moved my end dot to the place I want my line to end.

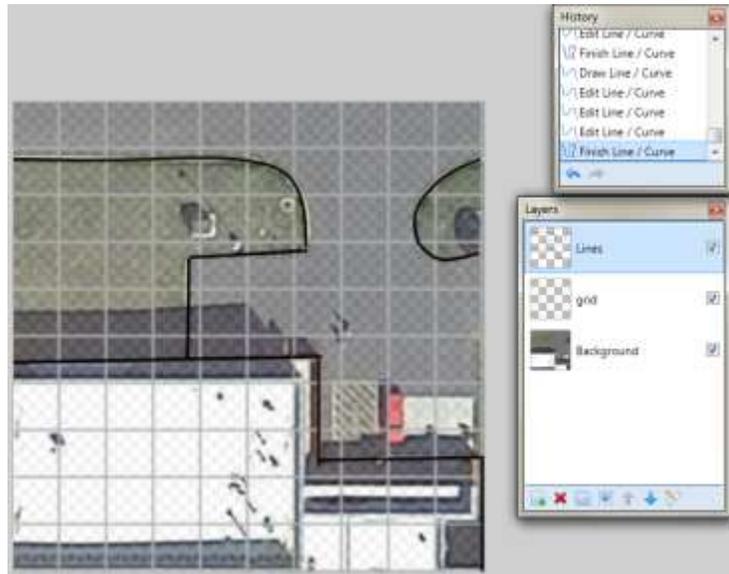


I moved the second to last dot along the curve. The rest of the line is starting to follow, I'll use the second dot to fine tune.



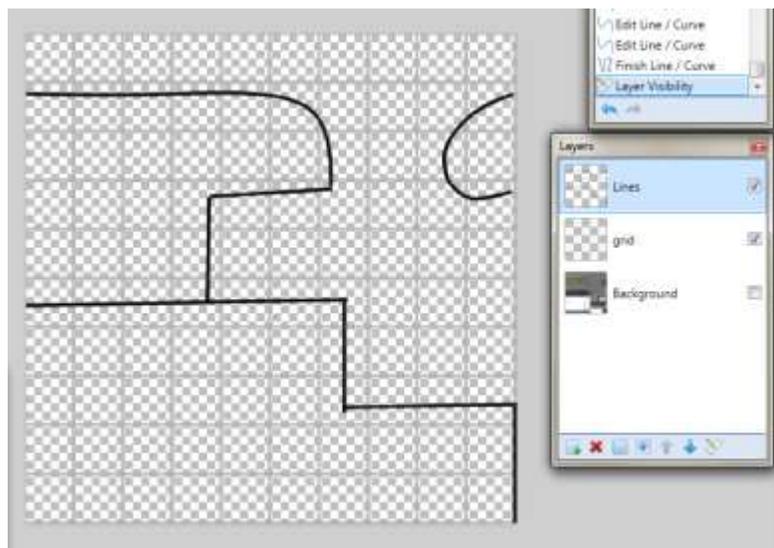
My line is as close as I need it to be!

16. Continue tracing the outlines you wish to display in your map. As you gain comfort, explore other tools. If you need to undo something, click backwards in your history toolbox to the last place you were pleased. (Note, watch out for shadows, they can be tricky! If necessary, go back to your background layer and increase the opacity to check for edges. Just be sure to click back on your "Lines" layer for drawing!!!) When you are finished, your drawing should look something like this:

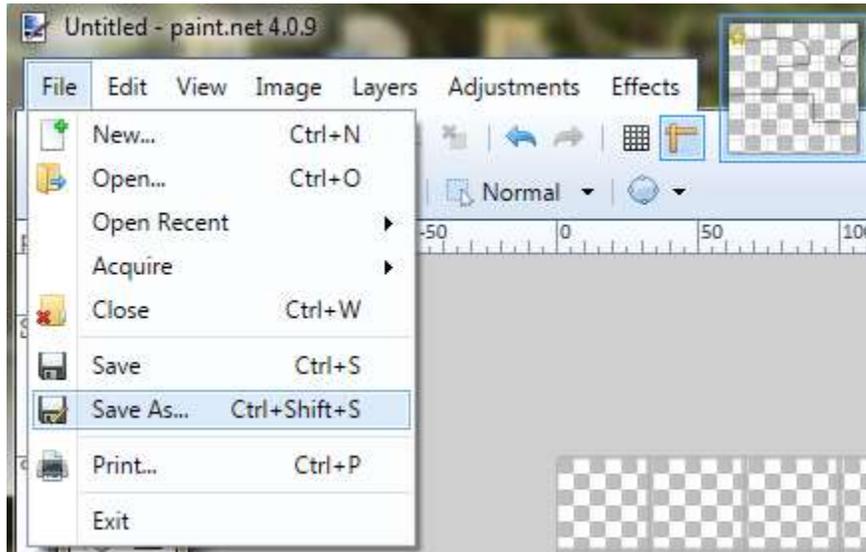


17. If you have not yet done so, **save this file!!!** Save it as a .pdn file (this is the default). .pdn is the paint file and will preserve your layers for future adjustment.

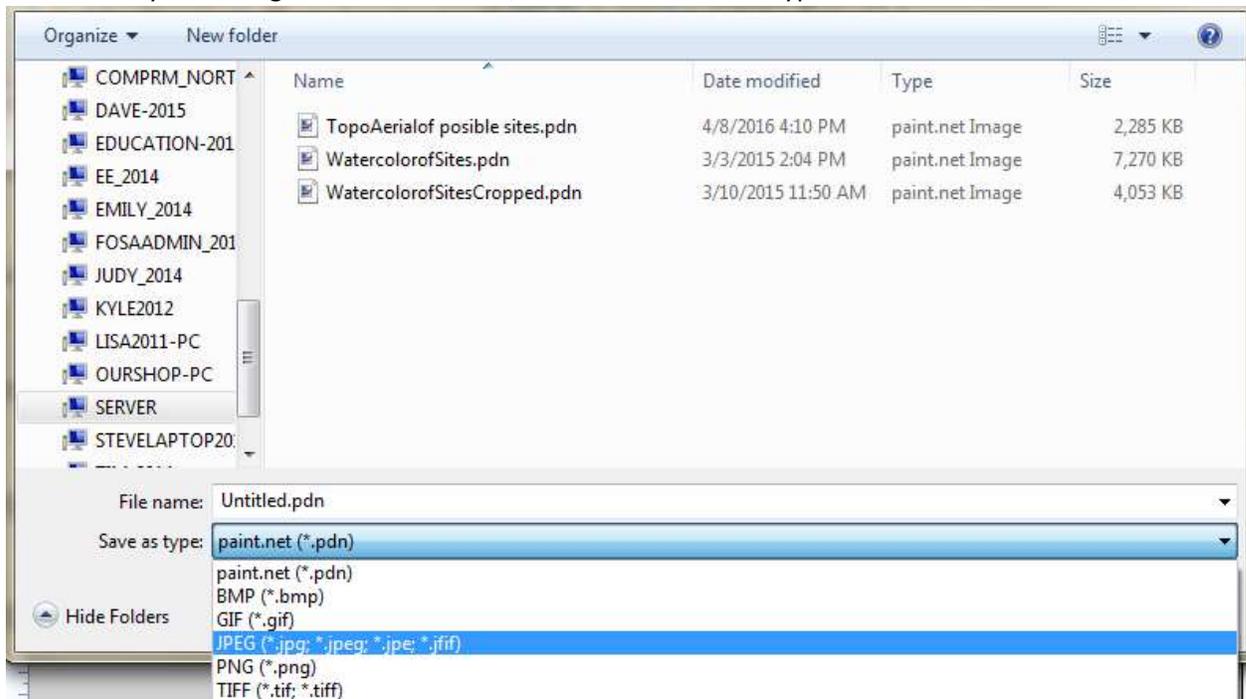
18. Any layer can be made invisible by unchecking the little box next to it. Uncheck the "background" layer to see your map.



19. If you are pleased with your final result, go up to the menu bar, click “file” and select “Save As” from the drop-down menu.



20. Choose your saving location and name, then beside “save as type” choose JPEG



21. It will check parameters (say OK) and ask if you want to flatten the images (choose to flatten)
22. You now have a map to insert into your datasheet!!!
23. If you wish to have an aerial with the grid to insert, open the saved pdn paint file, “hide” the lines layer and make the “background” layer visible. Then just follow steps 18-20!

# Part II inserting into the datasheet.

(These directions are far less descriptive, I'm assuming familiarity with Office products. If you need further assistance, please contact us for help!)

1. Open the attached SurfacesData.pub (Microsoft Publisher) file. If you do not have publisher installed, let us know and we can send you a Word or Powerpoint document.
2. Click on the existing map and delete it.
3. Insert your map either by selecting the "insert" tab, clicking on the "pictures" icon, and selecting your image from the save folder, OR by selecting and copying the image from the paint file.
4. When your image has been inserted, adjust the size to suit your needs.
5. Under the "Picture Tools – Format" tab, select "border" to create a border around your map.
6. **IMPORTANT!** Be sure to adjust your north arrow to match your map! To do so, click on the compass rose in the key. A dot will appear at each corner and one on a little tail above the image. When you hover over that dot, a circular arrow will appear. Click and hold, dragging around the image to adjust the rotation.