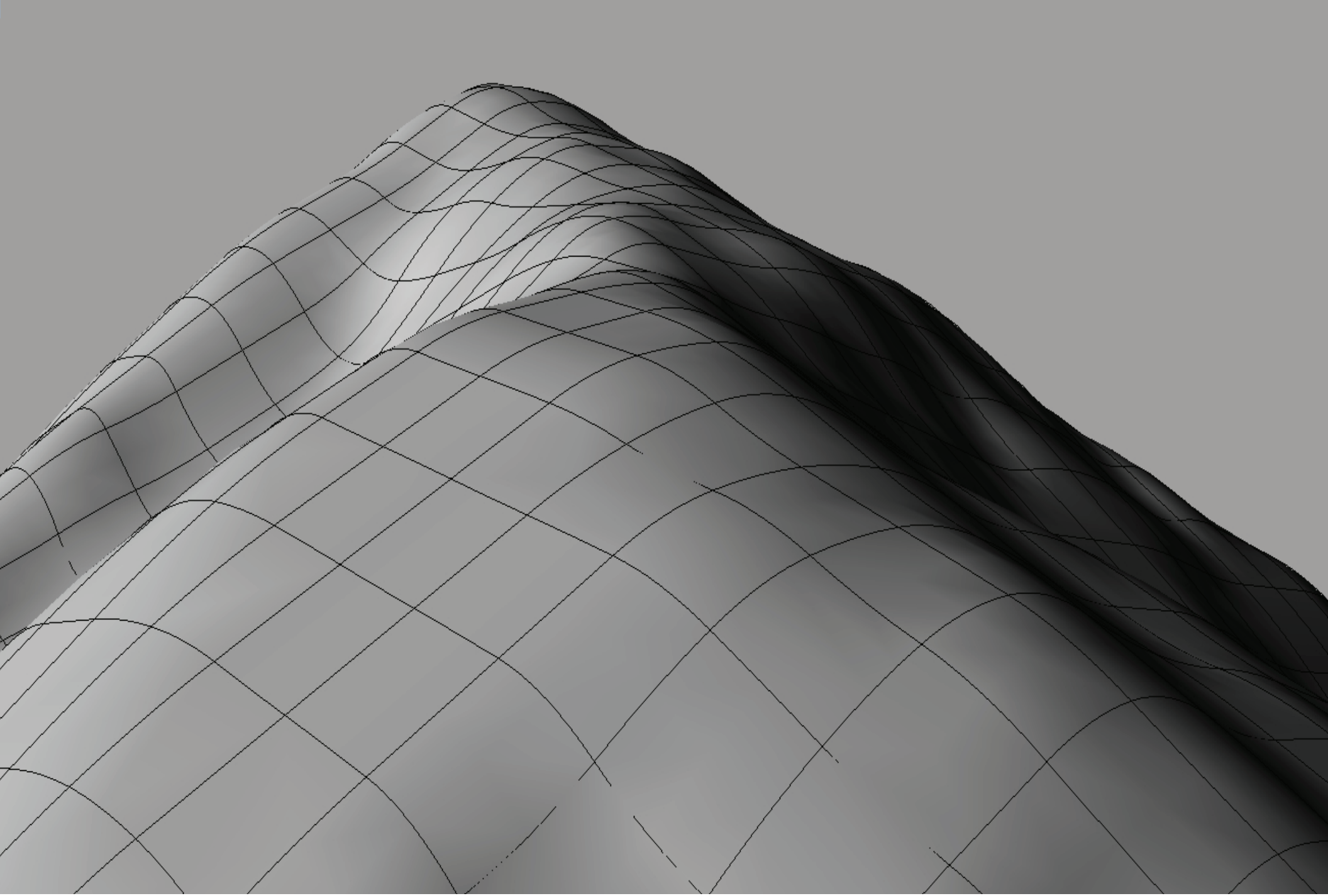


Terrain Modeling for Rhino 4.0

Join 

Move 

Copy 

Trim 

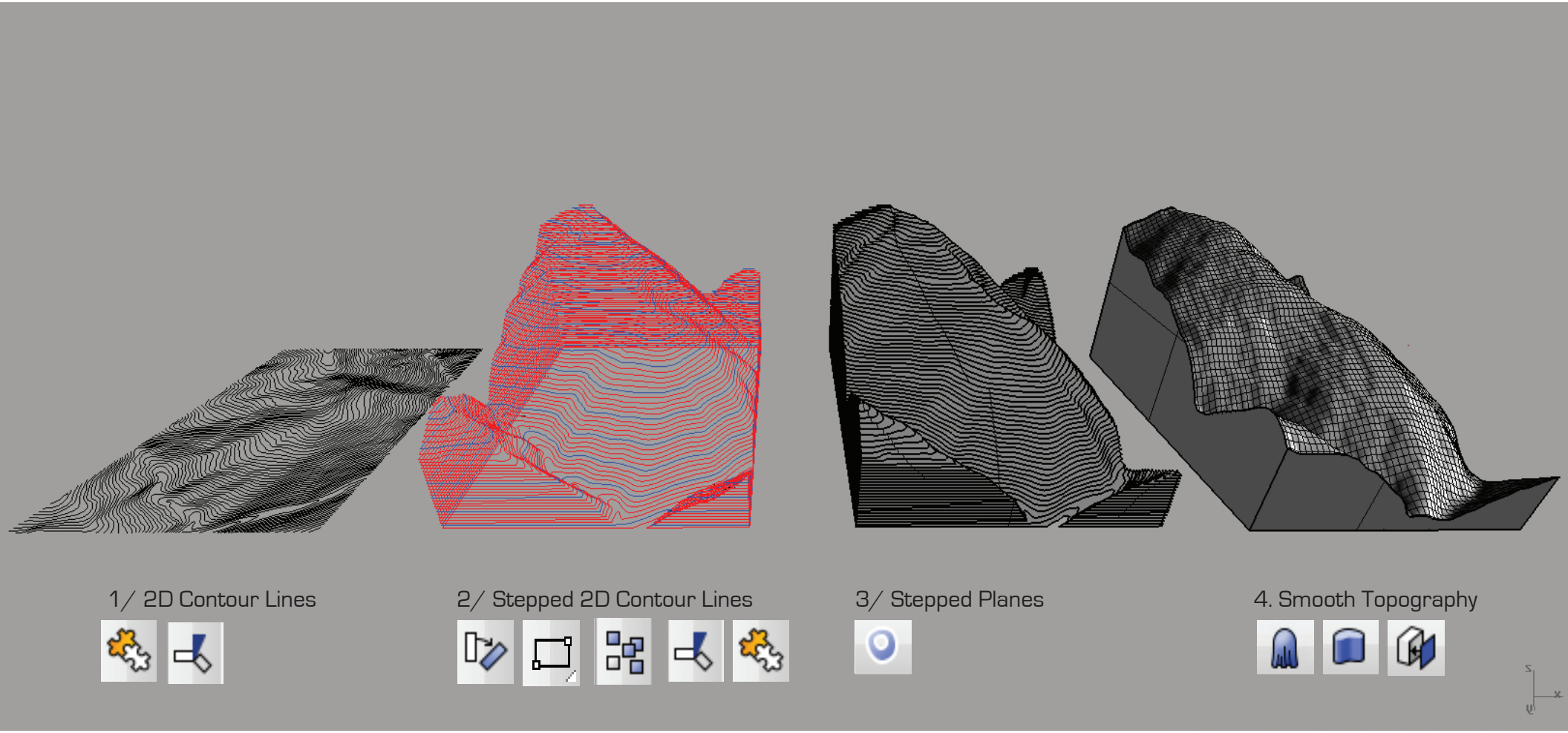
Planar Surface 

Drape 

Rectangle 

Extrude 

Cap 



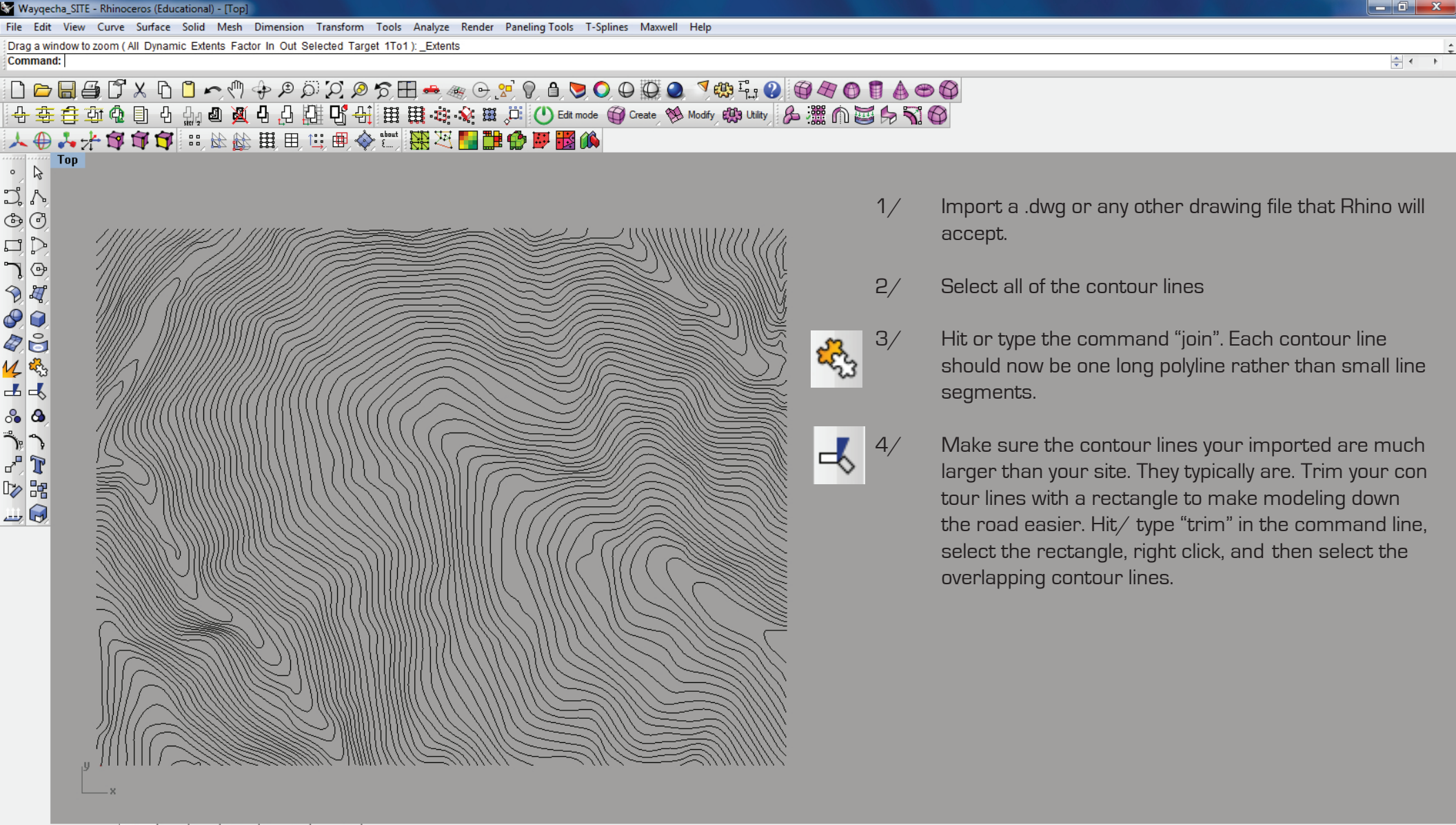
1/ 2D Contour Lines

2/ Stepped 2D Contour Lines

3/ Stepped Planes

4. Smooth Topography

Note: As you model these steps out take care to group components so you put them on their own separate layers for easy viewing/ modification later.



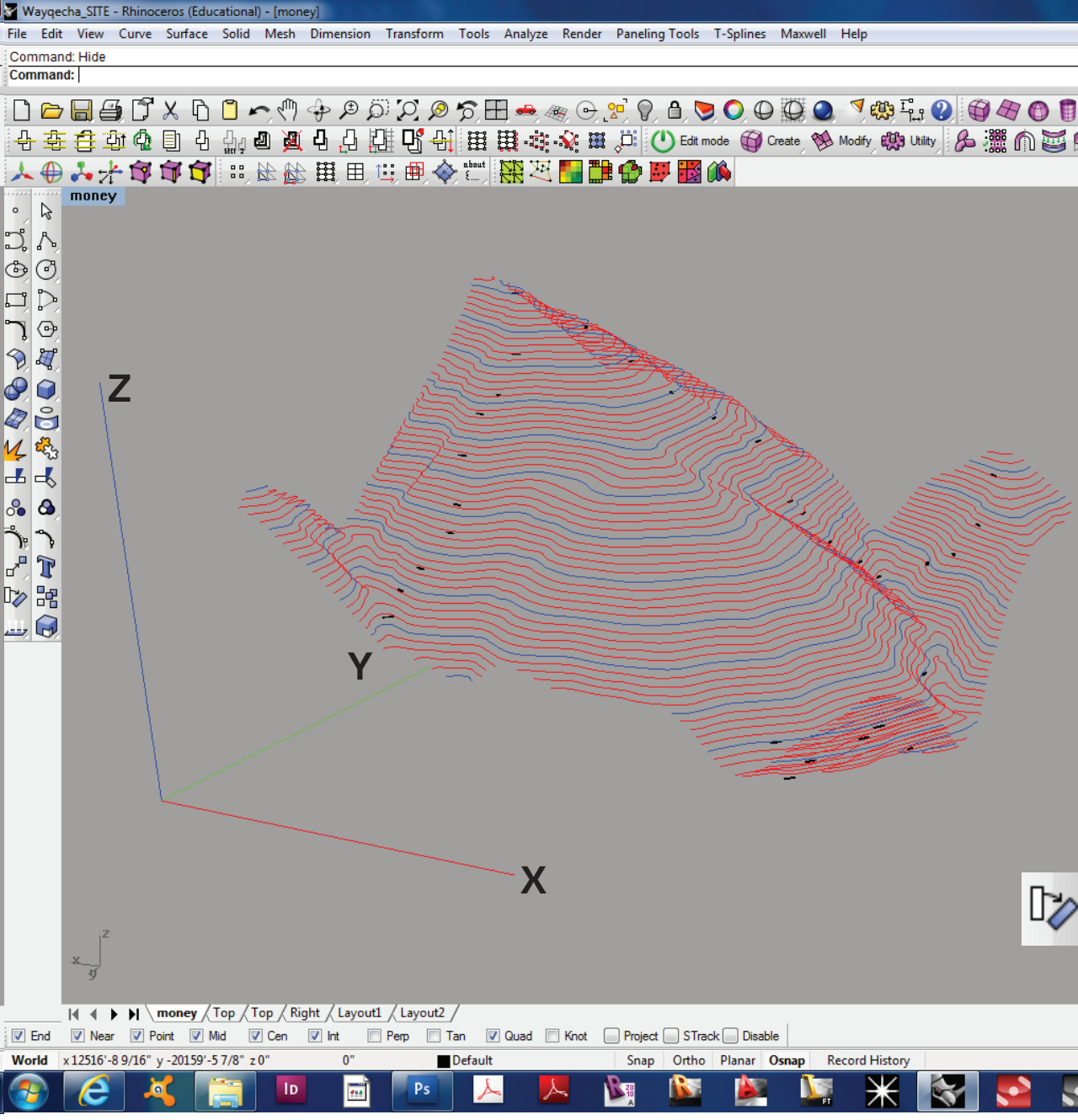
1/ Import a .dwg or any other drawing file that Rhino will accept.

2/ Select all of the contour lines

3/ Hit or type the command “join”. Each contour line should now be one long polyline rather than small line segments.

4/ Make sure the contour lines your imported are much larger than your site. They typically are. Trim your con tour lines with a rectangle to make modeling down the road easier. Hit/ type “trim” in the command line, select the rectangle, right click, and then select the overlapping contour lines.

2D Contour Lines



1/ We now need to move each contour line into its respective Z position.

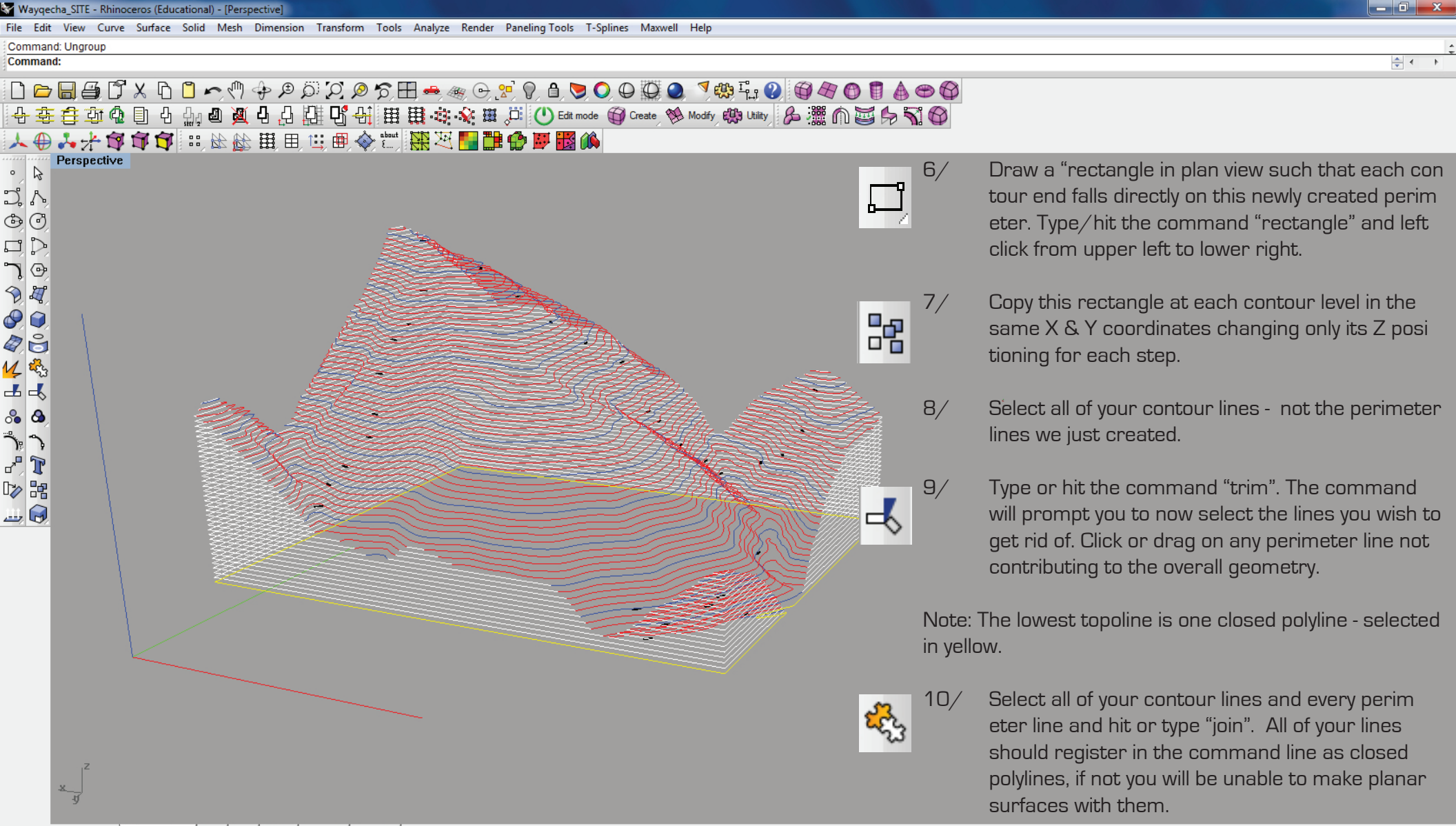
2/ Arrange your windows so you have a one view from the top and another view of an elevation.

3/ Check the stepped distance that each line should be above the next because this is the distance we need to move each ascending/ descending con tour line. In this example, each red contour line is 20 meters above the next red line making the blue lines 100 meters above each other.

Note: The larger the area modeled the larger the step between contour lines can be. Inversely the small the area the more contour lines you will need to pick up detail.

4/ Identify your lowest contour line and select all but that one.

5/ Type/ hit the “move” command, turn on ortho, left click, type in the step distance and enter, then left click in the direction of the move. For each step deselect the next lowest contour line.



6/ Draw a “rectangle in plan view such that each con tour end falls directly on this newly created perim eter. Type/hit the command “rectangle” and left click from upper left to lower right.

7/ Copy this rectangle at each contour level in the same X & Y coordinates changing only its Z posi tioning for each step.

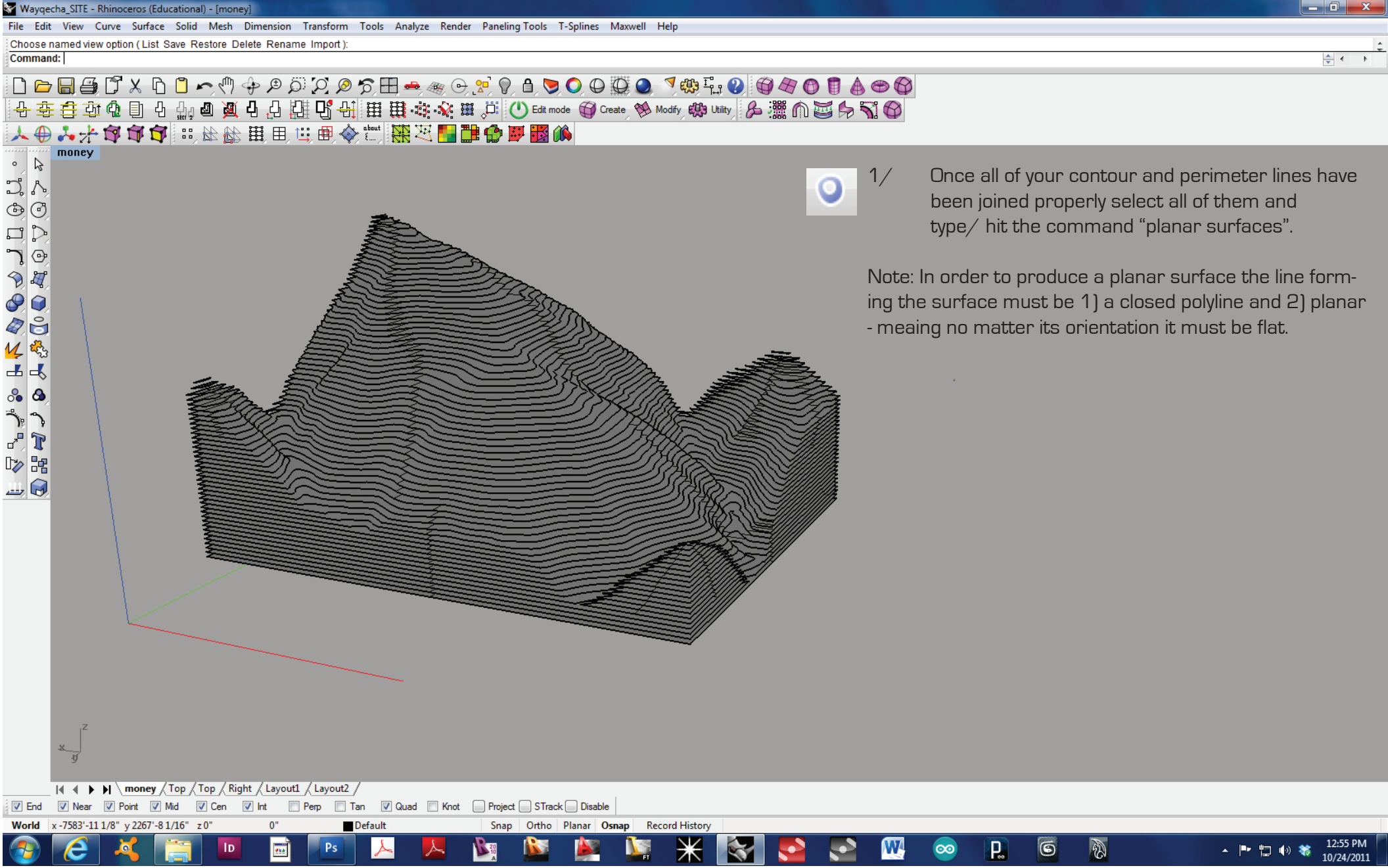
8/ Select all of your contour lines - not the perimeter lines we just created.

9/ Type or hit the command “trim”. The command will prompt you to now select the lines you wish to get rid of. Click or drag on any perimeter line not contributing to the overall geometry.

Note: The lowest topoline is one closed polyline - selected in yellow.

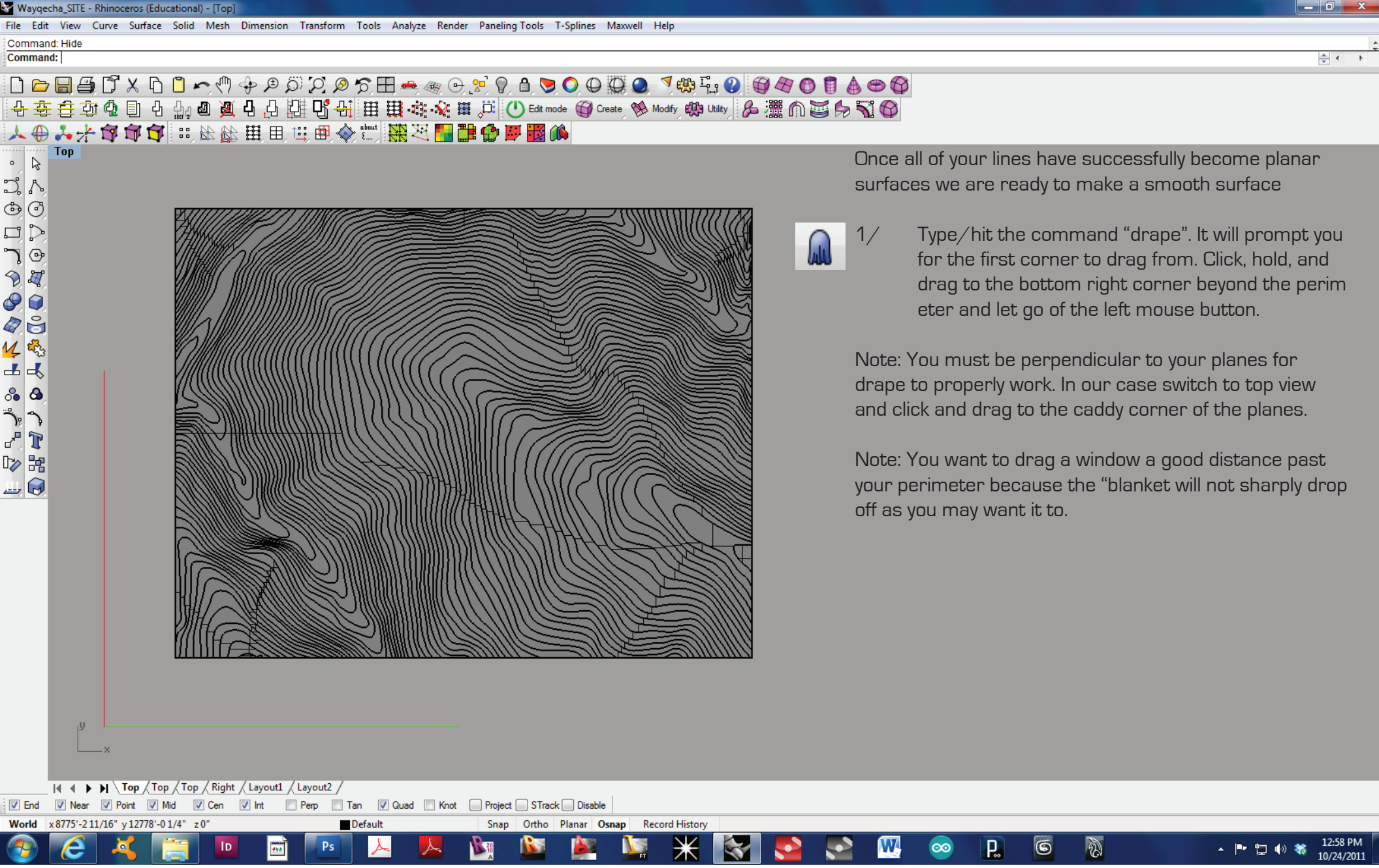
10/ Select all of your contour lines and every perim eter line and hit or type “join”. All of your lines should register in the command line as closed polylines, if not you will be unable to make planar surfaces with them.

Stepped 2D Contour Lines



1/ Once all of your contour and perimeter lines have been joined properly select all of them and type/ hit the command “planar surfaces”.

Note: In order to produce a planar surface the line forming the surface must be 1) a closed polyline and 2) planar - meaing no matter its orientation it must be flat.

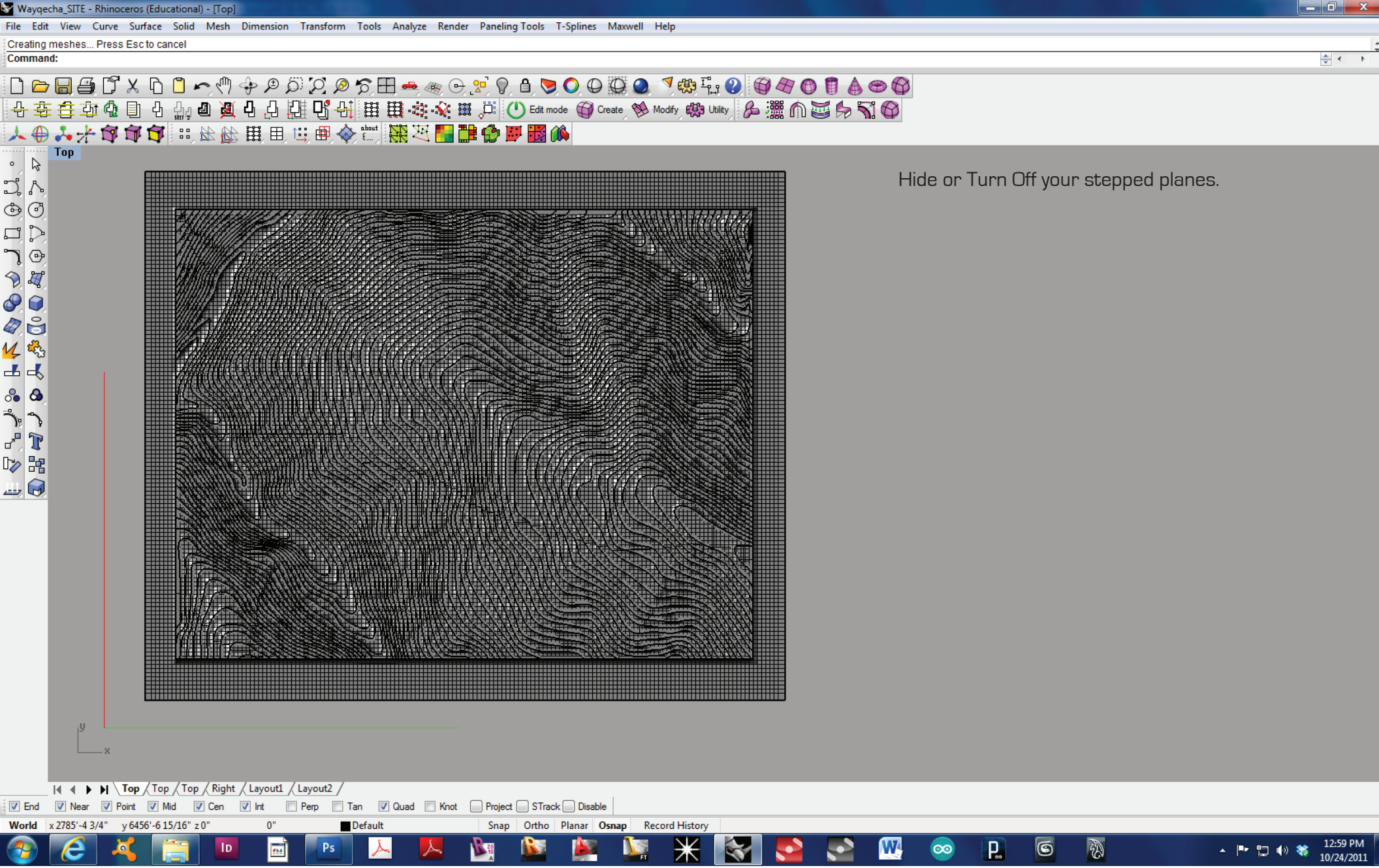


Once all of your lines have successfully become planar surfaces we are ready to make a smooth surface

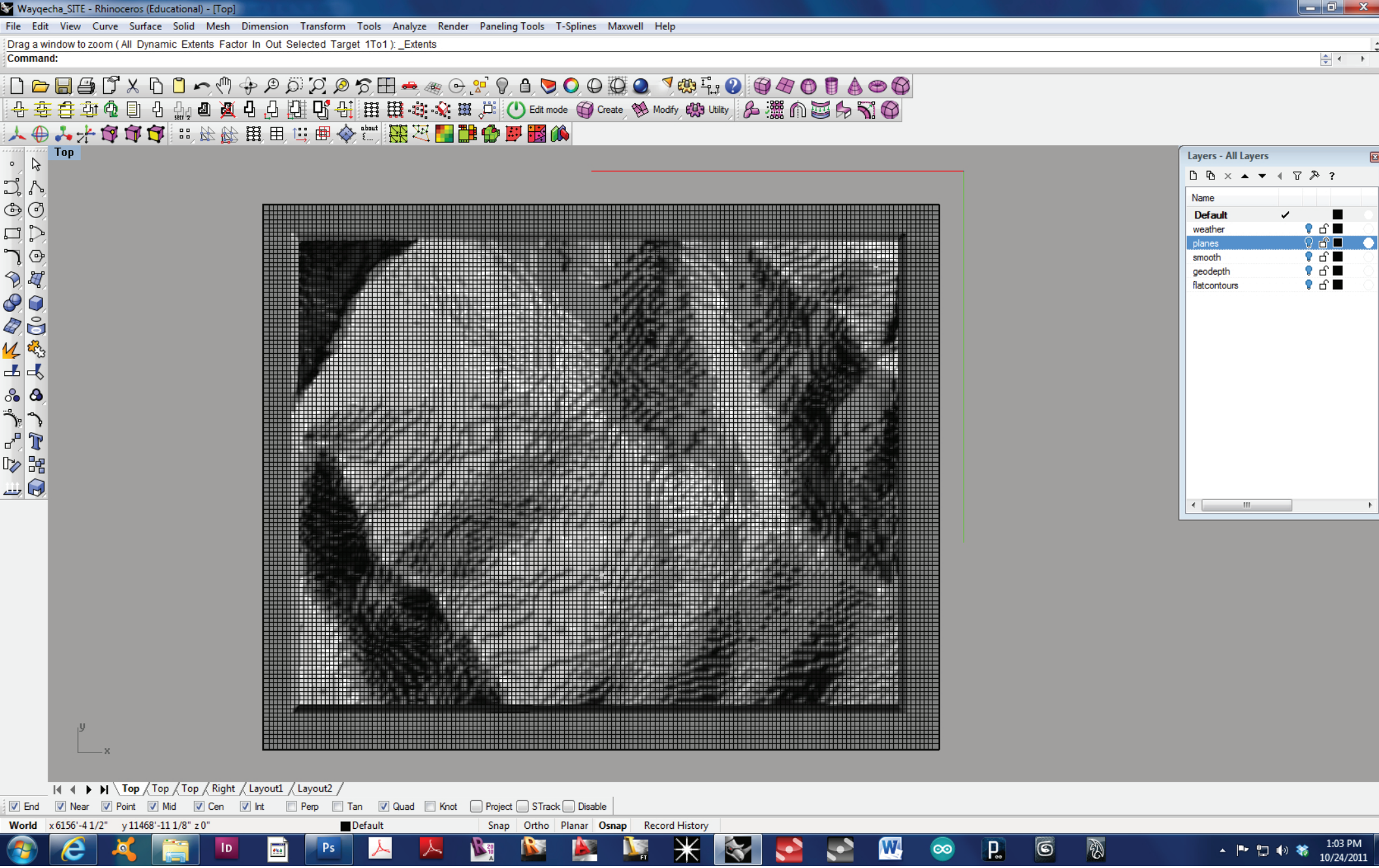
1/ Type/hit the command “drape”. It will prompt you for the first corner to drag from. Click, hold, and drag to the bottom right corner beyond the perim eter and let go of the left mouse button.

Note: You must be perpendicular to your planes for drape to properly work. In our case switch to top view and click and drag to the caddy corner of the planes.

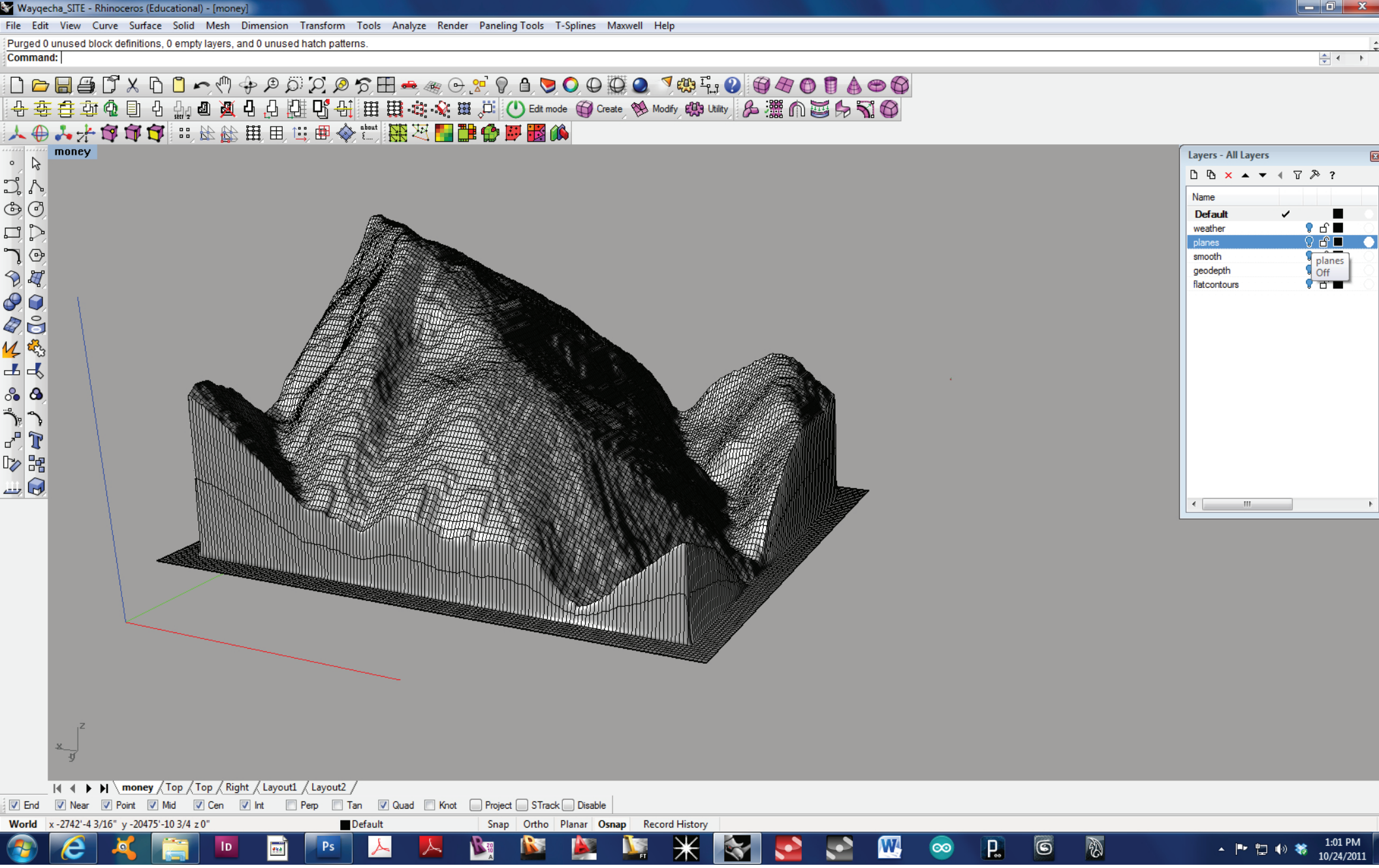
Note: You want to drag a window a good distance past your perimeter because the “blanket will not sharply drop off as you may want it to.



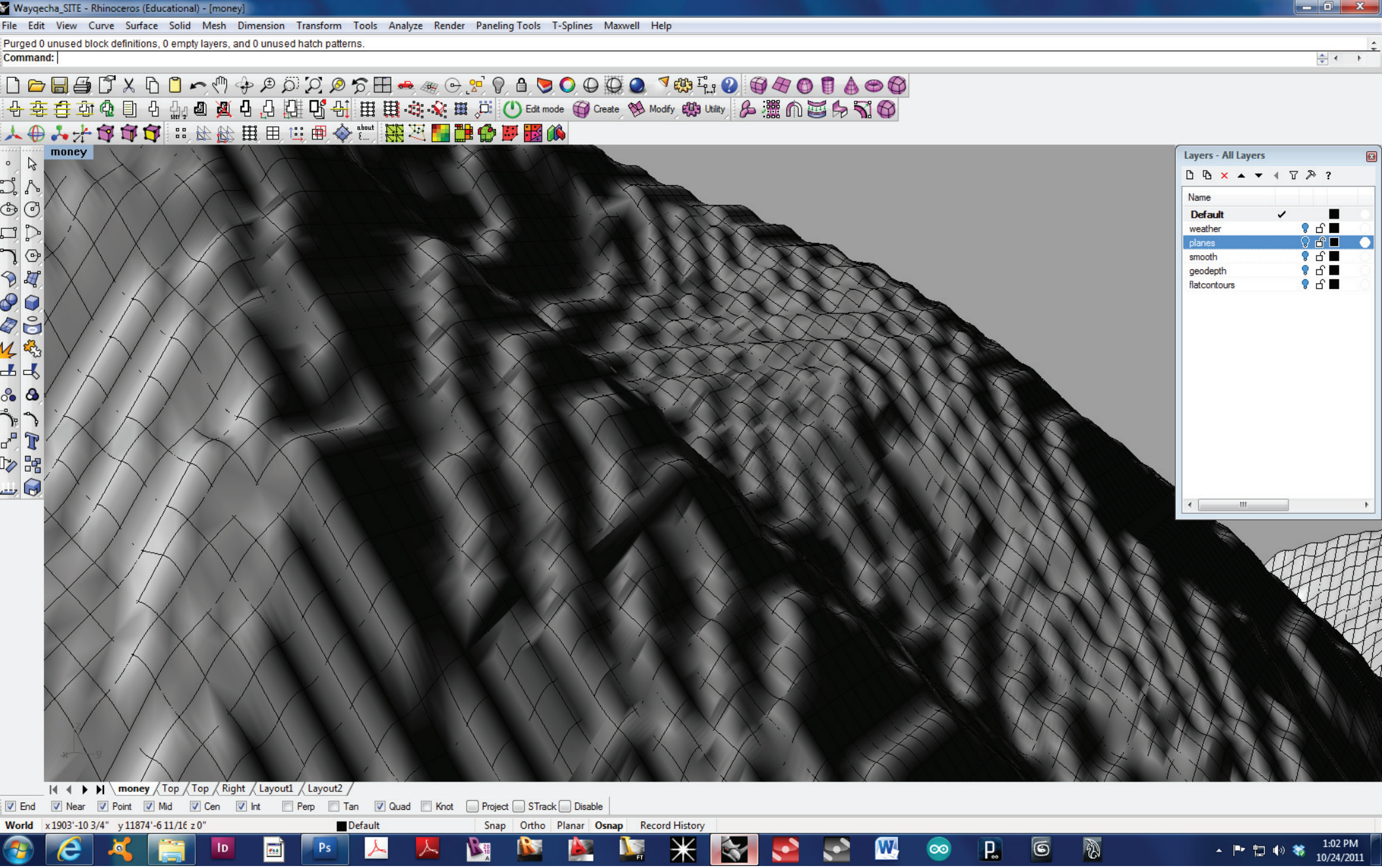
Smooth Topography



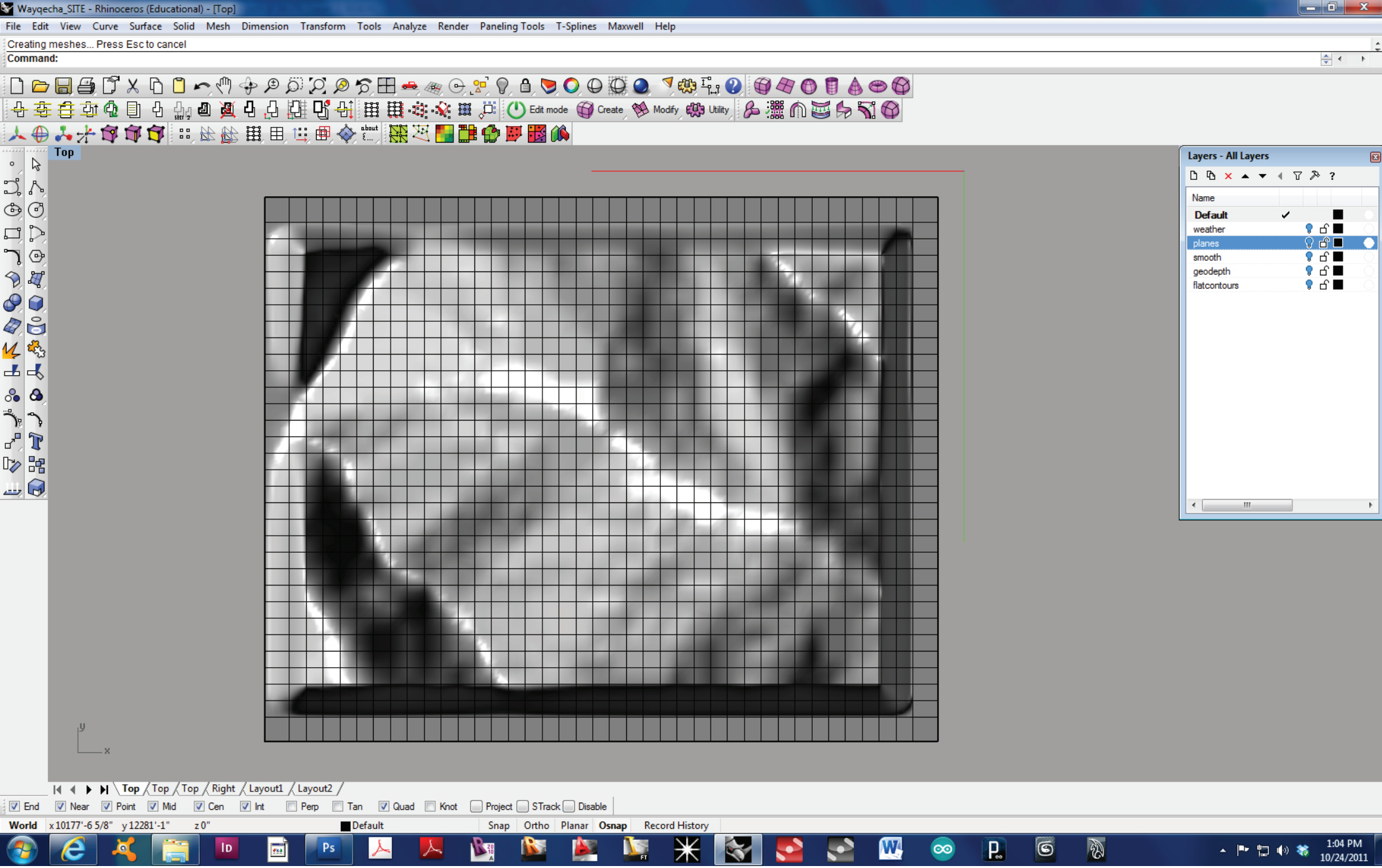
While we were able to make the edge drop off sharply we sacrificed getting the smooth topo we wanted.



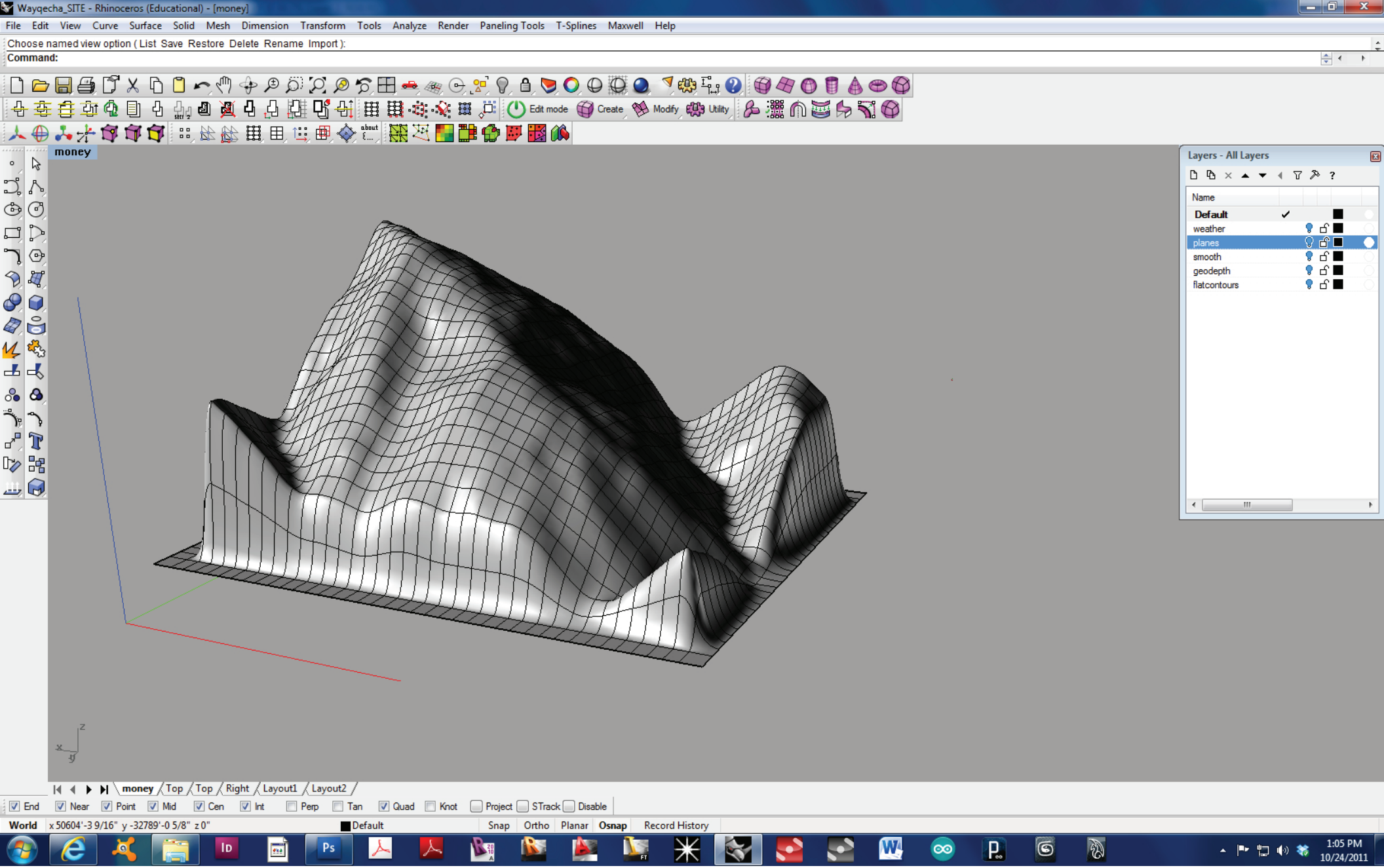
Smooth Topography



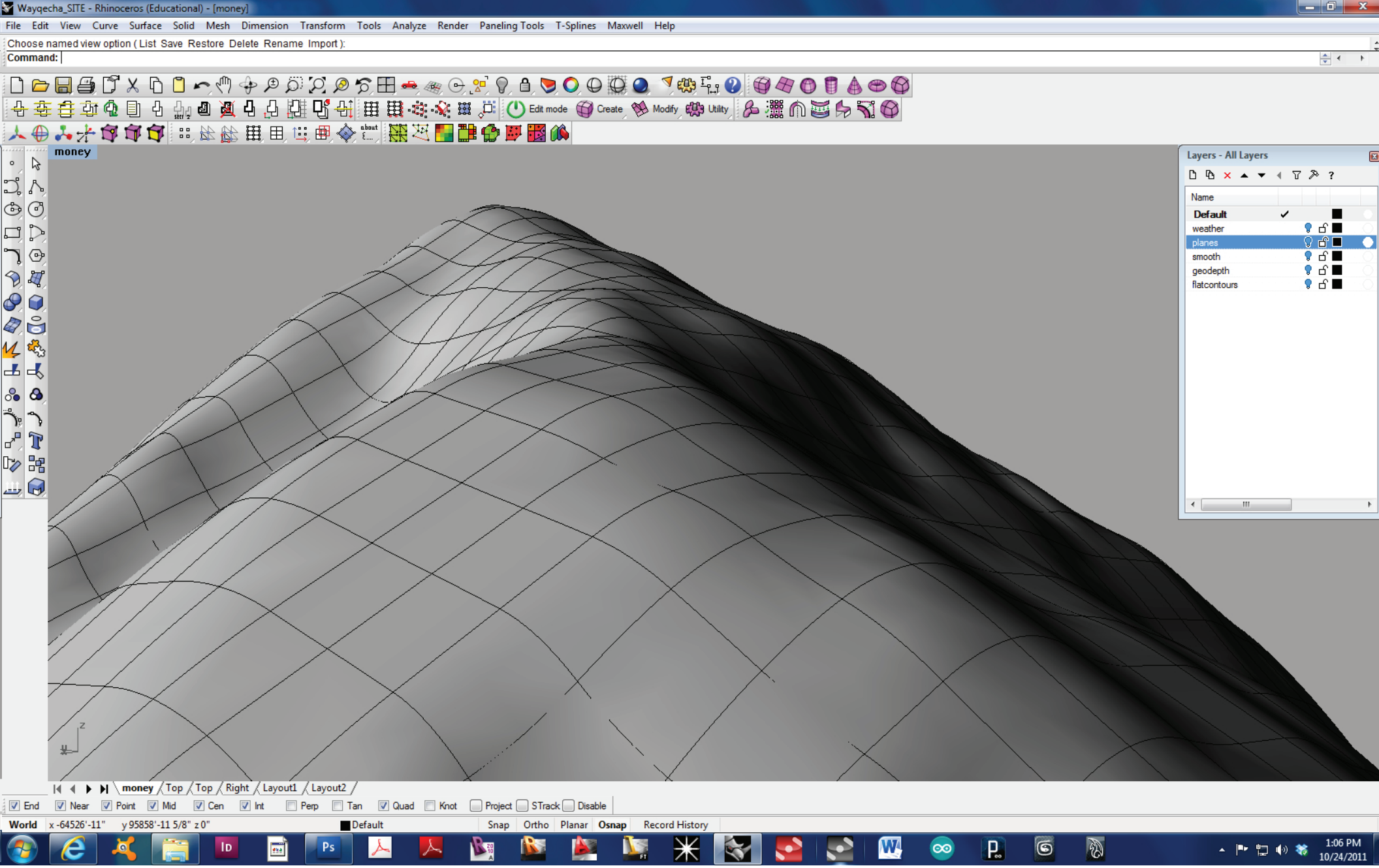
Close up we can see this topo reveals a textured bumpy-ness. Notice the NURBS wireframe. The spacing was set to 5 under the “drape” menu. In order to smooth this out we will need a higher value like 20.



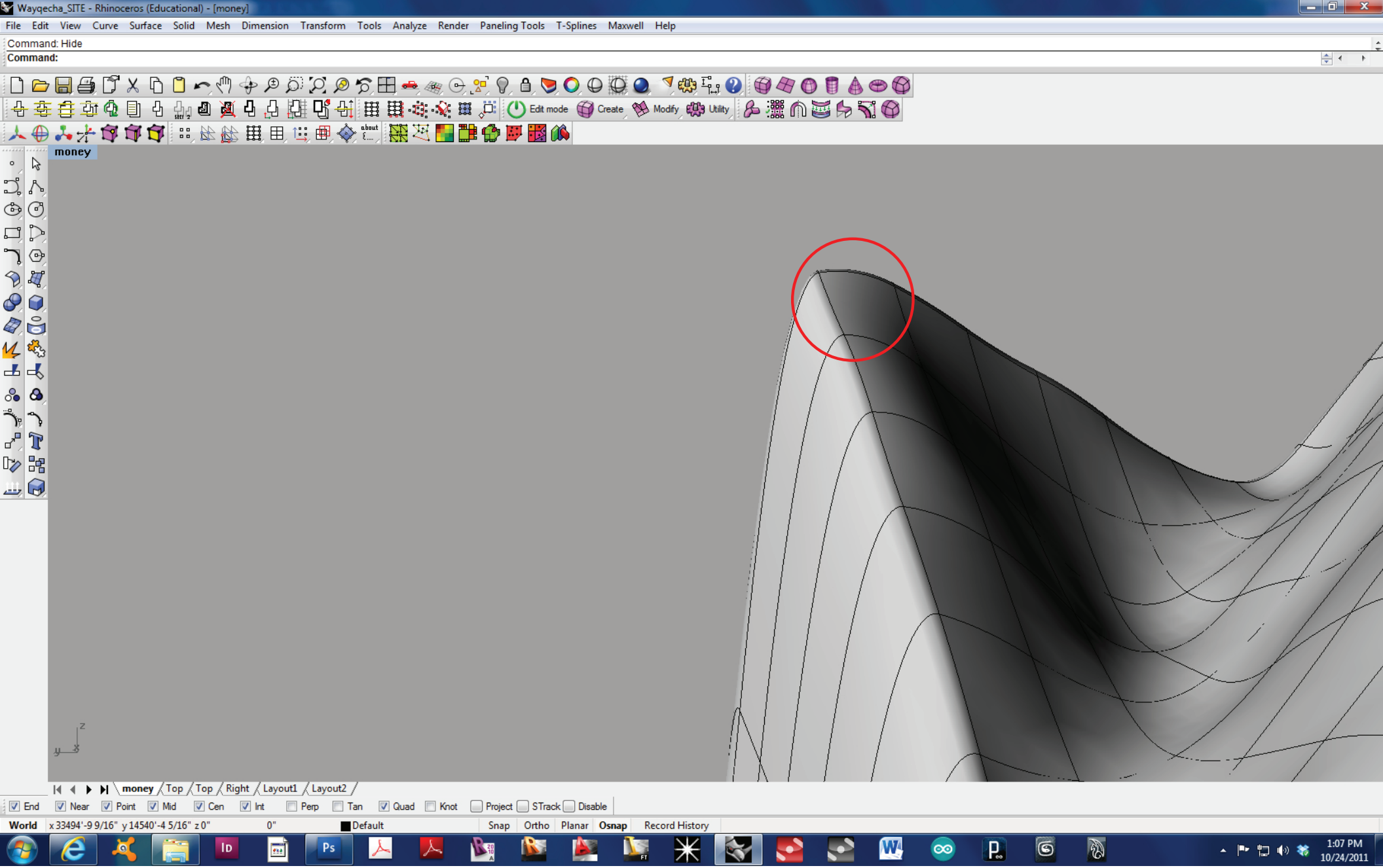
2/ Hit/ type the command “drape”. In the command line you will see its looking for a spacing value. Click on “spacing”. Enter twenty and then press enter. Drag the drape over the contour planes.



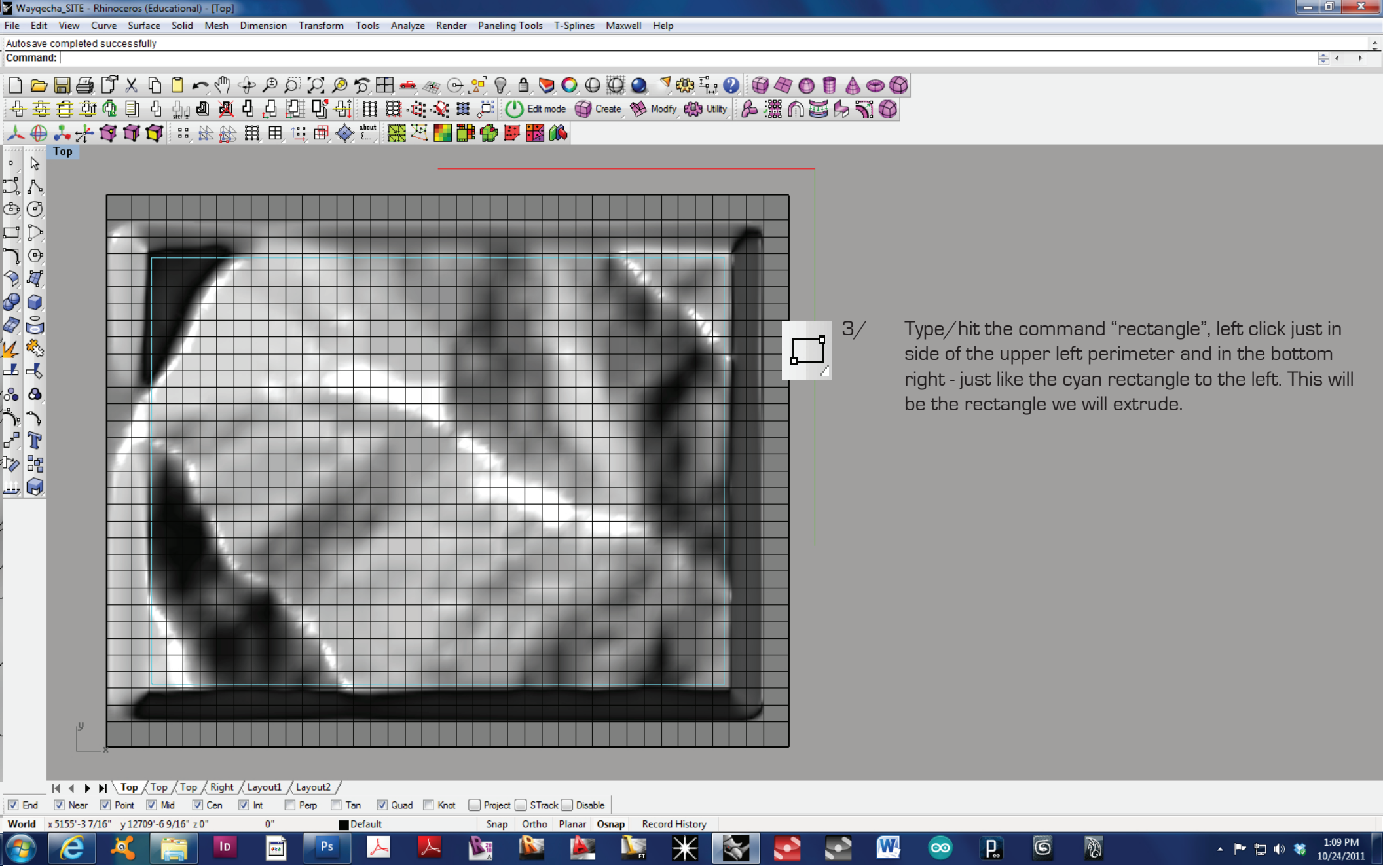
Smooth Topography



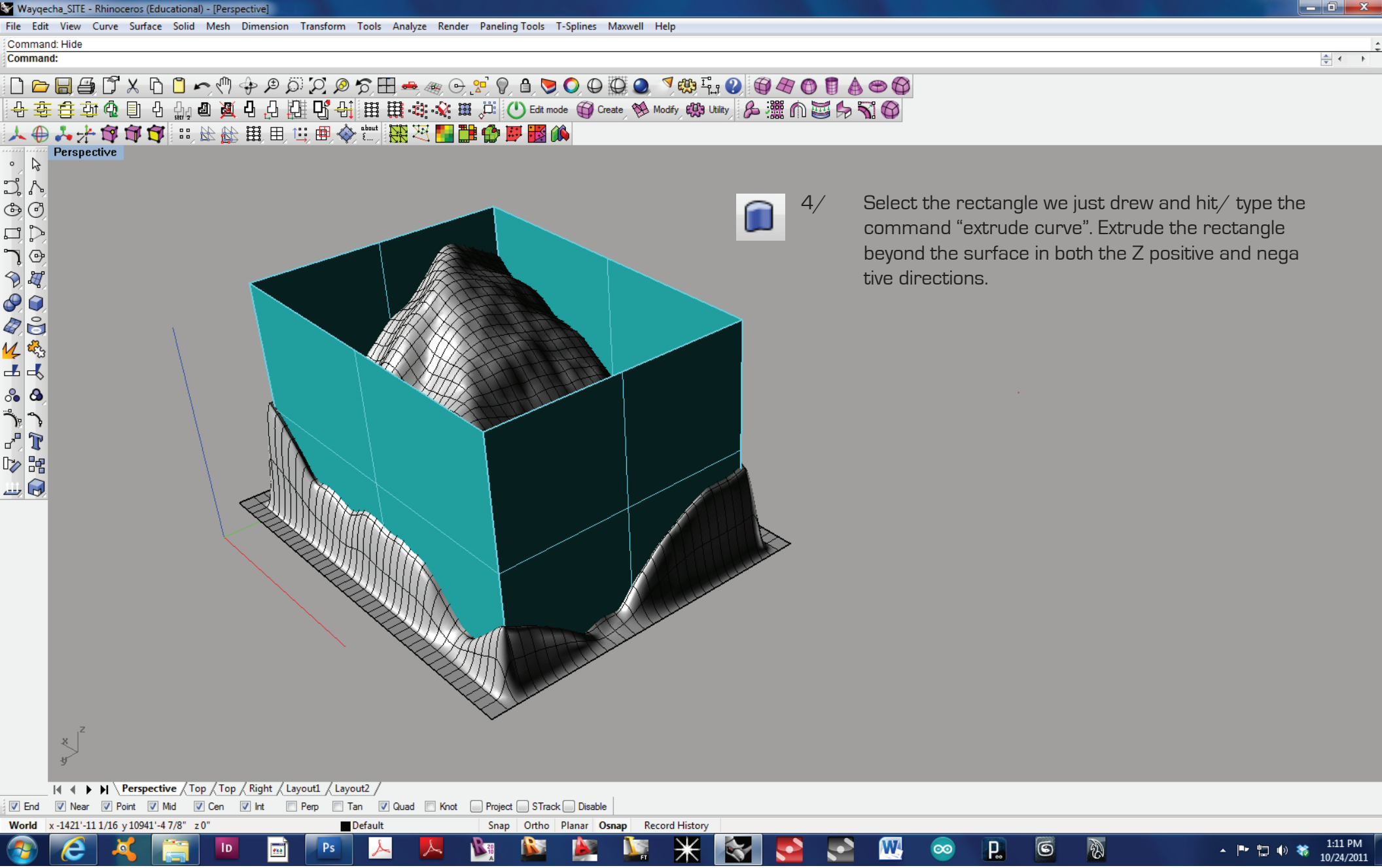
This is more accurately reflecting the grade change and the smooth topography we are seeking.



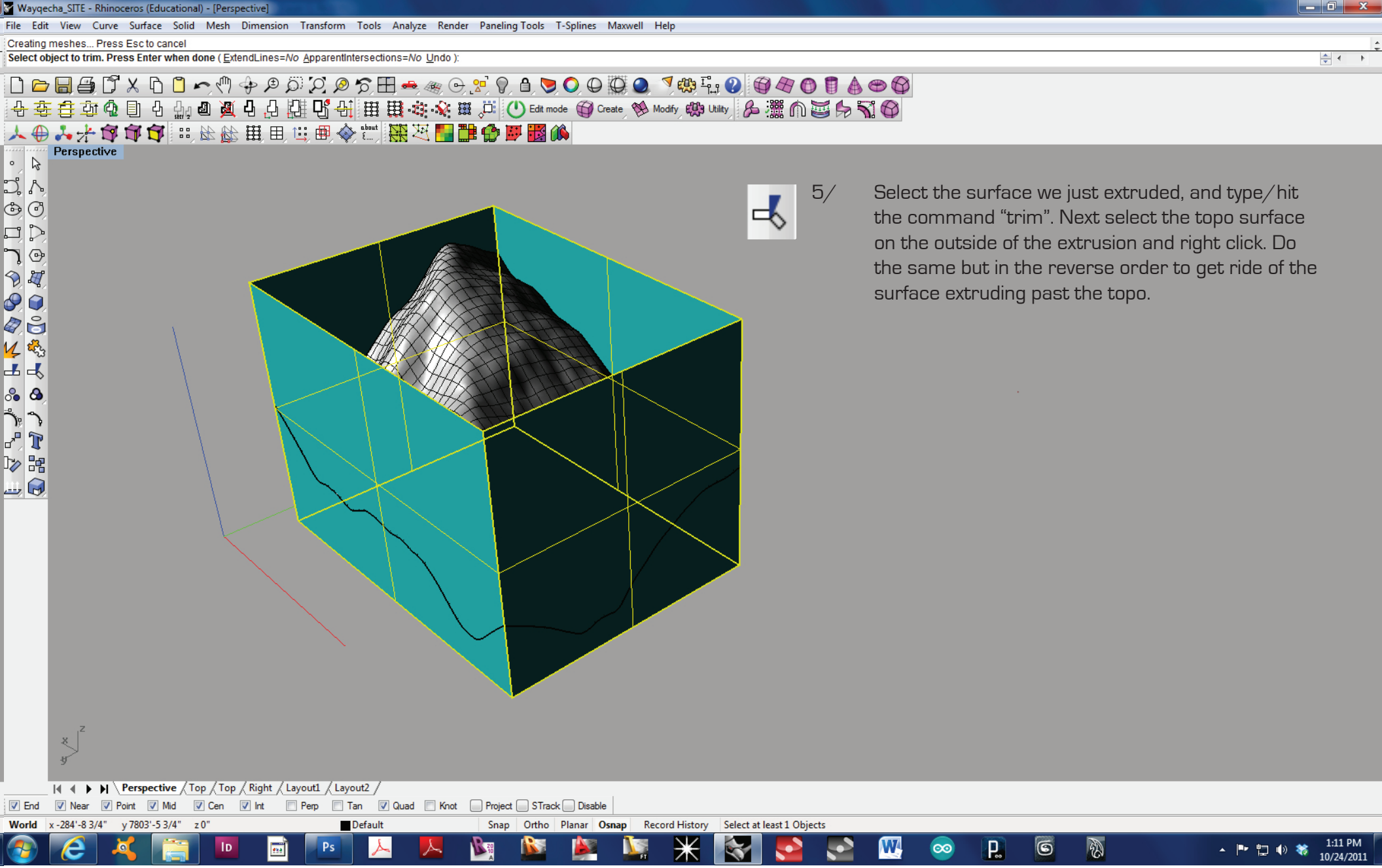
As the drape falls off the edge of the plane surfaces it starts to do so gradually resulting in a in accurate topo. We need to trim off these edges. In the above example the model is so large that 100 meters or more is an acceptible distance to offset the rectangle we will use to trim.



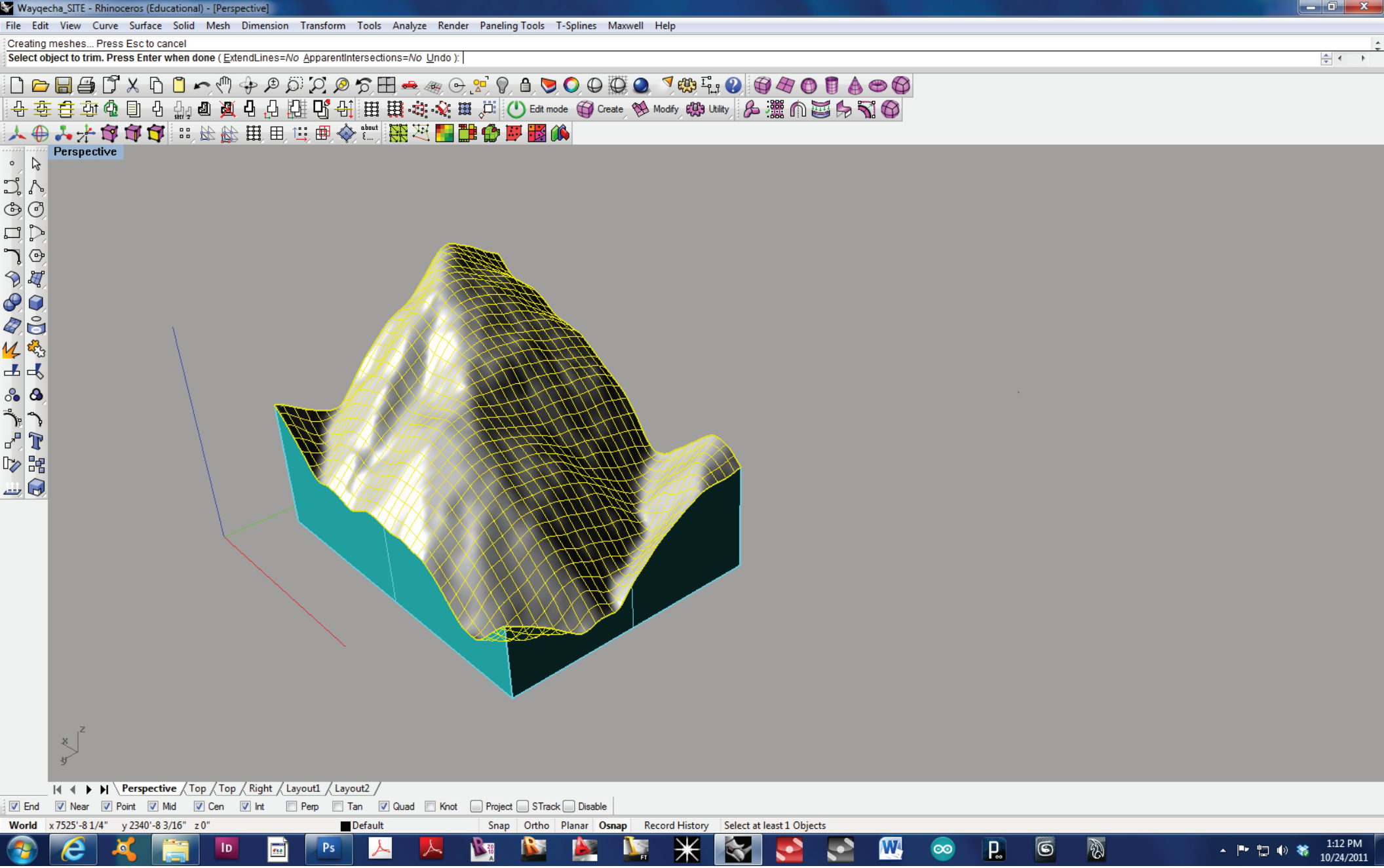
3/ Type/hit the command “rectangle”, left click just in side of the upper left perimeter and in the bottom right - just like the cyan rectangle to the left. This will be the rectangle we will extrude.



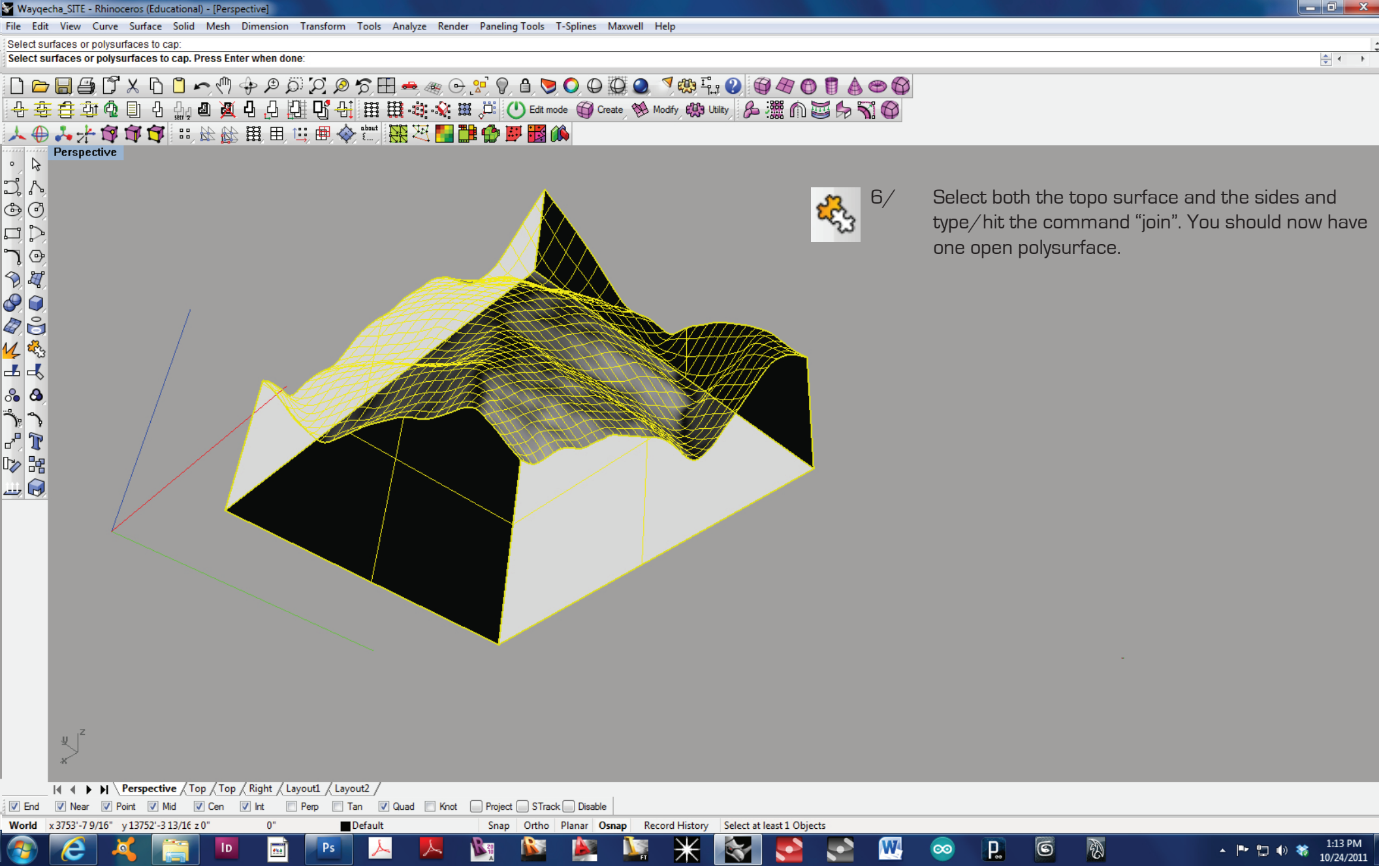
4/ Select the rectangle we just drew and hit/ type the command “extrude curve”. Extrude the rectangle beyond the surface in both the Z positive and nega tive directions.



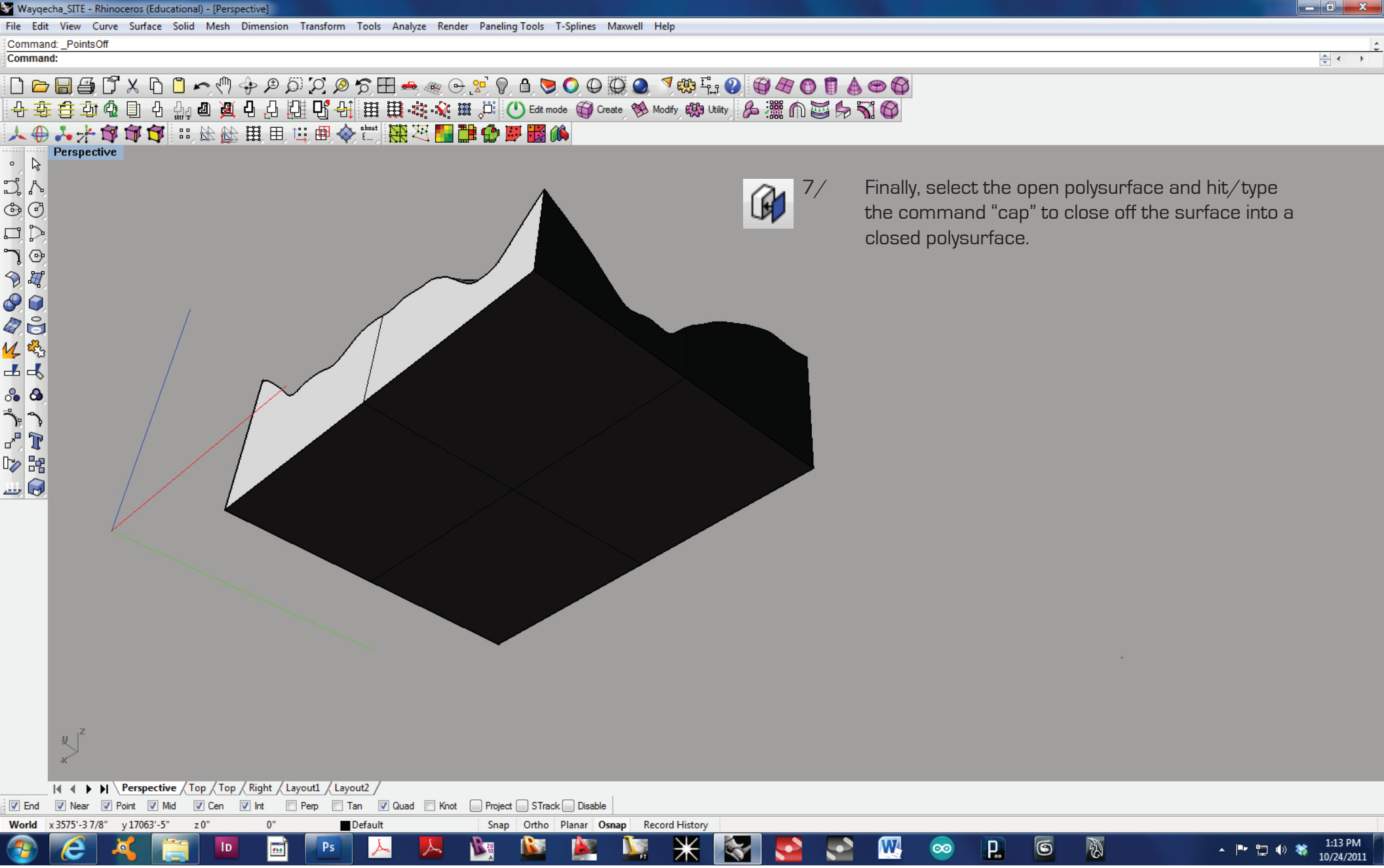
5/ Select the surface we just extruded, and type/hit the command “trim”. Next select the topo surface on the outside of the extrusion and right click. Do the same but in the reverse order to get ride of the surface extruding past the topo.



Smooth Topography



6/ Select both the topo surface and the sides and type/hit the command "join". You should now have one open polysurface.



7/

Finally, select the open polysurface and hit/type the command “cap” to close off the surface into a closed polysurface.