

ADVANCED SHARPENING with Adobe Photoshop

Matt Siber

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www.siberart.com

SHARPENING YOUR PHOTOGRAPHS

Every digital image needs to be sharpened, unless the image is intended to be soft or out of focus. Sharpening in Photoshop is not designed to compensate for poor focusing in the camera as it is impossible to create information where none exists in the original. Instead, digital sharpening helps compensate for weaknesses in scanners and photo chips. Even if your image was taken in perfect focus, it can be improved with digital sharpening. Including sharpening as part of your digital workflow will greatly improve the quality of your prints. If done correctly, digital prints should exceed the sharpness of traditional darkroom prints.

The object of this technique is to sharpen areas of your image that need sharpening more than the areas that don't. By creating a sharpening mask, you are assigning more sharpening effect to the areas with edge and contrast, while reducing the sharpening effect in areas with little or no detail. This serves to create very sharp lines and detail while preventing any unnecessary increase in the appearance of grain in skies or areas of solid color. The mask also allows you to reduce or eliminate sharpening in the shadow areas, a notoriously weak area of digital images. Sharpening these areas usually results in an increase in digital noise.

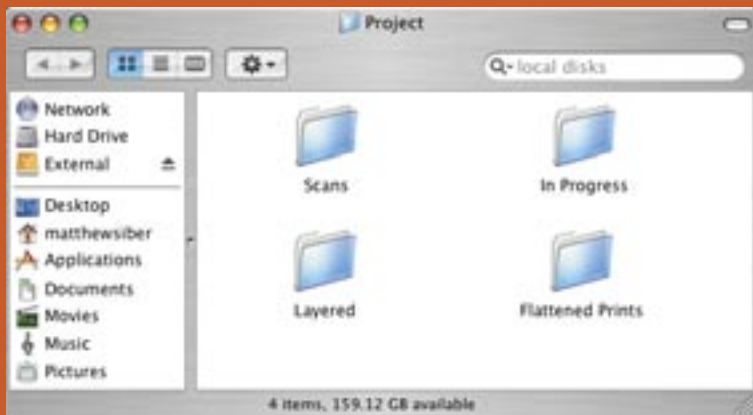
PROCEDURES

The following is a list of the procedures described in this document. You may want to use this page as a quick reference guide.

1. Save a layered version of your file, then flatten it.
2. Copy the Background Layer.
3. Create a selection from the channel with the most contrast.
4. Create a mask from that selection on the Background Copy.
5. Apply Find Edges filter to the mask and Invert.
6. Apply Curves adjustments to lighten or alter the mask.
7. Soften the mask using the Gaussian Blur filter.
8. Apply another Curves adjustment if necessary.
9. Apply Luminosity blending mode to the Background Copy.
10. Apply Unsharp Mask to the Background Copy.
11. Adjust Layer Opacity and alter mask as needed.
12. Flatten and print.

1. SAVE AND FLATTEN

Sharpening is the last step before outputting your image. All other corrections, adjustments and manipulations should be done before you sharpen your photograph. *It is crucial that you save a layered version of your file before flattening and sharpening it.*



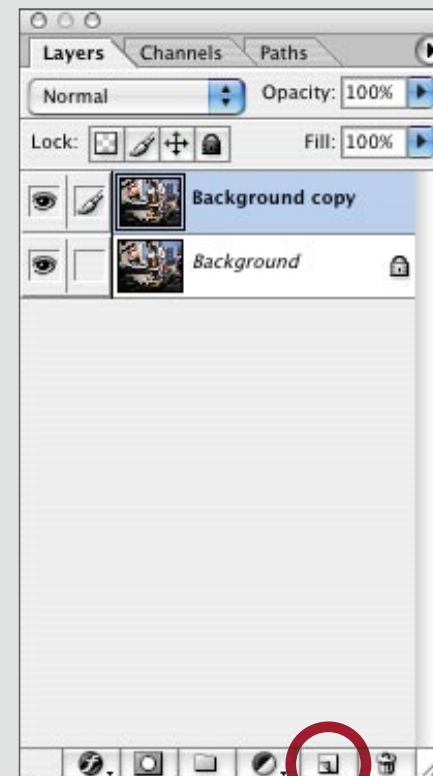
FILE MANAGEMENT

Create and title a separate folder for each project. Within this folder, set up four more folders to help you organize your files. One folder should contain Raw Scans, one for Work-in-Progress, one for Layered files and one for Flattened/Sharpened files. Not saving all of these files religiously can cause serious heartache if you find that you need to go back and change something at the end of the process. Good file management saves time and stress and creates a more efficient workflow.

2. COPY BACKGROUND

The most sophisticated sharpening tool in digital imaging is the Unsharp Mask filter in Photoshop. Because it is a filter, it is not available as an adjustment layer and is therefore, a permanent adjustment. In order to circumvent this issue, and to allow more flexibility, it is best to sharpen a copy of the background layer, leaving the background itself untouched.

The easiest way to create a background copy is to drag the background layer (in the layers palette) to the Create New Layer icon at the bottom of the palette (circled here in red). Make sure your layers palette looks like this before proceeding to step three.



3a. FIND A CHANNEL

The source for our sharpening mask is the Channels Palette. Click through the channels to find the most contrasty grayscale image with sharp, crisp lines. This is usually the Red Channel but can sometimes be the Green Channel depending on the color content of your photograph. It is best to stay away from the Blue Channel because it is often the least contrasty and tends to hold the most noise. Take a look and see for yourself.



3b. CREATE A SELECTION



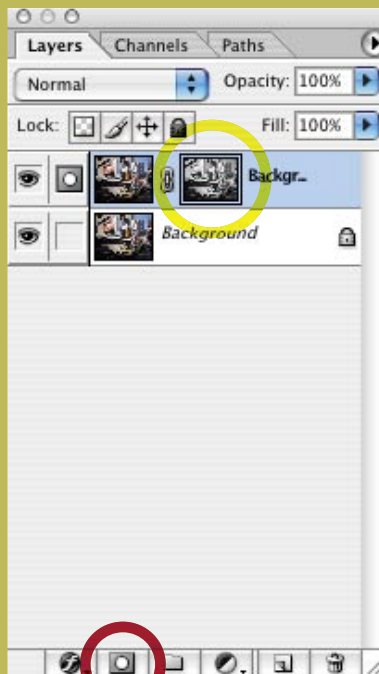
The image above is from the Red Channel at left and is an excellent candidate for a sharpening mask. The whites are bright, the shadows are dark, and the lines in the image are clear and crisp. Create a selection from this channel by: 1) Clicking on it while holding down the Open Apple key on your keyboard, or 2) Clicking on the Load Channel as Selection icon at the bottom of the channels palette (circled in red at left).

4. CREATE A LAYER MASK

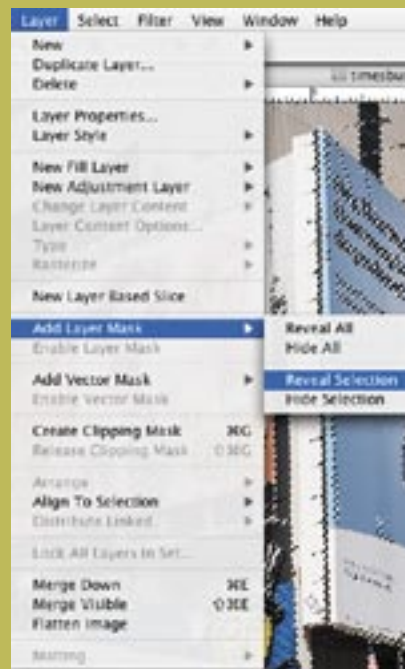
There should now be *crawling ants* on your image marking the selection made by the channel. Now turn the selection into a layer mask on the Background Copy layer using one of two methods.

1) With the selection visible and the Background Copy layer selected, click on the Add Layer Mask icon at the bottom of the palette (circled here in red at left).

2) With the selection visible and the Background Copy layer selected, go to the Layer pull down menu at the top of the screen. Drag down to Add Layer Mask and choose Reveal Selection as shown at right. With either of these methods, you should see the mask appear next to the Background Copy layer (circled in yellow at left).

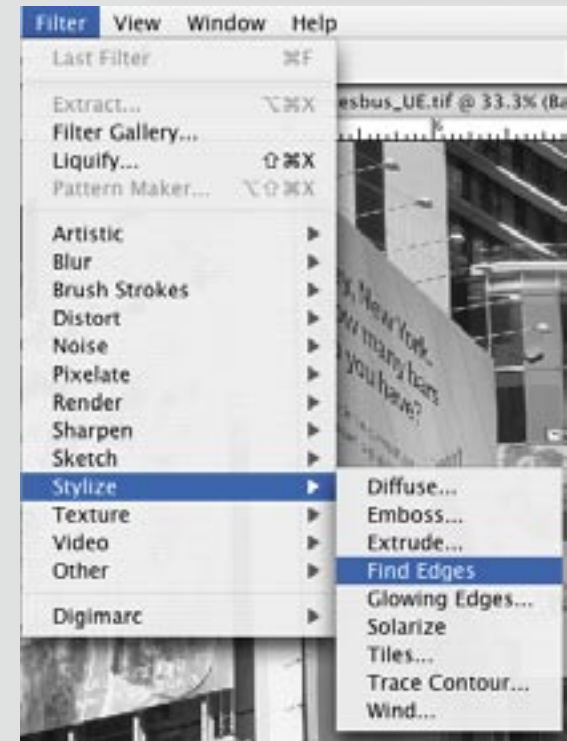


1.



2.

5a. FIND EDGES FILTER



The mask now needs to be altered so that it reveals the edges of the image and hides the areas without edge or fine detail. You can see your mask or your image by clicking on the mask with the Option key held down. Option + click to make your mask visible so that you see the grayscale image on your screen. The following adjustments will be made to your MASK only, not to your image or background. Under the Filter menu at the top of the screen, choose Stylize and Find Edges.

5b. FIND EDGES FILTER cont.

The Find Edges filter does just what it sounds like. It looks for areas of contrast in the image and highlights them in black, leaving the open areas of tone and color white. The result looks like a line drawing (below).

The purpose of this mask is to select the edges of the image. As with all masks, black hides while white reveals. On the mask below, the edges are highlighted in black which means they are hidden. We want the reverse of this effect so it is necessary to invert the mask to make the edges white.



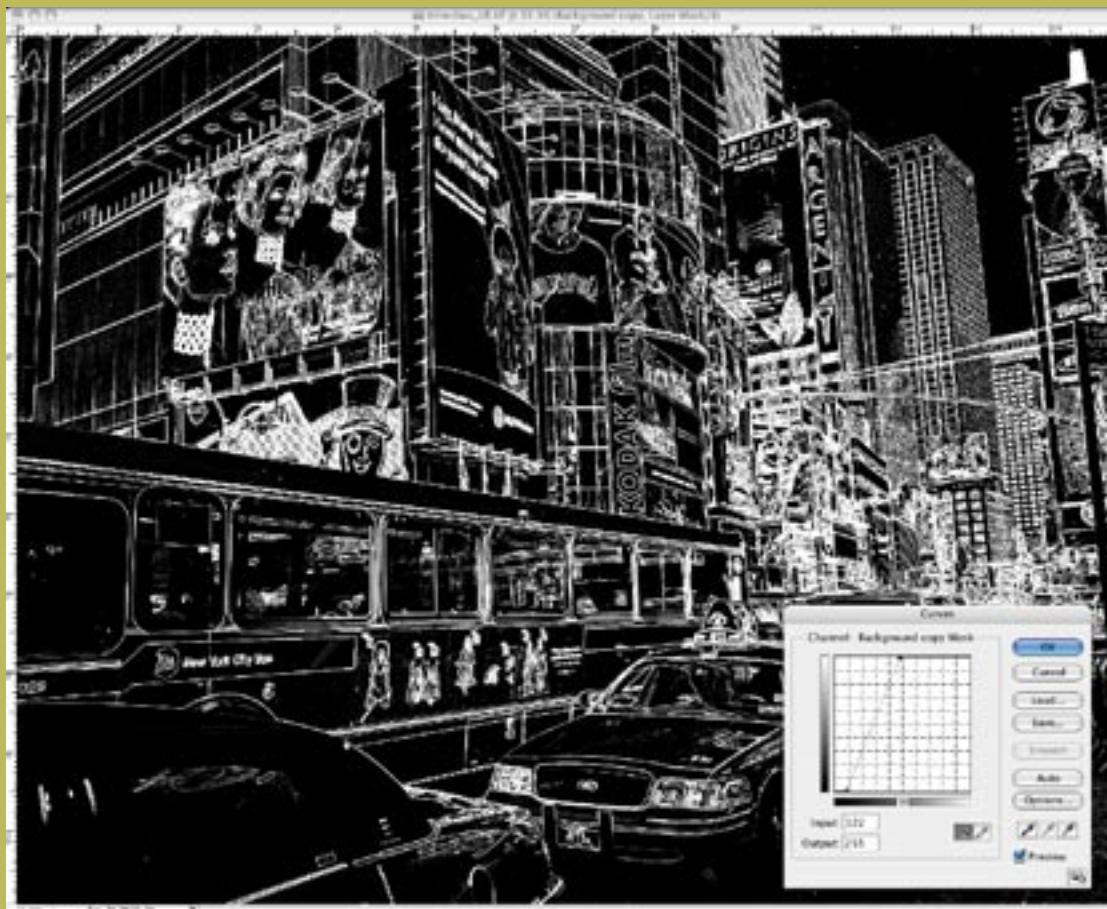
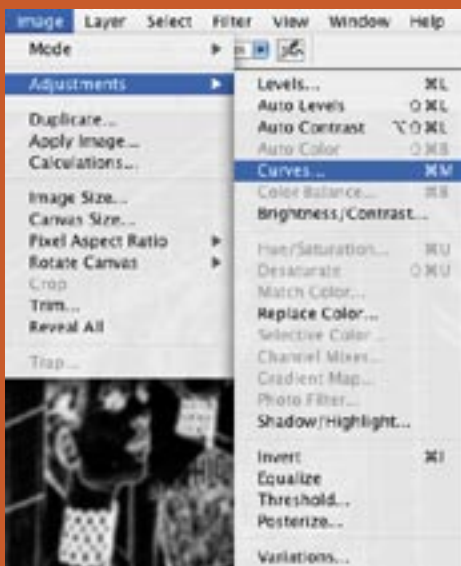
The easiest way to invert the mask is on the keyboard with Open Apple + I (for Invert). The Invert command is also available from the pull down menu at the top of the screen though Image < Adjustments < Invert.

Your mask should now have white lines highlighting the edges of the image like in the example above.

6. CURVES ADJUSTMENT

Usually, the mask needs to be lightened at this point. The lighter the mask, the more sharpening will take effect. It is usually better to oversharpen with the mask because we will be able to cut back the effect later with Layer Opacity.

Adjustment Layers do not work on masks. Create a Curves adjustment through Image < Adjustments < Curves, or on the keyboard with Open Apple + M. *This adjustment does not effect your image, only the mask.*



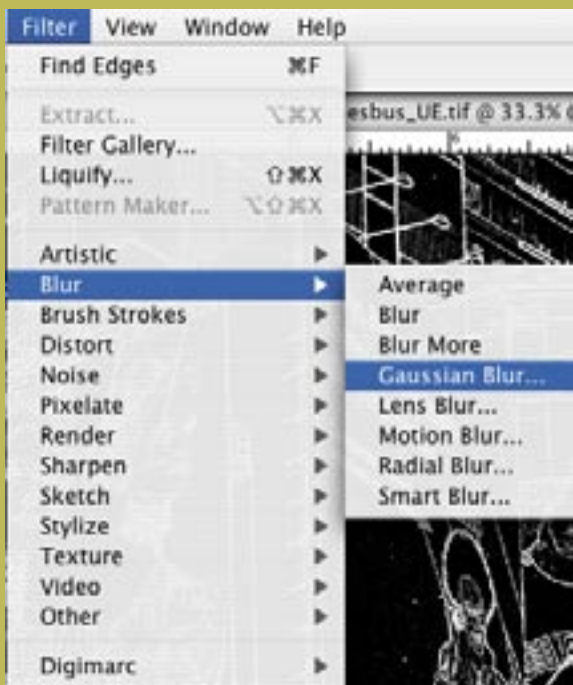
To make sure your white edges are completely white, and therefore completely selected, drag the highlight anchor point to the left across the top of the Curves box. It is usually ill-advised to sharpen shadows as it tends to generate pixelated noise. Sometimes it helps to drag the shadow anchor point right across the bottom of the Curves box to darken those areas so less sharpening occurs.

Your curve and mask should look something like the ones above.

7. GAUSSIAN BLUR FILTER

Blurring a mask is similar to feathering a selection. It turns hard edges into soft ones and creates a smoother transition between areas that are selected and the ones that aren't.

Gaussian Blur should be used for this effect because it has an adjustable slider. Do not use Blur, Blur More or Average. The other blurs are too specialized for this technique. At the top of your screen go to Filter < Blur < Gaussian Blur.



Use the slider in the Gaussian Blur dialogue box to increase or decrease the amount of blur. The amount of blur needed will vary depending on resolution and image size. Blur enough so that the edges are softened but not so much that the lines start to blend together. As in the example above, you should still be able to clearly see all the lines

8. CURVES ADJUSTMENT

You may notice that blurring the mask will blur some of the black into the white areas, turning them gray. It may be necessary to make one last curves adjustment to make the white areas completely white once more.

As before, go to Image < Adjustments < Curves and drag the high-light anchor point across the top of the box until the whites look white again.

Now your mask is complete. Option + click on your mask to see your image in RGB again.

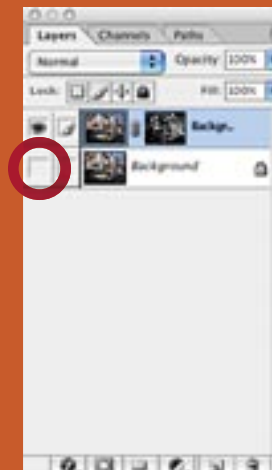


SEE THE MASK WORK



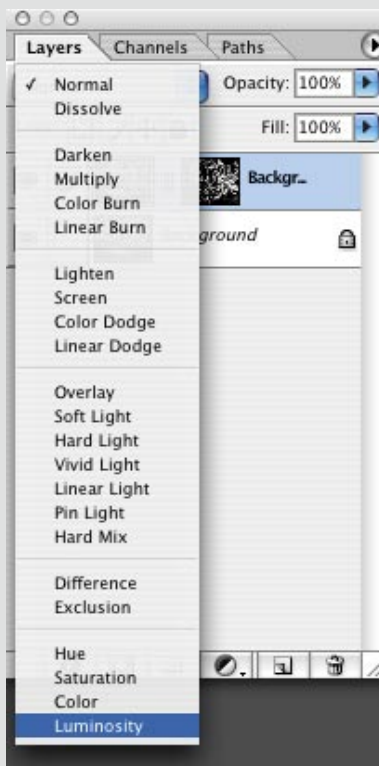
Now take a look at what your mask is doing. Turn off the background layer by unclicking the eyeball icon (circled in red at right).

The visible parts of the background copy will be the edged areas of your image and should look like the image above. The open areas should be transparent, indicated by the gray and white checker pattern.



9. LUMINOSITY BLENDING MODE

Before applying the Unsharp Mask filter, it helps to change the layer blending mode on the Background Copy layer to Luminosity. This creates the same effect as sharpening the Luminosity channel in LAB color. By applying sharpening to the tonal values of an image rather than hue or saturation, the appearance of noise is reduced. *This step is unnecessary when sharpening a grayscale image.*



In the Layers Palette, click on the Blending Mode menu. Scroll down to the bottom of the menu and select Luminosity.

This step can be taken at any point in this process.

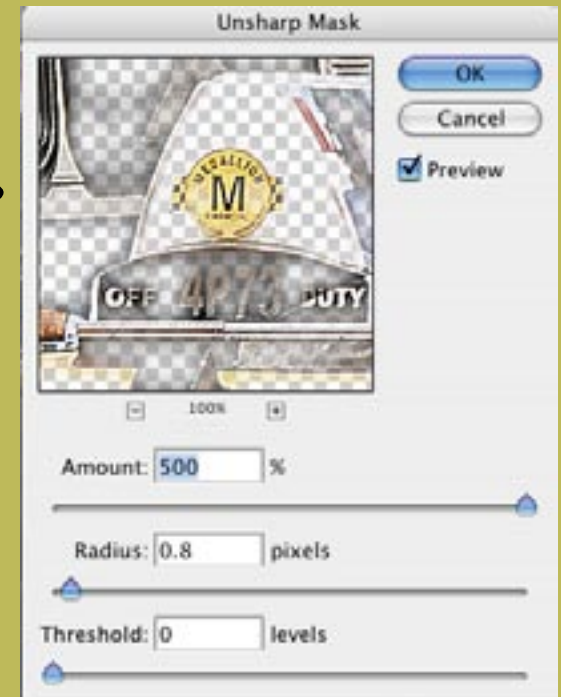
10. UNSHARP MASK FILTER



It is finally time to sharpen your image. First, make sure to click on the Background Copy LAYER and not the MASK. You want to sharpen the image, not the mask.

Next, at the top of your screen click on Filter < Sharpen < Unsharp

Mask. A dialogue box, like the one above at right, will appear. There are three sliders in the box that control Amount, Radius and Threshold. The Threshold function does the same thing as our mask does. Since we've already done it ourselves, set the Threshold to zero. The Radius should be kept relatively low. One or lower is usually best. The amount can usually be set at the maximum of 500%. It will most likely over-sharpen the image but we can adjust for that in the next step. It is better to over-sharpen than under-sharpen at this point.

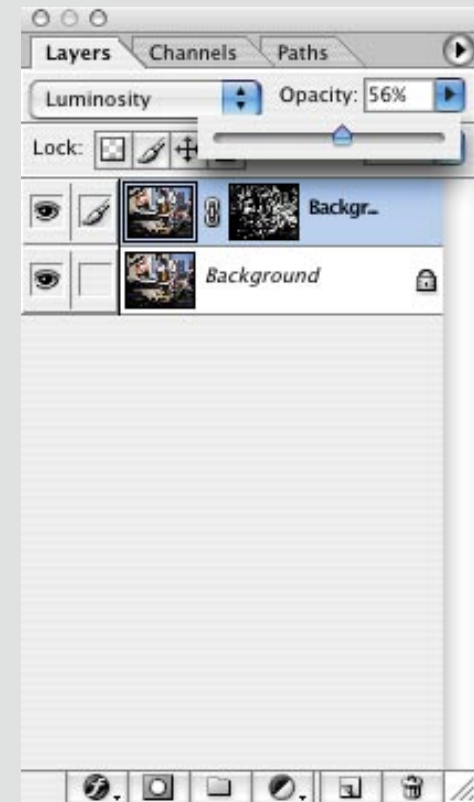


11a. CHECK SHARPENING

Now visually inspect your image. Always check for sharpening at 100% magnification by double clicking on the Zoom Tool. Use the hand tool (or hold down the space bar) to move around the image. Using the eyeball icon, click the sharpened layer on and off to see the before and after effect of the sharpening. Look for areas that get too contrasty, pixelated, haloed or chunky. Developing an eye for this takes practice but the sharpening effect should be fairly subtle. A dramatic sharpening on the screen will likely be overkill in the print.



11b. LAYER OPACITY



Most likely, your image will be over-sharpened. The easiest way to adjust for this is with the Layer Opacity slider at the top of the Layers Palette. Reducing the Layer Opacity will reduce the visibility of the sharpened layer resulting in the lessening of the effect.

11c. ALTER MASK AS NEEDED

The benefit of having a mask on your sharpened layer is that it becomes possible to make very specific adjustments to your sharpening. You may find that there are certain areas of your image that are sharpened too much while most of the rest of the image looks fine. By manipulating the mask, it is possible to make local, as well as global, changes in sharpness.

GLOBAL SHARPENING ADJUSTMENTS

Use a Curves adjustment on the MASK to either lighten or darken the mask. Lightening the mask will increase the sharpening effect while darkening the mask will reduce it.

LOCAL SHARPENING ADJUSTMENTS

Local sharpening adjustments are achieved by painting on the mask. Any of the painting tools (Paint Brush, Gradient, Fill, Eraser) will work.

- If an area needs less sharpening, paint that area of the mask with black paint.
- If an area needs more sharpening, paint that area of the mask with white paint.

For best results, use a soft brush to soften the adjustment to the mask. It is also a good idea to lower the Brush Opacity to slowly fade out or bring in more sharpening. Solid black or white will completely hide or reveal the sharpening effect. Using lower Brush Opacities allows for finer control.

12. FLATTEN AND PRINT

With the sharpening completed, you are ready to print. It is a good idea to recheck your image for dust after sharpening as Unsharp Mask has a tendency to bring out dust that may not have appeared in the initial dedusting.

When working with large image files, it is particularly helpful to flatten the image before printing. Flattening reduces the file size for more efficient printing and is found near the bottom of the flyout menu in the upper right corner of the Layers Palette.

While you are getting used to this technique, you may choose to save the layered version in case you over-sharpen and need to go back and readjust. This saves you from having to go through the whole process again.

