Astrophotography Editing in Photoshop CS6

The formula outlined below is the series of steps that I have found to be most effective when editing astrophotography containing deep-sky objects. It will not yield favourable results when editing photos of planets, the moon, or any photos with landscape elements in them.

1. Prepping the photo

a. Image Mode (Image tab > Mode > 16 bits/channel [Exposure and Gamma mode])
b. Rotation (Image tab > Image Rotation, can be done at any time or not at all)
c. Right click on Background layer in Layers tab, select Layer from Background
d. Crop (Necessary when working with image coming from stacking program such as DeepSkyStacker to remove dark edges)

2. Gradient Removal

a. File > New (Preset: "yourfilename.psd" in order to create blank document of same size)
b. Select entire layer from original document using Select tab > All, copy
c. Paste into new document
d. In new document, use Clone Stamp tool to paint over bright elements of image (galaxy centers, regions of bright nebulosity, anything that you don't want accidentally removed by the gradient removal process)
e. Filter tab > Blur > Gaussian Blur > 180 pixels
f. Image tab > Adjustments > Brightness/Contrast > set Brightness to -25
g. Back in original document, Image tab > Apply Image > Source: "nameofyournewdocument.psd" > Blending: Subtract

3. Levels

a. Layer > New Adjustment Layer > Levels
b. Rename layer if you wish, click Ok in pop-up box
c. Click exclamation mark to render histogram, move Black Point (left-most slider on histogram) up until the edge of data on the histogram
d. Move Grey Point to the left to brighten photo as needed
e. If necessary, repeat with another Levels layer to get Black Point closer to edge of data

4. Curves

a. Layer > New Adjustment Layer > Curves
b. Rename layer if you wish, click Ok in pop-up box
c. Click exclamation mark to render histogram, click near bottom of line (left side of main data peak) and drag down slightly (creating a "curve" in the line), click near right side of main data peak and drag up slightly (thus brightening the brighter parts of your image)
d. Click slightly right of center of the histogram, drag down until the upper portion of the histogram is in line with its original state (so highlights aren't overexposed)
e. If necessary, repeat with more Curves layers to further "stretch out" histogram and bring out details in your subject

5. Colour Balance

a. Layer > New Adjustment Layer > Colour Balance
b. Rename layer if you wish, click Ok in pop-up box
c. Adjust various sliders in Shadows, Midtones, and Highlights (ensuring Preserve Luminosity is checked) until the image is as neutral a colour as possible (easiest to tell by going for a black/grey background and by colour of subject)
d. If more Curves layers are added after balancing colour, it may be necessary to repeat the above steps with a new Colour Balance layer

6. Sharpening/Noise Reduction

a. Click on base layer in Layers tab
b. Filter tab > Noise > Reduce Noise > Strength: 1, Preserve Details: 99%, Reduce Color Noise: 50%, Sharpen Details: 50% > Ok
c. If more sharpening is needed: Filter tab > Sharpen > Smart Sharpen > Amount: 50%, Radius: 1 px (increase/decrease Amount value if more or less sharpening is needed)

7. Saving

a. Always a good idea to save image in Photoshop format: File > Save As > Format: Photoshop (ensure Layers are checked) > Save
b. If saving image for posting online or sharing: File > Save As > Format: JPEG > Save
c. If saving image for further editing in another program: File > Save As > Format: TIFF (ensure Layers are checked) > Save

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