



File Formats – Part 2

Roundtripping with Lightroom Classic

Image File Formats

The Other Six



Most Common Image File Formats



Most Common Image File Formats



Most Common Image File Formats



BMP Files



BMP (Bitmap Picture) File Format

- Raster graphics image file format created in 1994
- Stores bitmap digital images independent of display device
- Primarily used on Windows and OS/2
- Characteristics
 - Does not support effective image compression
 - Translate well to dot-format output devices like CRTs and printers
 - Large and uncompressed; rich in color, high in quality
- **Best use: Print graphics**

GIF Files



GIF (Graphics Interchange Format) File Format

- Commonly used for web images and sprites in software programs
- Created by Steve Wilhite at CompuServe (1987) for video display @ dial-up modem speeds
- Characteristics
 - Uses a maximum of 256 colors
 - Fewer available colors, so smaller than JPEG
 - Lossless LZW compression
- **Best uses: Line drawings, simple illustrations, animations, web graphics and small icons**

JPG Files



JPEG (Joint Photographic Experts Group) Format

- Common file format (created in 1992) for digital photos and other digital graphics
- Uses lossy compression (image quality lost as file size decreases)
- Characteristics
 - Standard format for most digital cameras
 - Great for making smaller file sizes / images with more than 256 colors
 - Compatible across nearly all devices and platforms (including the web)
- **Best uses: Black and white images, images with complex coloring, still life imagery, real life photographs**

PNG Files



PNG (Portable Network Graphics) File Format

- Raster graphics format (created in 1996) as an improved, non-patented replacement for GIFs
- Most used lossless image compression format on internet
- Two types of PNG image formats
 - PNG-8
 - Similar to GIF (but smaller)
 - 256 colors and 1-bit transparency
 - PNG-24
 - 24-bit color (similar to JPEG)
 - Can include over 16 million colors
 - Lossless compression means larger files than JPEG
- **Best uses: Web images and logos, transparent or semitransparent images, complex images like photographs if file size is not an issue**

Exporting Images to PNG vs. JPEG

Original RAW File (6000x4000): 28MB

JPEG Export (100% Quality): 9.7MB

PNG-24 Export: 18.6MB ←



PSD Files



PSD (Photoshop Document) File Format

- Image file format native to Photoshop; works with Adobe products
- Supports multiple pictures, objects, filters, text, as well as using layers, vector paths and shapes, and transparency
- Commonly used for containing high quality graphics data
- Characteristics
 - Capable of holding 30,000 pixels in both height and width
 - File size can extend to 2GB
- **Best uses: Images that will be sent to print, images that are being edited and layers are needed, high quality digital photography**

PSB (Photoshop Big) File Format

- Files with .PSB extension are **Adobe Photoshop Large Document** files
- Nearly identical to more common PSD format
- PSB files support **much larger files**
 - Can be as large as 4 EB (over 4.2 billion GB)
 - Supports height and width up 300,000 pixels
 - PSDs are limited to 2 GB and image dimensions of 30,000 pixels

TIFF Files



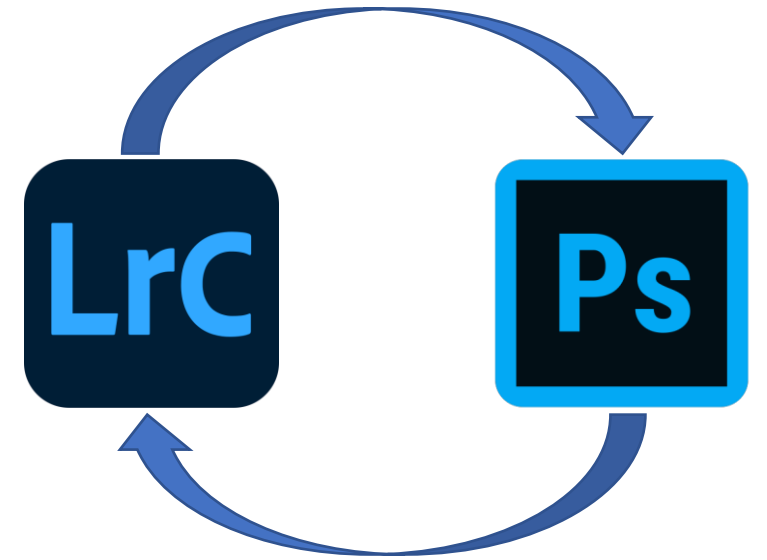
TIFF (Tagged Image Format File) File Format

- Created in 1986 by Aldus Corporation as a common file format for scanned images
- Patent acquired by Adobe Systems in 2009
- Commonly used for high quality graphics
- Characteristics
 - Can be viewed/edited in nearly all photo editing software products
 - Whether compressed or not, TIFFs do not lose any image data
 - Preferred format for scanning photographs and other complex imagery
- **Best uses: Images that will be sent to print, images that are being edited and layers are needed, high quality digital photography**

Image Format Comparison Chart

	JPG	TIFF	PNG	GIF	BMP	PSD
Lossy compression	☑	☒	☒	☒	☒	☒
Lossless compression	☒	☑	☑	☑	☑	☑
Uncompressed option	☑	☒	☒	☒	☑	☒
Grayscale	☑	☑	☑	☑	☒	☑
RGB Color	☑	☑	☑	☒	☑	☑
8-bit color (24-bit data)	☑	☑	☑	☒	☑	☑
16-bit color option	☒	☑	☑	☒	☑	☑
CMYK or LAB color	☑	☑	☒	☒	☑	☑
Indexed color option	☑	☑	☑	☒	☒	☑
Transparency option	☒	☑	☑	☑	☑	☑
Animation option	☒	☒	☒	☑	☒	☒
Layers	☒	☑	☒	☑	☑	☑
Print or Web	Both	Print	Web	Web	Print	Print

Roundtripping with Lightroom Classic



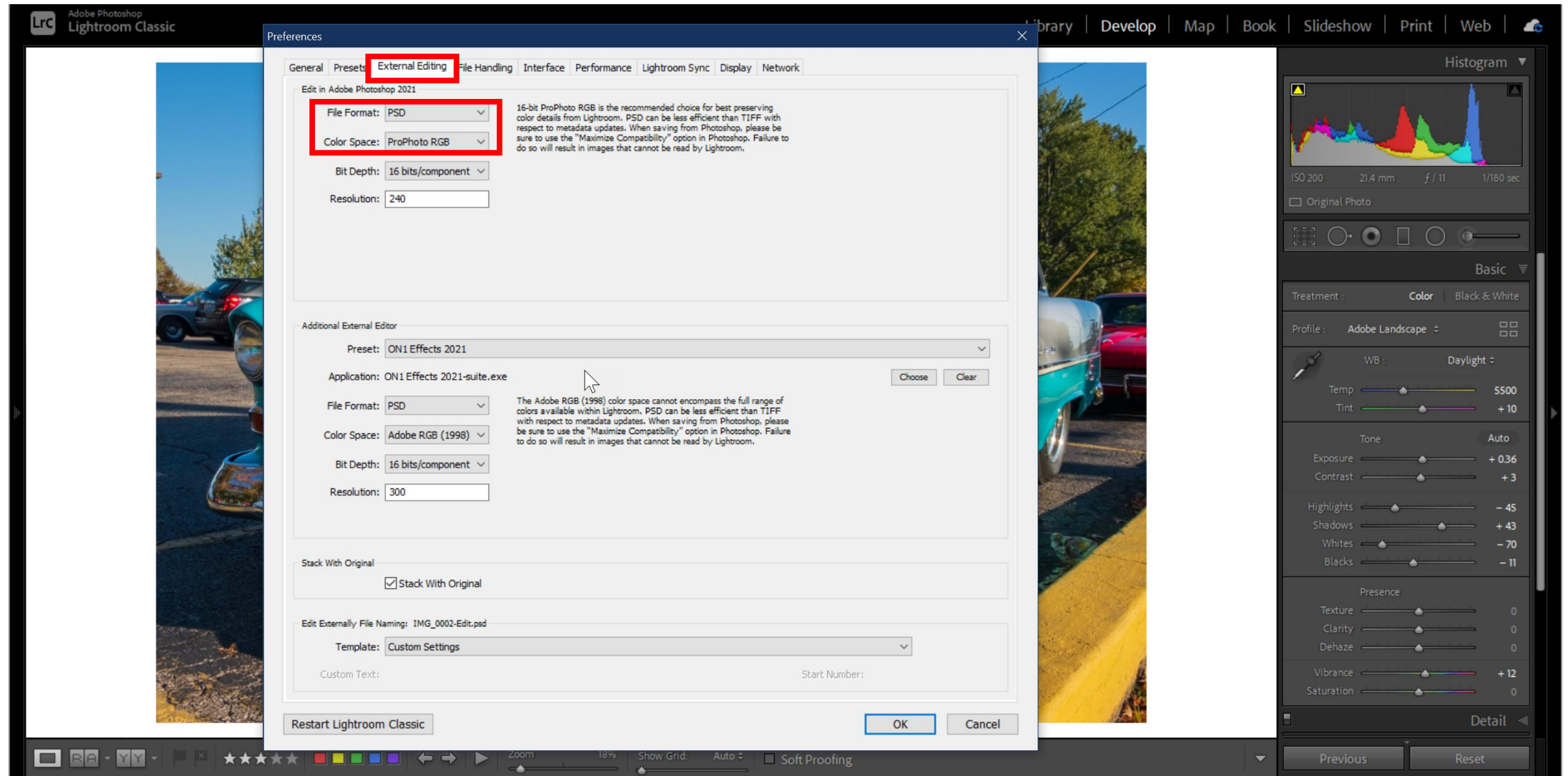
Why Roundtrip?

- Lightroom cannot do everything
- There are times you want to send a photo to Photoshop
- Go to Photoshop to use layers and filters
- Common to use Photoshop for
 - Retouching
 - Dodging and burning
 - Layered composites
 - Special effects
- **Best to make your main adjustments in Lightroom first**

Better File Choice – TIFF or PSD?

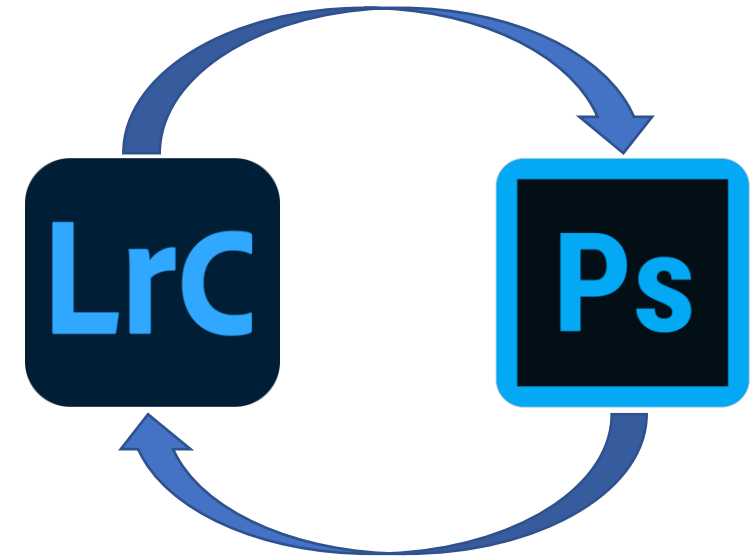
- Both TIFF and PSD files are lossless; quality factor is the same
- TIFFs are MUCH larger in size than PSD files
- TIFFs do not (generally) offer photographers a significant advantage
- **Exception:** If you are sharing your file with someone using a program that doesn't accept PSD files
- In this presentation, all LR-PS examples will use PSD files

How to Specify TIFF or PSD



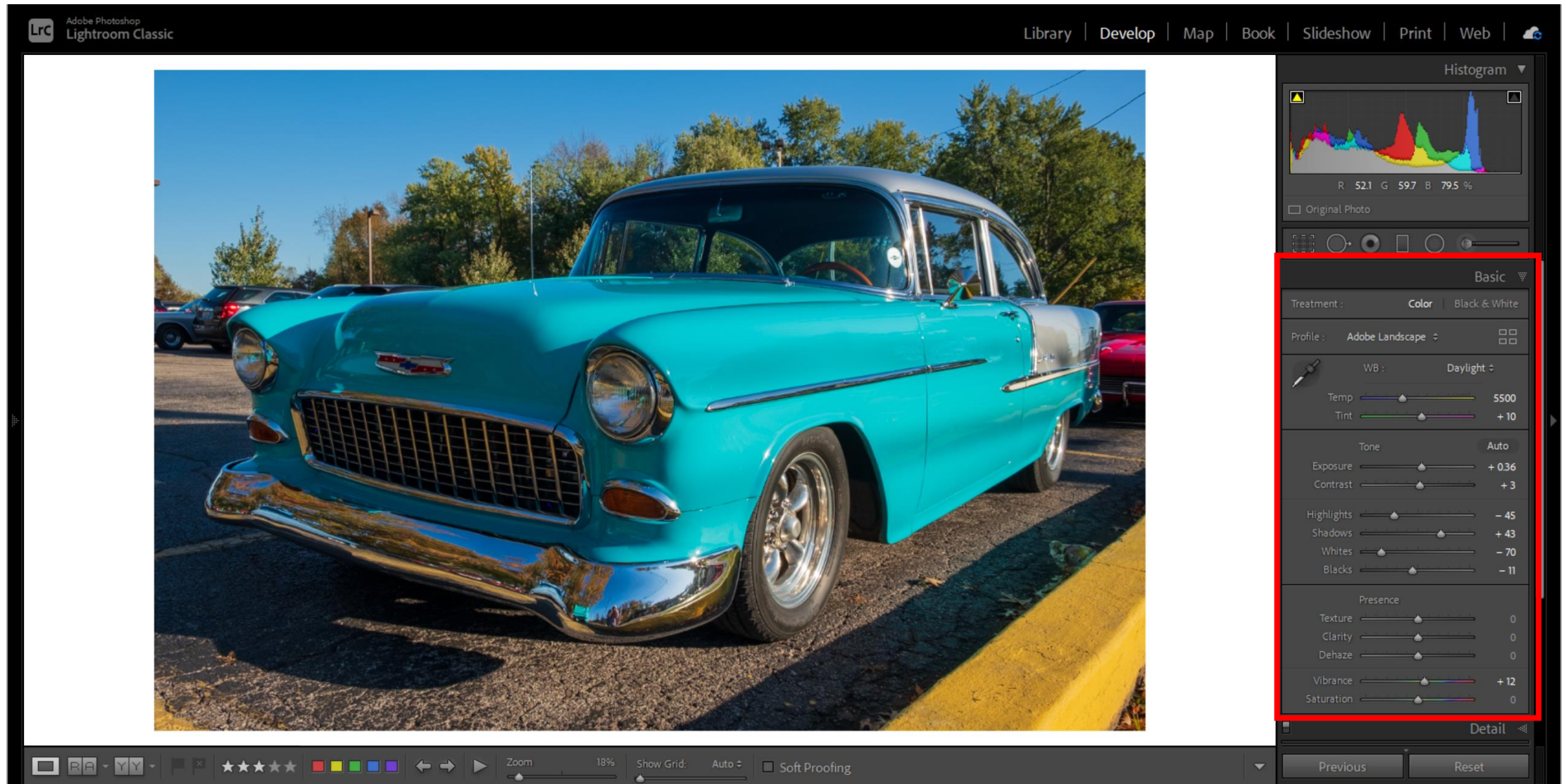
Simple Roundtrip Workflow

1. Open Lightroom Classic
2. Select the desired photo in the Lightroom catalog (Library, Develop, Slideshow, or Print modules)
3. Perform desired Lightroom edits
4. Right-click on the selected photo and send it to Photoshop as a Smart Object
5. Perform desired Photoshop edits
6. When finished, save the file to return it to Lightroom
7. File with Photoshop edits now in Lightroom catalog

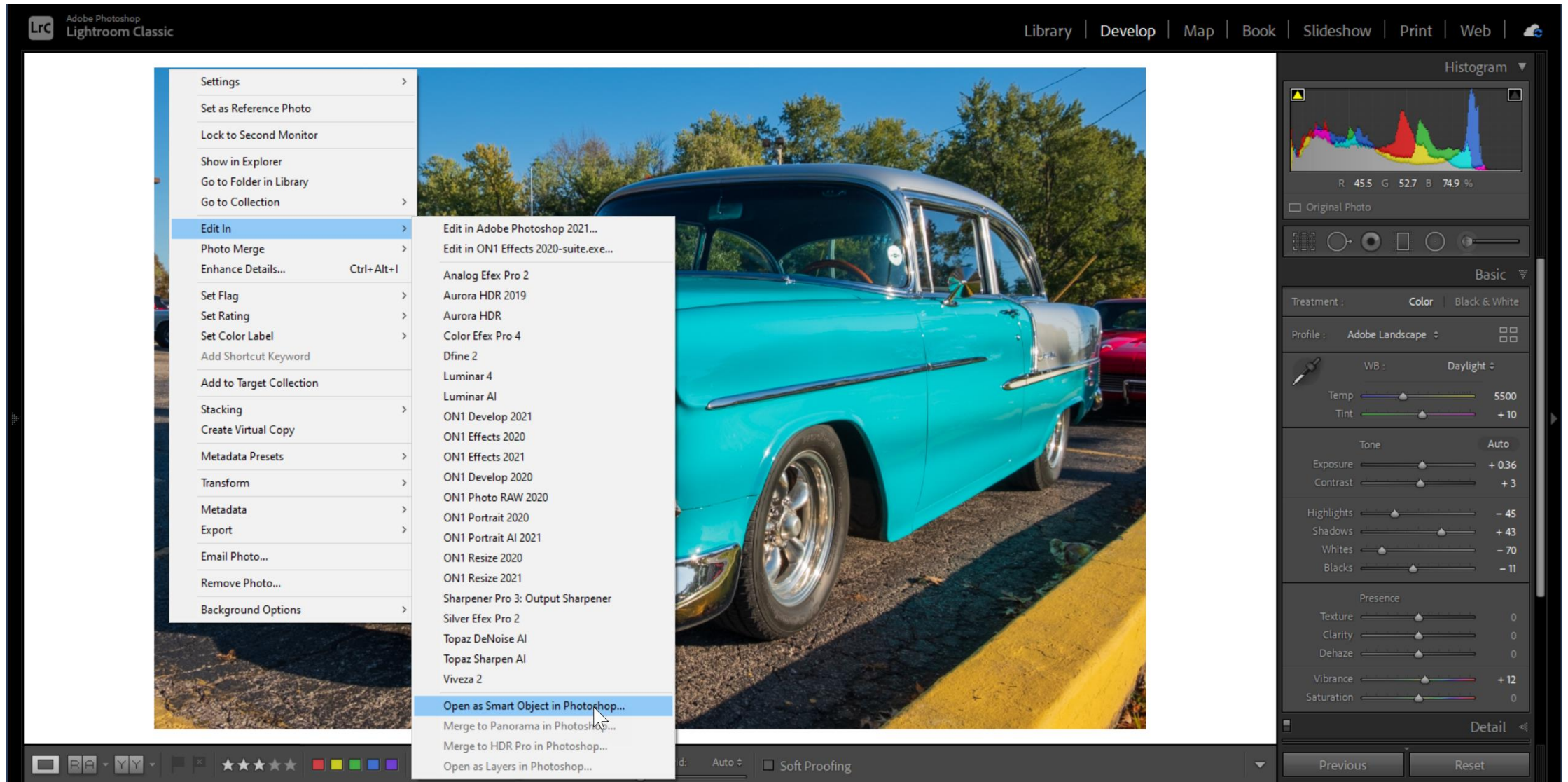


Opening a Lightroom Photo in Photoshop for the First Time

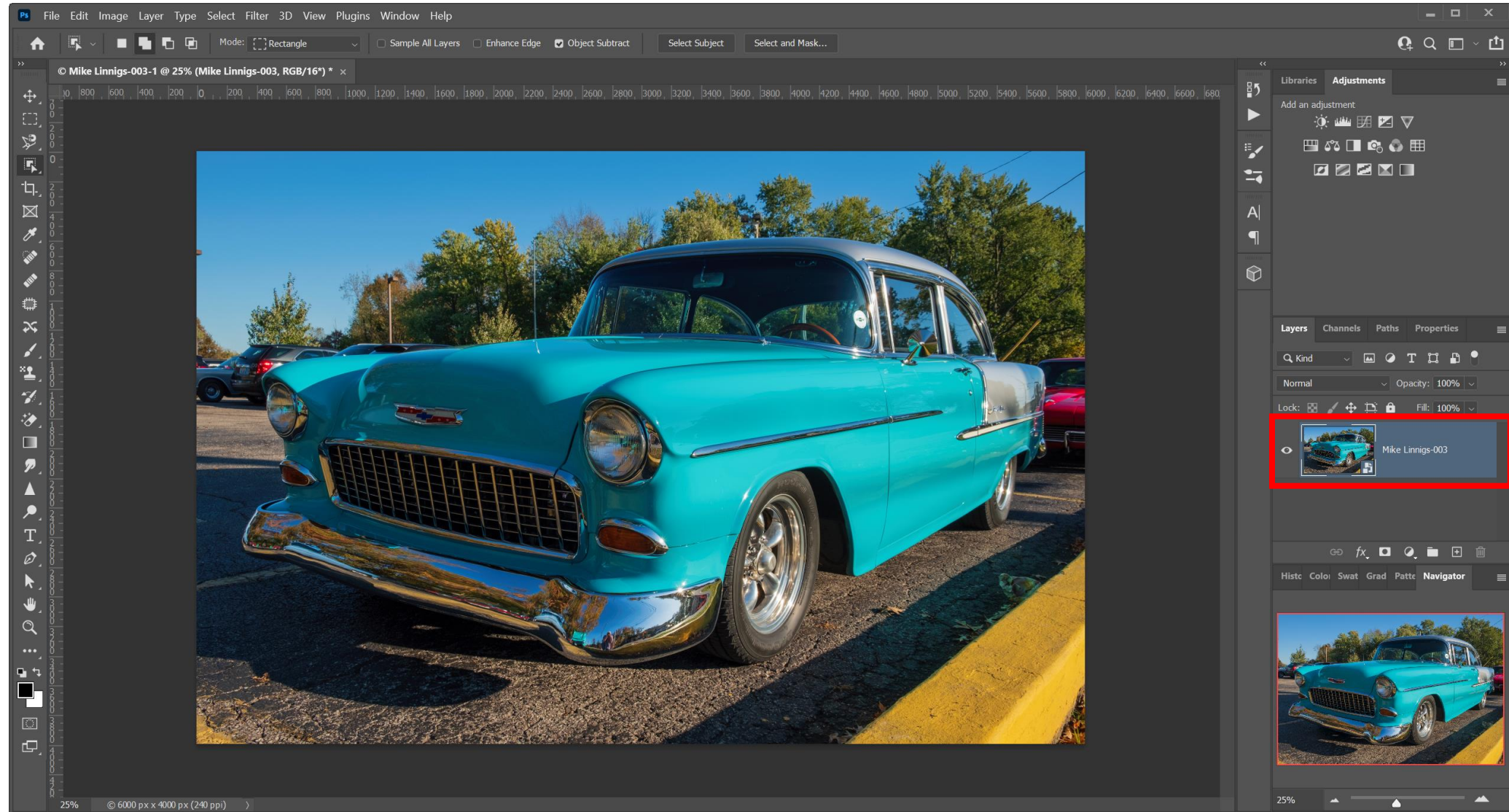
Perform Initial Edits in Lightroom



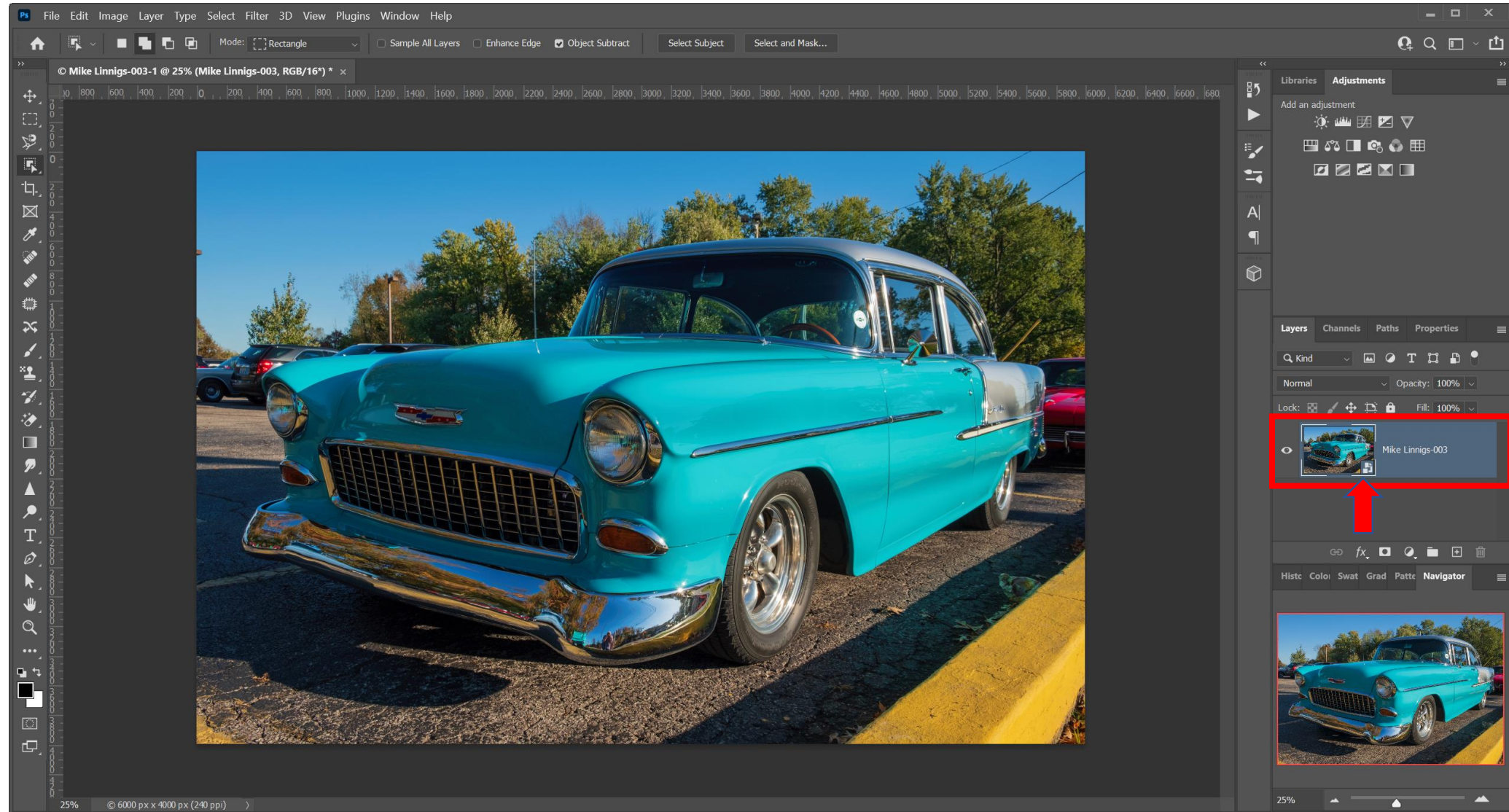
Send to Photoshop as a Smart Object



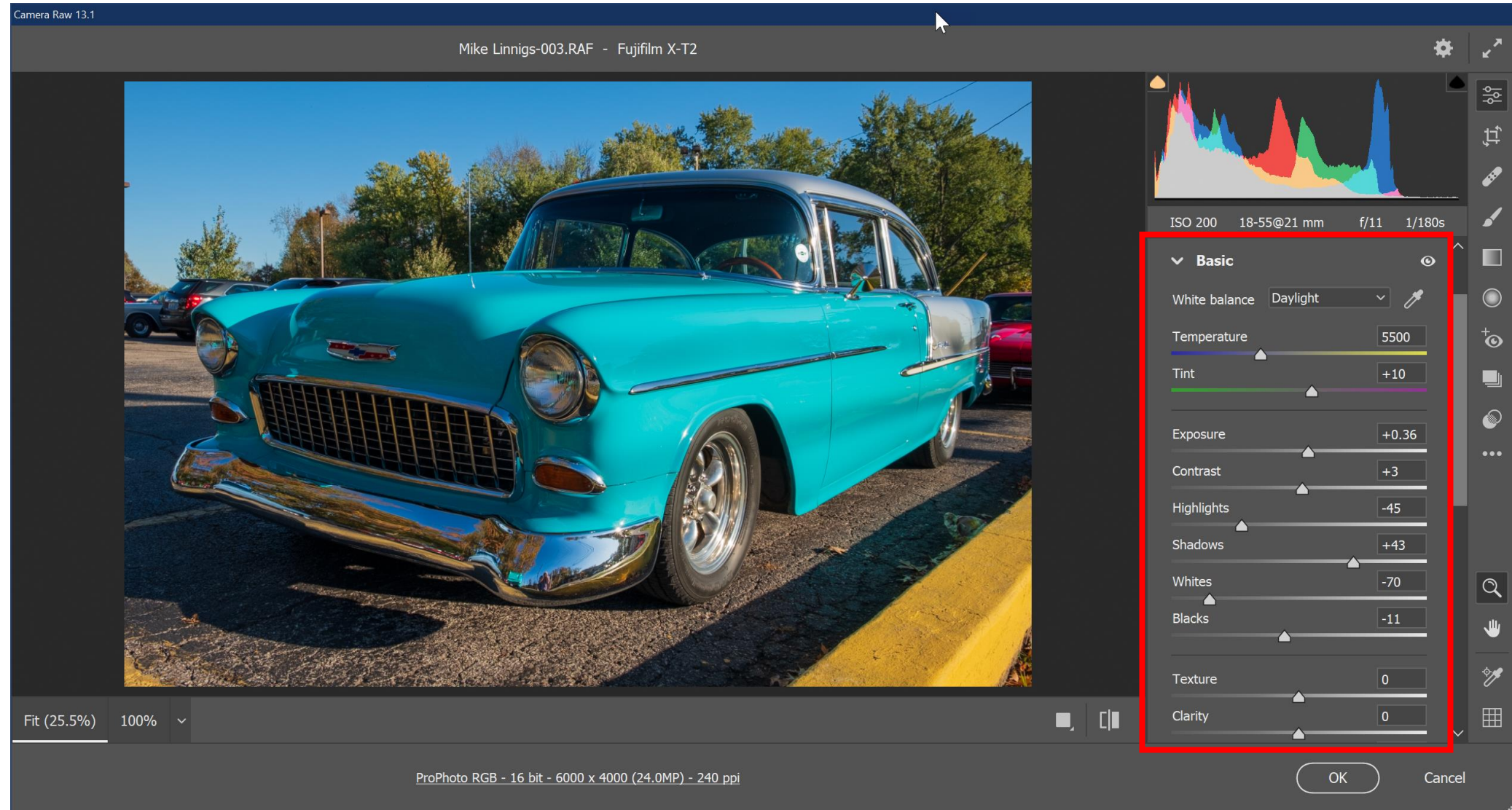
File Opens in Photoshop



File Opens in Photoshop




RAW File Opens in Adobe Camera Raw



Lightroom Settings Are Intact

Camera Raw 13.1

Mike Linnigs-003.RAF - Fujifilm X-T2



The screenshot displays the Adobe Camera Raw 13.1 interface. The main preview window shows a vibrant red classic car, a 1955 Chevrolet, parked on a paved lot under a clear blue sky. To the right of the preview are several adjustment panels. At the top is the 'Histogram' panel, showing a multi-colored histogram with RGB channels. Below it is the 'Basic' panel, which contains sliders for White balance (set to Daylight, 5500K), Temperature, Tint, Exposure (+0.36), Contrast (+3), Highlights (-45), Shadows (+43), Whites (-70), Blacks (-11), Texture (0), and Clarity (0). A red double-headed arrow points to the 'Basic' panel. The bottom of the interface shows the status bar with 'ProPhoto RGB - 16 bit - 6000 x 4000 (24.0MP) - 240 ppi' and 'OK' and 'Cancel' buttons.

ISO 200 18-55@21 mm f/11 1/180s

Basic

White balance Daylight

Temperature 5500

Tint +10

Exposure +0.36

Contrast +3

Highlights -45

Shadows +43

Whites -70

Blacks -11

Texture 0

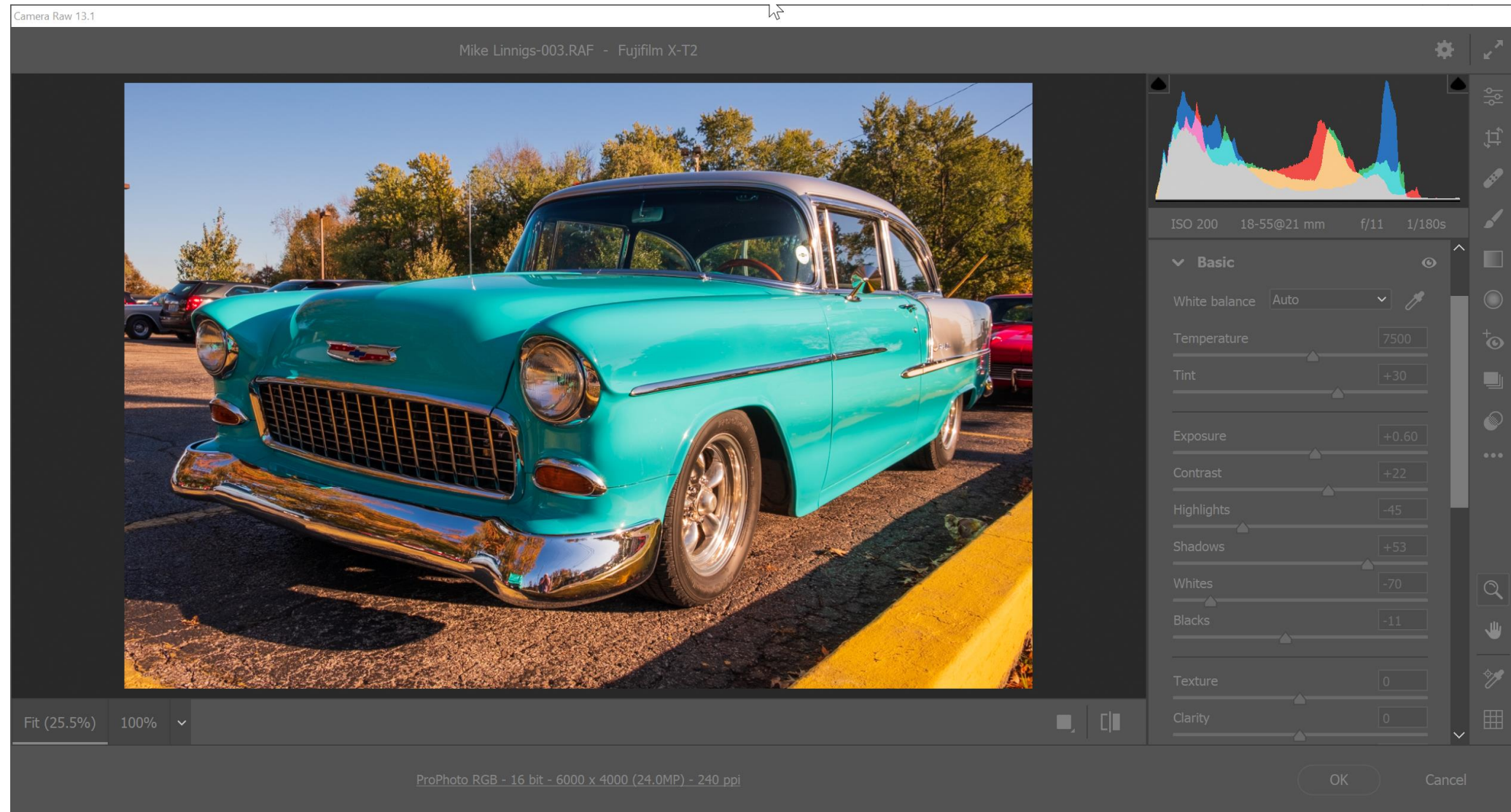
Clarity 0

Fit (25.5%) 100%

ProPhoto RGB - 16 bit - 6000 x 4000 (24.0MP) - 240 ppi

OK Cancel

Make Further Changes in Camera Raw



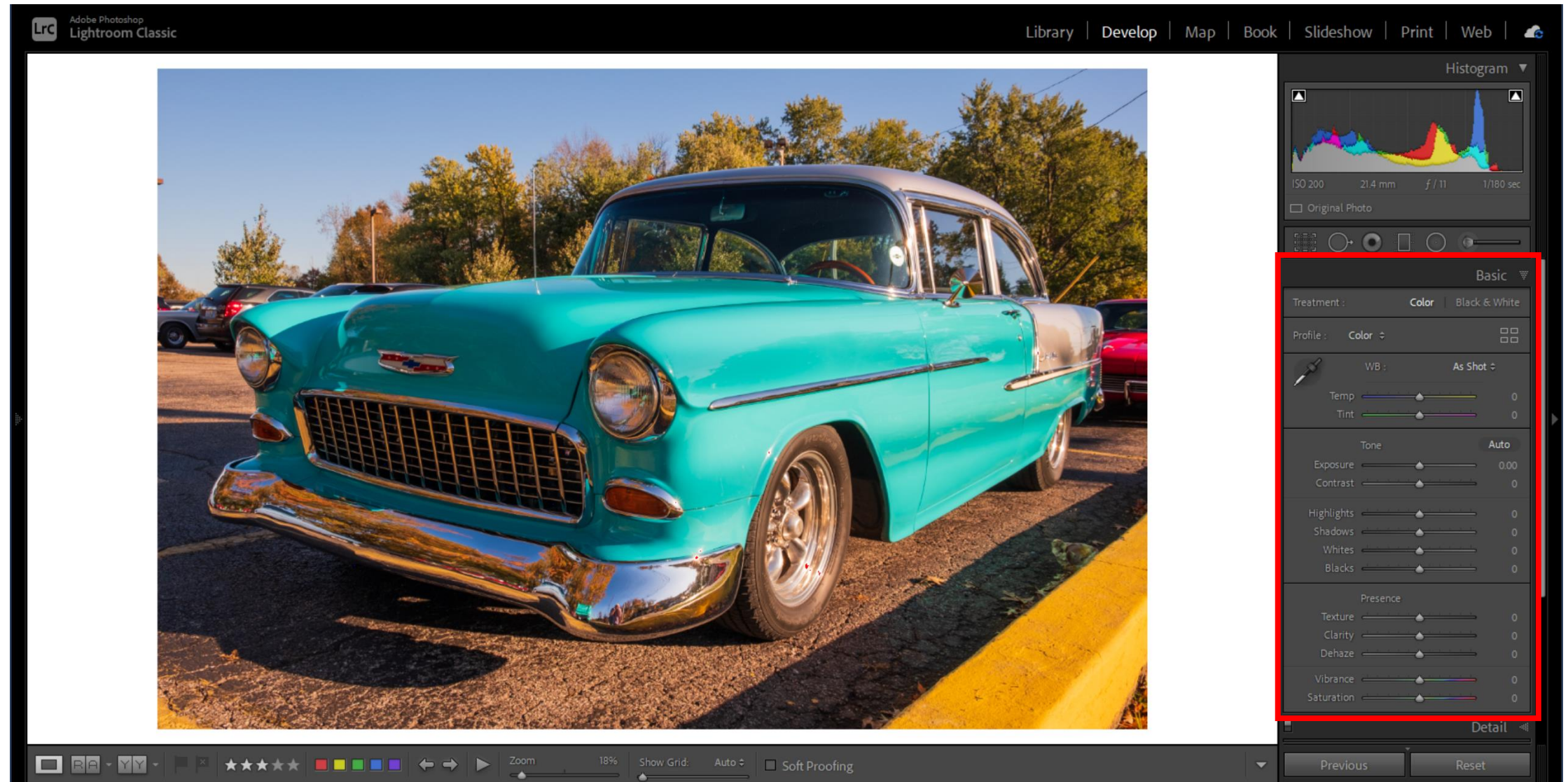
Updated File Returns to Photoshop



Save the Updated File



File Returns to Lightroom




File Returns to Lightroom

Adobe Photoshop
Lightroom Classic

Library | Develop | Map | Book | Slideshow | Print | Web | ☁

Mike Linnigs-003-Edit.psd
1/180 sec at f / 11, ISO 200
21.4 mm (XF18-55mmF2.8-4 R LM OIS)



Histogram

ISO 200 21.4 mm f / 11 1/180 sec

☐ Original Photo

Basic

Treatment: Color Black & White

Profile: Color

WB: As Shot

Temp 0 Tint 0

Tone Auto

Exposure 0.00 Contrast 0

Highlights 0 Shadows 0 Whites 0 Blacks 0

Presence

Texture 0 Clarity 0 Dehaze 0

Vibrance 0 Saturation 0

Detail

Previous Reset

18% Show Grid: Auto Soft Proofing

New PSD File in Lightroom Catalog

Adobe Photoshop
Lightroom Classic

Library | Develop | Map | Book | Slideshow | Print | Web

Library Filter: Text Attribute Metadata None Filters Off

145 Main Speed-015.RAF 6000 x 4000 FRAF
146 Main Speed-016.RAF 6000 x 4000 FRAF
147 Main Speed-017.RAF 6000 x 4000 FRAF
148 Mike Linnigs-001.RAF 6000 x 4000 FRAF
149 Mike Linnigs-002.RAF 6000 x 4000 FRAF
150 Mike Linnigs-003-Edit.psd 6000 x 4000 FRAF

151 Mike Linnigs-003.RAF 6000 x 4000 FRAF
152 Mike Linnigs-004.RAF 6000 x 4000 FRAF
153 Mike Linnigs-005.RAF 6000 x 4000 FRAF
154 Mike Linnigs-006.RAF 6000 x 4000 FRAF
155 Mike Linnigs-007.RAF 6000 x 4000 FRAF
156 Mike Linnigs-008.RAF 6000 x 4000 FRAF

157 Mike Linnigs-009.RAF 6000 x 4000 FRAF
158 Mike Linnigs-010.RAF 6000 x 4000 FRAF
159 Mike Linnigs-011.RAF 6000 x 4000 FRAF
160 Mike Linnigs-012.RAF 6000 x 4000 FRAF
161 Mike Linnigs-013.RAF 6000 x 4000 FRAF
162 Natural Sciences-001.RAF 6000 x 4000 FRAF

1 of 2

ISO 200 21.4 mm f / 11 1/180 sec

Original Photo

Quick Develop

Saved Preset Default Settings

White Balance As Shot

Tone Control Auto

Exposure

Clarity

Vibrance

Reset All

Keywording

Keyword List

Default Metadata

Comments

Sort: File Name

Thumbnails

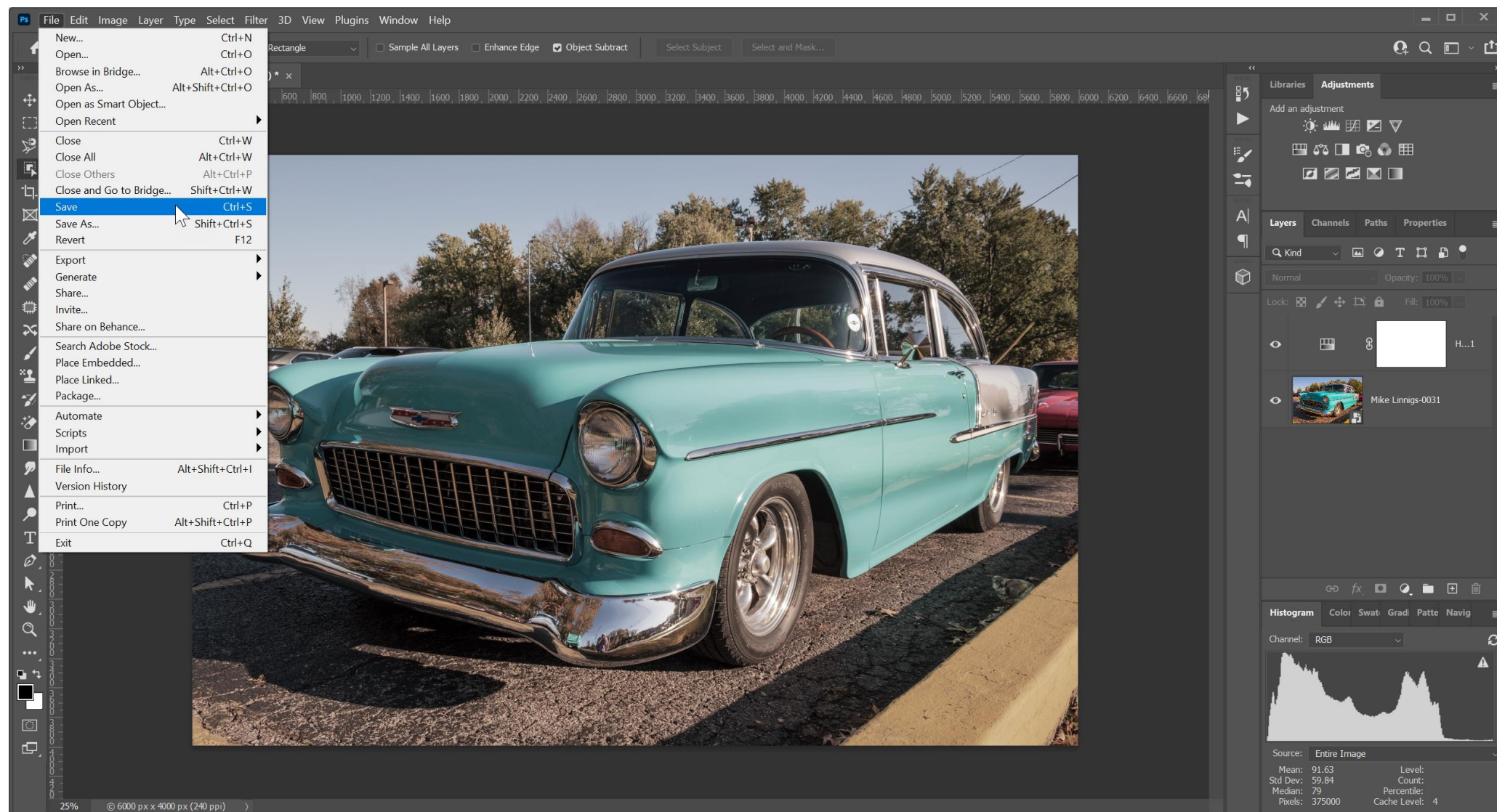
Sync Sync Settings

The screenshot shows the Adobe Lightroom Classic Library grid. A grid of photo thumbnails is displayed, each with a number and filename. The file 'Mike Linnigs-003-Edit.psd' (150) is highlighted with a red rectangle, indicating it is the new PSD file added to the catalog. Another red rectangle highlights the thumbnail for 'Mike Linnigs-003.RAF' (151). The right-hand panel shows the 'Quick Develop' settings, including a histogram, exposure, clarity, and vibrance sliders. The bottom of the interface shows the 'Sort' menu set to 'File Name' and a 'Thumbnails' panel.

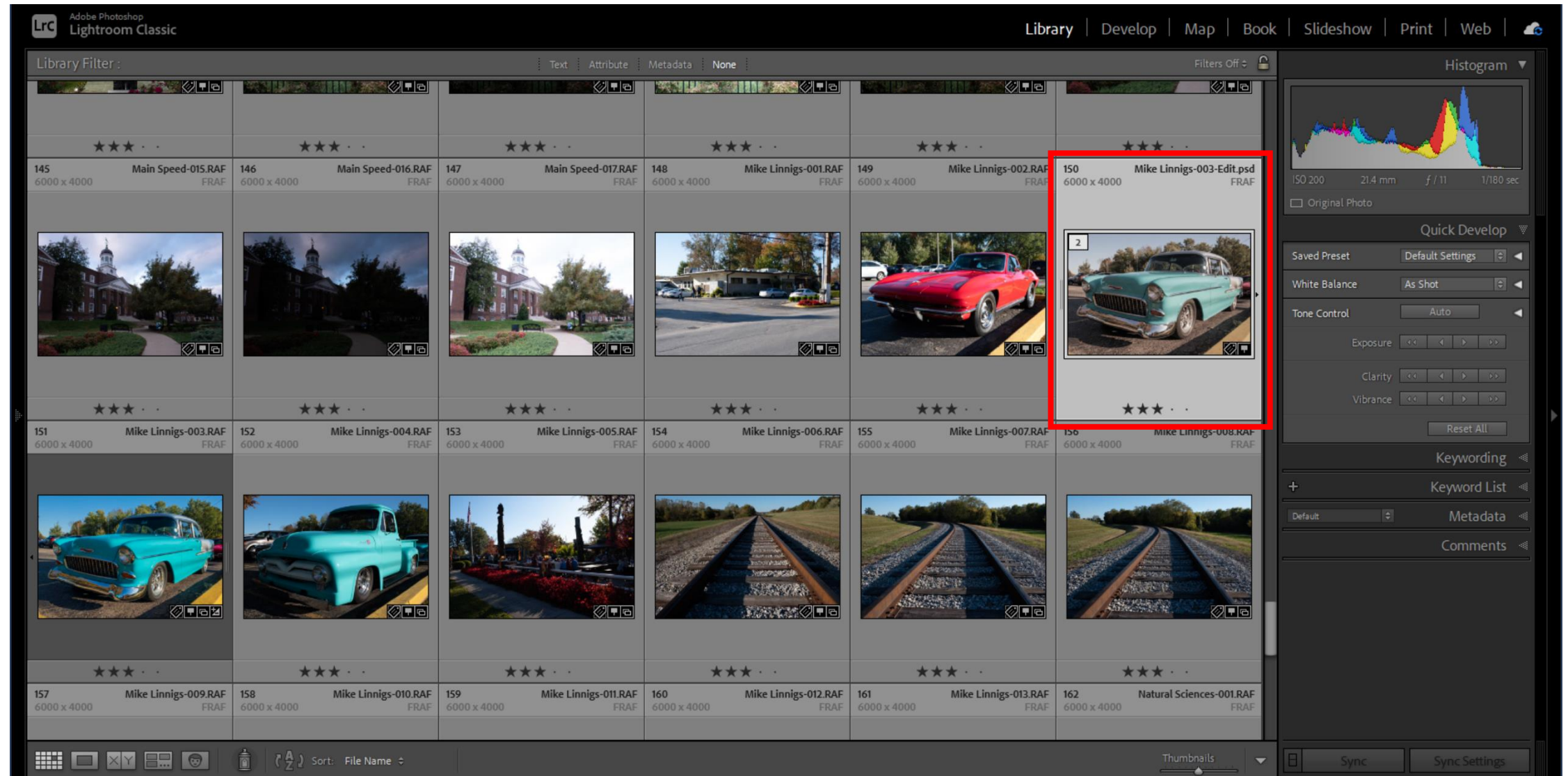
Go Back to Photoshop / Make More Changes

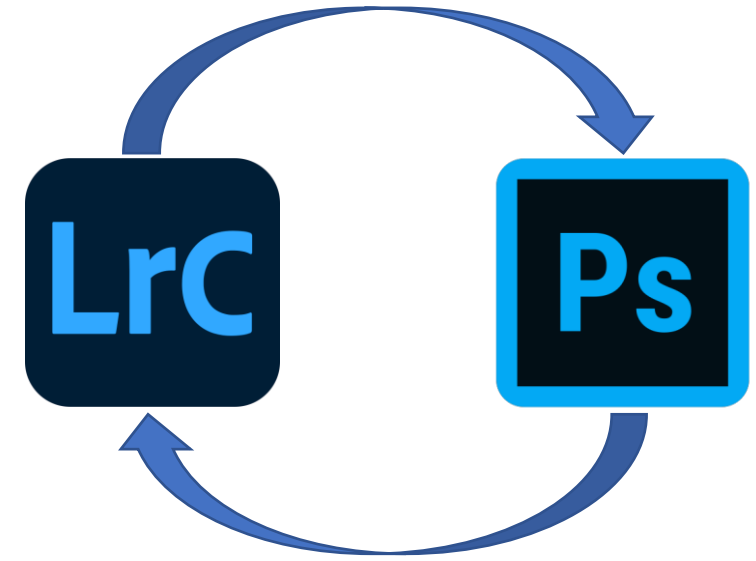


Save the Updated File



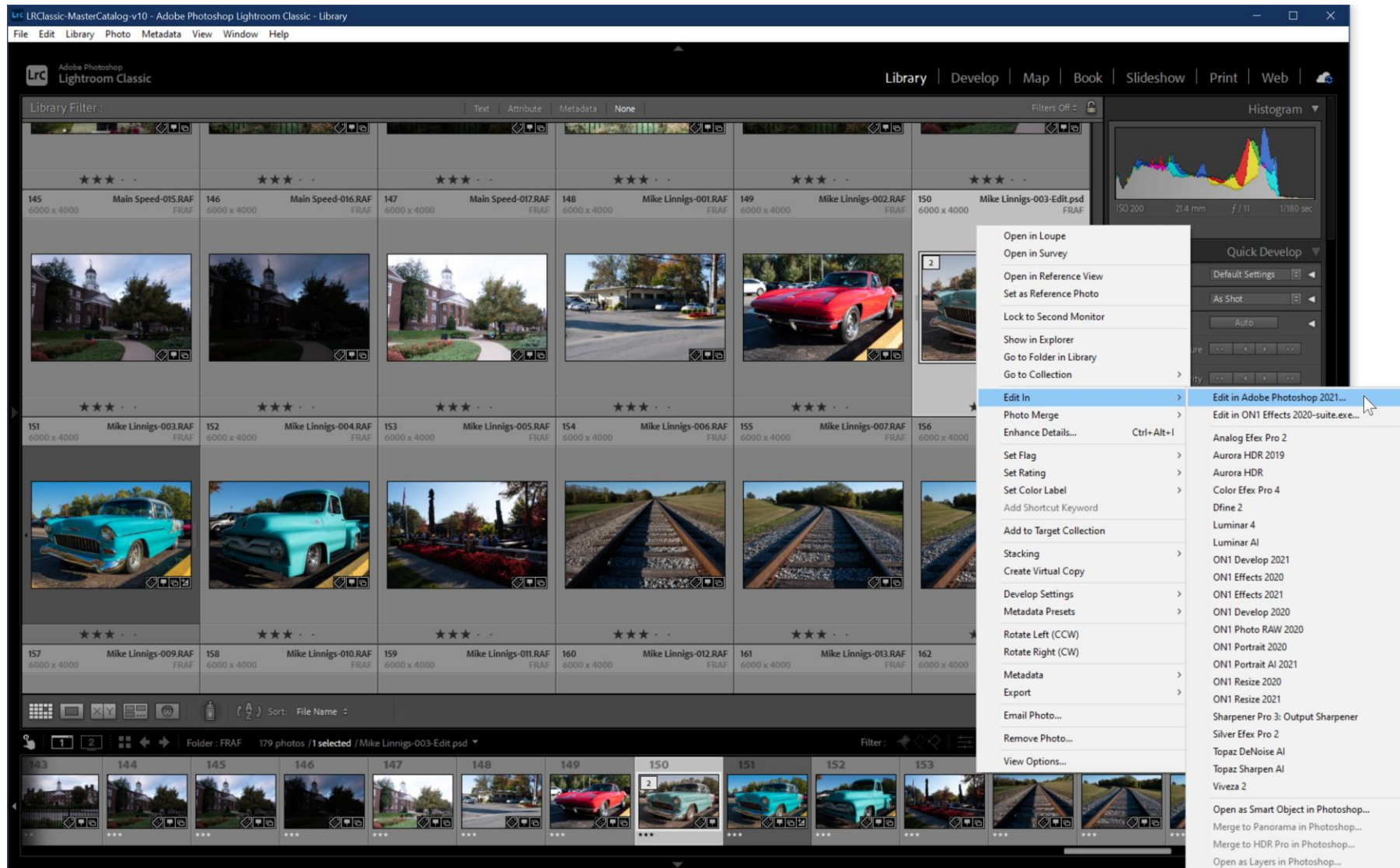
File Returns in Place to Lightroom



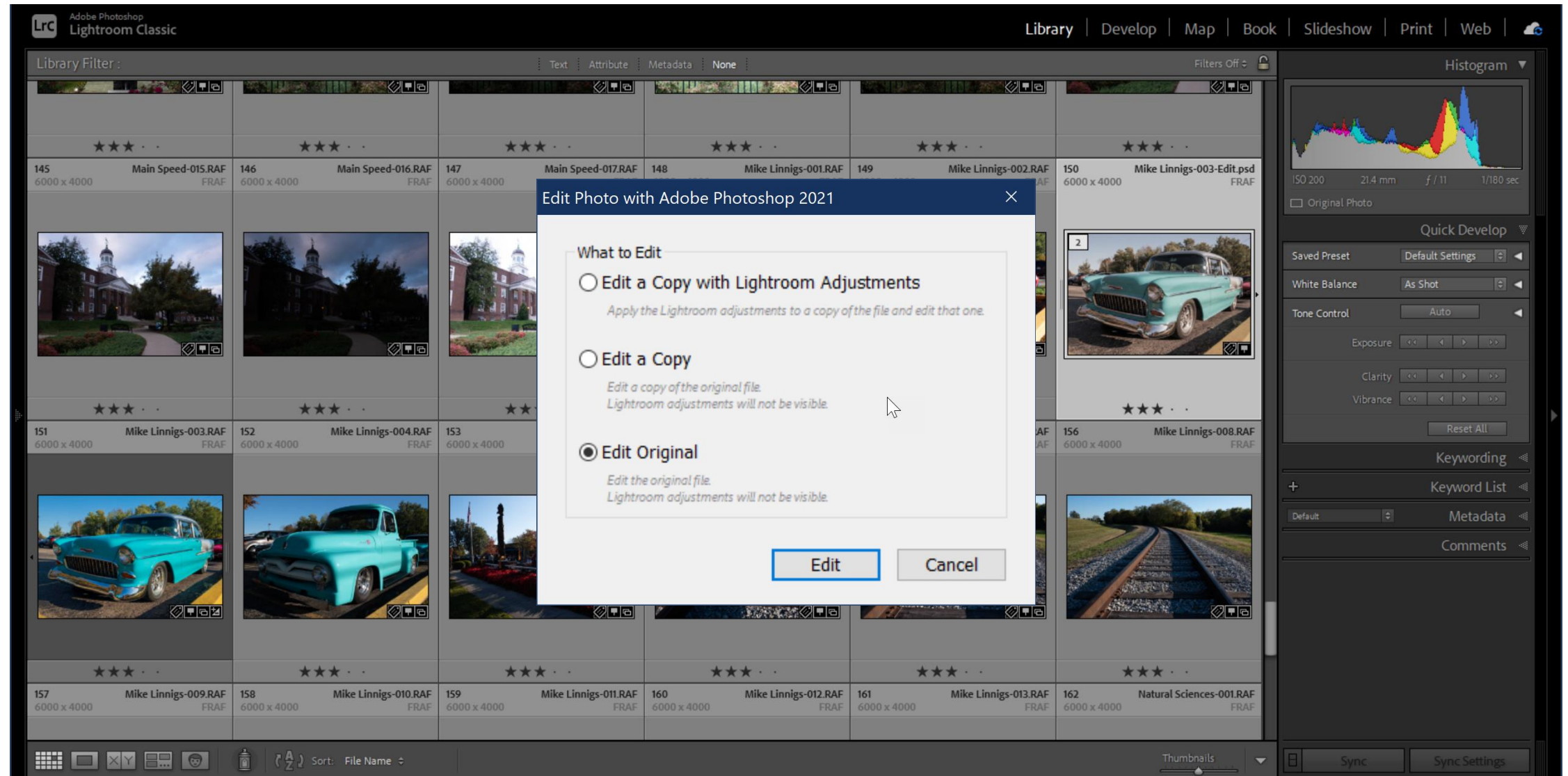


Opening a Photoshop Image From Lightroom

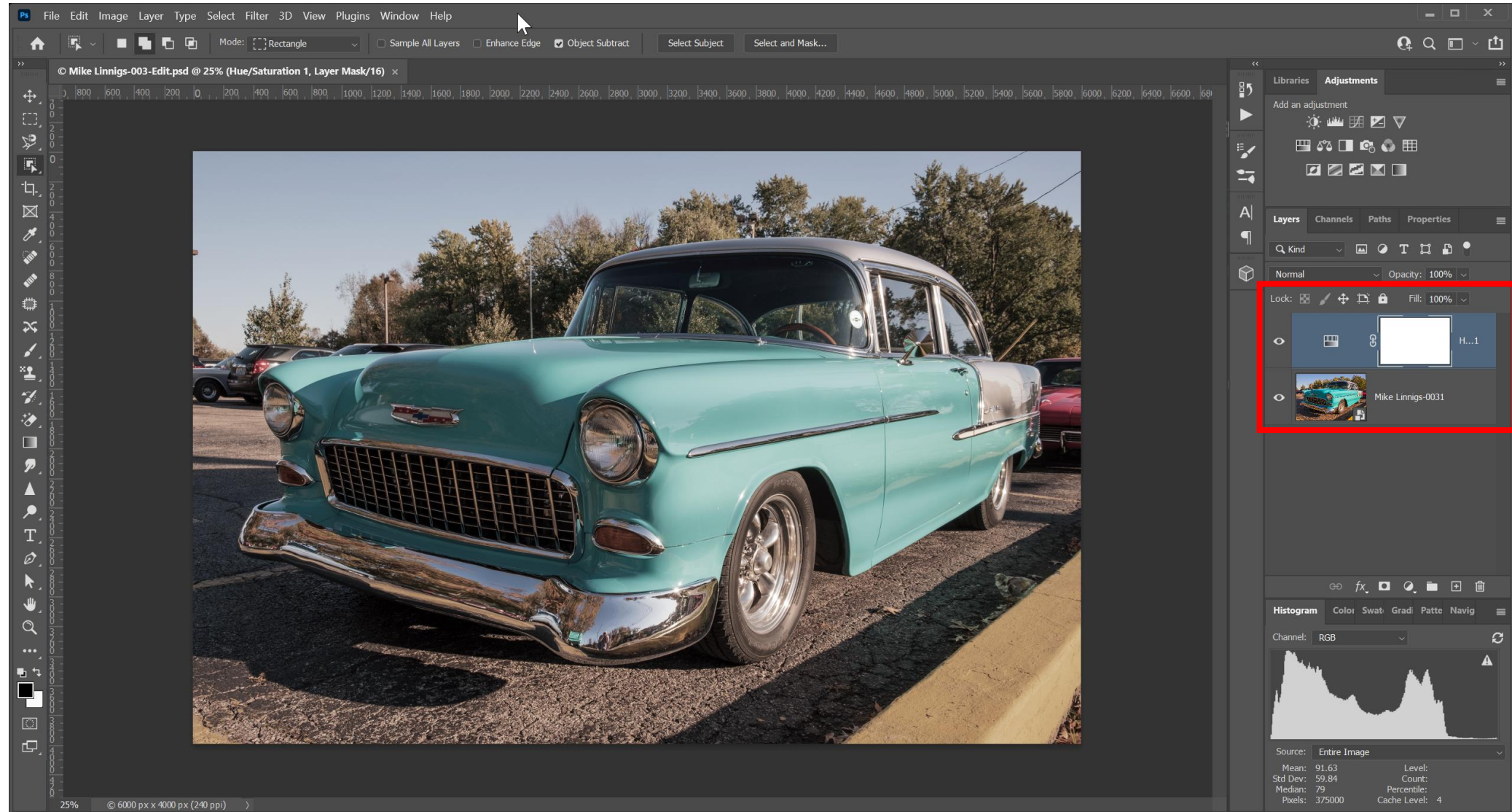
Send File to Photoshop (NOT a Smart Object)

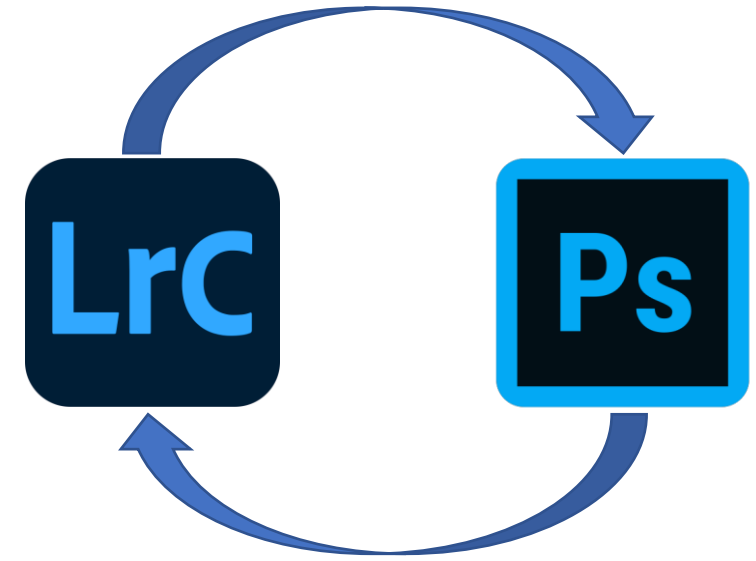


Edit the ORIGINAL File – NOT a Copy



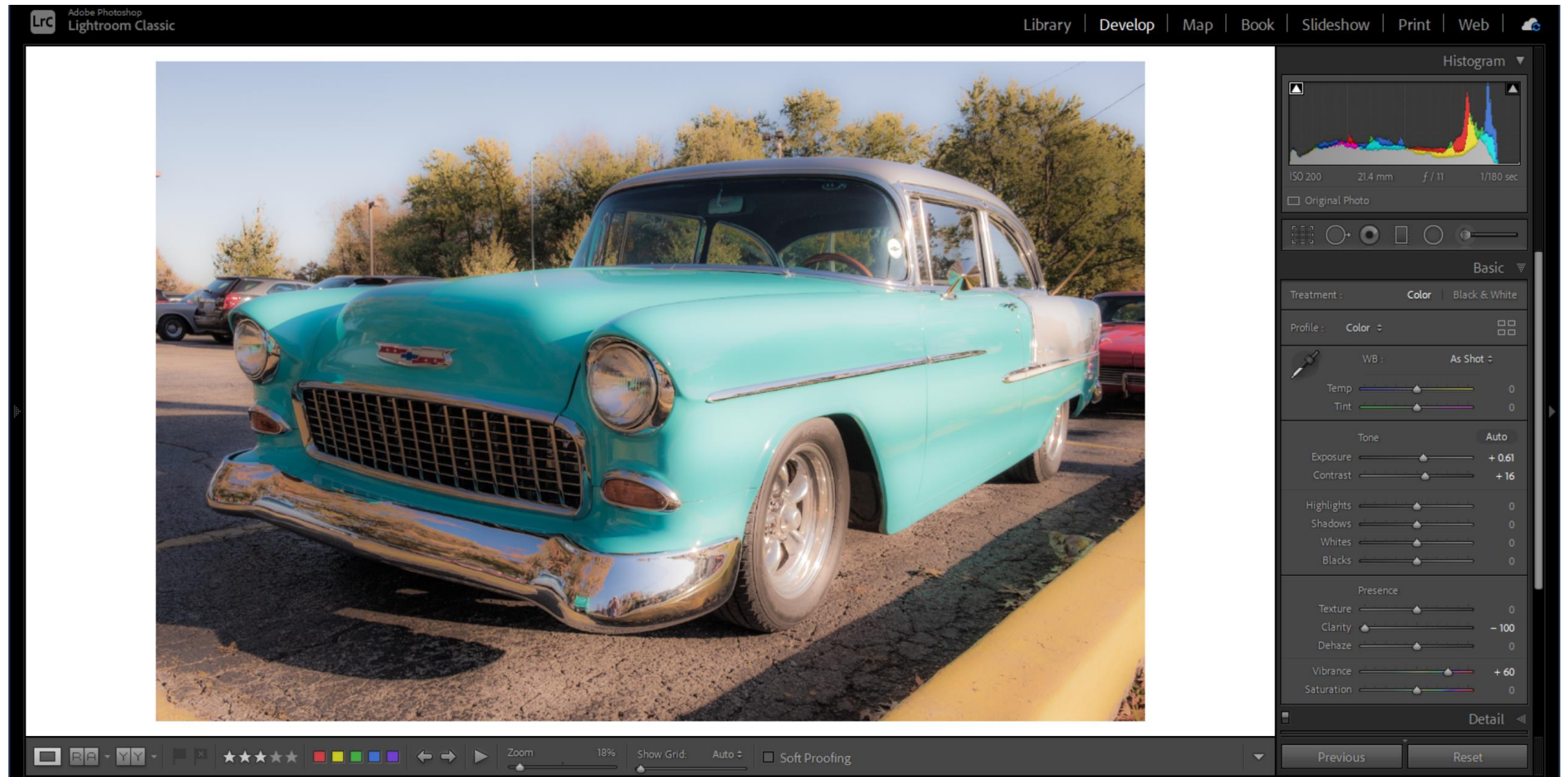
File Opens in Photoshop With Layers Intact



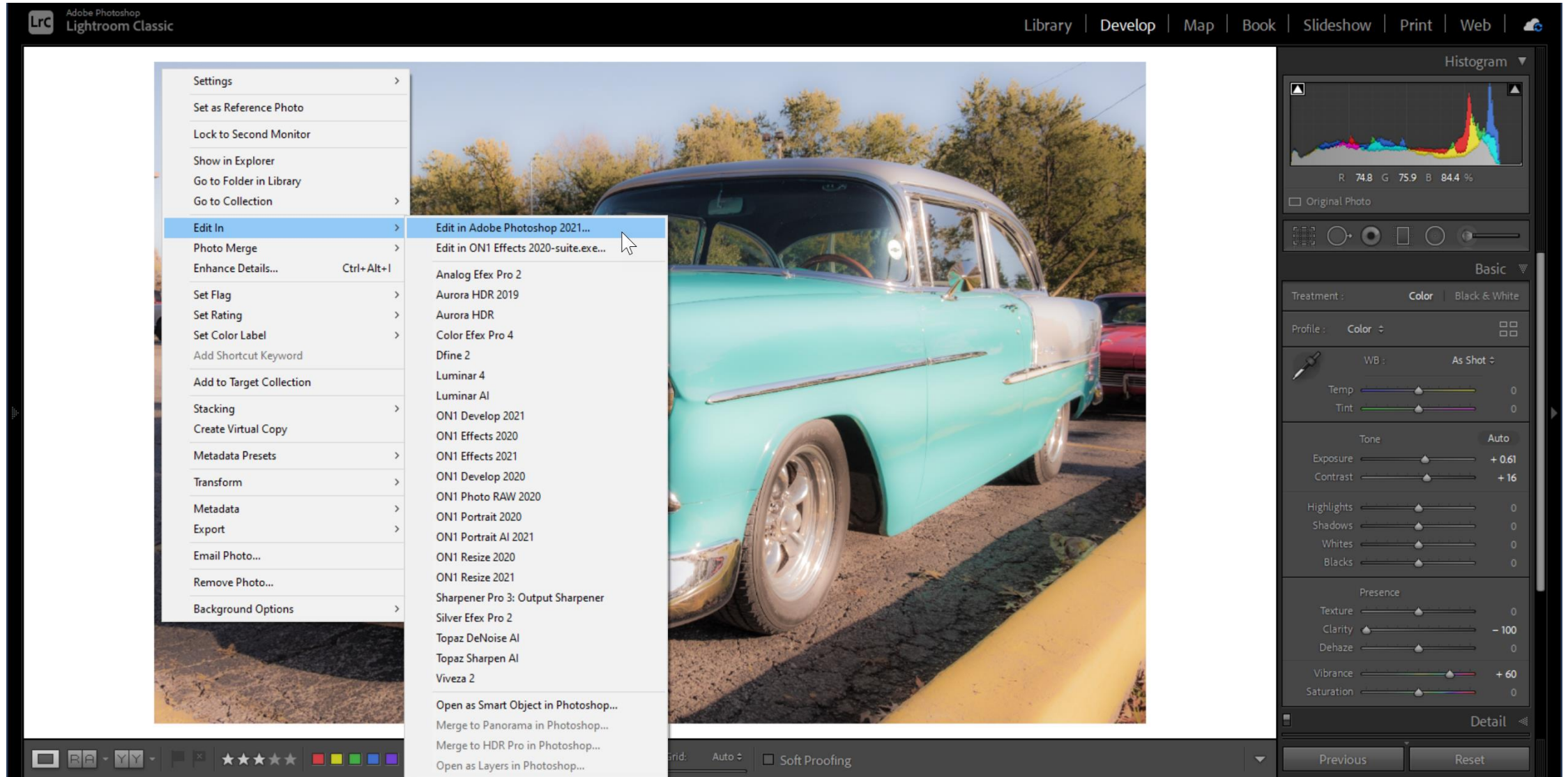


Opening a Photoshop Image With Lightroom Adjustments Applied

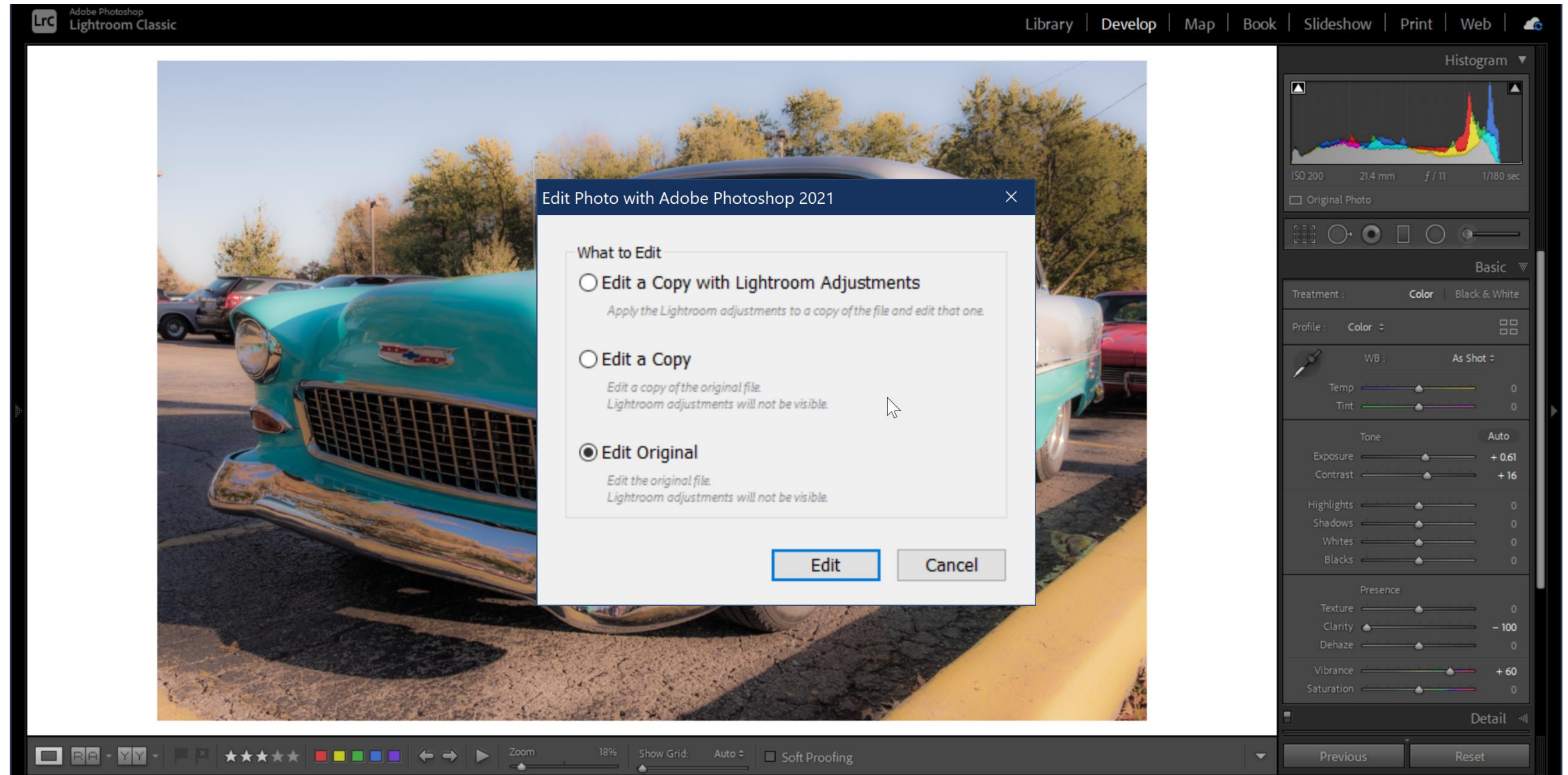
Add a Lightroom Adjustment to the PSD File



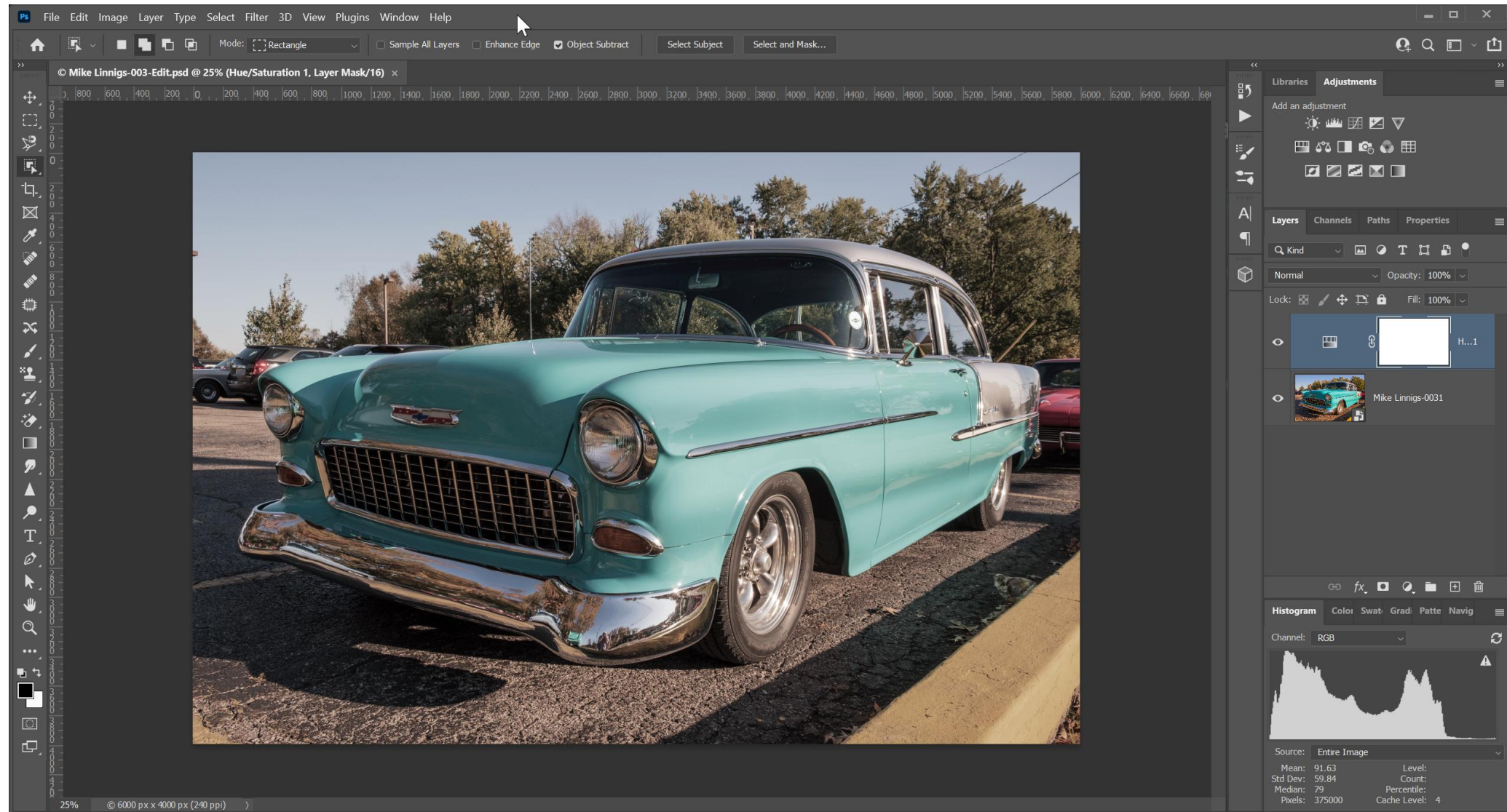
Send Edited File to Photoshop



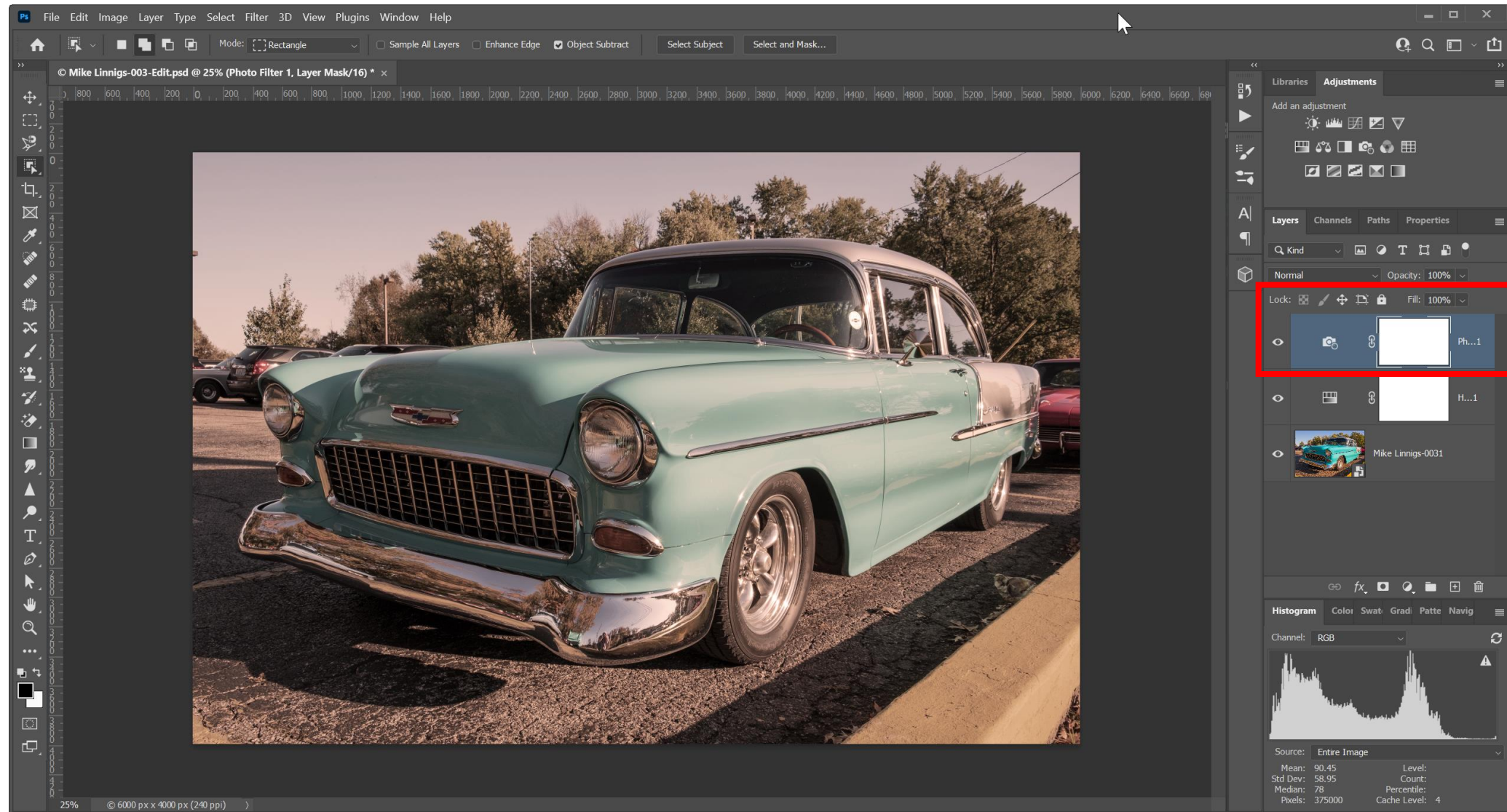
Edit the ORIGINAL File – NOT a Copy



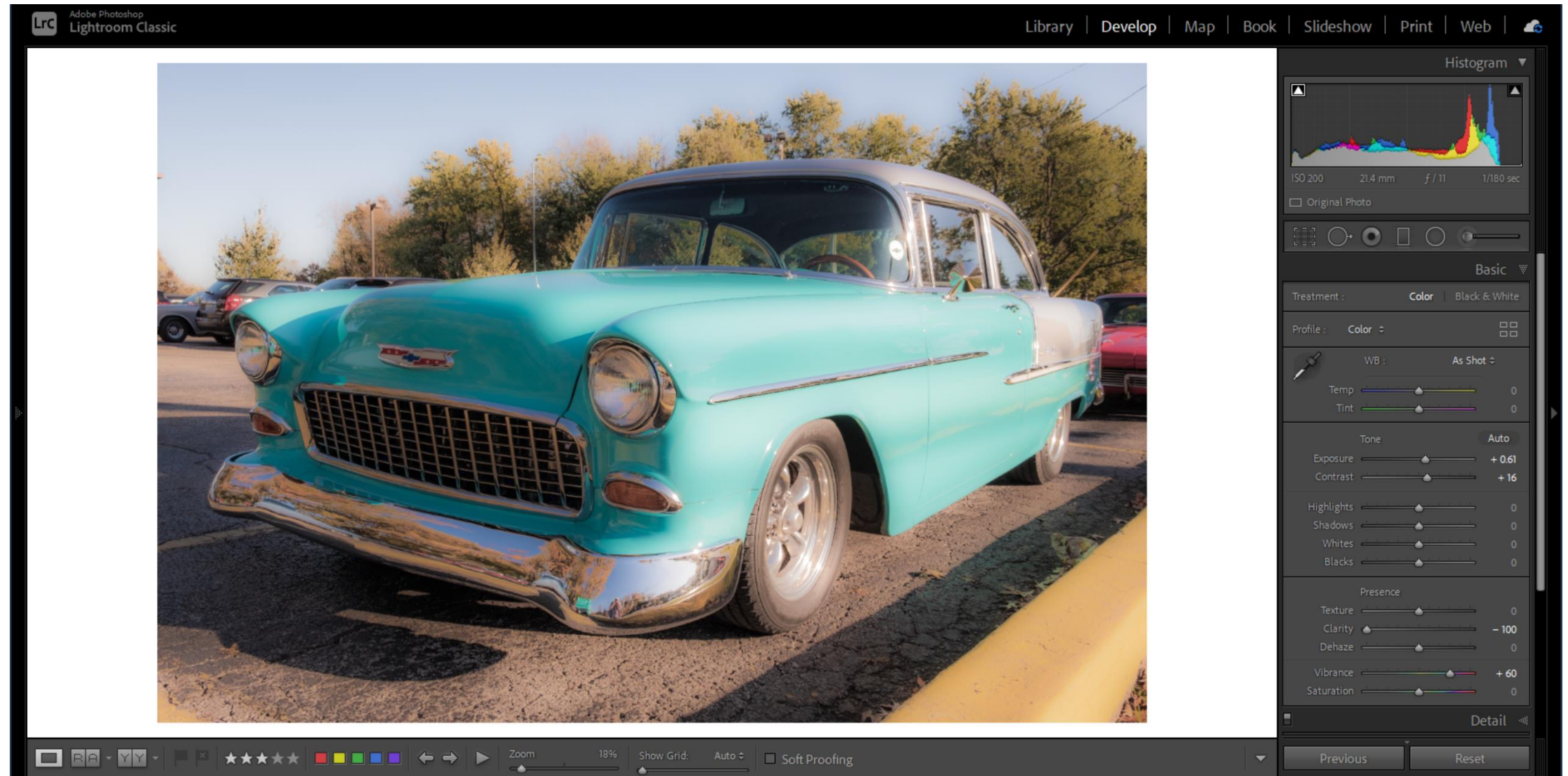
PSD File Does Not Reflect Lightroom Changes

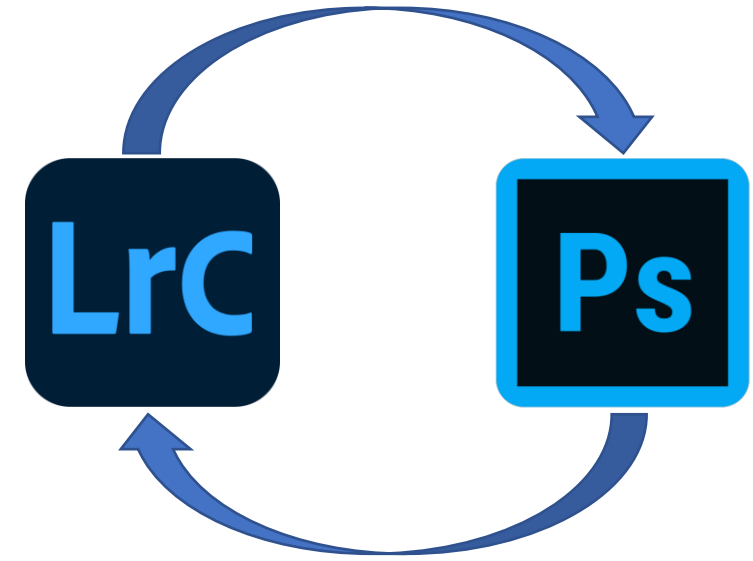


Make Additional Changes in Photoshop



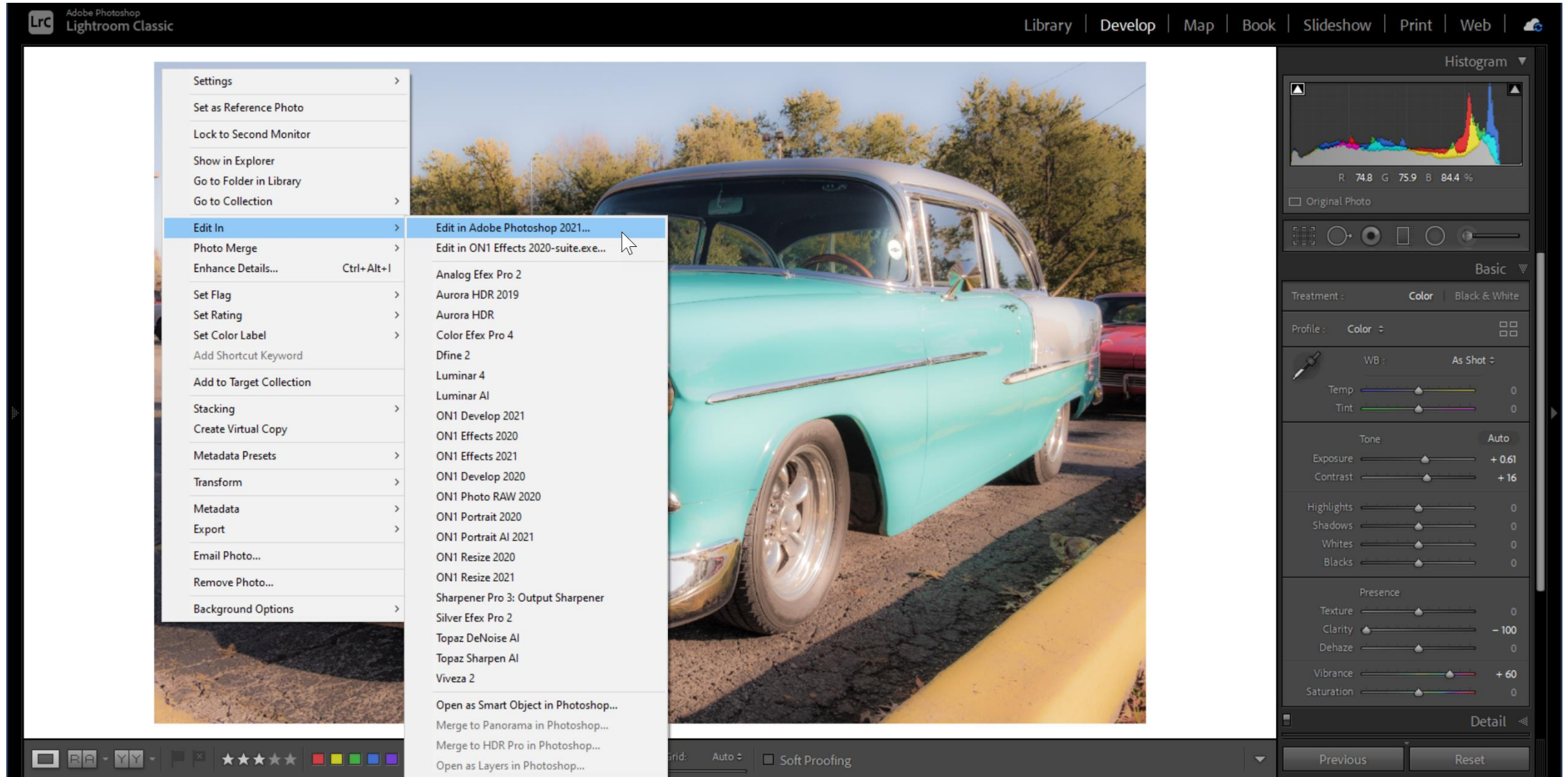
Return to Lightroom



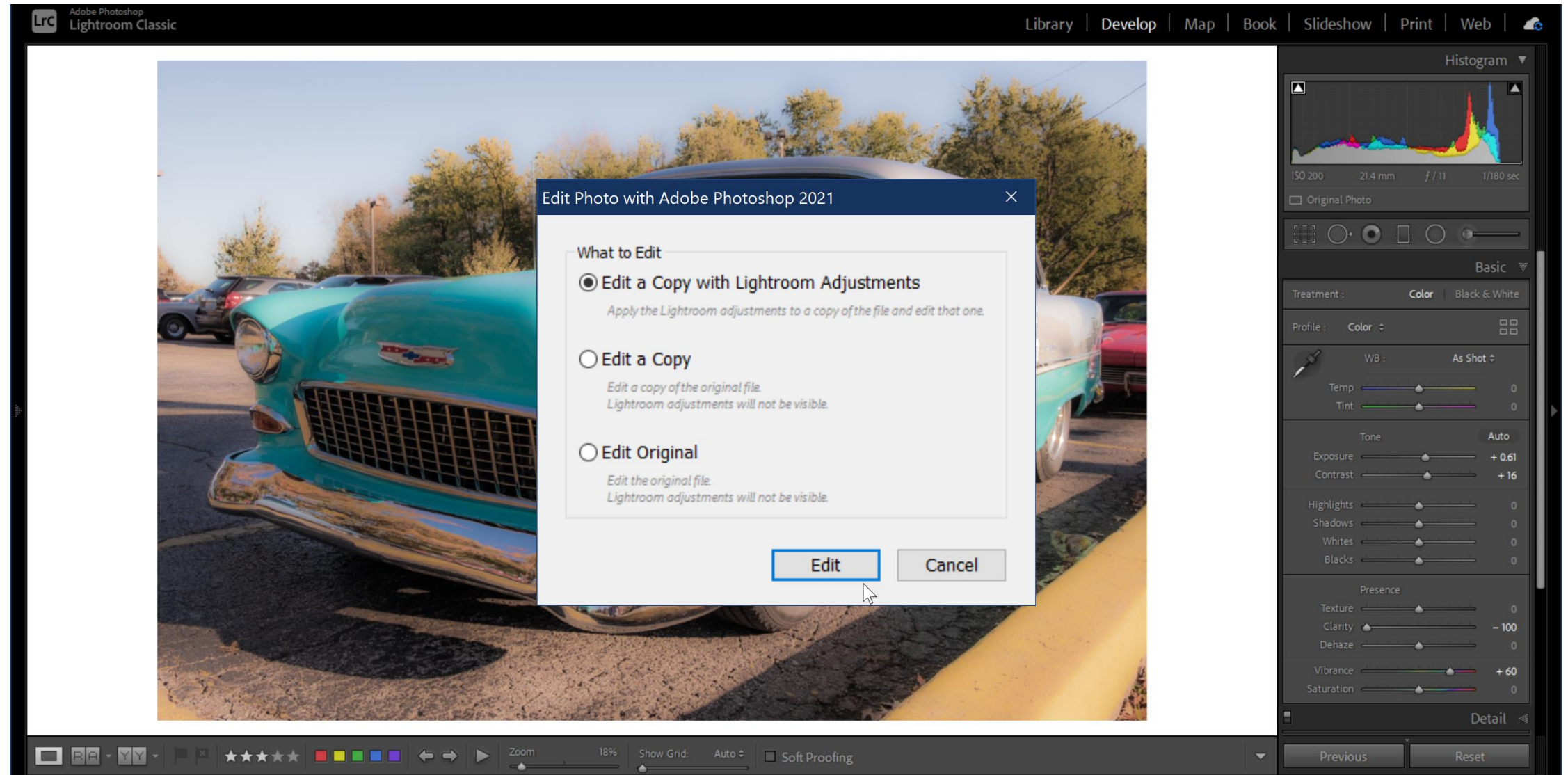


Keeping Lightroom Adjustments in Photoshop

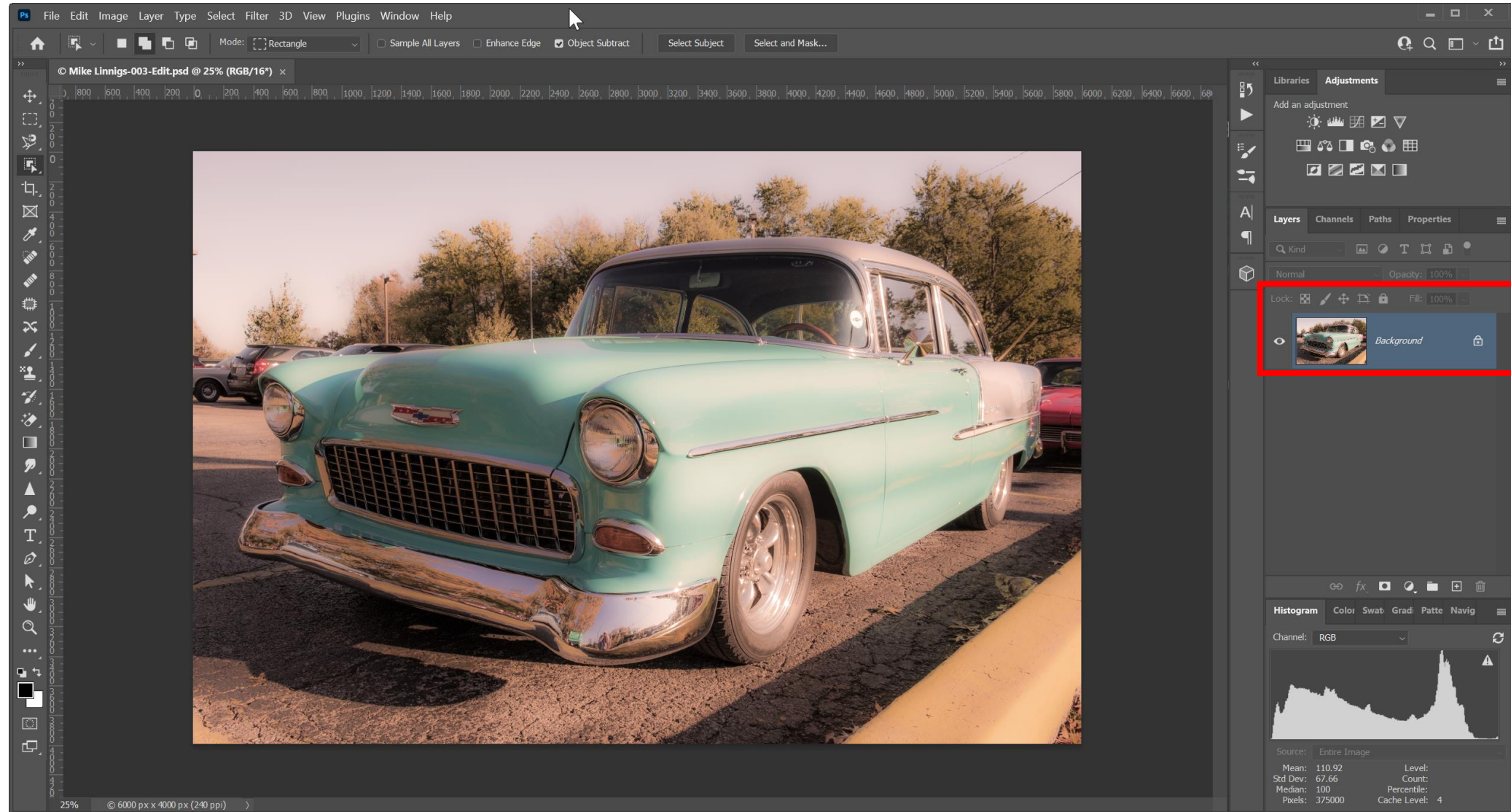
Send the File to Photoshop

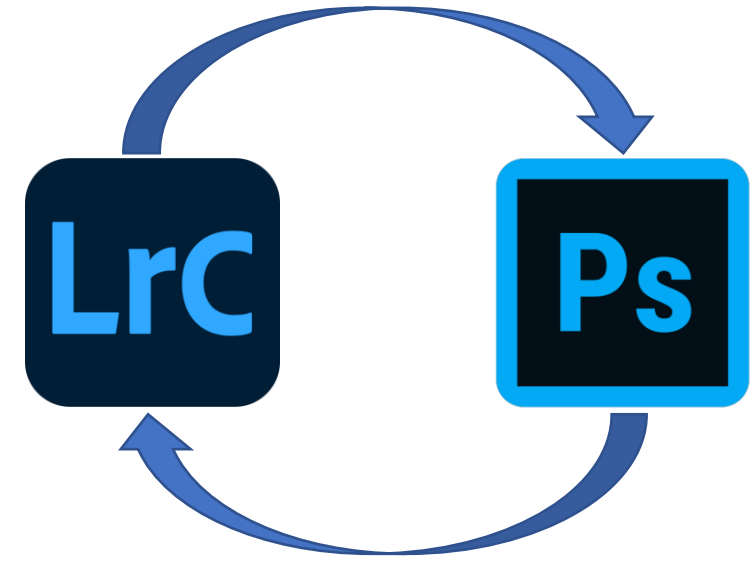


Edit a COPY of the File – With Adjustments



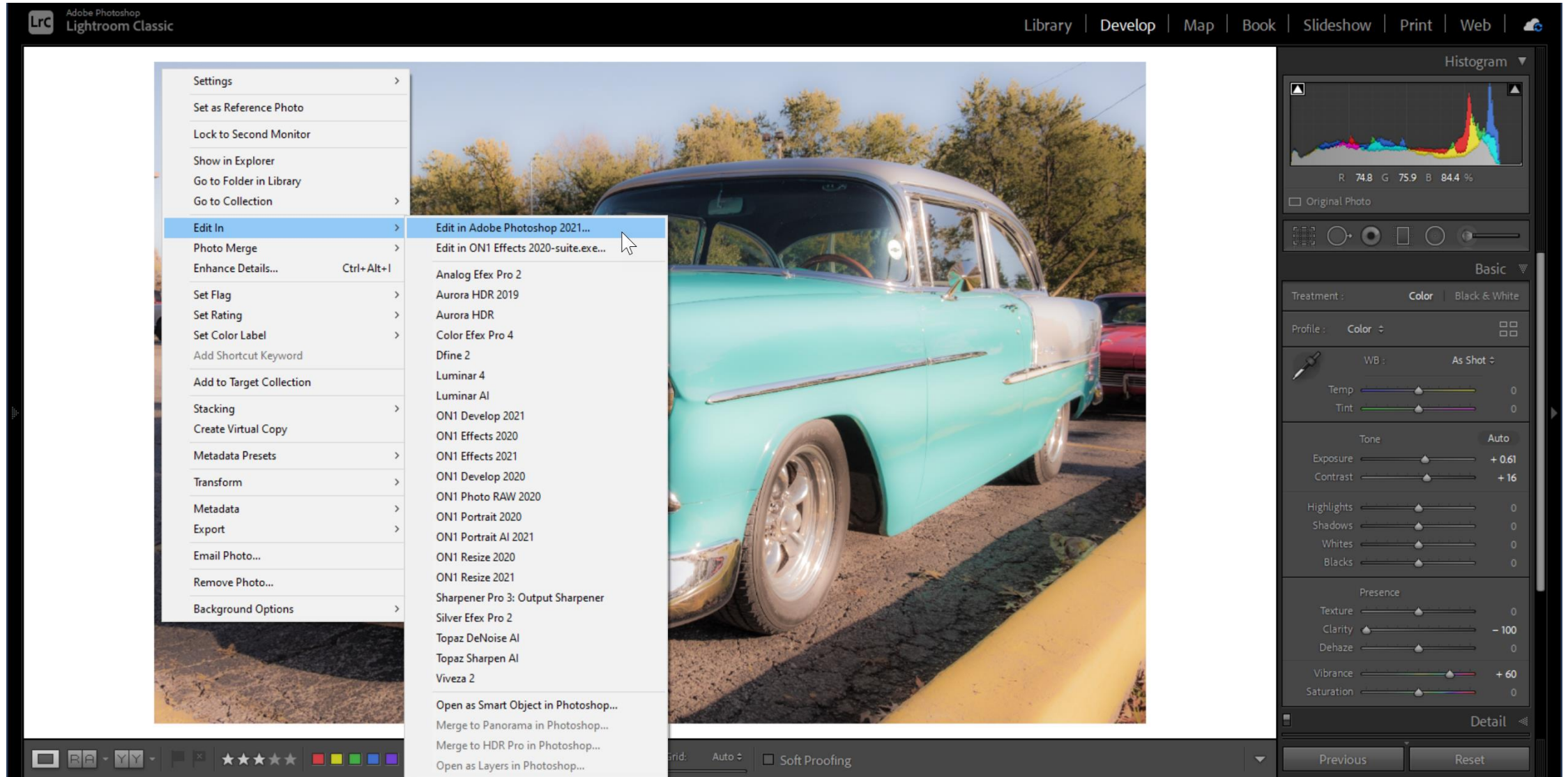
Photoshop File Reflects Lightroom Changes



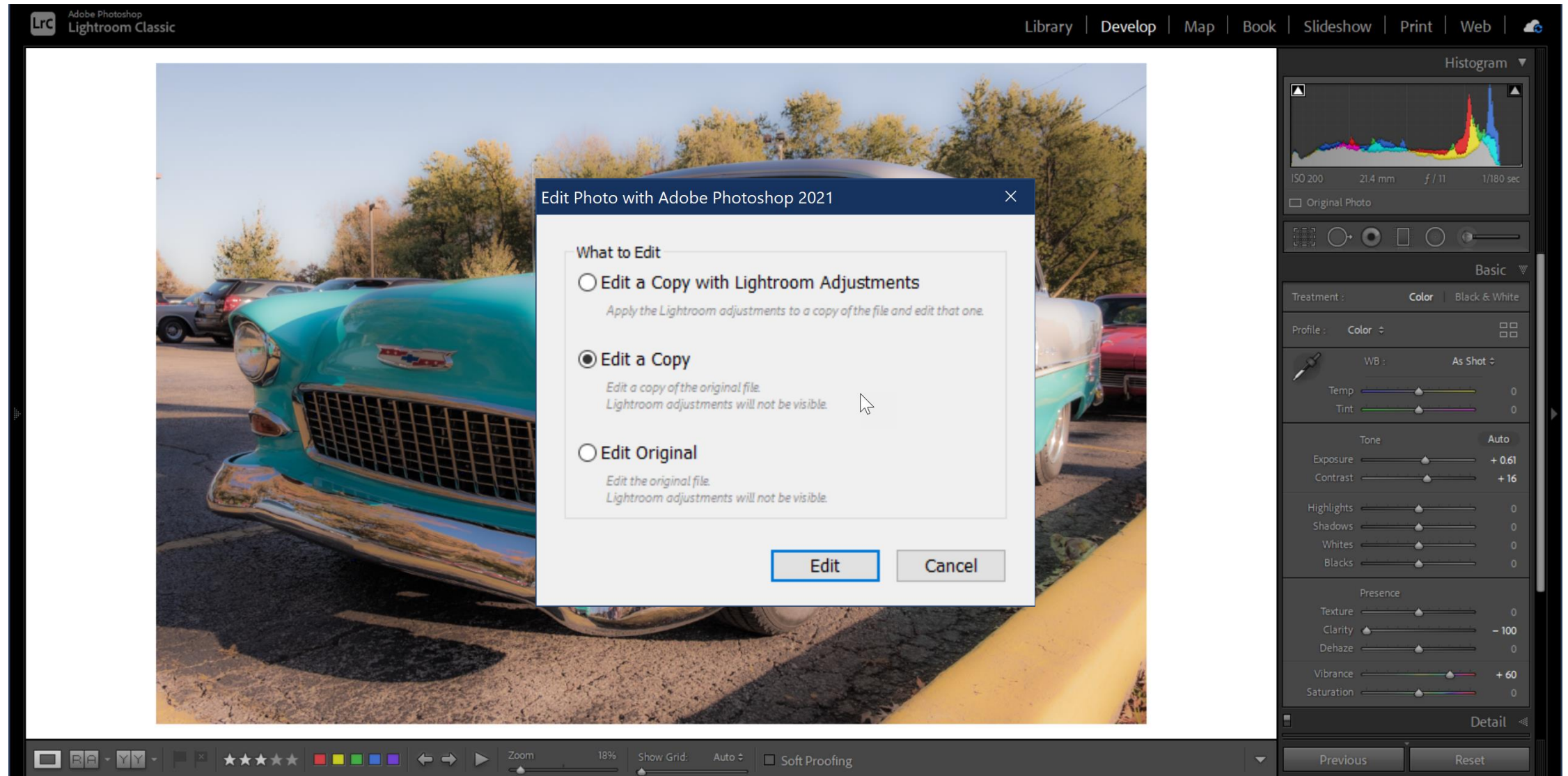


Transferring Lightroom Adjustments to Photoshop

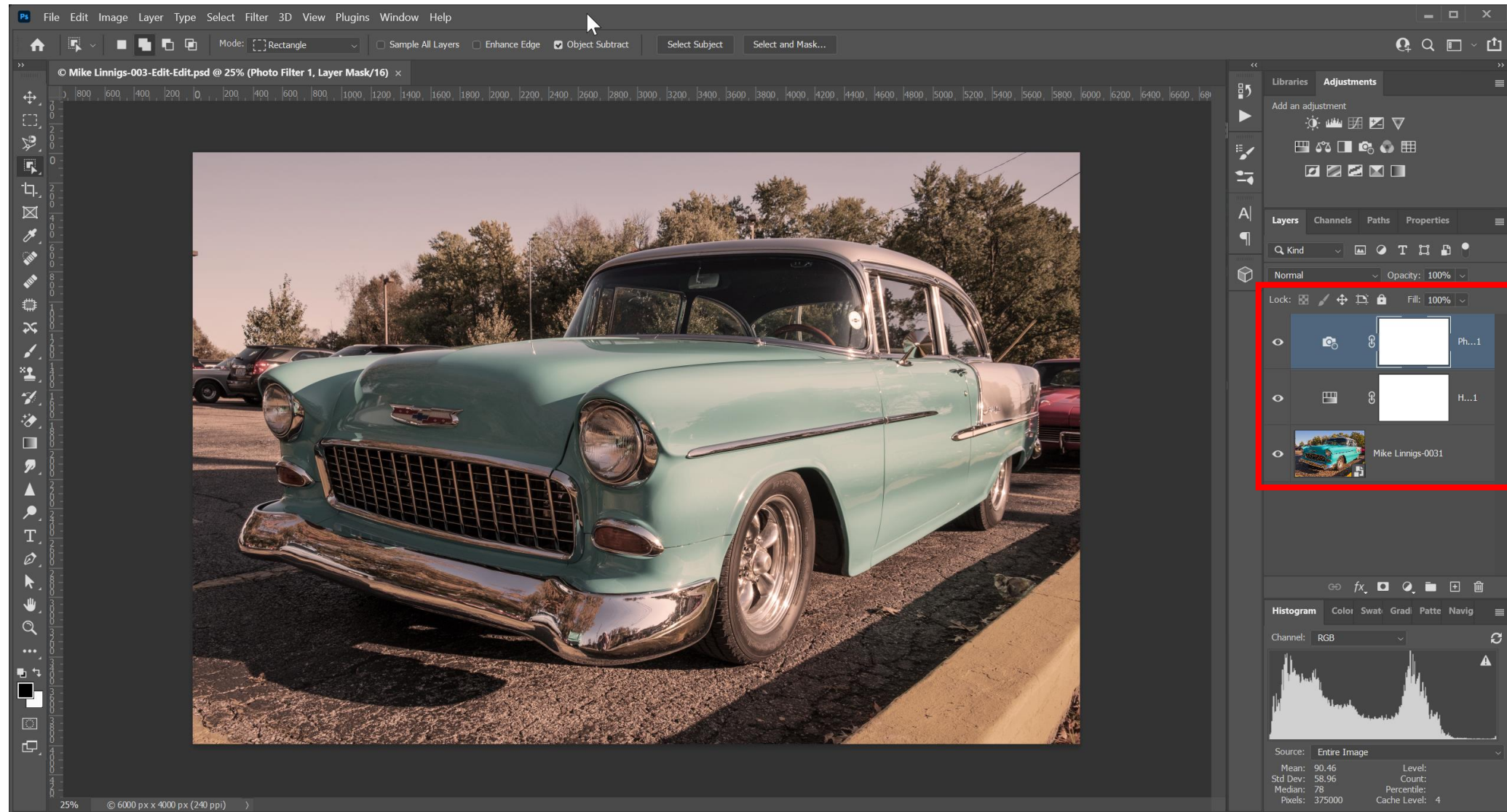
Send the File to Photoshop



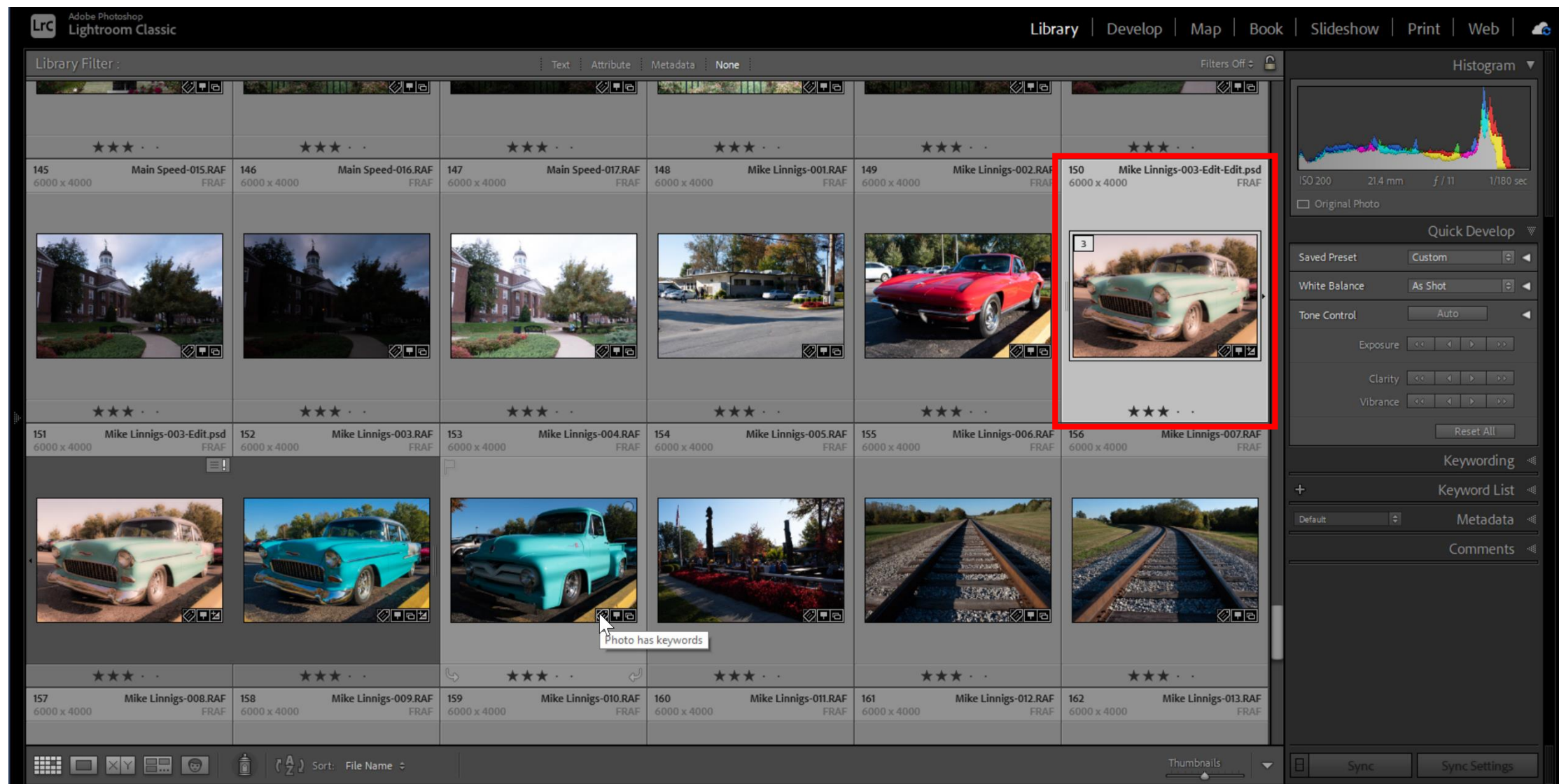
Edit a COPY of the File



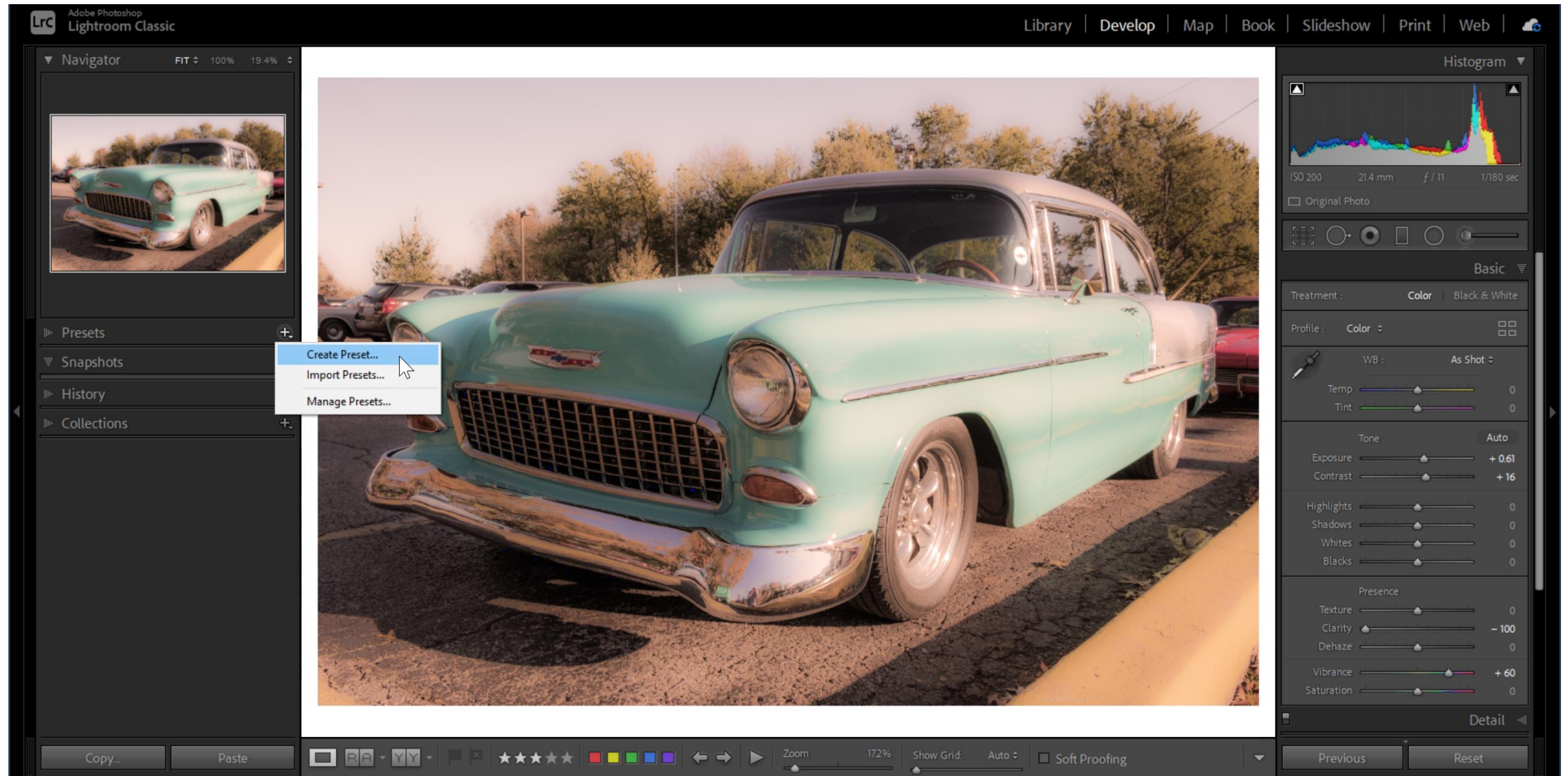
File Opens in Photoshop With Layers Intact



Third Copy of File Now in Lightroom Catalog



Create Preset to Store Lightroom Adjustments



Create Preset to Store Lightroom Adjustments

Adobe Photoshop
Lightroom Classic

Library | Develop | Map | Book | Slideshow | Print | Web |

Navigator FIT 100% 19.4%

Presets

- Color
- Creative
- B&W
- Defaults
- Curve
- Grain
- Optics
- Sharpening
- Vignetting
- Classic - General
- BetterBlackandWhites
- BlixFotoPresets
- dPS 101 Landscape Presets - Black and White
- dPS 101 Landscape Presets - Autumn
- dPS 101 Landscape Presets - Creative
- dPS 101 Landscape Presets - Mono Toned
- dPS 101 Landscape Presets - Spring Summer

New Develop Preset

Preset Name: PPC Training Preset

Group: User Presets

Auto Settings

☐ Auto Settings

Settings

- ☐ Treatment & Profile
- ☒ White Balance
- ☒ Basic Tone
 - ☒ Exposure
 - ☒ Contrast
 - ☒ Highlights
 - ☒ Shadows
 - ☒ White Clipping
 - ☒ Black Clipping
- ☐ Tone Curve
- ☐ Texture
- ☐ Clarity
- ☐ Dehaze
- ☐ Sharpening
- ☐ Color
 - ☐ Saturation
 - ☐ Vibrance
 - ☐ Color Adjustments
- ☒ Color Grading
 - ☐ Graduated Filters
 - ☐ Radial Filters
- ☐ Noise Reduction
 - ☐ Luminance
 - ☐ Color
- ☐ Lens Corrections
 - ☐ Lens Profile Corrections
 - ☐ Chromatic Aberration
 - ☐ Lens Distortion
 - ☐ Lens Vignetting
- ☐ Transform
 - ☐ Upright Mode
 - ☐ Upright Transforms
 - ☐ Transform Adjustments
- ☐ Effects
 - ☐ Post-Crop Vignetting
 - ☐ Grain
- ☐ Process Version
- ☐ Calibration

! Presets that do not specify a process version may produce different visual results in future versions of Lightroom.

ISO Settings

☐ Create ISO adaptive preset [Learn More...](#)

Check All Check None Create Cancel

Copy... Paste

Zoom 172% Show Grid: Auto Soft Proofing

Previous Reset

Histogram

ISO 200 21.4 mm f/11 1/180 sec

Original Photo

Basic

Treatment: Color Black & White

Profile: Color

WB: As Shot

Temp 0 Tint 0

Tone Auto

Exposure +0.61 Contrast +16

Highlights 0 Shadows 0 Whites 0 Blacks 0

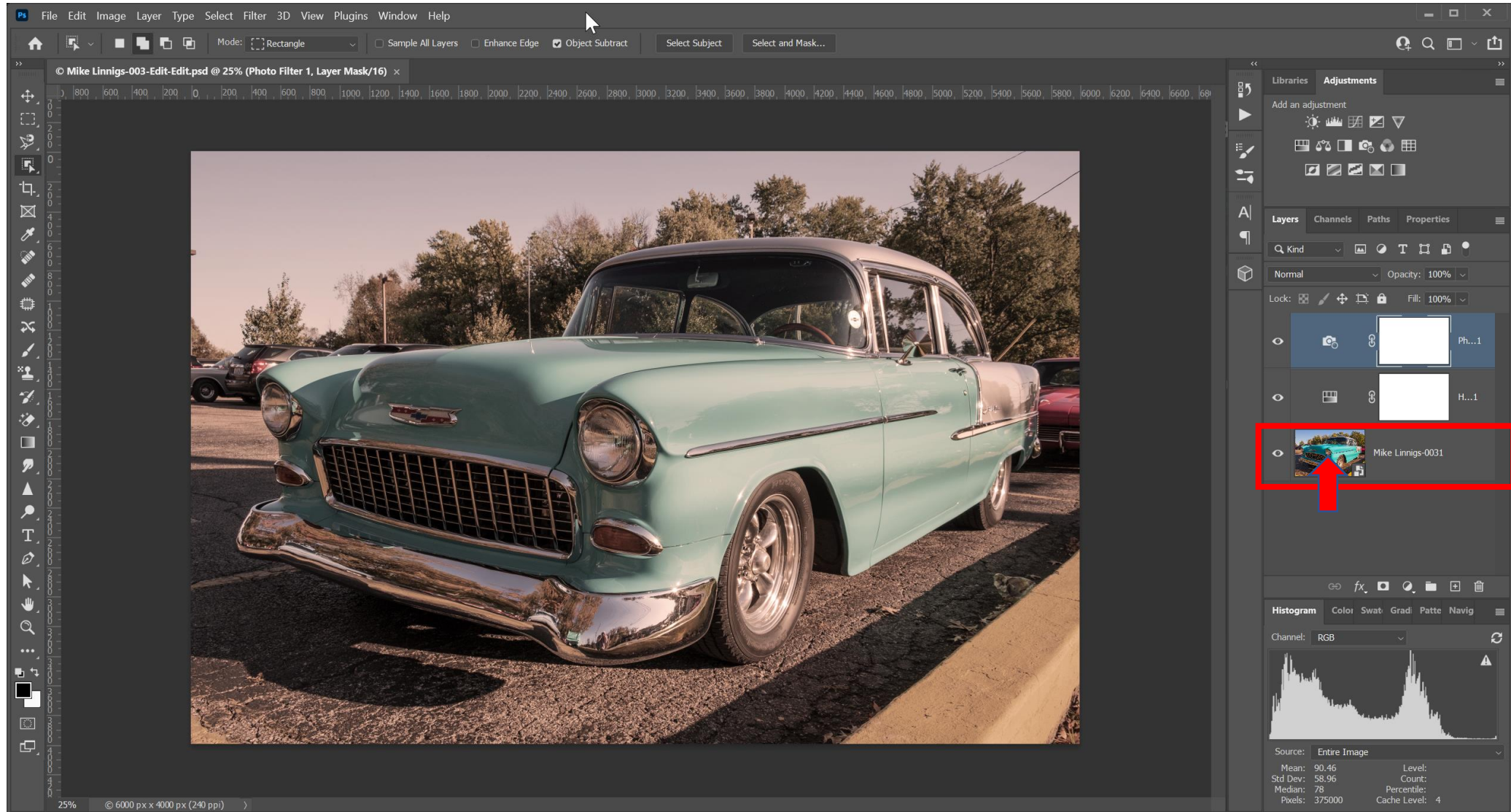
Presence

Texture 0 Clarity -100 Dehaze 0

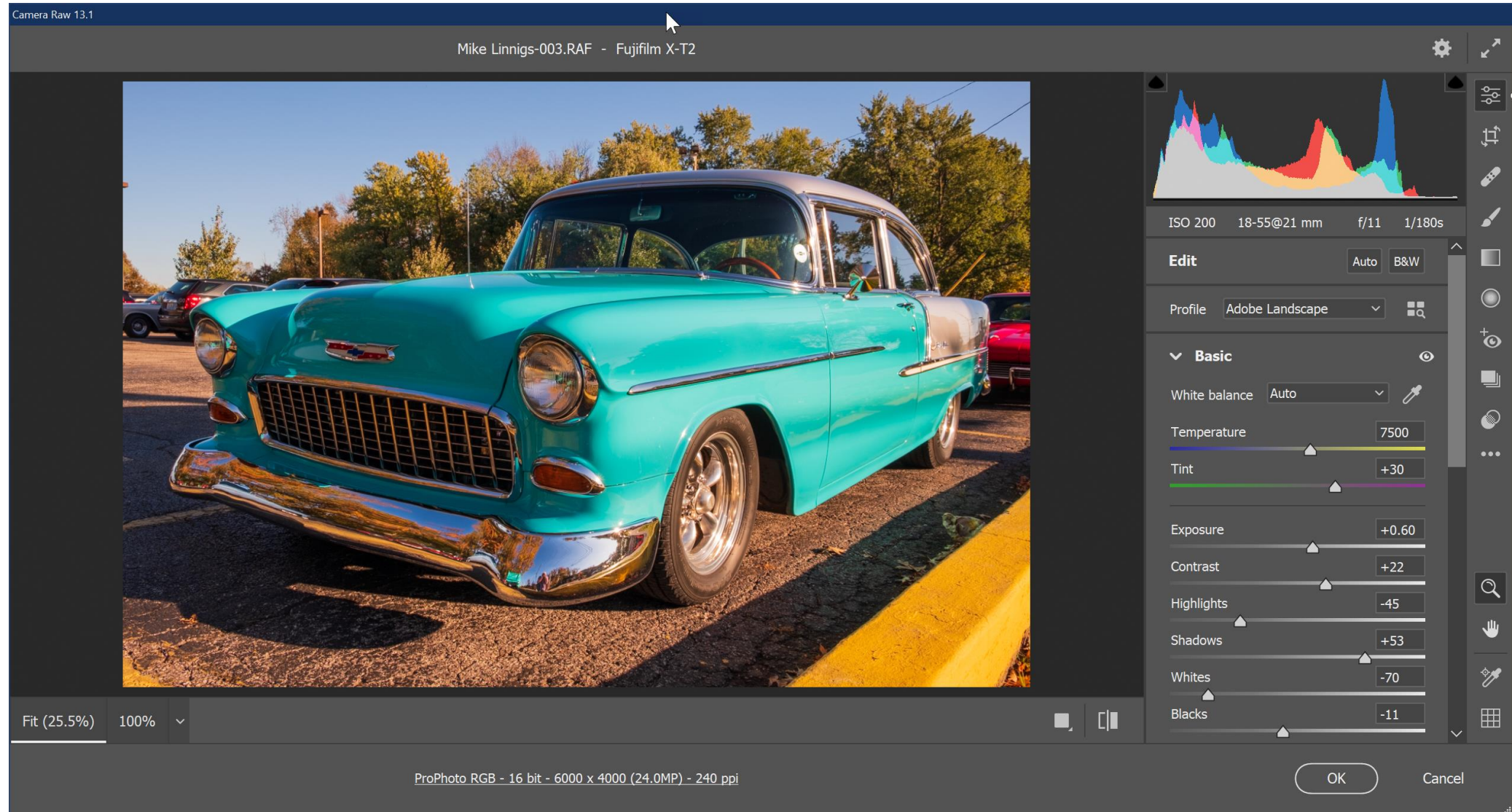
Vibrance +60 Saturation 0

Detail

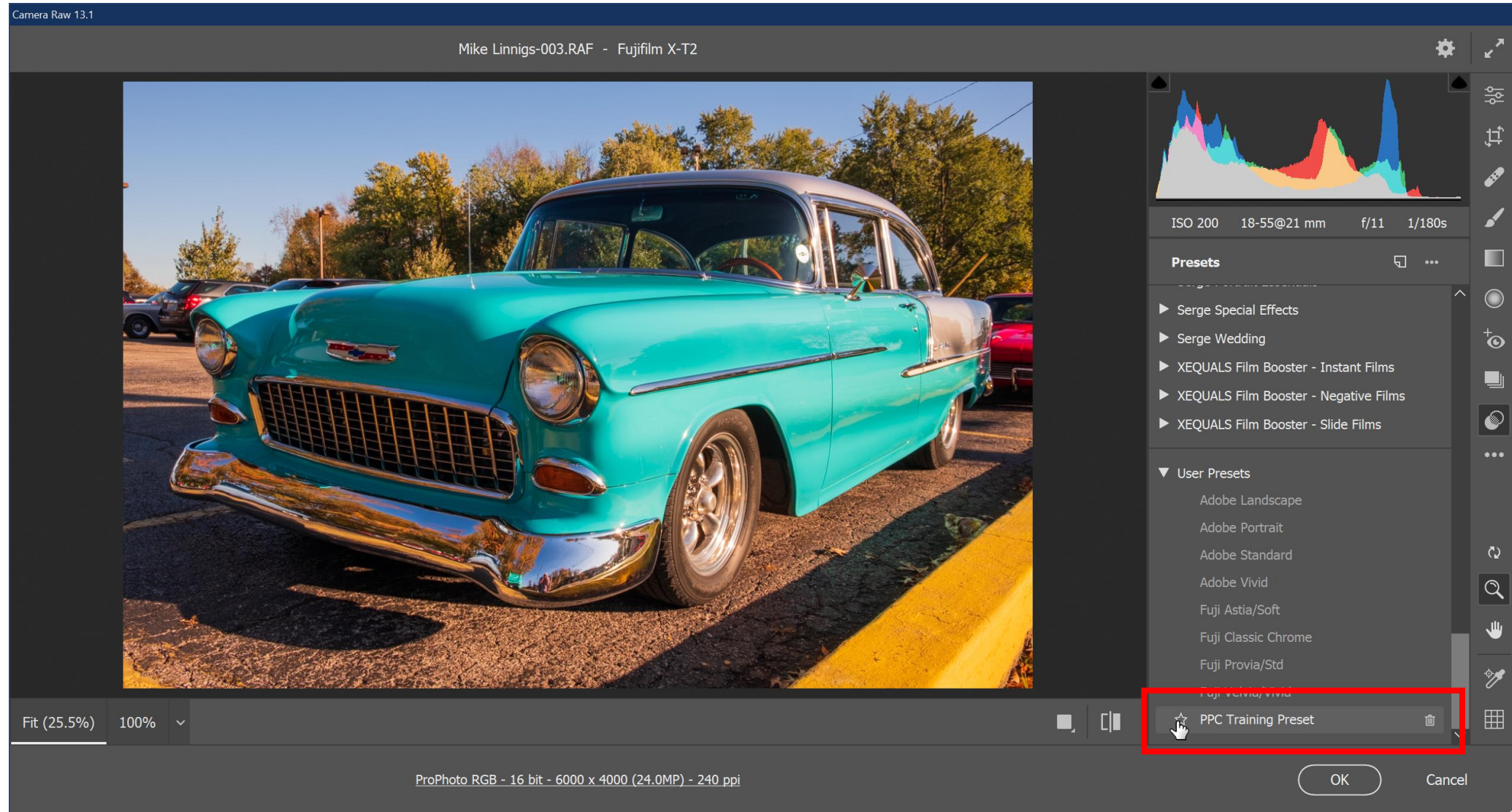
Open Original File in Camera Raw



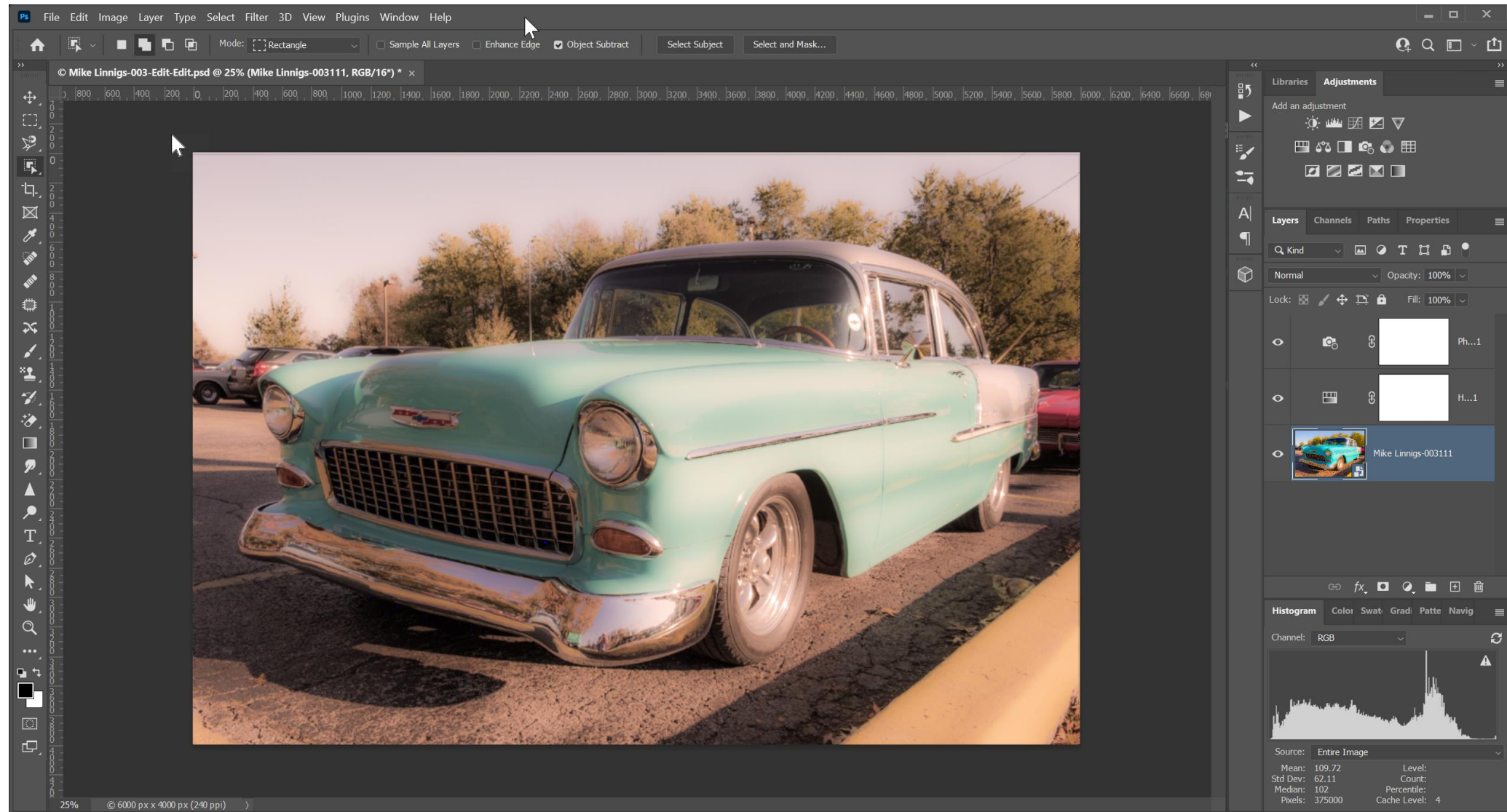
Original RAW File in Camera Raw



Apply Preset Created in Lightroom

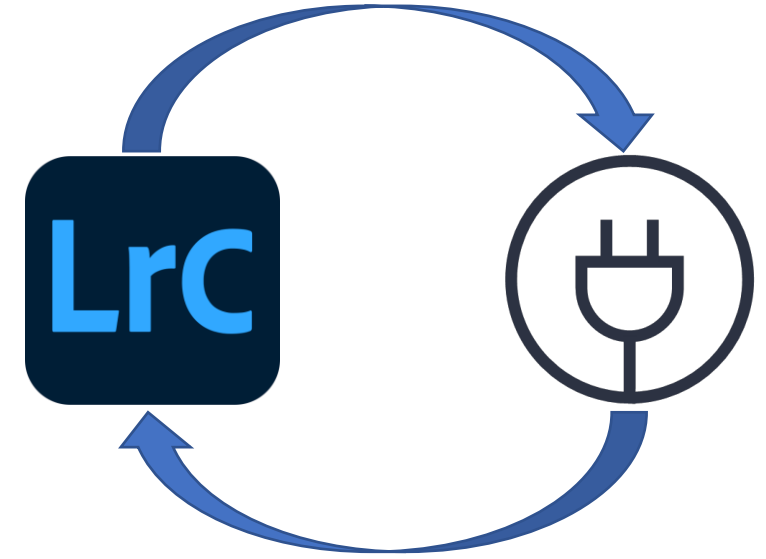


Photoshop File Updated with Lightroom Preset



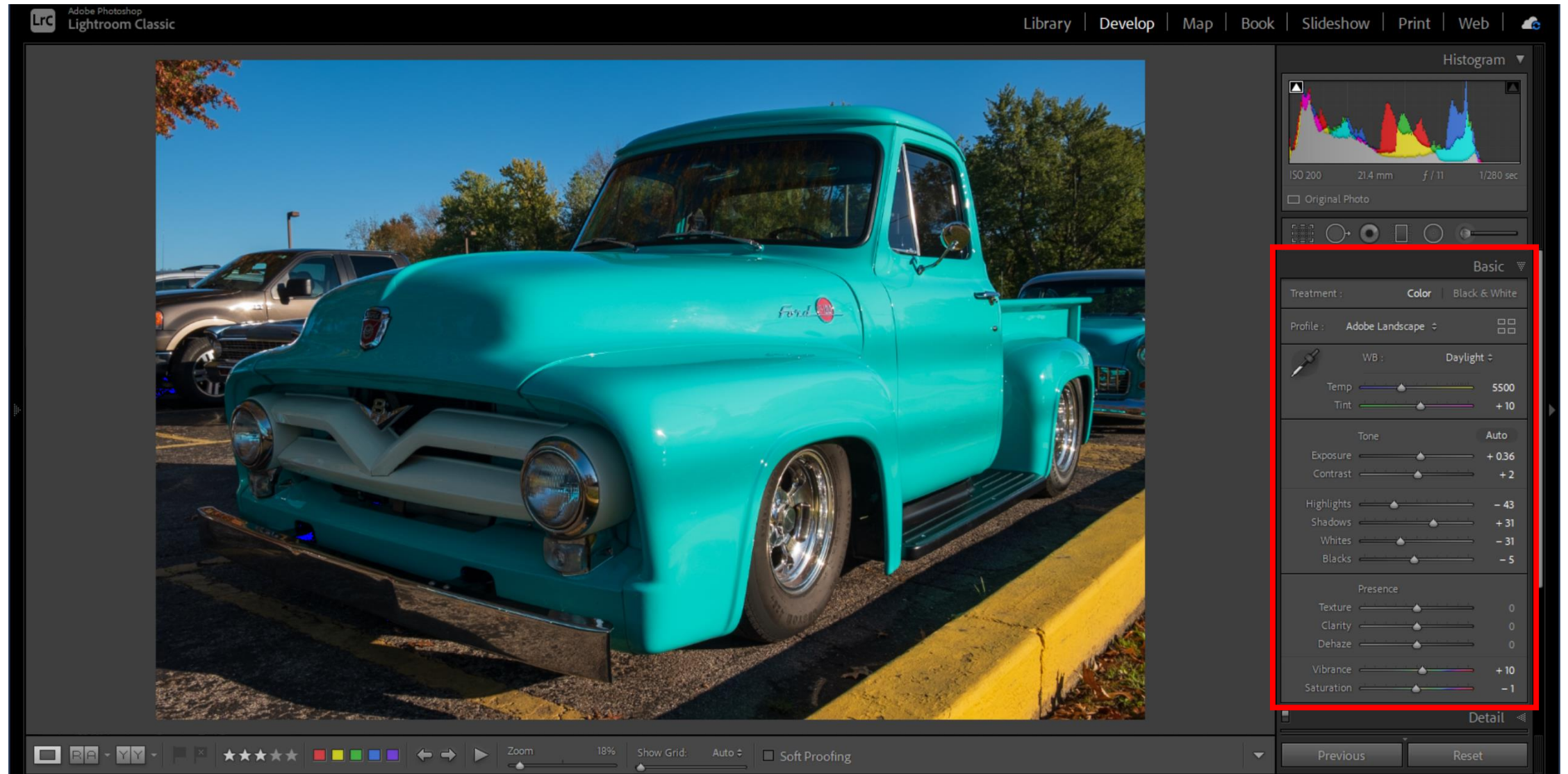
Quick Summary of LR-PS Roundtripping

- Make initial adjustments in Lightroom
- Right-click, **Edit in> Open as a Smart Object in Photoshop**. Apply Photoshop adjustments and choose **Save**
- If you want to work on that Photoshop Layered File again, choose **Edit In>Open in Photoshop** (Edit Original)
- If you want to change the RAW settings, its best to open the Smart Object in Photoshop
- However, if you make changes in Lightroom to the Photoshop image...
 - If you want to keep the Lightroom adjustments (those made after you bring the images back from Photoshop) choose **Edit In>Open in Photoshop** (Edit a Copy with Lightroom Adjustments)
 - If you want to create a copy of the Photoshop file and preserve the original, choose **Edit In>Open in Photoshop** (Edit a Copy with Lightroom Adjustments)

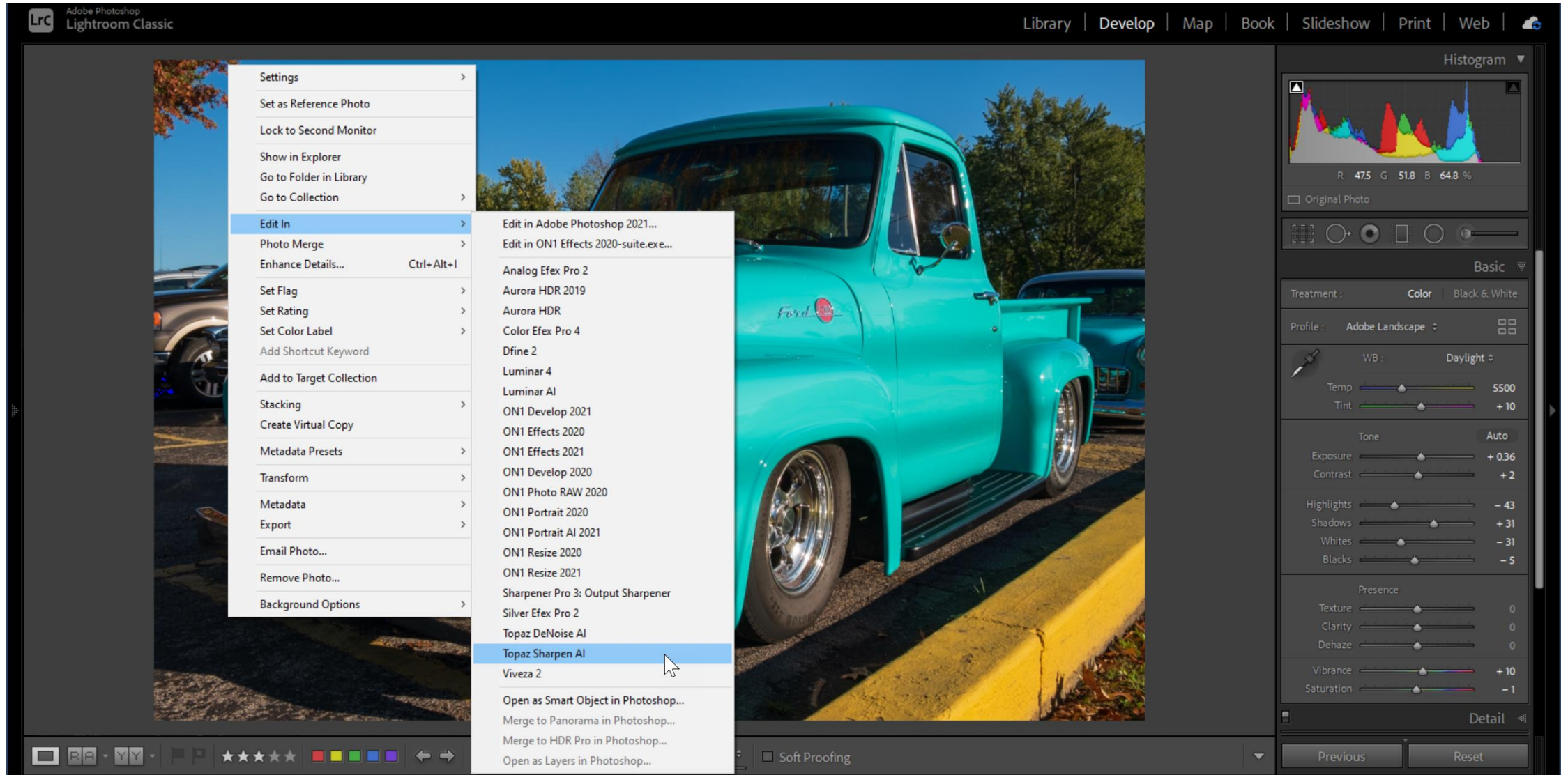


Opening a Lightroom Photo in a Plugin

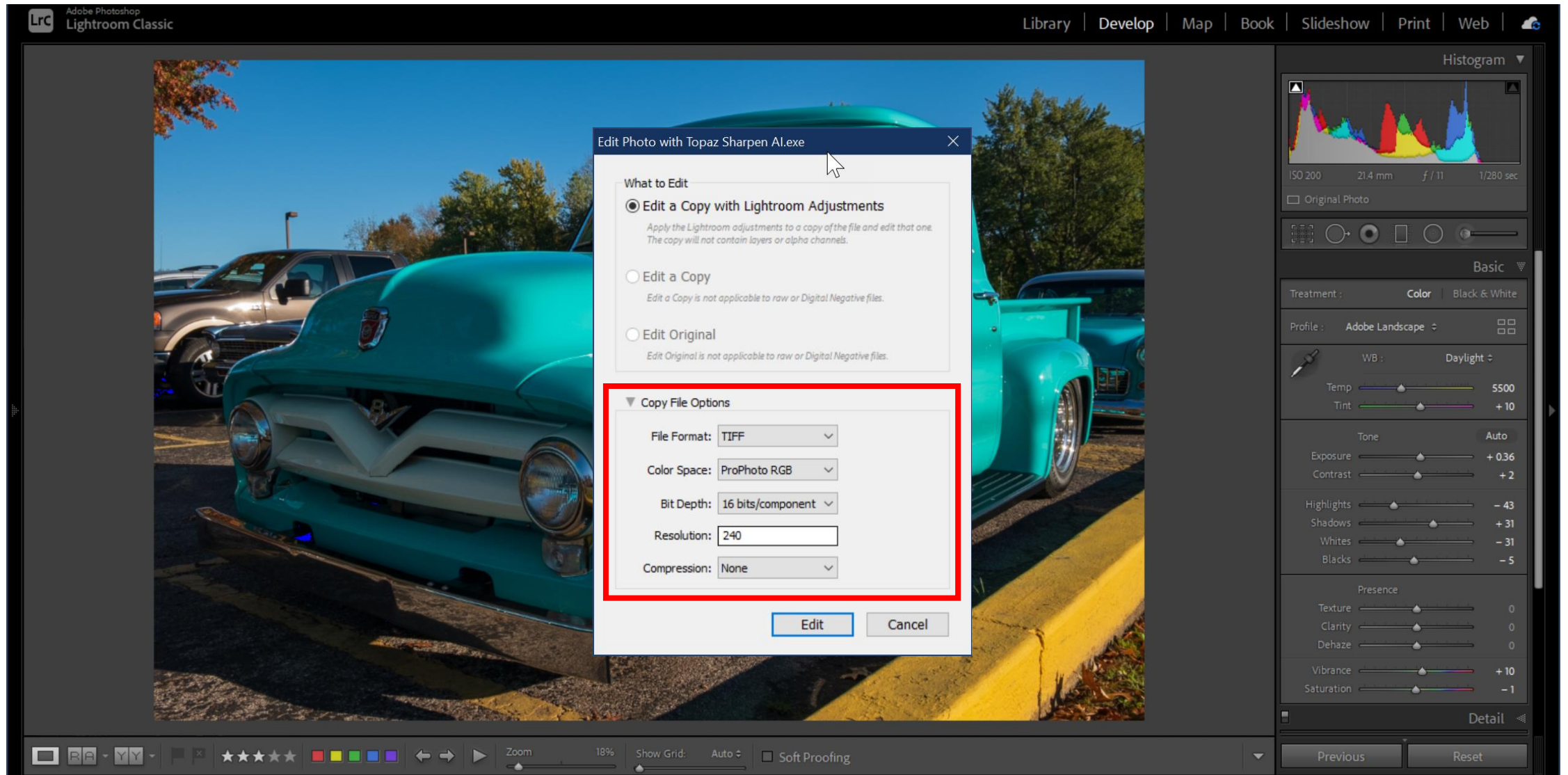
Perform Basic Edits in Lightroom



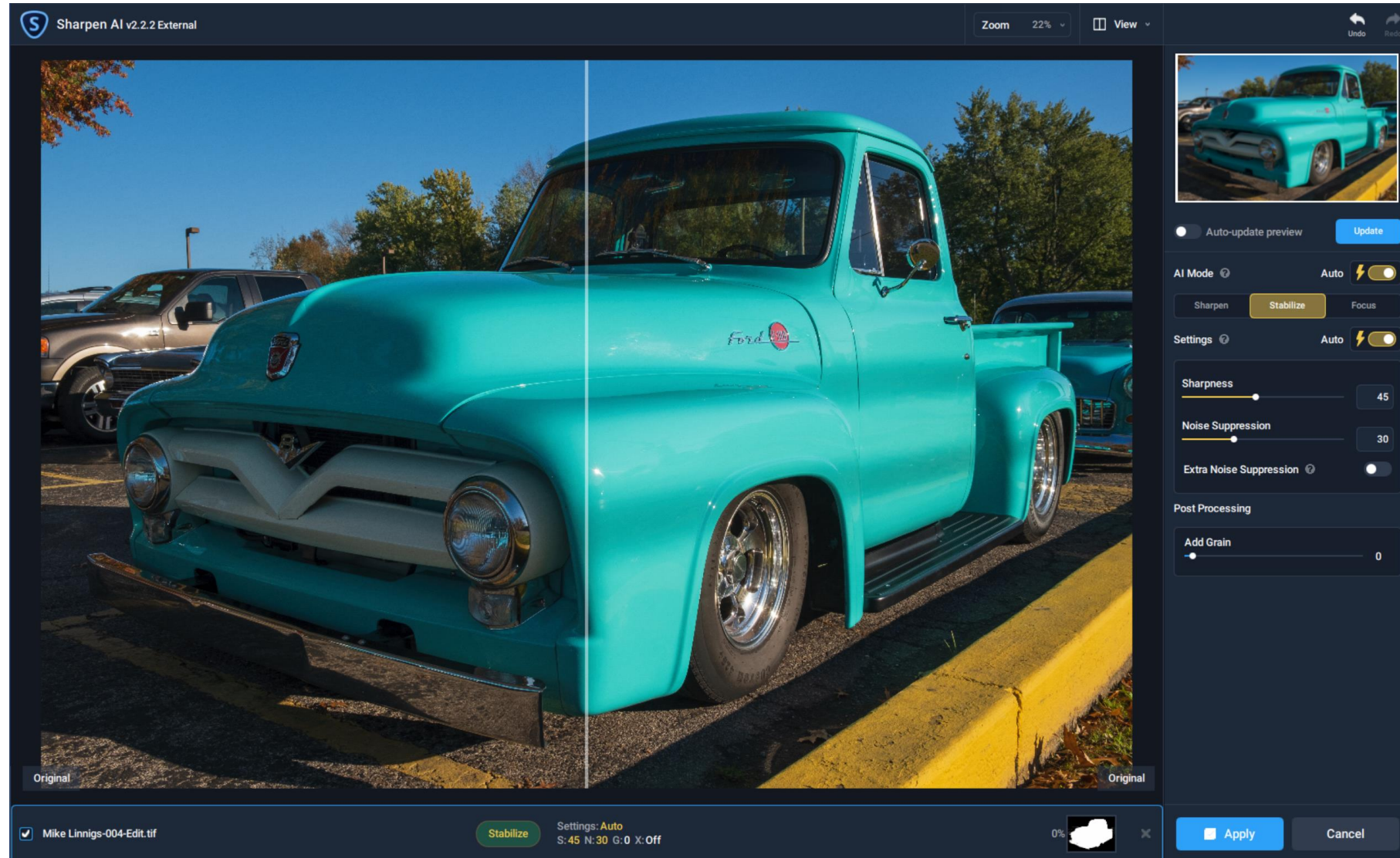
Send the File to the Desired Plugin



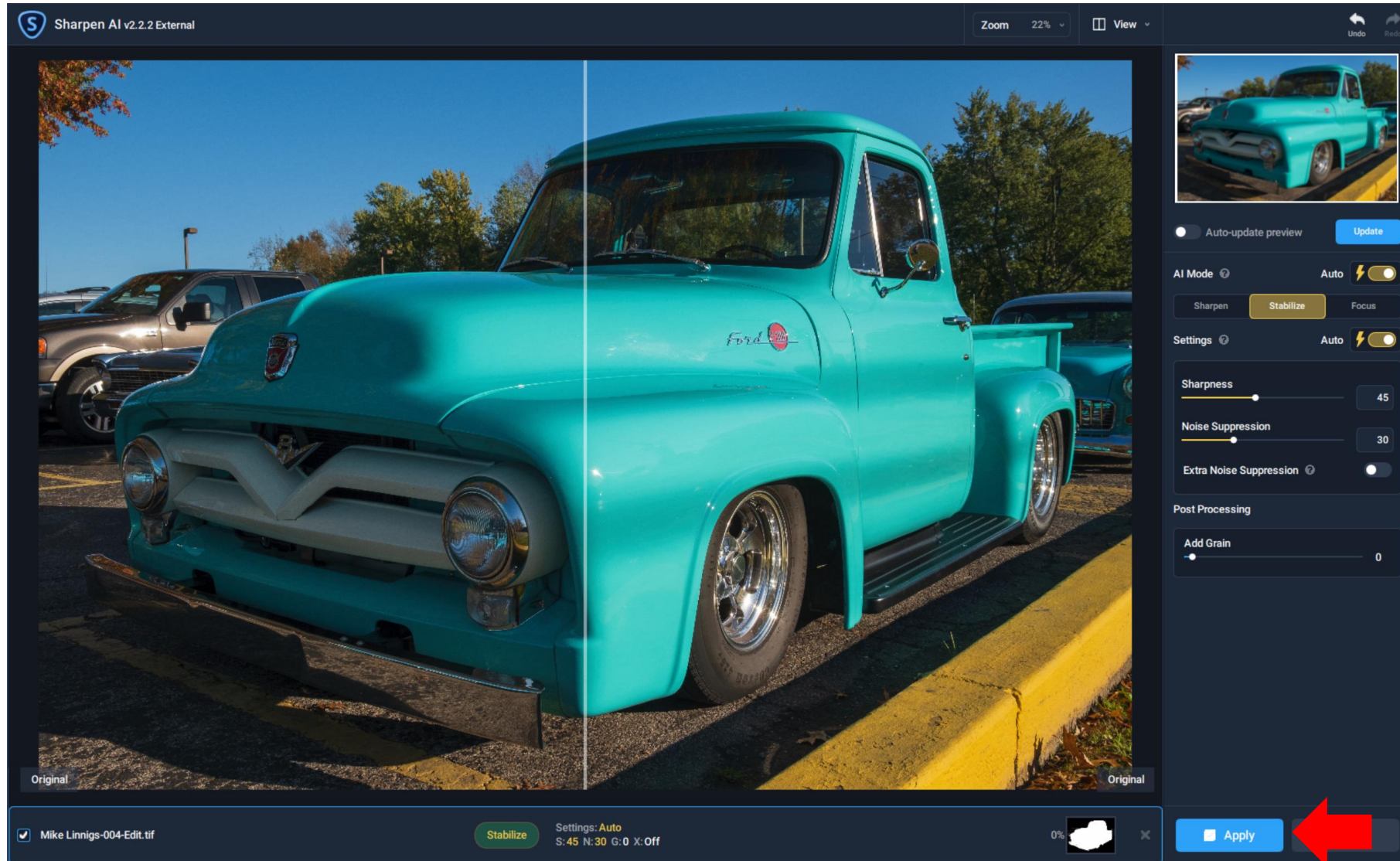
Choose Copy File Options; Click Edit



Make Desired Edits With Plugin



Click Apply to Export File Back to Lightroom



Edited TIFF File Now in Lightroom Catalog

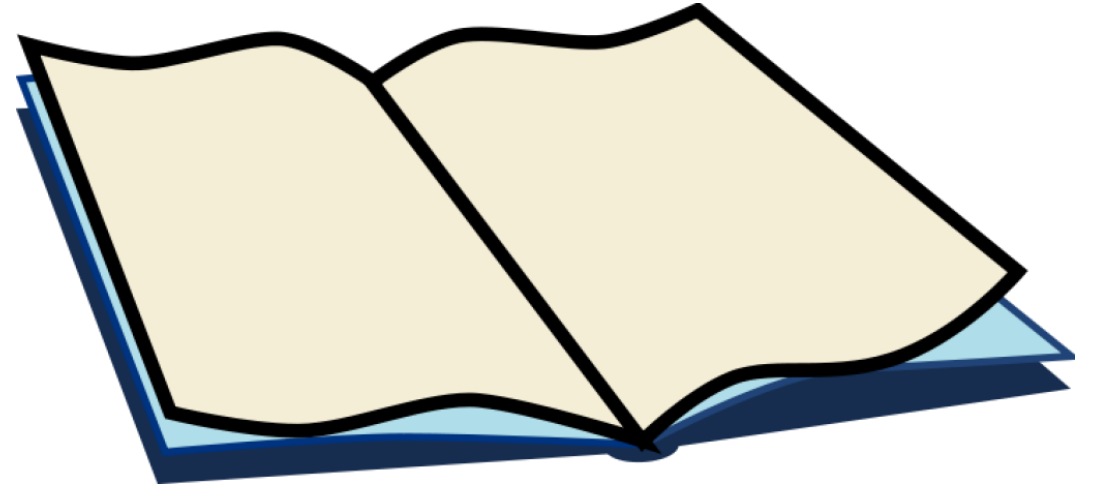


Quick Summary of LR-Plugin Roundtripping

- Make initial adjustments in Lightroom
- Right-click, **Edit in>Plugin Name**
- Choose **Edit a Copy with Lightroom Adjustments**
- Specify the desired **Copy File Options**
- Perform desired edits in the plugin application
- Apply the changes in the plugin to return edited file to Lightroom

Questions





Supplemental Materials

Setting Up An Effective LR-PS Workflow

- Certain settings in both programs are needed to establish the proper workflow
- To send photos from Lightroom to Photoshop, go to **Lightroom>Preferences>External Editing** and make the following changes
 - Format to PSD (because they are smaller than TIFF files)
 - Color Space to ProPhoto (or Adobe RGB if required).
 - Bit Depth to 16
 - Resolution to 240

Setting Up An Effective LR-PS Workflow

- To properly receive images in Photoshop from Lightroom, go to **Photoshop>Edit>Color Settings** and make the following changes
 - Under **Working Spaces**, select the color space you set in Lightroom (**ProPhoto** or **Adobe RGB**)
 - Under **Color Management Policies**, select **Preserve Embedded Profiles** from the **RGB** menu
 - Enable Missing Profiles: Ask When Opening
- To properly send the PSD file back to Lightroom, go to **Photoshop>Preferences>File Handling** and select **Always** from the **Maximize PSD and PSB File Compatibility** menu.

Lightroom and Photoshop Roundtrip Workflow

- Now that the environment has been set up properly, you can roundtrip from Lightroom to Photoshop in the following steps:
 - Right-click on any photo in Lightroom and select **Edit In>Open as Smart Object in Photoshop**
 - Perform your changes in Photoshop
 - Select **File>Save**. If you select **File>Save As**, the resulting file will have to be imported into the Lightroom Catalog to be visible
 - Make sure you are saving in PSD format
 - Go back to Lightroom and you will see the PSD file next to the RAW file you had originally sent over
 - Change **Sort Order** to **Capture Time** if you do not see it

Lightroom and Photoshop Roundtrip Workflow

- To retroactively change your RAW file in Lightroom and apply those changes to the same image in an existing Photoshop document (thus keeping your Lightroom image updated with its Photoshop counterpart):
 - Perform your changes in Lightroom, then send the RAW file over to Photoshop as a Smart Object
 - Right-click on the smart object and select **Duplicate Layer**
 - Select the original PSD document as the destination, replace the existing image smart object layer with the newly duplicated layer and save
- Resources
 - <https://creativeraw.com/lightroom-to-photoshop-roundtrip/>
 - https://www.youtube.com/watch?v=zgMI0hmfcIE&ab_channel=photoshopCAFE

Resources

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- <https://petapixel.com/2020/02/05/there-and-back-again-sending-photos-between-lightroom-and-photoshop/>
- <https://tutvid.com/lightroom/roundtrip-lightroom-photoshop-editing-workflow/>
- <https://www.adobe.com/max/2020/sessions/lightroom-classic-part-3-roundtripping-sharing-and-l6421c.html>
- <http://www.steves-digicams.com/knowledge-center/how-tos/photo-software/how-to-round-trip-in-lightroom.html#b>
- <https://www.scottdavenportphoto.com/blog/using-photoshop-smart-objects-for-round-trip-edits-in-lightroom>
- <https://digital-photography-school.com/round-tripping-with-lightroom/>
- <https://lightroomkillertips.com/understanding-lightroom-classic-photoshop-workflow/>