Marcellus ⊗ Design

Camouflaging Conflict

By: Tyler Cromleigh

" Camouflage is a game we all like to play, but our secrets are as surely revealed by what we want to seem to be as by what we want to conceal." –RUSSELL LYNES

Problem Statement:

The existing and impending development associated with Marcellus Shale drilling largely detracts from the scenic quality of the Sullivan County landscape. Structures, which are essential to the drilling operation, such as storage tanks and pods and compressor station buildings stand out amidst the natural landscape.

Project Description:

In order to preserve and restore the visual quality of the landscape of Sullivan County, the visual impact of these structures must be reduced. These structures are necessary, but they do not necessarily need to be a visual intrusion. Through camouflage techniques, which match the appearance of the structures to their surroundings, they become much less noticeable from common viewpoints.

Benefits/Goals of Project:

– Reduce visual impact of Natural Gas related structures
– Preserve visual quality of Sullivan County
– Establish better relations between gas companies and residents of Sullivan County

How Camouflage Works

- Blends structures in with surrounding environment
- Breaks up outline of structure
- Diverts eye away from structure
- Effective from .25 to 2 miles away

Types of Camouflage

Background Color Matching
- Match the paint color to the average color of the landscape surrounding the structure

Disruptive Coloration
- Apply a strongly contrasting pattern to break up the outline of the structure
- Create a pattern that matches the shapes and textures of the surrounding landscape

Countershading
- Apply a dark to light gradient, from top to bottom
- Counteracts typical lighting effect of self-shadowing, which makes the structure look flat

.5 MI

.5 MI

BACKGROUND COLOR MATCHING   .5 MI

DISRUPTIVE COLORATION

.5 MI

COUNTERSHADING

.5 MI

.5 MI

.5 MI

BACKGROUND COLOR MATCHING .5 MI

DISRUPTIVE COLORATION

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COUNTERSHADING

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BACKGROUND COLOR MATCHING .35 MI

DISRUPTIVE COLORATION

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COUNTERSHADING

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DISRUPTIVE COLORATION

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COUNTERSHADING   .25 MI

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BACKGROUND COLOR MATCHING   .25 MI

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BACKGROUND COLOR MATCHING

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DISRUPTIVE COLORATION

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COUNTERSHADING

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BACKGROUND COLOR MATCHING

DISRUPTIVE COLORATION

COUNTERSHADING

Camouflage Application

Industrial Painting

- Painting a structure the chosen color or pattern with spray guns
- After applying Background Color Matching, Disruptive Coloration and Countershading, the industrial painters can match the pattern and specific RGB color values.

Contact

- RJ Greengard Industrial Painting Contractor
- Phone: 1-800-354-9165

   Email: Robert@industrialpainter.com

   Web: industrialpainter.com

C a m o u f l a g e D e s i g n

Photograph The Structure

- Use a high resolution digital camera, in overcast lighting conditions for best image quality.

- Take the photograph from the most common viewing point of the structure to ensure the most effective camouflage design.

Download Free Photoediting Software

- GIMP is a free photoediting software available to download at http://www.gimp.org/downloads/

Opening the Photograph in GIMP

- In GIMP:

File: Open

->Select image of structure to be camouflaged

Maximize window size

Zoom in using scale in lower left corner

Background Color Matching

Click 'Rectangular Select Tool' in Toolbox on left side of screen
->Click and Drag, drawing a rectangle around the structure, including the landscape elements immediately surrounding it.

Select Filters tab in top menu bar
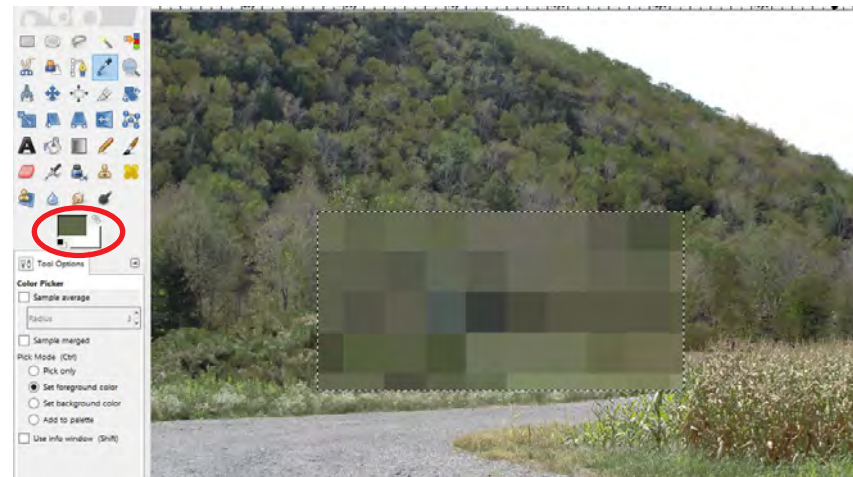->Choose Blur, then Pixelize
->Change pixel width and height to 100 pixels, click OK
Using 'Color Picker Tool' in Toolbox on left, select a pixel immediately surrounding the structure.
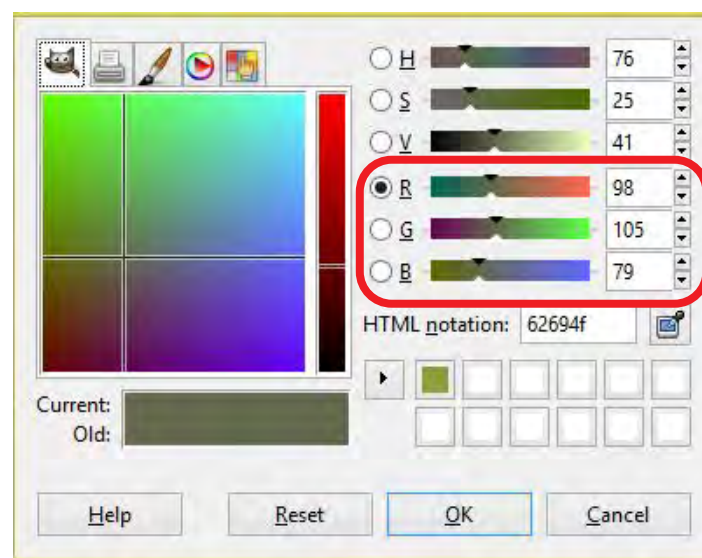
— C a m o u f l a g e   D e s i g n   C o n t i n u e d

Background Color Matching Continued

Click on selected color in Toolbox, located below the tools

->Record the R, G, and B values for the selected color

Repeat 'Color Picker Tool' and record RGB values for every pixel immediately surrounding the structure. (More pixels selected improves accuracy)

After recording all RGB values, calculate the average values for Red, Green and Blue, respectively (avg. of all Red values, avg. of all Blue values, avg. of all Green values)

 ->In Edit drop down in top menu, select 'Undo Pixelize'

 ->In Select drop down in top menu, select 'None'

Select 'Free Select Tool' from Toolbox

 ->Zoom in so that the structure fills the majority of the screen

 ->Click on an outside corner of the structure and trace around the structure by clicking and adding points, returning to and clicking on the initial point. (More points improves accuracy of selection)

Selection should look like this:

Click the top color box in the toolbox (Foreground Color)

 ->Enter averaged RGB values in R, G and B value boxes, click OK (This should show average color in Foreground color box)

C a m o u f l a g e   D e s i g n   C o n t i n u e d

Background Color Matching Continued

Create a new Layer in 'Layers' window on right of screen
  ->Click 'Create a New Layer' button on far left below the horizontal scroll bar

  ->Name Layer "Background Color Match", Click OK

In Edit drop down in Top Menu, select 'Fill with FG Color'
  ->In the Layers window, change the opacity of the 'Background Color Matching' layer to 65.00
This is the final result of Background Color Matching.
  To save an image, Select File->'Export'
    ->save image as a .jpg image file

Disruptive Coloration

- Select the original image layer from the Layer window
  ->Using the Free Select Tool from the Toolbox, select the outline of a commonly occuring object in the surrounding vegetation (Tree, Shrub, Corn Stalks)

-Edit-> Copy
-Select-> None
-Edit->Paste
  ->Right click on new layer called 'Floating Selection, Pasted Layer' and select 'To New Layer'
    ->Double click on New Layer and rename 'Disruptive Coloration', press enter on keyboard
-Select 'Move' too from Toolbox and move the landscape object on top of the structure
    ->change the opacity of the layer to 65.00
    ->right click on the layer 'Disruptive Coloration' and select 'Scale Layer', scale accordingly to create a pattern (75%, 50%)

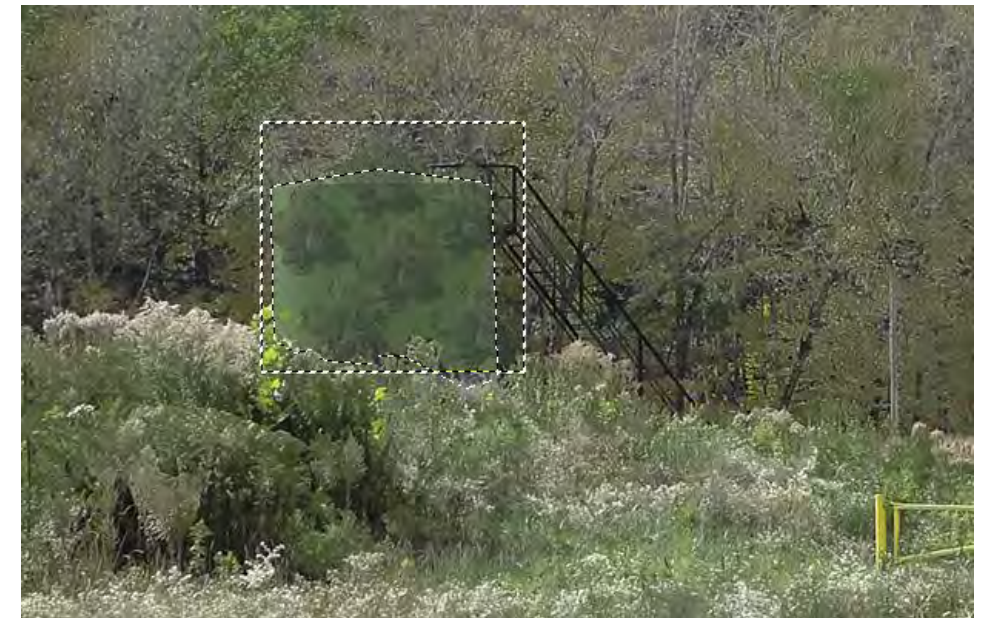## C a m o u f l a g e   D e s i g n   C o n t i n u e d

Disruptive Coloration Continued

- Right click on the Layer 'Disruptive Coloration' and select 'Duplicate Layer'

    ->Using 'Move' tool, place the landscape object in an organic pattern around the edges and inside of the structure, repeat 'Duplicate Layer' and 'Move' until the structure is covered.

-Right click the 'Disruptive Coloration' Layer at the top of the Layers window and select 'Merge Down"

    -> Repeat until all 'Disruptive Coloration' Layers are merged into one

-With 'Disruptive Coloration' Layer selected, trace the outline of the structure using the 'Free Select Tool'

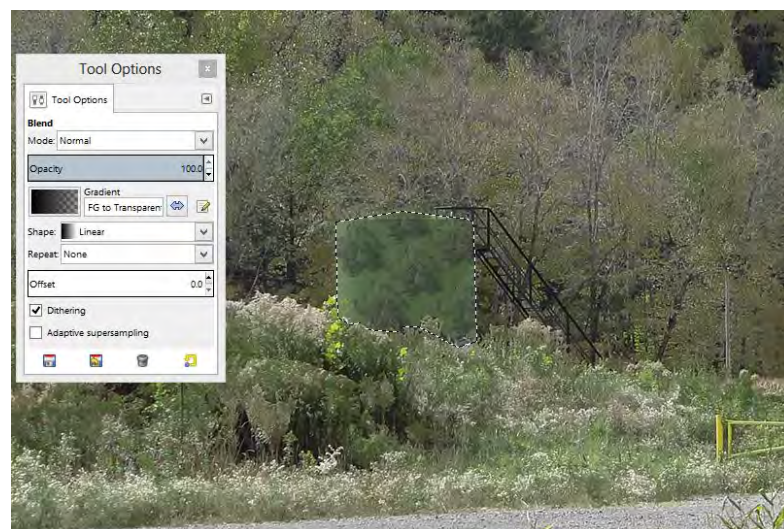- In top menu: Select->Invert

The selection should look like this:

-In top menu: Edit->Cut

-This is the final result of Disruptive Coloration

    -To save an image, Select File->'Export'

        ->save image as a .jpg image file

C a m o u f l a g e D e s i g n C o n t i n u e d

Countershading

- In top menu: Select->Invert
- Create a new Layer in Layer window called 'Countershading'
- In top menu: Windows->Dockable Dialogs->Gradients
    - ->In gradients window: select 'FG to Transparent'
- in toolbox: change the Foreground Color Box to black(top box)
- in toolbox: Select 'Blend Tool' (Make sure 'Mode' is 'Normal' and 'Shape' is 'Linear')
- Make sure the 'Countershading' layer is selected
    - -> click slightly above the structure and drag to the middle of the structure with the 'Blend Tool'

-This should apply a dark to light gradient over the structure. Change the opacity of the 'Countershading' layer to 80.00

-This is the final result of Countershading
    -To save an image, Select File->'Export'
        ->save image as a .jpg image file

Visual Quality of the Landscape Survey

Purpose

- To gain an understanding of universally perceived beauty in the landscape of Sullivan County, PA

Method

- Online survey taken by 191 undergraduate students

- Students were presented a series of 80 photos and asked to rate them on a scale of 1-10, 10 being the most beautiful. Of these 80 photos, 60 were unedited photos of common sights in Sullivan County. An additional 9 photos were included of the natural gas related structures before the rendered camouflage applications. 5 versions of this survey were made, each containing an additional 11 (out of 27 total) camouflaged images of the structures.
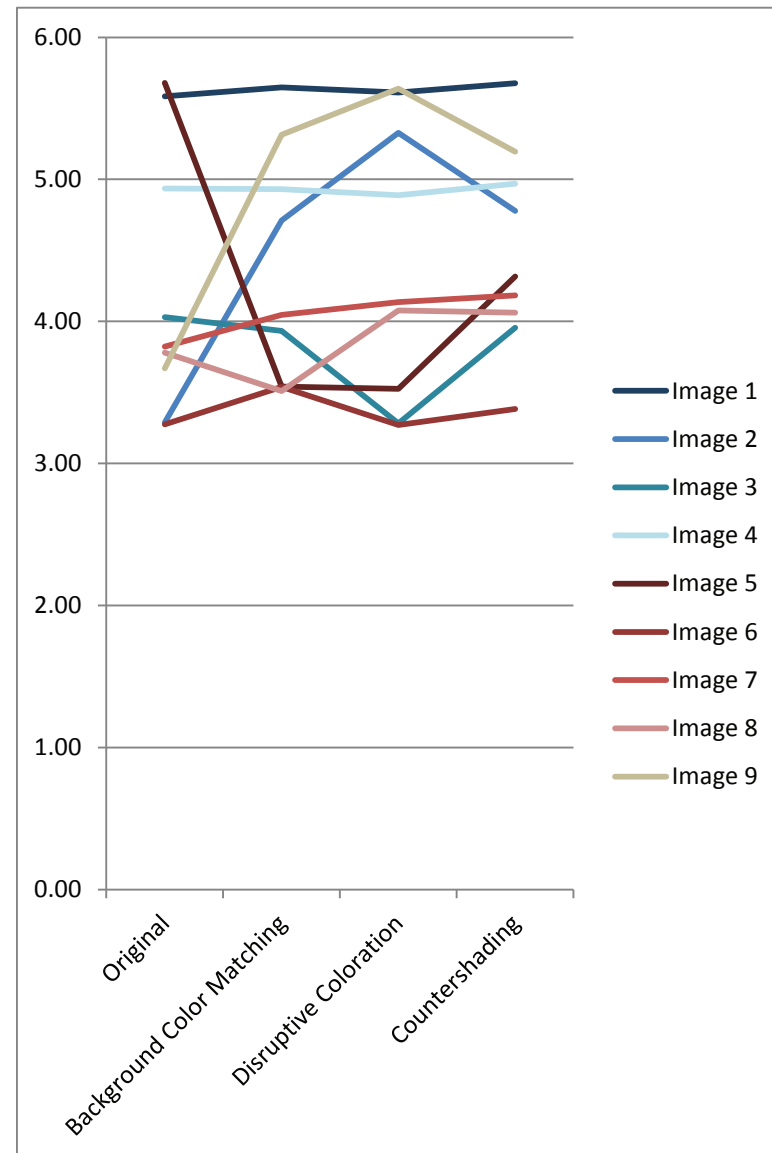
Analysis

- The survey results were categorized by picture, in order to get an average total rating for each.

- The average ratings of the unedited images of natural gas related structures were compared to ratings of images after camouflage application.

V i s u a l   Q u a l i t y   o f   t h e   L a n d s c a p e   S u r v e y

Results

- The average ratings of the images of natural gas related structures were charted before and after camouflage application to evaluate its perceived effectiveness.

- In 7 out of 9 images, the average rating of camouflaged structures was higher than the original structure.

Image 1
Image 2
Image 3
Image 4
Image 5
Image 6
Image 7
Image 8
Image 9