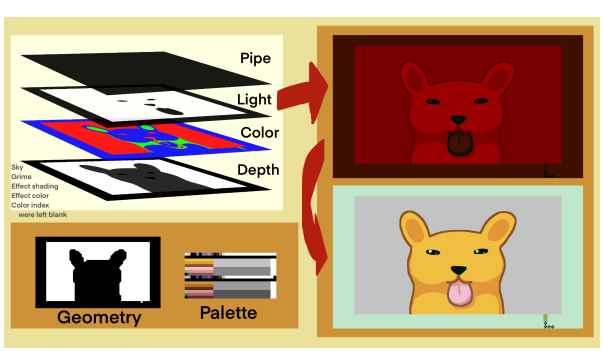
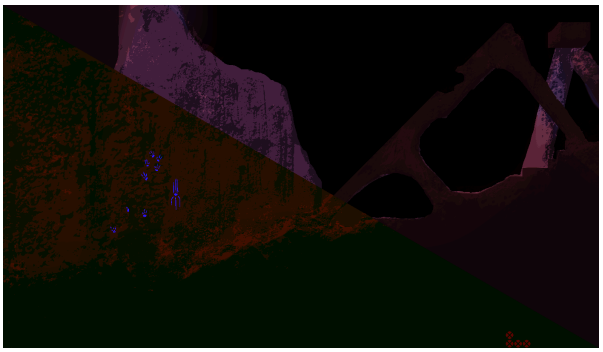
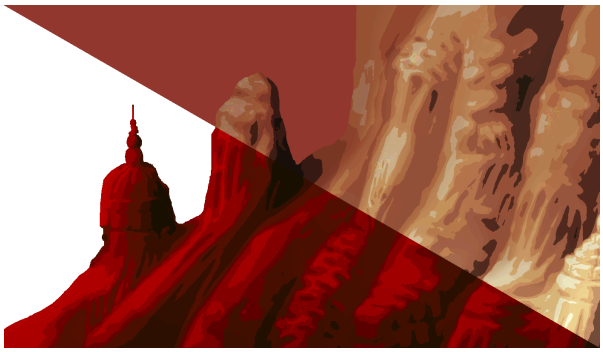
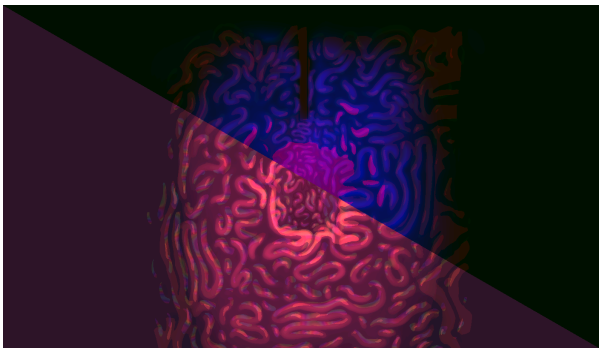
Manual Screen Editor for Rain World

This document describes the usage of and concepts behind the Manual Screen Editor. The program has been developed with two workflows in mind, screen making from scratch and editing pre-existing screens. Launching the program is as simple as running the associated exe file. No other files are required for the program to launch.

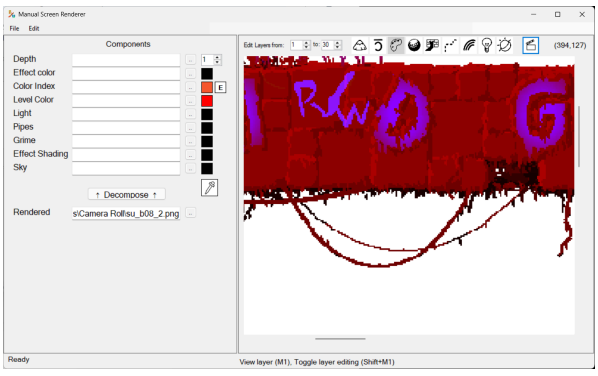








Above are four sample rooms made from scratch then composed into screens programmatically. It is not recommended that large scale drawings are performed *within* the editor since many softwares (ie Photoshop, Gimp, MSPaint, etc.) are better equipped for drawing at such scales. For such jobs, it is recommended that layers are exported (if modifying a pre-existing screen), modified then imported back into the editor where they can be recomposed into a full rendered screen.



For operations within the editor, a layering system is used. The “brush” used to apply changes contains information for each layer. These parameters can be seen and modified on the left panel.

Index colors have their own pop-up window for selecting a single color from 255 available RGB color swatches. Left-clicking edits the color of a swatch. Shift+left-clicking selects swatches for deletion. Ctrl+left-clicking chooses a single swatch for the brush.

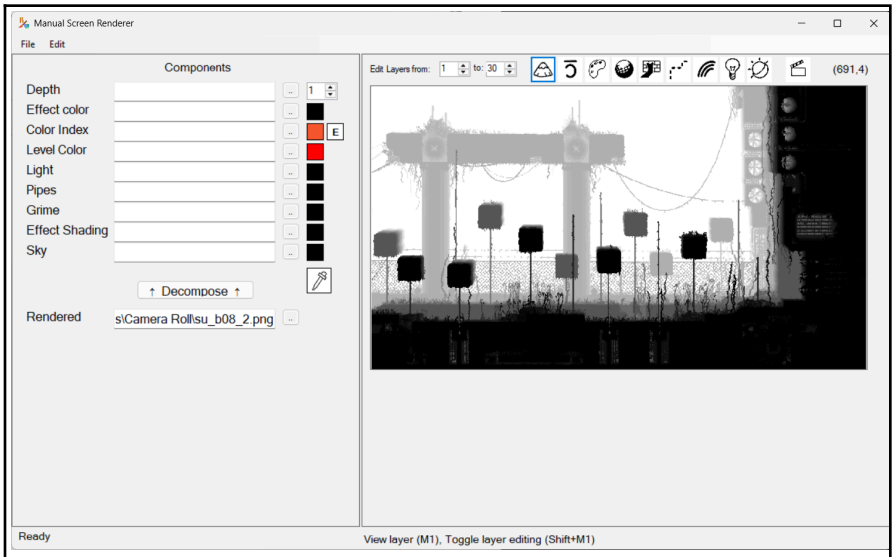
The color dropper can be used to quickly change all brush fields by copying data from a selected pixel.

Each field of the brush will only be applied if the associated layers, as seen at the top of the right panel, are toggled on (shaded gray). Layers can be toggled for editing by shift+left-clicking. Multiple layers can be toggled on at once. Left clicking on a layer's icon normally will select it for previewing (highlighted in blue).

Depth can be used for masking. The top of the right panel includes two fields for defining an inclusive range of layers from 1 to 30. Shrinking this range will restrict which pixels a user can modify with the brush.

Upon importing a layer or rendered screen, either the Compose (Note that images may be out of date) or Decompose button must be pushed to synchronize layers. Only the rendered screen preview is used for saving. Upon saving, the index color swatches are added to the top left corner of the screen.

Depth

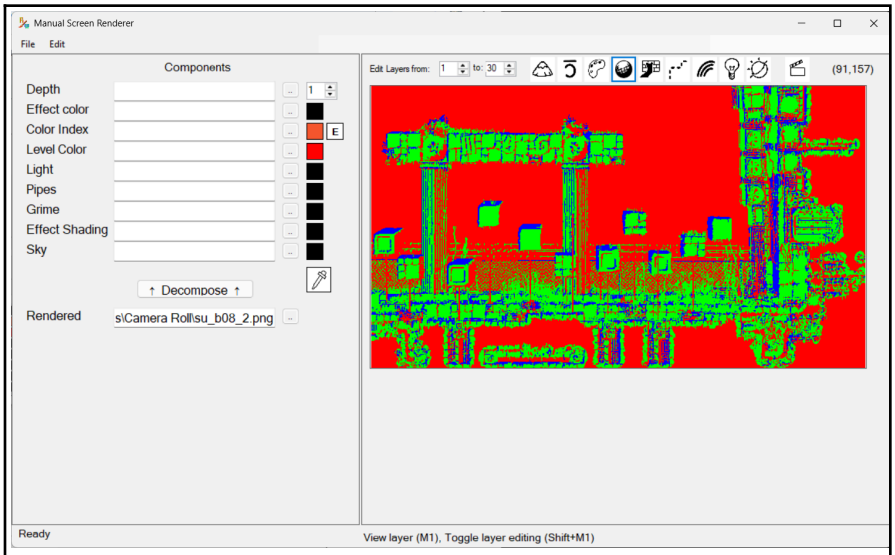


su_b08_2_depth.png

File Name	*_depth.png
Color Space	sRGB
Alpha Channel	None
Colors Accepted	Grayscale

Dark values are for near values, with 0 being the closest and 255 being the farthest. The program scales down the values to fit only 30 layers. The conversion is as follows:
Depth ≈ Floor(Value / 8.8)

Level Color

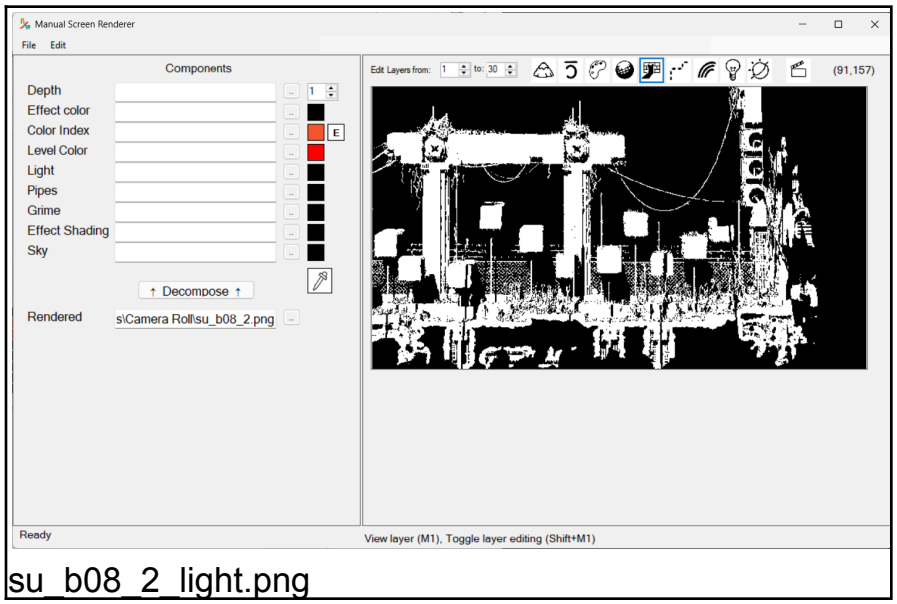


su_b08_2_lcolor.png

File Name	*_lcolor.png
Color Space	sRGB
Alpha Channel	None
Colors Accepted	Red/Green/Blue

This is similar to how traditional level editors define the coloration of graphics. Note that effect colors are not defined here. Usually blue, green and red represent light, neutral, and dark level geometry respectively, but the in-game appearance is ultimately determined by the screen's palette.

Light

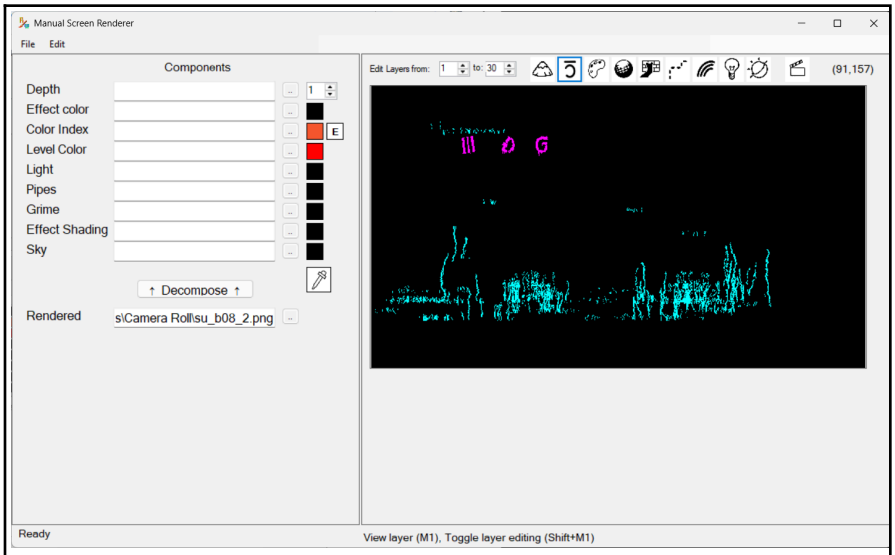


su_b08_2_light.png

File Name	*_light.png
Color Space	sRGB
Alpha Channel	None
Colors Accepted	Black/White

This layer works much the same as with traditional level editors. White pixels represent geometry in sunlight while black pixels indicate shadows. Lighting information combined with depth, level color, and the stage of the in-game rain timer produce the 180 distinct geometry colors that palettes provide.

Effect Color



su_b08_2_ecolor.png

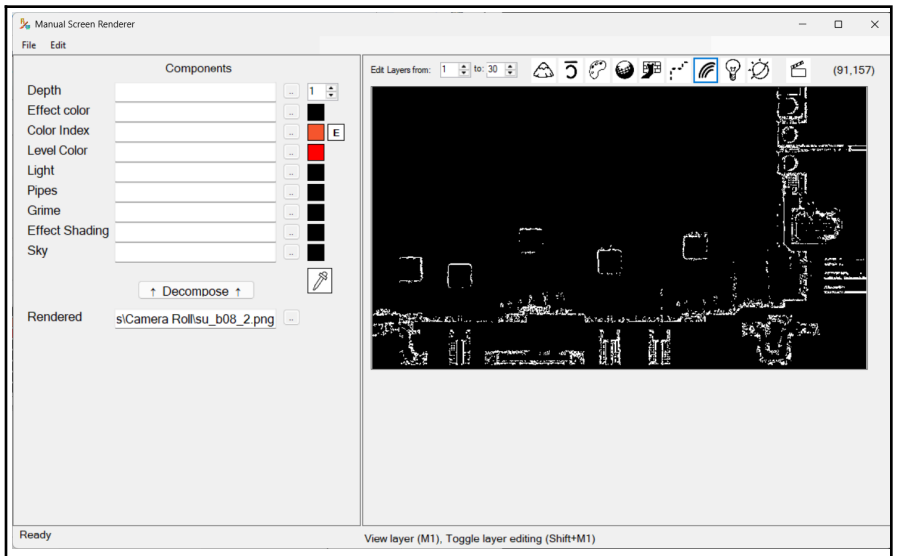
File Name	*_ecolor.png
Color Space	sRGB
Alpha Channel	None
Colors Accepted	Black/Magenta/Cyan/White

The effect color for each pixel. The meaning for each input is as follows:

Black	(0,0,0)	No effect color
Magenta	(255,0,255)	Effect color A
Cyan	(0,255,255)	Effect color B
White	(255,255,255)	White (used by batfly hives)

Effect colors A and B are set by room settings. The white effect color is hardcoded to only work inside batfly swarm rooms.

Grime

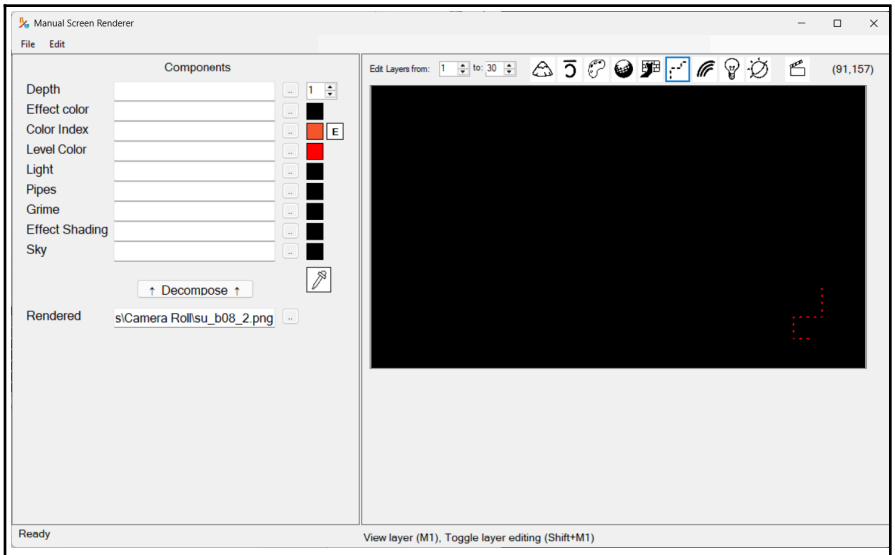


su_b08_2_grim.png

File Name	*_grime.png
Color Space	sRGB
Alpha Channel	None
Colors Accepted	Black/White

Sets where the grime (rainbow/oil) room effect appears. The actual colors used by grime are set by the screen’s palette. The in-game intensity of grime is controlled by the room’s settings.

Pipe Connections

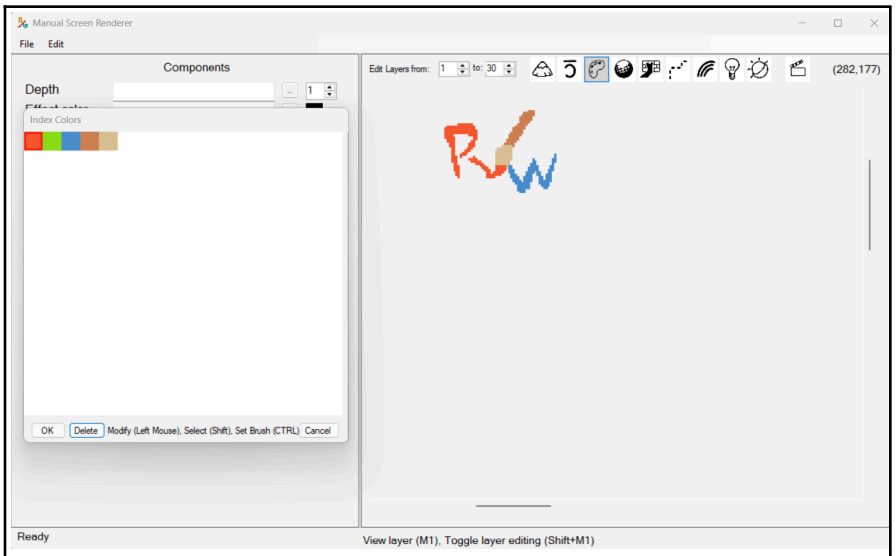


su_b08_2_pipe.png

File Name	*_pipe.png
Color Space	sRGB
Alpha Channel	None
Colors Accepted	Black/Red/Green/Blue

Sets where pipe antlines go. The colors red, green, and blue determine which layer the pipe is displayed on, layer 1, 2, or 3 respectively.

Index Colors

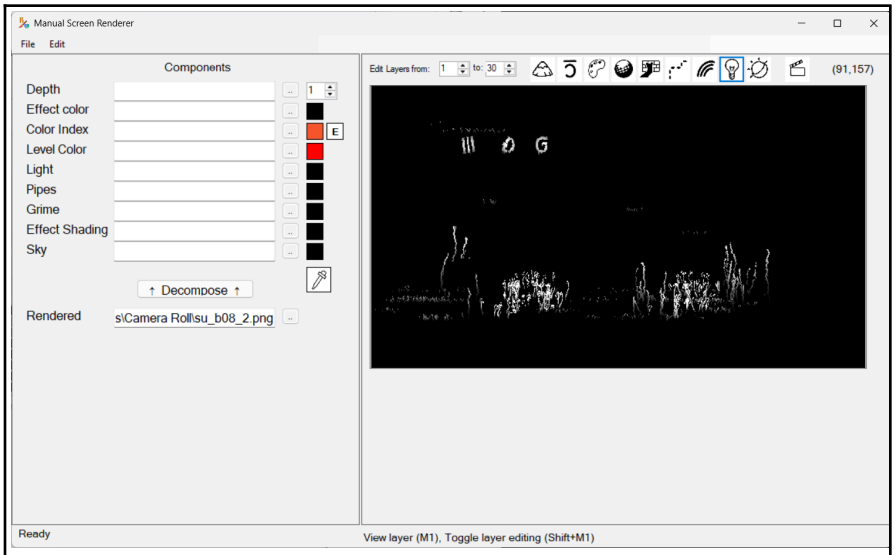


su_b08_example_2_index.png

File Name	*_index.png
Color Space	sRGB
Alpha Channel	Full Opacity/Full Transparency
Colors Accepted	Full 8 bit RGB range

These are the indexed colors which will be stored in the top left corner of the rendered image. Limit the number of colors used manually. Make sure that this input image does not have the colors already in the corner. The program will collect all unique indexed colors automatically. Upon importing to this layer, the image's format will be automatically converted to an 8 bit indexed format.

Effect Color Shading

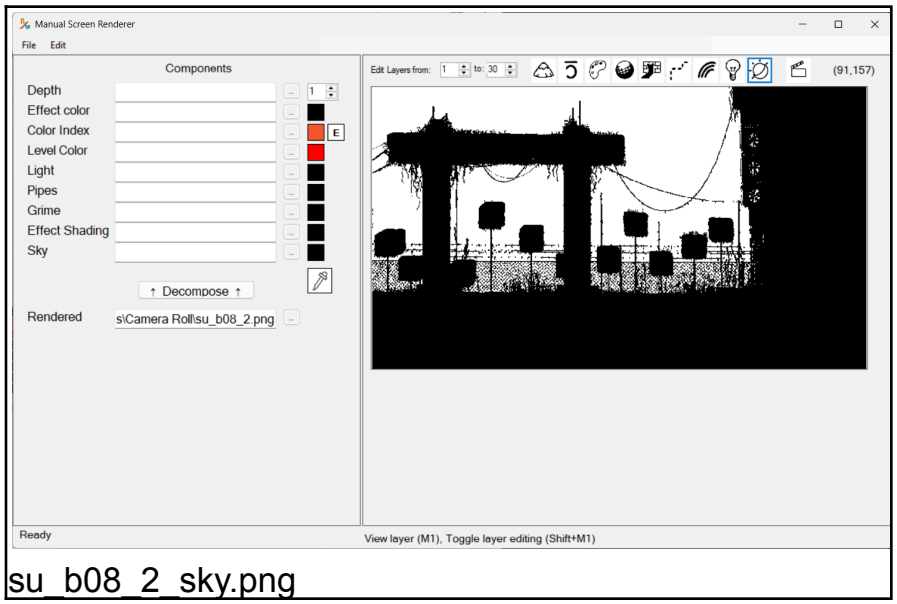


su_b08_2_shading.png

File Name	shading.png
Color Space	sRGB
Alpha Channel	None
Colors Accepted	Grayscale

This controls intensity for effect colors A, B, and white. White means 100% intensity, black means 0% intensity. Not to be confused with light.png.

Sky



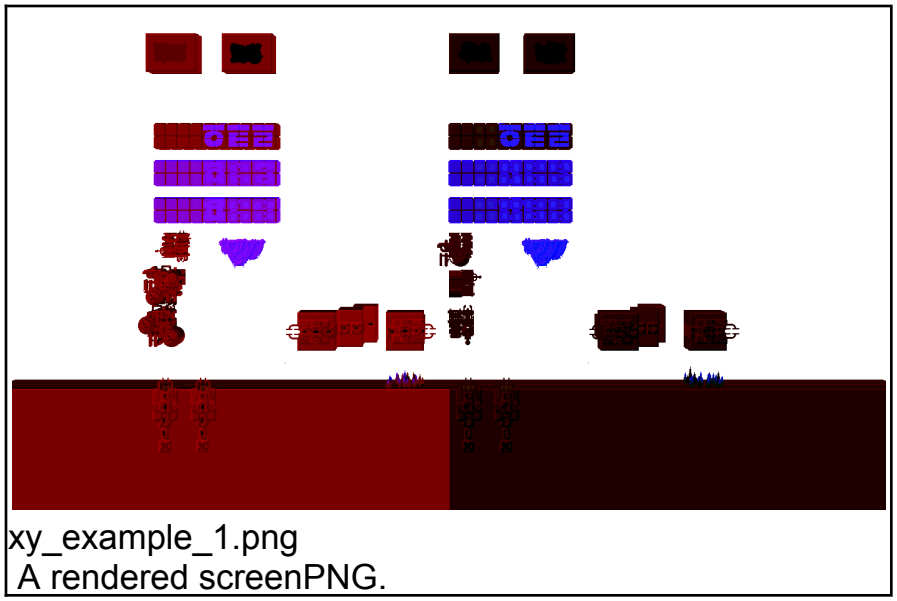
su_b08_2_sky.png

File Name	*_sky.png
Color Space	sRGB
Alpha Channel	None
Colors Accepted	Black/White

White represents sky, black represents geometry. The sky is also used by backgrounds.

Rain World Rendered Screen PNG Channel Format

This section describes the function of channel colors for rendered screen PNGs. Channel values refers to the 3 RGB channels for rendered room PNGs. Rendered screen PNGs are the images used by the game for each camera in a room. They can be found in folders like `...\world\xy-rooms` or `...\levels`. They typically use 8-bit integer sRGB precision with an RGB color space. They do not need an alpha channel, and can be without one. They have a 1400 x 800 pixel resolution, that being approximately 20 pixels per collision tile.



xy_example_1.png
A rendered screenPNG.

Red

The red channel stores information about layer depth (0-29), surface normals, and painted shadows. This information is purely visual, selecting palette colors and live shadow deformation. It does not affect collision or creature pathing.

Red Channel			
Value Range		Editor Normal	Shadowed
Layer 0	Layer 29		
1	30	Red	Yes
31	60	Green	Yes
61	90	Blue	Yes
91	120	Red	No
121	150	Green	No
151	180	Blue	No

*Value 0 goes unused.

*Value 255 is used for the background/sky

Green

The green channel is used for various per pixel utilities.

Green Channel				
Value (Light)	Value (Dark)	Per Pixel Effect	Grime	Color Index
0	16	No effect color	No	No
1	17	Effect color A (magenta in editor)	No	No
2	18	Effect color B (cyan in editor)	No	No
3	19	Effect color white	No	No
4	20x	No effect color	Yes	No
5x	21x	Effect color A (magenta in editor)	Yes	No
6x	22x	Effect color B (cyan in editor)	Yes	No
7	23	Effect color white	Yes	No
8	24	No effect color	No	Yes
9x	25x	Effect color A (magenta in editor)	No	Yes
10x	26x	Effect color B (cyan in editor)	No	Yes
11x	27x	Effect color white	No	Yes
12	28	No effect color	Yes	Yes
13x	29x	Effect color A (magenta in editor)	Yes	Yes
14x	30x	Effect color B (cyan in editor)	Yes	Yes
15x	31x	Effect color white	Yes	Yes

*Value 255 is used for the background/sky

*Values 8, 9, and 10 are used for each layer of a pipe connection ant-line.

*Values marked with an x denote broken effects. Pixels with these values do not function as expected, typically giving deference to effect colors.

Blue

The blue channel stores additional shading to be used as determined by the green channel. For decals, it determines the “color index”.

Blue Channel	
Value	Per Pixel Effect
0	Full dark
255	Full Bright

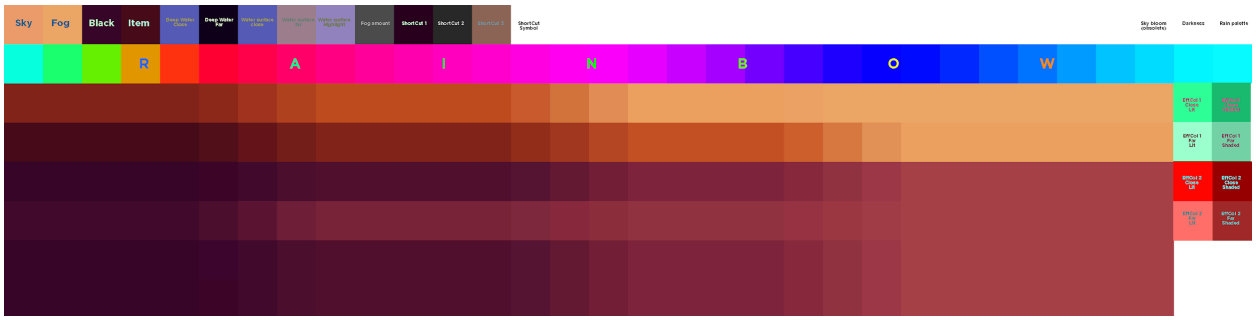
Indexing:

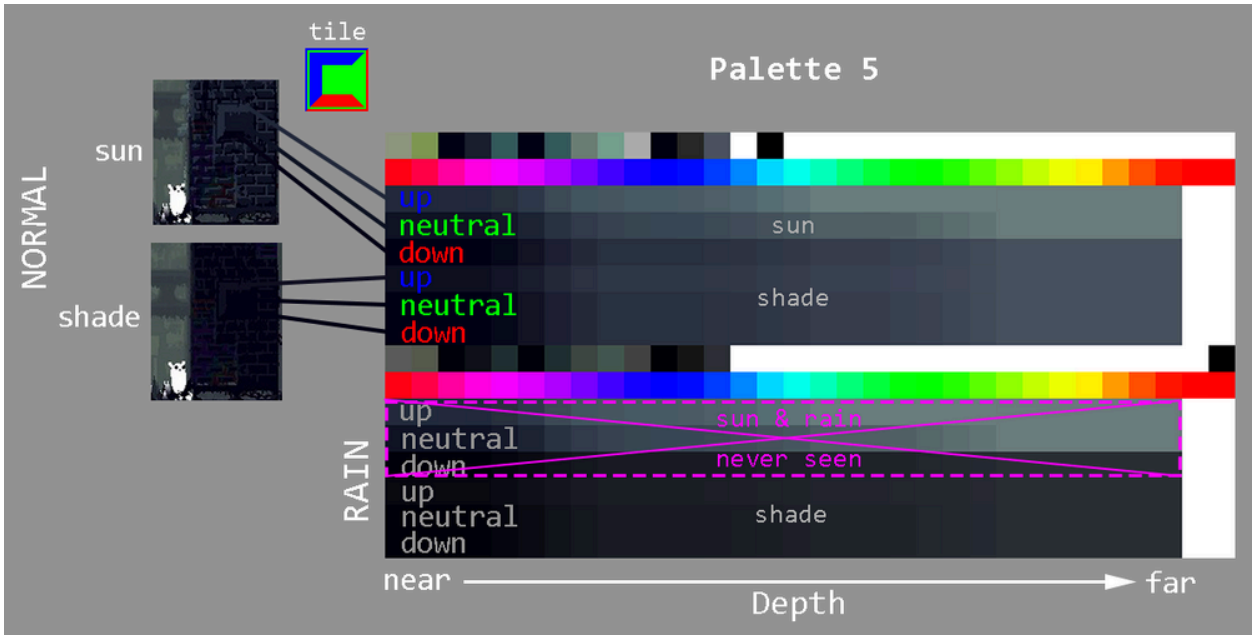
Indexing pixels are counted from the top left to the right in the first row.
255: color from pixel 1
254: color from pixel 2
etc.
0: normal geometry without effect colors/color indexing and pipes

*Value 255 is also used for the background/sky

Supplemental materials

Palette Diagram from the wiki:





https://rain-world-modding.fandom.com/wiki/Custom_Palettes_and_Tiles

https://rainworldmodding.miraheze.org/wiki/Palettes