Portrait / general graphics insertion method

This tutorial will explain how to insert most any graphics into FE5 by using the build files.
This will use the example of a portrait, but the process can be applied to most any raw graphics, as long as you know the location of the graphics you aim to edit, and their palette's. General advice that goes beyond portrait insertion will be in *italics*.

0) A few basic notions

FE5 often store sits graphics compressed. Files whose format ends in `.fe4` or `.comp` are compressed, and will need to be decompressed using the Decompressor in the tools folder. A compressed file cannot be viewed or edited.

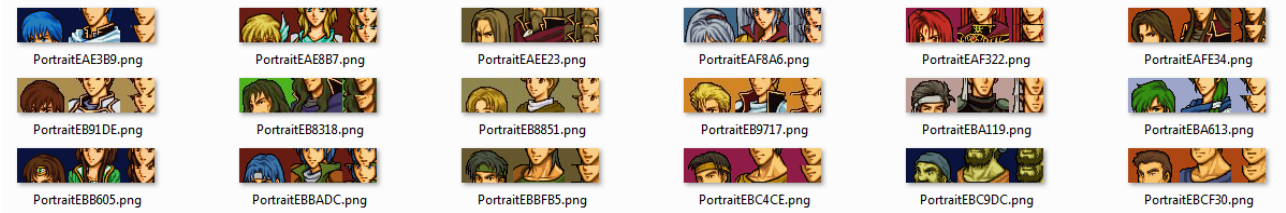
After decompressing and editing a compressed file, make sure to compress it again before insertion.

Palette files determine the colors of the graphics you're trying to insert. Those colors are RGB values represented by 2 bytes of data each. 0000 is pure black, and 7FFF is pure white.

You can find how many colors a palette contains by simply counting these colors. Most palettes are either 8 or 16 colors (with the first color dedicated to transparency).
If you find a palette with 7 or 15 colors, chances are the transparency color is omitted.

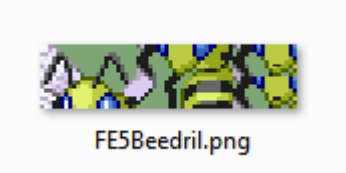
1) Formatting

First, you want to make sure your portrait is formatted like other portraits. If you look at the portrait folder, you can see that the PNG files are all arranged the same:
Top half Bottom half Mouth Open
Mouth Half-open



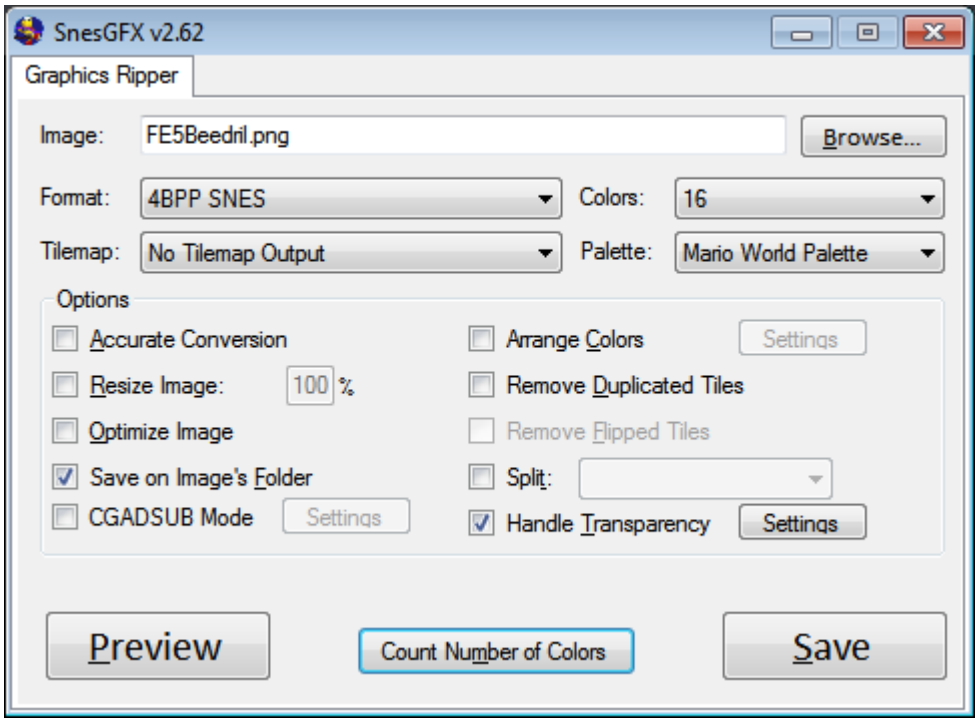
In graphics folders that only have files in .2 bpp or .4bpp format, you can visualize them in YY-CHR to find the proper formatting.

In your favorite image editing program, make sure to format your portrait in the same size and arrangement as the type of graphics you are attempting to replace or copy. The picture must also have the same number of colors as the original picture (15 + a transparency color).

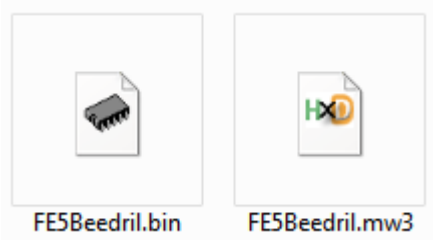


2) Converting

Now, run the file through SnesGFX, using the following settings:



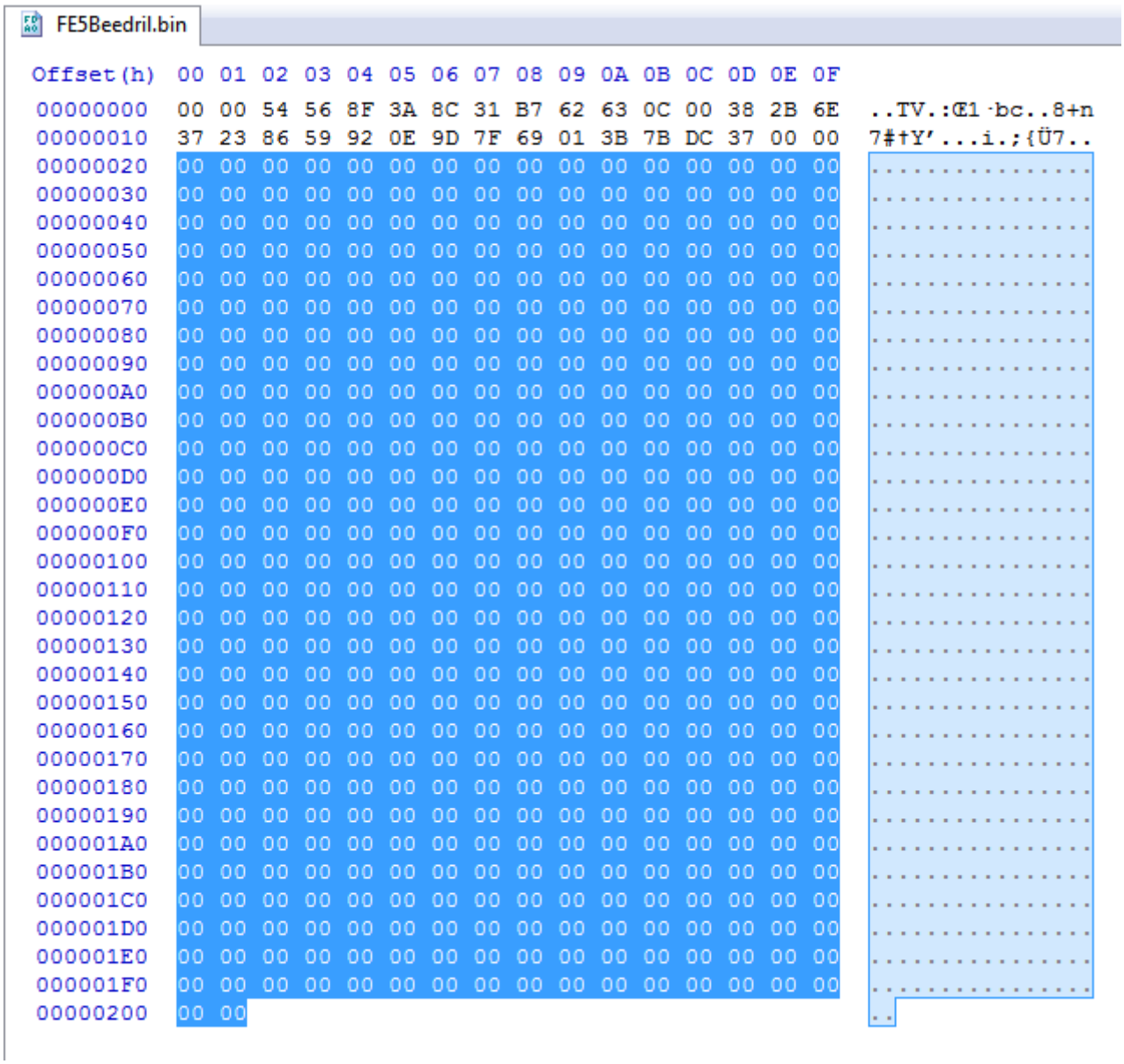
You can have it check the color amount, if you have any doubts. Hit Save, and you will get two files.



The .bin file is your insertable graphics. The `.mw3` file is its insertable palette.
Change their file formats to `.4bpp` (*or `.2bpp` if that's the type of graphics you're editing*) and `.pal` respectfully.
Then drop the `.4bpp` file into the compressor (*unless these graphics are incompressed in the ROM*).

3) Crop the palette file

Open the `.bin` file in a Hex editor, and delete everything starting at $20.



If the palette you're replacing has 7 colors + transparency, make that $10, and so on.
If the transparency color is omitted in the palette you're replacing, do also delete the first two bytes.

Save the resulting file.

4) Insert the files

In the Portraits installer, located in graphics/portraits, you'll need to first replace an existing palette, by changing its path to your palette:

```
* = $354000
.logical $EAC000

    segmentStart

    aPortraitPalette00 .binary "sprites/FE5Beedril.pal"
    aPortraitPalette01 .binary "sprites/PortraitPalette01.bin"
    aPortraitPalette02 .binary "sprites/PortraitPalette02.bin"
    aPortraitPalette03 .binary "sprites/PortraitPalette03.bin"
```

The same goes for the graphics:

```
* = $358318
.logical $EB8318

    segmentStart

    g4bppcPortraitEB8318 .binary "sprites/FE5Beedril.4bpp.fe4"
    g4bppcPortraitEB8851 .binary "sprites/PortraitEB8851.4bpp.comp"
    g4bppcPortraitEB8C84 .binary "sprites/PortraitEB8C84.4bpp.comp"
    g4bppcPortraitEB91DE .binary "sprites/PortraitEB91DE.4bpp.comp"
```

If you want, you can change the labels (aPortraitPalette00 and g4bppcPortraitEB8318) to something clearer, like aPortraitPaletteBeedril and g4bppcPortraitBeedril.

If you want to simply add this new portrait without erasing existing content, simply put your new portrait in free space.

```
* = $5BEEEE
.logical $37EEEE

    g4bppcPortraitBeedril .binary "sprites/FE5Beedril.4bpp.fe4"

.here
```

For other graphics, the same method applies.
However, if the graphics/palettes you're looking to insert are not yet in the build files, you'll need to know their location. You'll also need to make sure the graphics' size (after compression, if it's required) is equal or smaller than the original's, so as not to write over the data that comes after. If you can't get it small enough, then the graphics will have to go in free space and you'll need to repoint them.

5) Define the portrait

The portrait table in tables\UNITS lets you define portraits by assembling a portrait with its palette.

	A	B	C
1	structPortraitEntry 0	GraphicsPointer	PaletteIndex
2	DefaultPortrait	g4bppcPortraitEADE80	$00
3	LeifPortrait	g4bppcPortraitBeedril	$00
4	FinnPortrait	g4bppcPortraitEAE3B9	$01

Like before, feel free to change the label (here: LeifPortrait) to something else like BeedrilPortrait. However, do update all other instances of LeifPortrait in the build files if you do so, like in the Active speaker association table.

You may now give your beautiful portrait to its unit, in the Character Data table:

	A	AT	AU	AV	AW
	structCharacterDataROMEntry 1	Class	LeadershipStars	MapSprite	PortraitID
	Leif	Lord	0	LordMapSprite	BeedrilPortrait
	Finn	LanceKnight	0	LanceKnightMapSprite	FinnPortrait
	Osian	Fighter	0	FighterMapSprite	OsianPortrait
	Halvan	Fighter	0	FighterMapSprite	HalvanPortrait

Hit build. Tadaa!