# Importing Quixel Megascans assets for use in E-on Vue





(All text lines preceded by a dart; contain required actions)

## 1) Importing Quixel Megascans assets to create Vue objects

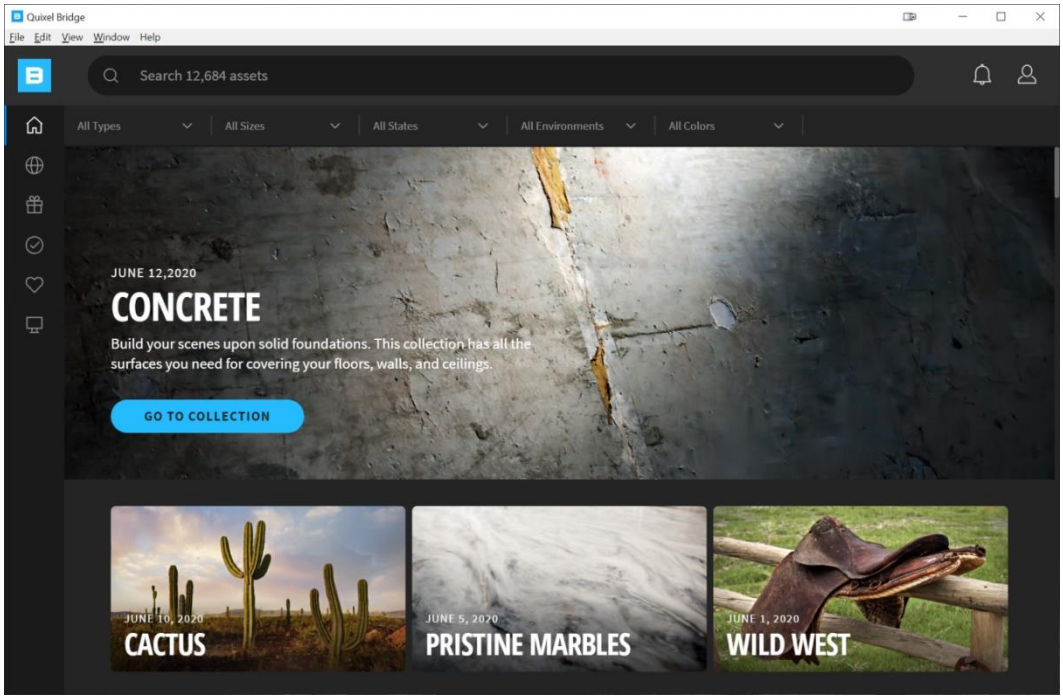
Another way of importing very high quality assets into Vue is to use Quixel Megascans objects.

**Setting Up**
Megascans has been acquired by Epic Games so the assets are free if you establish an Epic Games – Unreal Engine account, then install Unreal Engine 4 (also free).
The best way to browse the Megascans content is to download Quixel's "Bridge" application and set it to export to Unreal Engine.

- Once installed, select **Edit/Settings** to set the **Engine** (app to export to) to be: **Unreal Engine**. Below that, set the **Local Library Path** to a folder in the dropbox (if you have one) or a folder on D: drive somewhere. I used: **D:/dropbox(main)/dropbox/UE4 – Megascans Content**
- Press **Save** to enter the browser.

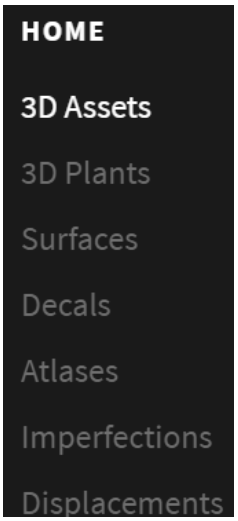
The content of Megascans is free for export to Unreal Engine only. To actually export a megascans asset, Unreal Engine must be open to a project. We will only download the Megascans assets but not export them to Unreal Engine since we only want to use them in Vue.

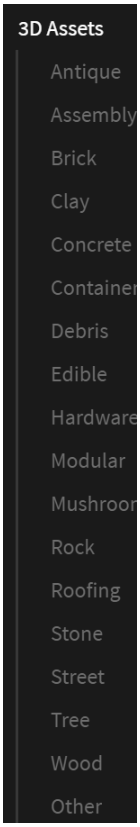
Back to the Quixel Bridge opening page:



Click the Home icon: then go to **3D Assets** in the list:

There are many categories to choose from in 3D assets. We'll try the **rusty anvil**…..





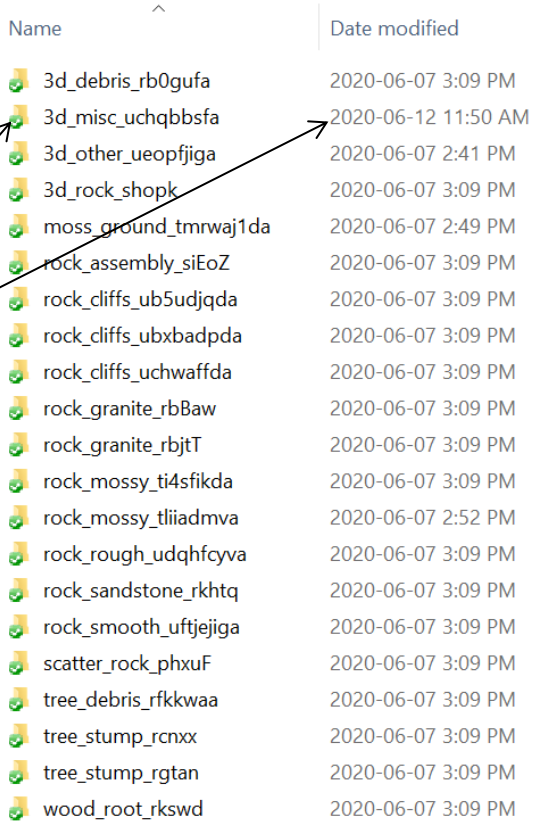

- When you mouse over the image, if you don't already have it, a green; **Download** arrow will appear in the upper-right. Click it to download it.
- Once downloaded, the **Download** arrow changes to a blue **Export** arrow.
- <u>Do not</u> click on the Export arrow to send it to Unreal Engine.

The asset files have been saved in the above folder on your computer.

The file folder for the asset will often have a cryptic name that in no way suggests what the asset is. I often have to use the file's time stamp to figure out which is which.

Once I find it, I change the main folder's name to something understandable.

3d_hardware_Anvil _R 2020-06-12 11:50 AM

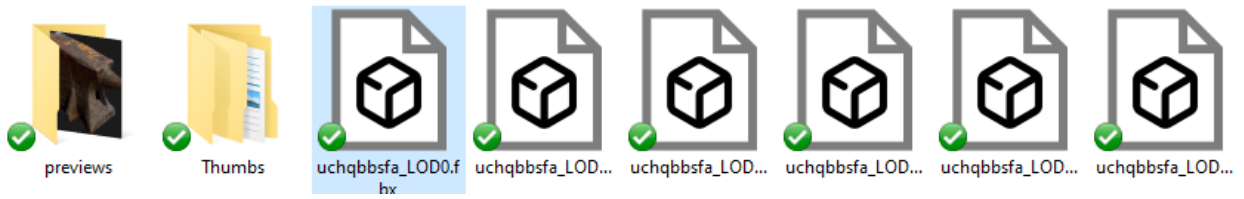



- Now you can close **Bridge**.

## Importing Asset to become a Vue object (.vob)

- Open Vue to an empty scene
- Select **File/Import Object** from the main menu
- Make your way to the Megascans folder for that asset (may be renamed like mine): 3d_hardware_Anvil _R 2020-06-12 11:50 AM

The files that are shown will only be folders and any files that have an extension for importable file types. **Unreal Engine (UE)** only uses FBX files for its geometry meshes so that's all that will be shown.



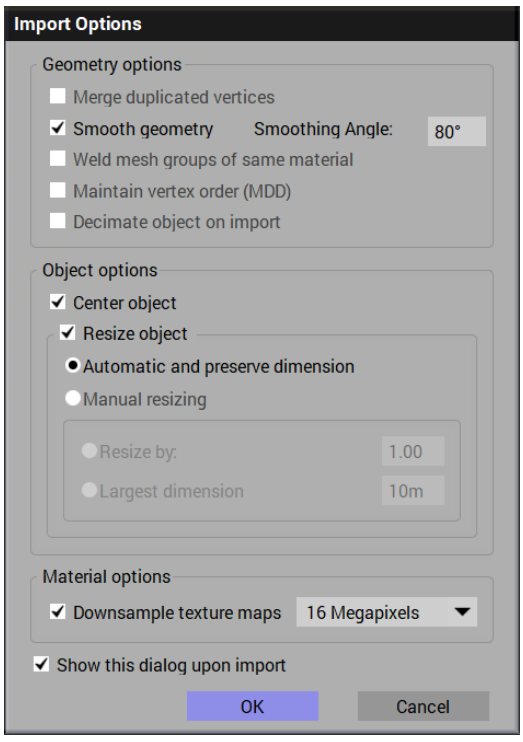

There will always be a number of FBX files of the same asset saved to the folder. Each one will have a different LOD or Level of Detail.
This allows UE to swap the image for a less detailed image as it gets further away from the camera. LOD0 is the most precise and they get less precise as the LOD number gets higher.

- We're only going to need one image for Vue so we'll select the best one. Select the LOD0 version of the file. (still named weird)

In Vue, the usual **Import Options** dialog opens:

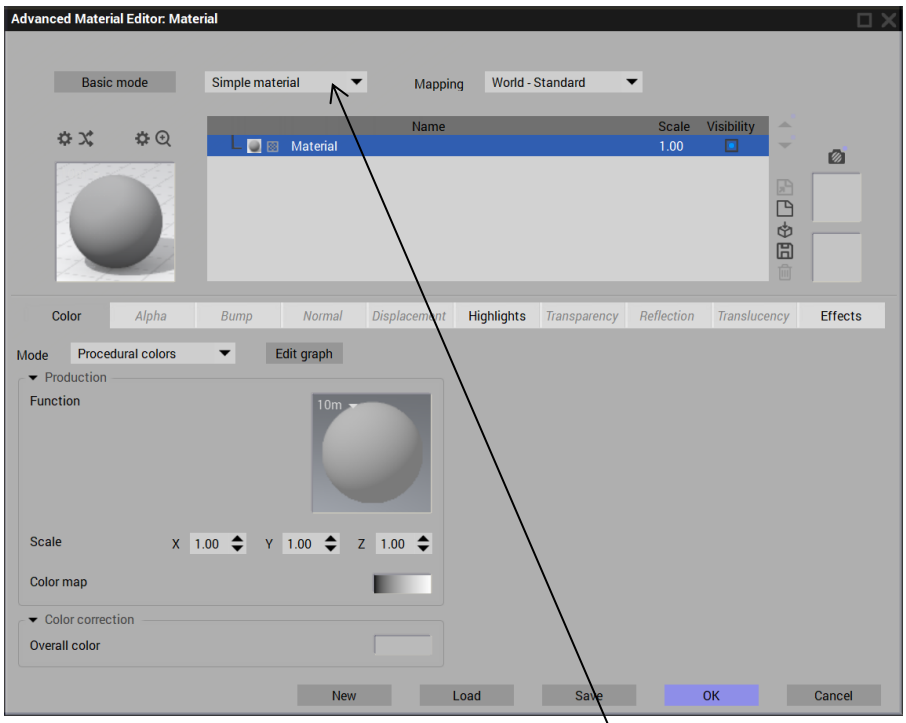
- I'll leave the usual options selected as they are shown here, click **OK**.

The anvil appears in the view with none of its colours or textures applied yet.



The various parameters of the anvil's appearance will be applied using the various tabs of the **Advanced Material Editor** in Vue.

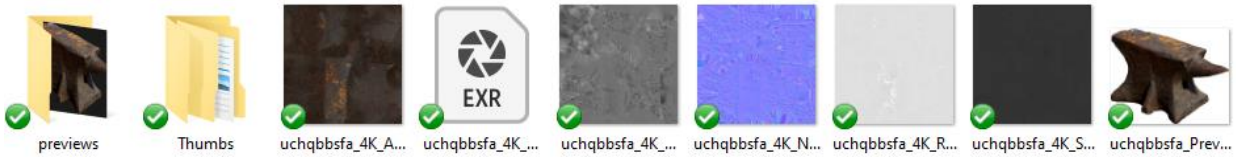
- Since we will be making this anvil into a Vue .vob object, let's change its listed name in the **World Browser** to **Rusty Anvil**.
- With the **Rusty Anvil** selected, open **the Advanced Material Editor.**




**Set Material** (edit –June 2021)
For best results, the material type listed in the top-center text box should be changed from **Simple material** to **PBR material.**

**Set Colour**

- With the **Color** tab selected, change the **Mode** to **Mapped Picture**.
- You will see the **Bitmaps** panel right away but click the **Open File** icon:  at the far right. Then locate the Megascans folder for the anvil again.



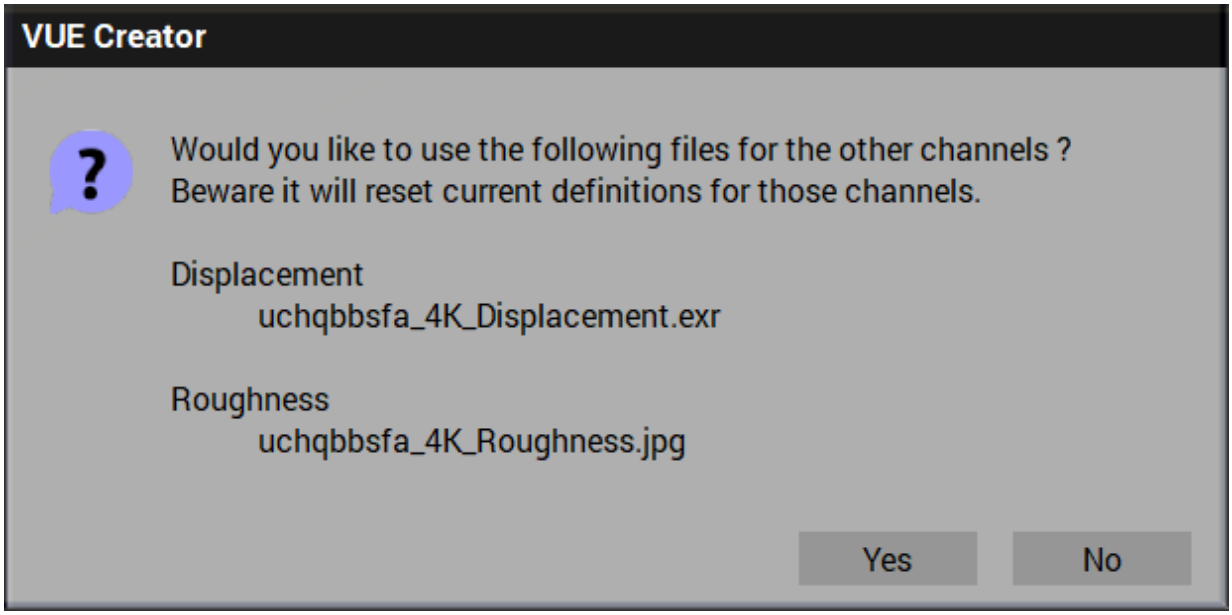

The first file after the two folders is a jpg bitmap picture with the name **albedo** in it. Albedo is a parameter that determines the asset's colour.

- Double-click the albedo file to load it as the material colour. (I think all **Production** defaults can stay as they are)

- Click **OK** to see the colour applied to the asset.

There are a number of parameters that can be applied to different assets whether they be 3D, 3D Plant or Surfaces.

Vue may determine that some of these other channels for this material could also be loaded as shown below….




Initially, Vue was able to identify and load the Colour, then also the Displacement and Roughness channels.

There may not be all corresponding material parameter channels (PBR mode) between Vue and a Quixel asset. Sometimes different parameter names may be used for the same parameter.

For Example:

| Vue (for PBR material) | Unreal Engine/Megascans |
|---|---|
| Color | Albedo / Diffuse |
| Ambient Occlusion (AO) | Ambient Occlusion |
| Alpha | Opacity |
| Roughness | Roughness |
| Normal | Normal |
| Displacement | Displacement (+ Alpha in EXR files) |
| Metalness | Specular |
| Transparency | also Opacity |
| Reflection | |
| Translucency | |

If the appropriate parameter file appears in a Megascans asset folder, the corresponding Vue parameter could be applied to the imported FBX mesh through the **Advanced Material Editor**.

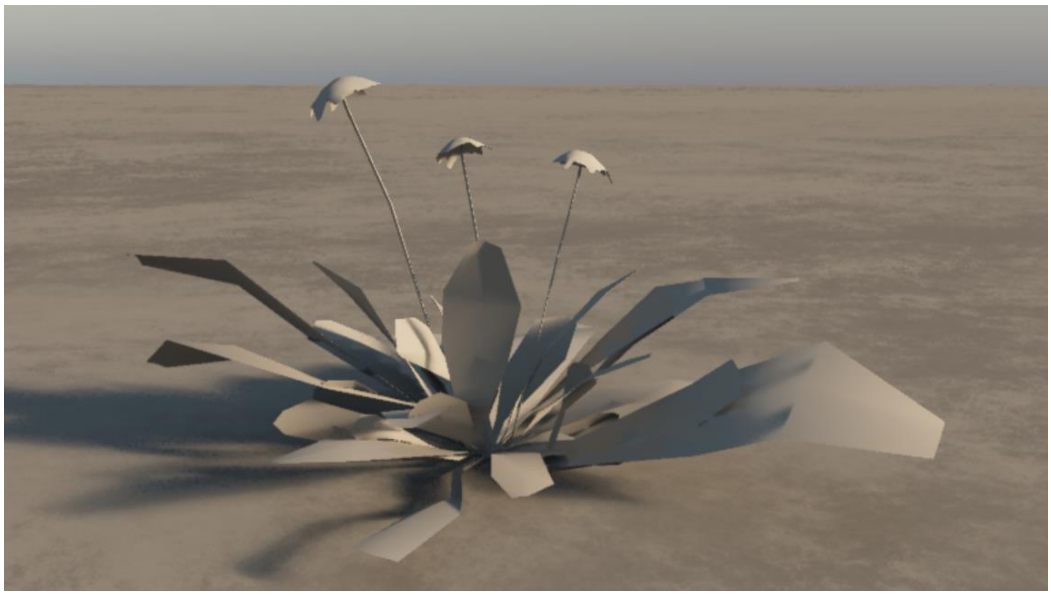
In the above Rusty Anvil asset from Quixel, Vue identified and loaded the Colour, Displacement (exr) and Roughness parameters.

But the list of files for the asset shows that there is also a **Normal** and **Specularity** parameter that could still be applied individually in Vue's **Advanced Material Editor**.

## 1b) Importing a “3D Plant” type of asset

The Anvil object may not have a lot of attributes to it. We have seen both colour and roughness have an effect on its appearance, but nothing else. It is not translucent, or shiny or reflective. These may be attributes, and therefore; material parameters of a different type of asset like a plant.

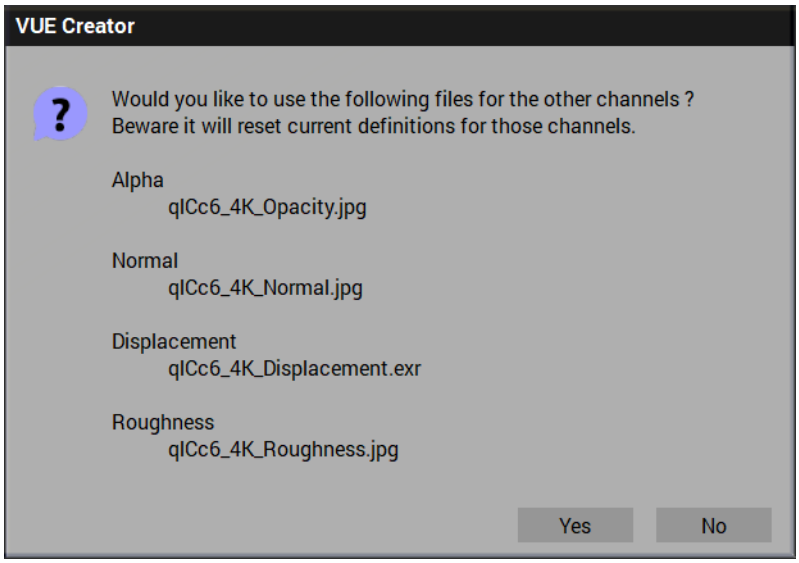
- We’ll try the simple **Dandelion**.
- Use the above process to import the **var1** variation at LOD0 (highest definition) of the dandelion into the Vue scene using the standard import options.



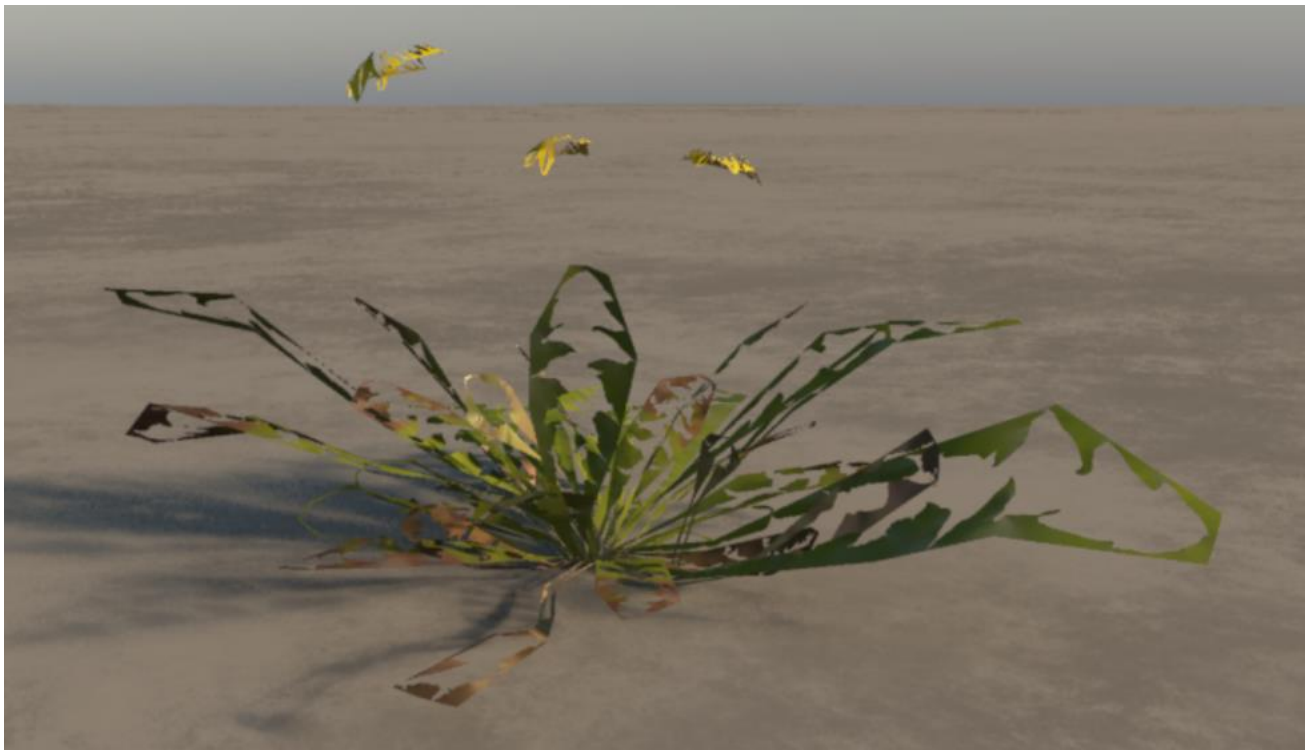
- Once again, change this from a **Simple material** to a **PBR material** in the Advanced Material Editor.
- Now apply Megascans **Albedo** file as the a **Mapped picture** to Vue’s material **Colour**

You will usually be asked to use the other PBR channels to texture elements of the model:

- Answer Yes:

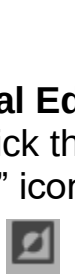



- In the **Material Editor** for the dandelion and select the **Displacement** tab.
- Set the **Displacement Depth** parameter to zero.



Looks like the leaves have disappeared, leaving only the boxy perimeters visible. We want it to go the other way; keep the leaves and make the perimeter invisible.

- In the **Material Editor**, **Alpha** tab, click the "invert image" icon:



In Vue, white is transparent and black is opaque; the opposite of Quixel opacity. So it always has to be inverted for Vue.

Now we the dandelion model shown as it is supposed to be; properly defined leaves and flowers and stem.

## Using Copy Material and Paste Material

Many 3D plants in Quixel have multiple variations of the same plant species; Listed as Var1, Var2, etc. When this is the case, the same texture map is used for all plants and the alpha map (which we invert in Vue) is arranged to cover all of the variations of the species. This means when one variation of the plant is imported into Vue, (and the displacement is reset to 0, see Displacement, below) the Material for the plant can be copied by right-clicking the Material sphere in the Object-Aspect pane. That material will be copied to the Windows clipboard. As long as another “copy to the clipboard” is not performed, the copied material can be pasted into subsequently loaded variations of the same plant species.

## The Occasional need to adjust Displacement value

There are times when the default setting of **Displacement** in the Advanced Material Editor in Vue (10cm) is too much. Below is an image of a **Native Violet Var3** cluster at the proper displacement value:

When a 3D Plant is imported from Quixel Megascans, the model is often distorted by Vue’s default Displacement value of 10cm, resulting in the appearance of the model below.

After importing a Quixel 3D Plant model, and the textures for that species is applied, it is suggested that the Displacement value be set to zero in the Advanced Material Editor before copying the material for use in subsequent variations of that species.

## 2) Importing Quixel Megascans Surfaces to create Vue materials

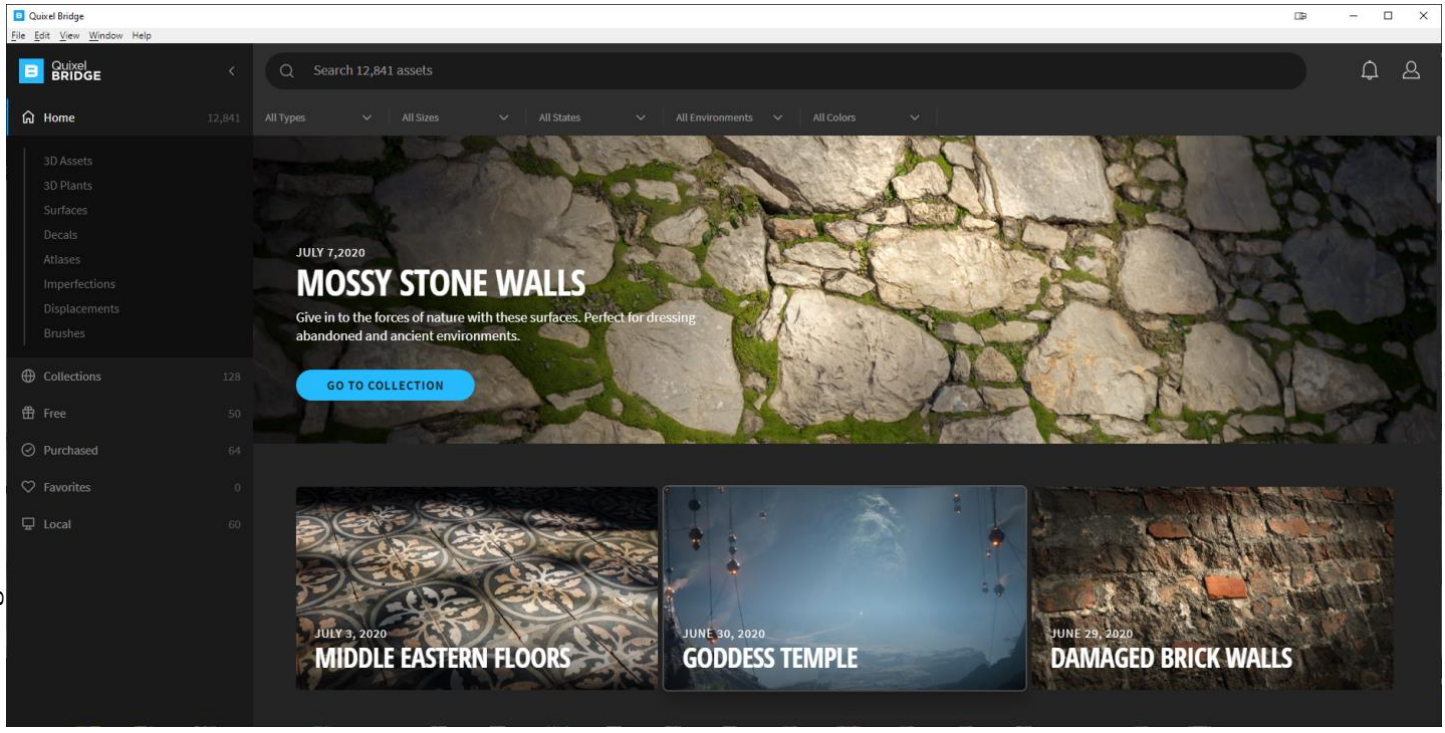
One way of importing very high quality materials into Vue is to use Quixel Megascans surfaces.

**Setting Up**
Megascans has been acquired by Epic Games so the assets are free if you establish an Epic Games – Unreal Engine account, then install Unreal Engine 4 or 5 (also free).
The best way to browse the Megascans content is to download Quixel's "Bridge" application and set it to export to Unreal Engine.

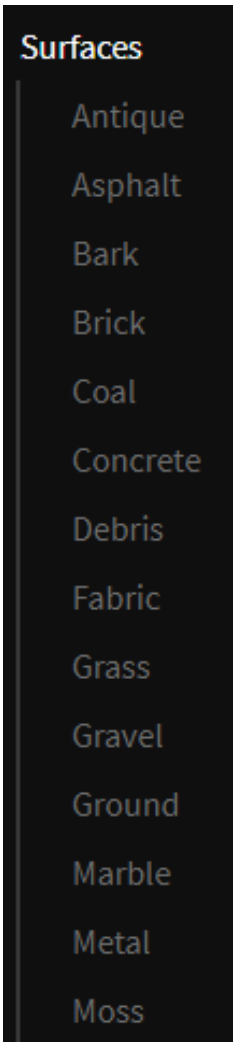
- Once installed, select **Edit/Settings** to set the **Engine** (app to export to) to be: **Unreal Engine**. Below that, set the **Local Library Path** to a folder in the dropbox (if you have one) or a folder on D: drive somewhere. I used: **D:/dropbox(main)/dropbox/UE4 – Megascans Content**
- Press **Save** to enter the browser.

The content of Megascans is free for export to Unreal Engine only. To actually export a megascans asset, Unreal Engine must be open to a project. We will only download the Megascans assets but not export them to Unreal Engine since we only want to use them in Vue.

Back to the Quixel Bridge opening page:



- Click on the Home icon: then go to **Surfaces** in the list:



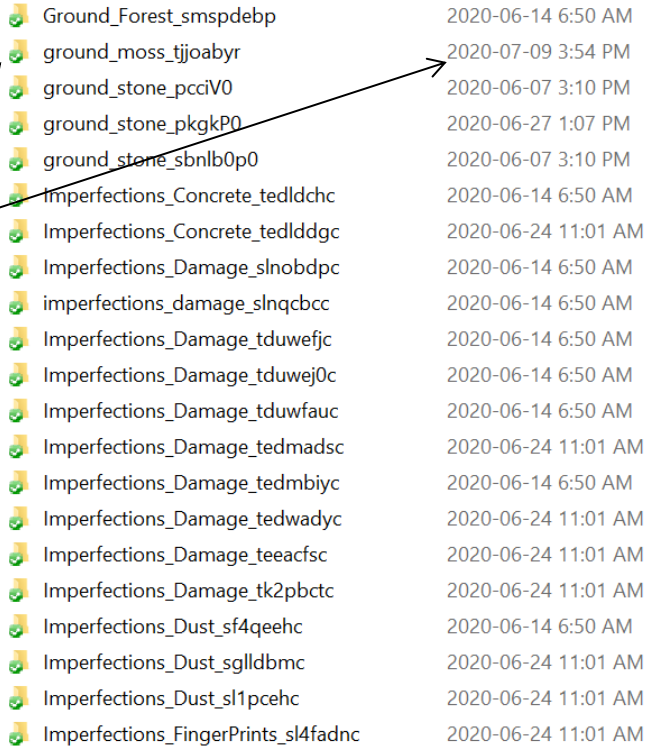

There ae many categories to choose from under Surfaces. In this example we will select Moss.
Once again, there are many varieties within the Moss category. We'll select Forest Moss….


- When you mouse over the image, if you don't already have it, a green; **Download** arrow will appear in the upper-right. Click it to download it.
- Once downloaded, the **Download** arrow changes to a blue **Export** arrow.
- <u>Do not</u> click on the Export arrow to send it to Unreal Engine.


The asset files have been saved in the folder on your computer.

The file folder for the asset will often have a cryptic name that in no way suggests what the asset is. I often have to use the file's time stamp to figure out which is which.

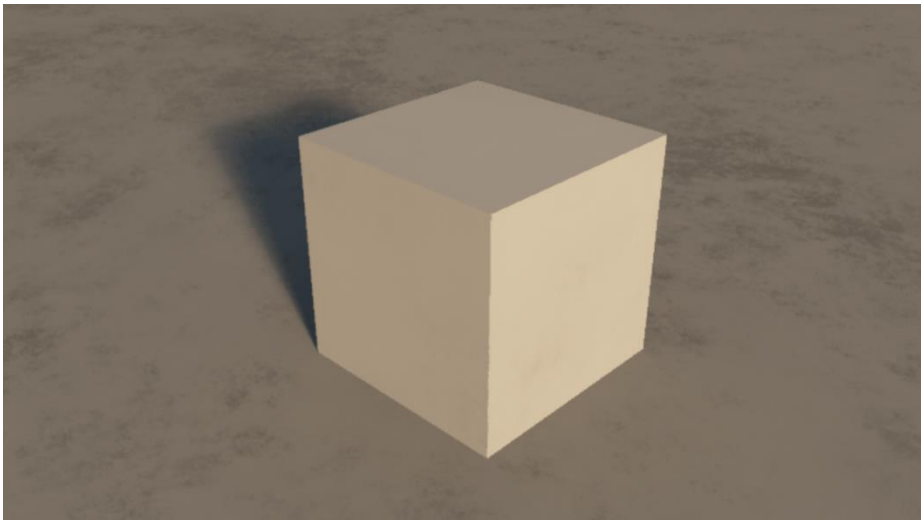
Once I find it, I change the main folder's name to something understandable.


- Now you can close **Bridge**.

## Importing Surface to become a Vue material (.mat)

- Open Vue to an empty scene
- Load a primitive object like a cube or sphere. Vue needs some object to the material onto. Well use the basic cube:

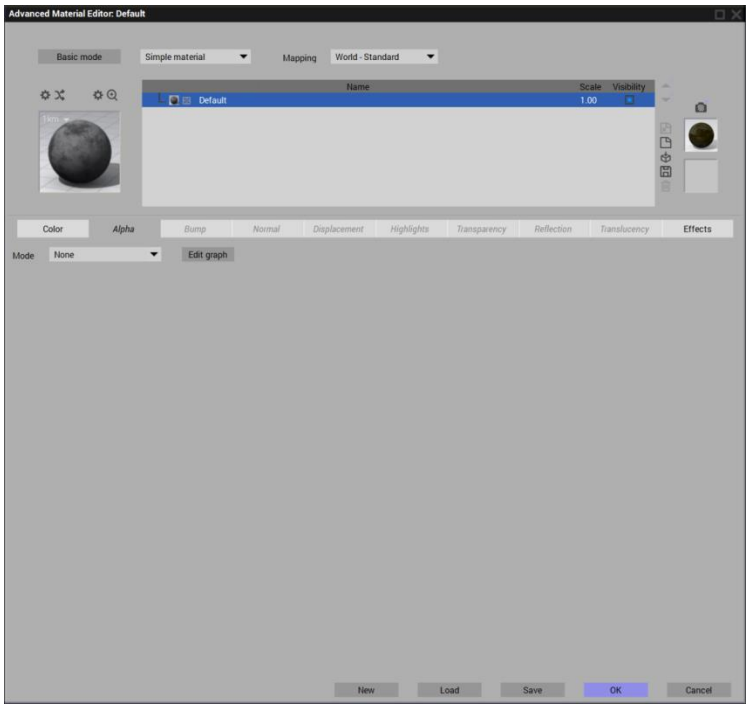


- Make your way to the **Megascans/downloaded/surface** folder for that surface file (may be renamed like mine): ground_forest_moss


The files that are shown will be material parameter files. Unlike 3D and Plant files; there will be no Asset mesh files with an FBX extension available for import to become Vue .vob objects. This is why we needed some kind of object loaded in Vue to “paint” these parameters onto.

In the **Object – Aspect** panel, the material sphere shows that the default “ground” material is applied to the cube.

- With the cube selected in the **World Browser**, double-click on the material sphere to open the **Advanced Material Editor** and set the material from **Simple material** to **PBR material**.



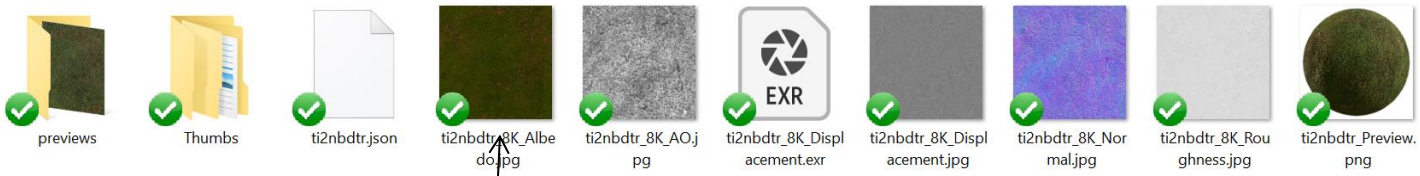

## Set Material Type

- At the top-center of the **Advanced Material Editor,** the material type is listed. It will default to **Simple Material**.
- In many cases, it would be better to change the material type to **PBR material** (or Physically Based Rendering) material which is a very compact format for describing materials – requiring much fewer parameters to fully describe the material.

(refer to E-on article on PBR materials here)

## Set Colour

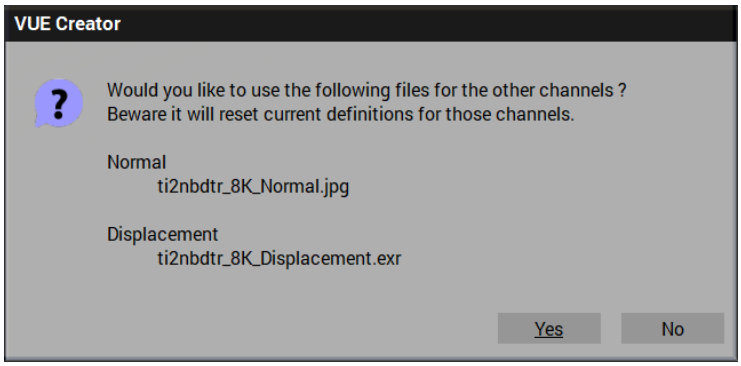
- With the **Color** tab selected, change the **Mode** to **Mapped Picture**.
- You will see the **Bitmaps** panel right away but click the **Open File** icon: at the far right. Then locate the Megascans folder for the **ground_forest_moss** again.




The first file after the two folders is a jpg bitmap picture with the name **albedo** in it. Albedo is a parameter that determines the asset's colour.

- Double-click the albedo file to load it as the material colour. (I think all **Production** defaults can stay as they are)

You may get a notice that Vue has determined that there are other files in this folder that could be applied to other parameter channels of this material.




- You can click Yes to this or choose to define each parameter manually. Certainly, once a parameter file has been applied to the material, it does not need to be done again.

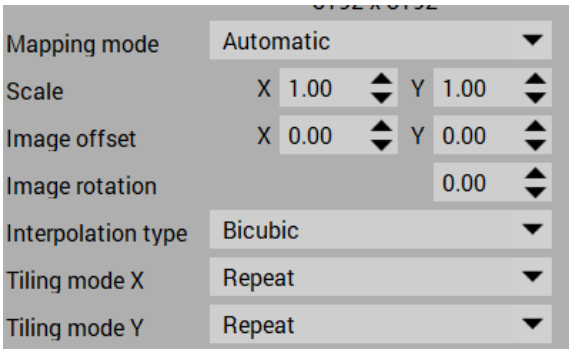
Once a parameter file has been applied to the material, the parameter name in the **Advanced Material Editor** will change from grey to black. It will not need to be applied again.

The various parameters also have different names between Vue and Unreal Engine/Quixel Megascans.

For Example:

| Vue | Unreal Engine/Quixel Megascans |
|---|---|
| Color | Albedo / Diffuse |
| Alpha | |
| Roughness | Roughness |
| Normal | Normal |
| Displacement | Displacement (+ Alpha in EXR files) |
| Highlights | Specular |
| Transparency | Opacity |
| Reflection | Metalness |
| Translucency | |

If the appropriate parameter file appears in a Megascans asset folder, the corresponding Vue parameter could be applied to the imported FBX mesh through the **Advanced Material Editor**. But it does not need to be applied, experimentation will find the best appearance.
The default **Production** settings in the **Advanced Material Editor** will be correct;




Once all the applicable parameters have been applied to the material, it will be ready to save as a new Vue material.

- Give the material a name in the **Advanced Material Editor** as this is how the material will be known to Vue. We'll use "Ground Forest Moss".
- Click on **Save** at the bottom of the **Advanced Material Editor.** The Save material window will use the same file name as above. Locate the appropriate location to save the new material file.

A preview sphere will be shown as it is constructed for previewing the material in the material selection window.

Now, to apply the new material to any Vue object, simply highlight the object in **World Browser** and click on the **Load Material** icon:  in the **Object – Aspect** panel and select the new material.

**Use of Scale in applying materials**

A single tile of megascans material is 4096 by 4096 pixels in resolution. The normal way it will be applied to an object will be in repeating tiled mode

The debris material has a distinct pattern which can easily be seen to be repeating:

In Vue, if that material is applied to the face of a 2m x 2m cube placed at origin 0,0, the 4096 x 4096 bit pattern will properly fill the face just once and not show any repetition.

If we apply the material to a 4m x 4m face the pattern will repeat once in both the X and the Y directions.

We could set the pattern to a non-repeating mode no matter what the size of the object is.

To do this all of the material parameters would have to be set to: **Object Parametric** for the mapping mode in the **Material** Editor (done by setting any parameter)

The down-side of this is that the scale of the pattern will change

as the dimensions of the object changes, often giving an unrealistic looking scale compared to other elements of the scene.

Below the sand material appears continuous against the 2m x 2m cube, though the pattern is tiled and, therefore, repeated several times.

**Using Materials from Poliigon** (Yes/ that's how it's spelled)

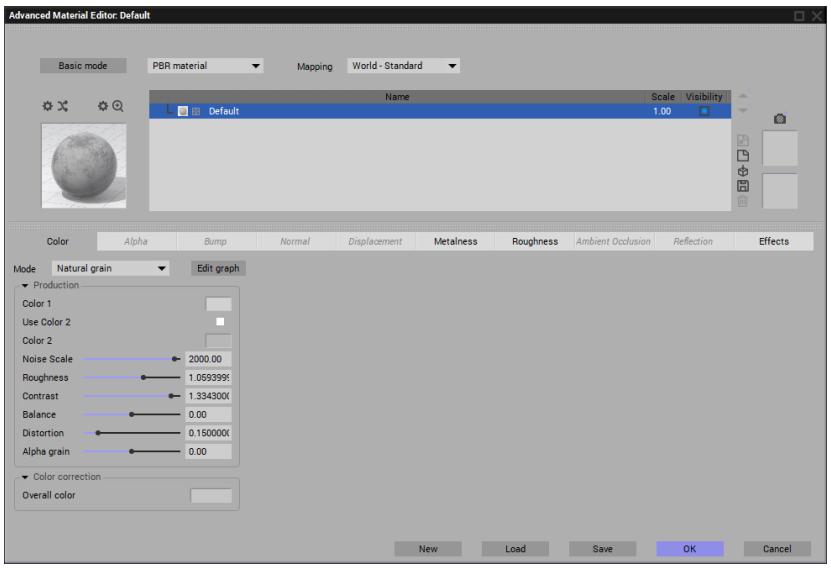
Normally you would expect the same process to convert a Poliigon material to Vue but there is a bit of an issue:

If you open the Advanced Material Editor and try to change the Default material Color from Natural Grain to Mapped Picture, it will just revert bac to Natural Grain again.

The fix is to double-click on the material sphere inside the Advanced Material Editor and select any one of the Quixel materials. Then when that material is loaded, the Colour Mode will have been changed to Mapped Picture. Now you can select a different Poliigon material for the colour and select the other files (if needed) for the other Poliigon material parameters,

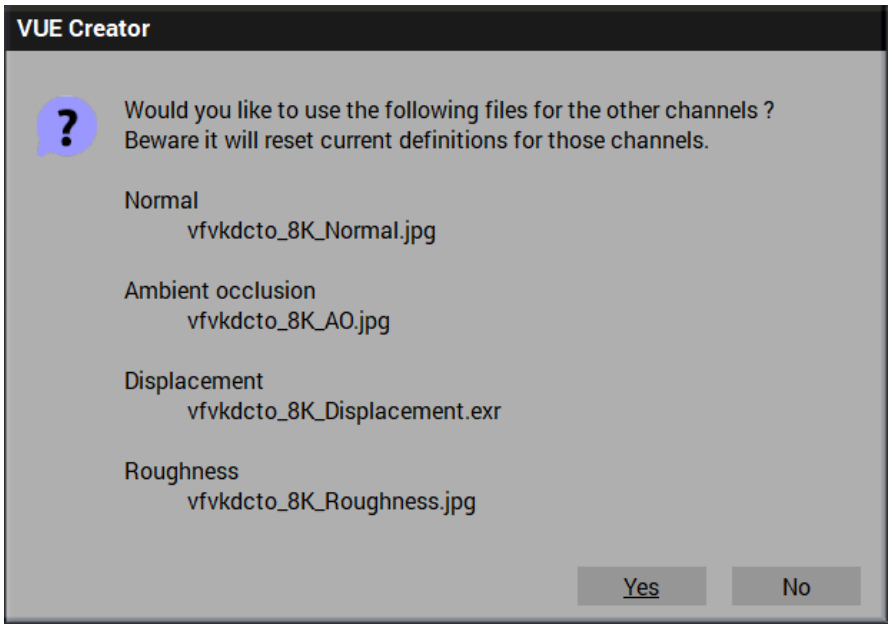
**Applying the various parameters:**
We'll create a simple cube in Vue. In the **Advanced Material Editor** we'll set the cube material to be a PBR material.

**Colour:** Will always be the first parameter tab selected. Change its **Mode** from **Natural grain** to **Mapped picture**.

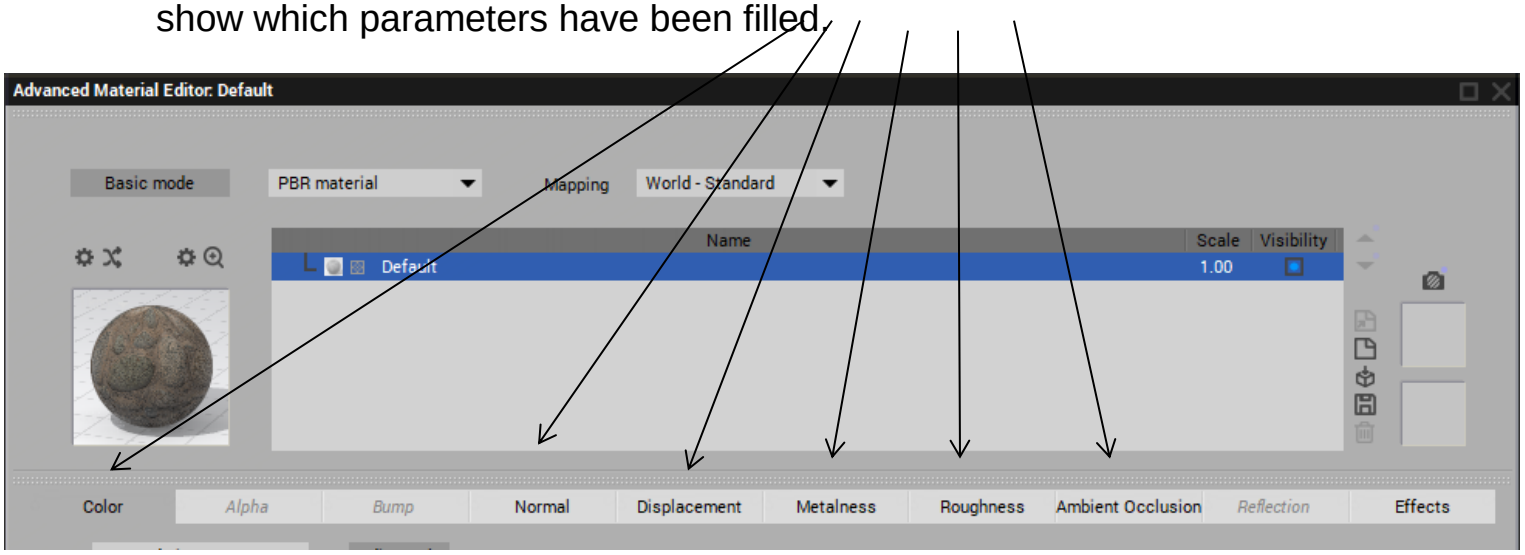



You will then be taken initially to the Bitmaps window to select a bitmapped picture.

- Click on the far right of the tool bar to the folder icon to search for the correct PBR files. In our case, this will be the **stone_cobblestone** file in the **UE4-Megascans Content/Downloaded/Surface/Stone**.
- Double-click on the **8K_Albedo** file to load it. Usually you will receive a prompt to auto-load the other associated files for this material:



- Click on **Yes** to accept this and the other files will be loaded. The parameter titles in the **Advanced Material Editor** will be darkened to show which parameters have been filled.




The Cube takes on the new PBR material. The shading produced by sun shining on the displacement of the cobblestones is clear.

## 3) Using Quixel mask files to refine Vue materials

### Using Masks

Often, along with the various parameter files that can be applied to Vue objects and materials, there are various types of mask files and opacity files meant to include or exclude areas to be affected by a certain object or material parameter.

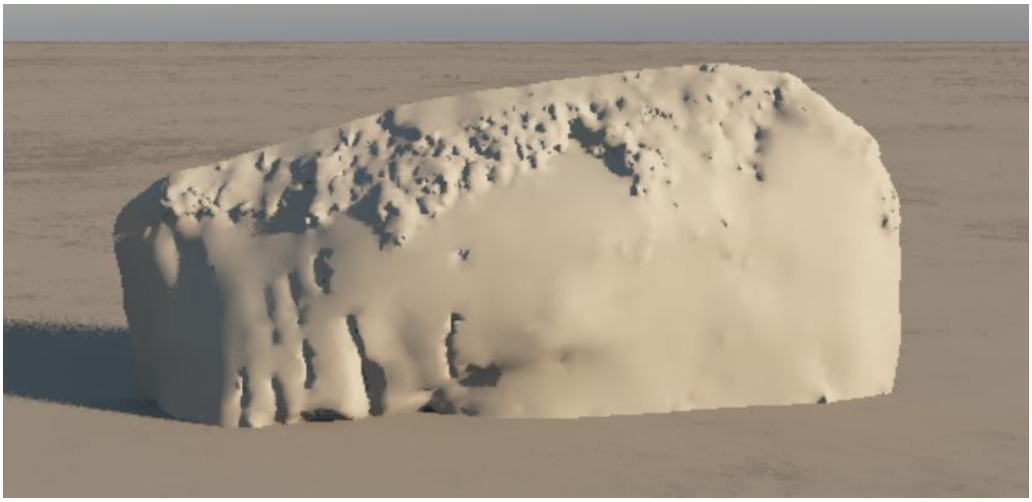
One such opacity parameter (or transparency mask) was used in the dandelion object in part 1to refine the dandelion leaf feature.
Other mask files are used to obscure or expose a portion of an object to a particular parameter or added material layer.

To illustrate, we'll import a new Quixel 3D asset and apply the correct material to it as an example.

- Follow the steps of Part 1 to import the **Mossy Rock Face** from Quixel Bridge and save it as a Vue .vob file.

Quixel Preview….

As loaded into Vue…



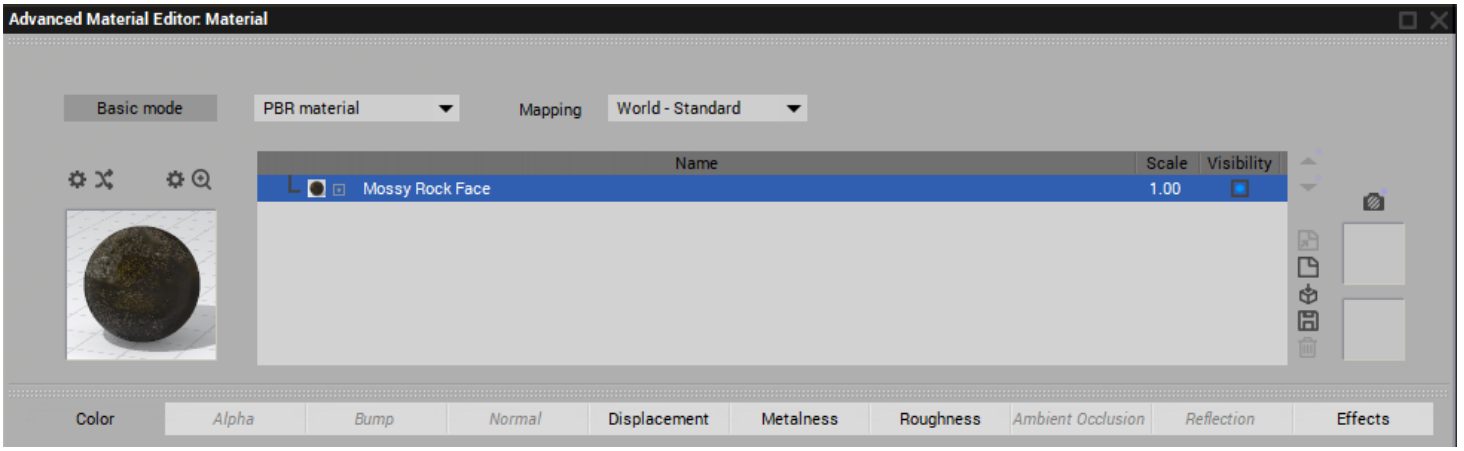
- First, in the **Advanced Material Editor**, we change from **Simple Material** to **PBR material.**
- Next, we apply the most logical parameter files to the **Mossy Rock Face** object through Vue's **Advanced Material Editor**;


Albedo – Color
EXR file – Displacement +Alpha (pre-empts using the Displacement.jpg file)
Roughness – Roughness
Normal – Normal
Specular – Metalness

We will now save the **Mossy Rock Face** as a Vue .vob file. Here is a rendered view of the Vue object (.vob)

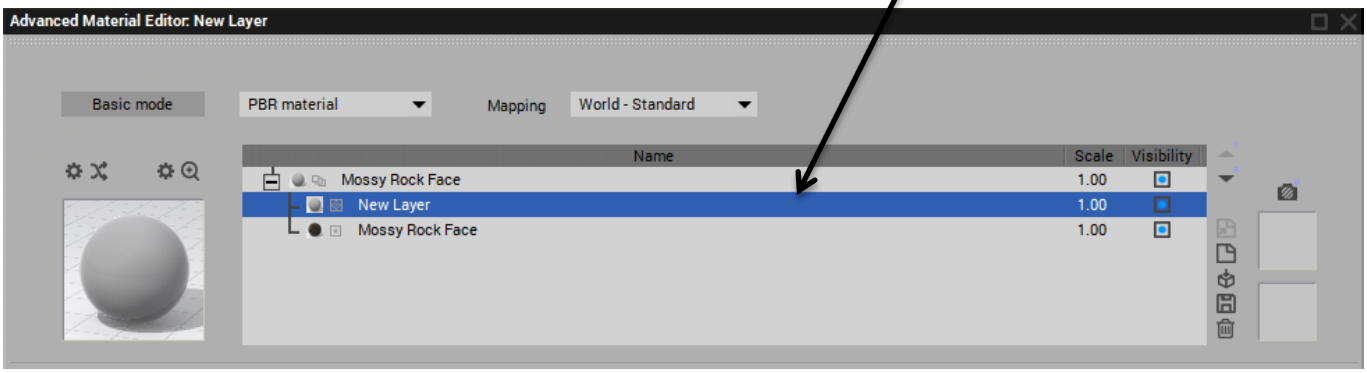
**Fuzz Mask:**
In the list of parameter files from Quixel, there is one file, however, that we have not used; the "Fuzz" parameter file. It appears black and white, similar to the **Opacity** file in Part 1. We'll try to apply this to the Mossy Rock Face.

- Highlight the **Mossy Rock Face** in World Browser and double-click the sphere in the **Object – Aspect** panel to open the **Advanced Material Editor** again. All the parameters should be as we had left them when we saved the rock as a Vue object.



**Applying the Fuzz mask**

To the right of the **Materials List** window, click the **Add Layer** icon:



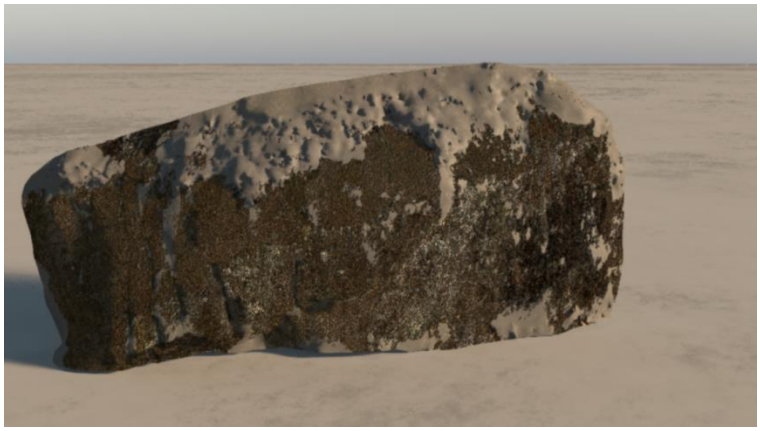

A **New Layer** will be created above the **Mossy Rock Face** layer and the usual default material will cover both the rock and the left; **Current Layer Material** sphere.

- First, rename the New Layer as; **Fuzz Mask**
- Under the **Alpha** tab, change the Mode to Mapped Picture
- The **Bitmaps** window opens but click on the **Open Files** icon at the right: to select the Mossy Rock Face's **Fuzz** file.

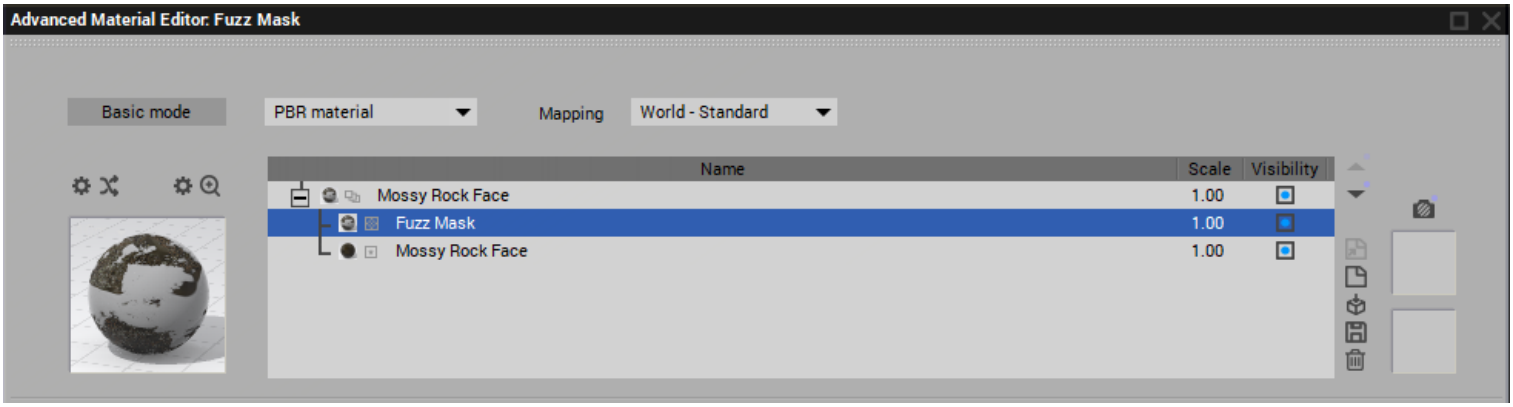
The mask fits over the rock face exactly but wrong; we want the actual rock of the rock face to show through and the mask (default material right now) to be applied to the moss on the rock. This was also the case for the opacity in part 1.

- Click on the **Invert Image** button to invert the image to be correct.


Now the mask that we will use to apply a fuzzy material to the moss of this rock is on the moss areas of the original object.



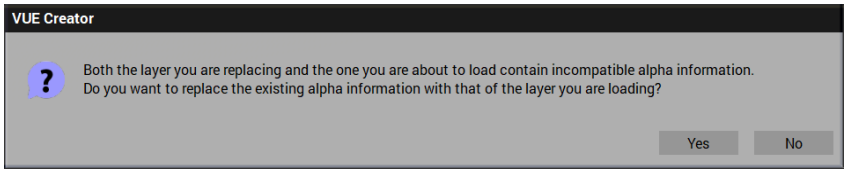
If, as we have found, the moss on the original object was not too distinct, We can now apply different materials to this Fuzz Mask which will more accurately resemble moss.




- With the **Fuzz Mask** layer highlighted in the Material List window, Double-click on the **Material Sphere** to the left to open the **Materials** selection window:


- If you had saved the **Ground Forest Moss** material from Part 2, select it. Or select any other material to be applied to the rock as a moss material.

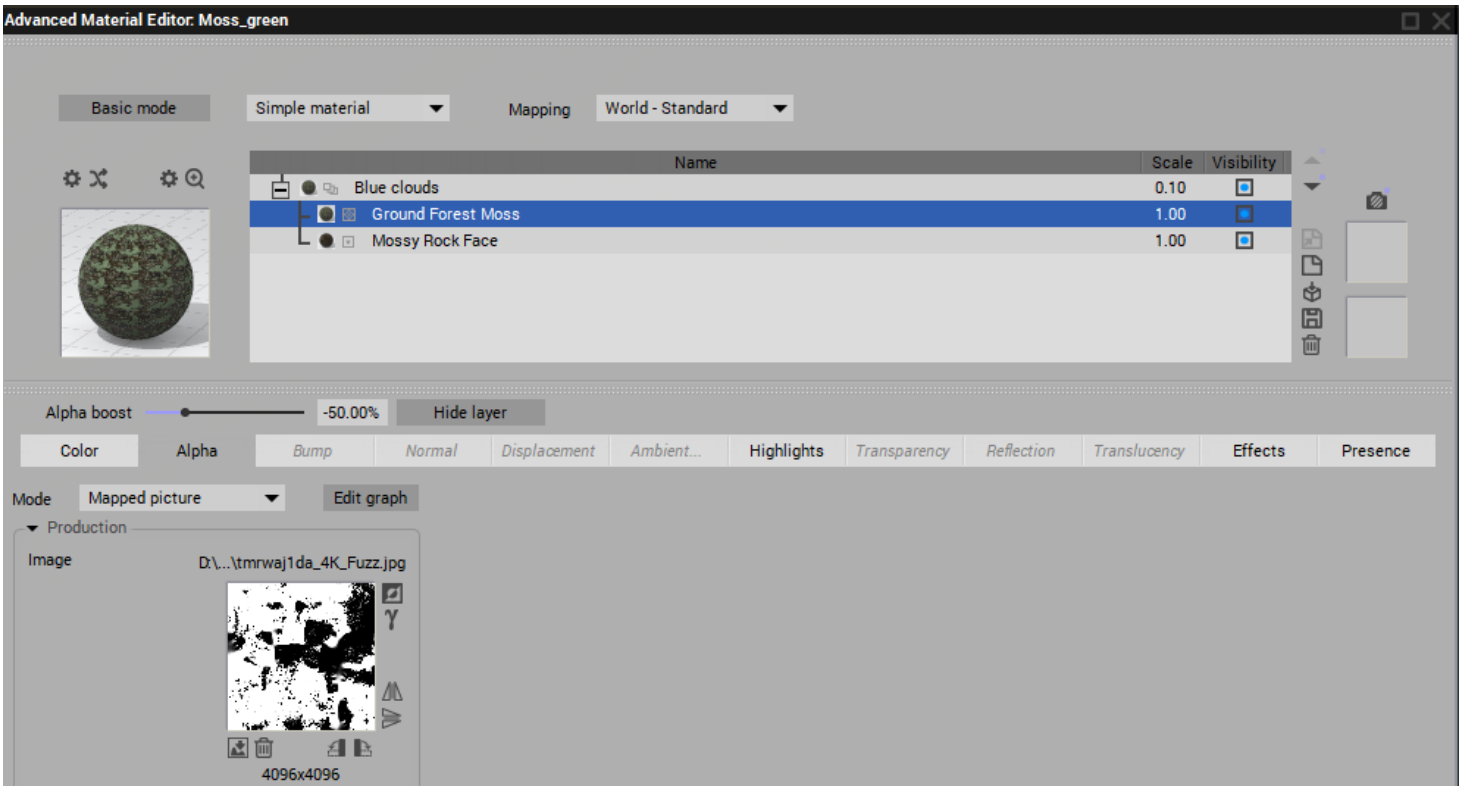
You may get a warning about replacing the current Alpha with the new one.



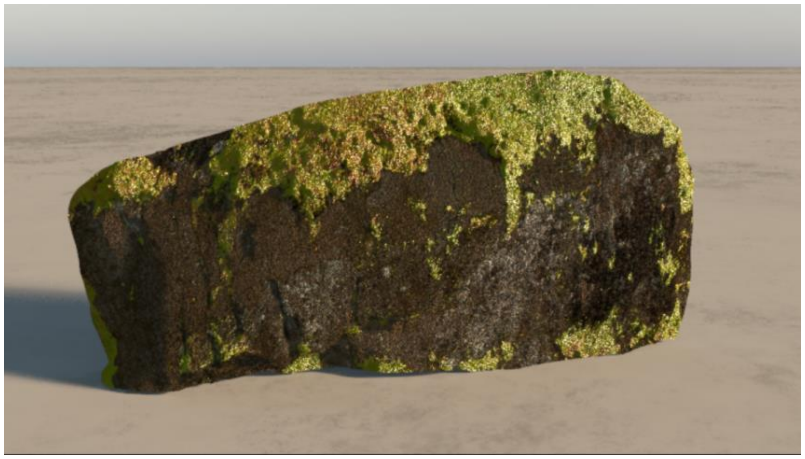
- Click **Yes**

The new material will cover the whole object. Not what we want…..

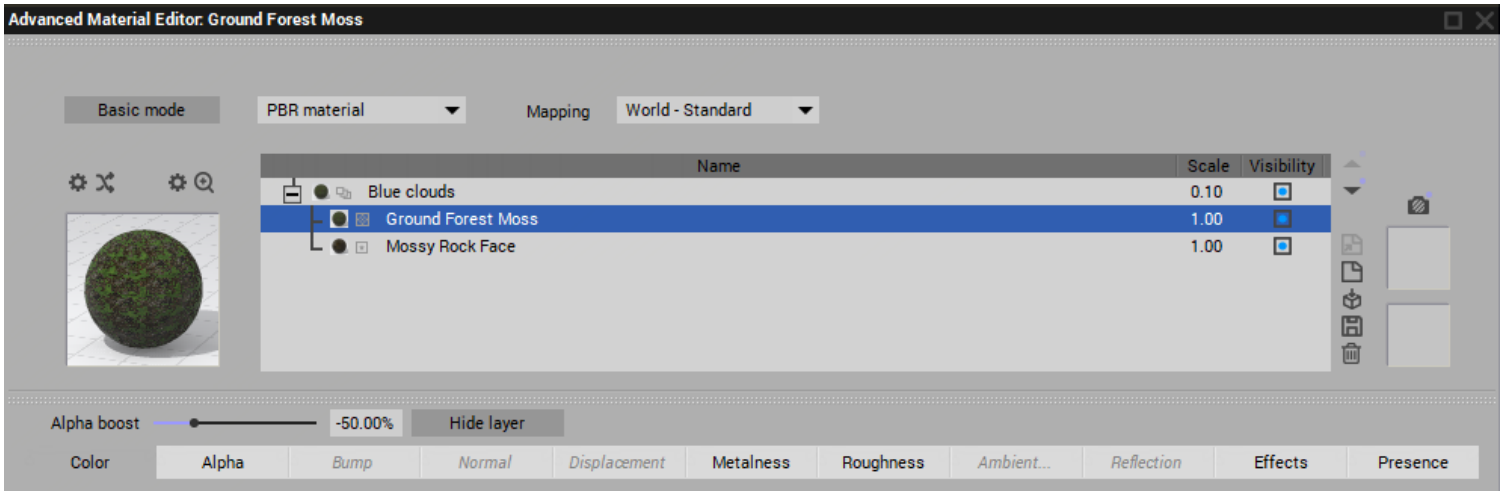
- Apply the <u>inverted</u> **Fuzz Mask** image to the **Alpha** of this new material again.




The moss material is now only applied to the correct area. The colour of the moss should probably be adjusted or changed to something more realistic.



The material parameters that had been applied to the new material are still available for adjustment in the **Advanced Material Editor**. The **Ground Forest Moss** in this case**,** and now used as the moss of this rock.

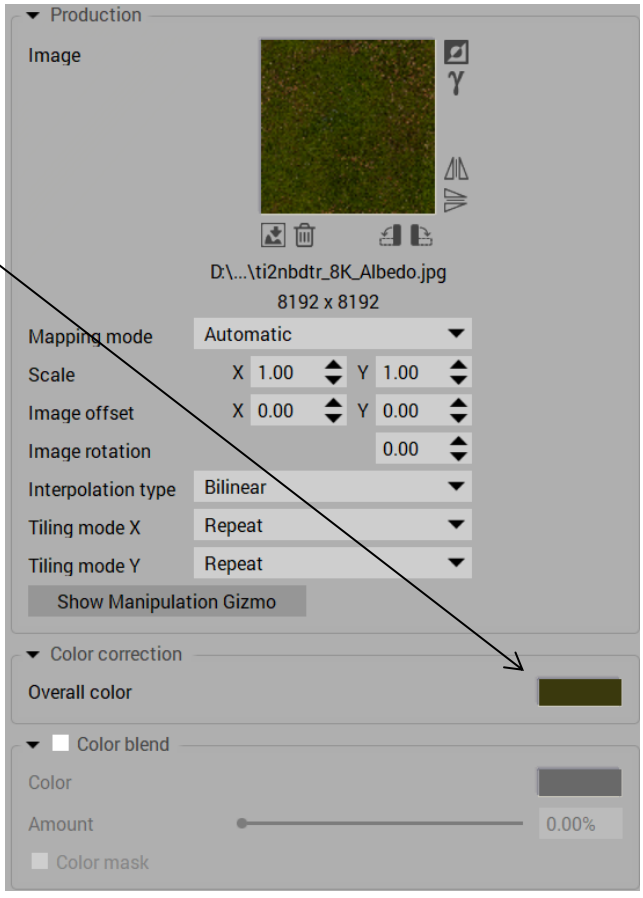


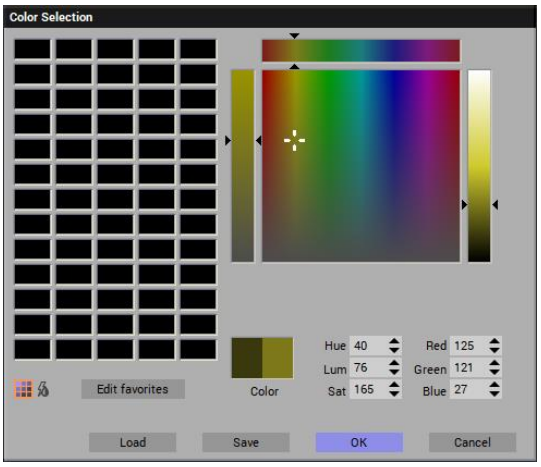

- Make sure that the **Ground Forest Moss** layer is highlighted in the **Advanced Material Editor**

Here, under the **Color** tab, most of the **Production** parameters should be left as is. But the **Overall colour** of the image could be adjusted.

We'll make the moss as bit lighter.

- Click the **Overall color** box and set the moss colour a bit higher.



Mossy rock in Vue with only the basic parameters applied:

Mossy rock from Quixel's original 3D assets preview .

Mossy rock in Vue with second material layer & mask applied. Colour adjusted.

More adjustments could probably be made……