

A brief guide to map porting

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About this guide

This document aims to teach you, in the easiest and shortest way possible, about map porting. This guide will not include specific problems involved in map porting. This guide is nothing more than a compilation of experience gained through failure and experimentation, nothing taught here should be taken as objective or professional; you are free to use and mould what you learn here in your own way.

Special thanks to: Bubbles, Kingus, SpunKy, Brent, MrArevio, DoktorSAS, mikz and most specially, to the man who made all this possible, RektInator.

IMPORTANT NOTE: If you're going to try CoD4 porting, take into count that as of the release of this guide, GFX exporting from that game is broken when using the public version of ZoneTool.

If I made any mistakes during this guide, you have any questions or need help, don't hesitate to join our Discord server below:

<https://discord.gg/B6XStDDmBY>

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Requirements

Map porting requires patience, effort and time. But most importantly, committed people and a set of tools and files mentioned below:

1. RektInator's public version of 'ZoneTool'
2. A fresh, non-altered/modified copy of Call of Duty 4: Modern Warfare
3. A fresh, non-altered/modified copy of Call of Duty: Modern Warfare 2 (can be IW4x)
4. A fresh, non-altered/modified copy of Call of Duty: Modern Warfare 3 (can be installed through Steam, as explained in <https://forum.plutonium.pw/topic/8262/how-to-install-plutonium-iw5>)
5. IW4x client for Call of Duty: Modern Warfare 2 (optional)
6. PlutoniumIW5 client for Call of Duty: Modern Warfare 3
7. Notepad++ (optional)
8. WinRAR, 7-Zip
9. A folder named 'English' in /zone (MW3)

In this brief guide, I'll explain the porting process between MW2 and MW3, which means I won't cover CoD4 porting here, as it'll make the document too long.

Downloading 'ZoneTool'

As one of the most important requirements (if not the most) in this porting process, downloading 'ZoneTool' is a topic that must be covered. I will just provide download links to the binaries and source, as I won't cover the compiling process in this guide.

You can download ZoneTool from the link below:



<https://github.com/ZoneTool/zonetool>

You can download ZoneTool binaries from the link below:



<https://github.com/ZoneTool/zonetool-binaries>

Once downloaded and compiled, you'll be left with the binaries and a DLL, which you are going to set up the following way:

1. Copy the zonetool.dll and paste it into your MW3 folder along with the zonetool_iw5.exe binary (if you downloaded MW3 through Steam, your game folder should be in C:\Program Files (x86)\Steam\steamapps\common\Call of Duty Modern Warfare 3):










 zonetool.dll	19/07/2021 7:13 a. m.	Extensión de la ap...	1.393 KB
 zonetool_iw5	18/09/2019 3:05 p. m.	Aplicación	3.968 KB

2. Copy the zonetool.dll and paste it into your MW2 folder along with the zonetool_iw4.exe binary:

 zonetool.dll	15/07/2021 6:46 p. m.	Extensión de la ap...	1.393 KB
 zonetool_iw4	18/09/2019 3:05 p. m.	Aplicación	3.832 KB

Then you can repeat the process with CoD4 if you're willing to port CoD4 stuff.

After all that, you'll need to make 2 folders in MW3 files. These folders will be named 'zonetool' and 'zone_source'. Your game folder should look like this:

 admin	13/06/2021 4:14 p. m.	Carpeta de archivos
 dump	7/08/2021 10:06 p. m.	Carpeta de archivos
 main	11/08/2021 10:42 a. m.	Carpeta de archivos
 miles	13/06/2021 4:14 p. m.	Carpeta de archivos
 players2	13/06/2021 4:22 p. m.	Carpeta de archivos
 Redist	13/06/2021 4:14 p. m.	Carpeta de archivos
 zone	13/06/2021 4:14 p. m.	Carpeta de archivos
 zone_source	11/08/2021 10:35 a. m.	Carpeta de archivos
 zonetool	11/08/2021 2:04 p. m.	Carpeta de archivos

Now you've finished setting up ZoneTool, and you can start working on maps.

Dumping your map and preparing your folders

Once you've done everything mentioned above, you can start choosing your map and start working. Map porting works as following:

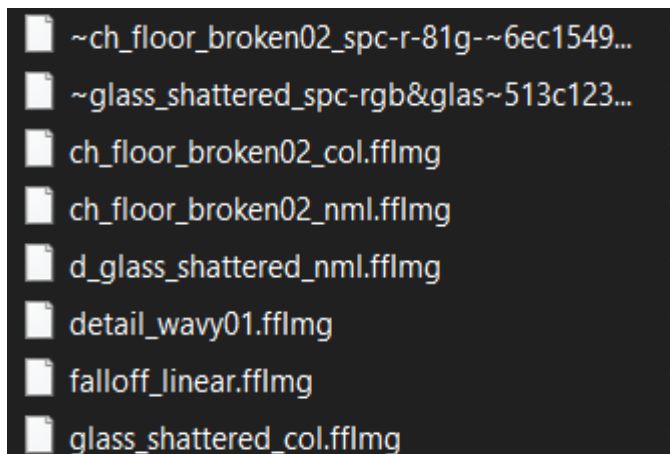
1. Execute `zonetool_iw4.exe` in your MW2 folder and wait for everything to load. You'll know it is ready to use when it says, "Waited x msec for asset 'none' of type 'weapon'." as shown below:

```
Loading fastfile common_mp  
Waited 1632 msec for asset 'none' of type 'weapon'.
```

2. Now that you're ready, proceed to type "dumpzone mp_yourmap" in the console. In my case, I will do Skidrow, so it should go as "dumpzone mp_nightshift". Once the dumping process finishes, you'll need to dump additional zones such as 'patch_mp' and 'common_mp', as we'll need some files from those zones.
3. After dumping everything, a new folder named 'dump' will appear in your MW2 files. Open it, and inside you'll find different folders with the names of the zones you've dumped. Go inside your map's folder (in my case 'mp_nightshift') and copy everything inside of it except for `mp_yourmap.csv`. After copying, paste everything you copied into the 'zonetool' folder you made inside of MW3 files.

4. Now, we'll start deleting some assets that may cause problems during the process:

- In XModel folder, search for every model with the prefix 'head_' and delete it
- In XModel folder, search for every model with the prefix 'viewhands_' and delete it
- In XModel folder, search for every model with the prefix 'mp_body_' and delete it
- In XModel folder, search for 'mil_tntbomb_mp.xme6' and delete it
- In XModel folder, search for 'turret_minigun_mp.xme6' and delete it
- In materials folder, search for ap_chrome_trim and delete it
- In materials folder, search for water_dark_mud and delete it
- In images folder, delete the following .fflmg assets:



A screenshot of a file explorer window with a dark background. It displays a list of files, each preceded by a small white icon representing a document. The files are: ~ch_floor_broken02_spc-r-81g--~6ec1549..., ~glass_shattered_spc-rgb&glas~513c123..., ch_floor_broken02_col.fflmg, ch_floor_broken02_nml.fflmg, d_glass_shattered_nml.fflmg, detail_wavy01.fflmg, falloff_linear.fflmg, and glass_shattered_col.fflmg. To the right of each filename, there is a small blue number '1'.

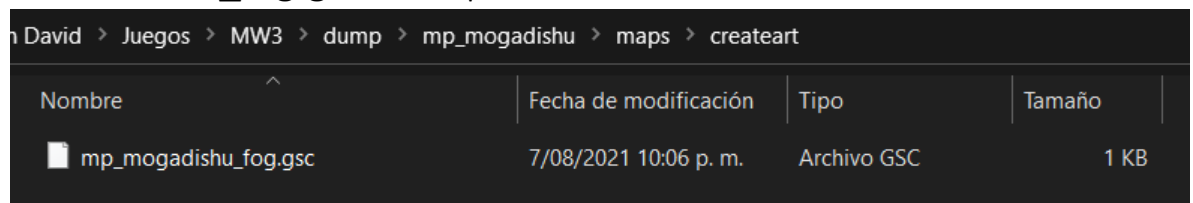
- ~ch_floor_broken02_spc-r-81g--~6ec1549...
- ~glass_shattered_spc-rgb&glas~513c123...
- ch_floor_broken02_col.fflmg
- ch_floor_broken02_nml.fflmg
- d_glass_shattered_nml.fflmg
- detail_wavy01.fflmg
- falloff_linear.fflmg
- glass_shattered_col.fflmg


- In maps/mp/ folder, search for 'mp_yourmap.d3dbsp.ents', open it with Notepad (I'd suggest Notepad++), Ctrl+F once opened, search for every 'turret_minigun_mp' coincidence and delete the whole chunk as shown below:

```
angles "0 350 0"  
}  
{  
  "angles" "0 350 0"  
  "origin" "-2142.2 -857.8 160"  
  "weaponinfo" "turret_minigun_mp"  
  "model" "weapon_minigun"  
  "export" "2"  
  "classname" "misc_turret"  
}  
{  
  "l+0origin" "-485.67 351.561"
```

5. Some of these assets may not appear in your folder, just don't mind them; you're better without them.
6. Now you'll need some important files for map colour: 'vision/mp_yourmap.vision' and 'maps/createart/mp_yourmap_fog.gsc'. These files we'll get off some dumps we've made and others we're going to make right after.
7. Depending on the map you chose, you'll find .vision files in either common_mp or patch_mp dumps in a folder named 'vision' in your IW4x game folder. In my case, mp_nightshift.vision is in 'IW4x/dump/common_mp/vision/mp_nigthshift.vision', so what I'll do is copy the file and create a new folder named 'vision' inside of /zonetool in MW3 and paste it there.

8. On the other hand, I haven't been able to find `_fog.gsc` files in any MW2 dump, but don't worry, as we can take another map's `_fog.gsc` and adapt it to our map. For example, for `mp_nightshift`, what I'll do, and you can do as well, is dump Bakaara from MW3 and get its `_fog.gsc`. So, I'll open MW3's ZoneTool (`zonetool_iw5.exe`) and type in 'dumpzone `mp_mogadishu`'. Once it dumps, make sure to go to the generated 'dump' folder, enter the `mp_mogadishu` folder and look for the `_fog.gsc` in `maps/createart` as shown below:




Nombre	Fecha de modificación	Tipo	Tamaño
 <code>mp_mogadishu_fog.gsc</code>	7/08/2021 10:06 p. m.	Archivo GSC	1 KB

9. As a final step, copy it and paste it in `zonetool/maps/createart` and change its name to `mp_yourmap_fog.gsc`, then open it and change the references inside to your map's (ex. If it says `mp_mogadishu`, change it to `mp_yourmap`) as shown below:

```
main()
{
    ent = maps\_utility::create_vision_set_fog( "mp_nightshift" );
    ent.startDist = 1000;
    ent.halfwayDist = 1433;
    ent.red = 0.591;
    ent.green = 0.578;
    ent.blue = 0.510;
    ent.maxOpacity = 0.74;
    ent.transitionTime = 0;
    ent.sunFogEnabled = 0;
}
```

Now we've finished preparing our folders and we can start the important part.

Building your CSV and fastfile

To start off with this part of the guide, create a new text file using Notepad in zone_source folder in your MW3. Then go to your map's dump in IW4x and open the .csv file that is there. If you use Notepad++, just right click the .csv file in your IW4x dump and click on "Edit with Notepad++". After that, create a new file by clicking on the  icon in the top left corner. Then you should be left with 2 tabs.

Now, follow the next steps:

1. In the first line of the new file, type 'map,true'
2. Search for every 'd3dbsp' coincidence in mp_yourmap.csv and paste them below the first line of the new file.
3. As an additional, add
glass_map,maps/mp/mp_yourmap.d3dbsp to avoid
glass_map errors.
4. Search for every 'rawfile,' coincidence in mp_yourmap.csv and paste them below d3dbsp references.
5. Below, add the references for .vision and _fog.gsc for your map. It should go like this:
rawfile,maps/createart/mp_yourmap_fog.gsc
rawfile,vision/mp_yourmap.vision
6. In the last line of your new file (below rawfiles), type
'iterate,true' (in some maps this command will load every model needed, in some it may not. If it does, you can skip the Adding XModels section. You'll know it worked if you don't see any Red FX in your map when you load in.

7. Your new file should look like this:

```
map,true

material,compass_map_mp_nightshift
col_map_mp,maps/mp/mp_nightshift.d3dbsp
com_map,maps/mp/mp_nightshift.d3dbsp
fx_map,maps/mp/mp_nightshift.d3dbsp
gfx_map,maps/mp/mp_nightshift.d3dbsp
glass_map,maps/mp/mp_nightshift.d3dbsp
map_ents,maps/mp/mp_nightshift.d3dbsp

rawfile,common_scripts/_destructible_types_anim_airconditioner.gsc
rawfile,common_scripts/_destructible_types_anim_light_fluo_single.gsc
rawfile,common_scripts/_destructible_types_anim_wallfan.gsc
rawfile,maps/createart/mp_nightshift_art.gsc
rawfile,maps/createart/mp_nightshift_fog.gsc
rawfile,maps/createfx/mp_nightshift_fx.gsc
rawfile,maps/mp/_train.gsc
rawfile,maps/mp/mp_nightshift.gsc
rawfile,maps/mp/mp_nightshift.cgsc
rawfile,maps/mp/mp_nightshift_fx.gsc
rawfile,maps/mp/mp_nightshift_precache.gsc
rawfile,vision/mp_nightshift.vision
rawfile,vision/mp_skidrow.vision

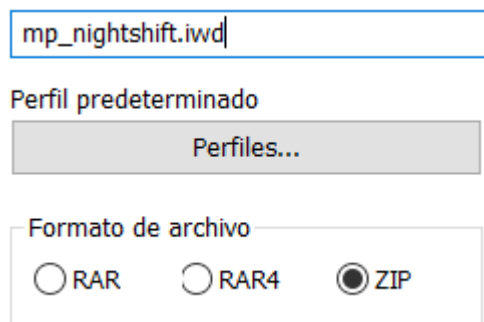
iterate,true
```

8. Now, take the new file and choose “Save as” and save it as mp_yourmap.csv in your MW3 folder /zone_source.
9. Before building your map, make sure to extract all MW2 images (IWDs that are in /main in your MW2 folder) in /zonetool. Make sure to just extract from iw_00 to iw_23
10. Once you’ve saved the new .csv in zone_source, you should be ready to build. Open zonetool_iw5.exe once again and type ‘buildzone mp_yourmap’, this should start building your new MW3 compatible .ff. If an error is given during the process, make sure you followed the steps above correctly, look this guide’s topic “Common problems” or join our Discord for support: <https://discord.gg/B6XStDDmBY>. If no error is given, then you’ve built the CSV correctly.

11. Now, to test if your map works, type 'loadzone mp_yourmap' in ZoneTool. If an error is given during the process, make sure you followed the steps above correctly, look this guide's topic "Common problems" or join our Discord for support: <https://discord.gg/B6XStDDmBY>. If no error is given, then you've successfully built the .ff.

Fastfile and images placement

1. Go to your MW3 folder and follow zone/English path. Then, look for mp_yourmap.ff, copy it and paste it in appdata/Local/Plutonium/storage/iw5/zone.
2. Go to your MW3 folder and follow main/mp_yourmap. Once there, right click on the 'images' folder and 'Add to archive'. Rename it to mp_yourmap.iwd and make sure it is compiled as zip:



mp_nightshift.iwd

Perfil predeterminado

Perfiles...

Formato de archivo

☐ RAR ☐ RAR4 ☒ ZIP

3. Copy the output .iwd and paste it in appdata/Local/Plutonium/storage/iw5
4. We will now need an .arena for the game to load our character in game. For that, go to /storage/iw5/mp and copy any of the .arena files into the same folder. Then, open it and edit its references to your map's.

Then, play with the teams depending on your map. Allowed combinations in allieschar and axischar respectively are delta_multicam, opforce_air; and sas_urban, opforce henchmen as the most common. With this process done, my .arena file for Skidrow looks like this:

```
{
  map          "mp_nightshift"
  longname     "Skidrow"
  gametype     "dm war sab sab2 dom sd sd2 hc thc ctf koth dd oneflag gtnw inf"
  description  "MPUI_DESC_MAP_nightshift"
  mapimage     "preview_mp_nightshift"
  mapoverlay   "compass_overlay_map_blank"
  allieschar   "delta_multicam"
  axischar     "opforce_air"
  environment  "urban"
  mappack      "27"
}
```

To finish up, rename the .arena file to mp_yourmap.arena

5. Now you can load your map in Plutonium. For that, start MW3 through Plutonium launcher and select 'Private match', then open Plutonium console and type 'map mp_yourmap' and it should load you in. You'll notice you may be missing stuff, such as FXs (fire, fog, explosions, shattered glass, etc.), XModels (if iterate,true didn't load .ents models) shown as Red FXs, a radar, sounds (footsteps, ambient sounds, etc.) and a load-screen. These map properties will be added 1 by 1 in the next topics.

Adding XModels

If 'iterate,true' didn't load your .ents models, then you'll have to add them manually. There's 2 ways of doing this:

1. Either you open the .ents of your map and search each model individually in the code, or
2. You use a mod made for IW4x that tells you directly which models is the .ents of a specific map requiring.

In this case, I will be teaching you the second option, as it is easier and time saving. First, download the .RAR: <https://t.ly/AqhM> and extract it. You'll be left with a folder named 'mods', copy it directly to your IW4x folder and execute the game. Now hit the 'mods' tab in the main menu and load 'Dev'. Create a custom game in the map you're trying to port, spawn in and start pressing '3' in the keyboard, not in the NUMPAD.

Once you start pressing '3', models will pop up on the screen and you'll be able to look for each of them in the dumped mp_yourmap.csv. To see a full list of the models needed, just open the extended IW4 console and all the models that showed up in the middle of the screen will show up there. Some models may not appear, don't worry about them. One example of this situation 'c130-zoomrig'.

If you haven't understood yet, follow along:

1. Press '3' in your keyboard until models repeat (not NUMPAD)
2. Open the extended IW4 console (Shift+')
3. Look for the models that appear in the console in your mp_yourmap.csv (the one from the IW4x dump)
4. Copy one by one and paste them in mp_yourmap.csv (the one that is in zone_source)
5. Repeat until models start over (if the first model that appeared was me_electricbox2, you know you can stop adding models when it pops up again)
6. Build the fastfile using ZoneTool, load it using ZoneTool again and load it into Pluto copying the output fastfile and compiling the output images in /main again (I suggest deleting the folder after compiling to avoid mixtures between corrupted and working images while building).

Adding FX

Adding FX is more like using brute force to get the map loading. Some FXs will load, some will not. Luckily, we've made a small list of FXs that won't load. So, let's start:

1. Go to your mp_yourmap.csv from the IW4x dump and Ctrl+A
2. Copy everything into a new file and sort it alphabetically ascending
3. Ctrl+F and look for every FX reference and copy all of them to your mp_yourmap.csv in /zone_source
4. Delete the following references from your zone_source CSV:

fx,impacts/large_brick
fx,impacts/large_brick_exit
fx,impacts/small_brick
fx,impacts/small_brick_exit
fx,impacts/large_dirt
fx,impacts/large_dirt_1
fx,impacts/large_dirt_1_exit
fx,impacts/small_dirt_1
fx,impacts/small_dirt_1_exit
fx,impacts/large_gravel
fx,impacts/large_gravel_exit
fx,impacts/small_gravel
fx,impacts/large_plaster
fx,impacts/large_plaster_1
fx,impacts/large_plaster_1_exit
fx,impacts/large_rock
fx,impacts/large_rock_1
fx,impacts/large_rock_1_exit

After deleting all these references, your fastfile should build just right. If there's any other FX giving errors, ZoneTool/game will notify you; just delete it off your CSV and try again.

Adding loaded_sounds

For sounds, it's just as easy as looking for every 'footsteps' reference in the dump .CSV and paste them 1 by 1 in your /zone_source .CSV.

Note: Before adding sounds, make sure to type reference,true at the start and reference,false at the end of the sound references as shown below:

```
// footstep sounds, reference means it will add , in front of the name (therefore reference it from another zone)
reference,true
loaded_sound,,footsteps/foot_dirt02.wav
loaded_sound,,footsteps/foot_dirt03.wav
loaded_sound,,footsteps/foot_dirt04.wav
loaded_sound,,footsteps/foot_metal01.wav
loaded_sound,,footsteps/foot_metal02.wav
loaded_sound,,footsteps/foot_metal03.wav
loaded_sound,,footsteps/foot_metal04.wav
loaded_sound,,footsteps/mrk_foot_dirtsand01.wav
loaded_sound,,footsteps/mrk_foot_dirtsand02.wav
loaded_sound,,footsteps/mrk_foot_dirtsand03.wav
loaded_sound,,footsteps/mrk_foot_dirtsand04.wav
loaded_sound,,footsteps/foot_snow01.wav
loaded_sound,,footsteps/foot_snow02.wav
loaded_sound,,footsteps/foot_snow03.wav
loaded_sound,,footsteps/foot_snow04.wav
reference,false
```

Then you're ready to build and try sounds.

Adding radar

To get radar working, you'll need the `map_yourmap.gsc` in your .CSV referenced as a rawfile, thing you must've done if you're here. So, the process goes like this:

1. Open your `mp_yourmap.csv` from the IW4x dump and search for 'compass' coincidences.
2. Copy the coincidence with the 'material,' header and paste it into your `mp_yourmap.csv` from `/zone_source`.
3. Build the fastfile and compile the images from `/main/mp_yourmap` again for the minimap image to load.
4. Start the game and load your map to see if it worked. If it didn't, it is because you don't have the `mp_yourmap.gsc` on your .csv or because you didn't replace the new generated images in `/Plutonium/storage/iw5`

Getting a loadscreen

The final step of this guide is purely aesthetical, it won't change your map in any way, but it'll look cute when loading in. The process goes as following:



1. Open the IW4x ZoneTool and dump 'mp_yourmap_load', the command is 'dumpzone'.
2. Look for the output dump folder and copy everything except the .csv file into your /zonetool in MW3.
3. Create a new text file, this will be your new .CSV, as if it was another map.
4. Open the dump mp_yourmap_load.csv and copy everything into the new text file.
5. Delete everything not containing the 'image,', 'material,' and 'rawfile,' headers in the new file you made.
6. Save it as mp_yourmap_load.csv in /zone_source
7. Your .csv should look like this:

```
image,default  
material,$victorybackdrop  
material,$defeatbackdrop  
image,loadscreen_mp_nightshift  
material,$levelbriefing  
rawfile,mp_nightshift_load
```

8. Open the MW3 ZoneTool and type 'buildzone mp_yourmap_load' in console.
9. Find the output fastfile and paste it in
appdata/Local/Plutonium/storage/iw5/zone:

mp_nightshift_load	15/06/2021 11:16 p.m.	Archivo FF	1 KB
mp_nightshift.ff	7/08/2021 9:28 a. m.	Archivo FF	33.338 KB
mp_nightshift_load.ff	18/07/2021 3:52 p. m.	Archivo FF	1 KB

10. Compile the image that is in /main/mp_yourmap_load in your MW3 folder using the same method taught before and paste it in appdata/Local/Plutonium/storage/:

 mp_nightshift	7/08/2021 9:31 a. m.	Archivo IWD	141.840 KB
 mp_nightshift_load	18/07/2021 3:55 p. m.	Archivo IWD	1.871 KB

Now, start your game and once you load your map you should see your beautiful loading screen when playing your ported map.

With this, you should now be done. Note that there are a lot more stuff to do when maps turn complex, as it is in Bailout. This guide is just a general view on the most important aspects in map porting. This process will be easier or harder depending on the map you try.

If you want to see how my Skidrow went out, check out in the link below:

<https://www.youtube.com/watch?v=DvF4F-l4ef4>

Thanks for reading this guide. If you're having problems with map porting, go to the topic below and see if it helps. If not, don't hesitate to join our Discord, we'll try to help!

Common problems

Problem: Material "x" is referencing more statebit entries than it has!

Fix: Delete that material from the zonetool folder and try again

Problem: Could not load default asset " for asset type 'glass_map'.
Tried to load asset 'maps/mp/mp_yourmap.d3dbsp'

Fix: Check to make sure your map has a glassmap d3dbsp in maps/mp/

If it does, add glass_map,maps/mp/mp_yourmap.d3dbsp into your csv file. MW2 csv files have game_map_mp instead of glass_map

Problem: Invalid entity token 'x'

Fix: Open the ents d3dbsp of the map and find anything that corresponds with that entity and delete that line

Problem: Couldn't load image 'x'

Fix: Check if your IWD has the corresponding image. If it does, it means the error triggers because the image is corrupt; delete it.

Problem: Game crashes when walking through certain zones in the map

Fix: Sometimes GSCs are the cause of this sudden crash. Open your mp_yourmap_precache.gsc from /zonetool/maps/mp/ and delete

the references for the GSCs you guess are causing the error (if it happened when looking at trees, delete trees GSCs references) from it. Then delete references of those rawfiles in your CSV.

Problem: Watermaps are not supported!

Fix: Delete the material referenced by the error from materials/wc/. This will cause your map to be missing water in certain places.

Problem: ZoneTool crashes while starting

Fix: The cause may be that you located ZoneTool in the Steam path of your game. Make a copy of the game in your desktop and set up ZoneTool there.

Tip: If you've gone through a lot of building with ZoneTool and start getting weird errors or issues that are model related, meaning ZoneTool can't build/load the fastfile, get a new folder. Delete everything from /zonetool, re-copy the dump from IW4x and extract MW2 images into it again. Finally, follow the steps at the beginning of this guide to set up your folder correctly and continue working.

