

# Why and How I make my Maps, BobT, June 2023

## Why

I decided to write this since I see so many post on FaceBook and forums from people who have no idea where the maps people sell on tablets come from, some think the people selling the tablets make them, most sellers acknowledge that they are using my maps (some add a few tracks for other areas) but for some reason a few do not. I think you will find it interesting and informative.

I started riding in WV with a club in the NC Triad area in 2004. We rode/ride out of Hilltop mostly. I and others in the club have tracked every ride since. We explored all over and frequently got lost. We rode Ivy Branch, Indian Ridge, Pocahontas, Warrior, CabWayLingo and East Lynn long before they were part of Hatfield McCoy. Clark Rowe (owner of Kimball ATV Hideway) showed us the tracks behind Walmart and the way to High Rock.

The group I ride with ride all over the country. We have been to Maine several times, Moab, Paiute several times, Taylor Park, CO twice, and the AZ Peace Trail three times. 21 of us are going to Utah in Sept to ride for six days (a big loop from Richfield to Bryce, the Paunsaugnut, Fremont Trail, Paiute trails, the Arapeen, and to the "Wedge" (Utah's Little Grand Canyon) in the San Rafaell Swell. 680 mile loop with only 25 miles of riding the same trails twice. Most of the people I ride with are not on FB and we don't post our rides on FB. I have been active in the western state forums for years and have shared a lot of tracks with people on those forums.. I have always made maps for everywhere we ride. I have IMO made the most accurate maps for Moab, Taylor Park, CO, All of Utah, the AZ Peace Trail, Tenn, KY and WV in five formats (Garmin, Windows PC, Mac PC, Orux, BCN & MapsPlus converted by Hunter Nott), all are free and can be downloaded at the following link.

<http://www.mediafire.com/folder/j8mra577regbm/Latest%20Public%20Map%20Files>

Back in the early 2000's Garmin and other GPS's would only display one track at a time (a few Chart Plotters would display 10 tracks at a time). Obviously this was a problem when I had over three hundred tracks at the time, now my WV map has over 2,000 and 1,100 wpts. Then I discovered GpsFileDepot that was devoted to 3<sup>rd</sup> party Garmin maps.

## How

I then found a 2 page document written by Ross Spoonland that explained how to make a single track and a waypoint. It also listed the 4 programs required to make a Garmin Map. The main program ([cGPSMapper.com](http://cGPSMapper.com)) was written by a Polish guy named Stan who reverse engineered how Garmin makes a map. It is extremely complex.

I use a total of nine different programs to make my maps. All programs are free.

To make a Garmin map, Windows and Mac PC map files I use the following Windows programs.

cGPSMapper – you will never actually start this program, it is used in the background by a couple of the other programs. It converts your raster image tracks to a vector image in an ".img" file which is the map file that Garmin uses. This is the program that does all of the serious work.

GPSMapEdit – this a graphical front end program to cgpsmapper. This is the main file that I use to convert my tracks and waypoints to a format that Garmin can read as a map. It is also used to give different tracks

different line/road types and some other things. I have to touch and do other stuff to every track and waypoint. The WV map will take me 6-8 hours from scratch, I have since learned some shortcuts.

TypWiz-6 – I use this program to make the infamous .typ file. The .typ files tells Garmin how to display (color, dashed, wpt icon, etc). I can make tracks with directional arrows and other patterns. Garmin is designed to display roads, highways, connectors, roundabouts, railroad tracks, etc. as various black lines.

MapSetToolKit will generate the type file from a .txt file (which is how I started). The .txt and .typ files are how you set the color and style of GPS tracks in your map. It is also used to create folders on your PC, generate and write the registry files and other files. This loads the map into MapSource or BaseCamp. This is an excellent program to delete files from MapSource. Be careful you can delete your basemaps that came with MapSource.

Inno Setup – A program that can be used to make a Windows “Setup.exe” file that will automatically copy the files to the correct directory and will write the correct registry entries in the Registry. It also has an Uninstaller that is accessible through Start|Settings|Control Panel|Add/Remove Programs. It is used to distribute a map easily, it contains all of the files and uses a standard Windows Installer Program. You run the Setup program and it installs the map on your PC and then you use Garmin Mapsource or Basecamp to transfer the map to your Garmin GPS. It took me several days to successfully write my first Windows PC Installation program. I also found a program that will convert my Windows PC map to a Mac PC map.

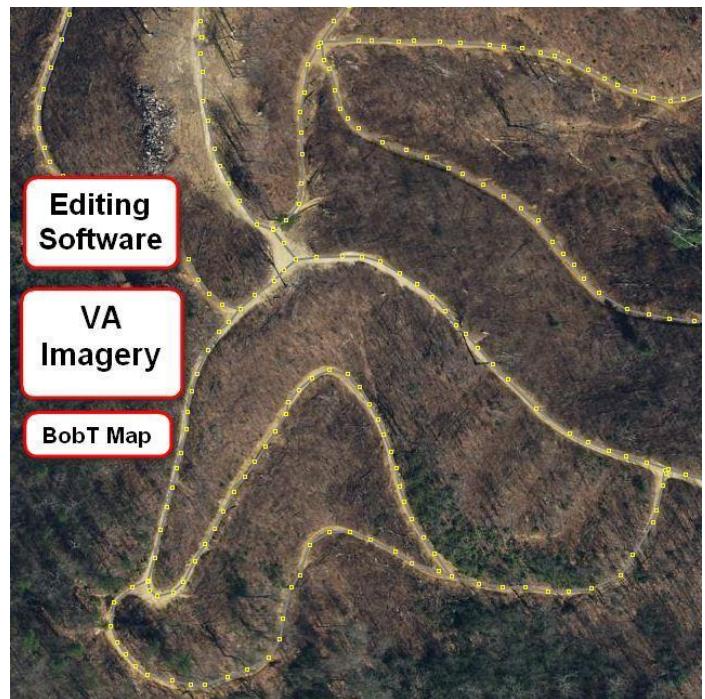
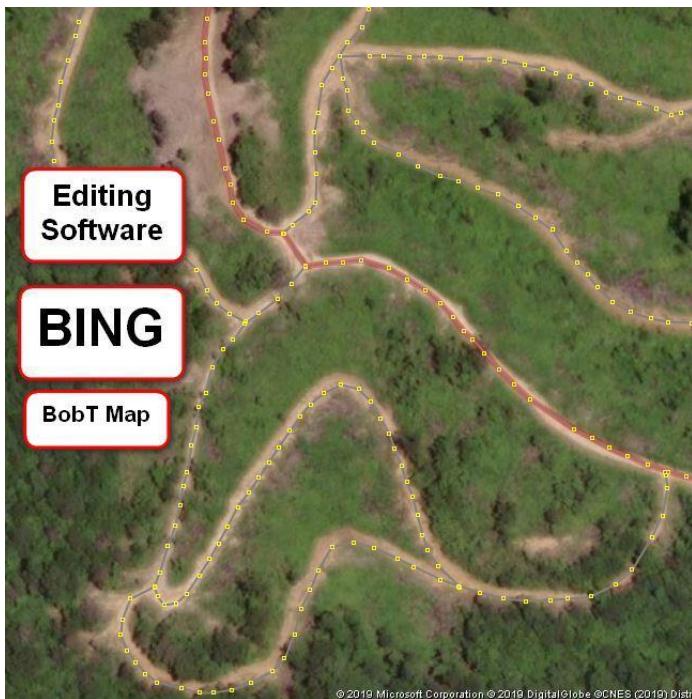
During 2007 through 2010 I spent half of my time in China on a large project. During this time I would try to figure out how to make a map on Sundays. I made my first, fairly simple, WV map in 2007 and posted it on GpdFileDepot. During this time I figured out how to make colored and dashed track lines and how to create some of my own waypoint icons. During our exploring we found a lot of tracks and wpts that I had to come up with names for. We found the Sophia Tunnels in 2007 and have been on maps ever since.

### **Track cleanup, coloring, and editing**

Before I even start to make a map I spend a lot of time cleaning and editing my tracks. If you track an entire days ride you have one long track that needs to divided into individual smaller tracks that intersect with other tracks. I use Garmin Mapsource for my initial editing. I use it to delete stops, back tracks, turn arounds, filter out track segments less than 20 feet, etc. I also use it to name and color tracks, add waypoints and select icons. I have difficulty colored all of the Outlaw trails. As anyone knows who has tracked for a day your return tracks can be off by 30-50 feet from the earlier track. I use another program called “JOSM” (Java Open Street Map Editor). This program was developed by the people that make the Open Street Maps. It is also a very complex program that I only use a small part of. It allows me to display my tracks on top of various satellite imageries. I can move individual track points are multiple track points at a time. I can also add a track point by touching the track (used to smooth out curves). This why my intersections are sharp and crisp. I have run 90% of the tracks for all of my maps through this program. I have probably touched and move several hundred track points



Screenshots of JOSM below



The above explanation of making a map is greatly simplified, here is link to download a detailed Tutorial I wrote on how to make a Garmin map image and subsequently the Orux image file.

[https://www.mediafire.com/file/elo64ia6j2iqs59/Making\\_a\\_Garmin\\_Transparent\\_Map-Feb\\_2020.pdf/file](https://www.mediafire.com/file/elo64ia6j2iqs59/Making_a_Garmin_Transparent_Map-Feb_2020.pdf/file)

## GPS Programs that my Maps Support

**Orux** – Around 2013 I discovered that Orux would display a Garmin Map image (.img). The “img” file is a very special vector image. I published my first Orux map in 2013. The advantage of this is that in Orux my dashed tracks show as dashed. The disadvantage is that it is more difficult to add a background map and the Garmin waypoint icons are not near as nice as the ones that BCN uses. Most people that prefer Orux is because of the uncluttered white background. I try to include all roads so that you do not need a background map. I run Orux and BCN at the same time and toggle between them. I dash the tracks for Pay to Play places like Hatfield McCoy, Black Mtn, Hillbilly Trails, etc.. This makes them stand out from Outlaw trails. When you install a map on your Garmin GPS with Garmin BaseCamp it embeds the .typ file in the .img file. Since I distributed the .img file for you to copy onto your GarminGPS or into Orux you also had to copy the .typ file. A couple of years ago I started installing the maps on my Garmin GPS which embedded the .typ file into the .img file. Now I just distribute this .img file.

**BCN Pro (BackCountry Navigator Pro)** – BCN like all Apps uses .gpx files. (Orux will also use .gpx files) BCN (or any App) will not display dashed tracks since dashed is not part of the GPX format. The advantage of BCN besides the gorgeous waypoint icons, is that it has plenty of background maps available. Also BCN Pro stores each map in its own database file that I can easily distribute and update. This why people who add extra trails use BCN since they can create separate database (.bcn) files for them. I published my first BCN map in 2013. In WV and in the east I use “Worldwide/Thunderforest Worldwide Maps/Open Cycle Map from Thunderforest” \$10, it is a light topo with all the roads. “World Topographic map from ArcGis” is similar to thunderforest and is free. The virtual earth type maps just show a lot of green since the east is so tree covered.

Out west where there are few trees I use “Worldwide/Worldwide Imagery Through ArcGIS”, free. It goes to zoom level 19. Reduced screenshot of Amsterdam River Cruise Docks below at level 19..

