Steps to take to upload custom maps into Uniden Mystic VHF/GPS
(may work with other Magellan based GPS units)

Disclaimer: *This is a typical CYA disclaimer so nothing happens to me. I am not responsible for any damage done to your GPS if you follow these instructions. I am merely posting these instructions to help other curious individuals modify their GPS to work for them while avoiding the need to pay out hundreds of additional dollars for proprietary maps. I am in no way affiliated with any of these companys.*

Purpose: *Since I was going to Canada, I needed Canadian Lake Map information which had been conveniently removed for **MapSend Streets & Destinations USA (software that was included with the Mystic).** The USA/Canadian border appears as a chiseled out blue blob below while Canada appears as a grey void. No Map for you!*

Software/Hardware:

> **Computer-***Windows PC*
> ***OziExplorer*** *(3.95.4c)- http://www.oziexplorer.com/*
> **AddMagMap***(1.01)- http://www.msh-tools.com/addmagmap/index.html*
> ***Magellan MapSend Streets & Destinations USA (4.00f) (I'm calling it MSSD USA)-*** *comes with GPS*
> **GPS dock with COM connection** *(or some other means of connecting your GPS to your computer via a COM port)*

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1. Scan the map into computer.

Follow the help files included with OziExplorer to scan your map. You may need a special drum scanner to scan in larger maps that won't fit on your flatbed scanner. The idea here is to get the map in the computer as cleanly as possible. You don't need high resolution scans. I believe the recommended DPI is between 96 and 150 DPI. Although you can scan in sections of a map, and piece them back together in Photoshop, it might be better to get the entire map in one shot to reduce any possibility of a mistake while piecing the map back together.

2. Connect the GPS to the computer.

The Mystic has a COM port/docking station that can connect it to the computer. I recommend purchasing a USB to Serial adapter if you don't have an available COM port on the computer to connect your GPS to. There is software that comes with the adapter that will allow you to use the USB port on your computer as a virtual COM port. Mine came in as virtual COM port 5. You will have to match the baud rate on the GPS to the settings in OziExplorer as well as in MSSD USA. I believe the default is 9600.

Off brand cheapo USB 1.1 to serial adapter

3. Calibrate the map using known latitude and longitudinal points.

Some maps have GPS waypoints on the map some maps don't. The free version of Google Earth is a good tool to verify latitude/longitudinal points on a map in reference with your paper map. It is also a good tool to mark certain land features that may not appear as a GPS waypoint on your map.

Make sure to choose the appropriate map DATUM format for the map and pick at least 5 different lat/long points while calibrating in OziExplorer. Make sure that if you use other programs to find lat/long that you know how to convert them for use in OziExplorer (like Google Earth). There are several ways to format lat/long coordinates. Do a Google search for lat/long formating, there are free web calculators for this.
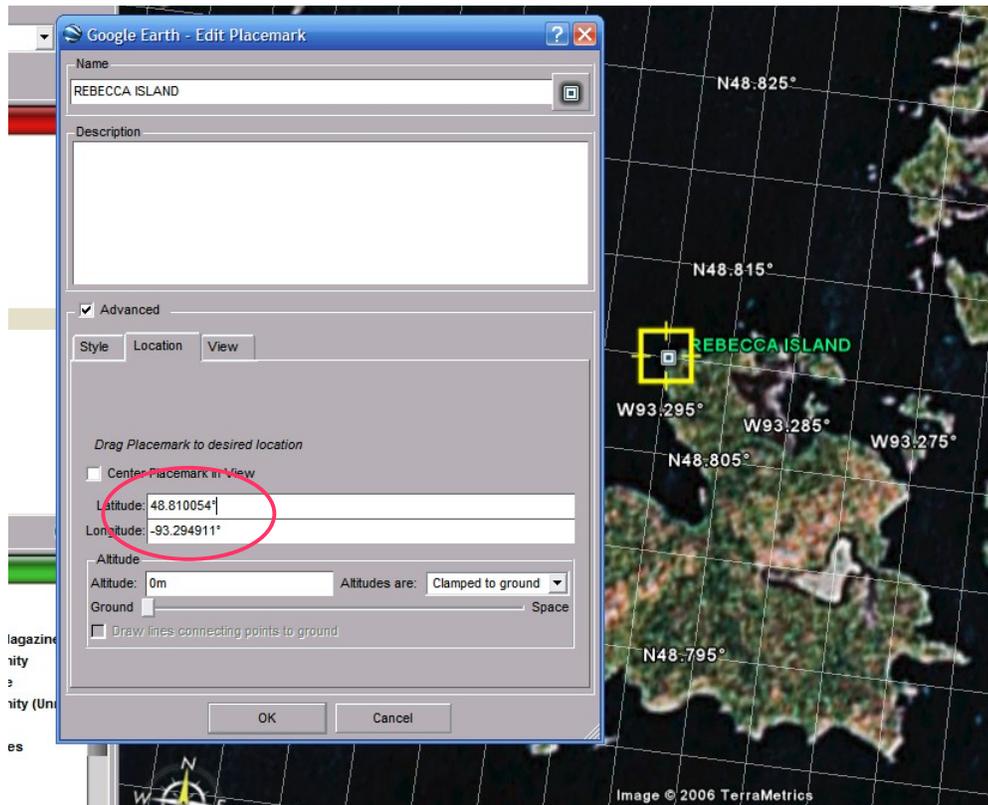
Illustration 1: Google Earth, Rebecca Island lat/long cross checking number 7 GPS
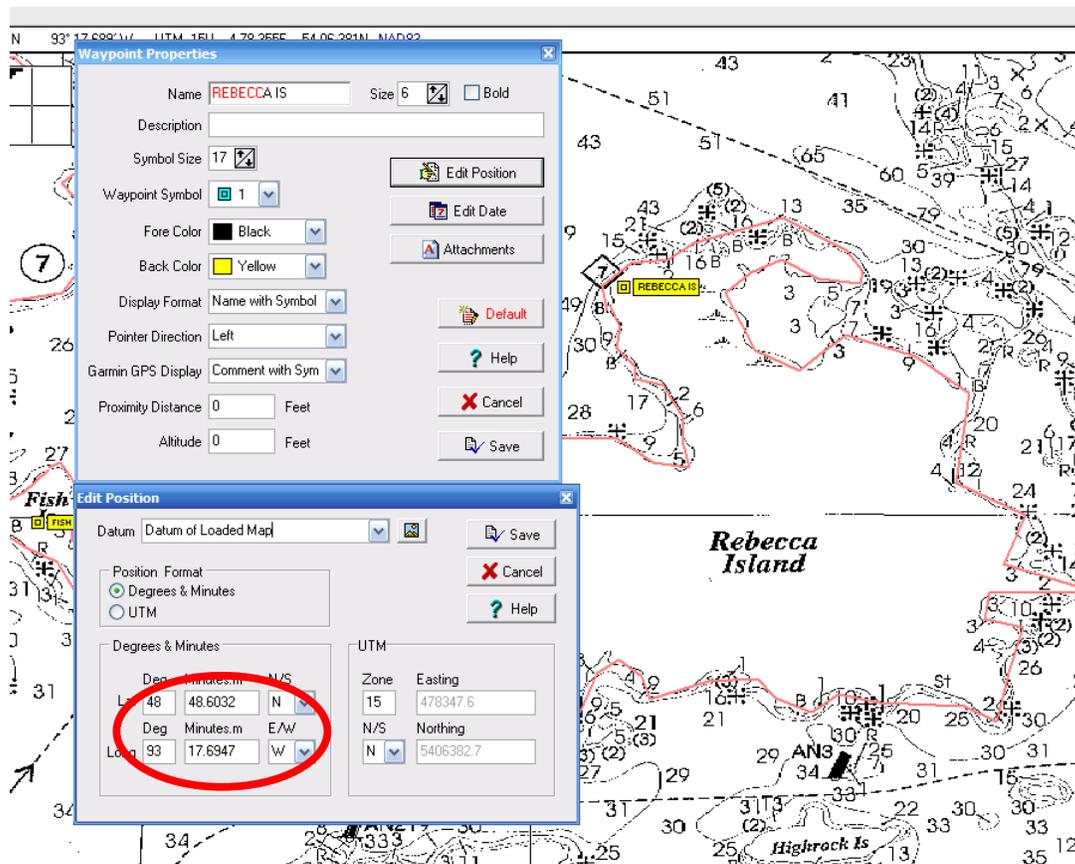
OziExplorer, Scanned map, lat/long converted from Google Earth

4. Use OziExplorer to outline the lake or other map with a track route.

When I created the lake outline for the map I needed I outlined islands and the shoreline only. Although tracing the contours/depth information might be possible, it was not practical. When out on the lake it was necessary to cross reference the boat's location on the GPS, to the paper map's depth information.
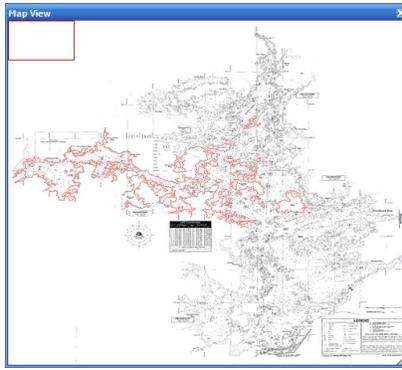
Screen shot of red track outline in OziExplorer, partial lake outline

5. Use OziExplorer to save out track as .shp format file.

6. Use AddMagMap to convert .shp data into usable mapping data for use with MapSend Streets and Destinations USA.

I had to convert the .trk file to a .shp file in order to read it into a program called "AddMagMap". This program is able to interface with MapSend Streets and Destinations USA (MSSD USA), modifying the original map data, while still allowing you to actually use the program in its original intention, to upload regions to your GPS. So you are still using MSSD USA, but with a modified map that you want to use.

7. Use MSSD USA to define region and upload data to GPS unit

If everything worked correctly you should see your modified map in MSSD USA and in the correct location. My lake map was in Canada so when I zoomed into the area beyond the provided map my track route/shp route appeared where it was supposed to appear. It is important to note that in MSSD USA you might have to zoom in closer than usual to see your map outline.

If you look closely the very bottom of the picture shows the included lopped off lake map as well as my imported lake information at the top.

*Lake Map info
I added*

Lopped off lake
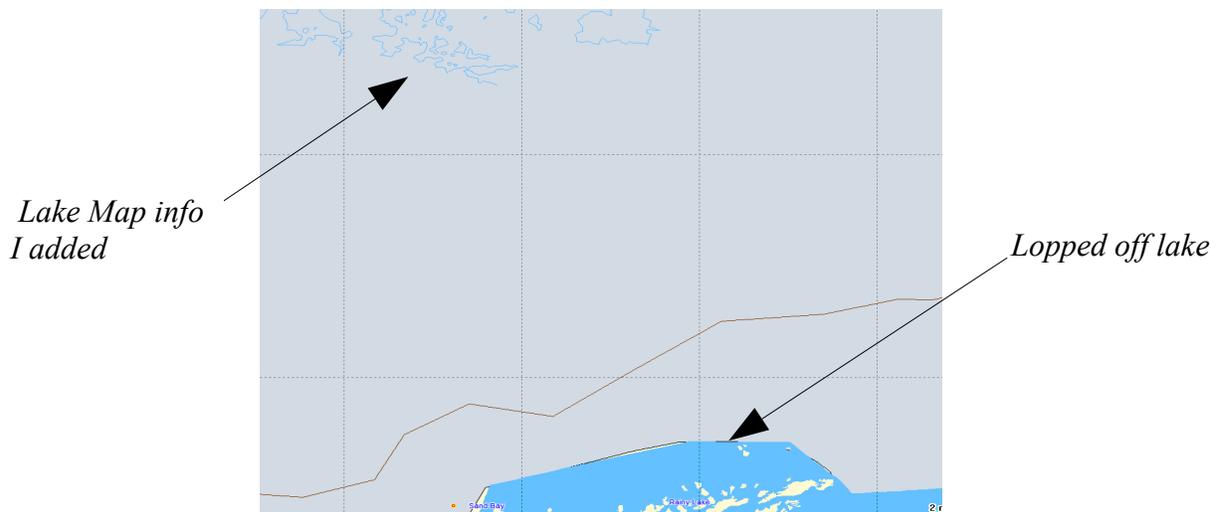
If there are any waypoints or special interest points on the map, use OziExplorer to place them on the map and upload directly to the GPS. This feature in OziExplorer seems to work fine (the direct upload from OziExplorer to the GPS).

You can figure out which waypoint icons show up on the GPS by looking at the GPS icon waypoint screen. The first icon is 0 and icons read from left to right incrementing by 1. Although OziExplorer shows different icons as long as the numbers match they will show up as those on the GPS.

You don't want to upload track routes straight from OziExplorer into the GPS, you do want to convert the track route to a .shp file to be appended to the existing map in MSSD USA.

I hope this helps others to work around the problems associated with Magellan GPS units. Good Luck!