

# Moving Points from GPS into GIS

There are many "high-tech" ways of moving GPS data into a GIS. These vary from system to system. They involve various combinations of cables, software packages, directory navigation, and file management. Each of these is designed to move data from the GPS into the GIS with limited human interaction, stressing instead ease of use and minimizing the introduction of error. Operating each will depend on knowing how each individual GPS connects with each individual computer, both in terms of cables and software. When transmitting large volumes of data, these high-tech methods make great sense. For only a few points, "low-tech" works fine.

Here is a "low-tech" way of moving GPS data into a GIS.

1. Decide if you want the GPS data to be included within GIS projects in a "decimal degree" format (e.g. "45.12345, -90.12345") or "projected" format (e.g. UTM meters such as "456789.12, 5123456.78"). In an ArcView map, all the "feature data" (points, lines, and polygons) need to be the same: decimal degree, or projected in one coordinate system.
2. Set the GPS to display either degrees or meters, according to your decision above.
3. If using degrees, it is more convenient if you can display in "degrees with decimal" (dd.ddddd) rather than "degrees, minutes with decimal" (dd,mm.mmmmm) or "degrees, minutes, seconds with decimal" (dd,mm,ss.sssss). If you cannot display degrees decimal, you must convert your DM or DMS data into degrees decimal. A spreadsheet can help you do this (divide minutes by 60, seconds by 3600, and add to degrees). It is best if you record 5 decimal places for your locations.
4. If you are recording sites in degrees, use a text editor such as Notepad or SimpleText to create a simple table, similar to the following example. Notice that there are no spaces after the commas, but there may be within individual "cells".

## DECIMAL DEGREE EXAMPLE:

```
site,lat,long,type,link,comment
101,45.12345,-93.12345,house,Charlie's House,foosball table
102,45.13579,-93.13579,condo,Mickey's Place,ping pong
103,46.12345,-93.24680,apartment,Tony's Place,backgammon
104,46.24680,-93.34567,apartment,Sam's Place,basketball hoop
```

## PROJECTED METERS EXAMPLE:

```
site,lat,long,type,link,comment
101,456789.12,345678.12,house,Charlie's House,foosball table
102,456812.34,345801.23,condo,Mickey's Place,ping pong
103,454890.12,357901.12,apartment,Tony's Place,backgammon
104,457912.34,346802.46,apartment,Sam's Place,basketball hoop
```

In each case above, we have constructed what amounts to a table composed of six "fields", each separated by a comma. (It is important not to use a space immediately after the comma, and not to use a comma within a "cell".) The file will be what computer users call a "comma delimited ASCII text file."

5. Save your file as a "text file" (if you have a choice) in a folder where you will be able to find it. Name it "sites.txt" when you save it.
6. Engage ArcView or ArcVoyager, and create or open a View.
7. Add in some background data, as follows:
  - a. If you have created your "sites.txt" file using "decimal degree" format, use:
    - i. decimal degree feature data
    - ii. decimal degree image data
    - iii. projected image data, which requires the View/Properties/Projection to match the image
  - b. If you have created your "sites.txt" file using "projected" format, use:
    - i. projected feature data (must be same projection)
    - ii. projected image data (must be same projection)
8. Go to the ArcView or ArcVoyager "Project" window. (From the "Window" menu, select whatever is item#1.) (You should see buttons for Views, Tables, Charts, and Layouts.) Single-click "TABLES", then single-click "ADD".
9. Navigate to where "sites.txt" is stored. Set the "Show Files of Type" pull-down item to read "Delimited Text (.txt)". Double-click the file "sites.txt". The file will appear in a new window. (If the file has content or format errors, you cannot fix it here. You must return to the Project window, delete the table "sites.txt", re-open your text editor software, open the file, make changes, re-save the file, and return to Step#8 above.)
10. In ArcView or ArcVoyager, make your map the front window.
11. From the "View" menu, choose "Add Event Theme".
12. In the "Add Event Theme" window's table picker, choose "sites.txt". It will automatically place "Long" in the "X" window and "Lat" in the "Y" window. Click "OK".
13. Back in the View, there will be a new theme named "sites.txt" at the very top of the list. Turn it on. You can now treat the "sites.txt" theme as if it were a regular shapefile: change the classification and symbolization as needed, use one of the fields in construction of hotlinks, and so on.