

# **Instructions for Downloading GPS Waypoints and Importing into ArcMap**

## **1. Set up ETrex Vista GPS Receivers**

Make sure that the ETrex GPS receiver is set up as follows:

From the main menu on the Etrex GPS select Main Menu > Set up > Units

1. Position Format: Decimal Degrees (hddd.ddddd)
2. Map Datum: NAD 27 CONUS
3. Distance Speed: Metric
4. Elevation: Meters

## **2. Downloading Data from the GPS Receiver:**

1. Turn the computer on and log on using your user name and password.
2. Connect GPS to the computer using the GPS PC interface connector.
3. Turn on the GPS unit if it is not already turned on.
4. Open Mapsource.
5. Select correct coordinate settings in Mapsource by:
  - a) Main menu select Edit > Preferences; Position tab
  - b) Position format Lat/Lon (hddd.ddddd)
  - c) Datum=NAD27CONUS
6. Main menu > Transfer > Receive from device > Receive. Make sure that only the waypoints are checked. If you have tracks, I recommend downloading tracks and waypoints separately.
7. Save Mapsource file (.gdb) in case you need to change datum or projection for the GPS points at a later time. Main menu > File > Save > Save file\_name.gdb in your student folder.
8. Export to text (tab delimited) file. Main menu > File > Export as text (tab delimited) > Save file\_name.txt in your student folder.

## **3. Using Excel to prepare the GPS points for Import into Arcview**

1. Open Microsoft Office Excel
2. Main menu > File > Open > Browse to student folder > Select file\_name.txt file.
3. Select delimited text > next > check tab > finish. Save file as .xls in case you need to repeat steps at a later time.
4. Delete the first three rows (Grid row, Datum row, and blank row). Delete the blank row between the field headers and the waypoints.
5. Delete unnecessary columns.
6. Insert column after "Position" column.
7. Highlight the "Position" column.
8. Separate your latitude and longitude coordinates into individual columns. Main Menu > Data > Text to Columns > Delimited > check Space > Finish.
9. Add/change the field headers for "Latitude" (Lat), "Longitude" (Lon), and Elevation (Z).
10. Delete N, W, and m (or ft) in coordinate and elevation fields.

- a) Highlight the latitude, longitude, and elevation columns. Main Menu > Edit > Find; Replace tab.
- b) Find “N”, Replace with “ ” (blank)
- c) Find “W”, Replace with “-” (minus sign)
- d) Find “m” (or “ft” if elevation is in feet), Replace with “ ” (blank).
- e) At this point, your waypoint file should look similar to below.

Name	Lat	Lon	Elevation
1	34.69581	-115.846	2300
2	34.70578	-115.833	2491
3	34.70557	-115.833	2489
4	34.70521	-115.833	2483

11. Save file as a Text (MS-DOS) (.txt). Do not use any special characters or spaces in the file name.
12. Optional: Save as .xls file using a different file name then before (i.e. file\_name\_clean.xls).
13. Exit out of Excel. You can not import the .txt file into ArcMap with the file open in Excel.

#### **4. Import Waypoints into ArcGIS**

1. Open your class project in ArcMap.
2. Add X Y data from text file.
  - a) Main Menu > Tools > Add X Y Data
  - b) Browse to folder > Select file\_name.txt file
  - c) Under Define Spatial Reference of Input Coordinates. Edit > Select > Geographic Coordinate System > North America > North American Datum 1927.prj > OK
3. Export XY points (events) to Shapefile.
  - a) Right-click on waypoint event layer. Data > Export Data > check Use Same Coordinate System as Data Frame. This saves your shapefile in the same coordinate system as your ArcMap project (UTM Zone 11 NAD27). Save the waypoint.shp file in your student folder. Choose to add the exported data to the map as a layer.
4. Add UTM coordinates to the attribute table.
  - a) Right-click on the waypoint shapefile > Open Attribute Table.
  - b) Select the Options button > Add XY & Populate. This will add the Northings and Eastings fields and calculate the projected value.
  - c) Optional: Remove X Y Events. Right-click on event layer > Remove.

## **5. Adding Strike & Dip Attribute Fields in ArcMap**

1. Right-click on the waypoint shapefile > Open Attribute Table.
2. Select the Options button > Add Field
3. In the Add Field dialog box enter “Strike” for the name and short integer for data type.
4. Select the Options button > Add Field
5. In the Add Field dialog box enter “Dip” for the name and short integer for data type.

## **6. Editing Strike & Dip Attribute Fields in ArcMap**

1. Open Editor Toolbar. Main menu > View > Toolbars > Editor.
2. From the drop-down menu on the Editor Toolbar select Start Editing > Highlight the data (folder) choice that contains the waypoint shapefile > OK
3. Right-click on the waypoint shapefile > Open Attribute Table.
4. Enter Strike and Dip values in appropriate fields.
5. Stop Editing. From the drop-down menu on the Editor Toolbar select Stop Editing > choose to Save Edits.

## **7. Symbolizing and Rotating Strike & Dip Shapefile**

1. Right-click on waypoint shapefile > Properties; Symbology tab.
2. Select the symbol button > Scroll to the strike & Dip symbol labeled “Inclined bedding showing strike and direction of dip” > Click on symbol so that it appears in the preview > OK. *If the symbol set is not visible, select More Symbols > Geology 24k and repeat the above steps.*
3. Select the Advanced button to the right of the Symbol button > Rotation.
4. Set the rotation field. Use the drop down menu under Rotate points by angle in this field > choose Strike > OK. Choose OK to close out the Layer Properties Menu.

## **8. Labeling Strike & Dip Points**

1. Right-click on waypoint shapefile > Properties; Label tab.
2. From the drop down menu to the right of Label Field select Dip > OK.
3. Right-click on waypoint shapefile > Properties; Label tab.
4. Under the Other Options select Placement Properties; Conflict Detection tab; check Place overlapping labels > OK > OK.
5. Right-click on waypoint shapefile > Label Features. Repeat this step to remove labels.

Note: Your labels will most likely need to be converted to graphics as you get to the end of your project in order to move them to exactly where they should be placed. We will cover converting labels to graphics when you begin preparation for your final map layout.