GPS Field Guide
Garmin Map76 Unit

Table of Contents

Using the Garmin

ArcView and DNR Garmin

Data Management

Massachusetts Base Station Information

Portsmouth Harbor NH ★

Hudson Falls NY
★

Achushnet MA ★
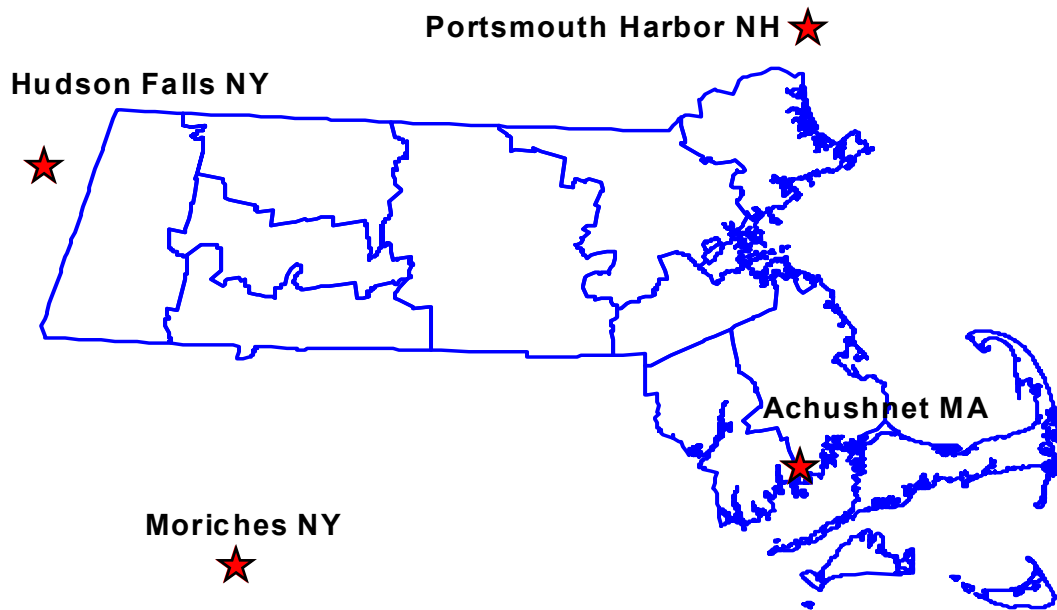
Moriches NY
★

Name	Frequency	Bit Rate
Acushet, MA	306	200
Hudson Fall, NY	324	200
Moriches, NY	293	100
Portsmouth Harbor, NH	288	100

General Description of the Garmin GPSMap76
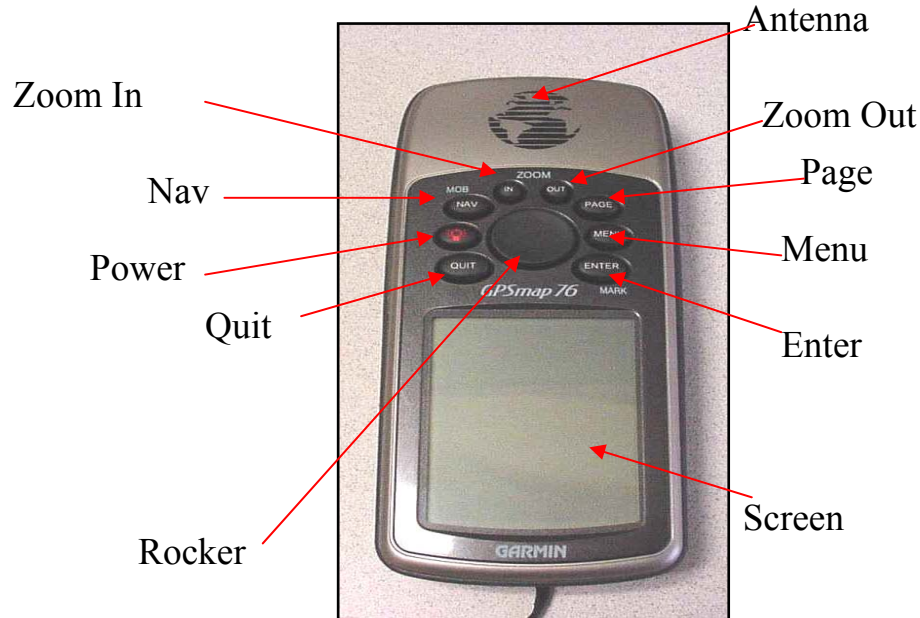
Button Descriptions:

Power Key: The **Power** key is used to turn the unit on and off. Press and hold the Power key to turn off the GPS.

Rocker Key: The **Rocker** key is used to control the movement of the cursor on menus and map displays (up, down, left, right).

Page Key: The **Page** key is used to navigate through the 5 main display pages. The Page key will also end an operation in progress and return to one of the main pages.

Quit Key: The **Quit** key is also used to navigate through the 5 main display pages in the opposite direction of the Page key and quit out of a menu or selection.

Menu Key: The **Menu** key will display the page options menu for the current page. **Pressing the Menu key twice will display the main menu**.

Enter Key: The **Enter** key is used to activate a data field or make a menu selection. Pressing and holding the Enter key will allow the user to capture the current position as a waypoint.

Zoom In and Zoom Out Keys: Allow you to zoom in and out on the map page to show more or less detail.

Nav Key: The **Nav** key is used to navigate to locations saved in the Garmin unit.

Main Screen Descriptions

- There are five (5) main pages on the Garmin unit.
  - The **Satellite** Page
  - The **Map** Page
  - The **Pointer** Page
  - The **Highway** Page
  - The **Active Route** Page

These pages are arranged sequentially on the unit, like on a rolodex. The **Page** and **Quit** keys are used to navigate between the pages. For example, if you are viewing the Satellite Page and you want to see the Highway Page, you can get there by pressing the **Page** key three times or the **Quit** key twice.

Map Page

Pointer Page

Satellite Page

Highway Page

Active Route Page
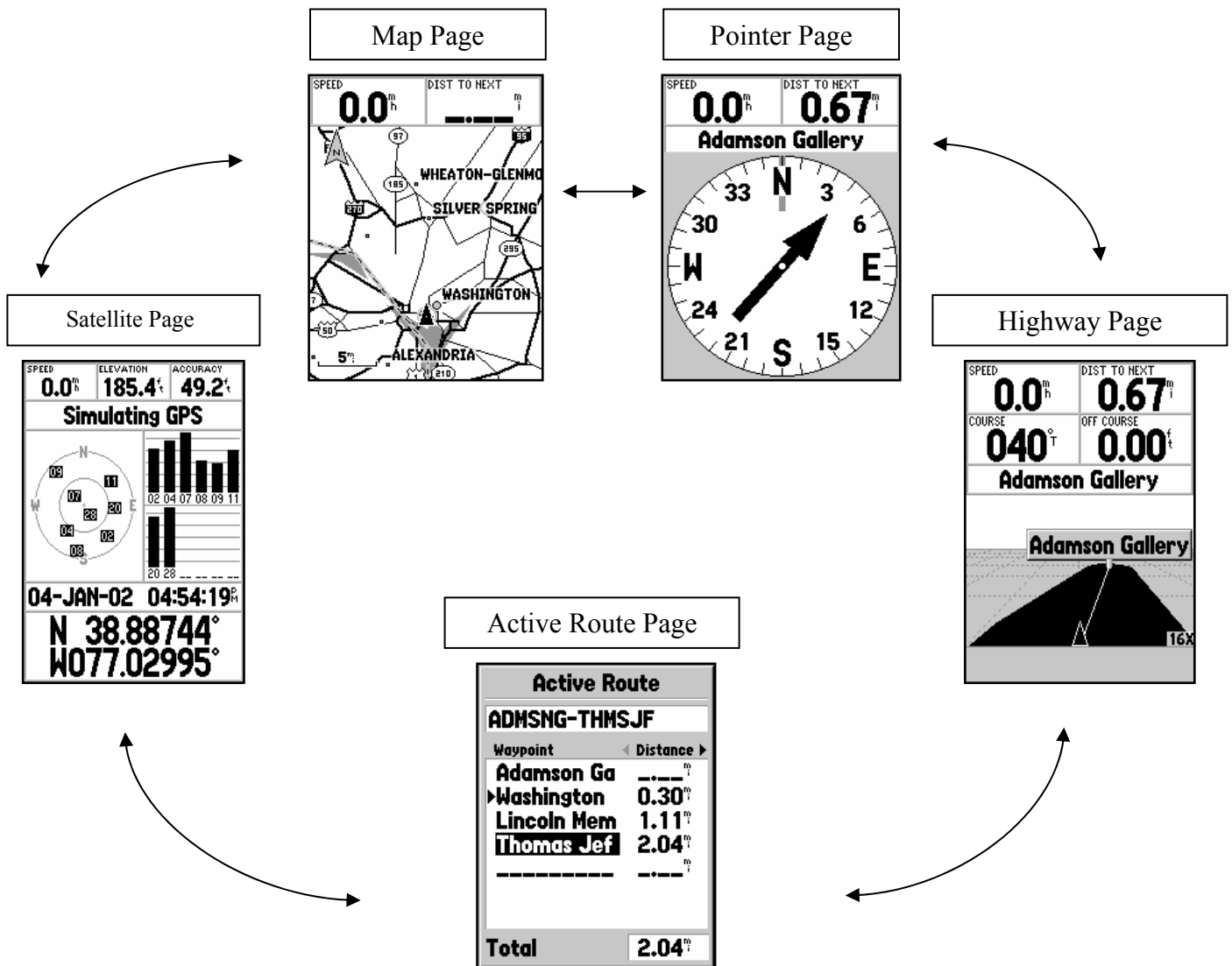
Unit Check Before Leaving the Office

• Before leaving the office it is important to make sure the GPS unit is working. This will save time and frustration because a problem can be found/fixed at the office before you travel to your field site
• Turn on the handheld unit and connect differential receiver to make sure they work
• Check to see the memory is cleared of waypoints/tracks
• Ensure that the batteries are charged

In the Field (Point Collection Setup)

• Connect the battery pack to the differential receiver in the backpack
• Connect the gray wires from the backpack into the handheld unit
• Set the unit to receive a differential signal (RTCM in/NMEA out)
  • From the Main Menu highlight **Setup** and press the Enter button
  • Scroll (left/right) to the Interface tab
  • Highlight the Serial Data Format (Ex. Garmin)
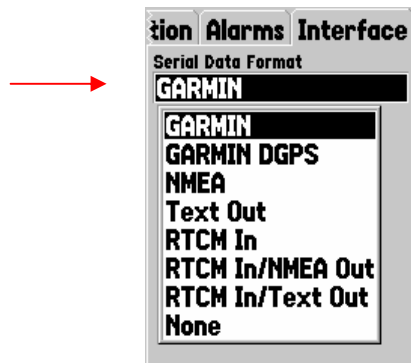
• Press the Enter button
  • Scroll down to highlight **RTCM In/NMEA Out**
  • Press the Enter button
  • Scroll down to highlight the Beacon field and press the Enter button
  • Scroll to highlight **User** and press the Enter button
• Enter the Frequency and Bit Rate for the appropriate base station
    • Highlight the Freq field and press the Enter button
    • Scroll through the numbers to select the correct frequency information. Press the Enter button
  • Scroll right to the Bit Rate field and press the Enter button
  • Scroll down to select the correct bit rate and press the Enter button
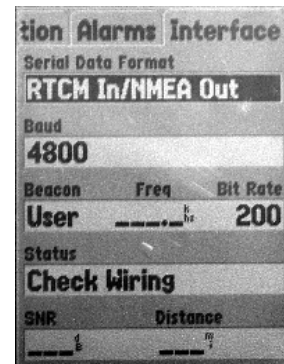
- Frequency and bit rate information can be obtained from the Base Station Information section of this manual.

- Check to see the unit is receiving a DGPS (differentially corrected) signal
    - Press the Quit button to return to the Satellite page
    - A "**D**" will appear at the bottom of the satellite strength indicator bar
    - The Receiver Status Message will say **3D Differential**

Receiver Status Message

Satellite Strength Indicator Bars
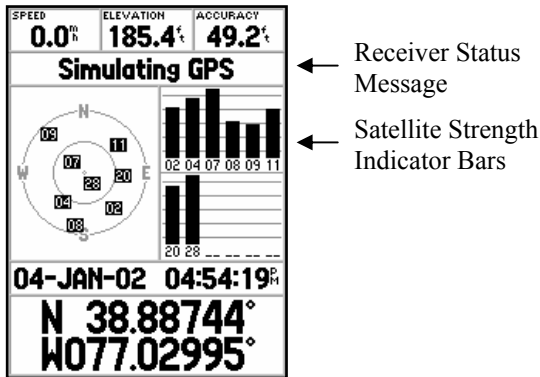
Waypoint Collection

Hint: Good field notes will help ensure that you do not forget what or where your points are. You may take a lot of points in one day and may not remember everything when you return to the office. Keeping a record of starting and stopping point numbers will be critical when you manipulate your data.

The location of a waypoint is taken from the antenna on the backpack not the handheld unit; be aware of this when marking waypoints. Remember to check your accuracy periodically; it will fluctuate during point collection.

- Mark a waypoint
    - Press and hold the Enter button for 2 seconds until the Mark Waypoint page appears

- The Mark Waypoint page displays information about the waypoint that was taken. It shows the number of the point, the date and time, and the location of the point

- To confirm the information, press the Enter button with the OK tab highlighted

- Marking your starting point in the field with a flag or using a reference location is a good way to make sure that you do not overlap when taking points. This will make the process of converting points to polygons easier and more accurate

Adjacent Fields

• Adjacent fields/strips must have their points collected in a specific way, so when polygons are made for each strip/field the acreage is correctly calculated
• The diagram below is an example of how points should be collected
• A coincident boundary should **never** have points taken on it twice
• A point must be collected at every corner of each strip/field
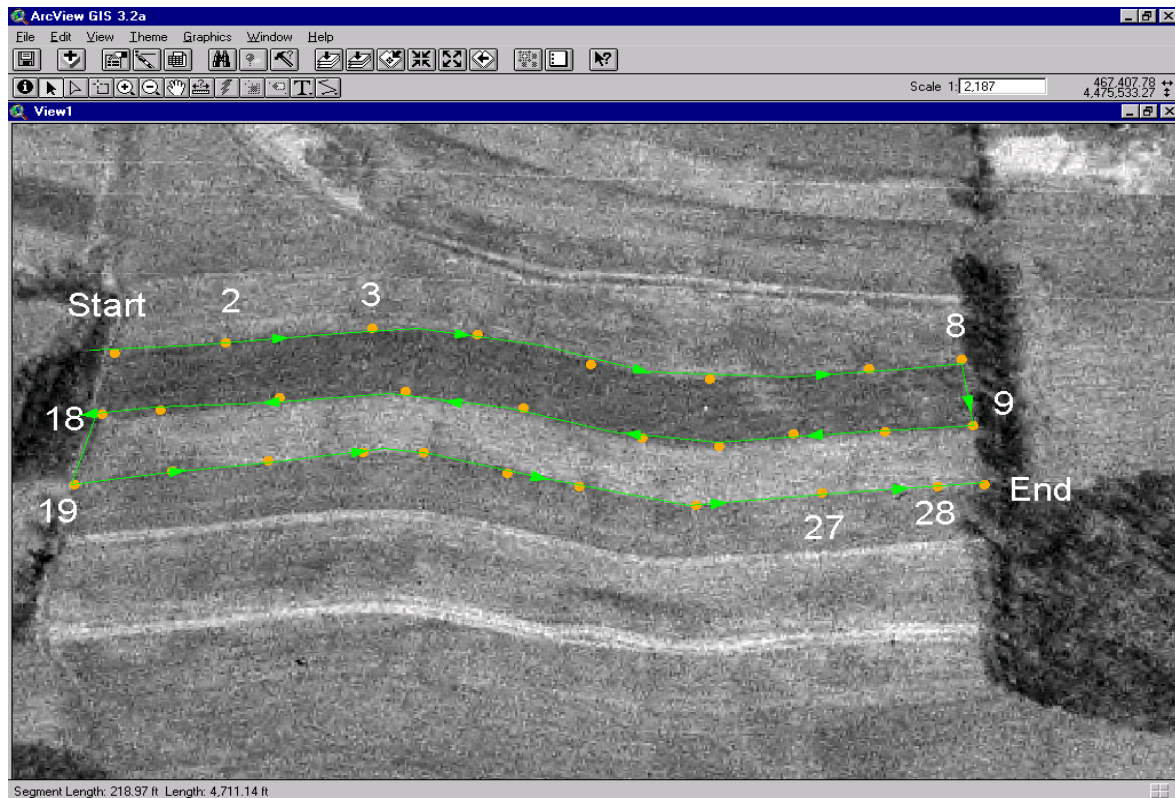

Note: It is important to keep a good field record of your point numbers so you don't forget what you did when you get back to the office. The starting and ending point numbers should be noted for each field/strip. **Be aware that GPS points are connected by a straight line, when marking curved features points must be taken close together in order to properly and accurately display the curved area.**

Waypoint Averaging

If additional accuracy is needed when collecting waypoints or collection conditions are less than ideal, the averaging function may be useful. Averaging works by taking several points at one location and creating an average location from all points taken, resulting in one waypoint marked for that location. This helps to make the location more accurate. **Do Not move** while using the averaging function, this will lead to poor accuracy.

- After holding the Enter button for 2 seconds the Mark Waypoint page appears
- Press the **Menu** button
- Highlight **Average Location** and press the Enter button
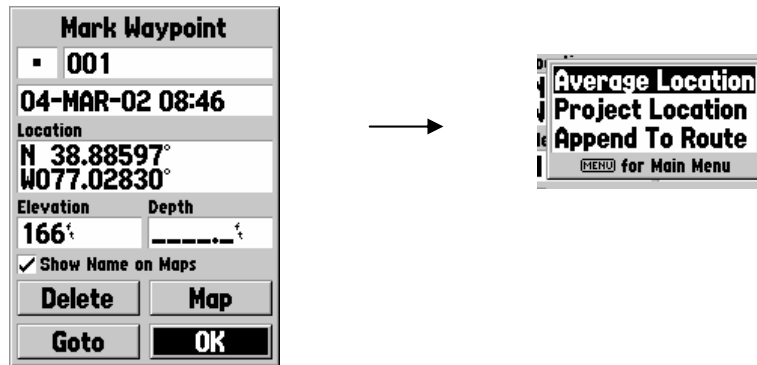
- The Average Location screen appear
- The measurement count is taking a point every second
- To stop taking averaging points press the Enter button with the Save box highlighted
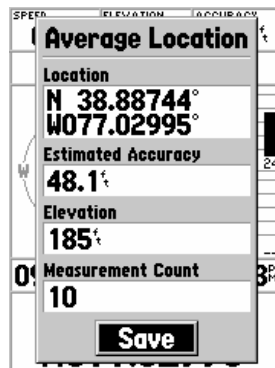
- This returns you back to the Mark Waypoint screen
- You proceed as if you had just taken a single waypoint

Navigation Back

The Garmin unit not only allows for the collection of data, but can also be used as a navigational tool. These units allow users to "Navigate Back" to a location that contains geo-referenced data. This function is useful when trying to locate a point that was previously taken with the unit, or navigating to points that were planned in the office. In order to navigate back to a point you must first have point data loaded in the Garmin unit. Instructions for this can be found in the Uploading Points section of this manual.

The "nav back" feature of the unit is an interface using the pointer page and the highway page. The pointer page will give you a visual display showing which direction to walk, and the distance to the point. The highway page is used as you get close to your location and displays a left or right offset for added precision.

Warning: Learning how to manipulate the navigation screens will take some practice. It is important that you practice and become proficient at using the interface before attempting to locate points for a field application.

- At your field location, set the unit to receive a differential signal
- Press the NAV button once on the handheld unit
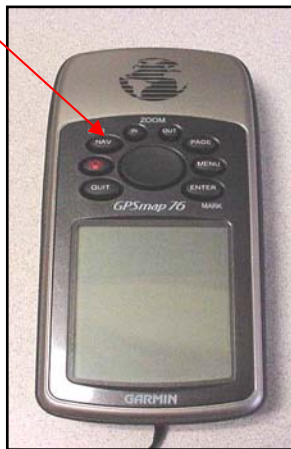
- In the window that appears, confirm that **Go To Point** is highlighted and press the Enter button
- In the Points box that appears, confirm that **Waypoint** is highlighted and press the Enter button
- A list of waypoints you have loaded in the unit will appear, press the Enter button, use the rocker key to highlight the point you wish to navigate to and press the Enter button
- The Waypoint page appears; with **Goto** highlighted, press the Enter button
- Use the Page button to move to the Pointer Page
- The Pointer Page shows the direction and distance you need to travel to the point

Vertical line

Distance to point
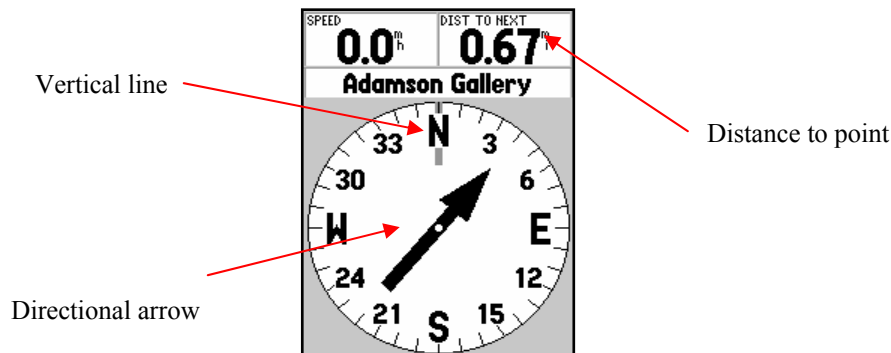
Directional arrow

• To navigate to the point, you must turn so the directional arrow points to the vertical line. When you are facing directly toward your destination, the directional arrow will be pointed toward the top of the display, aligned with the vertical line
• If you are no longer heading toward your destination, the directional arrow will turn away from the vertical line to point toward your destination (illustrated above)
• To head in the proper direction again, turn until the directional arrow realigns with the vertical line
• The distance to point box displays the distance you have until you reach your destination
• As you get close to your destination the directional arrow will become less useful due to the proximity of the destination point to your current location. To make navigation more effective and accurate, the Highway Page and Pointer Page should be used together.
• The Highway Page will allow for smaller scale adjustments as you near your destination.


Distance to point

Offset
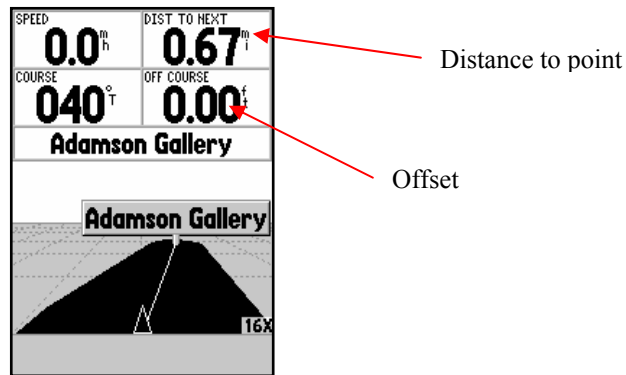
• As you near your destination you will hear two beeps informing you that you are getting close. A message will be displayed at the bottom of the unit. Press the Enter button to clear this message
• The highway page displays the distance to your destination and displays an offset that will show the distance you are off left or right of the exact location. If an L appears in the offset box that means that you are offset left and need to move right. If an R appears you are offset right and need to move left
• When the distance to point box and the offset both read 0.00 you have reached your destination

Note: Remember that there is always a small amount of error associated with all GPS. Attempting to get 0.00 in both boxes may *in some cases* be impossible. As a rule of thumb, acceptable error is L/R <0.5 ft in the offset box, and <1.0 ft in the distance to point box.

Measuring in the Field

The GPS units are capable of doing "in the field" linear measuring. The GPS unit will allow you to take measurements that were previously measured using the wheel. A good example of this is a riparian buffer situation. Here you can use the GPS to mark the stream bank with several points, then measure 180 feet out from those points. This allows you to get an exact location of the stream bank, place stakes at 180 feet, and record the location of those stakes for your plan all in one trip to the field.

- Set up the Garmin unit to receive a differential signal
- Locate the point from where you want to measure
- Take a point
- Move to the Pointer Page or the Highway Page using the Page button
- Select a reference point, and begin walking
- The distance will be displayed
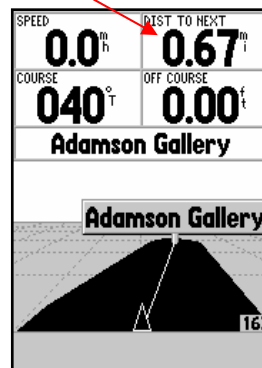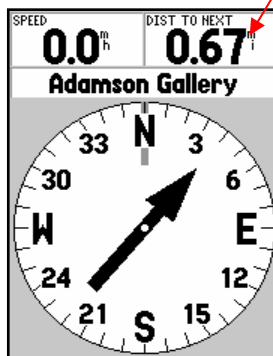
- When you reach the distance you want to measure, place a flag and mark the point
- This feature can also be used for measuring existing features, instead of measuring a set distance you can measure the distance between two existing features.

Tracks

Tracking is another method of using the GPS to collect data. Tracks work in a similar manner to waypoints, but in tracking mode the GPS unit automatically takes points at preset distance or time intervals. When the unit is tracking it is collecting a series of waypoints that are stored together in a track log. This differs from individual waypoints. **A single waypoint is stored as a single unit and can be manipulated as such, whereas points taken in tracking mode are stored together in a track log file and do not contain the same characteristics or attribute data that individual waypoints do.**

Tracks are complicated and are recommended only for expert users. The Garmin unit contains an active log that tracks every location the unit has been. When using the tracking feature, you are selecting out certain parts of this active log and saving them.

The problem with tracking lies in the fact that points are taken continuously, so if you stop to tie your shoe or talk to the landowner you are still collecting points. This can lead to inaccurate data. **Tracking should only be used in certain situations and is not designed for all uses. Before using tracking, make sure it is the best method for getting the job done.**

Setting the Collection Method for Tracks

There are three options for collecting data using the tracking function. These are distance, time, or auto. The distance setting will take a point after a specified distance has been traveled. The time setting will record a point after a specified amount of time has passed. The auto setting uses terms such as "more often" and "less often," but does not give a specific value for when data will be collected. The collection mode should be set according to the task you are working on. The collection mode must be set before you begin tracking.

- From the Main Menu, highlight **Tracks** and press the Enter button
- The Tracts screen appears
- Press the Menu button
- Highlight **Setup Track Log** and press the Enter button
- The Track Log Setup Window appears
- Highlight the selection under Record Method
- Press the Enter button
- Select Distance, Time, or Auto (time is the recommended method)
- Highlight your selection and press the Enter button
- Using the rocker key, highlight the selection under Interval and pressing the Enter button will allow you to change the interval of point collection. This is done using the rocker key to change the values of the highlighted selection. Press the Enter button to accept changes (Time is displayed in hh:mm:ss)
- Highlight the selection under Recording and press the Enter button
- Here you have the choice of Off, Wrap When Full and Stop When Full
- You will **only use** *Stop When Full* or the *Off* selection
- Highlight **Stop When Full** and press the Enter button
- Highlight OK at the bottom of the screen with the rocker key and press the Enter button
- The unit is now ready to start tracking

Collecting Tracks

- Check to see the unit is receiving a differential signal
- Locate the point where you want to start tracking
- From the Main Menu choose **Tracks** and press the Enter button
- The Tracts screen appears
- In the Tracks screen use the rocker key to highlight **CLEAR**
- Press the Enter button
- You are asked if you really want to clear the track log

• Highlight Yes and press the Enter button
• The log is now clear and you may begin walking the area where you want to collect points

Note: You must clear the track log immediately before collecting data. If you clear the log, but do not start walking immediately, you must clear the log again before you start collecting data.

• When you have reached the end of the area you are tracking, you must stop the track log
• This is done in the **Track Log Setup** screen
• Highlight **Stop When Full** under Recording and press the Enter button
• Select **Off** and press the Enter button
• Highlight OK and press the Enter button

You have now turned off the track log; the unit is no longer collecting data for the track log. If you have more areas to track, you need to follow the previous instructions (p.20-21). This will allow you to collect track data for several sites without having to return to the office after each field location. *If you are doing multiple tracks during a field visit, DO NOT clear the track log after you have collected track data. You WILL erase the data that was previously collected.*

• After you have collected all track data for the day you need to save the track log
    • From the Tracks page, highlight Save, and press the Enter button
    • The Save Back Through window appears, highlight **Entire Log** and press the Enter button

ArcView and DNR Garmin

Office Planning

Using some advanced features in ArcView and the DNR Garmin software it is possible to take advantage of the GPS system from the office. This is especially helpful when planning occurs in areas with little or no spatial reference points to take measurements from. Using the DNR Garmin software ArcView allows you to locate points in the office and then navigate back to those points on the earth. This process is similar to uploading existing GPS data, but it uses data that you create.

- Open ArcView
- Add data in ArcView that you want to work with. This may be an ArcView project in a customer folder, or a newly created ArcView project.
- Create a new point theme using the Toolkit button, in a customer or View and select New Theme.

- Using a theme such as an aerial photograph or topo map place the points in the locations where you want to navigate back to
- After you have placed all the points you must edit the table to give each point a number
  - Open the table for the point theme you just created, from the Table menu select **Start Editing**
  - Using the table Edit tool give each point a number in the ID field starting with 1

  - Use the Edit tool to choose the cell you wish to edit and enter the numbers in sequential order
  - After all the points are given an ID, from the Table menu, select **Stop Editing** and save edits


- Using the same steps discussed in the Uploading Points section, select all points to be uploaded to the Garmin unit

- Upload the points
- In the DNR Garmin window from the Waypoint menu select **Upload**
- A window appears telling you the transfer is completed and the number of waypoints that were uploaded to the unit

Remember: When creating new themes they must be saved in the correct location with a proper name. Keeping the default is not acceptable. If you are creating something permanent it should be saved in that customers file with a meaningful name. If you are experimenting or creating temporary files these, should be removed when you are finished with them.

Downloading Waypoints (Office Mode)

- Attach the black 4 pin cable to the COM port on your computer and into the back of the handheld unit
- Turn on the unit and start simulator mode
    - From the Satellite page press the Menu button
    - See that **Start Simulator** is highlighted and press the Enter button
    - The Receiver Status Message will say **Simulating GPS**
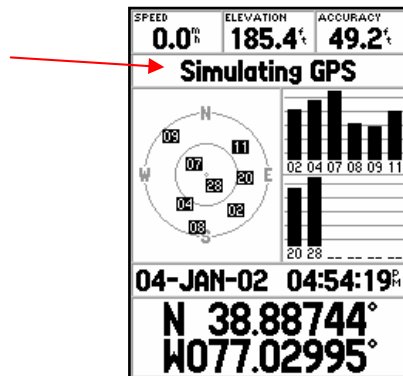
- From the Main Menu highlight **Setup** and press the Enter button
- Change the Serial Data Format from RTCM In/NMEA Out to **GARMIN**
- Scroll to the Interface tab
    - Highlight the **Serial Data Format**
    - Press the Enter button
    - Scroll to highlight **GARMIN**
    - Press the Enter button
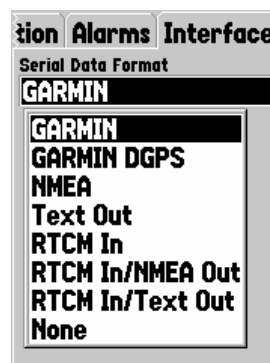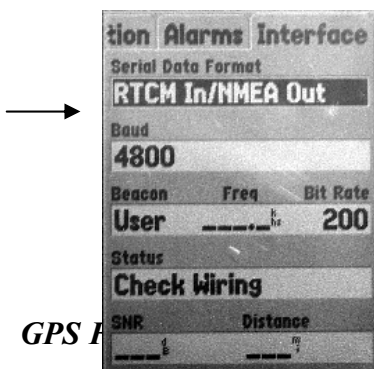
- Start ArcView
  - Open an existing project, or open the template
- Check to see if the DNR Garmin menu appears
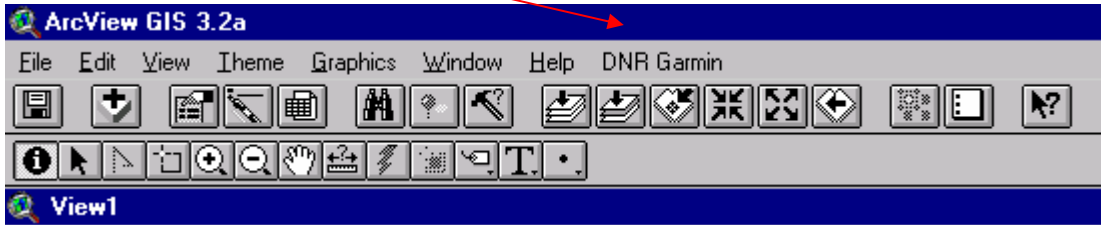
- If it does *not,* in ArcView turn on the DNR-Garmin-ArcView extension
  - From File choose **Extensions** (only if DNR Garmin is not it the Menu bar)
  - Scroll down to DNR Garmin – ArcView and check the box, click OK

- From the Menu bar click on **DNR Garmin**

Setting the Projection

- Select Set Projection – **if the box does *not* display UTM-1983 and your correct county zone (ie 18 or 19) you will have to change it**

Note: If this is the first time the DNR Garmin extension is used you **WILL** have to change the projection.
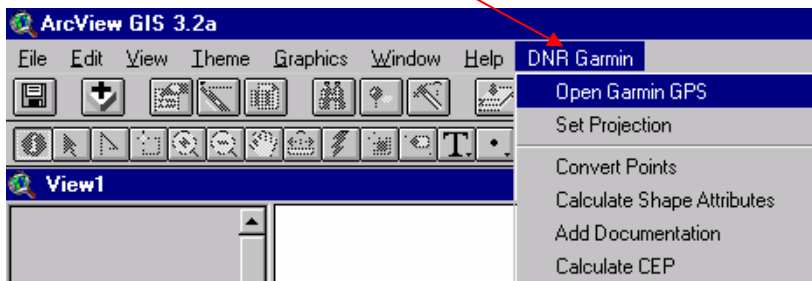
- If the information in the Use Default Projection box is **correct** click **Yes**
- If the information is **incorrect** click **No**, to change it
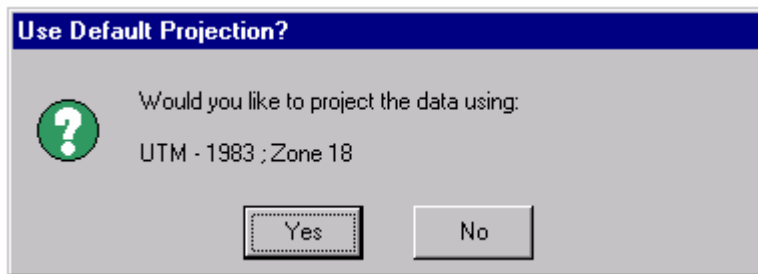
- The Projection Properties box appears
- Click the arrow next to Category and select **UTM-1983**
- Click the arrow next to Type and select your Zone (**18** or **19**)
- Click **OK**
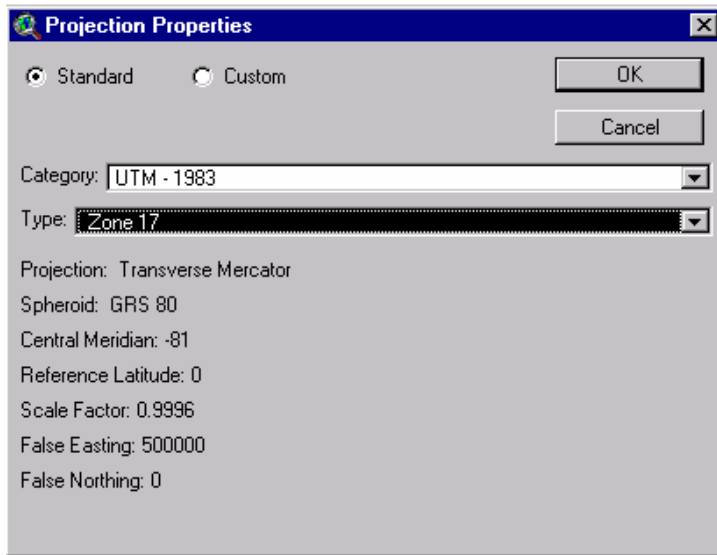
- Click on the **DNR Garmin** menu, then click on **Open Garmin GPS**

- A new MN DNR Garmin window will appear. In the bottom left hand corner you will see the unit connecting
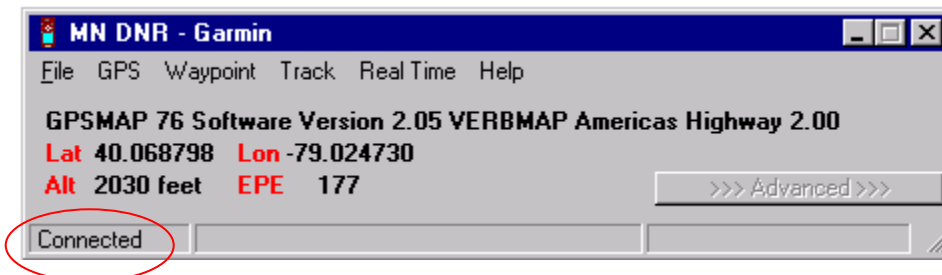
Downloading Points

- In the MN DNR Garmin window, click **Waypoint** and choose **Download**
  - You will see the points downloading in the MN DNR window and will hear two beeps from the handheld unit when the download is complete
- In the MN DNR Garmin window, click **File,** choose **Save As** and click on **ArcView Shapefile**
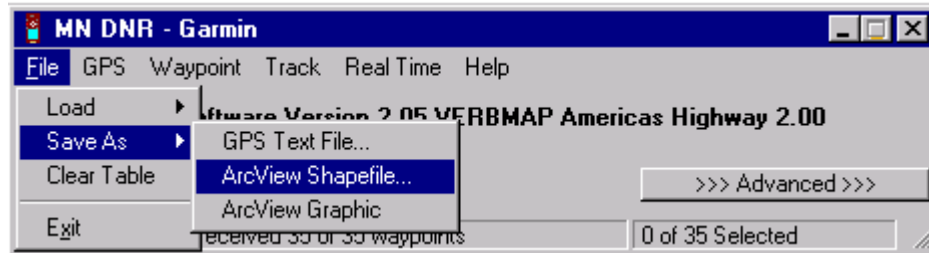
- A save as box appears
- Navigate to **F:\geodata\gps_data**
  - Save your points using the naming convention
    - <subject>_xd_ma countyFips code_yearmonthday
    - The subject will be the collector's name
    - xd will be used if the points are differentially corrected
    - x will be used if the points are *not* differentially corrected
    - Example: KParons_xd_ma015_20020712
  - Click **OK**

- The shapefile appears in the table of contents
- Click to put a checkmark in the box next to the theme to make it appear in your view
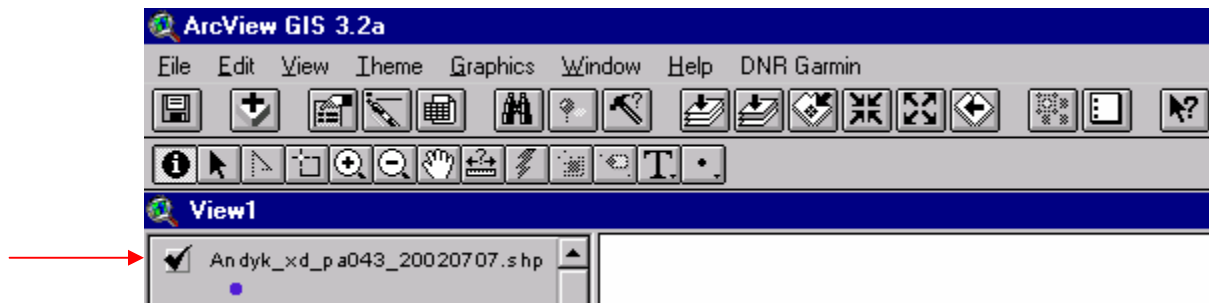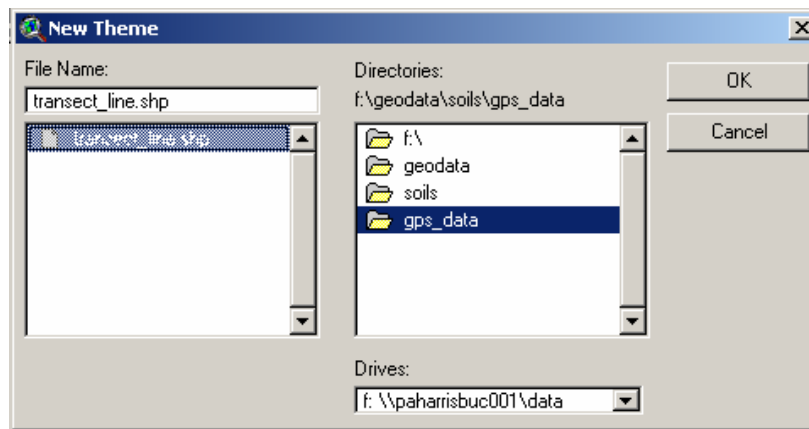
Make a polygon from GPS Points

The DNR Garmin extension allows users to create polygons from points collected with the Garmin unit. The software will connect the centers of each point creating an accurate polygon. Remember that your end results are only as good as the initial GPS data you collect.

- Make the GPS point theme active
- Using the select feature tool, select the points you want to use to make a polygon
  - Holding down the Shift key will allow you to select multiple feature
  - Points may also be selected using the GPS point theme table

- From the Menu bar click on **DNR Garmin** and select **Convert Points**
  - A Convert Points window will appear
  - In the Point Theme select your GPS point theme
  - From the Order Field select **Ident**
  - From Conversion Type choose **To Polygon**
  - From Output select **As Shapefile**
  - Click **GO**
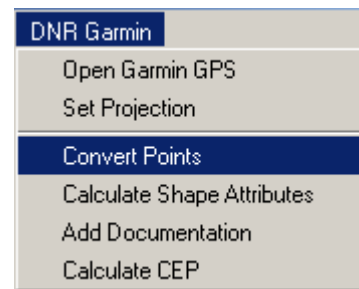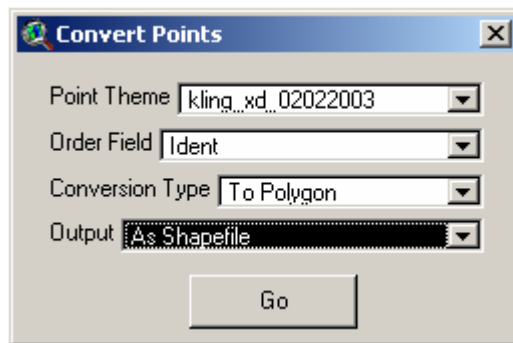
- Navigate to the GPS folder
- Name and save the file in the **GPS** folder under the **Soils**
  - It is important that you name your shapefile a meaningful name so you know what the shapefile is. **Do Not keep the default name of Polygon 1.shp**

- Your new theme appears in the table of contents of ArcView

Making a Point or Line Shapefile

In addition to creating polygons from GPS points, the DNR Garmin extension also allows you to create point or line features (shapefiles). This is helpful for marking an individual location such as a well or a grain bin or marking a linear feature such as a fence.

Making a Line

- This is done just like creating a polygon. Instead of selecting multiple points and making a polygon, multiple points are selected to make a line
- Select the points needed to create the line
- Click on the **DNR Garmin** menu and select **Convert Points**
- In the Convert Points window that appears select:
  - Point theme: The theme that contains the GPS points
  - Order Field: **Ident**
  - Conversion Type: **To Line**
  - Output: **As Shapefile**
  - Click **GO**
- Name and save the file to the correct location
- The new line theme now appears in your table of contents in ArcView

Creating a Point(s)

- Creating a point theme is a good way to show individual feature(s) such as a well or grain bin that do not have a linear component or for which a polygon is not appropriate
- Using the select feature button, select the point(s) that you want to make a new theme
- In ArcView click on the **Theme** menu and select **Convert to Shapefile**
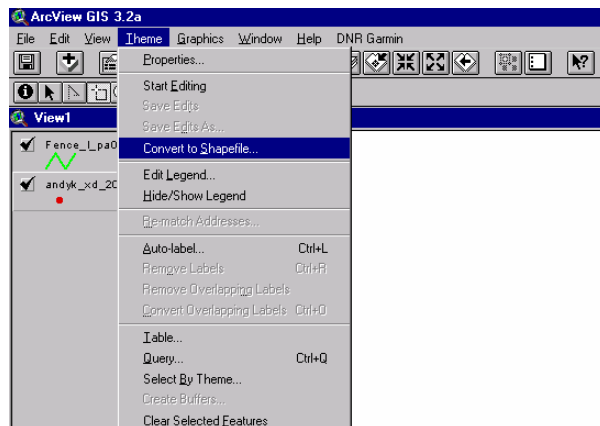
Selected Points

- Name the file and save it in the proper location
- Click **OK**
- Question: Add shapefile as theme to the view?
- Click **Yes**
- The new theme now appears in your table of contents

After Download

After you are done downloading GPS points, make sure that the unit is ready for the next user.

- Ensure that you have unplugged the battery pack from the differential receiver
- Recharge the battery pack
- Clear the memory on the handheld unit
    - From the Main Menu choose **Points** and press the Enter button
    - In the Points window choose **Waypoints** and press the Enter button
    - The Waypoint by Name screen appears with a list of points,
    - Press the Menu button
    - Scroll to **Delete All** and press the Enter button
    - Question: Do you really want to delete all waypoints?
   - Highlight **Yes** and press the Enter button
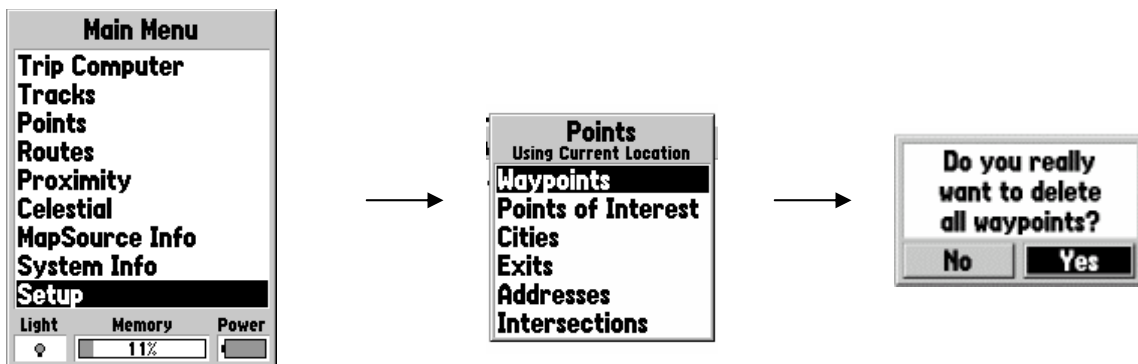
Uploading Points

In addition to downloading points, the DNR Garmin software allows users to upload previously saved GPS point data to the GPS unit. This is useful when trying to find a location that had been previously GPS-ed, or to locate points in the field that were planned in the office.

- Start ArcView (it is not necessary to be in a customer file)
- Add the GPS point theme from **F:\geodata\gps_data**
- From the DNR Garmin menu select Open Garmin GPS
- Using the select feature tool in ArcView, or selecting from the table, select all the points to be uploaded to the unit
- In the DNR Garmin window, from the File menu select **Load, WayPoints From,** then select **ArcView Theme**
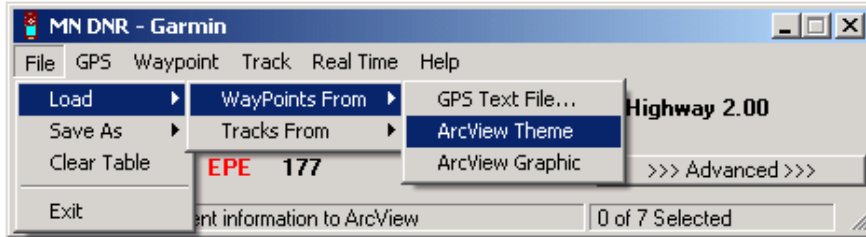
- The Export Waypoints from Shape dialog box appears asking for an identity input
- Select **Ident** from the list and click **OK**
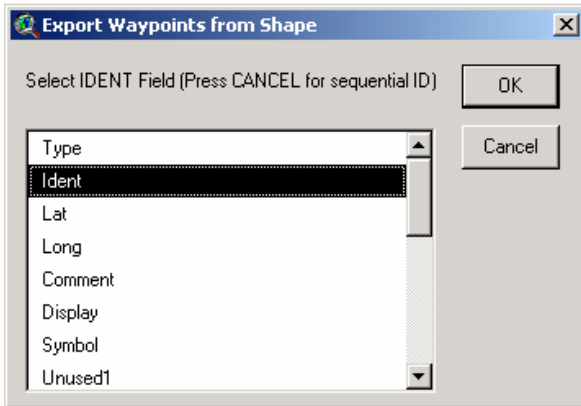
- The Export Waypoints from Shape dialog box appears again
- Click the **Cancel** button
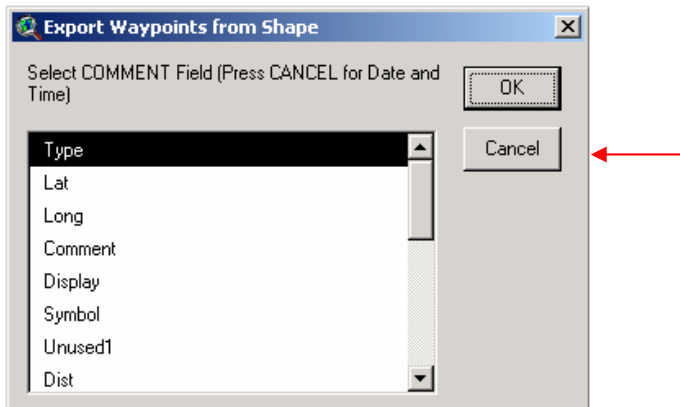
- In the DNR Garmin window from the Waypoint menu select **Upload**
- A window appears telling you the transfer is completed and the number of waypoints that were uploaded to the unit
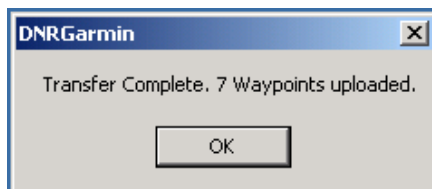

- The points are now saved back to the Garmin unit

Downloading Tracks

After you have collected track data, it can be downloaded and accessed in ArcView in three ways: a polygon, a line, or points.

- Prepare the handheld unit for downloading
- Start ArcView and open the DNR Garmin window
- In the DNR Garmin window from the Track menu select Download
- After the download is complete click on the Advanced button
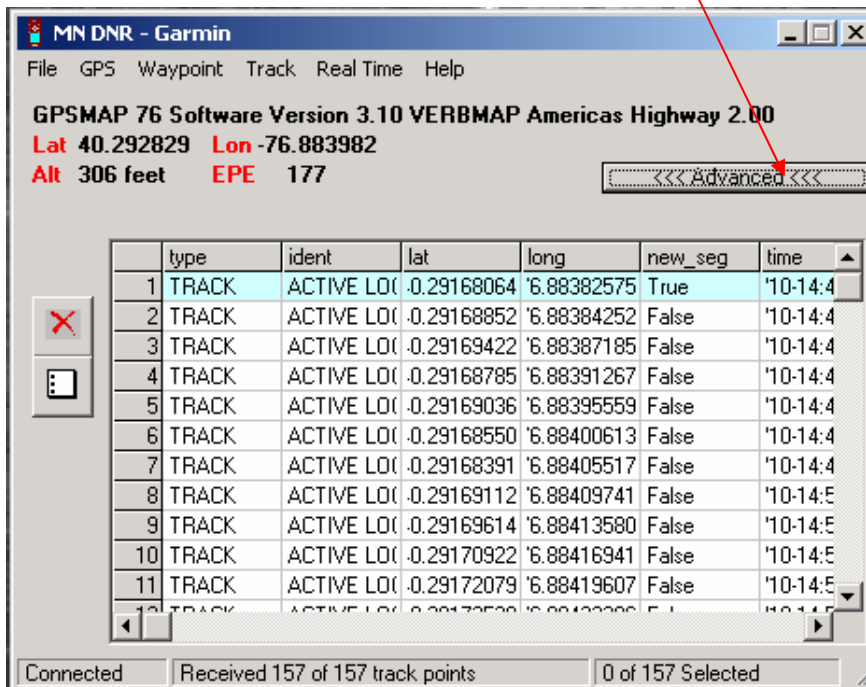
- The DNR Garmin window expands showing information about the track points
- Under the ident field you will see Active Log. The records containing Active log are the only records we want to keep. All records that do not contain Active Log must be deleted
- Every time a new track was started it appears in blue

• In order to select one track from the rest of the tracks in the unit, the other track points need to be deleted

• In the example on the previous page and below, we only want to keep rows 1 through 8, which is the first track

• Using the pointer hold down the shift key and select all points you do not want, by clicking on the row number. The rows will highlight in dark blue

	type	ident	lat	long	new_seg	time
1	TRACK	ACTIVE LO(	-0.29168064	'6.88382575	True	'10-14:4
2	TRACK	ACTIVE LO(	-0.29168852	'6.88384252	False	'10-14:4
3	TRACK	ACTIVE LO(	-0.29169422	'6.88387185	False	'10-14:4
4	TRACK	ACTIVE LO(	-0.29168785	'6.88391267	False	'10-14:4
5	TRACK	ACTIVE LO(	-0.29169036	'6.88395559	False	'10-14:4
6	TRACK	ACTIVE LO(	-0.29168550	'6.88400613	False	'10-14:4
7	TRACK	ACTIVE LO(	-0.29168391	'6.88405517	False	'10-14:4
8	TRACK	ACTIVE LO(	-0.29168567	'6.88377605	False	'10-14:5
9	TRACK	ACTIVE LO(	-0.29143983	'6.88372944	True	'10-14:5
10	TRACK	ACTIVE LO(	-0.29144008	'6.88372944	False	'10-14:5
11	TRACK	ACTIVE LO(	-0.29143295	'6.88376063	False	'10-14:5
12	TRACK	ACTIVE LO(	-0.29143002	'6.88379751	False	'10-14:5
13	TRACK	ACTIVE LO(	-0.29142482	'6.88383330	False	'10-14:5
14	TRACK	ACTIVE LO(	-0.29142097	'6.88387261	False	'10-14:5
15	TRACK	ACTIVE LO(	-0.29142415	'6.88391544	False	'10-14:5
16	TRACK	ACTIVE LO(	-0.29142675	'6.88395601	False	'10-14:5
17	TRACK	ACTIVE LO(	-0.29142432	'6.88399582	False	'10-14:5
18	TRACK	ACTIVE LO(	-0.29142080	'6.88403740	False	'10-14:5
19	TRACK	ACTIVE LO(	-0.29142046	'6.88409490	False	'10-14:5

• With the unwanted points highlighted click the delete button

• This will leave you with the track points associated with one track

• In the DNR Garmin window from the **File** menu select **Save as**, then **ArcView Shapefile**

• An Output Shape dialog box appears and asks you to define the output shape as a polygon, a line, or the track points

Output Shape

Please Define the Output Shape

○ Point
○ Line
● Polygon   OK
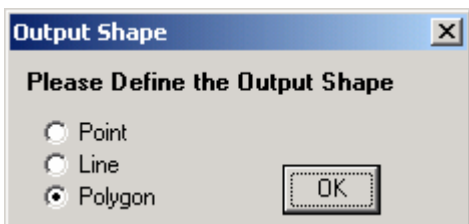
• Select the output you want and click OK

- If you have existing data in your view of the same feature type, you will be asked if you want to create a new shapefile or append to an existing one
- In most cases you will select **New Shapefile** and click OK
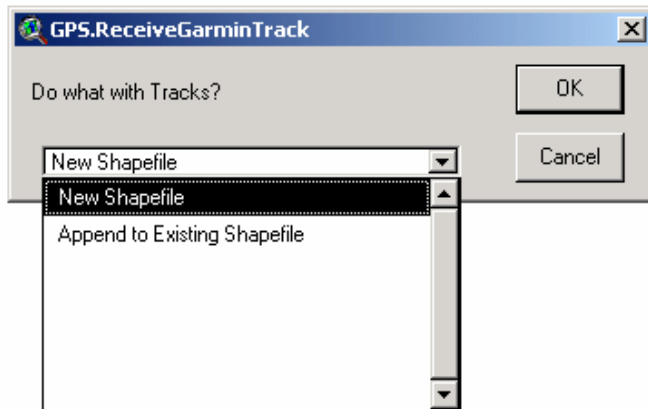
- Name and store your new file in the customer folder using a meaningful name **NOT track#**
- The new shapefile appears in your table of contents

- To save the second track out of the track log you must download the points again and delete those points that are not associated with the second track.

- The entire Active Log should be saved in the same manner that GPS points are saved. All track points taken in one day will be saved together in one file
- The file will be saved as **points** and will be named using the following naming convention
  - <collector's name>_T_xd_maFips code_yearmonthday
  - Example: kparsens_T_xd_pa043_20031018
- The only difference between naming track points and GPS points is the _T after the collector's name. This differentiates between points collected using the tracking feature and points collected as waypoints
- The file will be stored in the same location as all other GPS points
  - **F:\geodata\project_data\nrcs\gps_data**

Deleting Tracks

After tracks have been saved as a point file to the server they may be removed from the handheld unit.

- From the main menu highlight tracks and press the Enter button
- In the Tracks window that appears press the menu button
- A window appears highlight **Delete All Saved** and press the Enter button
- You are asked are you sure?
- Highlight **Yes** and press the Enter button

Data Management

Metadata

For every GPS shapefile you save create a metadata file that will accompany it. The metadata file is a text file that describes the data you have created. It will contain information such as the date that the file was created, who created the file, datum information, projection information, subject, what the data really is, etc.
• The metadata file will be created by using an extension for ArcView called **Metadata Builder**

Using Metadata Builder

• Check to see the **Metadata** menu appears in the ArcView menu bar
• If it does *not*, in ArcView turn on the Metadata Builder extension
     • From the File menu choose Extensions
     • Scroll down to Metadata Builder and check the box, click **OK**
• Ensure that the theme you are going to create the metadata for is the active theme
• From the **Metadata** menu and select **Make Metadata File**

• The Make Metadata File window that appears, complete all of the information boxes. In some data boxes you are given default choices to choose from; to choose these, click on the arrow on the right side of the box and click on the appropriate information
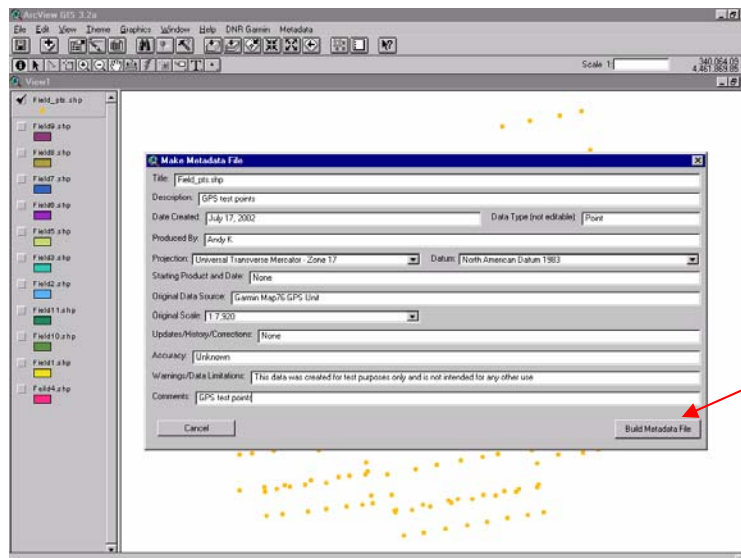
- After all the data boxes have been filled in, click on the **Build Metadata File** button in the bottom right hand corner. This completes the creation of the metadata file
- The metadata file can be edited or viewed by clicking on Metadata in the menu bar and choosing either edit metadata file or view metadata file
- The metadata file is a .txt file located in the same location that the original theme is saved. The metadata file will have the same name as the original source file with and additional _metadata.txt on the end

Note: Sometimes you cannot view the metadata file immediately after making it. This can be eliminated by saving the project, then viewing the metadata.
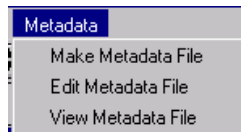

Naming and Storing Files

Naming conventions are subject to change due to requirements of Toolkit etc. Below is a place to start.

Correctly naming your files and storing them in the proper location will help to guarantee that your files are being backed up. This will help to keep data from being lost, saving you time and frustration in the future. Any files that you create that are permanent MUST be saved in the customer's folder or the server with a meaningful name.
- GPS point files
  - The naming convention for these files will be:
    - <collectors name>_ma countyFips code_yearmonthday
    - Example: kparsons_ma015_2002072002

- GPS track files
- GPS points collected using the tracking feature will be saved using the same naming convention as regular GPS points with **ONE EXCEPTION**. After the collectors name a **_T** will be placed indicating that these points were collected using the tracking feature.
  - Naming convention for track files
    - <collector's name>_T_ma countyFips code_yearmonthday
    - Example: kparsons_T_ma043 20031018

- GPS point and track files will be stored in the **gps_data** or the customer's folder on the server
  - **F:\geodata\gps_data or the customer' folder**

- Shapefiles that are created from a GPS point file will be stored in the correct project file on the server

Trouble Shooting

• *The DNR Garmin extension will not open. Two error messages will be displayed.*
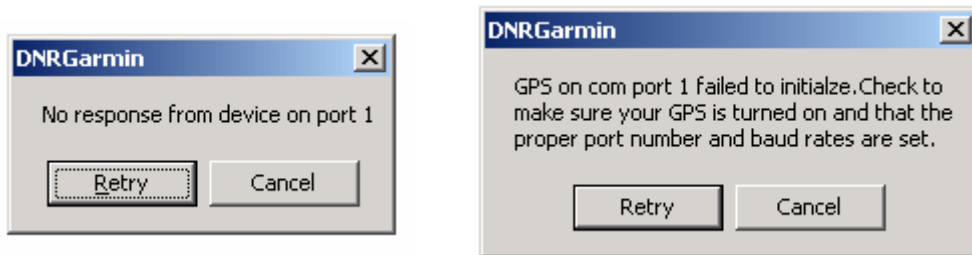
Possible Solutions

• Ensure the GPS handheld unit is turned on and in simulator mode and the Serial Data Format is set to **GARMIN**

• Check to ensure the black download cable is correctly seeded in the com-port and handheld unit

• From the DNR Garmin window, under the GPS menu. select Assign Port and Select Port 2. (Most desktop computers will have two serial ports in the back, selecting port 2 will tell the software to look for information from port 2 rather than port 1)
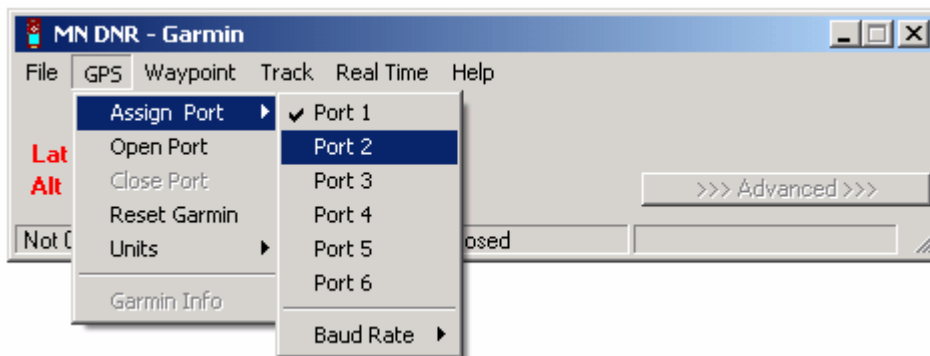
• *The Garmin unit will not turn on.*

Possible Solutions

• Check to see if the handheld unit contains batteries, and replace if necessary

• Ensure that both grey cables from the differential wire bundle are correctly connected and inserted correctly into the back of the handheld unit

• *The Garmin unit is not receiving a differential signal. (You will observe an uncharacteristically high number in the Accuracy box, the receiver status message will not read Differential, and/or the D's in the signal strength bars are absent)*

Possible Solutions
• Check the bit rate and frequency settings to confirm you have selected the correct base station for your location within the state
• Check to see that the battery is charged and correctly seeded in the connector
• Ensure the grey cables are correctly connected
• Check the component cables attached to the differential receiver, making sure each is properly connected
• Ensure that the differential receiver is getting power, by confirming there is text in the display window on the receiver

Note: Some locations in the state will not be able to receive a differential signal due to topography or lack of sufficient signal strength from a base station. Noted areas have been in the Northeast, Northwest, and the Southwest corners of the state.

• *There is no message displayed on the differential receiver when the battery is plugged in.*

Possible Solutions
• Recharge the battery, to ensure that the battery is not dead
• Check wires to see that all are correctly connected
• Check to see if indicator light on battery connection is illuminated

• *The indicator light is not illuminated during charging of the battery or during connection of the battery and the differential unit.*

Possible Solutions
• Check fuse in the male adaptor in either the charging unit or the batter connector unit. Replace fuse if blown