GETTING STARTED GUIDE

GPS Pathfinder® Office software

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GPS Pathfinder Office® software

Version 4.10
Revision A
March 2008
Part Number 34231-33

Trimble®

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10355 Westmoor Drive
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Westminster, CO 80021
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This is the March 2008 release (Revision A) of the *GPS Pathfinder Office Software Getting Started Guide*, part number 34231-33. It applies to version 4.10 of the GPS Pathfinder Office software.

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GPS Pathfinder Office software

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Contents

CHAPTER

1

Introduction

In this chapter:

Welcome to the *GPS Pathfinder Office Software Getting Started Guide*. This guide describes how to get started using the Trimble® GPS Pathfinder® Office software. It provides:

- software registration and installation information
- detailed information about the windows, toolbars, and menus in the software
- a tutorial providing step-by-step instructions for the main functions of the software
- a troubleshooting section

Even if you have used other Global Positioning System (GPS) products before, Trimble recommends that you spend some time reading this guide to learn about the special features of this product.

If you are not familiar with GPS, go to the Trimble website (www.trimble.com/GPS) for an interactive look at Trimble and GPS.

This guide assumes that you are familiar with the Microsoft® Windows® operating system that you are using.

About the GPS Pathfinder Office software

The GPS Pathfinder Office software, together with its associated utilities, provides all the functionality you need to manage and process data collected using Trimble Mapping and GIS data collection systems. It provides the tools you need to correct, view, and edit Global Positioning System (GPS) data collected in the field, and to export it in a format suitable for your GIS, CAD, or database system.

The GPS Pathfinder Office software enables you to:

- create separate projects, letting you manage the data associated with these projects effectively and conveniently
- construct and edit data dictionaries, which are used to control the data collection operation and ensure that the collected data is complete, accurate, and compatible with your GIS, CAD package, or database
- convert data from a GIS, CAD package, or database format to the Trimble SSF format so that you can take the data back into the field to check and update it
- transfer files to and from field computers running data collection software
- edit collected data in the office
- display collected data in the office against multiple background files in vector or raster formats, including images from an ArcIMS or OpenGIS Web Map Server
- process the GPS data to improve its positional accuracy, including data collected using a GPS receiver that has H-Star™ technology

- export the collected, processed, and edited data to a GIS, CAD, or database format
- produce a scaled plot as a paper record of the data

Related information

Other sources of related information are:

- Help – The software has built-in, context-sensitive online Help that lets you quickly find the information you need. Access it from the Help menu. Alternatively, click the Help button in a window, or press F1.
- Release Notes – The release notes describe new features in this version of the software and any changes to the documentation, and provide any information not included in the product documentation. The release notes are provided in the box with the software. They are also provided as a PDF file on the *GPS Pathfinder Office Software CD* and are installed in the program directory (typically C:\Program Files\Trimble\GPS Pathfinder Office) when you install the software
- Website – For related information about the GPS Pathfinder Office software, go to the Trimble website (www.trimble.com/pathfinderoffice.shtml).
- Trimble training courses – Consider a training course to help you use your GPS system to its full potential. For more information, go to the Trimble website at www.trimble.com/training.shtml.

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Technical support

Go to the GPS Pathfinder Office software technical support page (www.trimble.com/pathfinderoffice_ts.asp) on the Trimble website for the latest support information about the software, including:

- FAQs
- support notes detailing the latest support issues
- documentation
- the latest files available for download

Windows error reporting

If for any reason a Microsoft Windows Error Reporting dialog appears, indicating that the GPS Pathfinder Office software has encountered a problem and needs to close, you are asked whether you wish to send an error report to Microsoft.

Trimble recommends that you click **Send** and then click any subsequent links that are used to obtain additional information.

Trimble can access the report that is sent to Microsoft and use it to improve the GPS Pathfinder Office software.

Your comments

Your feedback about the supporting documentation helps us to improve it with each revision. E-mail your comments to ReaderFeedback@trimble.com.

CHAPTER

2

Software Installation

In this chapter:

This chapter describes how to install version 4.10 of the GPS Pathfinder Office software for the first time.

To install the GPS Pathfinder Office software, you must:

1. Make sure your computer meets the minimum platform requirements for successful operation of the GPS Pathfinder Office software.
2. Register your copy of the GPS Pathfinder Office software and obtain an installation code.
3. Install the software using the *GPS Pathfinder Office Software CD* and the installation code you obtained when you registered your copy of the software.

Compatible GPS systems

Version 4.10 of the GPS Pathfinder Office software is compatible with the following current Trimble GPS systems:

- GPS Pathfinder ProXRT receiver
- 5800 GPS receiver, or Trimble R8 GPS system with TerraSync™ software
- a GeoExplorer® series handheld (a GeoXH™, GeoXT™ or GeoXM™ handheld) with TerraSync software or the Trimble GPScorrect™ extension for ESRI ArcPad software
- a Juno™ ST handheld with TerraSync software or the Trimble GPScorrect extension for ESRI ArcPad software
- a Trimble Nomad™ handheld with TerraSync software or the Trimble GPScorrect extension for ESRI ArcPad software
- a Trimble Recon GPS XB or XC edition with TerraSync software or the Trimble GPScorrect extension for ESRI ArcPad software
- a GPS Pathfinder series receiver (a ProXH™, ProXT™, Pro XRS, XB, or XC receiver), with TerraSync software or the Trimble GPScorrect extension for ESRI ArcPad software
- Trimble Reference Station (TRS™) software
- GPSBase software

Platform requirements

The minimum platform requirements to ensure successful operation of the GPS Pathfinder Office software are:

- an Intel x86 architecture
- 160 MB of free disk space for a standard installation (with additional space for data files)
- one of the following Microsoft operating systems, including 64-bit variants:
  - Windows Vista® (Ultimate Edition, Enterprise Edition, Business Edition, or Home Edition)
  - Windows XP (Professional Edition, Home Edition, or Tablet PC Edition SP 2)
  - Windows 2000 Professional (SP 3)
  - Windows Server® 2003
- Internet Explorer version 6.0 or later
- a USB serial port (for communicating with a field computer running data collection software)

Note – *If you want to transfer data files to or from a device powered by the Windows Mobile® operating system, and you are using a Windows XP or 2000 operating system, make sure you have installed the appropriate version of Microsoft ActiveSync technology. If you are using Windows Vista, a connectivity driver for Windows Mobile powered devices is included with your operating system.*

Registering the GPS Pathfinder Office software

Before you can install the GPS Pathfinder Office software, you must register your copy of the software to obtain an installation code that you enter during the installation process.

You can only register your copy of the GPS Pathfinder Office software once. For information about obtaining your installation code when the software has already been registered, see Obtaining your installation code after registration, page 25.

Trimble recommends that you register ***before*** beginning installation.

To register, you need:

- the Proof-of-Purchase Number (POPN) from the GPS Pathfinder Office software packaging

  The Proof-of-Purchase Number (POPN) is labelled "POPN" and is located on the product label inside the software folder, below the software CD.

- Internet access (including a valid e-mail address)

Note – *If you do not have Internet access, contact your local Trimble reseller for assistance.*

To register your copy of the GPS Pathfinder Office software:

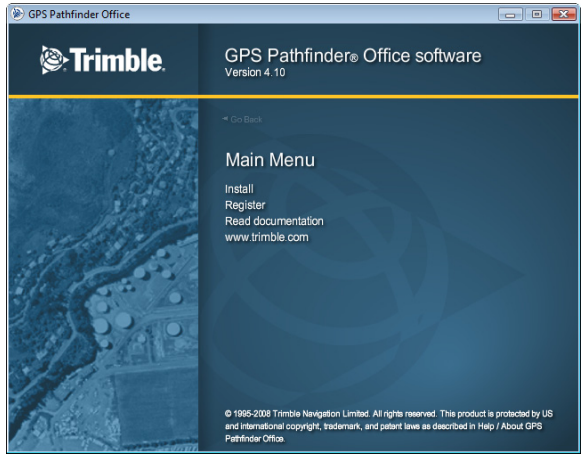
1. Go to the My Trimble account login page.

   To do this, open your Web browser and go to www.trimble.com/register.

   Alternatively:

   a. Insert the *GPS Pathfinder Office Software CD* in the CD drive of the office computer.

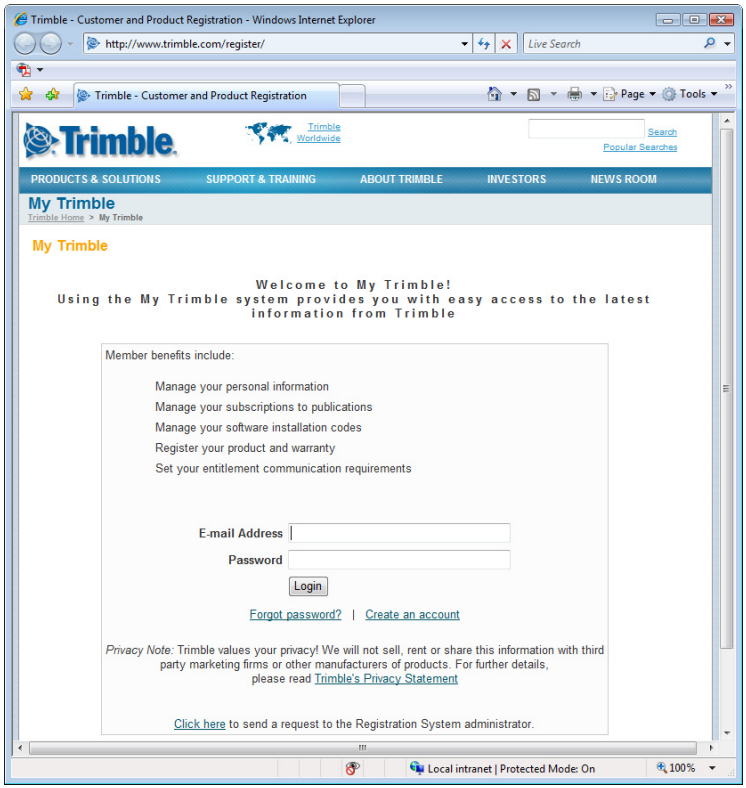
The Setup screen appears:



Note – *If this screen does not appear, select Autorun.exe from the CD drive folder.*

b. Click *Register.*

Your default Web browser opens and displays the My Trimble account login page:

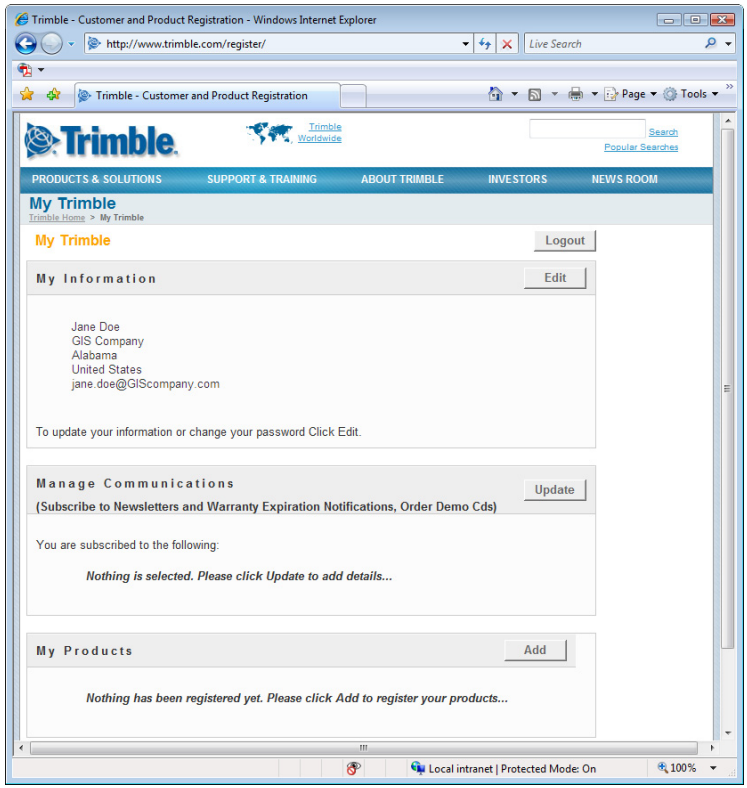


2. If you already have an account, skip this step and go to step 4 to log in.

   To create your My Trimble account, click *Create an account*. Enter your contact details and then click **Save**. Your account is created and you are returned to the My Trimble account login page.

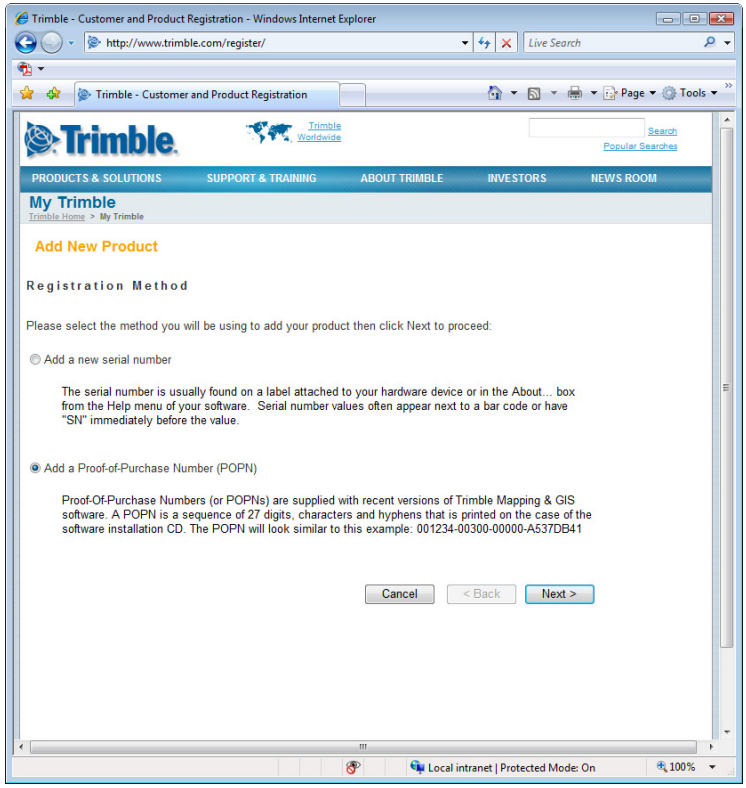
3. Enter your e-mail address and password, and then click **Login**.

The *My Trimble* page for your account appears. It will look similar to the one shown below:



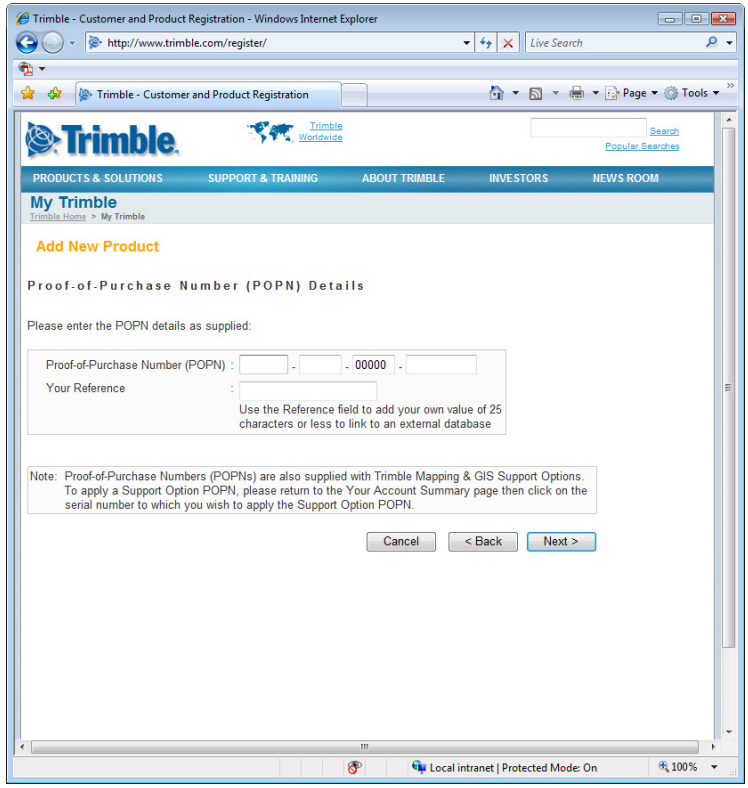
4. To register the GPS Pathfinder Office software, scroll to the *My Products* section and then click **Add**.

The *Registration Method* page appears:



5. Select the *Add a Proof-of-Purchase Number (POPN)* option and then click **Next**.

The *Proof-of-Purchase Number (POPN) Details* page appears:



6. Enter the Proof-of-Purchase Number (POPN) provided on the GPS Pathfinder Office software packaging. The POPN is located on the product label inside the software folder, below the software CD.

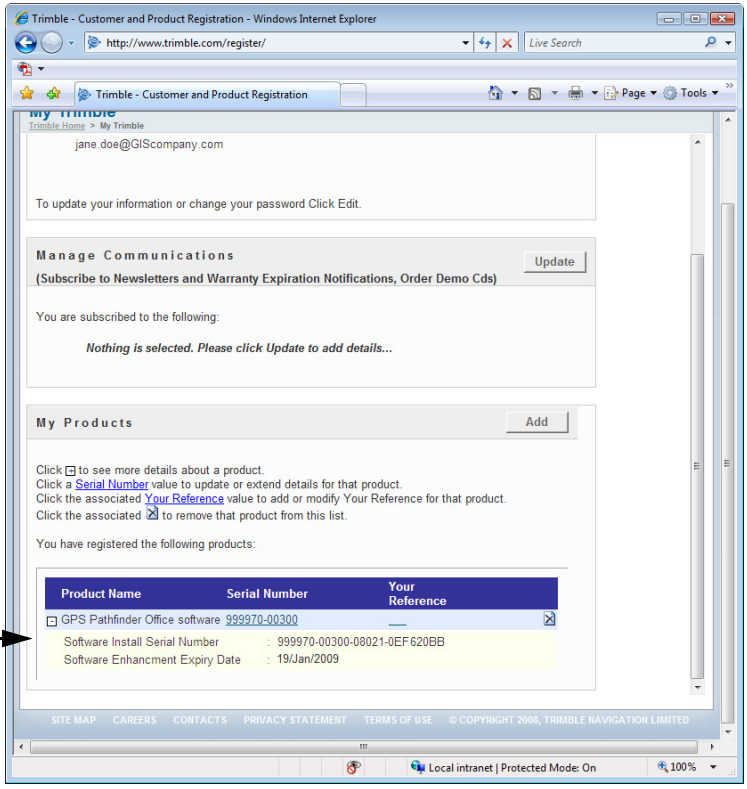
7. If you want to enter your own reference code, for example a sales order number or an asset/inventory number, enter it in the *Your Reference* field.

8. Click **Next**.

Note – *If a message warns that the POPN you entered has already been registered, click* ***Cancel*** *to cancel the registration process. Then obtain the installation code for your copy of the software and install the software. For more information, see* *Obtaining your installation code after registration, page 25*.

9. If this is the first time that you have registered a Trimble Mapping and GIS product, the *Mapping & GIS Industry Details* page appears. From the drop-down lists, select your organization type and most common market segment and then click **Save**.

   You are returned to your My Trimble page, where the software you have just registered now appears in the My Products section:



10. If the two lines below the GPS Pathfinder Office software do not appear, click the + beside the copy of the GPS Pathfinder Office software that you have just registered.

    The *Installation Code* field shows the installation code for your copy of the GPS Pathfinder Office software. Make a note of this code. You must enter this code when you install or reinstall the software.

Note – *If you are entitled to an upgrade from a previous version of the GPS Pathfinder Office software, you can install GPS Pathfinder Office version 4.10 using the installation code that you obtained when you first registered the product. If you are* ***not*** *entitled to an upgrade, the installation program will not accept your installation code. Contact your local Trimble reseller to purchase a software maintenance option.*

Obtaining your installation code after registration

To reinstall the GPS Pathfinder Office software, for example if you uninstall it from one computer and want to reinstall it to another, you must use the same installation code that you received when you registered the software before installing it for the first time.

If you do not know the installation code, do one of the following:

- If someone else at your company registered the software ask them for the installation code.

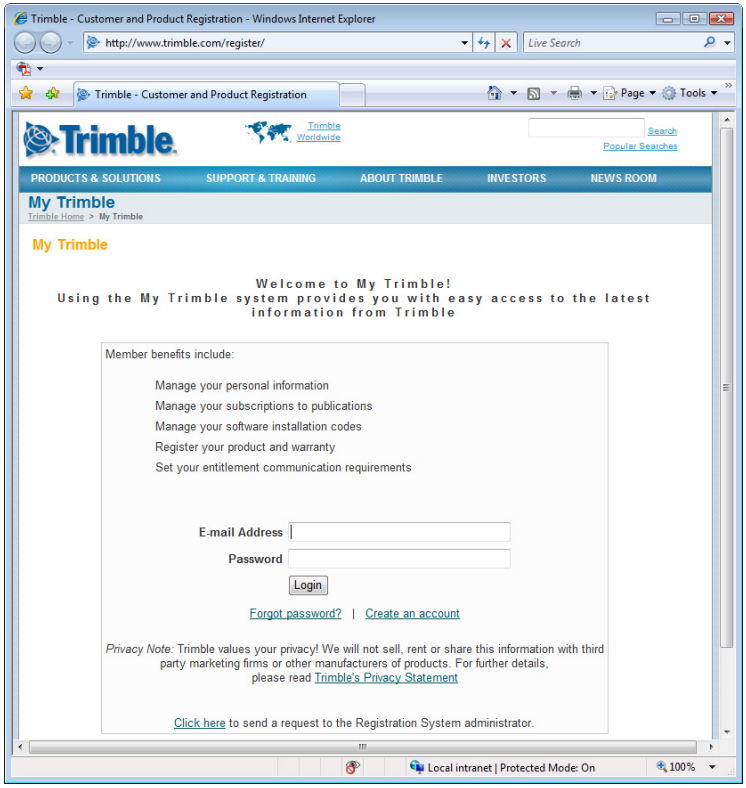
  If you cannot find out who registered the software, send an e-mail containing the Proof-of-Purchase Number (POPN) for your copy of the software to Trimble_support@trimble.com.

- If you registered your copy of the software yourself, you can check your installation code from the My Trimble page of the Trimble website.

To do this:

a. Open your Web browser and go to www.trimble.com/register.

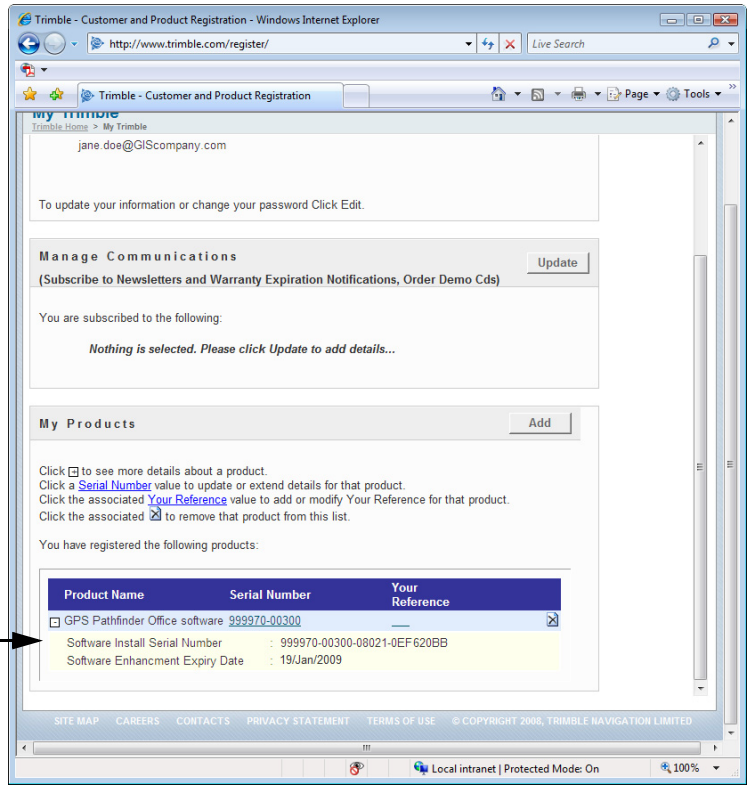
Your default Web browser opens and displays the My Trimble account login page:



Enter your e-mail address and password and then click **Login**.

The *My Trimble* page for your account appears.

b. Scroll to the My Products section, where any software that you have already registered appears:



c. If the two lines below the GPS Pathfinder Office software do not appear, click the + beside the copy of the GPS Pathfinder Office software that you have just registered.

The *Installation Code* field shows the installation code for your copy of the GPS Pathfinder Office software. Make a note of this code. You need to enter this code when you install or reinstall the software.

Installing the GPS Pathfinder Office software

To install the GPS Pathfinder Office software, the computer must have a CD-ROM drive, or have access to a CD-ROM drive over a network.

Before you begin

Before you begin the installation process, make sure that:

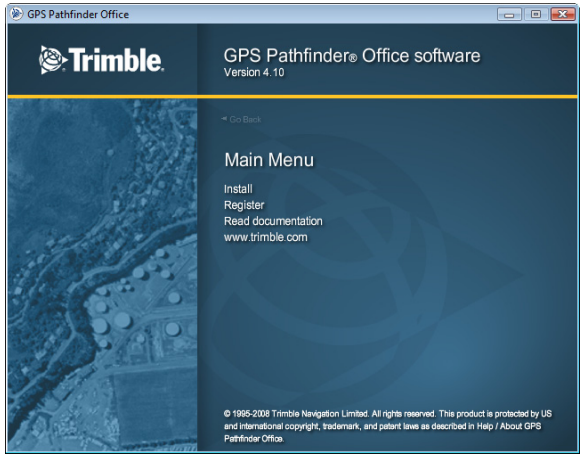
- The computer meets the minimum requirements for installing the GPS Pathfinder Office software. For more information, see Platform requirements, page 17.
- You have registered your copy of the software and have made a note of the installation code that you must enter during installation. For more information, see Registering the GPS Pathfinder Office software, page 18.
- You have uninstalled any existing copy of the software from your computer.

Running the installation program

To install the GPS Pathfinder Office software:

1. Insert the *GPS Pathfinder Office Software CD* in the CD drive of the office computer.

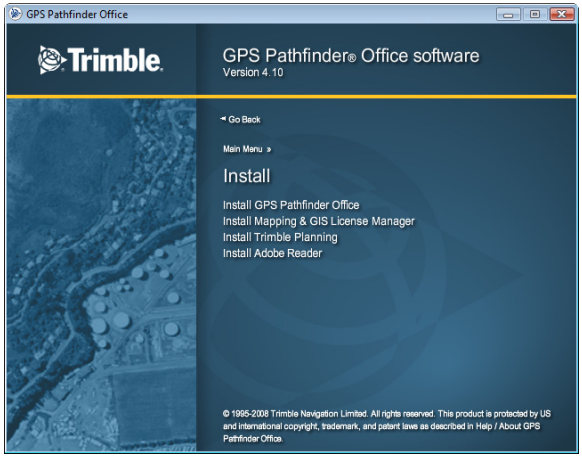
   The Setup screen appears:



Note – *If this screen does not appear, select Autorun.exe from the CD drive folder.*

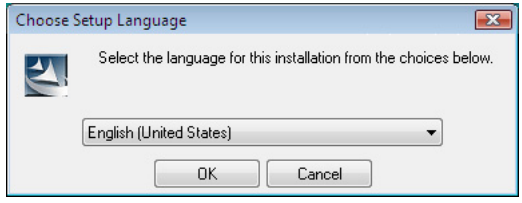
2. Click *Install*.

The Installation screen appears:



3. Click *Install GPS Pathfinder Office*.

   The *Choose Setup Language* dialog appears:



4. Select the language that you require to run the installation. To run the rest of the GPS Pathfinder Office software in a language other than English, after installing the software you must download the appropriate language update from the Web using the Updater utility. For more information, see Step 16 below.

5. Click **Next**.

6. In the *GPS Pathfinder Office InstallShield Wizard* click **Next**.

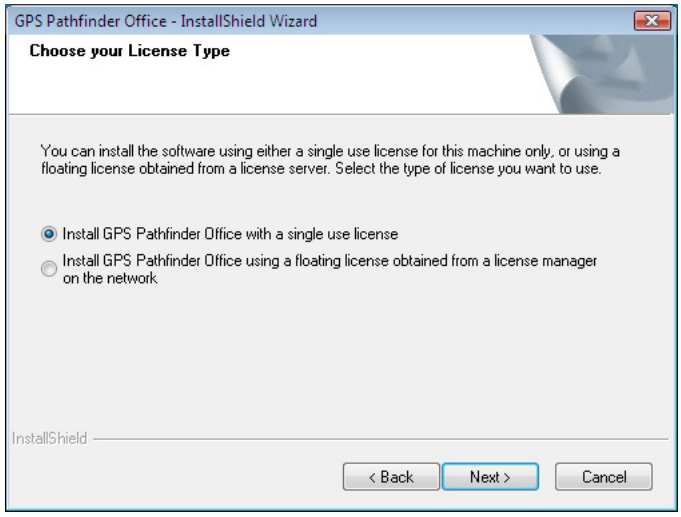
7. If you have previous versions of the GPS Pathfinder Office software installed on your computer, a message box appears listing any previous versions. Click Yes to uninstall the previous

versions of the software. An uninstaller for each previous version found appears. Work through each step in the uninstaller and then return to the *GPS Pathfinder Office InstallShield Wizard*.

8. Read the software license agreement and then click **Yes** to accept it.

9. Enter your user name and your company name and then click **Next**.

   The *Choose your License Type* page appears:



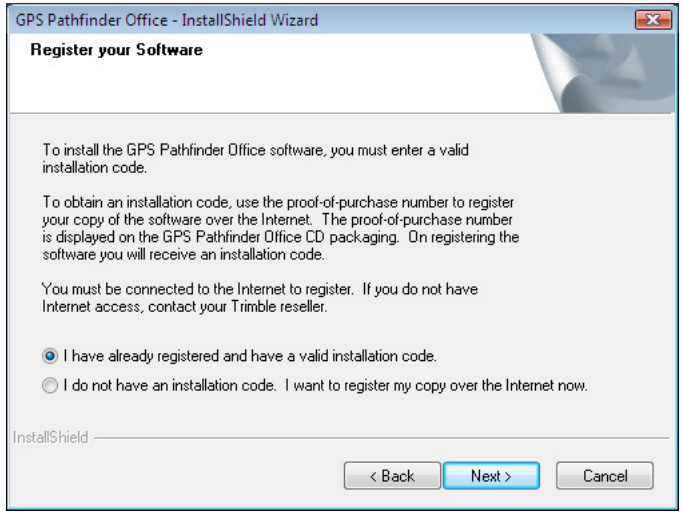
10. To install the software using a:

    – license that is for your copy of the software only, select the *Install GPS Pathfinder Office with a single use license* option and then click **Next**.

    – floating license obtained from the Mapping & GIS License Manager software, select the *Install GPS Pathfinder Office using a floating license* option and then click **Next**.

Tip – You can change from a single use license to a floating license, and vice versa, at any time using the GPS Pathfinder Office License Administrator software. For more information search for the topic **License Administrator** in the *GPS Pathfinder Office Software Help*.

The *Register your Software* page appears:



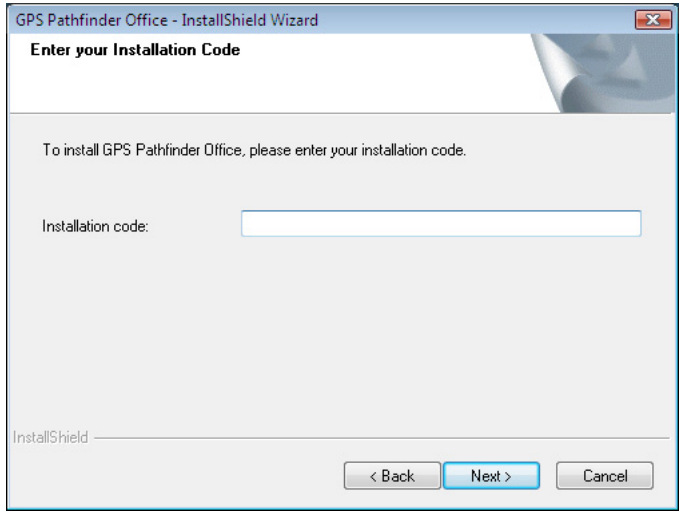
11. Do one of the following:

    – If you have registered the software and obtained your installation code for the software, select the *I have already registered* option and then click **Next**.

    – If you have not yet registered the software and do not have an installation code for the software, select the *I do not have an installation code. I want to register my copy over the Internet now* option and then click **Next**.

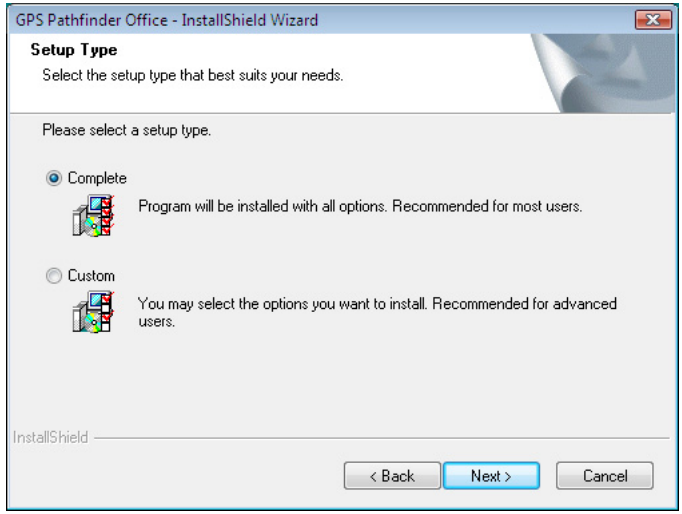
      The Register page opens in your default Web browser, displaying the My Trimble account log in. For more information, see Registering the GPS Pathfinder Office software, page 18.

The *Enter your Installation Code* page appears:



12. Enter the installation code assigned to your copy of the GPS Pathfinder Office software when you registered the software and then click **Next**.

    The *Setup Type* page appears:



13. Select how you want to set up the software. To install:

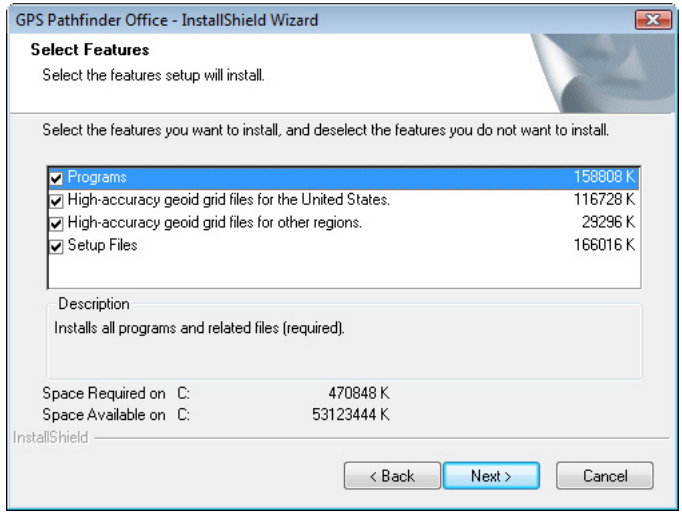
    – the default setup of the software, select *Complete* and then click **Next**.

    – a custom setup of the software, select *Custom* and then click **Next**. Then do the following:

        a. In the *Choose Destination Location* page, select the folder where the setup will install the program files and then click **Next**.

        b. In the *Choose Trimble Shared Files Folder* page, select the folder where the setup will install common components used by the GPS Pathfinder Office software and other Trimble software products and then click **Next**.

        c. In the *Select Features* page, select the features you want to install, and deselect the features you do not want to install:



In the list of components, clear the check box beside any components you do not want to install. For more information about any component, highlight it in the list. The Description field below the list provides a brief description of the highlighted component.

By default, all components are selected, and this is equivalent to selecting the *Complete* option in the *Setup Type* page.

d. Click **Next**.

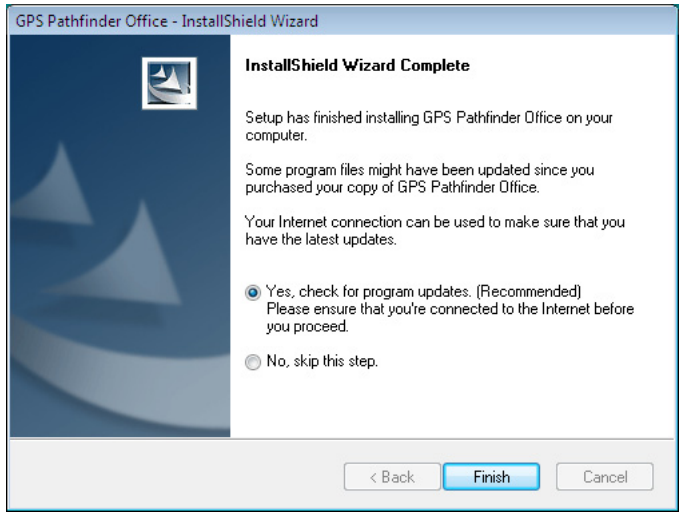
e. In the *Upgrade Coordinate Systems* page, make sure the check box is selected and then click **Next**.

f. In the *Select Default Project Folder* page, select the default folder under which projects will be created and then click **Next**.

14. Select whether you want the Project Changer and Connection Manager utilities to automatically start each time you restart your computer, and then click **Next**.

15. The *Start Copying Files* page appears. Click **Next**.

The final page of the installation wizard shows *InstallShield Wizard Complete*:



16. Trimble recommends that you click the *Yes, check for program updates* option and then click **Finish**.

    The GPS Pathfinder Office Updater utility appears. Use the utility to download the latest software updates and documentation from the Trimble website.

    If you selected a language other than English in the *Choose Setup Language* dialog (see Step 4 above), and you want to run the rest of the GPS Pathfinder Office software in that language, the Updater utility checks for available language files in the appropriate language.

    Once you download files, you can install them immediately, or you can run the Updater utility later and select the downloaded files that you want to install.

Updating the GPS Pathfinder Office software

Trimble recommends that you check for software updates during the installation process (see Step 16, page 36).

To check for software updates at any other time, do one of the following:

- From the Windows Start menu, select *All Programs* / *Trimble* / *GPS Pathfinder Office* / *GPS Pathfinder Office Updater*.
- From the GPS Pathfinder Office main window, select *Help* / *Check for new GPS Pathfinder Office updates now*.

For more information about the GPS Pathfinder Office Updater utility, refer to the *GPS Pathfinder Office Updater Utility Help*.

Managing licenses for the GPS Pathfinder Office software

The Trimble Mapping & GIS License Manager software enables you to manage floating licenses for Trimble Mapping and GIS software products. You can use the Mapping & GIS License Manager software to:

- View floating license information
- Add new or updated licenses

The Mapping & GIS License Manager is installed on a network computer and communicates with the client machine where the License Administrator software is installed (see GPS Pathfinder Office License Administrator software, page 38).

Installing the Mapping and GIS License Manager software

1. Insert the *GPS Pathfinder Office Software CD* in the CD drive of the network server computer.

   The Setup screen appears.

   If this screen does not appear, select Autorun.exe from the CD drive folder.

2. Click *Install*.

   The Installation screen appears.

3. Click *Mapping & GIS License Manager*.

4. The Mapping & GIS License Manager installation wizard appears.

   Follow the instructions on the screen to install the Mapping & GIS License Manager software.

Mapping and GIS License Manager Help

The *Mapping & GIS License Manager Help* is installed on the server machine with the Mapping & GIS License Manager software. It provides detailed information about using the software.

To view the Help, click the **Help** button provided in the *Mapping & GIS License Manager* window, or click **Start** on the Windows taskbar, and then select *All Programs* / *Trimble* / *Mapping & GIS License Manager* / *License Manager Help*.

GPS Pathfinder Office License Administrator software

The GPS Pathfinder Office License Administrator software is installed on the client machine when you install the GPS Pathfinder Office software.

The GPS Pathfinder Office License Administrator displays information about the type of license used by your copy of the GPS Pathfinder Office software. It also enables you to:

- Change the license manager that the GPS Pathfinder Office software obtains its license from.

  For example, the license manager may be reinstalled on a different computer.

- Change from a single use license to a floating license, and vice versa.

  For example, if you take your PC to a site office for several days of field work, the GPS Pathfinder Office software will not be able to communicate with the License Manager to obtain a floating license. To avoid this, change to a single use license. You can change it back once you return to the office.

For more information, search for the topic **GPS Pathfinder Office License Administrator** in the *GPS Pathfinder Office Software Help*.

CHAPTER

3

Basics of Operation

In this chapter:

This chapter describes the utilities, windows, toolbars, and menu commands that comprise the GPS Pathfinder Office software.

Starting the GPS Pathfinder Office software

To start the GPS Pathfinder Office software, do one of the following:

- From the Windows *Start* menu, select *All Programs* / *Trimble* / *GPS Pathfinder Office* / *GPS Pathfinder Office*.
- Double-click the GPS Pathfinder Office shortcut icon on the desktop:

- The software opens and displays the main GPS Pathfinder Office application window (see Features of the application window, page 43).

Setting the time zone

The first time you start the GPS Pathfinder Office software, you are asked to set the time zone. It is important to configure GPS Pathfinder Office for the local time zone. If you do not, the time records in field data files display as GPS time, which approximates Greenwich Mean Time. For more information, see Exercise 1: Configuring the GPS Pathfinder Office software, page 64.

Selecting a project

When you first start the GPS Pathfinder Office after installation, the *Select Project* dialog appears.

A project consists of a set of folders on the computer that store the data files for a particular job. Projects let you separate the data into different areas on the computer so you can keep track of different jobs separately.

By default, all GPS Pathfinder Office software projects are located in the GPS Projects folder. The location of the GPS Projects folder depends on the type of Microsoft operating system running on your computer. If it uses the:

- Windows Vista operating system, the GPS Projects folder is located in the C:\Users\<username>\Documents folder.

- Windows XP or Windows 2000 operating system, the GPS Projects folder is located in the C:\Documents and Settings\<username>\My Documents folder.

Note – *If you are using version 4.10 of the GPS Pathfinder Office software on a computer that had a version earlier than version 4.00 of the GPS Pathfinder Office software installed, the default project folder continues to be C:\Pfdata.*

For more information, see Exercise 1: Configuring the GPS Pathfinder Office software, page 64.

Features of the application window

When you start GPS Pathfinder Office, the main application window appears. The GPS Pathfinder Office application window (with the *Map* and *Time Line* window open) is shown in Figure 3.1.

The ...	does the following ...
Title bar	displays the name of the software (GPS Pathfinder Office), followed by the name of the current data file, if a data file is open. In this case tutorial.ssf.
Toolbars	offer convenient access to frequently used operations and utilities. For more information, see page 54.
Map window	shows the open file along with any background files. For more information, see page 94.
Time Line window	shows a visual display of when the data was collected along a linear time axis. For more information, see page 94.
Position Properties window	lets you view the positions of a feature. You can also delete a position. For more information, see page 107.

The ...	does the following ...
Feature Properties window	lets you view a note and view and change the attributes, status, and offset of a feature. For more information, see page 107.
Status bar	displays the coordinated system selected and the map coordinates of the current cursor position or selected feature.

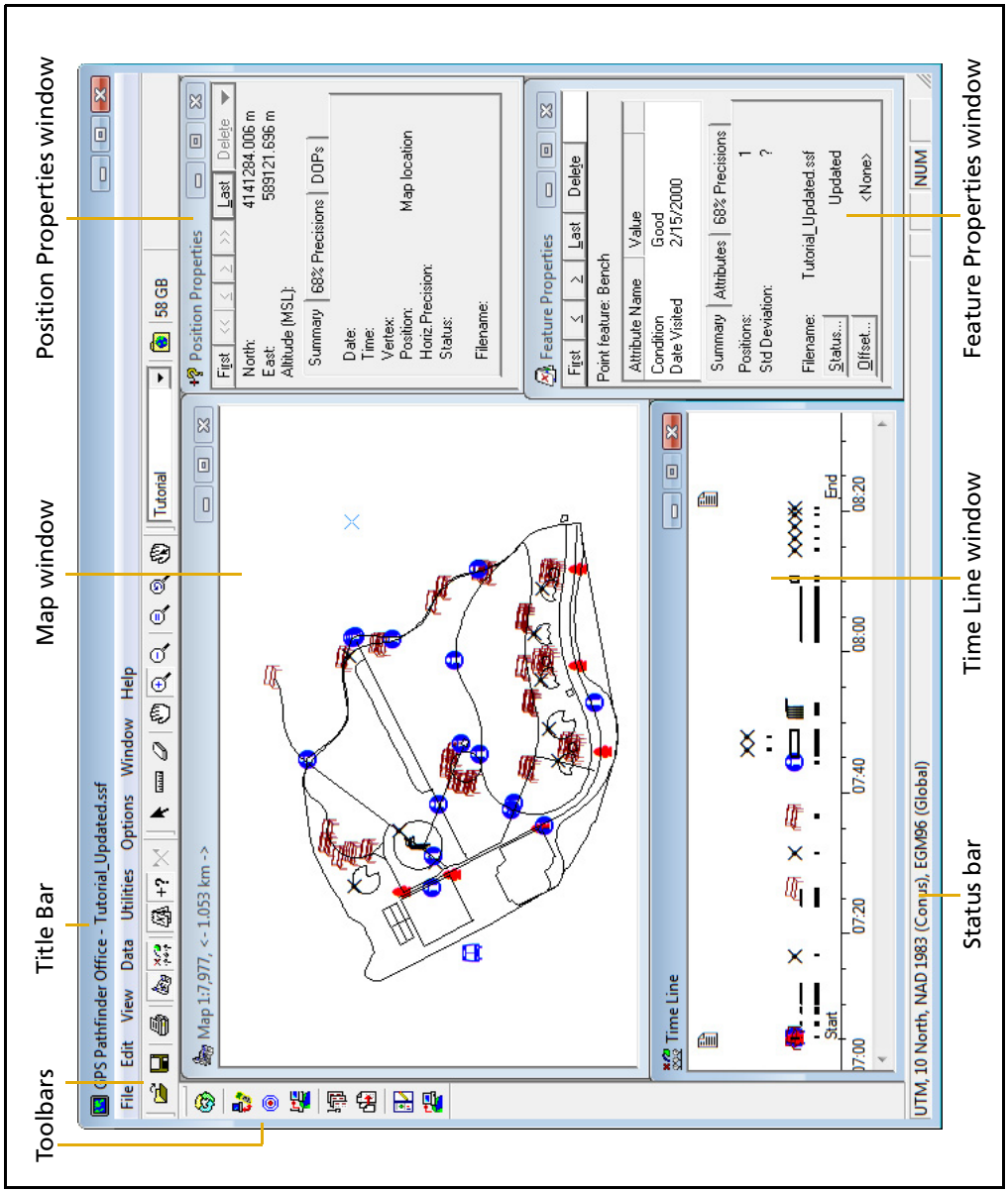


Figure 3.1 GPS Pathfinder Office application window

Map and Time Line windows

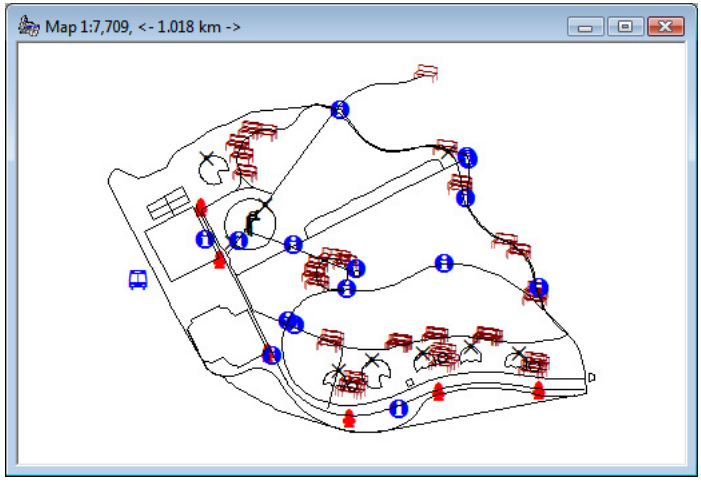
The GPS Pathfinder Office software makes extensive use of windows. There are two main windows:

- the *Map* window
- the *Time Line* window

These windows are described in more detail below.

Map window

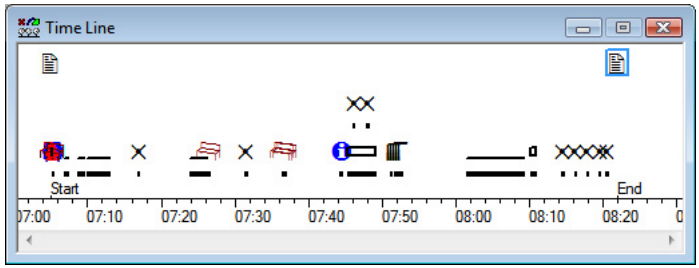
The *Map* window is the primary means of viewing your data. It provides a plan view of the area. The *Map* window can display the features you have collected, the waypoints in the current waypoint file, and any number of background maps:



You can select the features, waypoints, and notes to view information about them, or to change them.

Time Line window

The *Time Line* window provides an alternative view of your data. It displays the features and notes you have recorded in the current data file along a time axis (it does not display waypoints or backgrounds):



You can select the features and notes to view information about them, or change them.

Manipulating and moving the windows

You can manipulate the *Map* and *Time Line* windows like any other window. You can move them, resize them, zoom in and out, and 'pan' around the display.

Zooming

In both the *Map* and *Time Line* windows, you can:

- zoom in to view information in greater detail
- zoom out to view a greater area
- zoom to extents to view all the information in the window
- zoom to the scale that the map was previously set to

To zoom in:

1. Click the *Zoom In* tool: . Alternatively, select *View* / *Zoom* / *In*.

   The tool remains depressed.

2. Move the pointer over the window.

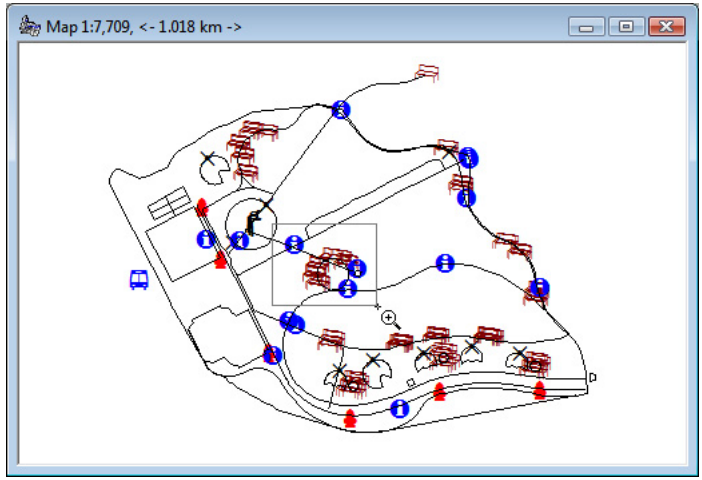
   It now displays as a magnifying glass with cross-hairs which mark the position of the pointer:

3. Do one of the following:

   – Click a position in the window.

     The scale of the window is halved, and the position becomes the new center of the window.

   – Drag the pointer across the window until you produce a rectangle that contains the data you want to zoom in on:



   The smaller the area, the greater the scale change.

   Release the mouse button. The window zooms in on the rectangle you defined, so that the contents of the rectangle now occupies the whole window.

Zooming out is the opposite of zooming in and works in a similar way.

To zoom out:

1. Click the *Zoom Out* tool:  . Alternatively, select *View* / *Zoom* / *Out*.

   The tool remains depressed.

2. Move the pointer over the window. It becomes  .

3. Do one of the following:

   – Click a position in the window. The scale of the window is doubled, and the position becomes the new center of the window.

   – Drag the pointer across the window until you produce a rectangle. The smaller the rectangle, the greater the scale change will be. Release the mouse button. The scale of the window changes, and the area previously displayed in the whole window now occupies the rectangle.

To zoom to extents:

1. Click the *Map* or *Time Line* window, to make it the active window.

2. Click the *Zoom Extents* tool:  . Alternatively, select *View* / *Zoom* / *Extents*.

   The window now displays all the information for the visible layers in the currently-open files. The previously selected tool remains selected.

To zoom to the previous scale:

1. Click the *Map* or *Time Line* window, to make it the active window.

2. Click the *Zoom Previous* tool  . Alternatively, select *View* / *Zoom* / *Previous*.

The window now displays information at the scale used before you last zoomed or panned.

Panning

To view a different area or time period of the data file, pan around the *Map* and *Time Line* windows. You can also configure the windows so that they pan automatically to include the currently selected item.

To pan across the window:

1. Click the *Pan* tool: . Alternatively, select *View* / *Pan*.

   The tool remains depressed.

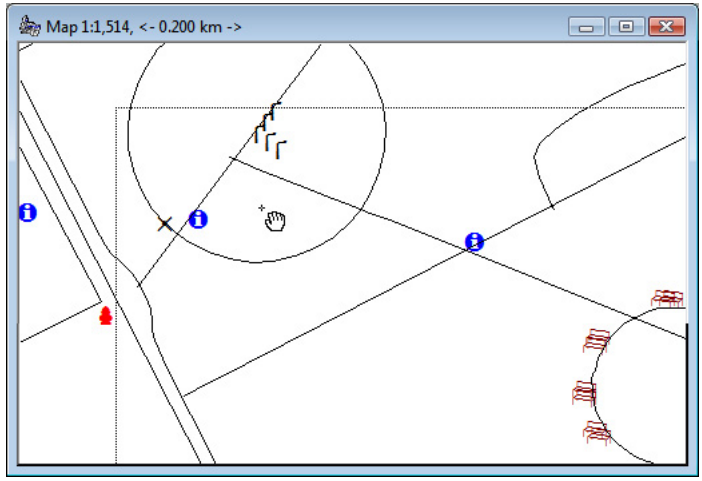
2. Move the pointer over the window.

   The pointer becomes .

3. Do one of the following:

   – Click a position in the window. That position becomes the new center of the window.

   – Drag the pointer in the direction and for the distance you want to pan. A dotted border indicating the amount the window view will move appears as you drag the pointer:



   Release the mouse button. The contents of the window shifts in the direction and for the distance indicated by the dotted border.

To automatically pan the *Map* or *Time Line* windows to any selected item:

1. Click the *Auto-pan to Selection* tool  . Alternatively, select *View* / *Auto-pan to Selection*.

   A check mark (✓) appears beside the menu command.

2. Do one of the following:

   – Select a feature using *Edit* / *Find Feature* or *Data* / *Feature Properties*. The *Map* or *Time Line* window (whichever is active) automatically pans so that the item is displayed.

   – Select a waypoint using *Data* / *Waypoint Properties*. The *Map* window automatically pans so that the item is displayed.

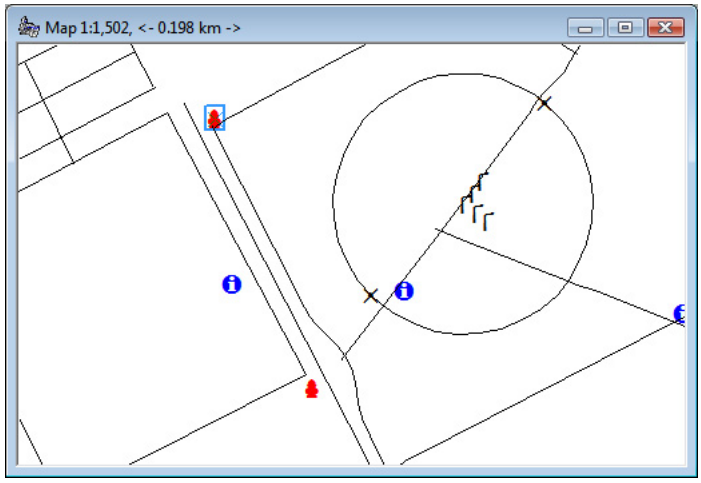
Tip – You can use this option to locate a feature or waypoint which is hard to find on the *Map* or *Time Line* window.

Selecting an item

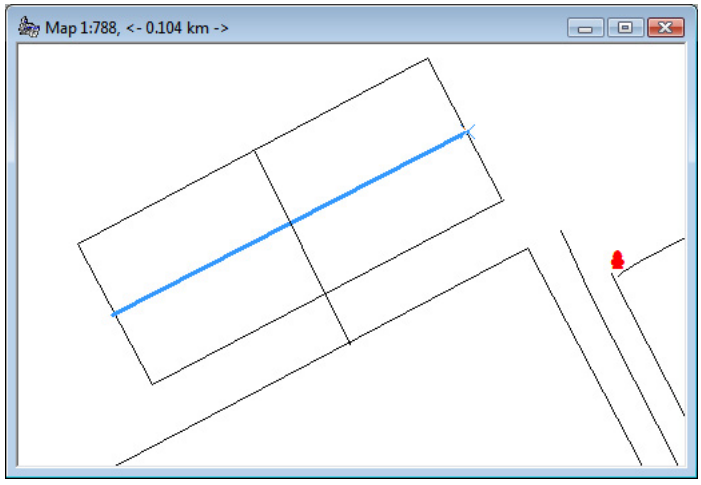
You can select items displayed on the *Map* or the *Time Line* window. Only one item (one feature, note, or waypoint) can be selected at a time.

- If a feature is selected in the *Map* or *Time Line* window, it is selected in both windows. It also appears in the *Feature Properties* window. (If the *Feature Properties* window is not open, double-click a feature.)
- If a waypoint is selected on the *Map* window, it is also selected in the *Waypoint Properties* window.
- If a note is selected in the *Time Line* window, it is also selected in the *Feature Properties* window.

A selected point feature, waypoint, or note has a frame around it, for example the fire hydrant symbol near the top of the window in the Map window shown below:



A selected line or area feature is drawn with a thicker line type, for example the line across the centre of the rectangle shown below:



To select an item, do one of the following:

- Double-click the item to select it. The *Feature Properties* window or *Waypoint Properties* window opens.
- Click the item using the *Select* tool. It is shown as selected and the window it is in becomes the active window, if it was not already.
- Use the arrow keys on your keyboard to move the cursor over the map, and press the space bar to select a feature or map point.

Saving the window layout

When you run the GPS Pathfinder Office software for the first time, a default arrangement of windows appears on the screen. You can change this, so that the GPS Pathfinder Office software starts with the windows you want open.

You can set up the windows you want to open automatically when the GPS Pathfinder Office software starts. To set the window layout for subsequent sessions:

1. Resize and position the GPS Pathfinder Office windows so that they are the way you want them.
2. From the *Options* menu choose *Save Window Layout on Exit* so that it has a check mark (✓) beside it.
3. Exit the GPS Pathfinder Office software.
4. Each time you subsequently start the GPS Pathfinder Office software, it recreates the last arrangement of windows that you had when you closed the software.

Toolbars

Tools with related functions are grouped together in different toolbars. Some tools display a dialog; other tools change the pointer, and some start utility programs.

The GPS Pathfinder Office software has four toolbars:

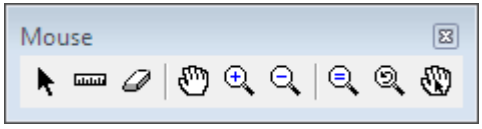
- Standard

For more information, see page 56.

- Project

For more information, see page 57.

- Mouse



For more information, see page 57.

- Utilities

For more information, see page 58.

Displaying a toolbar

You can show or hide a toolbar.

To display a toolbar, select *Options* / *Toolbars*. From the pullout menu, select the toolbar you want to display.

Tip – To display the *Toolbar* submenu you can also right-click on the edge of the toolbar area.

If a toolbar is visible, a check mark (✓) appears beside its name. Select the toolbar in the submenu to remove the checkmark. The toolbar disappears.

Select an un-checked toolbar to make the toolbar appear again.

Floating a toolbar

You can move a toolbar from its 'docked' position and create a 'floating' toolbar, so that the toolbars are in a more convenient location for you.

To create a floating toolbar:

1. Place the mouse anywhere within the area of the toolbar, ***but not*** directly over a button.
2. Click once and hold the mouse down (the toolbar is depressed).
3. Drag the toolbar away from its docked position while continuing to hold the mouse down.
4. Release the mouse at a position where you want to place the floating toolbar.

To move a floating toolbar to any position on the desktop, drag the toolbar by its title bar.

To change the shape of a floating toolbar, use its window border to resize it.

To close a floating toolbar, click the close box in the top right corner of the toolbar.

To return the toolbar to its previously docked position, double-click its title bar. Alternatively, drag it back to the toolbar area. Toolbars can be docked in any order.

Selecting a tool in a toolbar

To select a tool in the toolbar, do one of the following:

- Click the tool (button) on the toolbar.
- Select the equivalent menu command.

Tip – Position the pointer over any tool. A small yellow popup window (ToolTip) appears, showing the name of the tool. Additional information appears in the status bar at the bottom of the application window.

Standard toolbar

The *Standard* toolbar contains tools for file and window operations:

Tool		Description	Equivalent menu command
	Open	Opens a data file(s).	*File / Open*
	Save	Saves a data file.	*File / Save*
	Plot Map	Prints a data file.	*File / Plot Map*
	Map	Opens the *Map* window.	*View / Map*
	Time Line	Opens the *Time Line* window.	*View / Time Line*
	Feature Properties	Opens the *Feature Properties* window.	*Data / Feature Properties*
+?	Position Properties	Opens the *Position Properties* window.	*Data / Position Properties*
	Waypoint Properties	Opens the *Waypoint Properties* window.	*Data / Waypoint Properties*

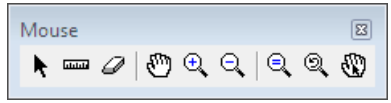
Project toolbar

The *Project* toolbar contains items to help you manage projects:

Item	Description
	Displays the name of the folder set for the present project. Change the project by selecting a project name from the drop-down list.
	Opens the folder named in the Current Project drop-down list box in a Windows Explorer view.
	Displays the amount of free disk space on the drive where the current project is stored.

Mouse toolbar

The *Mouse* toolbar contains tools for the mouse and view actions:



Tool		Description	Equivalent menu command
	Select	Lets you select an item in the *Map* or *Time Line* window. The pointer always appears as an arrow. Click on an item in the *Map* or *Time Line* window to select that item.	*Edit / Select*
	Measure	Lets you measure distances between two or more points, and areas within a polygon.	*Data / Measure*
	Delete Block	Lets you delete all positions within a selected rectangle.	*Edit / Delete Block of Positions*
	Pan	Lets you pan across the contents of the *Map* or *Time Line* windows, so that a different part of the window is displayed.	*View / Pan*
	Zoom In	Lets you zoom in on a part of the *Map* or *Time Line* window. This magnifies the display by decreasing the scale.	*View / Zoom / In*

Tool		Description	Equivalent menu command
	Zoom Out	Lets you zoom out on the *Map* or *Time Line* window. This lets you see a greater area by increasing the scale.	*View / Zoom / Out*
	Zoom Extents	Acts on the *Map* or *Time Line* window (whichever is the active window). It changes the scale so that the window displays all the information for the visible layers in the currently open files.	*View / Zoom / Extents*
	Zoom Previous	Lets you undo the last zoom or pan command and return to the previous view.	*View / Zoom / Previous*
	Auto-pan to Selection	Configures the *Map* and *Time Line* windows to always display the currently selected item.	*View / Auto-pan to Selection*

Utility toolbar

The *Utility* toolbar contains tools for opening utility programs:

Tool	Utility	Equivalent menu command
	Batch Processor utility	*Utilities / Batch Processor*
	Trimble Data Transfer utility	*Utilities / Data Transfer*
	Differential Correction wizard	*Utilities / Differential Correction*
	Export utility	*Utilities / Export*
	Grouping utility	*Utilities / Grouping*
	Combine utility	*Utilities / Combine*
	Data Dictionary Editor utility	*Utilities / Data Dictionary Editor*
	Import utility	*Utilities / Import*

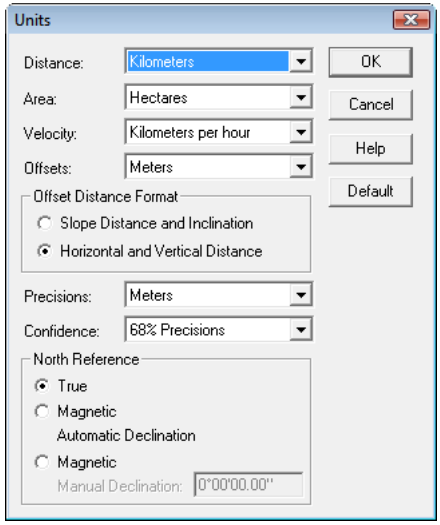
Shortcut menus

Shortcut menus in the GPS Pathfinder Office software appear when you right-click items. The items that appear in the shortcut menu depend on the item selected.

For example, right-click a feature in the *Map* or *Time Line* window to display menu options such as *Zoom In*, *Zoom Out*, *Pan*, *Delete*, *Properties*, and *Symbol*.

Measurement units

To select the units used to display or enter numeric values used by the GPS Pathfinder Office software, select *Options* / *Units*. The *Units* dialog appears:



Use the *Units* dialog to choose units for distance, area and velocity, as well as the formats for display of offsets and bearings. The default values and options are shown above.

To set units for coordinates and heights, and the reference for altitudes, select *Options* / *Coordinate System*.

Values that you enter into a field are often in a particular unit, for example meters. The field displays an abbreviation for the unit after the value, so that you know the current units.

Tip – To convert data into the configured units, simply enter the value followed by the abbreviation for the units it is in. For example, if meters is the configured unit, and you enter 10 ft, it is converted to 3.048 m. This applies only to fields that contain distances, offsets, heights, or coordinates.

Table 3.1 lists the available units and their abbreviations.

Table 3.1 Unit abbreviations

Unit	Abbreviation
Meters	m
Feet	ft
Inches	in
Kilometers	km
Millimeters	mm
Miles	mi
Namibian meters	nam
Yards	yd
Nautical Miles	nm
US Survey Feet	USft

Exiting the GPS Pathfinder Office software

To exit the GPS Pathfinder Office software:

1. Select *File* / *Exit*. If a data file is still open and there are unsaved changes, a message appears asking if you want to save your data.
2. Click **Yes** to save and close the data file and quit the GPS Pathfinder Office software.

   The GPS Pathfinder Office application window closes.

CHAPTER

4

Tutorial

In this chapter:

This chapter explains how to collect and maintain data for a GIS, and process the collected data using the GPS Pathfinder Office software. It contains step-by-step instructions for the main tasks involved.

The tutorial exercises are designed to be completed in sequence, with each exercise using the results from the previous exercise. The exception is Exercise 8: Special exercise, which has no effect on the other exercises and may be performed independently.

Note – *The exercises assume that the GPS Pathfinder Office software's default settings are unchanged. If they have been changed, the software may behave differently.*

The tutorial will take approximately 70 minutes for you to complete.

Tutorial sample files

The exercises use sample files supplied with the GPS Pathfinder Office software. By default, these sample files are located in the GPS Projects\Tutorial folder.

The location of the GPS Projects folder depends on the type of Microsoft operating system running on your computer. If it uses the:

- Windows Vista operating system, the GPS Projects folder is located in the C:\Users\<username>\Documents folder.
- Windows XP or Windows 2000 operating system, the GPS Projects folder is located in the C:\Documents and Settings\<username>\My Documents folder.

Note – *If you are using version 4.10 of the GPS Pathfinder Office software on a computer that had a version earlier than version 4.00 of the GPS Pathfinder Office software installed, the default project folder continues to be C:\Pfdata.*

If the tutorial files have been deleted from your GPS Projects folder, copy and paste them from the GPS Project Files/Tutorial folder in the GPS Pathfinder Office software program folder. By default this is in C:\Program Files\Trimble\GPS Pathfinder Office.

Note – *This tutorial assumes that you are familiar with GPS and the Microsoft Windows operating system that you are using.*

Scenario

The local City Government maintains a GIS of its public assets. This includes street signs, utility poles, parks and their amenities, parking lots, and other types of assets. Information is stored about each asset, including its condition and other information specific to each type of asset.

Your task is to prepare the data dictionary so that the field crews can collect the required information, process the data using the GPS Pathfinder Office software, and then export it to your GIS.

A few months later, the data needs to be updated, so you must then import the data from your GIS into the GPS Pathfinder Office software, update the data dictionary, and send the field crews out with the data so that they can update information on the assets.

Exercise 1: Configuring the GPS Pathfinder Office software

There are three options in the GPS Pathfinder Office software that are important to configure before you use it.

This exercise shows you how to:

- start the GPS Pathfinder Office software
- set the local time zone
- select a project
- select a coordinate system

Starting the GPS Pathfinder Office software

To start the GPS Pathfinder Office software, do one of the following:

- From the Windows *Start* menu, select *All Programs* / *Trimble* / *GPS Pathfinder Office* / *GPS Pathfinder Office*.
- Double-click the GPS Pathfinder Office shortcut icon on the desktop: 

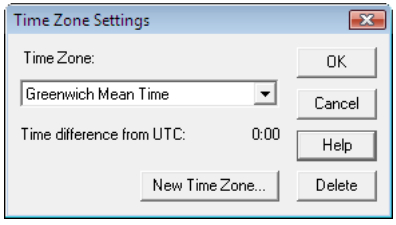
The GPS Pathfinder Office logo appears while the program is loading, followed by the GPS Pathfinder Office application window.

Setting the local time zone

You must configure the GPS Pathfinder Office software for the local time zone. If you do not, the time records in field data files display as GPS time, which approximates Greenwich Mean Time. Normally, you set the local time zone once (and whenever summer time changes are necessary).

To set the local time zone:

1. The first time you start the GPS Pathfinder Office software, a message may appear, asking you to set the time zone.
2. Click **Yes**.
3. The *Time Zone Settings* dialog automatically appears. If it does not, select *Options* / *Time Zone*. The *Time Zone Settings* dialog appears:



4. From the *Time Zone* field, select the time zone for your current location.

Tip – If the local time zone is not available, click **New Time Zone**. The *Add Time Zone* dialog appears. Enter the name of the time zone and the offset from Greenwich Mean Time. For example, if the time zone is 9 hours and 45 minutes behind Greenwich, enter -9:45 as the offset. Click **OK**.

5. Click **OK** to save the time zone settings and close the dialog.

Tip – To display GPS times at any stage, select Greenwich Mean Time (+0:00) instead of the local time zone.

Selecting a project

A project is a set of folders on the computer that store the data files for a particular job. They let you separate the data into different areas on the computer so that you can keep track of different jobs separately.

You must decide how you want to use projects to separate the data. You may want to have a different project for each different site you are working on, or you may have a project for each of your clients.

Note – *If you include invalid characters, such as ?, +, >, or " ", when naming a new project, you will receive an error message.*

A project defines where certain types of files are stored on the computer. Each project can point to a different set of folders. The types of files that are distinguished by projects are:

- data files, including files created by importing from a GIS
- base files
- exported GIS or CAD format files
- backup copies of field data files

Each of these file types can be assigned a different default folder. By default, this folder is selected whenever you open or save one of the above types of files. In most cases you are not limited to just this folder, but it serves as a useful default.

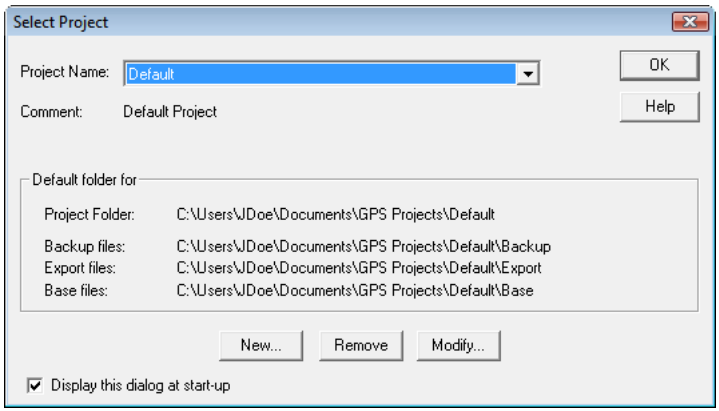
The types of data that are ***not*** distinguished by projects are:

- data dictionaries
- waypoint files
- background files
- configuration files

These four types of files can be stored in projects if you want. However, if you change projects the default folder will not change. Usually these types of files are stored separately from project data so that they can be accessed easily by all projects.

To select a project:

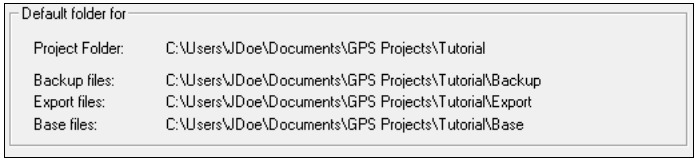
1. When you start the GPS Pathfinder Office software, the *Select Project* dialog appears automatically:



If this dialog does not appear, select *File* / *Projects* to display it.

Tip – To stop the *Select Project* dialog appearing each time you start the GPS Pathfinder Office software, clear the *Display this dialog at start-up* check box.

2. From the *Project Name* field, select Tutorial.
3. The default folders area will look similar to the following:



This area shows the folders that are defined for this project. Table 4.1 describes the purpose of each folder.

Table 4.1 Contents of the Tutorial folder

The folder ...	is defined as ...	Description
project	GPS Projects\Tutorial	This is the main project folder where the data files are stored. Whenever you open, save, or import a data file, this folder is selected by default.
backup	GPS Projects\Tutorial \Backup	A folder within the main project folder. This is the folder where backup copies of the field data are kept. Backup copies are made when files are transferred from a field computer to the office computer.
export	GPS Projects\Tutorial \Export	A folder within the main project folder of GPS Projects\Tutorial. This is the folder where any exported GIS or CAD format files are created by default.
base file	GPS Projects\Tutorial \Base	A folder within the main project folder of GPS Projects\Tutorial. When selecting base files for differential correction, by default, the software looks in this folder. If you have one central folder for all base files, you can define this folder explicitly when creating your own projects. For example, if all of the base data resides on a network folder, n:\Basedata, enter this folder in the Base files field. The same rule holds for the other folders of a project.

4. Click **OK** to accept the tutorial project.

For an introduction to projects, and for more information on the *Select Project* dialog, search for the topic **Projects** in the *GPS Pathfinder Office Software Help*.

Selecting a coordinate system

You need to use a coordinate system that is suitable for the area in which you are collecting data. For example, in order to display collected GPS positions in relation to a background map, the GPS Pathfinder Office software must be able to relate GPS latitude and longitude coordinates to north and east coordinates on the map. It is also critical that you have the correct coordinate system selected when you:

- enter waypoint coordinates
- print or plot the map
- export coordinates to a GIS or CAD package
- import features from a GIS or CAD package
- enter manual positions

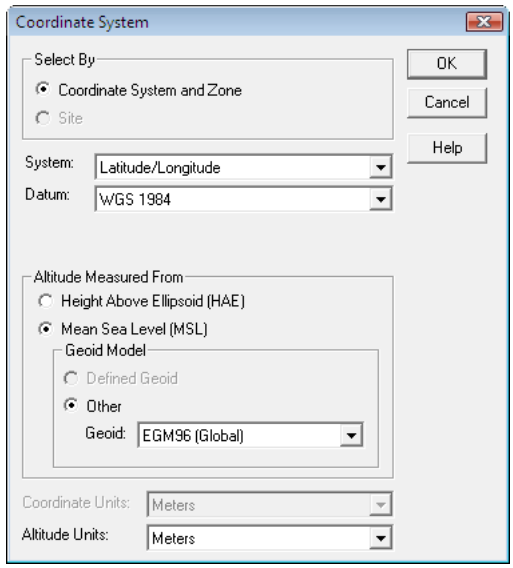
In the GPS Pathfinder Office software you can choose the correct coordinate system by selecting a coordinate system and an associated zone, or by selecting a local site. To properly specify a system, you need to select a zone and/or datum. Your choice affects the display of the field data, but not the data itself.

For an introduction to the concepts of coordinate systems and zones (and the associated concepts of a datum, an ellipsoid, and a geoid), search for the topic **About Coordinate Systems and Datums** in the *GPS Pathfinder Office Software Help*.

Tip – The currently selected coordinate system is displayed in the status bar.

For this project, you need to select a UTM coordinate system:

1. Select *Options* / *Coordinate System*. The *Coordinate System* dialog appears:



2. Make sure that the *Select By* group is set to the *Coordinate System and Zone* option.
3. Set the *System* field to UTM.
4. Set the *Zone* field to 10 North.
5. Set the *Datum* field to NAD 1983 (Conus).
6. Make sure that the *Altitude Measured From* group is set to the *Mean Sea Level (MSL)* option.
7. Make sure that the *Geoid Model* group is set to the *Defined Geoid (EGM96 (Global))* option.
8. Set the *Coordinate Units* field to Meters.
9. Set the *Altitude Units* field to Meters and then click **OK**.

Exercise 2: Preparing to collect data

This exercise introduces you to the concepts of:

- GPS data collection
- features
- attributes

It shows you how to:

- open a data dictionary
- print a data dictionary
- transfer a data dictionary to a field computer running data collection software

GPS data collection

Organizations such as utility companies, scientific organizations, and local governments have billions of dollars of fixed assets and equipment located throughout their region. They must be able to accurately locate, monitor, and maintain these assets.

The large task of managing these assets is greatly reduced with the use of proper field information management tools such as GPS data collection systems and GIS databases.

Information on assets can be collected in the field using a field computer running data collection software. Data collection software stores information in the form of "features" and "attributes".

Features

A feature is a physical object or an event in the real world for which you want to collect position and descriptive information. For example, you may want to collect information about lakes or roads.

Each feature has a feature name. Feature names are equivalent to themes or layers in a GIS or CAD system. Each occurrence of a feature is equivalent to a record in that theme or layer in a GIS system.

GPS data collection software uses feature classification to determine the way the data collection software logs GPS positions.

A feature can be one of three different types. See Table 4.2.

Table 4.2 Feature types

Feature type	Examples
Point 	Accident sites Water faucets in a park
Line 	Paths Pipelines
Area 	Lakes Wetlands

Attributes

You can define a set of attributes for each feature type. An attribute is a piece of descriptive information about the feature. For example, for the feature, Path, you could have the attribute, Width. Each Path feature that you collect in the field will have its own value for this attribute.

For each attribute you must define an attribute name. Attribute names are equivalent to items, columns, or fields in a GIS or CAD system.

An attribute can be one of six different types. See Table 4.3.

Table 4.3 Attribute types

Attribute type	Example
Menu	The surface type for a path
Numeric	The width of a path
Text	The name of the path
Date	The date when information about the Path feature was collected
Time	The time when information about the Path feature was collected
File Name	Linking the Path feature to an image of the feature on a computer

Opening a data dictionary

A data dictionary is a description of the features and attributes relevant to a particular project or job. A data dictionary structures data collection; it does not contain the actual information collected in the field (positions and actual attribute values for each occurrence of a feature).

A data dictionary is used in the field to control the collection of features and attributes. For example, you may want to collect information about power poles, lakes, and roads. Therefore you can create a data dictionary that contains a list of all these features.

It is important to understand data dictionaries and how they are used in the field to control feature and attribute collection. A data dictionary prompts you to enter information; it can also limit what you enter to ensure data integrity and compatibility with your GIS or CAD system. Although data dictionaries are not always required for field work, they do make collecting, updating, and processing data easier and faster.

A data dictionary consists of the following elements:

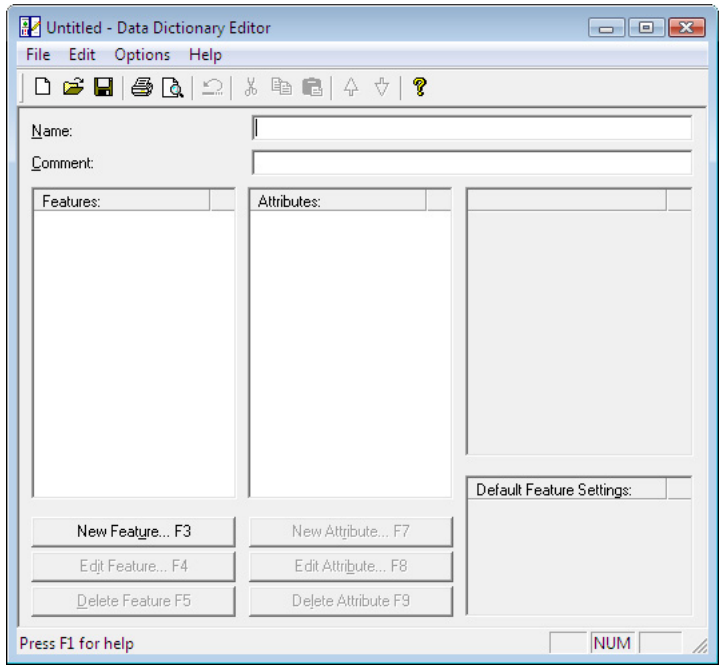
- a list of features to be collected in the field
- a list of attributes (if any) that describe each feature

A data dictionary should contain all the features for which you want to collect information. You can have different data dictionaries for different projects, for example, a road map data dictionary and a utility data dictionary. You can only use one data dictionary at a time in the field. If you want to collect information about roads at the same time as information about utilities, it is important to put all the features into one data dictionary.

To open a data dictionary:

1. Select *Utilities* / *Data Dictionary Editor*. Alternatively, click  .

   The Data Dictionary Editor utility starts:



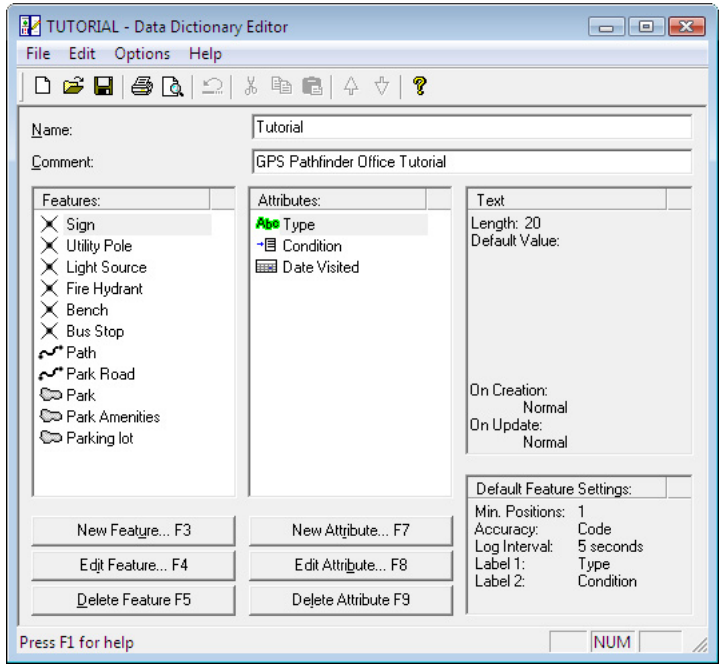
2. Open the Tutorial.ddf file in the \GPS Projects\Tutorial folder. To do this, click  and then go to one of the following locations:

   – If you are using the Windows Vista operating system, browse to C:\Users\<username>\Documents\GPS Projects \Tutorial.

   – If you are using the Windows XP or Windows 2000 operating system, browse to C:\Documents and Settings\<username> \My Documents\GPS Projects\Tutorial.

   Select the file Tutorial.ddf and then click **Open**.

3. The data dictionary editor opens and you will see a number of features and their attributes:

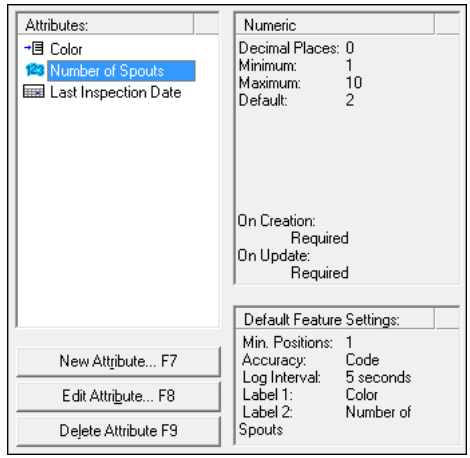


4. Look at the *Features* column:

This symbol ...	indicates that the feature is a ...
	point
	line
	area

5. Now view some features and their attributes. Select the Fire Hydrant feature.

6. The *Attributes* column shows you three defined attributes:
   - Color
   - Number of Spouts
   - Last Inspection Date



7. Click on each of these attributes in turn.

   Notice that the right panel shows information about the currently selected attribute.

   In this example, the number to be entered in the field must be a whole number. There can be a minimum of one spout and a maximum of 10 spouts. The default number of spouts is 2.

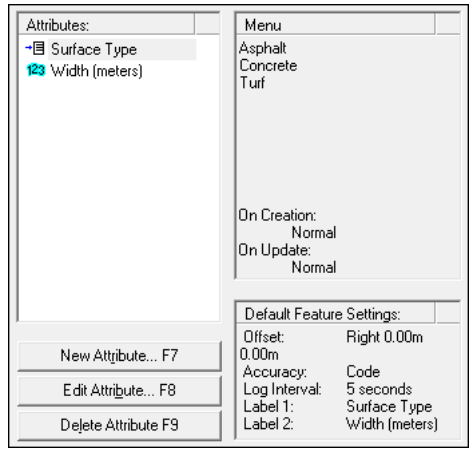
8. In the *Features* list, select the Path feature.

   There are two attributes this time:

   – Surface Type

   – Width

9. Click on each of the attributes.



10. In the *Features* list, select the Parking lot feature.

    There is just one attribute:

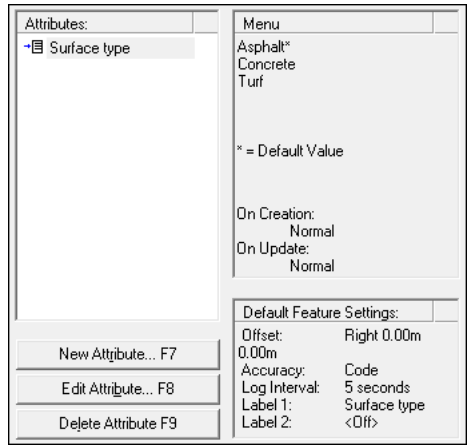
    – Surface type

    It has the values:

    – Asphalt

    – Concrete

    – Turf



    Notice the * shown beside the value Asphalt. This means that Asphalt is the default value. Setting a default saves field crews from entering repetitive data and also makes collecting data simpler and faster.

You do not need to make any changes to the data dictionary at this stage. In the next section you will print the data dictionary.

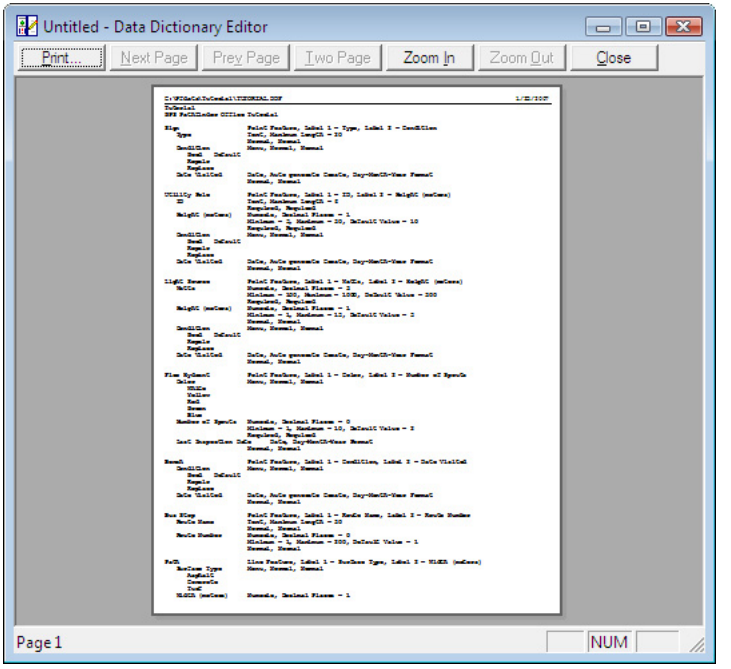
Printing the data dictionary

To view the entire data dictionary description in text form, you can print it. You may want to keep a printout of each of your data dictionaries in case they are accidentally deleted.

Tip – To check the printer setup and font before printing, select *File / Print Setup* or *File / Set Printer Font*.

To preview the data dictionary printout before you actually print it:

1. Select *File* / *Print Preview*. The *Print Preview* window appears:



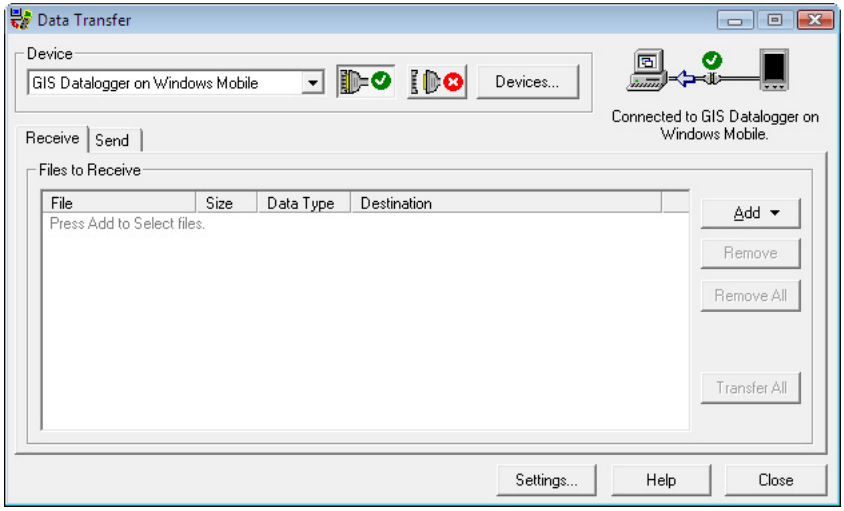
2. Click **Print**, check your printer settings and then click **OK** to send the data dictionary to the printer.
3. Select *File* / *Exit* to close the Data Dictionary Editor.

You are now ready to transfer the data dictionary to the data field computers so that your three field crews can go out and collect some data.

Transferring data to a field computer

You need to transfer the data dictionary to the field computer so that your three field crews can use the dictionary in the field to collect data.

Normally, you would use the Data Transfer utility to do this. The Data Transfer utility enables you to transfer files to a field computer that you have connected to your office computer. The opening dialog of the Data Transfer utility is shown below:



To transfer data to the field computer, select the *Send* tab, click **Add**, and then select a file type from the drop-down list. The *Open* dialog appears. Browse to the location of the files and select them. Then return to the Data Transfer utility window and click **Transfer All**.

For the purpose of this tutorial, we have done this for you.

Exercise 3: Differentially correcting the field data

The data has been collected in the field by the three field crews. It has been transferred back to the office computer and now you need to process it.

This exercise introduces you to the concepts of:

- postprocessed differential correction
- base data

It shows you how to:

- differentially correct SSF files

Postprocessed differential correction

Postprocessed differential correction can significantly improve the accuracy of GPS positions collected in the field. The *Differential Correction* wizard compares the collected GPS data with base data collected at a known location at the same time that the field data was collected. The process produces a .cor file that contains a new set of GPS positions that are corrected.

Base data

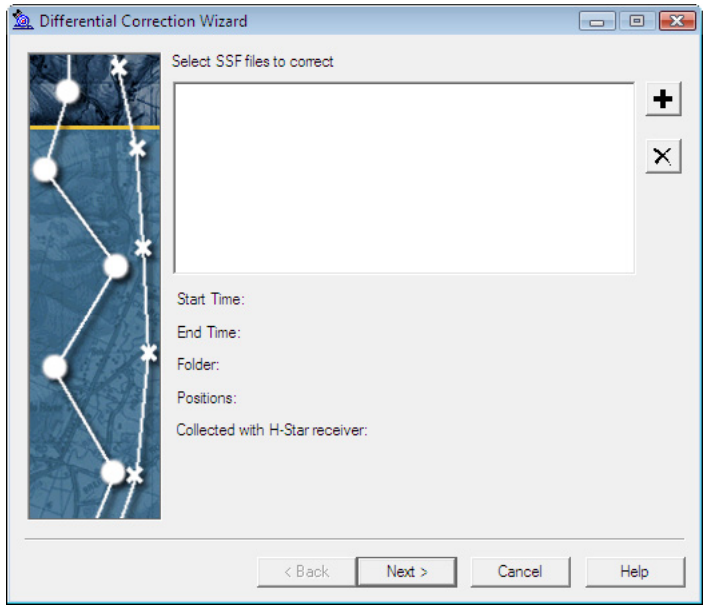
Many regions have reference stations that can supply the base data required for differential correction. The GPS Pathfinder Office software provides a list of some stations that you can use to obtain base data. You can access this list in the *Select Base Provider* dialog.

The base data for the tutorial is on the Trimble FTP site and is available by selecting the GPS Pathfinder Office tutorial base files provider from the list in the *Select Base Provider* dialog.

To differentially correct the field data:

1. In the GPS Pathfinder Office software, click the *Differential Correction* tool , or select *Utilities* / *Differential Correction*.

   The first page of the *Differential Correction* wizard appears:



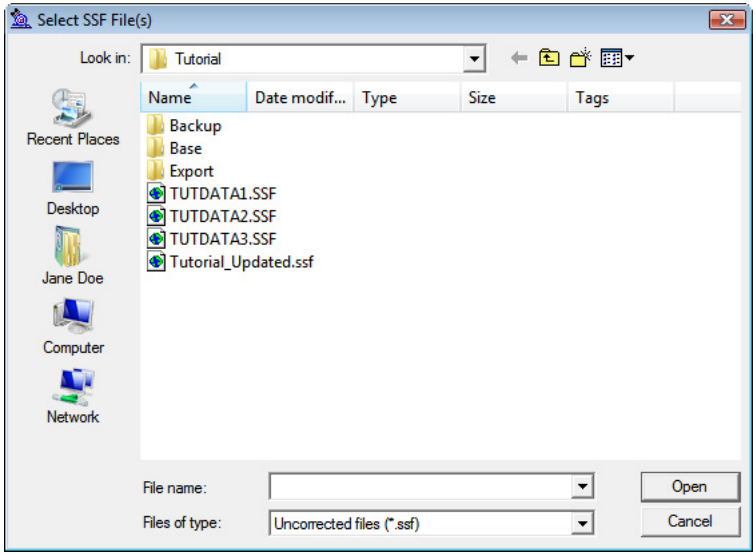
   The *Select SSF files to correct* list is either empty, or it displays the SSF files that were selected for differential correction the last time you used the Differential Correction wizard.

2. Remove any SSF files that are listed by selecting them and then clicking the Delete button .

3. To select the SSF files that you want to correct:

   a. Click the Add button [+].

      The *Select SSF File(s)* dialog appears:

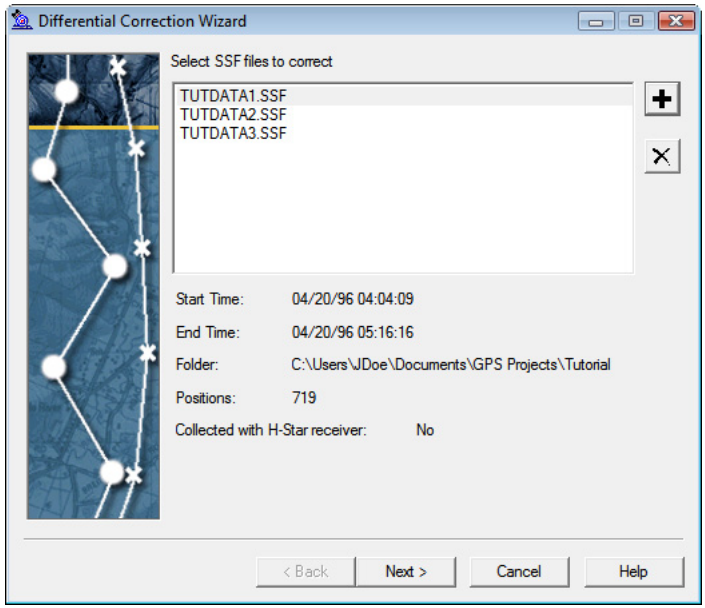


   By default, the uncorrected files (.ssf) are shown. The GPS Projects\Tutorial folder is selected, as this is the default folder for data files that was defined when we selected the project (see Selecting a project, page 65). There are three data (rover) files available that have the filename of "TUTDATAX.ssf". These data files were collected at the same time by three different field crews. You need to correct all three files.

   a. Click TUTDATA1.ssf, hold down [CTRL], and click TUTDATA2.ssf, then TUTDATA3.ssf to select all three files.

   b. Click **Open**. This confirms the selection and closes the dialog.

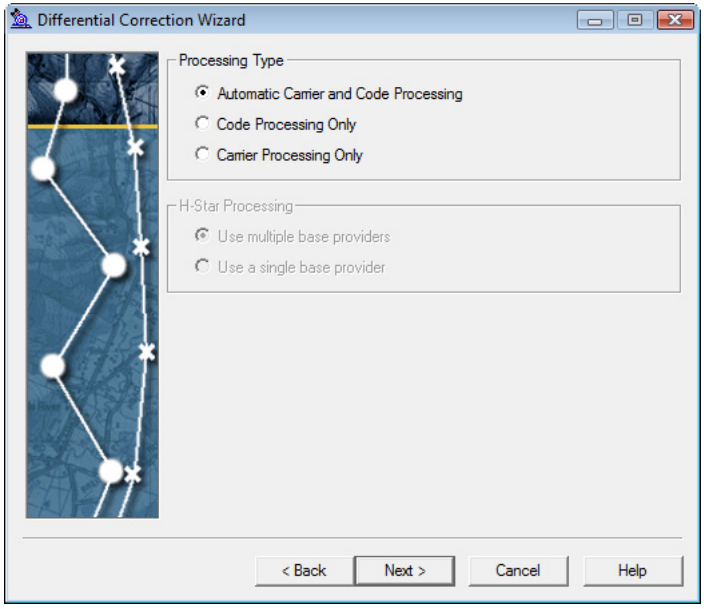
The selected SSF files appear in the *Select SSF Files to correct* list in the *Differential Correction* wizard.



The fields below the selection list display information about the selected SSF file. The *Collected with H-Star receiver* field indicates whether the SSF file contains data collected using a receiver with H-Star technology. The options displayed in the rest of the Differential Correction wizard are dynamic; H-Star processing options are only displayed if the value for this field is Yes.

4. Click **Next**.

The Processing Type page of the wizard appears:

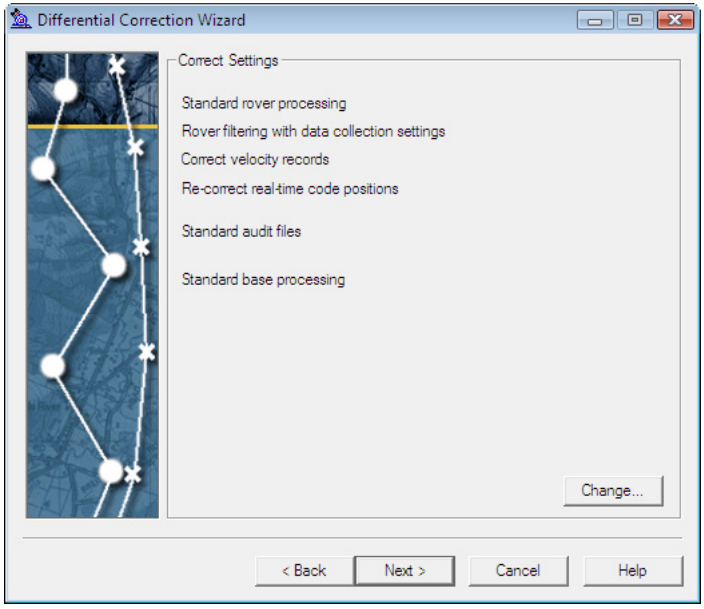


It displays the processing options available for processing the GPS data in the selected SSF files. The selected SSF files do not contain data collected using H-Star technology, and so the GPS data can only be corrected against base data from a single base station.

Tip – To learn more about processing options, search for the topic **Specifying the processing type** in the *Differential Correction Wizard Help*.

5. Make sure the *Automatic* option is selected. This is the default setting and it is the most thorough type of processing.
6. Click **Next**.

The *Correct Settings* page of the wizard appears:



It displays the settings that will be used to differentially correct the selected SSF files. The default settings are displayed above.

If the settings displayed are different to the default settings, click **Change**. The *Correction Settings* dialog appears. In each tab, select the appropriate options so that your settings match the default correction settings. Click **OK** to close the dialog and return to the *Differential Correction* wizard.

7. Click **Next**.

   The *Base Data* page of the wizard appears.

   There are three options for locating base data:

   – download files from a base provider using the Internet

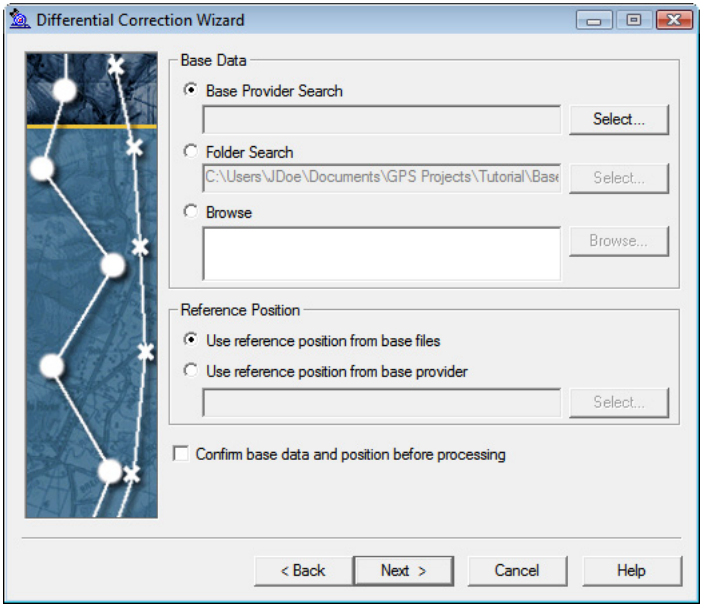
   – use base files that you have previously downloaded and saved in the base data folder for the project

– browse for base files that you have previously downloaded and saved elsewhere

Do one of the following:

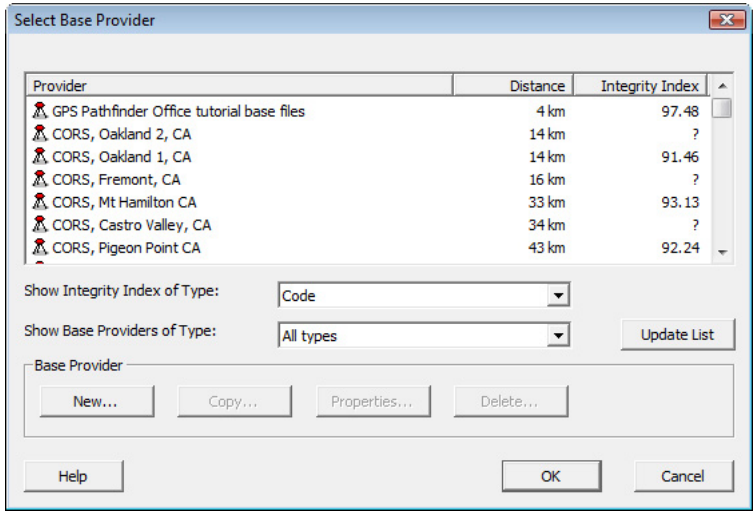
- If you have access to the Internet, download base data files from the tutorial base provider:

  a. In the *Base Data* group, select *Base Provider Search*:



  b. Click the **Select** button next to the Base Provider Search text box.

The *Select Base Provider* dialog appears:



The dialog displays a list of available base providers. The list is arranged by distance from the location where the field data was collected, so that base stations closest to the location where the data was collected are at the top of the list.

For this tutorial, we have set up an FTP site for the tutorial base data and named it "GPS Pathfinder Office tutorial base files".

c. Click the "GPS Pathfinder Office tutorial base files" provider (near the top of the base provider list) to select it, and then click **OK.**

- If you do not have access to the Internet, use the base data files in the base data folder of the Tutorial project:

  a. In the *Base Data* group of the Select Base Data page of the wizard, select *Folder Search*.

  The path and folder name of the Base folder for the Tutorial project should already appear in the box below the Folder Search option.

b. If the correct path and folder name is not shown, click the **Select** button next to the Folder Search text box.

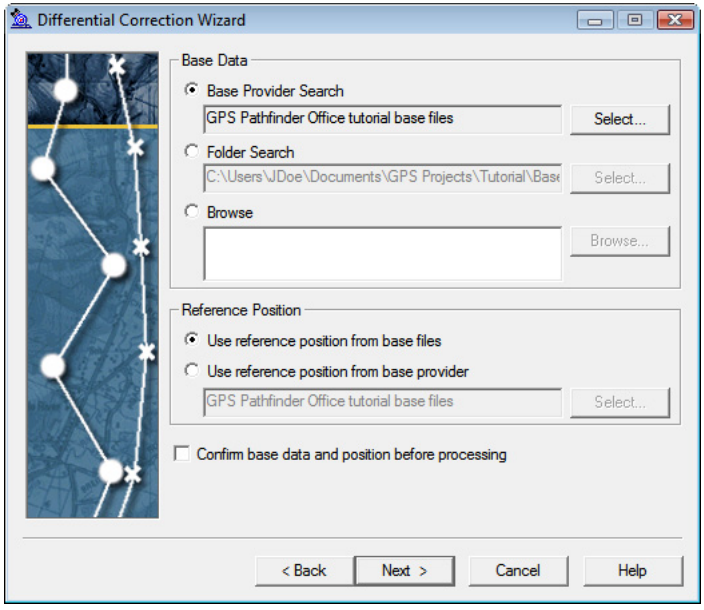
   The *Folder Search* dialog appears.

c. Click **Browse** to navigate to the base folder that is defined for the Tutorial project. The default location is Tutorial\Base in the GPS Projects folder.

d. Click **OK**.

The dialog closes and you are returned to the Base Data page of the wizard.

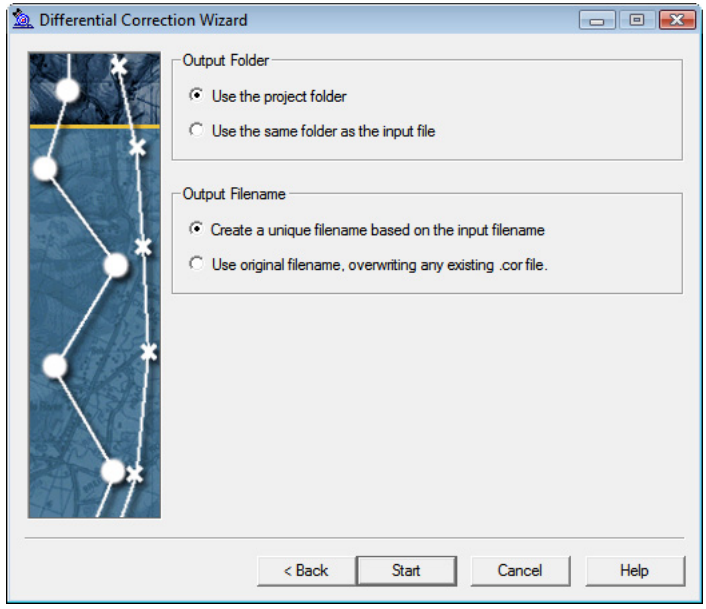
The base provider, or the path of the folder you selected, is displayed in the text box below the Base Data option you selected.



8. In the *Reference Position* group, select *Use reference position from base files*.

9. Click **Next**.

10. The *Output* page of the wizard appears:

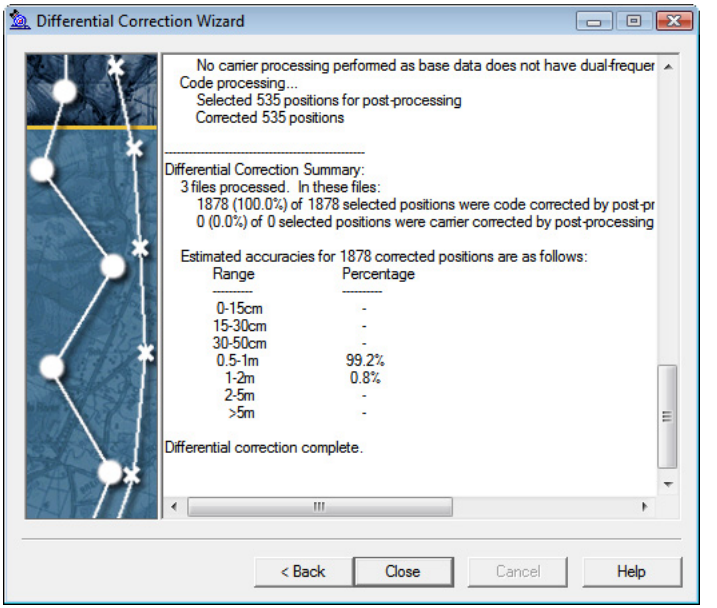


11. Make sure the *Use project folder* option is selected. The output files will be stored in the GPS Projects\Tutorial folder, because that is the project folder you have specified. The output files will have a .cor extension.

12. Make sure the *Create a unique filename* option is selected. That means that if you recorrect the SSF files, each subsequent corrected file will have _n appended to the filename, where *n* denotes the next number in the sequence.

13. Click **Start**. The differential correction process starts.

As the GPS Pathfinder Office software begins differentially correcting the selected SSF files, the *Differential Correction Processing* page of the wizard appears:



It displays details about the status of the differential correction process. The SSF files are processed sequentially. The *Differential Correction Processing* page displays the number of corrected positions for each SSF file.

When the last SSF file has been processed, the message Differential correction complete and a summary of the estimated accuracy values gained for the corrected GPS positions appears at the bottom of the *Differential Correction Processing* page.

This summary provides immediate feedback as to the quality of the corrected GPS positions. For example, if too few base providers have been selected for multi-base processing, the results will indicate this by showing large estimated accuracy values.

14. Click **Close**.

    The contents of the *Differential Correction Processing* page are saved as the Differential Correction report. The report is stored in the project folder.

Exercise 4: Viewing and editing the data

You now need to visually check the data before you export it to a GIS or spatial database. This is to confirm that all the expected data is there, and to look for any unwanted positions.

This exercise shows you how to:

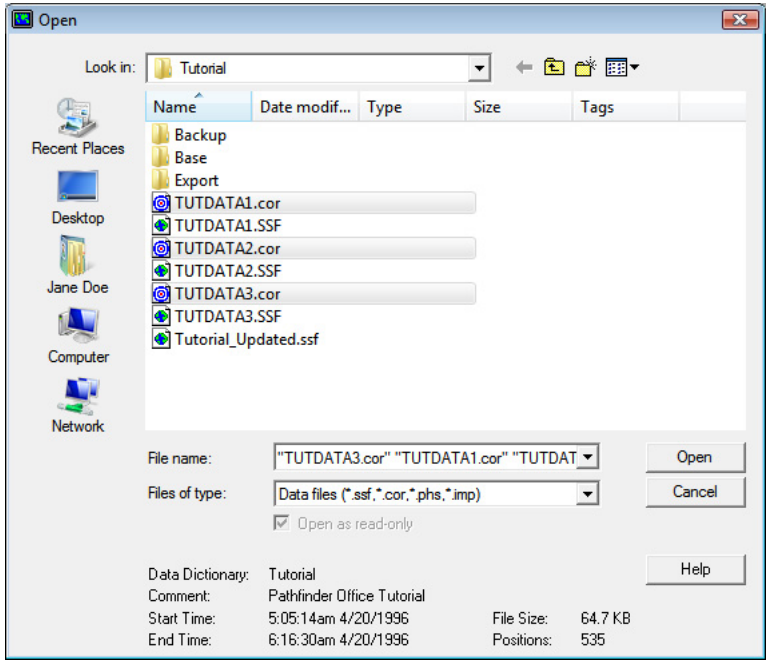
- open the data files
- select a coordinate system
- display the *Map* window
- display the *Time Line* window
- load the background files
- configure the *Map* window
- view the attributes of a feature
- view the offset of a feature

Opening the data files

You must open the data files in the GPS Pathfinder Office software to view them. You can open as many files as you like together, but you can only edit files if they are opened individually.

To open data files:

1. Select *File* / *Open*. The *Open* dialog appears:



   The three files that were just created by the Differential Correction wizard are selected by default.

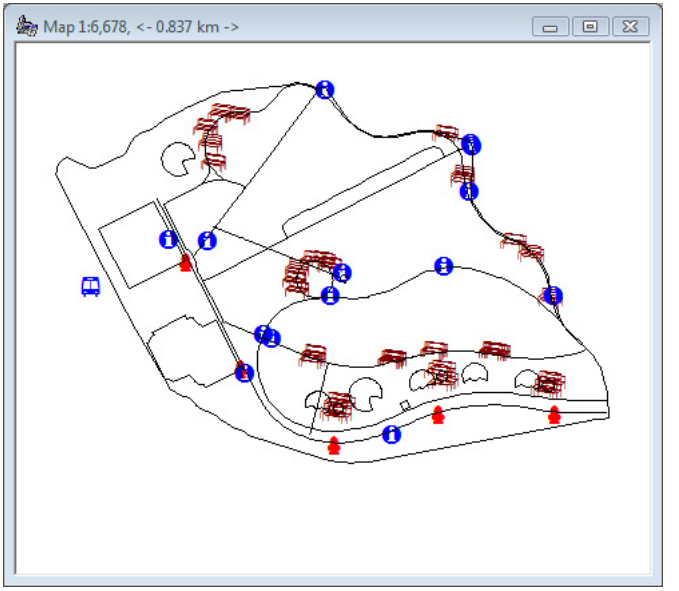
2. Click **Open** to confirm the selection.

Displaying the Map and Time Line windows

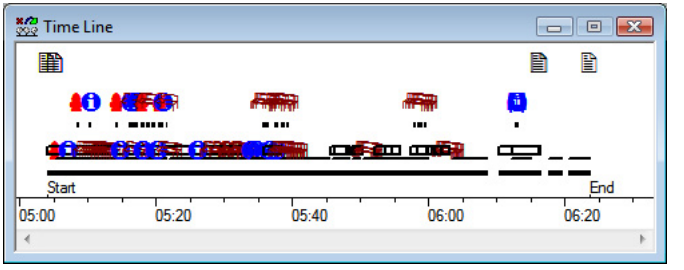
There are two methods available to display the data. The first is the *Map* window, where the file appears along with any background files. The second is the *Time Line* window, which presents a visual display of when the data was collected along a linear time axis.

To display the *Map* and *Time Line* windows:

1. Select *View* / *Map*. The *Map* window appears:



2. Select *View* / *Time Line*. The *Time Line* window appears:



Tip – If the *Map* window is not open and no files are loaded, select *View* / *Map* to automatically open the *Open Data Files* dialog. This is a handy shortcut for opening the data files. The same rule applies for the *Time Line* window.

Loading the background files

You can specify one or more background files, such as street maps and aerial photographs, for display in the *Map* window. These files provide a background for the field data files.

There are two types of background files:

- Vector files (or drawings)
- Raster files (or images)

Vector files

A vector file loads and transforms into any coordinate system.

The vector file Streets.dxf has its coordinates stored as Latitude/Longitude (WGS-84), but the coordinate system for the project is currently set to UTM.

We will need to specify that this file is set to the Latitude/Longitude coordinate system so that the GPS Pathfinder Office software can automatically transform the file from that coordinate system into UTM.

Raster files

Raster files must be displayed in the coordinate system to which they are "geo-referenced". Geo-referencing involves matching the pixels in a raster file to real-world coordinates. All raster files ***must*** be geo-referenced before they can be loaded into the GPS Pathfinder Office software.

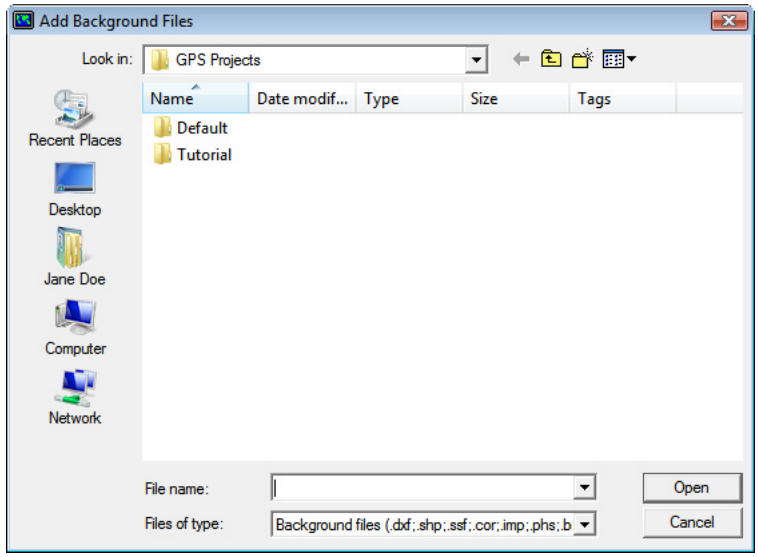
The raster file Aerial.bmp is geo-referenced in the UTM coordinate system, and UTM is the coordinate system for the project.

You can load this file without setting the coordinate system.

You will load the two background files one at a time so that you can see what each background file looks like individually.

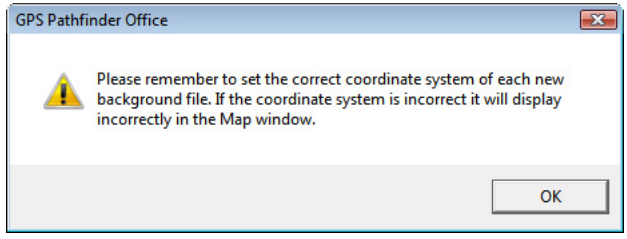
To load the background file STREETS.dxf:

1. Select *File* / *Background*. The *Load Background Files* dialog appears.
2. Click **Add**. The *Add Background Files* dialog appears:

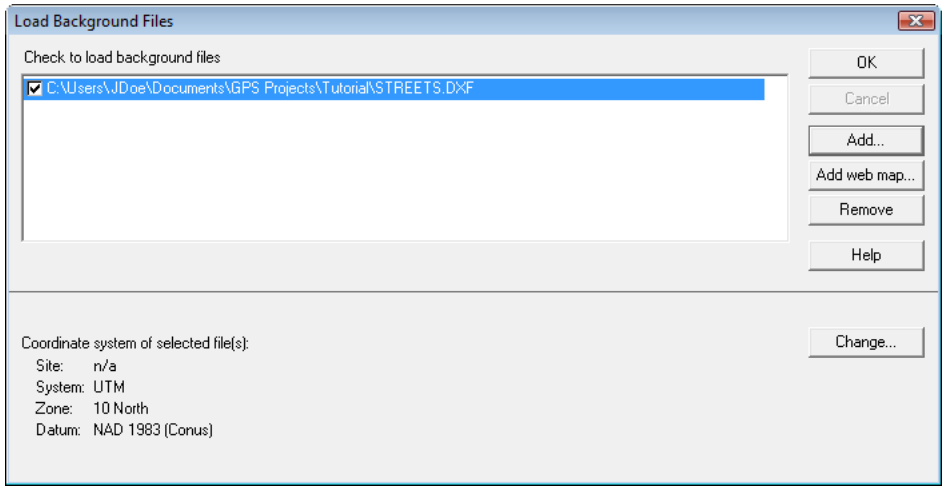


3. Open the Tutorial folder, select the file STREETS.dxf and then click **Open** to return to the *Load Background Files* dialog.

   A message reminds you to set the correct coordinate system for the new background files (you will do this in Step 5).

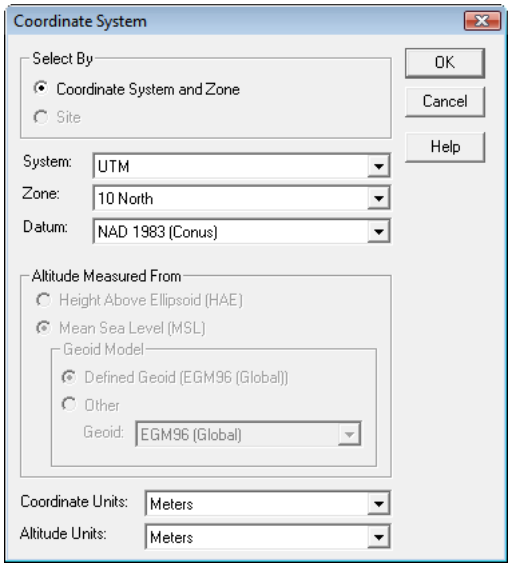


4. Click **OK** to clear the message. The *Load Background Files* dialog appears:



The check mark to the left of the filename indicates that the file loads when you close the dialog.

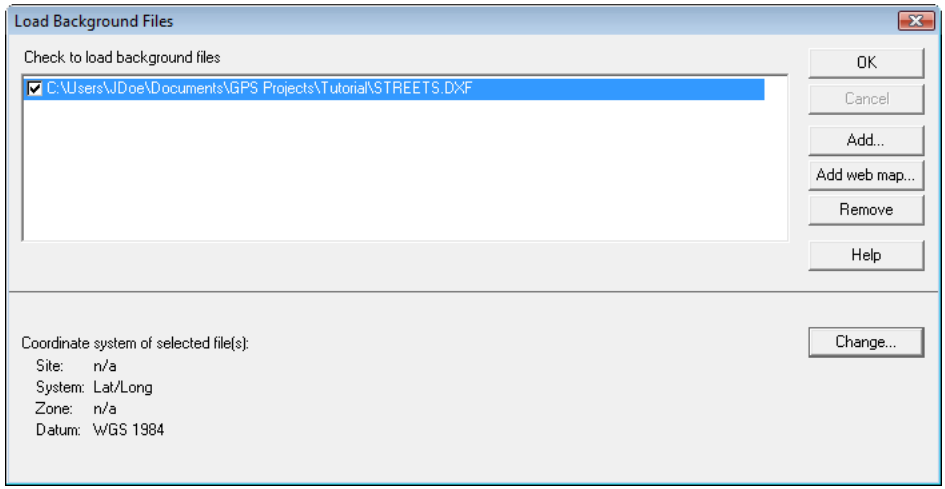
5. You need to specify that this file is set to the Latitude/Longitude coordinate system, so click **Change**. The *Coordinate System* dialog appears:



a. Change the *System* field to Latitude/Longitude. (The *Datum* field automatically changes to WGS 1984.)

Tip – Latitude/Longitude appears at the top of the list of coordinate systems.

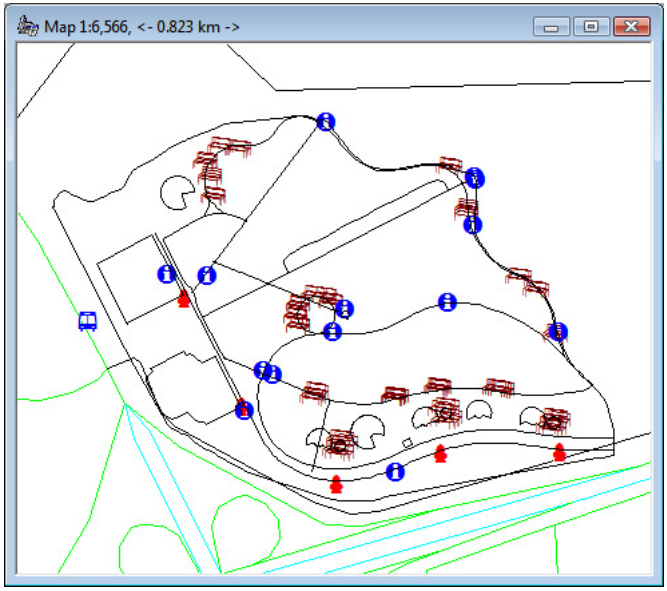
b. Click **OK** to accept the selected coordinate system and zone, and return to the *Load Background Files* dialog:



The coordinate system information at the bottom of the dialog is updated to reflect your changes.

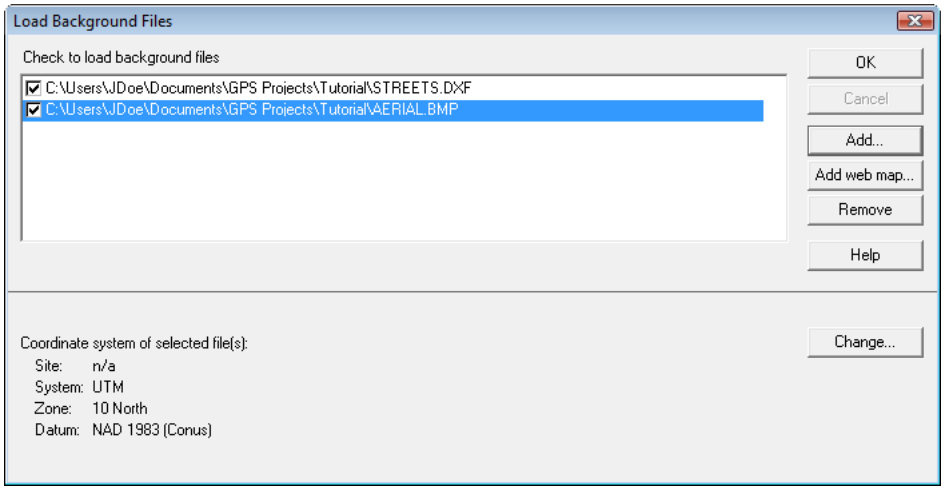
6. Click **OK** to load the background file and close the dialog.

The *Map* window displays the background STREETS.dxf file:



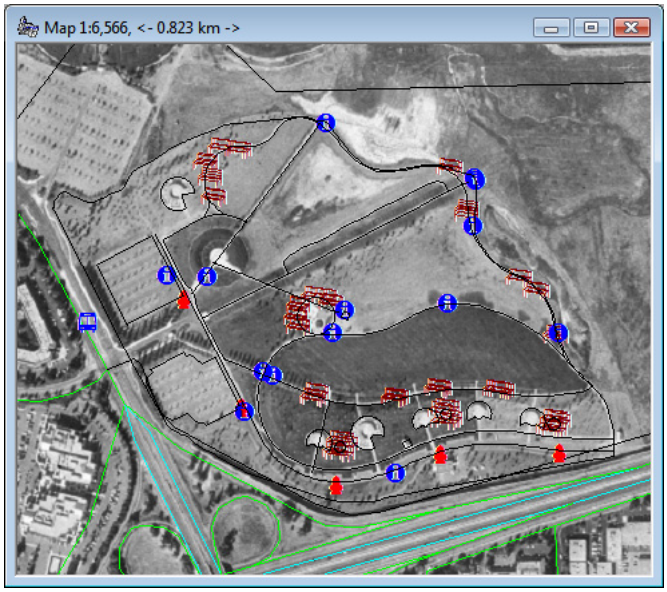
7. Start to load the second background file, AERIAL.bmp, following Step 1 through Step 4 above.

We do not need to change the coordinate system for this file as it is geo-referenced in the UTM coordinate system, which is the coordinate system for this project:



8. Click **OK** to accept the selected coordinate system and to close this dialog.

A progress bar appears while the files are loading. When it is finished, the *Map* window should look like this:



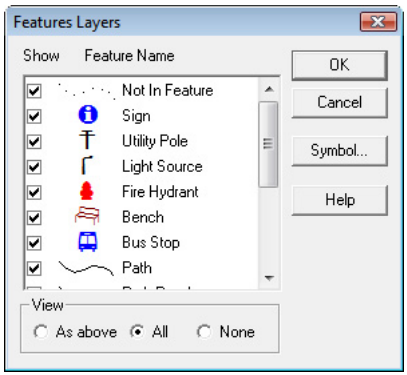
Configuring the Map window

You can configure the *Map* window to only show certain information. For example, you can change the symbols or line colors used to display features to make it easier to differentiate between features. You can also hide features in the data file or layers in the background files to make it easier to view the data.

Feature style settings are shared by the TerraSync software, version 2.20 and later, so you can have a common feature style in the office and in the field. A change in one place affects the other when you transfer the files.

To change the style of point features:

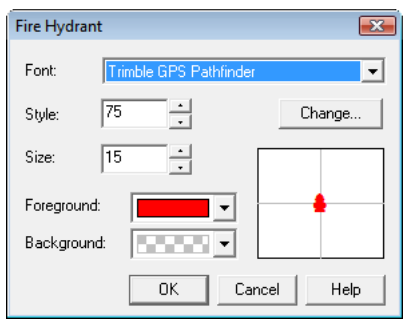
1. Select *View* / *Layers* / *Features*. The *Features Layers* dialog appears:



2. We will not change the symbol assigned to the Fire Hydrant feature, however, we will change its color and size. To change the symbol details, select the Fire Hydrant feature (click on the word Fire Hydrant) and then click **Symbol**.

Tip – You can also change the symbol of a selected feature, by double-clicking on the name of the feature. Alternatively, in the *Map* window, right-click on a feature and select the *<feature name> Layer Symbol* command.

The dialog opposite appears:



3. In the *Font* list, make sure that Trimble GPS Pathfinder is selected.

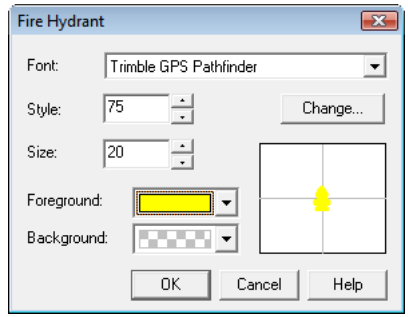
4. Leave the *Style* field as is. This field shows the assigned "style number" of a feature.

Tip – If you know the style number of a symbol, you can enter it directly in the *Style* field. For a table of assigned Trimble GPS Pathfinder symbol style numbers, refer to the *GPS Pathfinder Office Software Help*.

5. In the *Size* field, change the size of the symbol from the default of 15 to 20.

Tip – To view all the symbols for a font, click **Change**. The *Select Style* dialog appears. Select a different font, and then choose a symbol. Click **OK**.

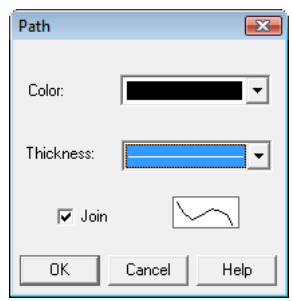
6. In the *Foreground* list, select the color yellow. The changed symbol appears in the symbol preview area of the *Fire Hydrant* dialog:



7. Click **OK** to return to the *Features Layers* dialog.
8. Make sure that the *Show* check box next to the Fire Hydrant feature is selected so you can view the symbol in the *Map* window, and then click **OK**.
9. Click **OK** to close the *Feature Layers* dialog. The *Map* window is updated to display the data file using the new symbols and colors.

To change the style of line and area features:

1. Select *View* / *Layers* / *Features*. The *Features Layers* dialog appears.
2. Select Path from the list of features. The **Symbol** button changes to **Line Style** because you have selected a line feature.
3. Click **Line Style** to display all the possible colors that can be assigned to the Path line feature. The dialog opposite appears:

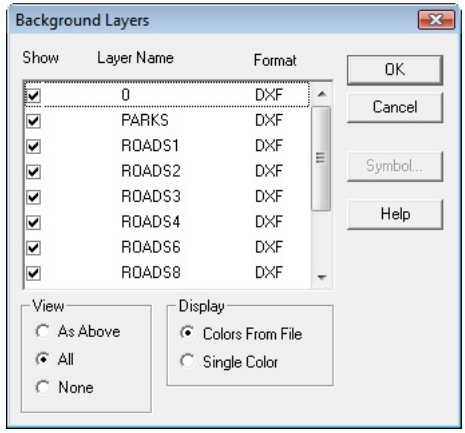


4. From the *Color* field, select an appropriate color.
5. From the *Thickness* field, select an appropriate line thickness.

6. Click **OK** to return to the *Features Layers* dialog.
7. Repeat Step 2 through Step 6 for the following features:
   - Park Road
   - Park
   - Park Amenities
   - Parking lot
8. Click **OK** to close the *Features Layers* dialog. The *Map* window is updated to display the data file using the new symbols and colors.

To remove the minor roads from the street background file:

1. If necessary, click the *Map* window or select *Window* / *Map* to make the *Map* window the active window.
2. To make sure that you can see the changes you are about to make use the zoom buttons on the *Mouse* toolbar to show as much of the park as you can in the *Map* window.
3. Select *View* / *Layers* / *Background*. The *Background Layers* dialog appears:



Each layer in the STREETS.dxf file has a separate layer in this list. The aerial photograph is a single layer in this list. The minor roads are layers ROADS4, ROADS6, ROADS8, and ROADS9.

4. Select all of the above Road layers by clicking on ROADS4, holding down Shift, and then clicking ROADS9.

   All the Road layers from ROADS4 to ROADS9 should be selected.

5. Click the box in the *Show* column to hide these layers. The check marks beside these layers disappear.

6. In the *View* group, select the *As Above* option. Selecting this option displays only the layers with a check mark.

7. Click **OK** to close the dialog. The *Map* window redraws without the minor roads.

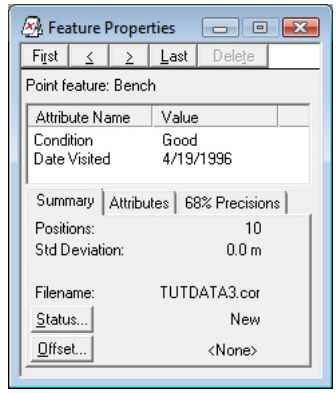
Viewing the attributes of a feature

You can view and edit the attributes of any feature or note in the GPS Pathfinder Office software. You can also view and delete the positions that make up a feature.

Note – *When multiple data files are open, you can view, but not edit or delete, features and positions.*

To view the attributes of a feature:

1. Click the *Select* tool or select *Edit* / *Select*.
2. In the *Map* window, double-click a feature. The feature is highlighted and the *Feature Properties* window appears:

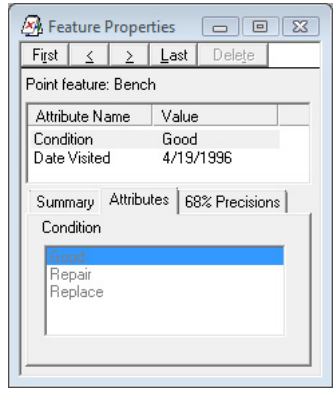
   The feature shown here may differ from the one you have selected.

   The current feature type is shown at the top of the *Feature Properties* window. In the above example, it is a Point feature called Bench.

   To select another feature, click on it in the *Map* window, or use the **First**, **<**, **>**, and **Last** buttons to move to the first, previous, next, and last features respectively.

Note – *The Feature Properties window also shows the contents of notes. Make sure that a feature, not a note, is selected before continuing on to the next step.*

3. Below each feature name is a list of attribute names and values for that feature. Click the *Attributes* tab. The value of the selected attribute is shown in the bottom of the window:



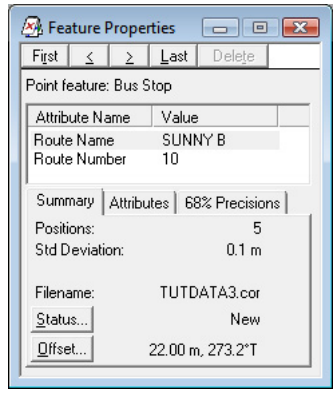
4. Move to the next attribute by clicking on it in the *Attribute Name* list.

Because more than one file is open, you cannot edit attributes. If you were to open a single file, you could edit the attributes for any feature in the file.

Viewing the offset of a feature

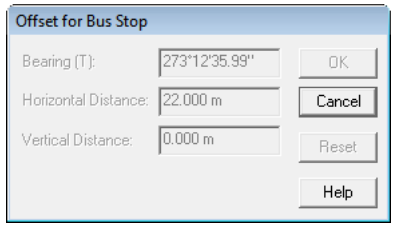
Offsets are an excellent tool for collecting features from a distance when they cannot be collected directly. For example, a feature underneath a bridge could be collected using an offset because the bridge will obstruct the GPS signal. Using the GPS Pathfinder Office software, you can view, add, or change an offset to any feature in an SSF file.

To view the offset for a feature:



1. Select the Bus Stop feature. This is the point feature to the far left of the park boundary. (If the *Feature Properties* window is not open, double-click the feature to select it and open the *Feature Properties* window.)

2. Make sure the *Summary* tab is displayed and then click **Offset**. The *Offset* dialog for the feature appears:



   This dialog shows how far and in what direction the feature is from the spot where the GPS receiver was placed when it was actually collected.

   In this example, the location of the bus stop is 22 meters in a westerly direction from the spot where it was collected.

3. You cannot edit the offset because multiple files are open. Click **Cancel** to close the dialog.

Note – *For line and area features, a direction rather than a bearing, is defined. The direction indicates whether the feature is to the left or to the right, looking along the direction of collection.*

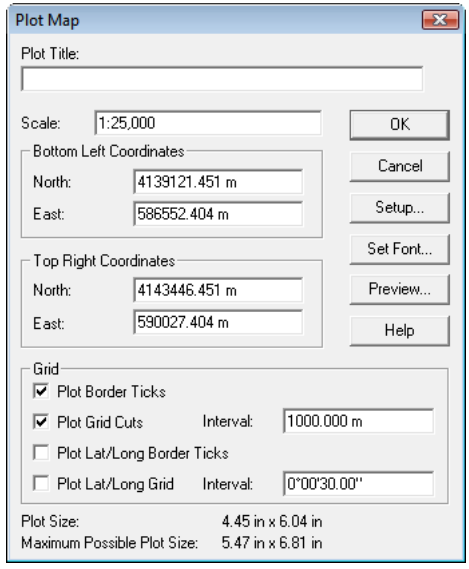
Printing the data

Creating a hardcopy plot of the data is often required for record-keeping, or as a part of a job submission. The GPS Pathfinder Office software lets you plot the contents of the *Map* window directly to any printer or plotter that is supported by Microsoft Windows.

Note – *Even if you do not have a printer or plotter you can complete this section of the tutorial.*

To plot the contents of the *Map* window:

1. Select the *Map* window to make it active.
2. Select *View* / *Zoom* / *Extents* to zoom the *Map* window to include all information. The *Map* window will show all of the data files and background files.
3. Select *File* / *Plot Map*. The *Plot Map* dialog appears:

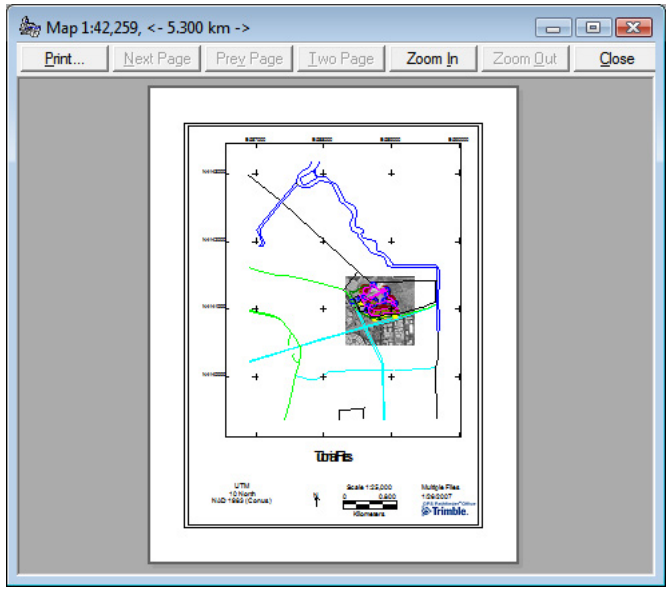


4. If you have more than one printer or plotter set up on the machine, click **Setup** to select the one you want to plot to. Select the printer or plotter and then click **OK**.

5. Enter a title for the plot in the *Title* field. For example, type **Tutorial Files.**

   By default, a sensible scale is selected that fits the contents of the *Map* window onto a single sheet of paper.

6. Click **Preview** to see a preview of the plot before it is actually plotted. The preview will look something like this:



7. Click **Close** to close the preview window.

8. Click **OK** to plot the map to the selected printer or plotter. Skip this step if you do not have a printer or plotter configured.

Exercise 5: Exporting data to a GIS or CAD system

After collecting GPS data you are likely to incorporate the data into a database, such as a spreadsheet or a GIS. Depending on the database that you use, you must export your collected and edited data files to a format that your end-product software can use.

The GPS Pathfinder Office software supports a variety of major GIS, CAD, and spatial database formats. You can also define your own ASCII formats.

For this tutorial, you will export the data files to ESRI Shapefile format.

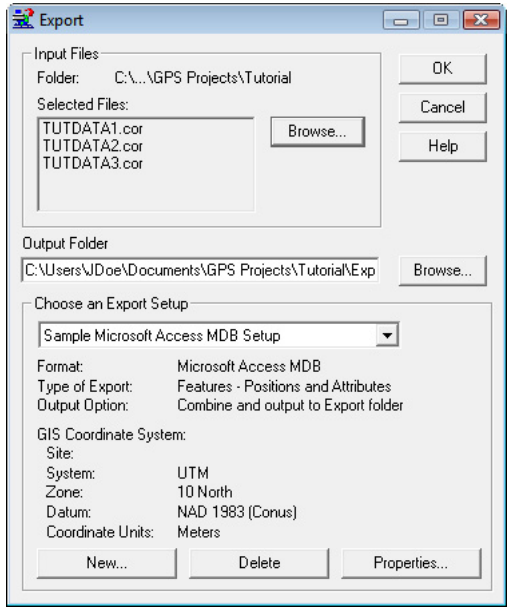
This exercise shows you how to:

- export data files to a GIS format

To export data files to a GIS format:

1. Click the *Export* tool  , or select *Utilities* / *Export*.

   The main window of the Export utility appears:



When the Export utility starts, the most recently used data files are selected by default as input files.

2. Look at the *Output Folder* field. This defaults to the export folder specified in the current project, \GPS Projects\Tutorial\Export. This folder is where all export files will be created.

3. Look at the *Choose an Export Setup* group. It shows information about the export format, the type of data you are exporting, output options, and the coordinate system used for the exported data shows the export setups that are available. The drop-down list in this group contains a list of available export setups. An export setup consists of a format plus several parameters that customize that format for a particular purpose. You can create as many export setups as you like and use them over and over.

4. From the drop-down list, select Sample ESRI Shapefile Setup.

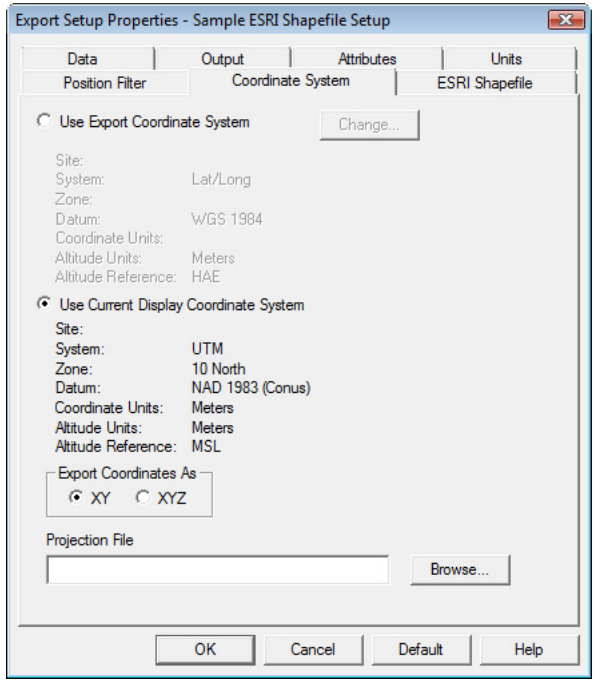
   This export setup creates output files in Shapefile format. The resulting Shapefiles contain 2D coordinates. Tracking themes are not exported.

5. To export a .prj projection file with your files:

   a. Click the **Properties** button.

      The *Export Setup Properties* dialog appears.

   b. Select the *Coordinate System* tab:



   c. Click the **Browse** button next to the *Projection File* field.

      If the ESRI ArcGIS software is installed on the computer, the GPS Pathfinder Office software automatically looks for the location where the ArcGIS software installed the .prj files.

      If the ESRI ArcGIS software is not installed on the computer, you must browse to the location of any existing projection files that you have installed.

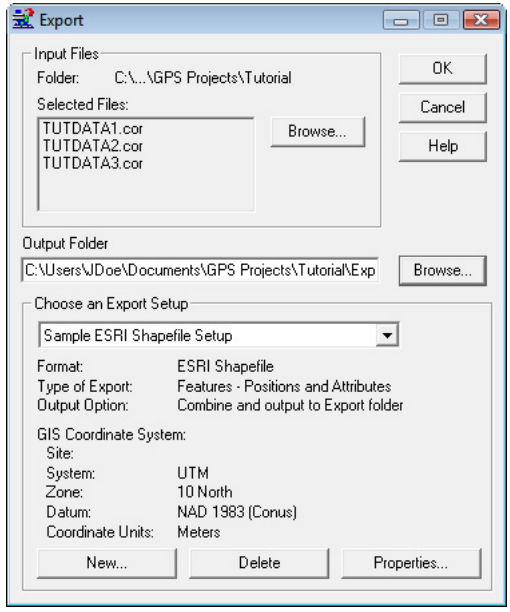
   d. Navigate to the location of the NAD 1983 UTM Zone 10N.prj file and then select it.

Note – *If you cannot locate the correct projection file, leave the Projection File field blank.*

e. Click **OK** to return to the *Export Setup Properties* dialog.

f. Click **OK** to close the *Export Setup Properties* dialog.

6. The rest of the information in the *Choose an Export Setup* group is updated with information relating to the export setup you selected:

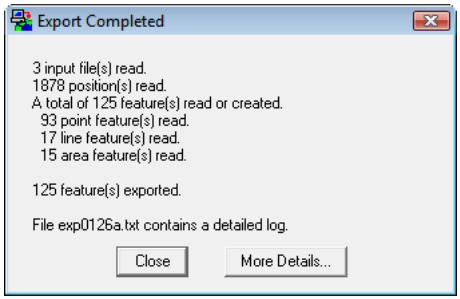


7. Click **OK** to start the export process.

8. If the GPS Pathfinder Office software is unable to locate the selected .prj file, a message asks if you want to continue with the export. Click **Yes** to continue.

9. If a message warns that the files may be overwritten, click **Yes** to continue.

When the process is complete, the *Export Completed* dialog appears:



10. Click **Close** to remove the message without displaying the export log.
11. Using Windows Explorer or another file management utility, look at the contents of the \GPS Projects\Tutorial\Export folder.

    The folder contains the following file types:

File type	Extension	Description
SHP File	.shp	Exported data in Shapefile format.
SHX File	.shx	Index files.
DBF File	.dbf	Attribute data associated with the Shapefiles.
PRJ File	.prj	Projection file.
TXT File	.txt	GPS Pathfinder Office Export log file.
Setup Information	.inf	information on the settings used in the export process. You can use a text editor to open this file. This file is named after the first data input file in the *Export* dialog.

Exercise 6: Updating the data

It is important to keep your GIS up-to-date so that accurate records can be maintained and that the information in the GIS can be used efficiently.

Six months after the three field crews went into the field and collected the data, you now need to send one field crew back to some of the sites to update some data and to collect a new feature.

This exercise shows you how to:

- edit the Tutorial data dictionary to add a new feature and attributes
- save the data dictionary
- import data from a GIS so it can be taken back into the field

Editing the tutorial data dictionary

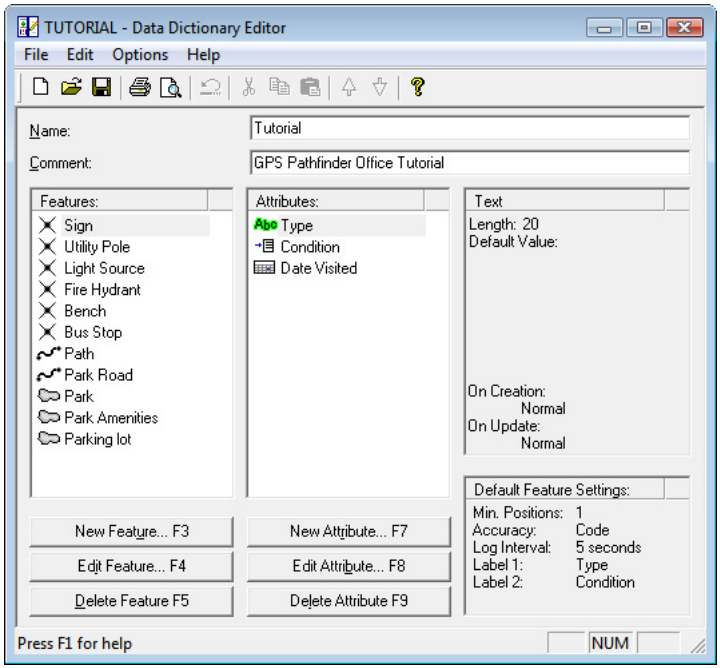
The local City Government that you work for has recently installed some trash cans in a local park. You need to add this feature to your data dictionary so that the field crew can collect data about where each trash can is located.

In this section you will:

- start the Data Dictionary Editor and open a data dictionary
- add the new Trash Can feature and attributes for it
- add a new attribute to the Park Amenities feature

To open a data dictionary:

1. Start the Data Dictionary Editor utility and open the Tutorial.ddf file. (For a reminder on how to do this, see page 74.) The data dictionary opens. You will see a number of features and their attributes:



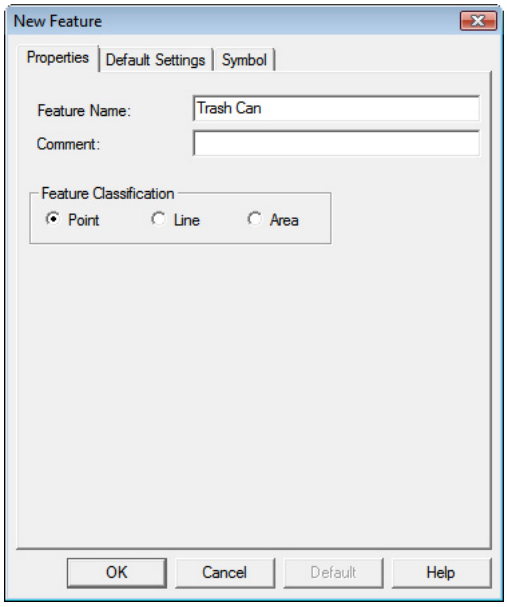
To add the Trash Can feature:

1. Click **New Feature**. Alternatively, press F3.

   The *New Feature* dialog appears.

2. In the *Feature Name* field, enter the text **Trash Can**.

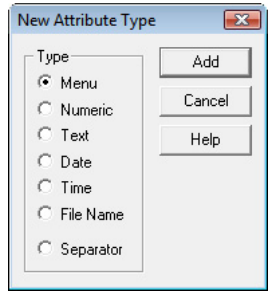
3. In the *Feature Classification* group, make sure that the *Point* option is selected:



4. Click **OK** to return to the main Data Dictionary screen.

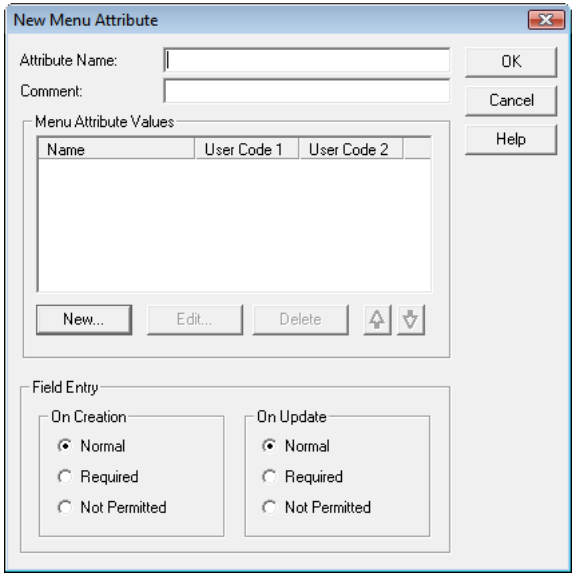
   The feature now appears in the *Features* list.

You can now add attributes to the Trash Can feature:

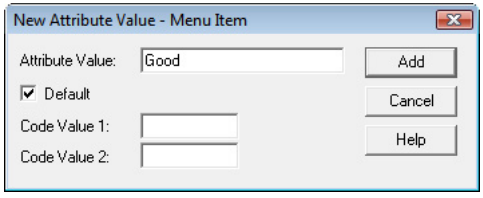


1. Make sure that the Trash Can feature is selected. Click **New Attribute** or press F7. The *New Attribute Type* dialog appears.

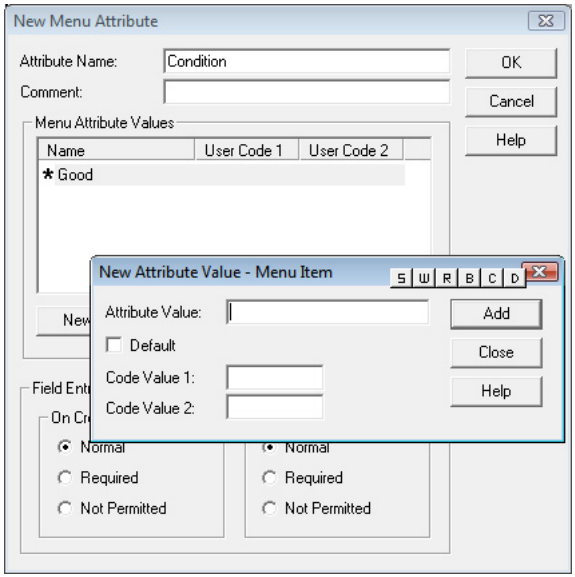
2. Select the *Menu* option and then click **Add**. The *New Menu Attribute* dialog appears:



3. In the *Attribute Name* field, enter the text **Condition**.
4. Click **New** to enter values. The *New Attribute Value - Menu Item* dialog appears.
5. In the *Attribute Value* field, enter the text **Good**.
6. We will make this value the default. Setting a default saves field crews from entering repetitive data and also makes collecting data simpler and faster. Select the *Default* check box:



7. Click **Add**. The value is added to the *Menu Attribute Values* group in the *New Menu Attribute* dialog:



   The *New Attribute Value – Menu Item* dialog remains open so you can add more values.

8. In the *Attribute Value* field, enter the text **Repair** then click **Add**.
9. Repeat Step 8 but enter the text **Replace**.
10. Click **Close** to return to the *New Menu Attribute* dialog.
11. Click **OK** to return to the *New Attribute Type* dialog.

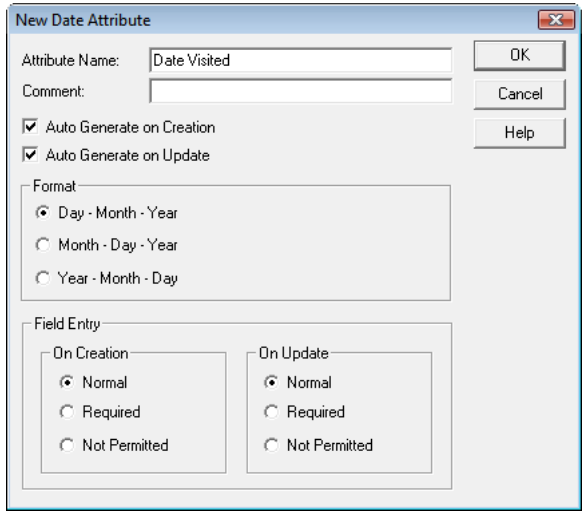
You now need to add a Date attribute to the Trash Can feature so that the date the field crew visited the feature can be logged:

1. In the *New Attribute Type* dialog, select the *Date* option and then click **Add**.

   The *New Date Attribute* dialog appears.

2. In the *Attribute Name* field, enter the text **Date Visited**.

3. To have the data collection software automatically supply the current date when a new feature with this attribute is ***collected***, make sure that the *Auto Generate on Creation* check box is selected.
4. To have the data collection software automatically supply the current date when an existing feature with this attribute is ***updated***, select the *Auto Generate on Update* check box.
5. In the *Format* field, select the *Day – Month – Year* option:



6. Click **OK** to return to the *New Attribute Type* dialog.
7. Click **Close** to return to the main Data Dictionary Editor screen.

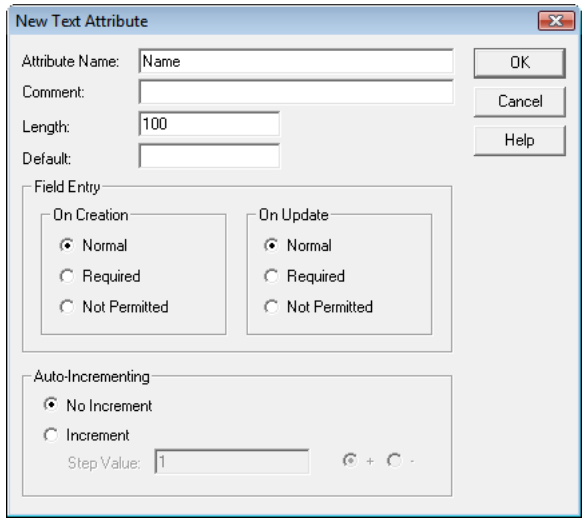
Select the Park Amenities feature. Note that it has one attribute called Type. We will now add another attribute called Name so that the field crew can enter the name of the amenity.

To add an attribute:

1. In the Features list, select Park Amenities.
2. Click **New Attribute** or press F7.

   The *New Attribute Type* dialog appears.

3. Select the *Text* option and then click **Add**. The *New Text Attribute* dialog appears:

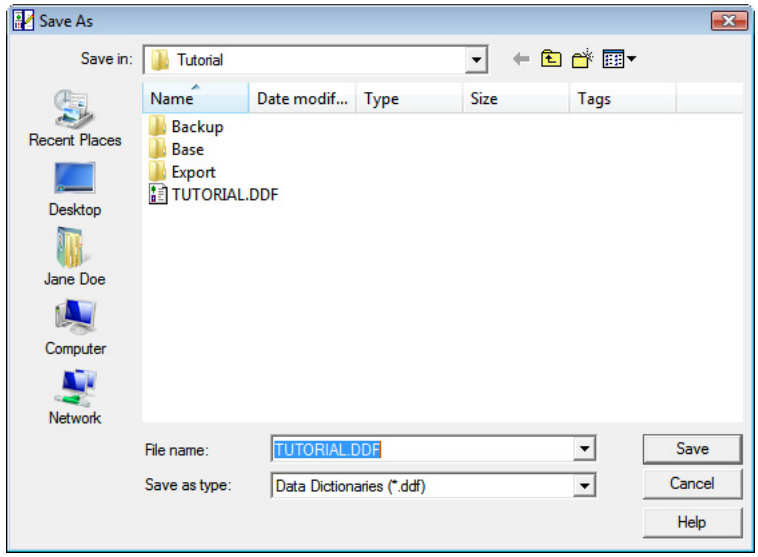


4. In the *Attribute Name* field, enter the text: **Name**.
5. In the *Length* field, change the value from the default of 30 characters to 100. This is the maximum length of a text attribute.
6. Click **OK** to return to the *New Attribute Type* dialog.
7. Click **Close** in the *New Attribute* dialog to return to the main Data Dictionary Editor screen.

Saving the data dictionary

For the purposes of this tutorial, save the data dictionary with a ***different name*** to tutorial.ddf.

1. From the *File* menu choose *Save As*. The following dialog appears:



2. Make sure that the Tutorial folder is selected and in the *File name* field, enter the following name for your changed data dictionary: **Tutorial_updated.ddf**.

3. Click **Save**.

   The name of the new data dictionary appears in the title bar of the main Data Dictionary Editor screen.

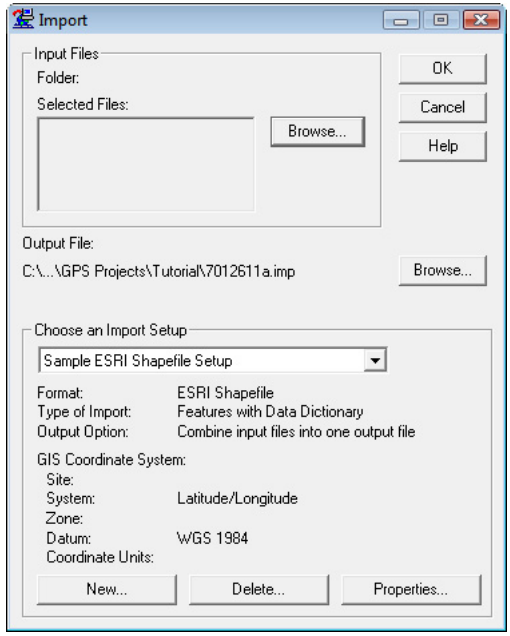
4. Select *File* / *Exit* to close the Data Dictionary Editor utility.

Importing data from a GIS

To import the data from the GIS that we want the field crews to visit and update in the field:

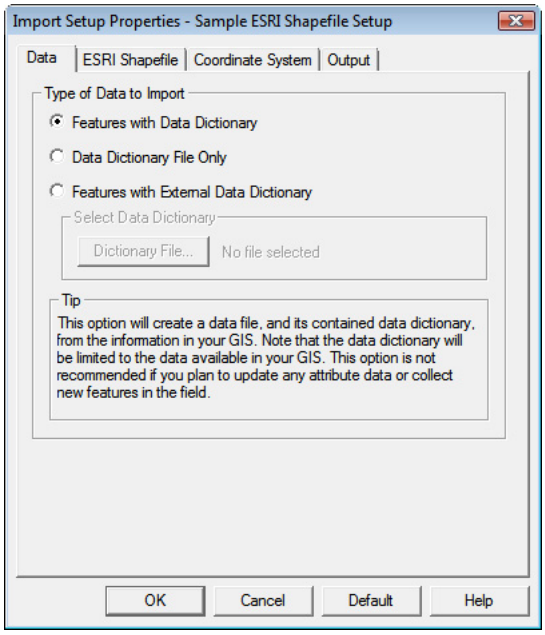
1. Select *File* / *Close* to close any data files that are currently open.
2. From the *Utilities* menu choose *Import*. Alternatively, click  .

   The main window of the Import utility appears:



3. In the *Choose an Import Setup* group, make sure that the Sample ESRI Shapefile Setup item is selected.

4. Click **Properties**. The *Import Setup Properties* dialog for the selected import setup appears:



   To import some data from the GIS and match it with the data dictionary, which you just changed:

   a. In the *Type of Data to Import* group, select the *Features with External Data Dictionary* option. The *Select Data Dictionary* group becomes available.

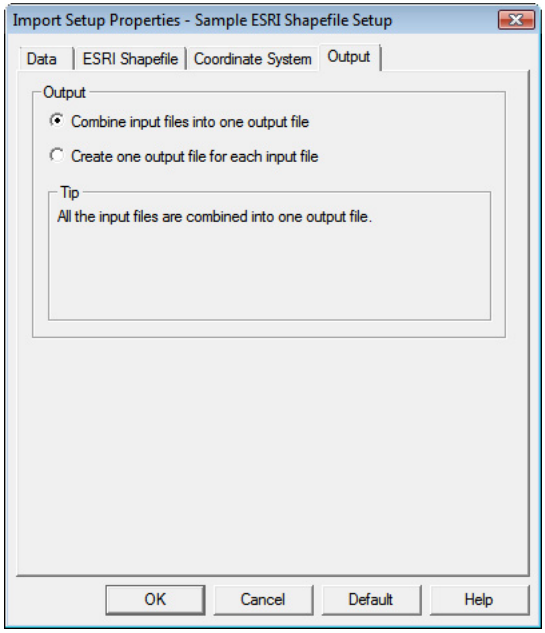
   b. Click **Dictionary File**. The *Select Data Dictionary File* dialog appears.

   c. Select the Tutorial_updated.ddf file, which is in the Tutorial folder and then click **Open**.

5. In the *Import Setup Properties* dialog, select the *Coordinate System* tab.

If the Current Coordinate System area does not have the current coordinate system selected (UTM) click **Change** and change the coordinate system. (For the coordinate system settings that you need to use, see page 70).

6. In the *Import Setup Properties* dialog, select the *Output* tab:



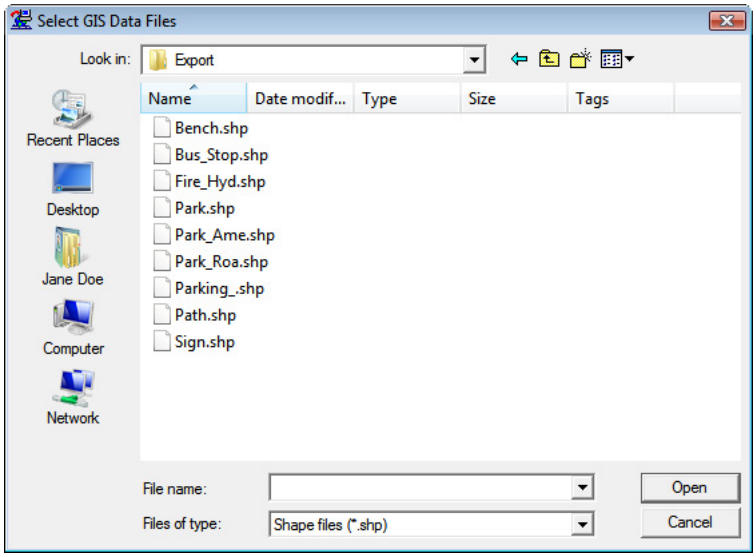
   a. In the *Output* group, make sure that the *Combine input files into one output file* option is selected. This will create only ***one*** data file for taking back into the field for updating.

   b. Click **OK** to return to the main Import utility screen.

7. In the *Input Files* group, click **Browse**.

   The *Select GIS Data Files* dialog appears.

8. Select the nine Shapefiles that were exported in Exercise 5 (these files are in the GPS Projects\Tutorial\Export folder) and then click **Open** to return to the *Import Utility* dialog:



The selected files appear in the Output File area of the I*mport Utility* dialog.

9. In the Output File area:

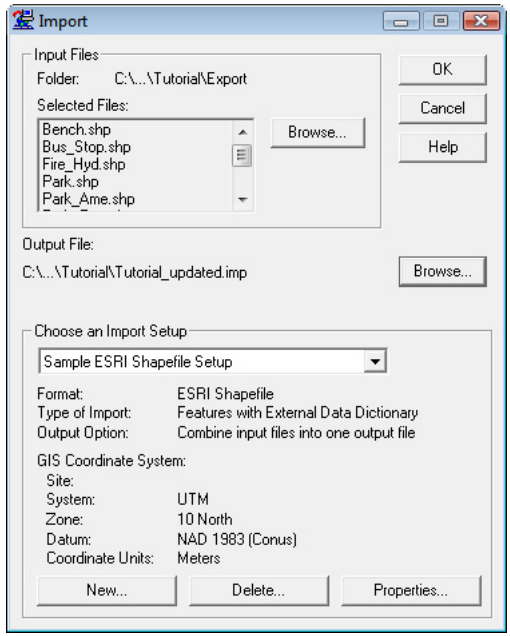
   a. Make sure that the file will be stored in the \GPS Projects \Tutorial folder.

      By default, the name of the file is automatically generated.

Note – *The file itself is the same as an .ssf file except that it has a different file extension. The file extension is changed to make sure that files are not overwritten when they are transferred from the field computer back to the office. By default, the file name uses the 24-hour clock format, YMMDDHHa, where a is the number of the file that has been created in the hour. For example, the file 0030722a.imp was created on 7 March 2000 at 22:00 hours. It is the first file created that hour.*

   b. Click **Browse**. The *Specify Output File* dialog appears.

c. Rename the file to **Tutorial_updated.imp**. Make sure this file is selected in the *File name* field and then click **Save**. You are returned to the *Import Utility* dialog:



10. Click **OK**. The files are imported.

    The *Import Completed* dialog appears, which contains a summary of the import process.

Tip – To see a detailed log of the import process, click **More Details**.

11. Click **Close**.

    The .imp file can now be transferred to the field computer so that the GIS data can be checked in the field.

Exercise 7: Back in the office

The field crew have collected data on the new trash cans. They have also updated some data. You have transferred the updated file from the field computer back to the office computer (the file has been stored in the main tutorial project area). Note that this file is automatically renamed with an .ssf extension to eliminate the overwriting of files. It also makes it easy to identify which files were imported from your GIS and which were updated in the field.

Because the updated data has been collected in real-time, there is no need to differentially correct it as we did in Exercise 3: Differentially correcting the field data.

Once you have opened the updated data file, you need to check the data for GPS spikes or other irregularities and edit as appropriate. Do this before you export the data to a suitable format for your GIS.

This exercise shows you how to:

- open the updated data file
- find a feature that needs repairing or replacing
- view the positions of a feature
- view new and updated features that were collected by the field crew
- view the status of a feature
- measure the distance between two features

Opening the updated data file

To open the updated data file:

1. Open the file Tutorial_Updated.ssf. (From the main GPS Pathfinder Office software select *File* / *Open*.)
2. Make sure that the *Map* window is open.

   If necessary, refer to Displaying the Map and Time Line windows, page 94.

Finding a feature

You can search for a particular type of feature or for a feature with a particular attribute value. In this case, we will search for all features with the Condition attribute set to the value of Repair or Replace.

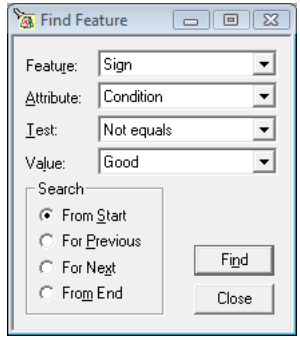
To find a feature that needs repairing or replacing:

1. Turn on the *Auto-pan to Selection* tool or select *View* / *Auto-pan to Selection*.

   Finding a feature with the *Auto-pan to Selection* tool ensures that the *Map* window always displays the feature when it is found even if it is not already in the *Map* window.

2. Select *Edit* / *Find Feature*. The *Find Feature* dialog appears.
3. In the *Feature* field, select the first feature listed: Sign.
4. In the *Attribute* field, select the Condition item.
5. In the *Test* field, select the Not equals item.
6. In the *Value* field, select the Good item.
7. In the *Search* group, make sure the *From Start* option is selected:

   The software searches for all Sign features that need repairing or replacing. The search starts from the beginning of the data file. This is the default when you first search for a feature. Once the first occurrence of a feature is found, the *For Next* option is selected.



Tip – To search for a particular feature that needs repairing, set the *Test* field to Equals and the *Value* field to Repair.

8. Click **Find**. The GPS Pathfinder Office software searches for the first feature in the file that is a Sign feature with a value that does not equal Good.

When the feature is found in the *Map* window it becomes the selected feature: .

Tip – You may find it easier to view the found features if you turn the aerial background map off.

9. Repeat the above steps to search for other features that need repairing or replacing.

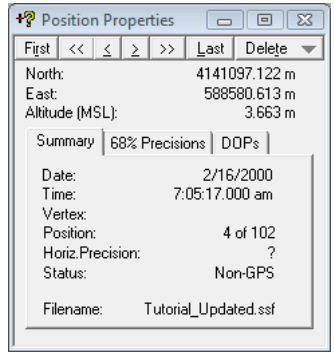
Viewing the positions of a feature

To view the positions of a feature:

1. Select the Park Road line feature. This is inside the park area feature and starts to the right of the parking lot which is in the top left corner of the park. It runs along the right side of the parking lot, parallel with the boundary, and along the bottom of the park, ending in the bottom right corner of the park.

Tip – If you cannot find this feature, use the *Find Feature* tool.

2. Click the *Position Properties* tool +? or select *Data* / *Position Properties* to display the *Position Properties* window:



This window displays the individual positions of the currently selected feature. It can also be used for Not in Feature positions and general map locations. Currently displayed is the first position in the Park Road feature. A small crosshair shows its position in the *Map* window.

3. Click **>**. The crosshair moves to the next position in the Park Road feature and the *Position Properties* window changes to show these coordinates.

Tip – To see where the positions were logged more clearly, zoom in on the Park Road in the *Map* window.

4. Click **>>**. The crosshair jumps to the last position in the Park Road feature (position 102 of 102).
5. Click **Last**. The crosshair jumps to the very last position in the open file, which is in a Trash Can feature.

Using layers to view a feature

Layers let you determine which features are displayed in the *Map* and *Time Line* windows, and how they are displayed.

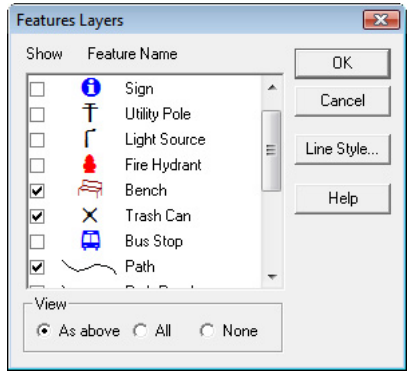
All information is grouped into layers, which can be turned off or on. For example, all notes form a layer, as does each feature defined by the data dictionary. By turning layers off or on, you can view only those items that you are interested in. The default setting is to view all layers.

Layers help you control the display of feature layers. You can:

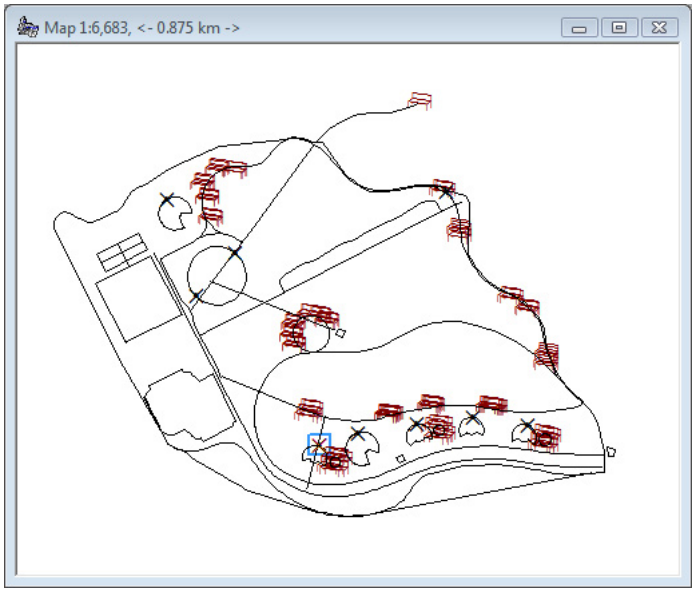
- show or hide any particular feature layer
- select several features and show or hide them all
- select several point features and change them all to the same symbol
- select several line and area features and change them all to the same line style

To view the Bench and Trash Can point features:

1. From the *View* menu choose *Layers* / *Features*. The *Features Layers* dialog appears:
2. Clear the check box in the *Show* column next to each ***point feature***, except for the Bench and Trash Can features and then click **OK**.



3. The Bench and Trash Can features appear in the *Map* and *Time Line* windows, along with the line and area features to put the features in perspective. You can also see where the trash cans are located in relation to the park benches:



Viewing the status of a feature

1. Open the *Feature Properties* window. (From the *Data* menu click  or choose *Data* / *Feature Properties*.)
2. Click < and > to scroll through the list of features collected.
3. View the status of each feature in the Status area near the bottom of the window.

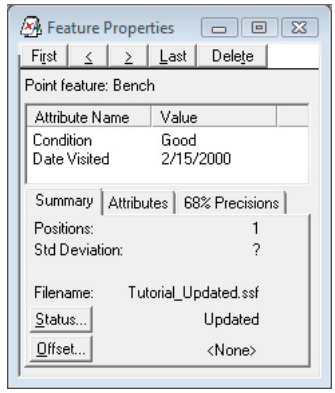


Table 4.4 shows the three values for the status of a feature.

Table 4.4 Feature status

Status	Description
New	A new feature is one that has been added to a data file in the most recent data collection session. A new data file will only contain new features.
Imported	An imported feature is one that previously existed in a data file and has not been edited or updated in the most recent data collection session.
Updated	An updated feature is one that previously existed in a data file, but has been edited or updated in the most recent data collection session.

Measuring distances

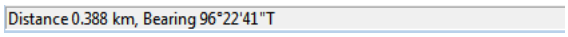
The Measure command lets you measure distances and areas on the map. You can measure the distance between two points, or the distance along a route. To measure the distance along a route and not merely the distance as the crow flies, you measure a series of straight-line distances between points along the route. The approximate route distance is the sum of these distances. You can also measure the area enclosed by a set of points.

To measure the distance between two positions:

1. Select the *Map* window to make it active.
2. Click the *Measure* tool  or select *Data* / *Measure* to activate the *Measure* tool.
3. Click on the *Map* window at the start position.

   The status bar changes to display the measurement information.
4. Move the mouse towards the position you want to measure to.
5. Click on the end position.

   The status bar in the main window of the GPS Pathfinder Office software displays the total distance and bearing between the positions:

6. To end the measurement command, double-click, press Esc, or select another tool.

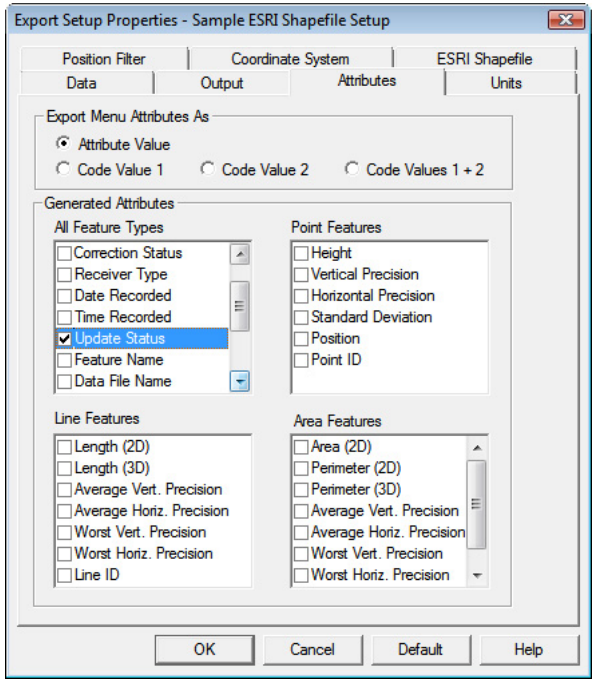
Tip – To change the measurement units select *Options* / *Units* and change the distance measurement.

Exporting data to update the GIS

If you want to export an updated data file to a format that is suitable for your GIS, you would use the Export utility.

If you are going to use the Status flag to determine how to update the features in the GIS, make sure that the Update Status generated attribute is exported.

To do this, in the *Export* dialog, click **Properties** and then select the *Attributes* tab). Select the check box next to Update Status in the *All Feature Types* list, and then click **OK**.



For more information, refer to the *Export Utility Help*.

Exercise 8: Special exercise

The special exercise has no effect on the other exercises and may be performed independently. It is divided into two parts. You do not have to complete both parts, and it does not matter which part you do first.

In the first part of the special exercise Batch processing, you learn how to use the Batch Processor utility to automate repetitive tasks.

In the second part of the special exercise, Managing waypoints, you learn how to create and view waypoints.

Batch processing

The Batch Processor utility is a powerful tool designed to help you increase your productivity by automating repetitive tasks. This means that you can spend more time collecting data in the field.

You can set up the Batch Processor utility to transfer data, differentially correct, format, and then export files to your particular GIS system. It can also import and process your files with your GIS software, depending on the power of its own batch or macro language.

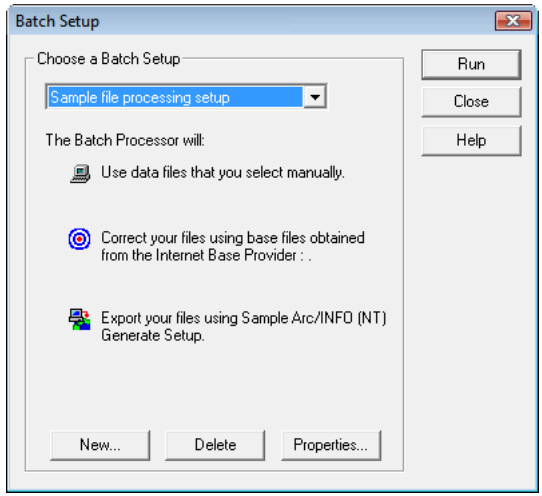
You can save your settings as a batch setup to use in future sessions. A batch setup stores information about, and specific settings for, the Data Transfer, Differential Correction, and Export functions you select. You can also associate a particular project with a batch setup.

The first part of this special lesson shows you how to:

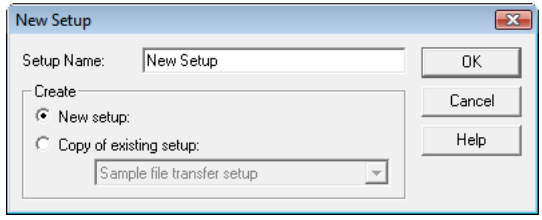
- create a batch setup
- differentially correct files
- export corrected files
- run the Batch Processor utility

To create a new batch setup and run the Batch Processor utility:

1. Click the Batch tool , or select *Utilities* / *Batch Processor*. The *Batch Processor* window starts, then the *Batch Setup* dialog appears:

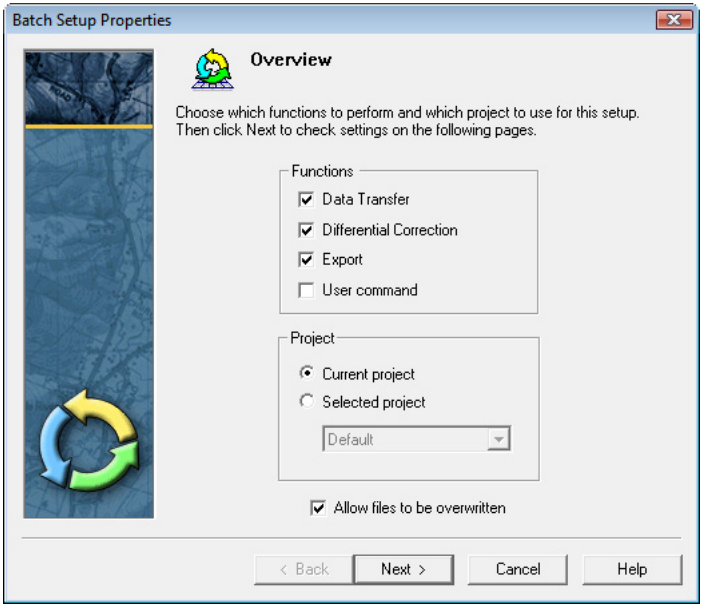


2. Click **New**. The *New Setup* dialog appears:



3. In the *Setup Name* field, type a name for your batch setup. Choose a meaningful name so that you can easily identify it each time you use this batch setup. For example, use the name of your client and the date you create the setup.

4. Click **OK**. The *Batch Setup Properties* dialog appears:



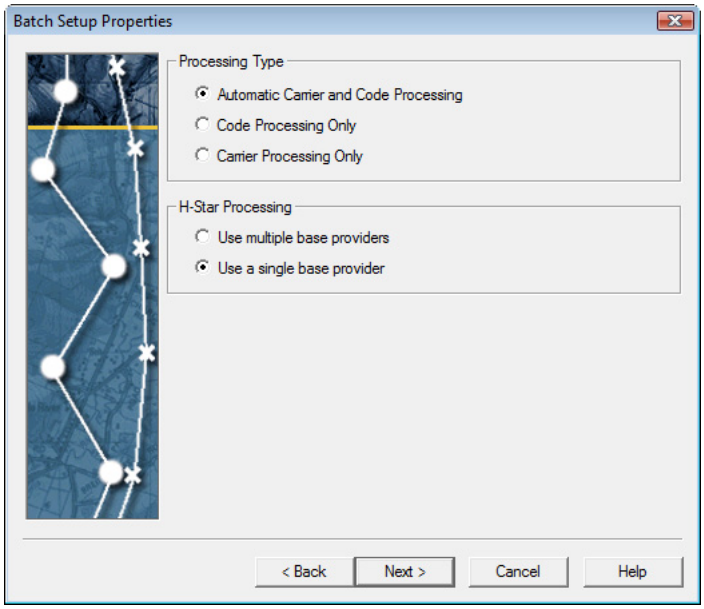
The Batch Processor utility follows a wizard-style process of moving through a series of pages using the **Next** and **Back** buttons.

5. The first three options are selected by default but, for the purposes of this tutorial, clear the *Data Transfer* check box. This prevents the Batch Processor utility from attempting to connect to and transfer data from a field computer.

   The check marks next to Differential Correction and Export indicate that, in this setup, the Batch Processor utility will differentially correct and export the selected data files.

   In the *Project* group, the ***Current project*** field shows the project associated with the last-used batch setup. If you want to specify a project that will always be associated with the batch setup you are creating, select the ***Selected project*** option, click the drop-down arrow and choose a project from the list.

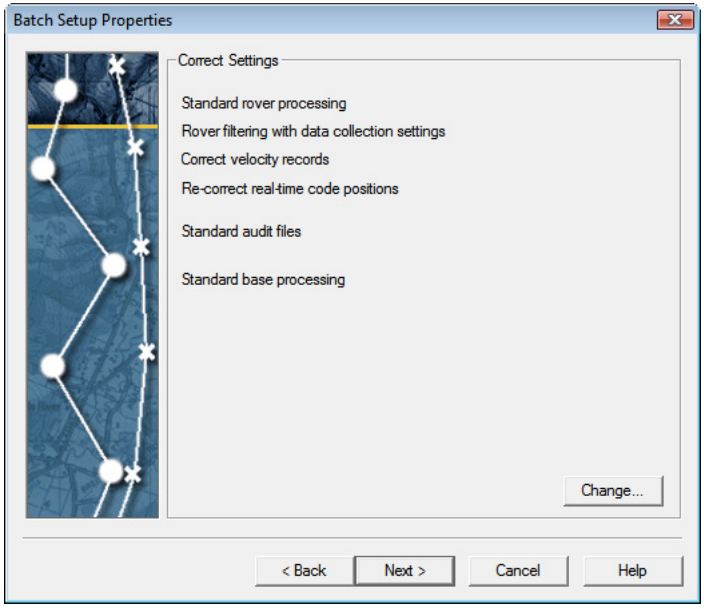
6. In the *Project* group, choose the *Selected project* option and make sure that the Tutorial project is selected.
7. Make sure that the *Allow files to be overwritten* check box is selected, otherwise the Batch Processor utility stops when it tries to create a file that already exists.
8. Click **Next**. The *Processing Type* page appears:



It displays the processing options available for the data files. Because you have not yet selected the files for processing, all processing type options are availble.

9. In the *Single-base* group, make sure that the *Automatic* option is selected. This is the default setting and it is the most thorough type of processing.

10. Click **Next**. The *Correct Settings* page appears:



It displays the settings that will be used to differentially correct the data files. The default settings are displayed above.

If the settings displayed are different to the default settings, click **Change**. The *Correction Settings* dialog appears. In each tab, select the appropriate options so that your settings match the default correction settings. Click **OK** to close the dialog and return to the Batch Processor utility.

11. Click **Next**.

The *Base Data* page appears.

There are three options for locating base data:

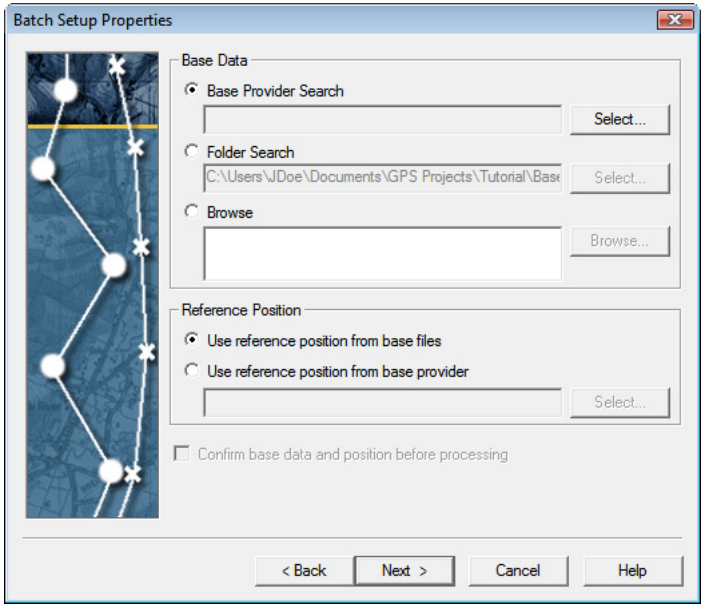
- download files from a base provider using the Internet
- use base files that you have previously downloaded and saved in the base data folder for the project

– browse for base files that you have previously downloaded and saved elsewhere

Do one of the following:

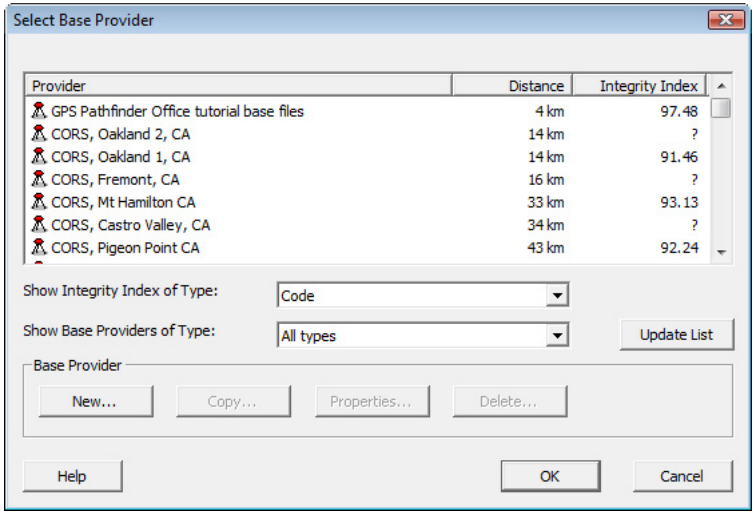
- If you have access to the Internet, download base data files from the tutorial base provider:

  a. In the *Base Data* group, select *Base Provider Search*:



  b. Click the **Select** button next to the Base Provider Search text box.

The *Select Base Provider* dialog appears:



The dialog displays a list of available base providers. The list is arranged by distance from the location where the previously corrected rover files were collected.

Note – *If there are no data files open, the list of available base providers is arranged alphabetically and ? is shown in the Distance and Integrity Index fields.*

For this tutorial, we have set up an FTP site for the tutorial base data and named it "GPS Pathfinder Office tutorial base files".

c. Click the "GPS Pathfinder Office tutorial base files" provider (near the top of the base provider list) to select it, and then click **OK.**

If you do not have access to the Internet, select the folder where base data files for the tutorial are stored:

- If you do not have access to the Internet, use the base data files in the base data folder of the Tutorial project:

a. In the *Base Data* group, select *Folder Search*.

   The path and folder name of the Base folder for the Tutorial project should already appear in the box below the Folder Search option.

b. If the correct path and folder name is not shown, click the **Select** button next to the Folder Search text box.

   The *Folder Search* dialog appears.

c. Click **Browse** to navigate to the base folder that is defined for the Tutorial project. The default location is Tutorial\Base in the GPS Projects folder.

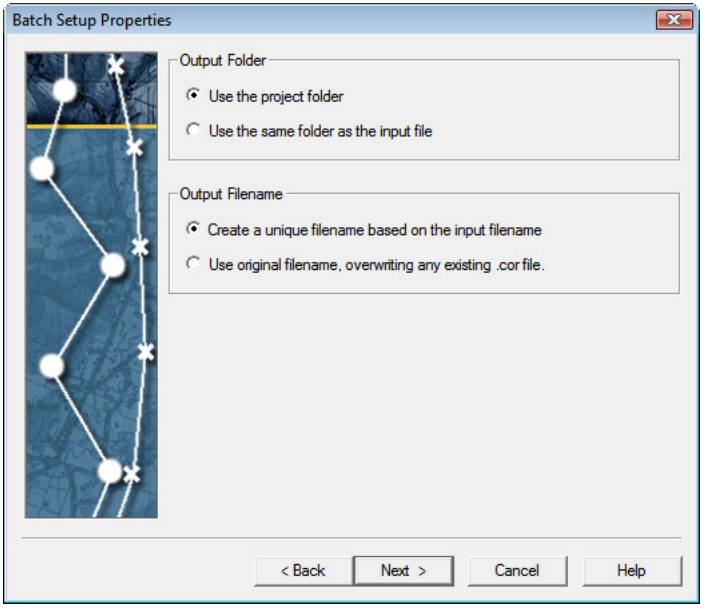
d. Click **OK**.

The dialog closes and you are returned to the Base Data page of the wizard.

The dialog closes and you are returned to the Select Base Data page of the utility. The base provider, or the path of the folder you selected, is displayed in the text box below the Base Data option you selected.

12. In the *Reference Position* group, select *Use reference position from base files*.

13. Click **Next**. The Output page appears:

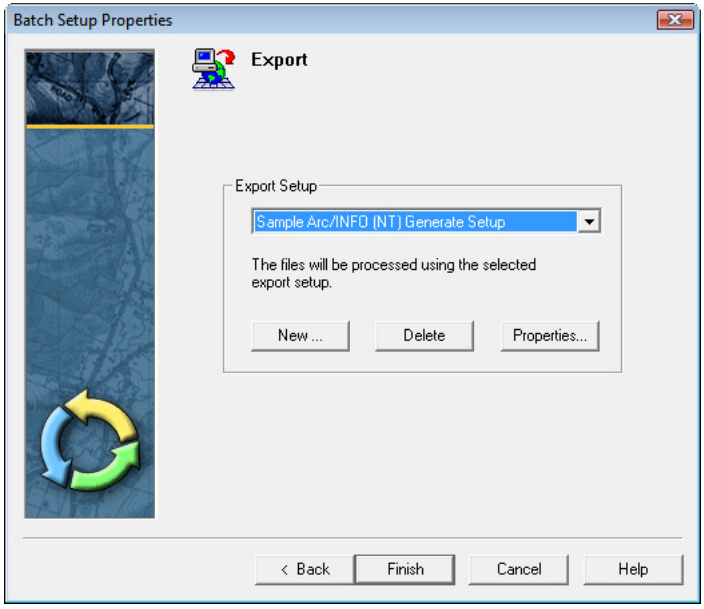


It displays the options for outputting the processed files.

14. Make sure the *Use project folder* option is selected.

15. Make sure the *Create a unique filename* option is selected. That means that if you reprocess files, each subsequent processed file will have _n appended to the filename, where *n* denotes the next number in the sequence.

16. Click **Next**. The *Export* page appears:



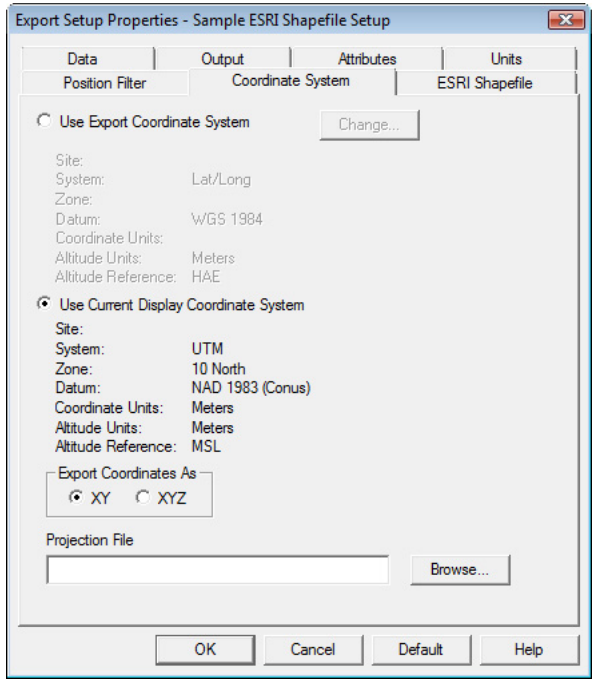
It displays the options for the export part of the batch process.

17. Click the drop-down arrow below the Export Setup field and select the Sample ESRI Shapefile Setup option. The export folder defaults to \GPS Projects\Tutorial\Export, which is the export folder specified for the project.

18. If the ESRI ArcGIS software is installed on your computer, do the following:

    a. Click the **Properties** button. The *Export Setup Properties* dialog appears.

    b. Select the *Coordinate System* tab:



    c. Click the **Browse** button next to the *Projection File* field. The software looks for the location where the ArcGIS software installed the .prj files. Navigate to the location of the NAD 1983 UTM Zone 10N.prj file and select it.

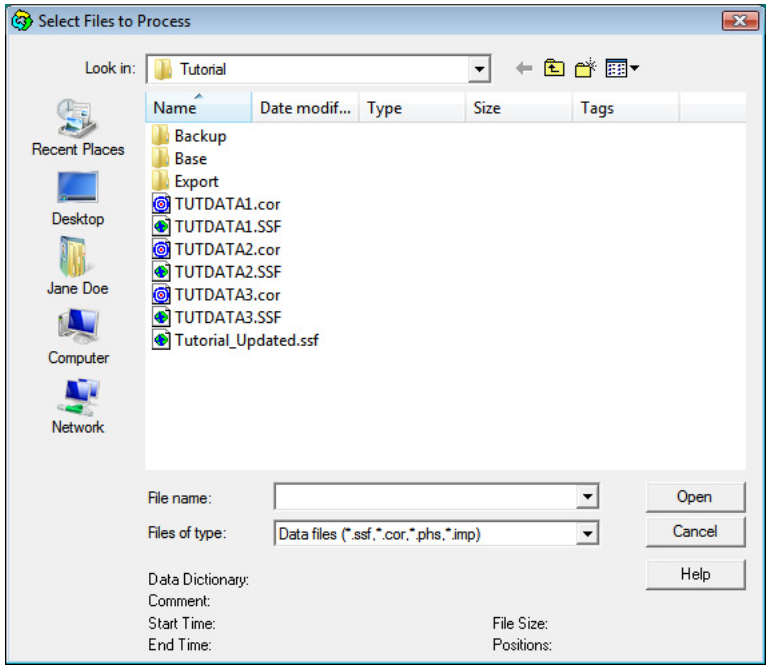
    d. Click **OK** to return to the *Batch Setup Properties* dialog.

19. If you left the *Projection File* field empty, a message warns that no ESRI projection file has been found. Click **Yes** to continue.

20. Click **Finish** to return to the *Batch Setup* dialog.

21. Click **Run**.

22. Because you chose not to transfer files from a field computer, the Batch Processor utility requires you to select files from the *Select Files to Process* dialog:



All data files are shown in this dialog, including a set of Standard Storage Format (.ssf) files. These are files that have been collected in the field.

23. Select the files TUTDATA1.ssf, TUTDATA2.ssf, and TUTDATA3.ssf, as follows:

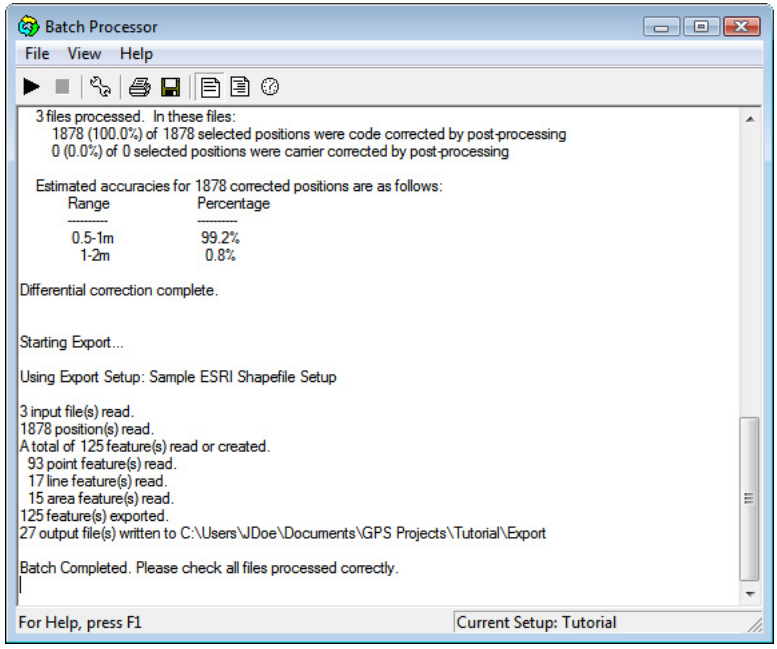
    a. Click TUTDATA1.ssf, then, while holding down Ctrl, click TUTDATA2.ssf and TUTDATA3.ssf.

       All three data files are now highlighted.

    b. Click **Open** to run the batch setup.

As the batch setup runs, a series of progress dialogs is displayed, and a record of what happened during the batch process is saved in a log file. You can refer to this log file once the batch session has finished to confirm that everything was processed as expected.

Once the session is complete, the batch log window appears, indicating that the data was correctly processed:



24. Examine the detailed log by clicking on the *Details* tool or selecting *View* / *Show Details*.

    The detailed log shows you the input data files, the names of the automatically selected base files, and other information about the batch process. If anything goes wrong, check this log to determine what happened.

25. To save the log file:
    a. Select *File* / *Save As.*
    b. Give the file a meaningful name.
    c. Save the file in the \GPS Projects\Tutorial folder.
26. Select *File* / *Exit* to close the Batch Processor utility.

Managing waypoints

Waypoints are named locations that you can record using a field computer running data collection software, or create in the GPS Pathfinder Office software. Waypoints are useful for navigating to a point.

In the GPS Pathfinder Office software, waypoints are stored in files that usually have the extension .wpt. You can store as many waypoints as you like in one file.

The second part of this special exercise shows you how to:

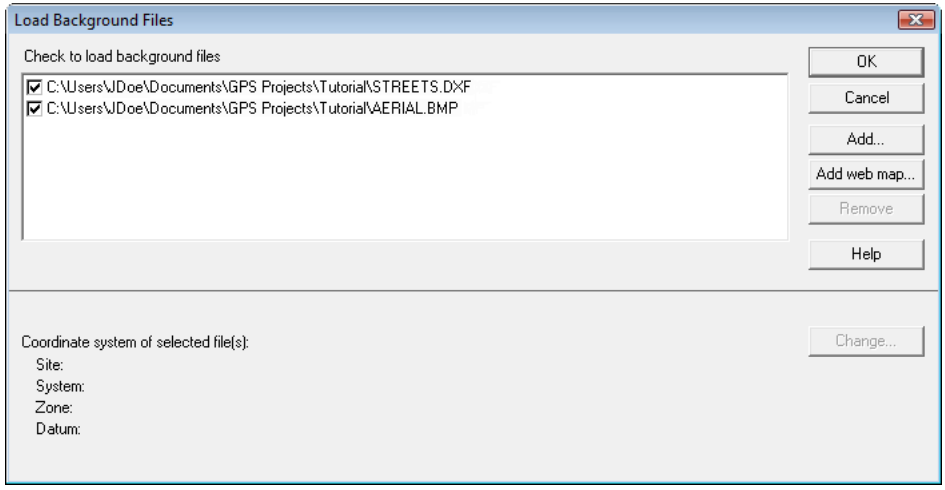
- create a new waypoint file
- create a waypoint

To create a new waypoint file:

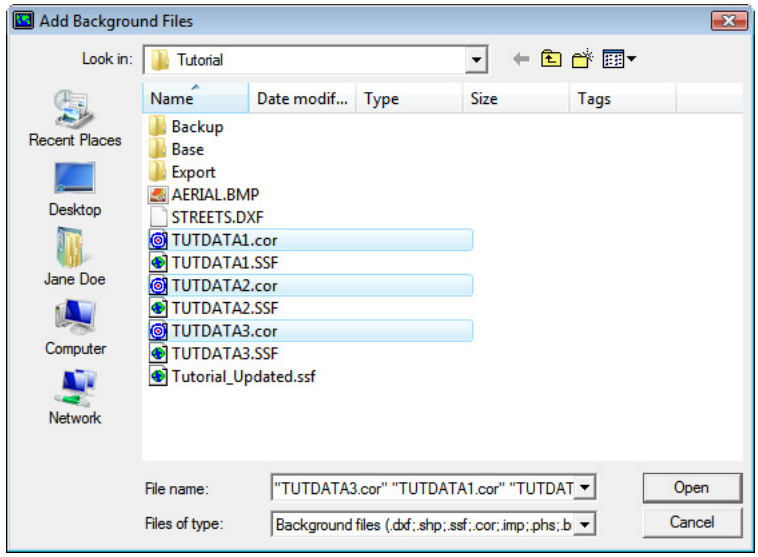
1. Start the GPS Pathfinder Office software and open the Tutorial project.
2. Select *View* / *Map* to display the Map window.

3. To display files in the Map window:

   a. Select *File* / *Background*. The *Load Background Files* dialog appears:



   b. Click **Add**. The *Add Background Files* dialog appears:



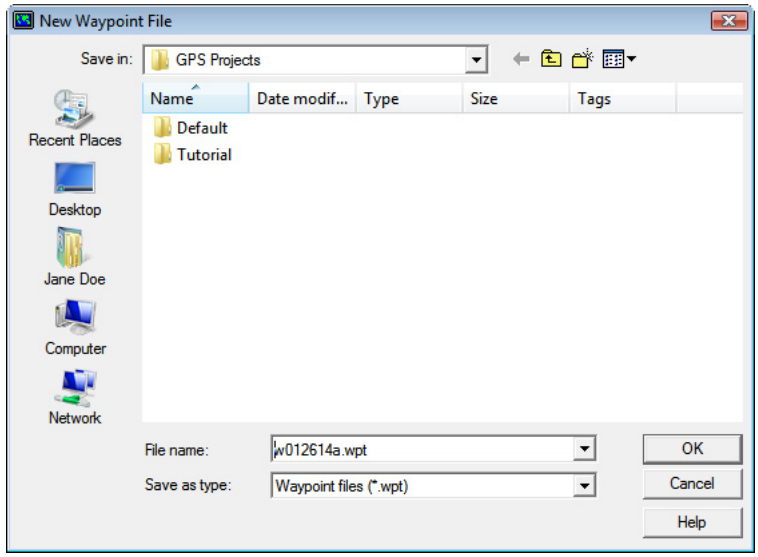
c. Select the three .cor files (or the first three .ssf files if no .cor files are available).

d. Click **Open** to return to the *Load Background Files* dialog.

e. Click **OK**.

Progress bars shows that the files are loading, then the map will display the features from the data files.

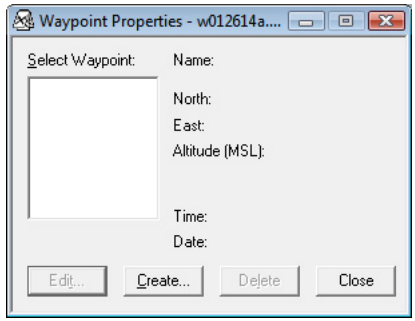
4. Select *File* / *Waypoints* / *New*. The following dialog appears:



By default, the new waypoint file is named using the current date and time in the 24-hour clock format, wMMDDHHa, where w is the waypoint file identifier and a is the number of the file that was created in that hour. For example, the file w042810a.wpt was created on 28 April at 1000 hours. It was the first file created in that hour.

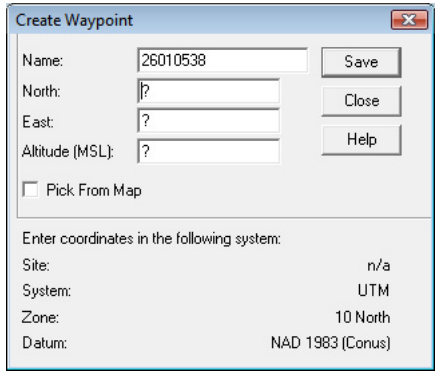
5. If you want, change the filename and the current folder, then click **OK**.

The *Waypoint Properties* dialog opens automatically when you open a waypoint file:



Using the *Waypoint Properties* dialog you can create new waypoints, edit existing waypoints, or delete waypoints from the waypoint file.

6. Click **Create**. The *Create Waypoint* dialog appears.

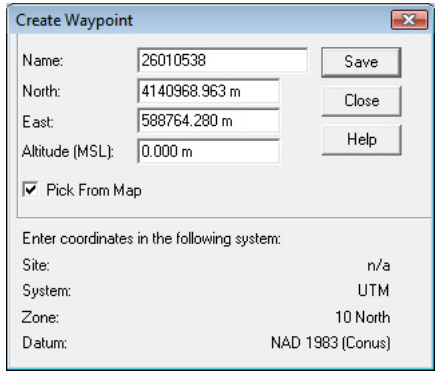


7. Select the *Pick From Map* check box.

   If the *Map* window has no files displayed in it, the *Pick From Map* field is unavailable.

8. Click anywhere in the *Map* window (for example, on a feature that you want to revisit).

The *North*, *East*, and *Altitude* fields have been filled in the with coordinate of the location that you clicked on:



9. If you want, change the default waypoint name to a more meaningful name, and then click **Save** to save this as a waypoint.
10. Click **Close** to close the *Create Waypoint* window.

    The *Waypoint Properties* window reappears with the waypoint you just created displayed in the list on the left. The waypoint appears as a crossed-flag symbol on the map.
11. Select *File* / *Waypoints* / *Close* to close the waypoint file. It is now saved permanently on the disk.

In a real situation, you can create as many waypoints as required, and then transfer the waypoint file to the field computer using the Data Transfer utility. You can then navigate your way (back) to these waypoints.

Note – *There is no limit to the number of waypoints that can be stored by the TerraSync software. However, some older types of field computers and receivers limit the number of waypoints you can store. For more information, refer to the file types you can transfer topic for your device in the Data Transfer Utility Help.*

APPENDIX

A

Troubleshooting

In this chapter:

This appendix describes problems that can occur and explains how to solve them.

For information on the latest support issues, go to the GPS Pathfinder Office software technical support page at www.trimble.com/pathfinderoffice_ts.asp and then click *Support Notes*.

Map and Time Line window display

Table A.1 lists symptoms related to the display in the *Map* or *Time Line* windows, possible causes, and their fixes.

Table A.1 Map and Time Line window display errors

Symptom	Cause	Solution
The coordinates displayed appear to be incorrect.	You are using the Latitude/Longitude coordinate system and you selected the wrong datum.	In the *Coordinate System* dialog, select *Latitude/Longitude* and specify the correct datum.
	You are using the UTM coordinate system and you selected the wrong UTM zone.	In the *Coordinate System* dialog, set *System* to *UTM* and specify the correct zone.
	You are using the UTM coordinate system and you selected the wrong datum.	In the *Coordinate System* dialog, set the *System* to *UTM* and specify the correct datum. ***Note –*** *The traditional UTM datum for the U.S.A is NAD-27.*
	You selected the wrong coordinate system or zone.	In the *Coordinate System* dialog, select the correct coordinate system and zone.
	You are using the wrong coordinate units.	In the *Coordinate System* dialog, select the correct coordinate units.
The background file has the wrong scale, it is too large or too small	When loading a background file, the GPS Pathfinder Office software uses the coordinate units specified in the *Coordinate System* dialog to interpret the coordinates in the file. If the units configured in the GPS Pathfinder Office software are different from the units specified in the background file then the background will have the wrong scale.	Check the coordinate units used in the background file. Change the configured units in the *Coordinate System* dialog. Then reload the background file.

Table A.1 Map and Time Line window display errors (continued)

Symptom	Cause	Solution
GPS information is not overlaying correctly on the background file.	When loading a background file, the GPS Pathfinder Office software uses the coordinate system you specified to interpret the coordinates. If this coordinate system is different from the one used by the background file, GPS positions will not overlay correctly.	In the *Load Background Files* dialog, highlight the background file and check its associated coordinate system. If necessary, change the configured system with the **Change** button in *File* / *Background.*
The waypoints entered previously from a paper map are not in the correct position on the map and their coordinates appear incorrect.	The coordinate system used on the paper map and the coordinate system configured in the GPS Pathfinder Office software when you entered the waypoints were different. You must use the same coordinate system in the GPS Pathfinder Office software as the coordinate system used on the paper map.	Re-enter the coordinates from the paper map using the correct coordinate system in the GPS Pathfinder Office software.
The *Map* window appears to be empty, yet you know you should have data displayed in it.	You zoomed to extents and you have a waypoint file with waypoints a long way away from where you are currently. This can make the background map and SSF file very small in the *Map* window.	If you do not need the waypoints in the current waypoint file, close the file. Alternatively, select *View* / *Layers* / *Waypoints* and clear the *View* check box; this hides the display of waypoints on the *Map*. Then select *View* / *Zoom* / *Extents* or the Zoom Extents tool and you should see the data clearly in the *Map* window.
You lost where you are on the *Map* window.	The *Map* is zoomed in or panned away from the current position.	Select the *Map* window and then select *View* / *Zoom* / *Extents* or the Zoom Extents tool. The *Map* window zooms to extents.
Information in the background file is not displayed on the *Map*.	You turned some layers off.	Select *View* / *Layers* / *Background* and turn the appropriate layers on.

Table A.1 Map and Time Line window display errors (continued)

Symptom	Cause	Solution
Information in the SSF file is not displayed on the *Map* or *Time Line.*	You turned some layers off.	Select *View* / *Layers* / *Features* and turn the appropriate layers on.
Notes in the SSF file are not being displayed the *Time Line*.	You turned the notes layer off.	Select *View* / *Layers* / *Notes* and turn the notes layer on.
SSF files that have carrier and code processed data and are loaded as background files, appear slightly different in the *Map* window to how they appear when opened in the foreground—point features may not match exactly the file.		Display the positions in the foreground instead. To do this, select *File* / *Open*.
Waypoints in the waypoint file are not being displayed on the Map.	You turned the waypoint layer off.	Select *View* / *Layers* / *Waypoints* and turn the waypoint layer on.
You cannot see notes or nested points on the Time Line.	The *Time Line* window has been resized so that the notes and nested point features are hidden.	Resize the *Time Line* window vertically.

Printers and plotters

Table A.2 lists possible causes and fixes for problems relating to printing and plotting.

Table A.2 Printer and plotter errors

Symptom	Cause	Solution
The plot contains more information than appears in the *Map* window.	By default, the scale of a plot is rounded down to a regular value. Compare the scale displayed in the *Map* window with the scale displayed on the plot.	Change the scale value to a different value in the *Plot* dialog.
Background raster files do not appear on the plot.	Pen plotters cannot display background raster files.	Select a printer such as a laserjet or inkjet printer, if available.
Some text does not appear on the plot, or is colored incorrectly.	Some non-postscript printer drivers do not display colored rotated text correctly. Dark colors display as black and light colors display as white. Non-rotated text is always displayed as black.	Edit the background file which contains the rotated text and convert all text into a dark color. Contact the printer manufacturer for an upgrade for the printer driver, if available.
The edges of the plot are clipped off.	Plotters and printers with a non-printable margin of greater than 1cm are not supported.	In the printer options, select a page size smaller than the physical size of the paper.
When running GPS Pathfinder Office in Chinese, Korean, or Japanese, text does not print properly.		In the *Plot Map* dialog, click **Set Font** to set an appropriate font before plotting.
My background Web Map does not print properly.	Some Web Map Servers impose limits on the size of the image that can be requested. Such limits can easily be exceeded when using the Plot Map functionality in GPS Pathfinder Office. This is due to a combination of printer resolution and image extents.	In the *Load Background Files* dialog, select the Web Map background and click **Save As**. Create a new background image at a reduced resolution, and then load the new file as a background file.

Internet problems

If Base Provider Search cannot download the required files, then:

1. Check that your internet connection is working.

   For more information, see Connection problems, page 162.

2. Determine why the files are not present on the Internet server.

   For more information, see Files not present on the Internet server, page 163.

Connection problems

A helpful rule for problem solving is that if Microsoft Internet Explorer works, then the Base Provider Search option in the Differential Correction wizard will also work. That is, if Internet Explorer can access and download base files from the chosen Internet base data provider, then this establishes that Windows is set up correctly to work with the Internet.

Internet Explorer uses the Windows settings, as does the Differential Correction wizard. Some other Internet browsers do not use the Windows settings; they use their own settings. Using a browser other than Internet Explorer does not help with troubleshooting Differential Correction problems.

If Internet Explorer cannot download the base files, then there is a problem with the Windows setup. You may need help from your System Administrator or Internet Service Provider (ISP) to resolve the problem.

Note – *After changing the Windows Internet settings, you must close and restart the Differential Correction wizard for the changes to take effect.*

Table A.3 lists possible causes and solutions for problems relating to Internet connections.

Table A.3 Internet connection errors

Symptom	Cause	Solution
You cannot connect to the Internet. A timeout error occurs, or it fails to dial up the ISP.	The Internet configuration for Windows is not set up correctly. Perhaps the modem is not installed correctly, or Dial Up Networking is not set up correctly.	Check the Windows Internet settings. Try using Internet Explorer to determine whether it can access and download the base files. For further assistance, contact the System Administrator or ISP.
Failure to dial into the ISP.	The ISP may be busy with other customers, leaving no spare lines free.	Try again, immediately or later. Consider changing to an ISP that has more lines.
The Internet connection is very slow.	The Internet server is very busy, or the ISP is busy, or the line is noisy.	Try again, immediately or later.
You can connect to the Internet but not to the base station server.	A firewall is preventing you making the connection, or the base station is offline.	Contact your System Administrator or ISP to enable connectivity through the firewall. Contact the base station administrator to enquire the status of the base station.

Files not present on the Internet server

If your Internet connection is working correctly, then the problem may be that the files which the GPS Pathfinder Office software expects are not yet present on the Internet server. There are many possible reasons for this.

Tip – The most likely reason that file(s) are not present on the server is that the base station logs data periodically (for example, hourly) and has not yet made the file(s) you need available.

You may want to contact the administrator of the base station to see if anything has changed.

Trimble regularly updates base provider information. To get the latest provider information:

1. Start the Differential Correction wizard.
2. In the Select Base Data page, select the *Base Provider Search* option and click **Select**. The *Select Base Provider* dialog appears.
3. Click **Update List**. A progress dialog indicates that base providers are being downloaded.

   Once download is complete, the list of base providers in the Select Base Provider is updated.
4. Choose the base provider you want to use and then click **OK** to return to the Differential Correction wizard.
5. Select the *Confirm base data and position before processing* checkbox and then click **Next**.
6. Select your output and file naming options, and then click **Start**.
7. Check the Differential Correction Report in the progress window to see if the base files have been downloaded from the selected base provider.
   - If the files have been downloaded, click **Confirm** to continue with postprocessing the data.
   - If the files have not been downloaded, use the **Back** buttons to return to the Select Base Data page and select a different base provider.

Table A.4 lists possible causes and solutions for problems relating to files on the Internet.

Table A.4 Internet file errors

Symptom	Cause	Solution
You cannot find a local Internet base data provider in the list.	The base data provider list is not up to date.	Click New in the *Internet Search* dialog, and select the *Copy the most up-to-date list from Trimble's Internet site, and select from it* option in the *New Provider* dialog.
	Even the latest list does not contain a local provider.	Create a new provider in the *Internet Search* dialog, and select the *Enter the details yourself* option in the *New Provider* dialog. You may need to contact the local provider to ask for some of the important details.
Failure to copy files from the Internet (error code 500 or 550).	This is a general Internet error code. The most likely causes are that the file or directory does not exist on the server, or that the server was not found.	The file may not exist because it is too old. Most base providers only keep one to three months of data online before archiving. The file may not exist if it is outside the hours logged by the server. For example, some base stations only log data for normal working hours. Also, the base station may have been put out of service during the required time period. It is possible that the specified directory is incorrect, perhaps because the provider has changed the server configuration. If you entered the Base Provider details, check that the server address is correct. Also check that the proxy server is set up correctly. In most cases, you can use Internet Explorer to double-check the required URL (Internet address). If necessary, contact the base data provider.

Web Map Server problems

If you cannot connect to a Web Map Server using the GPS Pathfinder Office software, do the following:

- Check that your Internet connection is working. For more information, see Internet connection problems, page 166.
- Check that the Web Map Server is responding. For more information, see Web Map Server connection problems, page 167.

Internet connection problems

A helpful rule for problem solving is that if Microsoft Internet Explorer can access and download information from a chosen website, it should be possible to connect to a Web Map Server. This establishes that Microsoft Windows is set up correctly to work with the Internet.

Internet Explorer uses the Windows settings. Some other Internet browsers, such as Netscape, do not use the Windows settings; they use their own settings. Using a browser other than Internet Explorer does not help with troubleshooting Web Map Server problems.

If Internet Explorer cannot access or download information from the Internet, then there is a problem with the Windows setup. You may need help from your systems administrator or Internet Service Provider (ISP) to resolve the problem.

For information about possible causes and solutions for problems relating to Internet connections, see Table A.3 on page 163.

Web Map Server connection problems

Before you contact Trimble Support with any Web Map Server queries, work through the solutions described in this troubleshooting section.

Table A.5 provides possible solutions for some difficulties that you may encounter when using a Web Map Server..

Table A.5 Problems when connecting to a Web Map Server for the first time

Symptom	Cause	Solution
The message Error connecting to Web Map Server appears immediately after any operation.	It is likely that you have an Internet connection problem.	See Internet connection problems, page 166.
The message Resolving server <URL> appears a few seconds after the progress dialog.	It is likely that the URL is invalid.	Try using a known URL.
The message Waiting for the server to respond appears for a long period of time in response to a request.	It may mean that the Web Map Server, or some of its services, are temporarily unavailable.	Try again later.
The message Cannot get services - do not use this site appears.	The GPS Pathfinder Office software does not support the PNG images that are being sent by the Web Map Server.	Select a different server.

Table A.6 Problems when reconnecting to a Web Map Server

Symptom	Cause	Solution
When reconnecting to a Web Map Server, you may experience the messages Error connecting to Web Map Server or Waiting for the server to respond as described above.	This may be because of problems with the Web Map Server.	Try again later, or use other tools to validate the Web Map Server state. For example, to check the status of the Web Map Server, visit the URL using a Web browser or contact the Web Map Server host directly to check for any known problems or server downtime. Remove the existing URL from your Backgrounds list and create a new Web Map component for the same server using the Web Map wizard.

Table A.7 Problems when connected to a Web Map Server

Symptom	Cause	Solution
Some or all of the selected layers are not visible in the Map view of the GPS Pathfinder Office software.	Some or all of the layers have been removed from the Web Map Server, or their configuration has changed, since you last visited that URL. Some Web Map Servers set layers to be visible only for certain scales.	Return to the Web Map wizard and change or reselect these layers. Select All Layers in the Web Map wizard and zoom in and out to determine which layers are visible at particular scales. You can then deselect the unwanted layers.
The coordinates displayed for your selected layers in the Web Map wizard are either not shown or they are not sensible values.	The coordinates for the selected layers received from the Web Map Server may be invalid for the corresponding GPS Pathfinder Office coordinate system.	Use the Internet and other resources to find the actual coordinate system for each server/service/layer (for more information, see below) and ensure that the Web Map Server and GPS Pathfinder Office coordinate systems correspond. Use the Web Map wizard to change the coordinate systems until the *Layers* dialog displays sensible coordinates.
Web Map Server layers do not appear in the GPS Pathfinder Office software.	The coordinate system received from the Web Map Server is not the same as the coordinate system in GPS Pathfinder Office.	Most layers on ArcIMS map servers are in WGS-84 (Lat/Long). If in doubt, try this as the corresponding GPS Pathfinder Office coordinate system. For OpenGIS, the Web Map Server coordinate system is described using the European Petroleum Survey Group (EPSG) standard EPSG codes. The most commonly used code is EPSG: 4326, which corresponds to WGS-84 (Lat/Long). The EPSG website (www.epsg.org) has a link to a Microsoft Access (.mdb) database that lists all the EPSG codes and a description of the corresponding coordinate system. ***Note –*** *If you have problems opening the .mdb file provided, try importing the tables contained within the database into an empty .mdb database.*

If after working through these solutions you still need to contact Trimble Support, make sure you have all your files and relevant information available from the Web Map Server, including:

- the correct URL
- the service chosen
- layers selected
- the GPS Pathfinder Office software coordinate systems used

General issues

Table A.8 lists general problems, their possible causes, and fixes.

Table A.8 General issues

Symptom	Cause	Solution
The GPS Pathfinder Office software has locked up.	A corruption has occurred while running Windows software.	Restart Windows, and restart the GPS Pathfinder Office software.
You cannot find the window you want to use.	The window has scrolled off the desktop.	Maximize the application so that you can see more of the windows. You can also select *Windows / Cascade* to cascade the windows on the desktop so that you can see them.
The GPS Pathfinder Office software is not behaving as expected, and you cannot find the symptom in this Appendix.	Settings in the registry or configuration files may be incorrect.	Reinstall the software. For more information, refer to Chapter 2, Software Installation.
The file that you are trying to transfer using the Data Transfer utility will not transfer.	The Data Transfer utility may not be able to transfer the file because of certain characters in the filename (in particular, Asian language characters)	Ensure that the correct system locale and code page settings are used, using the Windows Regional Settings. For more information, refer to the Windows Help.

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