SEMSoft
Landfill Control

SEM5000 Software

Operating Manual

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MANUAL GUIDELINES

Safety symbol

Information in this manual that may affect the safety of users and others is in the following format:

> **!** Information in this manual that may affect the safety of users and others will be placed in a box identical to this one.

Failure to follow this information may result in physical injury that in some cases could be fatal, cause damage to the equipment or to the environment, or invalidate the certification of the equipment.

Hyperlinks

Hyperlinks to other sections of this manual, websites or email addresses are in the following format:
www.qedenv.com

Notes

Important/useful information and instructions are shown clearly throughout the manual in a note format. For example:

> NOTE: For further information please contact QED Technical Support at:
>
> USA: (800) 968-2026   email mailto:landtec_support@qedenv.com
>
> Worldwide: +44 (0)333 800 0088   email mailto:technical@qedenv.co.uk

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GENERAL DESCRIPTION

Software for the management and monitoring of landfill areas, with OSM (Open Street Map) cartography integrated.

This monitoring software can be used in real time or for data download with the instrument **SEM5000**. The software can also be used in Office mode (disconnected from the instrument), to control work, for export of data, or to print reports.

It also allows the integration of ESRI shape files containing the landfill areas, landfill grids, and monitoring and control points, to work fast and efficiently.

The data can be exported in several formats: .shp (ESRI Shapefile), .CSV (Excel-compatible) and .KML (Google Earth Keyhole Markup Language).

NOTE: The photos shown in this manual are indicative.

INSTALLING SEMSOFT

To install SEMSoft, double click on the file "installer.exe" and follow the instructions.

If the SEMSoft application is to be used by different users on the same machine, then choose to install for all users. This will create the required application shortcuts for all users but requires administrative access to write to shared areas. If you will be the only person using the software or the user account is already shared, then choose the 'install for me only' option.
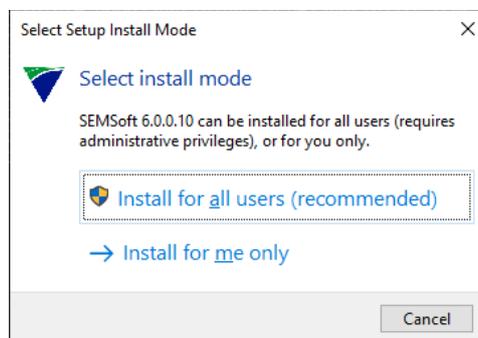
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<u>Install Location</u>
This screen displays the destination location for the software folder. Using the default location is recommended. SEMSoft cannot be installed to a shared location, such as 'C:\Program Files' as it uses writable files in its directory structure. Click "Next" and then 'Install' to continue the installation.
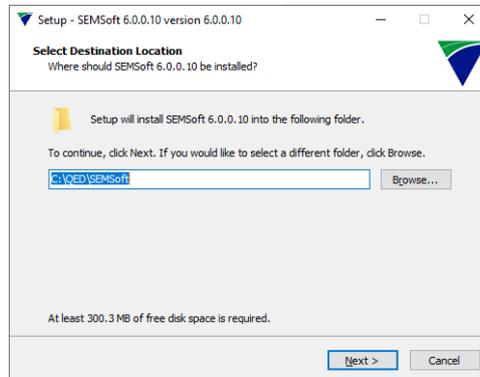
<u>Installation completed</u>
Once the installation is finished, the confirmation window will appear. Click "Finish" to complete the installation.
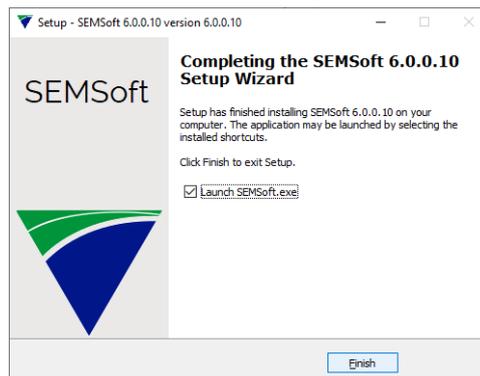
NOTE: SEMSoft will create all necessary storage folders on your PC upon initial installation.

!   DO NOT change the names of the storage folders created by SEMSoft. Doing so will result in an incompatibility with future SEMSoft versions and will not allow you to update the software.

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Bluetooth Connection

Activate Bluetooth on your PC and ensure the PC can find the instrument – it will normally be discovered as 'SEM5000 nnnnn', where nnnnn is the serial number assigned to the device.

If a PIN is requested during the pairing sequence, enter the default PIN 1234.

If you experience problems connecting via Bluetooth, follow the procedures in the following link. These procedures are for standard drivers. In case you have another type of driver, check on the manufacturer's website.

Windows 10
https://support.microsoft.com/en-us/help/17156/windows-10-connect-to-bluetooth-devices

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Launching the Application

Install the SEMSoft software provided with your SEM5000 on your PC. The installer will automatically create a shortcut on your desktop that can be used to launch the application in the future. When the application is launched, a splash screen will appear with the QED logo and the current software version number.

SEMSoft maintains a local user repository in its application database, which is initially empty. When you start the application for the first time and are prompted for a username and password, enter your desired username and password in the corresponding fields. This will automatically create your username as the first user of the system and, as such, will be able to create additional users if required.

NOTE: Usernames AND passwords are case-sensitive in SEMSoft. Please ensure you enter the details correctly and consistently.

NOTE: For any issues resetting the database please contact QED Technical Support at:

USA: (800) 968-2026   email mailto:landtec_support@qedenv.com

Worldwide: +44 (0)333 800 0088   email mailto:technical@qedenv.co.uk

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If you select "Always connect with this user" before login, the provided credentials will be used on subsequent instances of the software and you will not be asked for a username or password. You can use the configuration toolbox within the application to disable this behavior and return to the original configuration.

Click "Login" to enter the application and start searching for an instrument.

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The program will now search for all the available com ports on the PC. If the application had previously been connected to an instrument, it will start the search on the last COM port used by the instrument.

If you have the SEM5000 activated and have already paired the instrument with your PC, the software will recognize the instrument and display the instrument serial number.

Click "OK" and the software will connect to the instrument and continue to the main screen.

NOTE: In order to retrieve data from the instrument, it must be active and connected to a PC containing the associated license.

NOTE: If there are two or more instruments connected, SEMSoft will display the serial number for each unit, one at a time. Click the "Next" button until you locate the desired instrument and then click "Okay".

If the program does not detect an instrument, the message "No instrument found" will appear and the program will start in Office mode, (SEM5000 not connected or active).

NOTE: Office mode allows you to view and work with previously downloaded data. It will not display any data from the SEM5000 that has not yet been downloaded.

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The Startup splash screen will display a toolbar and an active button to start a new session. Clicking "New Session" will allow you to view and work with previously downloaded data.

NOTE: If your SEM5000 is connected and has data in its memory, the "Data Download" button will be active on the splash screen. It will also indicate the next recommended factory calibration date for the instrument.

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<div style="background-color:green; color:white;">**Downloading Data**</div>

To download data from the SEM5000:

- Connect the SEM5000 to your PC. It can be connected via Bluetooth or you can connect directly by using the USB cable
- The Bluetooth for the SEM5000 is always active when the device is ON and will attempt to connect to your PC. You may need to open Bluetooth on your PC and pair the device before SEMSoft will recognize it
- Click the "Download" icon on the main screen.
- Fill out the requested information in the window that appears and then click the "Download" button.

Download

NOTE: To download data using the USB cable, plug the battery charger into the 9-pin connector of the SEM5000 battery, plug the USB cable into the battery charger, (USB1), and then plug the other end of the USB cable into your PC. The battery must be installed in the SEM5000 instrument to provide a communications path to the instrument.
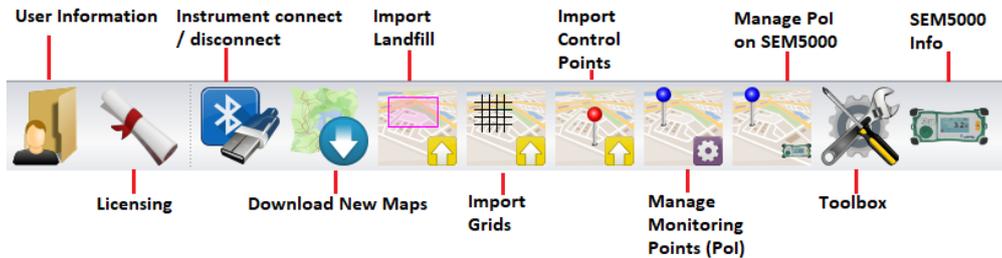
!   DO NOT plug the battery charger into an electrical supply during download.

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Startup Screen Toolbar

The startup screen will typically show the following icons on the main toolbar when an instrument is connected.

User Info

The "User Info" icon allows you to insert/modify personal information.

There are two types of users: the "Administrator" and the "User". The 'first' user is the one created at the first ever launch of SEMSoft. The default Administrator account is created at the same time.

USER	DESCRIPTION
Administrator	can modify his own information can create new "Users" (with button "Add")
User	can modify his own information

License

In order to use the SEMSoft software and associate it with your SEM5000, the SEM5000 will be supplied with an electronic license file.

- Click the "License" icon on the tool bar to open your file browser
- Select the license provided by QED at the time of purchase of the SEM5000
- Click "Open"
- The license will be imported into the software

Once the license has been added, restart the software and connect the instrument to your PC. Once everything has connected properly, the phrase "LICENSE OK" will appear in the lower, right-hand corner of the screen.
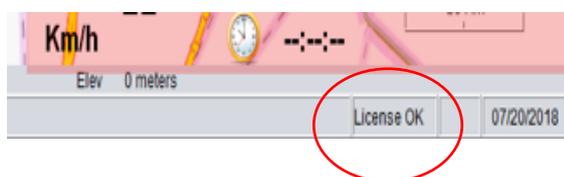
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Connect to Instrument

This button shows that an instrument is not connected and allows you to connect to a paired instrument after Office mode has been launched.

Import New Maps

When you open the program for the first time, it has NO maps to be displayed. Without geographic maps, the software cannot associate any of the scan data as it is saved by GPS location.

Maps must be downloaded from mapsforge.org.
To download a map, click the "Import New Maps" icon.

It opens the mapsforge.org web site in your registered web browser, where you can download the desired map(s) and the Workspace Map OSM folder where the map(s) should be saved when downloaded.

NOTE: You will be directed to the Version 4, (v4), folder on the MapsForge website. This is the version that is compatible with SEMSoft.

NOTE: When downloading and saving maps, be sure that they save to the OSM folder located inside the Workspace folder.

After downloading your desired map(s), you must clear the cache.
Click the Toolbox icon on the toolbar and click the "Cache" button at the bottom of the pop-up window.
The software will ask if you want to clear the contents of the cache. Click "Yes"
Restart SEMSoft

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 Import Landfill Map

This button allows you to import files of landfill site maps.

To import a landfill area:

- Click the "Import Landfill Map" icon in the Intro screen toolbar.
- Fill in the requested information
- Click the "Browse" button to locate the .shp file that you wish to import
- Select your file
- Click "Import"

NOTE: Imported landfill maps must be in ESRI Shapefile [.shp] file format and contain a complete geometrical boundary of the landfill.
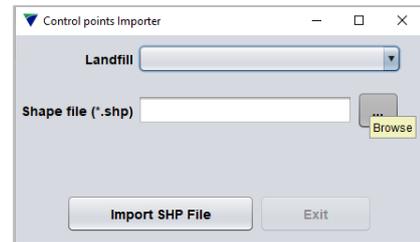
NOTE: For imported maps to be displayed, you must clear the cache and restart the software.

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Add Control Points

This button allows you to import any control points, (previously created points within a landfill boundary).

- Click the "Add Control Points" button
- Choose a landfill from dropdown list
- Click "Browse" button to select your control points .shp file
- Click "Import"

NOTE: Control points imported in this manner must be in an ESRI Shapefile [.shp] file format.

NOTE: For imported control points maps to be displayed, you must clear the cache and restart the software.

Manage Monitoring Points
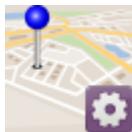
This button allows you to manage named points of interest by site and grouping. Please refer to the section on managing monitoring points.
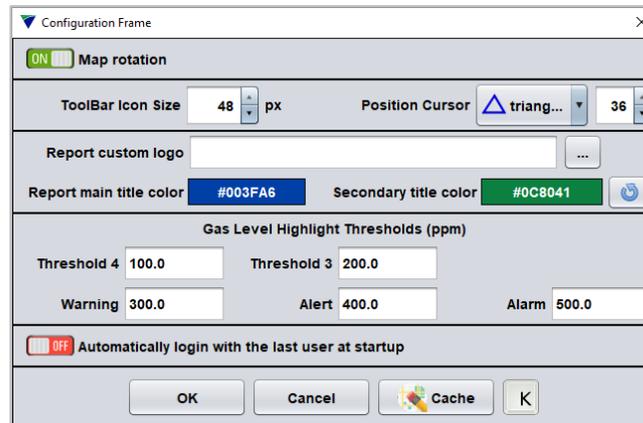
Manage Monitoring Points on Instrument

If an instrument is connected, button allows you to manage points of interest on an instrument. Please refer to the section on managing monitoring points.

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Toolbox

The Toolbox allows you to:

- Turn Map Rotation ON or OFF

    o Recommended for slow speed scanning

- Change the GPS position cursor

- Import your company's custom logo for use on SEM reports

- Customize your Gas Threshold levels

    o These levels relate to the colour-coded GPS points

- Choose to log you in automatically on startup

- Clear the Cache

Instrument Info

The Instrument Info icon will display information related to the current type of connection.

If you do not have a SEM5000 connected, the icon will appear as a PC and the display will advise that no instrument is connected and that you are currently working in Office mode.
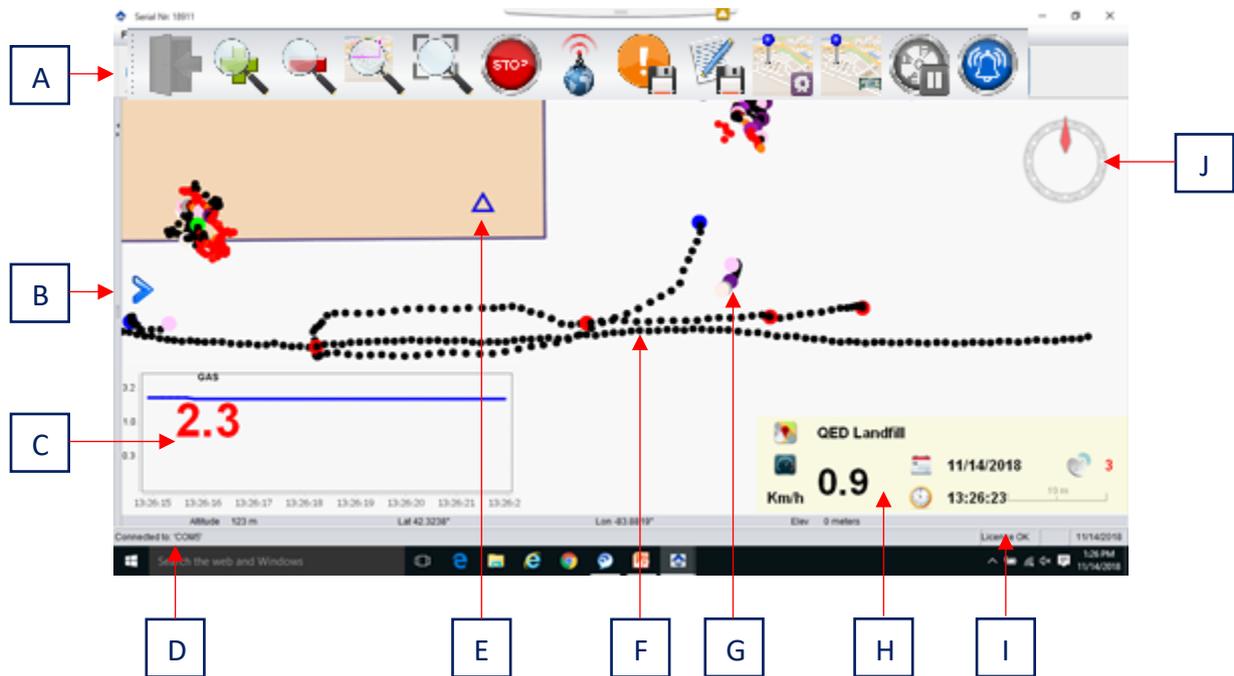

If you are connected to an instrument, the icon will appear as the SEM5000 and the display will advise the serial number of the instrument(s).
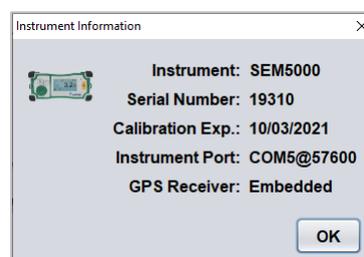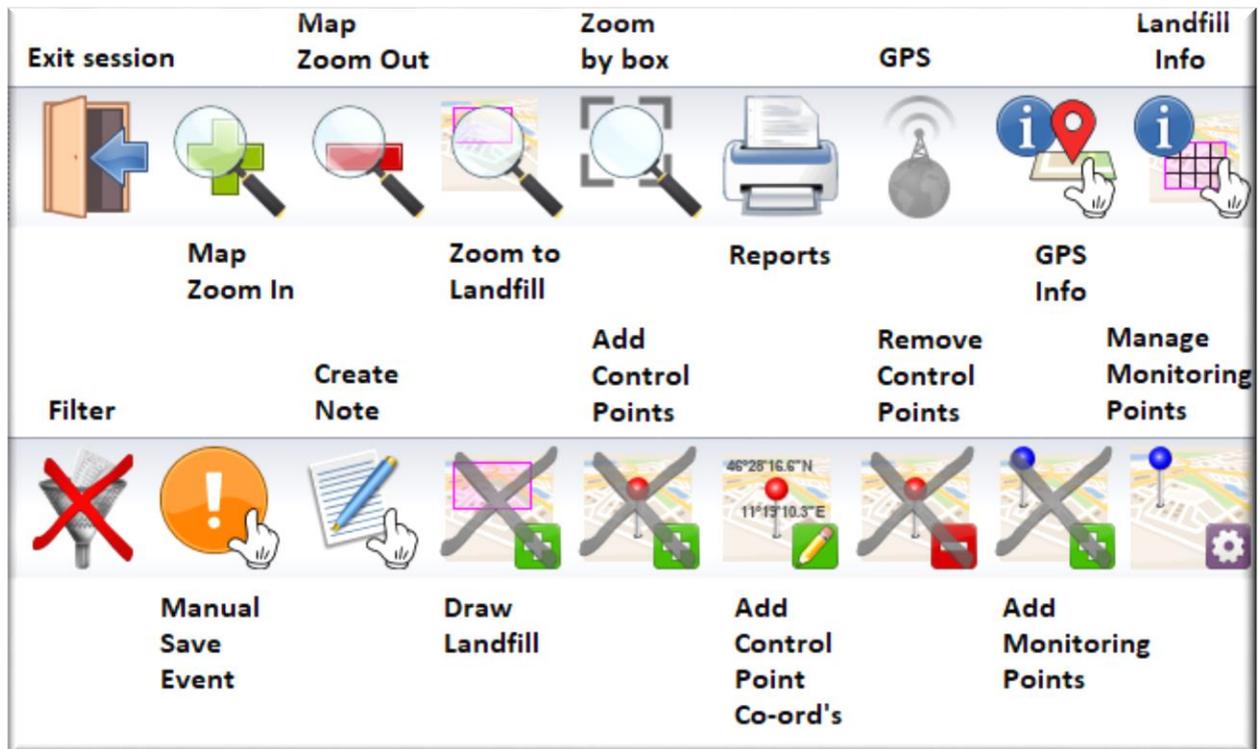
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Work Screen Overview

A	Toolbar
	NOTE: Toolbar will change depending on operating mode and software version
B	Map Layers Panel Open/Close Button
	NOTE: Refer to "Management of Map Layers" for more information
C	SEM5000 Pump Status/Sample Concentration
	NOTE: Only shown in Real Time mode
D	SEM5000 Instrument Connection Indicator
E	GPS Position Indicator
	NOTE: Only shown in Real Time mode
F	GPS Points
	NOTE: Refer to "Management of GPS/Event Points" for more information
G	Event Points
	NOTE: Refer to "Management of GPS/Event Points" for more information
H	SEM5000 Information Panel (Landfill Name, Speed, Date, Time, Number of GPS Satellites
I	SEM5000 License Indicator
J	Orientation Indicator

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Office Mode Toolbar

These images show the office-mode toolbar (split across two lines) with a quick description of their usage.

Exit Session

 This button allows you to exit your current session and returns you to the Startup screen.
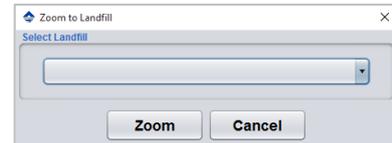
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Zoom to Landfill

This button allows you to zoom to any landfill site that you have previously uploaded or created in SEMSoft.
- Click the "Zoom to Landfill" icon on the toolbar
- Click the drop-down menu in the window
- Choose your landfill
- Click "Zoom"

Zoom by Box

This button allows you to zoom in to any point on the map.

- Click the "Zoom by Box" icon on the toolbar

- Click and drag over desired location

- Release and the software will enlarge highlighted section
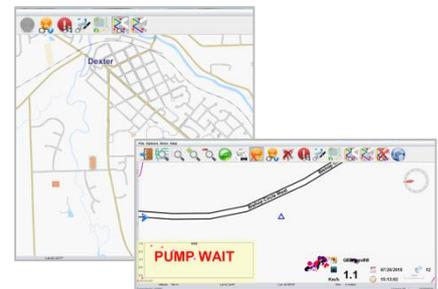
Zoom In / Zoom Out

These buttons allow you to enlarge or shrink any point on the map.

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<div style="background:green;color:white">**Create Report**</div>

This button allows you to create a variety of reports from your downloaded scan data: CSV, Background and KMZ

CSV Report: This report is provided in Excel-compatible format and contains the following information for each saved reading:

Time and date stamp	GPS location	Gas concentration value
Number of GPS satellites	Accuracy of satellites	Scan speed
GPS point description	Points of interest	

Instrument ID	Instrument S/N	Landfill	Operator	Date	File savetime								
SEM5000	17019	QED Landfill	CFE	07/24/18	24/07/2018 14:07:56								
point ID	timestamp	lat	hemisLat	lon	hemisLon	gasValueAbs	gasValueRel	satellites	hdop	azimuth	speed	code	description
1	24/07/2018 13:01:28	42.32399316666667	N	-83.88210683333334	W	0	2.3	9	1.1	0	0	11	Mission Start
2	24/07/2018 13:01:41	42.32394250000001	N	-83.88212916666667	W	0	1	9	1.1	0	0	0	GPS Point
3	24/07/2018 13:01:51	42.32393233333334	N	-83.88211233333335	W	0.1	1	12	1.1	0	0.19	0	GPS Point
4	24/07/2018 13:02:01	42.32392933333334	N	-83.88209550000002	W	0	1	12	0.8	0	0.19	0	GPS Point
5	24/07/2018 13:02:01	42.32392933333334	N	-83.88209550000002	W	0	1	12	0.8	0	0.19	28	Air 1 stop
6	24/07/2018 13:02:29	42.32395266666667	N	-83.88204133333332	W	0	0.9	12	0.8	0	0	29	Gas 1 start
7	24/07/2018 13:02:32	42.3239535	N	-83.88204366666666	W	94	120.6	12	0.8	0	0.19	0	Gas 1 GPS Point
8	24/07/2018 13:02:33	42.32395266666667	N	-83.88204383333331	W	259.9	272.2	12	0.8	0	0	0	Gas 1 GPS Point
9	24/07/2018 13:02:34	42.32395266666667	N	-83.8820435	W	392.2	398.7	12	0.8	0	0	0	Gas 1 GPS Point
10	24/07/2018 13:02:35	42.323952999999996	N	-83.88204333333333	W	455.3	458.6	12	0.8	0	0	0	Gas 1 GPS Point
11	24/07/2018 13:02:36	42.3239533333333336	N	-83.88204333333333	W	486	489.6	12	0.8	0	0	0	Gas 1 GPS Point
12	24/07/2018 13:02:37	42.32395366666666	N	-83.88204333333333	W	505.5	506.4	12	0.8	0	0	0	Gas 1 GPS Point
13	24/07/2018 13:02:38	42.32395366666666	N	-83.88204416666667	W	513.5	515.5	12	0.8	0	0	0	Gas 1 GPS Point
14	24/07/2018 13:02:39	42.3239535	N	-83.88204516666669	W	520.3	520.6	12	0.8	0	0	0	Gas 1 GPS Point
15	24/07/2018 13:02:40	42.323953333333336	N	-83.8820455	W	523.1	523.6	12	0.8	0	0	0	Gas 1 GPS Point

To create a CSV report:

- Click "Create Report" Button
- Select Landfill from drop down
- Default leak values are set
- These can be manually changed
- Click "Enter" to apply new values to GPS points
- Choose Date Range of SEM event
- Choose Session from drop-down menu
- Choose Device from drop-down menu
- Click "CSV"
- Choose folder, name file and click "Save"
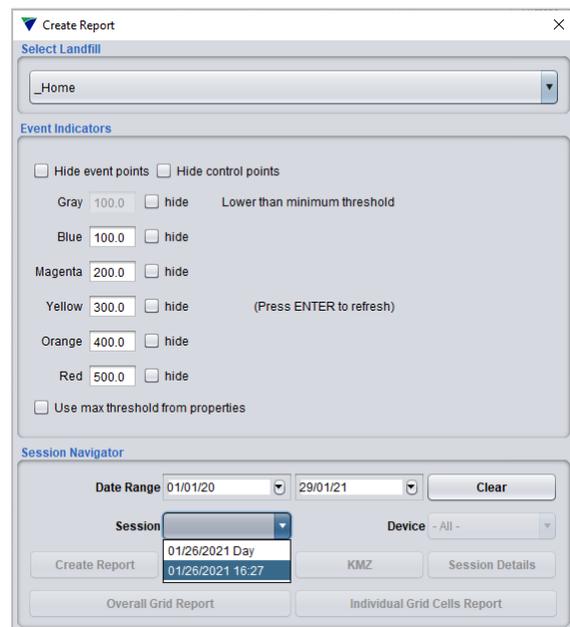
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Point of interest in CSV export

Points of interest in CSV reports

If recorded points of interest are detected in the GPS points for the session, then the point name will be listed alongside the point data during export [GPS Point of Interest]. Similarly, if it detected that points of interest were enabled on an instrument for that specific session, then the nearest point of interest is listed against normal GPS points [GPS Point], but surrounded with round parentheses.

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Background Reports: SEMSoft also creates the following standard background reports

- Calibration Procedure and Background

- Calibration Precision

- Instrument Response Time

NOTE: Background reports are automatically created using the information from the field calibration performed prior to the SEM event.

To print your background reports

- Click "Create Report" Button
- Select Landfill from drop down
- Choose Date Range of SEM event
- Choose Session from drop-down menu
- Choose Device from drop-down menu
- Click "Create Report" again
- The reports will save to your designated folder

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KMZ reports: KMZ reports allow you to overlay scan data onto Google Maps area representations.

To create a KMZ report:

- Download and install Google Earth on your PC from: https://www.google.com/earth/desktop/

- Click "Create Report" Button

- Select Landfill from drop down

- Choose Date Range of SEM event

- Choose Session from drop-down menu

- Choose Device from drop-down menu

- Click the "KMZ" button

- The file will save to your designated folder

- Right click on the file and choose "Open with" and choose the Google Earth app
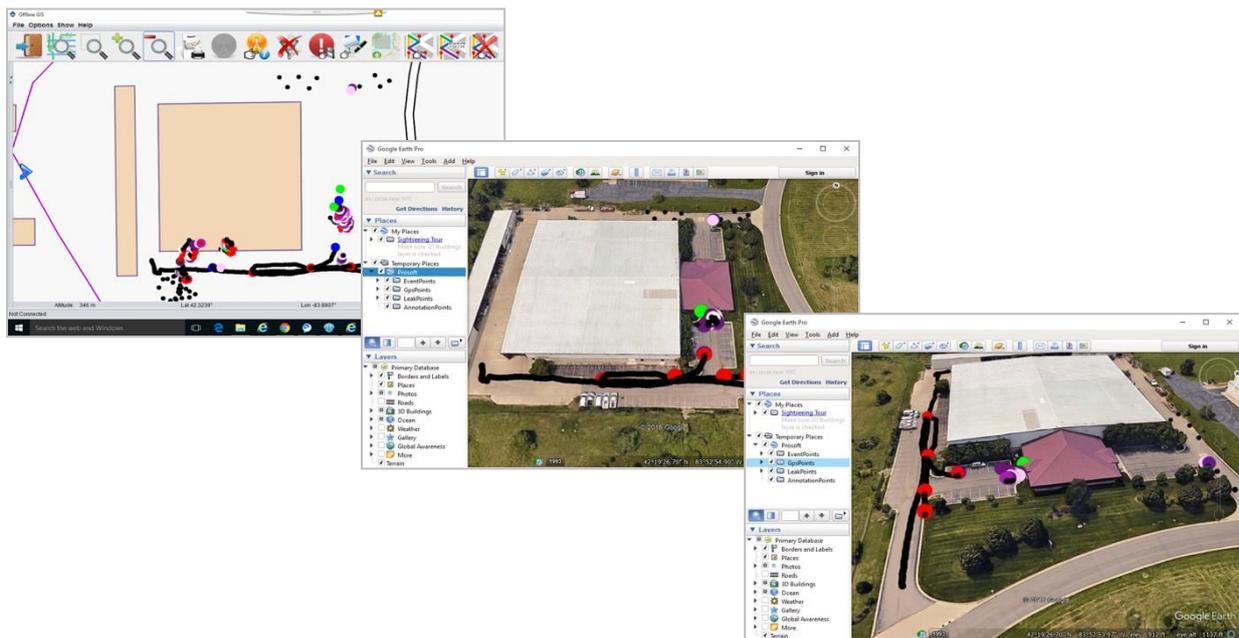
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GPS Points Info Tool

This button allows you to view specific data for any GPS point saved during your SEM event.

- Click "GPS Points Info" button
- Click on desired point
- Recorded information specific to selected control point will be displayed
    - Window will display:
        - Date/Time
        - Event Type
        - Gas Concentration
        - Speed
        - GPS Coordinates
    -
- Click "Modify" button to update information or add notes/photos
- Click "OK"
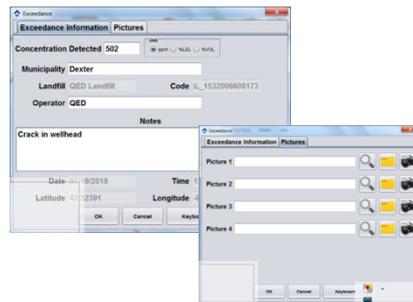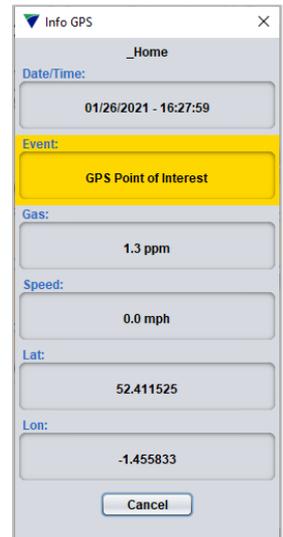
NOTE: Clicking the "Report" button after modifying an exceedance point will automatically save an exceedance report, (including any notes and photos), to your SEMSoft "Workspace Reports" folder.

GPS Points Filter

This button allows you to filter and view GPS points, from previously downloaded SEM events, by date range.
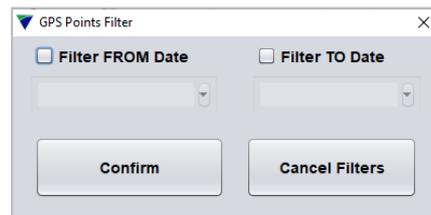
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Save Event (Manually)

This button allows you to manually save a GPS point or event to a SEM event while working in Office mode, (or in Real Time).

- Click "Save Event (Manually)" button
- Left-click inside landfill area, (at leak location)
- Complete background data
- Click "OK"

NOTE: You can also add up to 4 photos to each manually saved GPS point or event.

Insert a Note

This button allows you to insert notes and pictures for any control point, (saved data point), from your SEM event.

- Click "Insert a Note" button
- Left-click desired control point
- Complete information and note
- Click "Pictures" tab
- Add up to four photos from file or device
- Click "OK"

Add New Landfill by Box

There are two ways in which you can populate a landfill in SEMSoft. The first is to import your landfill site map as a .shp file. The second is to use this button to create a landfill by adding a box to the geopraphical map.

To add a landfill:
- Click "Add New Landfill" button
- Click and drag mouse to create landfill area on map
- Fill in Landfill name
- Click "OK"
- The new landfill will appear as a rectangle on the map
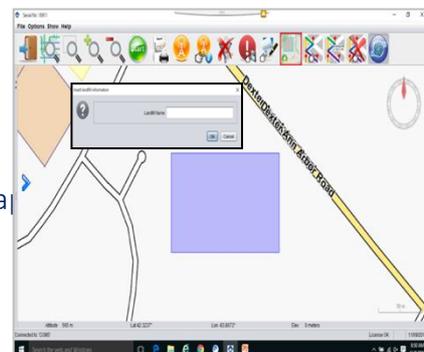
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This button also allows you to add on to an existing landfill by clicking and dragging an intersecting box over an existing site.
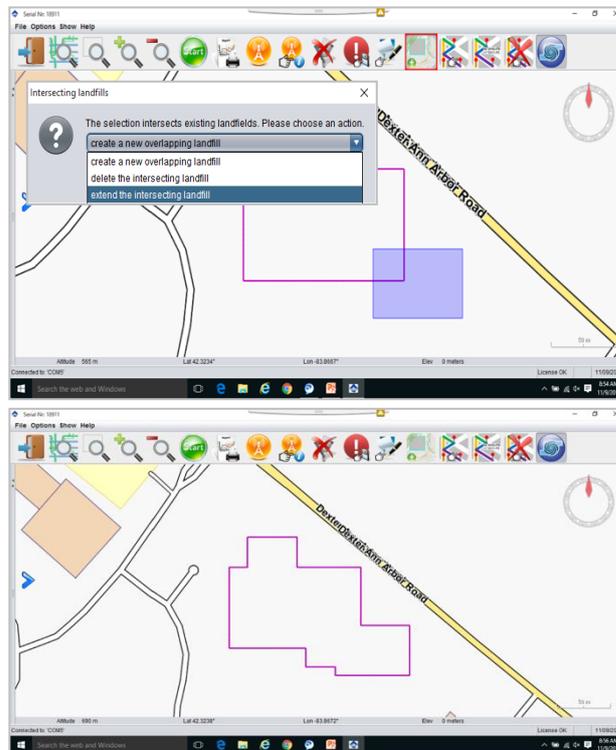
<div style="background-color:green;color:white;padding:4px;font-weight:bold;">Add Control Points (Manually)</div>

Control points are saved readings or points of interest from your surface scan. When you download scan data from your SEM event, the path that you walked will be represented on the map by a series of dots or control points.

Control points can also be added during Office mode. There are two ways to add control points post scan. The first is to add them manually:

- Choose landfill to edit, ("Zoom to Landfill", "Zoom by Box", etc.)
- Click "Add Control Points (Manual)" button
- Left-click inside designated landfill area to assign control point.
- Continue clicking until all points have been added
- Click "Add Control Points (Manual)" button again
- Points will save automatically
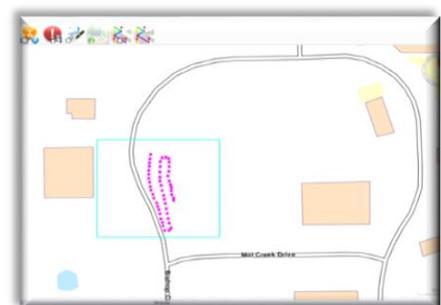
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Add Control Points (GPS)

Control points can also be added by using GPS coordinates, (latitude and longitude):

- Choose landfill to edit, ("Zoom to Landfill", "Zoom by Box", etc.)
- Click "Add Control Points (GPS)" button
- Add Latitude and Longitude for control point
- Click "OK"
- Repeat for each control point until all points have been added
- Click "Add Control Points (GPS)" button again
- Points will save automatically
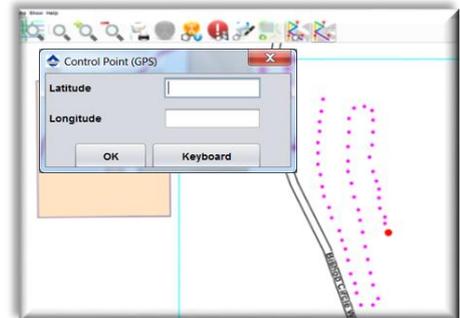
Remove Control Points in Selected Area

In the event that you have made a mistake or if the added control points are no longer of interest, this button allows you to remove control points that you have created.

- Click the "Remove Control Points" button

- Click and drag to create a box around the control points that you wish to delete

- Release the mouse

- A pop-up window will ask if you want to delete the points in the selected area

- Click "Yes"
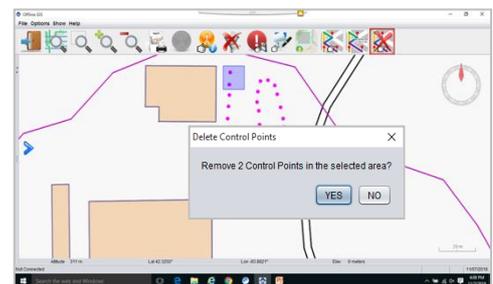
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Management of GPS/Event Points

All saved readings from your survey are represented on the SEMSoft map by a colour-coded dot.
Saved data points that fall below the minimum defined exceedance level will appear as a black dot. These are known as GPS points.
Data points above the minimum exceedance level or that have a special meaning are represented by larger, colour-coded dots. These are known as Event Points.

- Start Scan Event

- Exceedance Warning 1

- Exceedance Warning 2

- Exceedance Warning 3

- Scan Stopped

- Restart Scan

- Pause

- End Pause

- GPS Positioning Error

NOTE: All data points inside the landfill boundary are displayed with an associated colour. If you delete the landfill, the points will remain on the geographical map but will be shown in gray.

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Management of Map Layers

The Map Layers Panel allows you to customize your view by turning the various map layers ON or OFF.

The right side of the Map Layers Panel allows you to show or hide a number of layers, including:

- Maps
- Control Points
- GPS Points Events – All colour-coded points, (exceedance, start/stop, etc.)
- GPS Points Archive – GPS points created during previous surveys, (this allows you to view survey history)
- GPS Points Layer – GPS points from your current survey
- Landfills
- Background
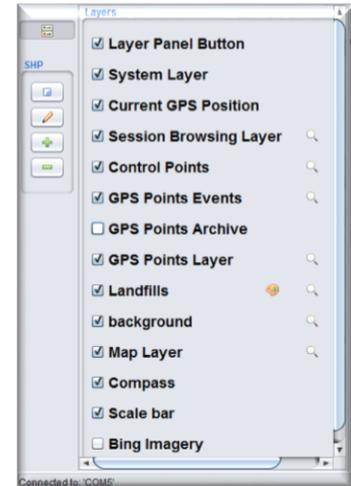
The panel displays the information layers that can be applied to the map. Each layer can be turned on or off by clicking the check mark in front of the title.

Where present, you can click on the magnifying glass to zoom to a desired layer or point.
To change the colour of the imported Shape points, click on the "Paint Palette" icon. It opens a window from which you can select the colour. Click "OK" to confirm.

The left side of the panel allows you to:
- Load .shp files

- Edit .shp files

- Add/Remove GPS points

To load a .shp file:
- Click on the "Load .shp File" icon

- Select the file to import
- Click on "Open" to import the file
- The name of the imported file will appear under the "Layers" list.
- Click the magnifying glass to zoom directly on the imported points.

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To edit a .shp file:
- Click on the "Edit .shp File" icon
- Click on the point to be modified
  - This opens a form containing the details of the selected point.
- Make the changes
- Click "OK" to confirm

To Add or Remove GPS Points:
- Click the "Plus" button to add points

- Click the "Minus" button to remove points

Real Time Mode

The SEM5000 can save data in real time by using a laptop or tablet in the field. The two main advantages to doing this are:
- Unlimited data save

  - Since you are saving directly to the software, you aren't limited to the 480-hour memory of the instrument

- Real time progress monitoring of your path

In order to support the SEMSoft software, your device must, at a minimum, meet the following specifications:

  Processor: i5
  Disk: 128GB
  Ram: 4GB
  Bluetooth Connection
  Rear Facing Camera, (optional)
  USB

NOTE: It is recommended that you use a device that is certified by the American National Standards Institute, (ANSI), for use in Class I and II, Division II hazardous locations.

Real Time Toolbars

There are two toolbars that are used to control the SEM5000 in real time.

This toolbar displays once you start the program and connect with the SEM5000, (GPS must be active)

This toolbar displays once you start the SEM5000 and begin your survey.

Most of the toolbar buttons are the same as those used in office mode. However, there are several that are unique to the Real Time toolbars and are used to operate the instrument.

Operating Manual

Start/Stop Survey

These buttons are used in real time to start and stop the survey. If you do not click the "Start" button prior to beginning you survey, not data will be saved. If you do not click the "Stop" button when your survey is complete, it will continue to save data until you shut off the SEM5000.

Pump Start/Stop

These buttons are used to control the pump of the SEM5000 during real time scanning. It is used in place of the "Function" button on the instrument.

Buzzer On/Off

This button allows you to enable or disable the audible alarm on the SEM5000.

Center Map

When working in real time, the SEMSoft geographical map will continue to move and correct itself based on your direction and GPS position. This button allows you to disable that function and lock the map into place on your screen.

NOTE: Disabling the Center Map function is recommended for slow speed scanning, (i.e. – walking).

Operating Manual

Monitoring Points (Points of Interest, as distinct to simple control points) are named labels displayed on a map that reference a location within or associated with a geographically delineated landfill. They are shown on the map by name.
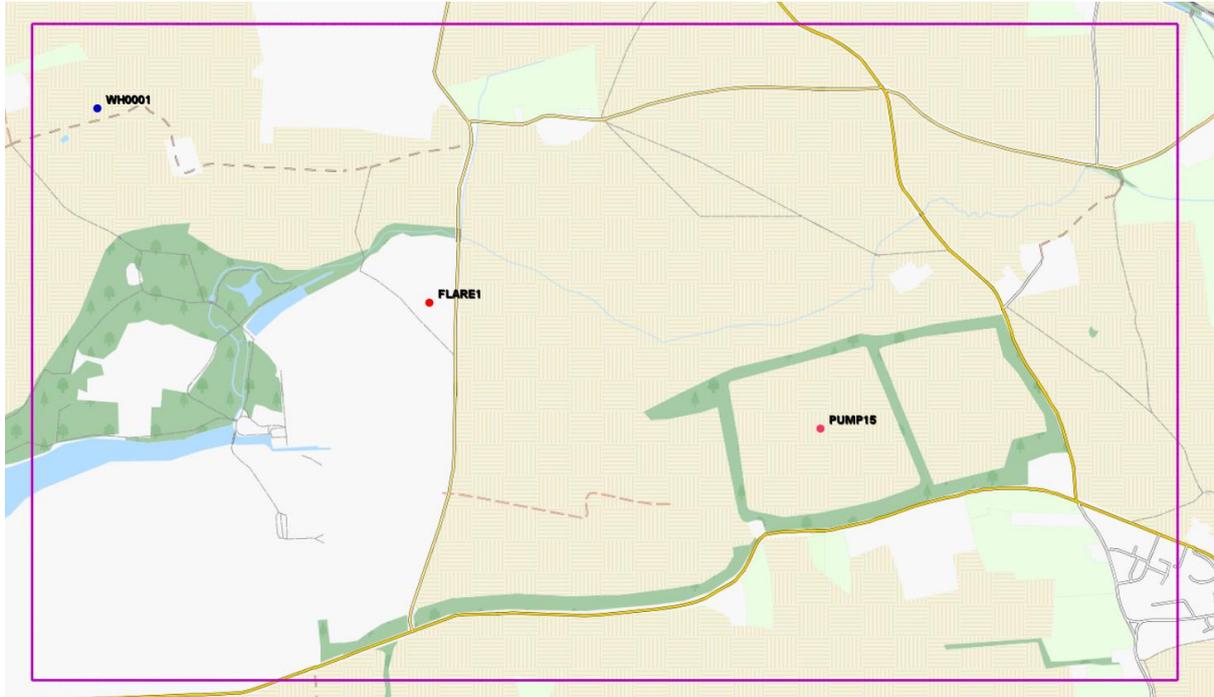
In the map view, above, there are three points (WH0001, FLARE1 and PUMP15), which correspond to hypothetical well-heads, flare stations and pumps.

Points can be individually created with a name, location, colour and associated notes, or can be grouped together within a site.

NOTE: It is also possible for points to be created that are not assigned to any group or site. These are known as global points and will be described later.

Operating Manual

Selecting 'Manage Monitoring Points' from the toolbars or from the menu opens this dialog:
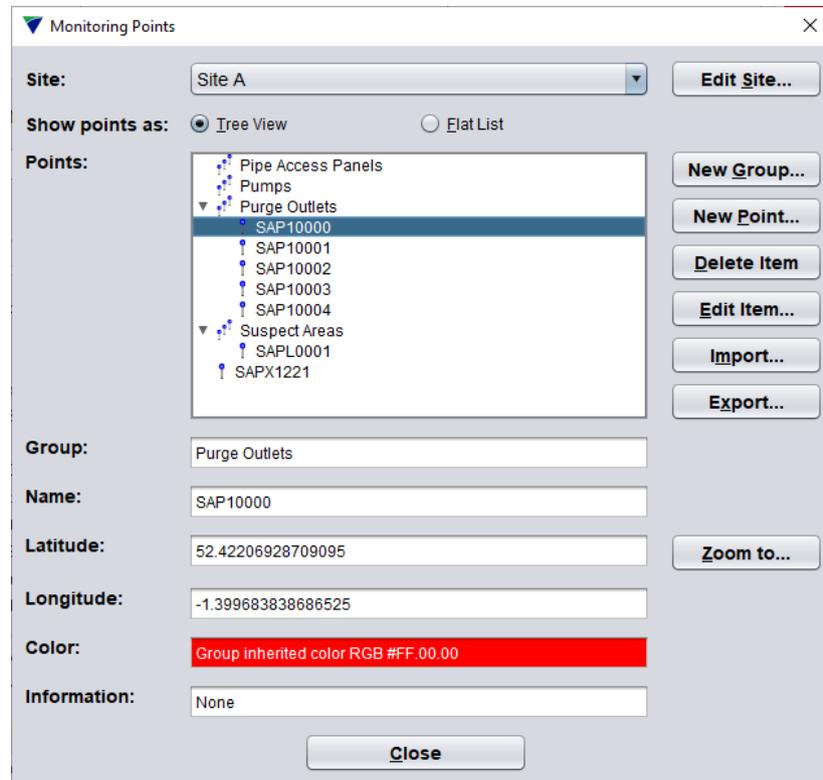
Covering each element, starting with lists and textual views:

Site

This is a drop-down list of all landfill sites defined within the database.

Points

This is a list of groups and points associated with each site

Show points as

Points can be displayed in a tree view along with their container groups, or as a flat list (no groups). Use the radio button to toggle between the views.

Group

Reflects the name of the selected group from the tree view, or the name of the point's parent group if a point is selected.

Name

Shows the name of the selected point (if any).

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Lat/Lon

Shows the latitude and longitude of a selected point (if any).

Colour

Shows the colour assigned to the point and how it was assigned that colour. A brief overview is that a point can be directly assigned a colour, or it can inherit from a parent container. See the colours section for more details.

Information

Each point and group can be assigned additional notes. This field shows a summary of the notes assigned to the point or group. The tooltip text is set to the full set of notes as the flat view may not show the full set of values.

Operating Manual

Dialog Buttons:

Edit Site

Clicking this button opens the site colour dialog. This shows you the current colour associated with a site. In this instance, this shows that the system colour has been set to RGB #FF3366. Any points associated with this site will be drawn with this colour unless the group or point has a specific override.

New Groups

Clicking this open a dialog to add a new group. Groups have a freeform name, though it is recommended to keep the name reasonably short while still descriptive. The group colour can be set here.
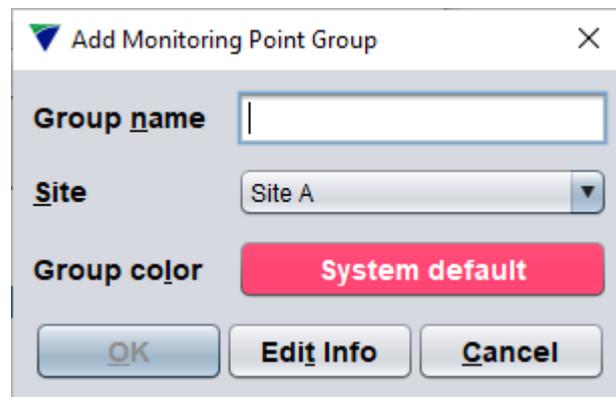
Operating Manual

Edit Info

While not in the main dialog directly, we have just shown the edit info button within the groups dialog, so it is apposite to show and detail this operation. Selecting Edit Info from the group or point dialog will open the following dialog. In this dialog you can enter attribute value pairs associated with the point (or group).
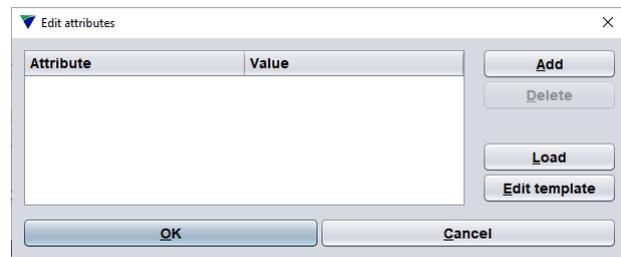
Edit templates

Additionally, in the previous dialog, you can click on Edit Template to open a dialog to define common templates for other points and groups. Clicking Load in the dialog, above, will populate all template entries into the dialog from the templates, below.
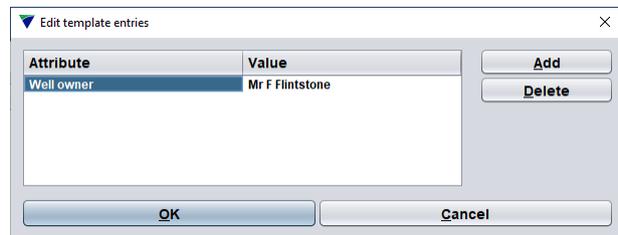
Operating Manual

New Point

Clicking this button opens the dialog to manually define a new point. The name here is limited to only 8 alphanumeric characters (instrument limitation). You can manually set the name, location, site association, group and colour, if required, here.

This example shows a custom colour of RGB #FF0000 (Red) has been chosen for this point.
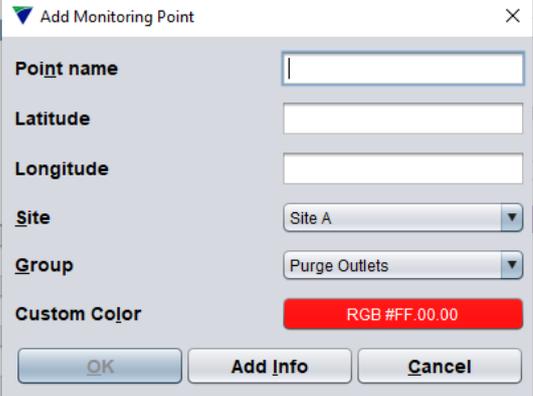
It is also possible to create and edit points from the map view. Click this icon and you can then click a location on the map and define a point, as above, but with the co-ordinates generated for you.

If you click on or near an existing point the system will ask if you are trying to edit an existing point or create a new point, very close to the existing one. This allows for easy of access to editing existing points.

Operating Manual

| Delete Item |
| Edit Item |

These buttons, when enabled, allow the user to delete or edit a selected group or point. When deleting a group, the user will be given the option to save the points or delete them.

| Import |

This button allows you to import monitoring points definitions from another machine. Clicking this button will allow you to select a directory with a points database (shapefile) and it will import the points, groups, notes, and site information (lan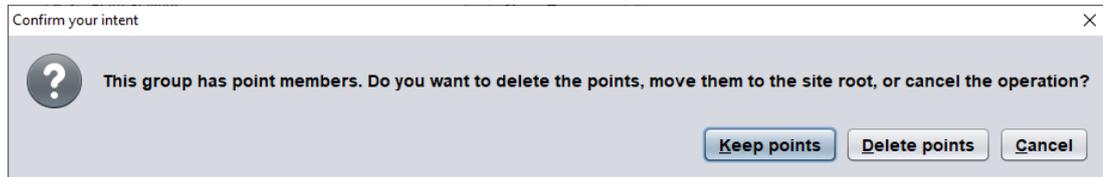dfill and grids). If the landfill already exists, the code merges the data set with the existing data set and creates an import report.

The software also supports a simple text-based import of groups, points, and information. This is detailed in the target installation's doc folder and is called example-import.lst.

| Export |

Clicking this button allow you to export a site's information – points, groups, notes, grids and the site definition. After exporting, the data sets (shapefiles) are shown in the system explorer.

These data can then be imported to another instance of SEMSoft.

NOTE: Please contact QED Technical Support if you require the schema to the exported data. Whilst it is not proprietary information and can be read from the shapefile using appropriate tools, this document is not a suitable locus for such information.

Operating Manual

Colours (Points, Groups, Sites)

As mentioned previously, points, groups and sites can be assigned colours by RGB definitions (see https://www.w3schools.com/colours/colours_rgb.asp). Colours can be inherited from a container:

If a point has no specific colour, it may inherit from its parent group (if any).
If the parent group (if any) has no specific colour, then it may inherit from its site colour.
If the site has no assigned colour, then the system or application defaults may be used.

Note: the application has a default colour of Magenta (FF00FF), but the system default can be changed by editing the colour of the '*Global' site entry.

Operating Manual

Additional sites

The main dialog will show two 'pseudo' sites – '*Global' and '*Universal'. These are both generated sites with special meanings:

*Global:

> This site contains all points that are not associated with a landfill site. This site can not contain groups.

*Universal:

> This site is a 'view' across all points whether assigned to a site or not.

Operating Manual

Managing Points on an Instrument

The data stored in SEMSoft can be transferred to an instrument for two linked purposes:

1. Linking manually saved exceedances with a monitoring point of interest (PoI).
2. The point co-ordinates can be used for geofence alerts.

Manually created exceedances

When performing a survey at a site, the operator can enter the Points Menu and associate the current instrument reading with a selected point. This point can be selected from a list determined by GPS proximity or by manual selection by name (please refer to the SEM5000 Operations Manual for instrument operation).

These records will then be displayed in SEMSoft as an orange circle around the PoI (with its own colour in the centre).
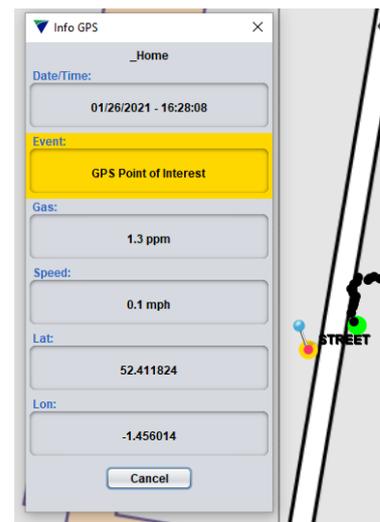
Operating Manual

The geofencing feature is in addition to the instrument tagging feature, above. When a point set is being configured for an instrument, each site, group or point entry can be assigned a geofence value of up to 99 meters radius from the absolute location.
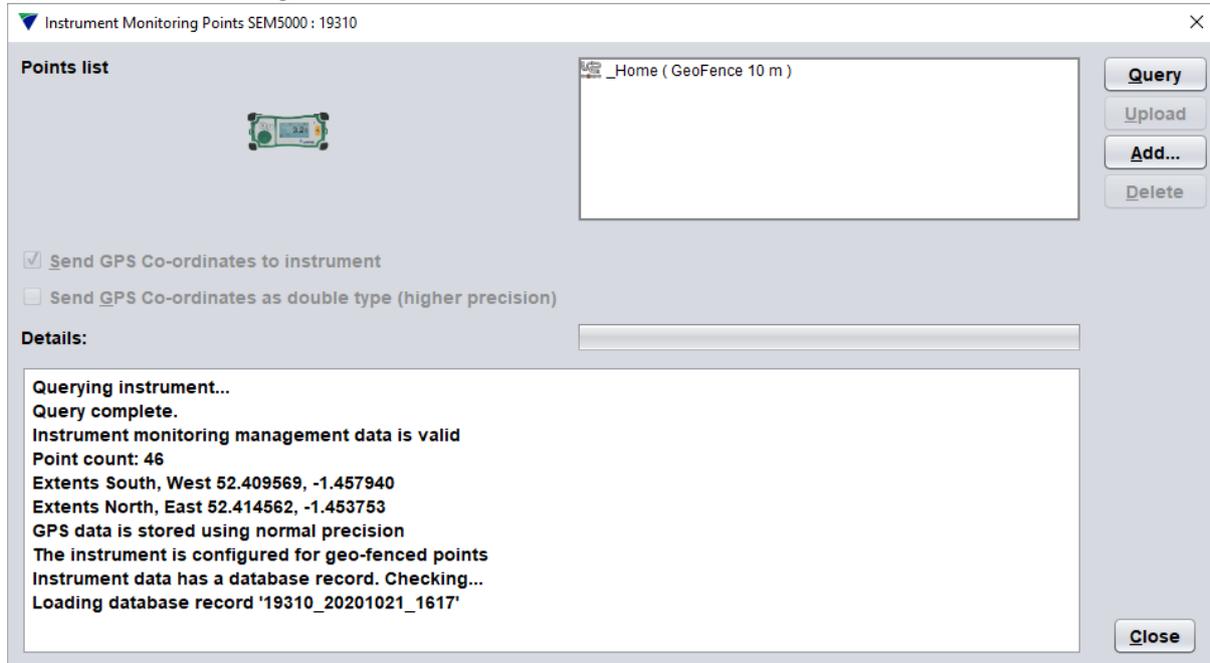
When the operator comes within a geofence trigger envelope, the instrument makes an audible sound, blinks the green LED and shows the trigger on the main screen.

These fences are not returned to the management software in any form but are defined in SEMSoft as in the following section.

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The instrument dialog is described here:

When first connected to a supported instrument (firmware version 6.10 and higher), the software will query the instrument for its configuration. The above dialog shows an instrument configured for a single site (site A), with Geofence enabled at the site level with 25m radius, and the points data stored as normal floating-point types.

Points List

This list shows the site(s), groups and points in the data set for the instrument and whether they are geofenced.

Send GPS Co-Ordinates to instrument

This option is required to send to the instrument to support nearest-point lookup and geofencing.

Send GPS Co-Ordinates as double type

This option sends GPS data to the instrument in double precision floating point format. While this can theoretically provide sub-metre precision for GPS readings, this is provided for future use alongside RTK GPS enabled instruments

Details

The details window shows information about the instrument and any pending operations, such as query and upload.

Operating Manual

Upload

This button prepares and sends a data set to a supported instrument.

Add

This button allows you select a site, group or point to be added to the data set. In this example, site Cyan Park is to be added to the data set and geofencing is enabled on a 25m radius for all points. This will add all points defined within the site to the collection.

Query

This button sends a new query to the instrument to get its supported facilities and information on the data set that it holds.

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TROUBLESHOOTING

Problem	Possible Cause	Solution
SEMSoft shows that SEM5000 is not connected.	Bluetooth is not active on PC.	Activate the Bluetooth on your PC and make sure that the PC finds the instrument. Pair the SEM5000 and your PC and enter the PIN 1-2-3-4 See **Appendix L** for more information
Bluetooth is activated but SEMSoft shows that SEM5000 is not connected.	SEM5000 is turned off.	Turn SEM5000 on and restart SEMSoft.
Bluetooth is activated and SEM5000 is on but SEMSoft shows that SEM5000 is not connected.	Incorrect instrument chosen at start up.	Restart SEMSoft and choose correct instrument based on serial number.
Boxes at the bottom are purple	SEM5000 is not connected	Verify that SEM5000 is turned on and that Bluetooth is active on your PC. Restart SEMSoft and attempt connection.
Boxes at the bottom are yellow and an error notice appears	Instrument error	The note on the graphic indicates the type of error
Boxes at the bottom are yellow and there isn't GPS indicator displayed on the map.	GPS is not connected or unavailable	Verify that GPS is connected. If not, attempt to reconnect.
The map is not correct	Wrong map selected	Select a different map
The map is not correct	GPS is not connected or unavailable	Verify that GPS is connected. If not, attempt to reconnect.
"Failed test" appears on the screen	Gas/Air test has failed	Restart test

Operating Manual

NOTE: For further information please contact QED Technical Support at:

USA: (800) 968-2026   email mailto:landtec_support@qedenv.com

Worldwide: +44 (0)333 800 0088   email mailto:technical@qedenv.co.uk

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