

General

General

United States  
Environmental Protection  
Agency

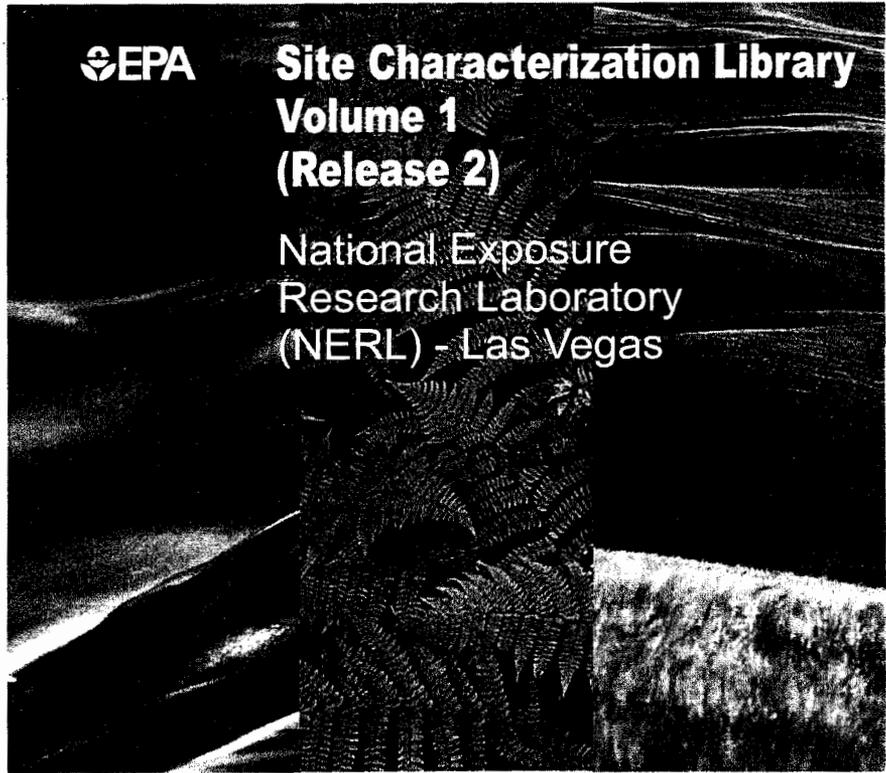
Office of Research and  
Development  
Washington, D.C. 20460

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EPA/600/C-98/001  
April 1998



**Site Characterization Library**  
**Volume 1**  
**(Release 2)**

National Exposure  
Research Laboratory  
(NERL) - Las Vegas



13174

# Adobe™ Acrobat™ Reader Online Guide

This online guide contains information to help you use the Acrobat Reader program. For installation instructions and system requirements, see the *README* file accompanying your software. Click one of the following topics to go to an explanation of that topic:

[How to use this online guide](#)

[About Adobe Acrobat](#)

[The Acrobat Reader window](#)

[Status bar](#)

[Preferences](#)

[Using links](#)

[Using notes](#)

[Displaying documents in Full-Screen mode](#)

[Reading an article](#)

[How to upgrade](#)

## How to use this online guide

Use these procedures to navigate through this guide:



Click underlined text to go to the topic indicated. Underlined text indicates text that is “linked” to another part of this guide.



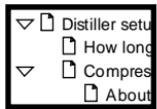
Click the Go Back button in the toolbar to return to your previous location.



Click the Next Page button in the toolbar to go to the next page of the guide.



Click the First Page button in the toolbar to return to the opening screen of this guide.



Click the bookmark name to go to the topic marked by that bookmark. Click the triangle to the left of a bookmark to show and hide subordinate bookmarks. The bookmarks for this guide provide a complete list of topics.



Click the arrow button to go to the next screen of any continued topic.

## About Adobe Acrobat

The Adobe Acrobat product family consists of three products designed to bring electronic document solutions to a wide range of users:

- **Acrobat Exchange** – provides all the software a business user requires for creating electronic documents from common applications. Included in Acrobat Exchange are the Acrobat Exchange viewer and PDF Writer for creating and modifying electronic documents. Acrobat Exchange includes Acrobat Search for full-text searches of indexed Portable Document Format (PDF) files. The Acrobat Exchange product also includes the Acrobat Reader for Macintosh®, Windows™, DOS®, and UNIX®.
- **Acrobat Pro** – combines Acrobat Exchange and Acrobat Distiller™. Acrobat Distiller converts any PostScript™ language file into PDF. Set up Acrobat Distiller to convert PostScript files on a local Macintosh or Windows computer, or to monitor directories on a network file server, which provides Distiller conversion services to any number of network users.



- **Acrobat for Workgroups** – provides everything a workgroup of 10 requires: 10 licenses of the Acrobat Exchange viewer for Macintosh and Windows, 1 license of Acrobat Distiller, and Acrobat Catalog™ to create indexes for full-text cross-document searches.

To find out how to order Acrobat products, click one of the following topics:

[How to upgrade](#)

[Order form](#)

## The Acrobat Reader window

You open a document in the Acrobat Reader window. You can display bookmarks or thumbnails in an overview area to the left of the document.

Beneath the menu bar at the top of the window is the toolbar; at the bottom left of the window is the status bar. At the right of the window is a vertical scroll bar that enables you to scroll up and down through a document. The overview area of the window includes an independent scroll bar that you can use to scroll through bookmarks or thumbnails.

See these topics for more information about the Acrobat Reader window:

[Status bar fields and controls](#)

[Tools and buttons](#)

## Tools and buttons

The toolbar contains tools for selecting and viewing documents. Select a tool by clicking the tool icon. To hide or show the toolbar, choose Hide Toolbar or Show Toolbar from the Window menu.

The toolbar contains the following tools and buttons:



Click the **Page Only** button to close the overview area of the window.



Click the **Bookmarks and Page** button to open the overview area and display bookmarks created for the document. Click a bookmark's name to go to the location marked by that bookmark.



Click the **Thumbnails and Page** button to open the overview area and display thumbnail images of each document page. Click a thumbnail to go to the page marked by that thumbnail.



Use the **hand** tool to move a document page on-screen when it does not fit within the window. Drag the hand tool in the direction you want to move the page.





Use the **zoom** tools to magnify and reduce the page display by a factor of 2.



Use the **select text** tool to select text in a document, which can then be copied to the Clipboard by using the Copy command. Choose Select Graphics from the Tools menu to select graphics in a document.



Use the **Previous Page** or **Next Page** button to move the document backward or forward, one page at a time.



Use the **First Page** or **Last Page** button to move the document to the first or last page of a document.



Use the **Go Back** and **Go Forward** buttons to retrace your steps in a document, moving to each view in the order visited. Go Back also returns you to the original document after you click a link to another document.



Click the **Actual Size** button to display the page at 100 %.



Click the **Fit Page** button to scale the page to fit within the window.





Click the **Fit Width** button to scale the page to fill the width of the window. Pressing this button and the Option (Macintosh) or Control (Windows) key fills the window with only the visible text and graphics on the page.



Click the **Find** button to search for part of a word, a complete word, or multiple words in a document.



Click the **Web Browser** button to start your Web browser. If your Web browser is already running, it becomes the active application.

If the Web Browser button does not appear in the toolbar, make sure you have the Weblink plug-in installed and that the Show Toolbar Button option in the Weblink Preferences dialog box is selected. (To set the Show Toolbar Button option, choose Edit > Preferences > Weblink.)

## Status bar fields and controls

The status bar contains the following fields and controls:



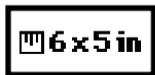
The **window splitter** adjusts the width of the overview and document areas. Drag the control to where you want to divide the two areas.



The **page number box** displays the current page number and lets you go to a specified page in a multipage document. Click the page number box to display the Go To Page dialog box.



The **magnification box** displays the current page magnification and lets you select various magnifications. Choose Other from the menu to display the Zoom To dialog box.



The **page size box** shows the size of the current page by using the units specified in the Preferences dialog box.

# Preferences

The Preferences items in the Edit menu allow you to set preferences that affect all the Acrobat documents you view.

## General preferences

Choose Preferences > General to set these options:

- **Default Magnification** is the magnification that Acrobat Reader uses when documents are opened.
- **Max Fit Visible Magnification** is the maximum magnification for Fit Visible and for viewing articles. The Fit Visible option automatically selects the appropriate zoom level to display the visible elements of a page.
- **Display Large Images** displays large images without replacing them as gray boxes. A large image is an image that requires many bytes of storage and that takes a long time to display.
- **Use Page Cache** may reduce the amount of time it takes to page through a document.



- **Greek Text below [\_\_\_\_\_] pixels** displays the size of characters below which Acrobat Reader *greeks* characters (displays characters as gray lines). Increasing the size of greeked characters speeds page display.
- **Substitution Fonts** controls which multiple master fonts Acrobat Reader substitutes for Type 1 fonts that are not available on your system.
- **Page Units** displays the units of measurement (inches, millimeters, or points).
- **Display Splash Screen at Startup** displays the product splash screen when you start the Reader viewer.
- **Display Open Dialog at Startup** displays the Open dialog box when you start the Reader viewer.
- **Maximize Application on Opening** (Windows only) maximizes the application window to fill the entire display.



## Full-Screen preferences

Choose Preferences > Full Screen to set these options:

- **Change pages** specifies mouse and keyboard control, or automatic advancement every specified number of seconds.
- **Loop** displays the document continuously, looping from the first page to the last.
- **Background color** specifies the window's background color.

See [Displaying documents in full-screen mode](#) for instructions.

## Displaying documents in Full-Screen mode

Choose View > Full Screen to make the PDF document fill the entire monitor screen.

The characteristics of full-screen documents are set through the Full Screen Preferences dialog box. See [Full-Screen preferences](#) for more information.

The pointer remains active during Full-Screen mode so that you can click links and open notes. Thumbnails and bookmarks are not accessible in Full-Screen mode.

The following tools and commands are accessible through their command-key shortcuts:

- All View menu commands except Page Only, Bookmarks and Page, and Thumbnails and Page
- The Hand, Zoom-In, and Zoom-Out commands in the Tools menu

To exit from Full-Screen display mode, press the Escape key, or advance past the last page.

## Using links

Creators of PDF documents can create hypertext links that connect two parts of a document. Links can connect part of a PDF document to another PDF document or to another application file, such as a spreadsheet or movie. Links also connect PDF documents to documents on Web servers.

### **To use a link:**

Click any text or graphic that is identified as a hypertext link. The pointer changes to a pointing finger when positioned over a link. When moved over a Web link, the pointing finger contains a W.

### **To return from a link to a PDF document:**

Click Go Back or choose Go Back from the View menu to return to the previous page view.

### **To return from a link to a Web document:**

Make the Acrobat window active.

## Using notes

When you encounter a note in a PDF document, double-click it to open the note window. To find the next note in the document, choose Find Next Note from the Tools menu.

To close the note window, click the close box in the upper left corner of the note. (Macintosh users can also press Command+W.)

## Reading an article

Creators of PDF documents can define document *articles* that automatically guide you through sections of a document.

### To read an article:

Choose View > Articles. (The menu item is dimmed if no articles exist in the document.) The Articles dialog box appears.

Select the article you want to read from the title list, and click View to go directly to the beginning of the article, or click the beginning of the article with the hand tool. Place the hand tool pointer on any box in the article.

If you start at the first article box, the pointer changes to Read Article , and the status bar shows Read Article.

Click anywhere in the article or press Enter to follow the text of the article view by view.

### To return to the previous view of the article:

Hold down the Shift key and click.



**To return to the beginning of the article:**

Hold down Option/Ctrl and click.

**To exit an article at any time:**

- Select any navigation method other than pressing Enter or Return.
- Go to another article or page.
- Click + Shift + Option (Macintosh) or Shift + Ctrl + Click (Windows).

*Note: If you exit an article by going to a specific page using Go To Page or the toolbar buttons, the page is displayed with the Default Magnification preference setting. The magnification in effect while you read the article is not used.*

## How to upgrade

If you're using Acrobat Reader to view a Portable Document Format (PDF) file created by someone else, you can do much better with Acrobat Exchange 2.1 for just \$195 (U.S.). Outside North America, contact your local Adobe reseller.

### **Acrobat Exchange 2.1 for Macintosh or Windows includes:**

- Acrobat Exchange and PDF Writer for creating your own PDF files
- Acrobat Search for full-text search and retrieval of files indexed with Acrobat Catalog
- Acrobat Reader for Macintosh, Windows, DOS and UNIX to view and print your PDF files

In North America, to order or to locate the Adobe authorized reseller nearest you, call 800-521-1976. Please mention offer number 9-02-02-9.

Alternatively, print or fax the [order form](#) to 408-655-6096, or mail it to: Adobe Systems Incorporated, P.O. Box 6458, Salinas, CA 93912-6458.

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## Adobe Acrobat Reader 2.1 Online Guide

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This product contains an implementation of the LZW algorithm licensed under U.S. Patent 4,558,302.

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# Adobe™ Acrobat™ Search Online Guide

This online guide contains all the information you need to use the Search feature with Acrobat Reader. You can use the Search feature to quickly locate information in collections of PDF documents that have been indexed with the Acrobat Catalog™ program. Click one of the following topics to go to an explanation of that topic:

[How to use this online guide](#)

[About the Search feature](#)

[Search buttons](#)

[Starting a search](#)

[Limiting search results](#)

[Using search options](#)

[Using the Refine search feature](#)

[Searching with AND, OR, and NOT \(Boolean expressions\)](#)

[Viewing search results](#)

[Setting search preferences](#)

[About Acrobat indexes](#)



Troubleshooting searches

Keyboard shortcuts

## How to use this online guide

Use these procedures to navigate through this guide:



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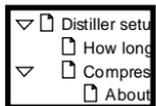
Click the Go Back button in the toolbar to return to your previous location.



Click the Next Page button in the toolbar to go to the next page of the guide.



Click the First Page button in the toolbar to return to the opening screen of this guide.



Click the bookmark name to go to the topic marked by that bookmark. Click the triangle to the left of a bookmark to show and hide subordinate bookmarks. The bookmarks for this guide provide a complete list of topics.



Click the arrow button to go to the next screen of any continued topic.

## About the Search feature

With the Acrobat Reader Search command, you can perform full-text searches of collections of PDF documents that have been indexed with the Adobe Acrobat Catalog program.

Unlike the Find command of a word-processing program, which searches for words by reading every word on every page, the Search command searches full-text indexes created by Acrobat Catalog. The full-text indexes created by Acrobat Catalog can represent hundreds or thousands of documents, and—compared with searching a document word by word one page at time—searching a full-text index is very fast.

A full-text index is an alphabetized list of all the words and terms used in a collection of documents. The Search command uses full-text indexes to find words and terms quickly in the documents without having to open the documents.



Indexed document collections can be extremely large. Electronic document publishers can, for example, build an index for all the PDF documents that fit on a CD-ROM. Corporate index publishers can build an online index for all the PDF documents that fit on a network file server. The Search command lets you search thousands of documents in seconds.

Using the Search command, you can quickly search indexed PDF documents for single words or terms, phrases, or arbitrary character patterns specified with wild-card characters. You can also search for documents that contain combinations of words and phrases. You can, for example, search for documents that contain the phrase *status report* and that contain some form of the word *succeed*, such as *succeed*, *success*, or *successful*.



Unlike most other full-text search programs, the Acrobat Search command can find words and terms in illustrations, graphs, and formatted tables. Because it searches PDF documents and because PDF is based on the PostScript page description language, which represents illustrations and artwork as well as text, the Search command can find all the words on a page, no matter where or how they are used. The Search command can even find words that are rotated or attached to a curved line in an illustration.

In addition to finding indexed words and terms, the Search command can find documents that contain specific field values. The Search command can find, for example, all the documents that have Author fields that contain the name *von Neumann*, and that have Keyword fields that contain *binary* or *program*.

The Search command can also find documents that were created or modified during a specific period. You can limit your searches, for example, to documents that were created before or after a particular date.

## Search buttons

The Acrobat Reader toolbar contains tools for selecting, viewing, annotating, and linking documents. The Acrobat Search feature adds the following buttons to the toolbar:



The **Search** button searches indexed PDF documents for single words, phrases, or combinations of words.



The **Search Results** button displays the results of your cross-document search.



The **Search Next** button displays the next occurrence of a search term found by the Search command.



The **Search Previous** button displays the previous occurrence of a search term found by the Search command.

## Starting a search

1 Choose Search > Query from the Tools menu, or click the Search button  on the toolbar.

2 Select one or more indexes. The indexes represent the document collections you want to search.

3 Choose one or more of the following options:

- Enter a search term, phrase, or Boolean expression. You don't have to enter search text; you can perform a search with just Document Info field values or a document creation or modification date range.
- Enter one or more Document Info field values, either to limit your search or to find documents with field values you specify.
- Enter a creation or modification date range, either to limit your search or to find documents created or modified in the periods you specify.
- Choose one or more search options.



**4** Click Search to perform the search. Acrobat Reader searches the index or indexes and displays a list of all the found documents in the Search Results window.

**5** View the search results. By default, the documents returned from a search are listed according to a score (or [relevance ranking](#)), which places the documents most likely to contain relevant information at the top of the list. Double-click a document title to display the first page that contains a search term in that document. With one of the documents returned from the search displayed, you can use the Search Next and Search Previous buttons to see all the pages containing search terms in all the documents returned from the search.

See [Viewing search results](#) for more information.

After performing a search, you can use the [Refine feature](#) to perform another search that is limited to just those documents returned by the previous search.

## Selecting indexes to search

The Search command searches for words and character sequences in documents that have been indexed by the Acrobat Catalog program. By selecting a single index, you can find words and terms in any document in the collection of indexed documents. By selecting two or more indexes, you can search for words in two or more collections at the same time.

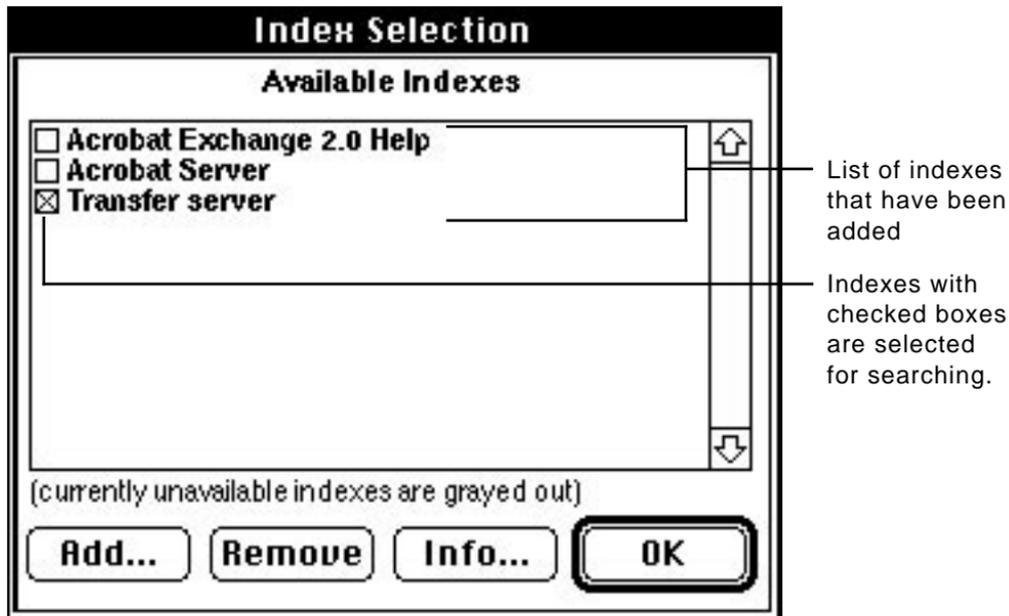
The publisher of a document collection can automatically add an index to the list of available indexes. To search additional indexes, you must add them to the list of available indexes. As you search for information, you choose which indexes to search by selecting and deselecting indexes in the list of available indexes.

To help decide which index to use for your search, you might want to view a description of an index. See [Viewing information about indexes](#) for instructions.



## To select one or more document indexes to search:

1 Click the Indexes button in the Acrobat Search window.  
Alternatively, choose Search > Indexes from the Tools menu.  
The Index Selection dialog box appears.



- 2 Click the check box to the left of the index you want to use.
- 3 Click OK to close the Index Selection dialog box and return to the Search window.

**Note:** *Dimmed indexes are currently unavailable for searching. Usually, an index is unavailable because the network connection between your computer and the server where the index resides has been lost. See [The index is unavailable](#) for more information.*

### **To add an index to the search list:**

- 1 Select Search > Indexes from the Tools menu, or if the Acrobat Search window is already open, click the Indexes button. The Index Selection dialog box appears.
- 2 Click Add. The Add Index dialog box appears.
- 3 Locate and select the index you want to use. Acrobat index definition filenames end with .pdx.
- 4 Click OK (with Windows) or Open (on the Macintosh) to select the index and close the Add Index dialog box. Alternatively, double-click the name of the index you want to use. The new index is added to the search list.



## **To remove an index from the search list:**

- 1** Click the Indexes button in the Acrobat Search window. Alternatively, Choose Search > Indexes from the Tools menu. The Index Selection dialog box appears.
- 2** Click to highlight the name of the index you want to remove.
- 3** Click Remove. The index is removed from the list.
- 4** Click OK to return to the Acrobat Search window.

## Viewing information about indexes

After you have [added an index to the search list](#), you can display the following information about the index:

- **Title** is the index name that appears in the Index Selection dialog box.
- **Description** is the index description written by the publisher who created it.
- **Path** is the location and name of the PDX index file as seen from your computer.
- **Last Built** is the date the index was last updated to include new and changed documents.
- **Created** is the date the index was created.
- **Documents** is the number of PDF documents in the collection of indexed documents.



▪ **Status** indicates the index's current status. *Available* means that you can select the index for searching. *Unavailable* means that the Search command cannot open the index files, usually because the network connection to the server containing the index files has been lost. You cannot search an unavailable index. *Not Loaded* means the index has not been selected; it may or may not be available for searching.

### **To display information about an index:**

- 1** Click the Indexes button in the Acrobat Search window. Alternatively, choose Search > Indexes from the Tools menu. The Index Selection dialog box appears.
- 2** Click to highlight the name of the index in which you are interested.
- 3** Click Info. The Index Information dialog box appears.

## Searching for a single term

To find occurrences of a single term, enter the term in the Find text box and click Search. A search term can be a word, a word with [wild-card](#) characters, or any combination of letters, numbers, and symbols.

You cannot find [stopwords](#), which are words excluded from an index, and you might not be able to find numbers. Contact the person who created the index to learn which words, if any, are excluded from the index and whether numbers are included in the index.

You can use the [Match Case](#), [Word Stemming](#), [Sounds Like](#), and [Thesaurus](#) options when searching for a single term. The Match Case, Word Stemming, and Sounds Like options might not be available with all indexes, because index publishers can choose not to add support for these features.

You can also use [Document Info](#) and [Document creation and modification date](#) field values to limit the number of documents returned by a search for a single term.



See [About Acrobat indexes](#) for a description of how the Acrobat Catalog program recognizes words and other terms in PDF documents and how index publishers can prevent stopwords and numbers from being included in an index.

## Searching for a phrase

To search for a phrase, type the phrase in the Find text box and click Search. For example,

status report

finds all occurrences of *status report*, *Status report*, and *Status Report*, as well as all other combinations of uppercase and lowercase letters for the phrase *status report*.

You can use a phrase as part of a [Boolean expression](#). For example,

status report AND anaconda project

finds all documents that contain both the phrase *status report* and the phrase *anaconda project*.

If the phrase you want to find contains a [Boolean operator](#), you must enclose the phrase in quotation marks. For example,

“cats and dogs” OR “rain or shine”

finds all documents that contain either the phrase *cats and dogs* or the phrase *rain or shine*.



Use the [Match Case option](#) to find phrases that are capitalized exactly like the phrase you enter in the Find box.

The [Thesaurus](#), [Sounds Like](#), and [Word Stemming](#) options have no effect on phrase searches.

You can use [Document Info](#) and [Document creation and modification date](#) field values to limit the number of documents returned by a search for a phrase.

## **Stopwords and phrase searches**

Phrases that include [stopwords](#) cannot be found as phrases. For example, if Lincoln's Gettysburg address is indexed with the [typical stopwords list](#)—which includes *of*, *the*, *by*, and *for*—users cannot find the address by searching for its most famous phrase,

Of the people, by the people, for the people

or with

people people people



which is how—with the typical stopword list—the phrase is indexed. In this case, the only way to find the words in Lincoln’s famous phrase is to search for *people*. The limitation that stopwords place on phrase searches is a good reason not to exclude stopwords from an index. However, stopwords reduce the size of an index, which is why they are sometimes excluded.

### **Punctuation and other special characters in phrase searches**

The Search command ignores any punctuation characters you enter as part of a phrase.

For example, the search phrase *Go home!* finds *Go home!* but it also finds strings such as *I want to go home* and *Go home? You must be joking*.

Similarly, the Search command ignores other special characters such as the at sign [*@*] and the asterisk [*\**]. See [How terms are indexed](#) for details.

## Searching with wild-card characters

You can use wild-card characters to find all the words that contain a word fragment or all the words and terms that match an arbitrary character pattern. The wild-card characters are the following:

- \* the asterisk, which matches zero, one, or more characters
- ? the question mark, which matches any one character

### Wild-card examples

- geo\* matches words such as *geode*, *geodesic*, *Geoffrey*, *geography*, *geometry*, *George*, and *geothermal*
- \*nym matches words such as *antonym*, *homonym*, and *synonym*
- ?ight matches words such as *fight*, *light*, *might*, *right*, and *sight*
- 555-???? matches all seven-digit phone numbers with the 555 prefix
- pr?m\* matches words such as *premature*, *premeditate*, *prim*, *primate*, *promise*, and *promontory*



You can use wild-card characters in a term that is part of a [Boolean expression](#). You can also use wild-cards to specify [Document Info](#) field values.

**Note:** *You cannot use wild-card characters to represent separator characters such as the hyphen [-] and the slash [/]. When the Catalog program builds an index, it uses separator characters to recognize where words begin and end and does not place them in the index. To find both begin/end and begin-end, for example, you cannot search for begin?end. Searching for begin?end finds neither begin/end nor begin-end. To find both, you must search for the phrase begin end, or for both begin/end and begin-end. See [How terms are indexed](#) for a description of separator characters.*

## Search tips

When you begin using the Search command, you might encounter the following two problems:

- A search finds too many documents. A search for a single word can, for example, return hundreds of documents—far too many to open and view.
- A search finds too few, or no documents.

This topic gives advice for solving both of these problems.

### **Handling a search that finds too many documents**

When a search returns too many documents, you can use the following techniques to restrict or refine the results of the search.

- Ignore documents with a medium or low relevance ranking. By default, found documents are listed in order of a [relevance ranking](#). The information you seek might be in the documents with the highest relevance ranking.



- Use AND to limit searches to documents that contain two or more words or phrases. You can search, for example, for documents that contain *North* and *Nicaragua* and *senate hearings*. You can also use NOT to find documents that contain one, two, or more words but not another word. You can search, for example, for documents that contain *human* and *fossil* but not *piltdown*. See [Searching with AND, OR, and NOT](#) for more information about AND and NOT.
- When you use AND to search for documents containing two or more words, you can use the Proximity search option to change the way found documents are assigned a relevance ranking. With the Proximity option selected, the closer together the words are in a document, the higher the relevance ranking. The Proximity option also requires that terms in an AND search be within three or four pages of one another to be found.
- Use the [Refine Search feature](#) to limit a search to the documents returned by a previous search. You can, for example, first find all the documents that contain the phrase *Anaconda project*. Then, by using the Refine option, you can enter any combination of search terms and options, and the search will be limited to only those documents that also contain *Anaconda project*.



- Use field values to restrict searches to only those documents with field values you specify. When searching an index of English literature, for example, you can limit a search to just those documents that have an Author field that contains *Shakespeare* and a Title field that contains *king*.
- Use date ranges to restrict searches to only those documents that were, for example, created before a specific date or modified after a specific date.
- Use the Match Case search option to limit searches to documents that contain the words or phrases that are capitalized exactly like the search word or phrase you enter.

### **Locating hard-to-find information**

If a search returns too few documents, first make sure that the search is set up correctly. Make sure that you are using the index or indexes built for the documents that contain the information you seek. Also, make sure that you don't have search options selected or field values entered from a previous search.



If a search is set up correctly and too few documents are returned from the search, use the following techniques to increase the number of found documents:

- Use the [Word Stemming](#) search option to find words that share a stem with a search word. Searching for *programming*, for example, also finds *program* and *programs*, but not *programmer*. (See [Word Stemming search option](#) for details.)
- Use OR to search for alternative spellings of the same word or to search for two or more words that are used to describe the information for which you are searching. When looking for information about political revolutions, for example, you might search for *revolution* or *coup* or *uprising*. See [Searching with AND, OR, and NOT \(Boolean expressions\)](#) for more information about OR searches.
- Use the [Thesaurus](#) search option to find words that have the same meaning as the search word. Searching for *crypt*, for example, also finds *grave*, *mausoleum*, *sepulcher*, and *tomb*.



- Use the [Sounds Like](#) search option to find different spellings of last names. Searching for *Smith*, for example, also finds *Smythe*. (Searching for *Smith*, however, also finds *send* and *somewhat*. See [Using the Word Assistant](#) for a way to use the Sounds Like feature without finding irrelevant terms.)

## Limiting search results

One way to limit the number of documents returned by a search is to refine your search query. Another way to limit search results is to limit the number of documents that are searched. For example, you can limit a search to documents that were written after a certain date.

See the following topics for more information:

[Using Document Info fields](#)

[Using document creation and modification dates](#)

## Using Document Info fields

You can use Document Info field values to limit the results of your searches to just those documents that contain specific field values. To add the Document Info fields to the Search window, choose [Preferences > Search](#) from the Edit menu and select Show Fields in the Preferences dialog box.

### With Document Info

Title	<input type="text"/>
Subject	<input type="text"/>
Author	<input type="text"/>
Keywords	<input type="text"/>

When you enter a Document Info field value or [expression](#), only documents with fields that contain the value and that meet the search criteria are returned.



Document Info fields may be empty, because PDF document creators are not required to enter field values. You may also see additional fields not described in this guide, because PDF document creators can add custom fields.

When you enter one or more Document Info field values or expressions in the Find text box, you do not have to enter a search term. You can use fields to find all the documents that contain a specified field value.

**Note:** *The Title field contains a document title that has been entered by the author. For Macintosh documents, it does not contain the Macintosh filename unless the author entered the filename as a title.*



## Using two or more fields

Entering values for two or more fields specifies an [AND condition](#). Documents must contain all the field values you specify. For example, if you enter *Samuelson* in the Author field, *cost analysis* in the Subject field, and *spreadsheet* in the Keywords field, only documents that contain these values in these fields are returned from subsequent searches.

## Wild-card characters

You can use wild-cards in Document Information text boxes. For example, if you enter

Sm?th\*

in the Author text box, documents with Author field values that include *Smith*, *Smyth*, and *Smythe* can be returned with subsequent searches. See [Searching with wild-card characters](#) for instructions on how to use wild-card characters.



## Boolean expressions

You can use Boolean expressions in the Document Info text boxes. For example, if you enter

Shakespeare or Milton

in the Author text box, only documents that include either *Shakespeare* or *Milton* in the Author field are found. See [Searching with AND, OR, and NOT \(Boolean expressions\)](#) for instructions on how to build Boolean expressions.



## Boolean expressions that use more than one field

By combining the field expression with the search expression in the Find text box, you can build a Boolean expression that uses more than one field. For example, if you enter

    ("Sixteen to one project" OR "16 to 1 project") AND  
    (Author ~ Raskin) AND (Keywords ~ "slide show" OR  
    keywords ~ presentation OR keywords ~ spreadsheet)

in the Find text box, the search returns only documents that

- contain either the phrase *Sixteen to one project* or *16 to 1 project* and
- Have an Author field that contains *Raskin*, and
- Have a Keywords field that contains either the phrase *slide show* or the word *presentation* or *spreadsheet*.

The tilde [~] operator is described in the following section.



## **Operators that can be used only with Document Info fields**

Certain operators can be used only in Document Info field values.

<b>Operator</b>	<b>Meaning</b>
-----------------	----------------

=	matches exactly (for text, numeric, and date values)
~	contains (for text values)
!=	does not contain (for text, numeric, and date values)
<	is less than (for date or numeric values)
<=	is less than or equal to (for date or numeric values)
>	is greater than (for date or numeric values)
>=	is greater than or equal to (for date and numeric values)

The comparison operators (<, <=, >, and >=) can be used only with values of the same type. For example, a date value can be compared only with another date value, and a text value can match exactly only another text value.

The standard Document Info fields—Title, Subject, Author, and Keywords—are all text values.

## Using document creation and modification dates

You can use the Date Info fields to limit search results to just those documents that were created or modified in a specific time period. To add the Date Info fields to the Acrobat Search window, choose Preferences > Search from the Edit menu and select the Show Date option.

With Date Info	mo	dy	yr		mo	dy	yr		
Creation after	/	/		▲▼	before	/	/		▲▼
Modification after	/	/		▲▼	before	/	/		▲▼

### To specify a date:

- 1 Click the month field box for the date you want to specify, and enter the number of the month. The current day and year appear in the day and year fields.
- 2 To change the day, click the day field and either enter the day number or use the up and down arrows to select the day number.
- 3 To change the year, click the year field and either enter the year or use the up and down arrows to select the year.



**To limit a search to documents created or modified after a specific date:**

Specify the After date, and leave the Before date blank.

**To limit a search to documents that were created or modified before a specific date:**

Specify the Before date, and leave the After date blank.

**To clear the date fields:**

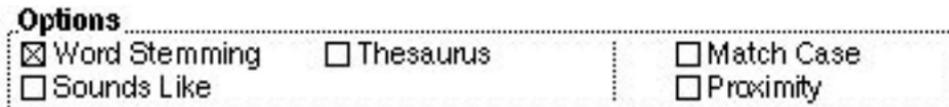
Click Clear.

**To use both the creation and modification dates:**

Entering time periods for both creation and modification dates specifies an AND condition. Only documents created in the specified period and modified in the specified period are returned from a search.

## Using search options

The search options expand and restrict the results of searches with single terms, phrases, and Boolean expressions. The search options do not apply to Document Info field values. To add the search options to the Acrobat Search window, choose Preferences > Search from the Edit menu and select Show Options.



- Word Stemming finds words that share a stem with the search term.
- Thesaurus finds words that have the same meaning as the search term.
- Sounds Like finds words that share a phonetic resemblance to a search term.
- Match Case finds only words that are capitalized exactly like the search term.
- Proximity changes AND searches so that words must be within three or four pages of one another.



See also [Using the Refine Search feature](#).

You can use the [Word Assistant](#) to see the effects of using the Word Stemming, Thesaurus, and Sounds Like search options before performing a search. Choose Search > Word Assist from the Tools menu to display the Word Assistant dialog box.

## Word Stemming search option

Word stemming expands the search to find words that share word stems with the search terms you enter in the Find box. For example, with Word Stemming selected, searching for *building* finds *build* and *builds* as well as *building*.

**Note:** *The Word Stemming option does not find words that end with er. For example, searching for build does not find builder, searching for bake does not find baker, and searching for publish does not find publisher.*

Use the [Word Assistant dialog box](#) to see all the words in the current index or indexes that share a stem with a specified search term. Choose Search > Word Assist from the Tools menu to display the Word Assistant dialog box.

The Word Stemming feature does not apply to terms that contain [wild-card characters](#).



You cannot use the Word Stemming option with the Match Case option. When Word Stemming is selected, the Match Case option is ignored.

Not all indexes support the Word Stemming option; index publishers must build support for word stemming into indexes. When an index does not support word stemming, selecting the option has no effect.

## Thesaurus search option

Thesaurus expands the search to find words that bear some semantic resemblance to the search terms you enter in the Find box. For example, with Thesaurus selected, searching for *begin* finds *start*, as well as *attack*, *produce*, and many other terms.

Sometimes the number of words that the Search command considers to have the same meaning as a given search term is surprising. Before searching with the Thesaurus option, it is usually a good idea to use the [Word Assistant](#) to see all the words that the Search command considers to have the same meaning as a specific search term. Choose Search > Word Assist from the Tools menu to display the Word Assistant dialog box.

The Thesaurus option does not apply to terms in a search phrase or to terms that contain wild-card characters.

You cannot use the Thesaurus option with the Match Case option. When the Thesaurus option is selected, the Match Case option is ignored.

## Sounds Like search option

Sounds Like expands the search to find words that begin with the same letter as a search term and that share some phonetic relation to a search term. For example, with Sounds Like selected, searching for *Smith* also finds *Smyth* and *Smythe*. Searching for *Smith*, however, also finds *send* and *somewhat*. Before searching with the Sounds Like option, it is usually a good idea to use the [Word Assistant](#) to see all the words that the Sounds Like option will find. To display the Word Assistant dialog box, choose Search > Word Assist from the Tools menu.

The Sounds Like feature does not apply to terms in a search phrase or terms that contain wild-card characters.

You cannot use the Sounds Like option with the Match Case option. When Sounds Like is selected, the Match Case option is ignored.

Not all indexes support the Sounds Like option; index publishers must build support for the Sounds Like option into indexes. When an index does not support Sounds Like, selecting the option has no effect.

## Match Case search option

Match Case limits the results of the search to find only those documents that contain words with the same capitalization as the search term or terms you enter in the Find box. With Match Case selected, for example, searching for *He* finds all occurrences of *He*, the symbol for Helium, but not all occurrences of *he*, the common pronoun.

You can use the Match Case option with phrase searches, and the Match Case option applies to any terms you use with a [Boolean expression](#).

You can also use the Match Case option with terms that contain [wild-card characters](#). Characters matched by wild-card characters, however, can be either uppercase or lowercase.

You cannot use the Match Case option with the Word Stemming, Thesaurus, or Sounds Like options. When any of these options are selected, the Match Case option is ignored.



Not all indexes support the Match Case option; index publishers must build support for the Match Case option into indexes. When an index does not support Match Case, selecting the option has no effect.

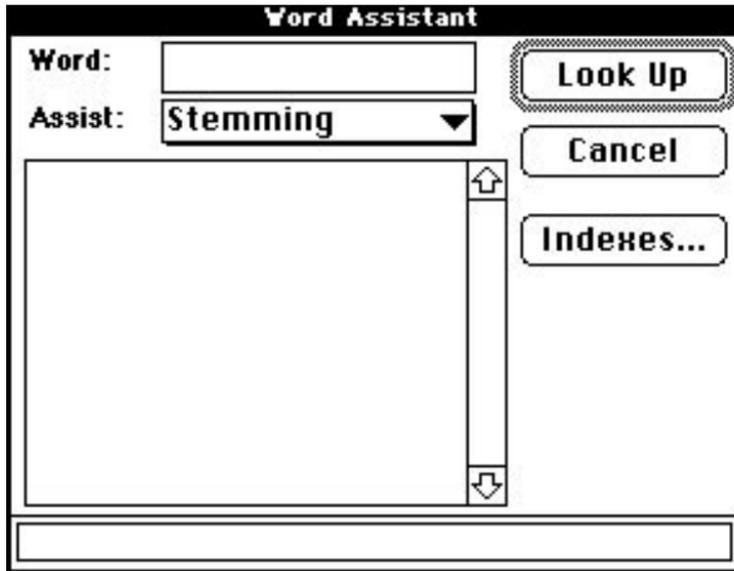
## Proximity search option

Proximity changes the way AND searches work. With Proximity selected, words in an AND search must be within three or four pages of each other to be found. Without the Proximity option, two words may appear anywhere in a document and still be found by an AND search.

Also, the closer the words are in the document, the higher the relevance ranking of the document in which they appear.

## Using the Word Assistant

The Word Assistant dialog box shows how the [Sounds Like](#), [Word Stemming](#), and [Thesaurus](#) search options affect a search query. Use the Word Assistant to see which terms, in addition to the search term, will be found with a search option selected.



You can also cut terms from the Word Assistant dialog box and paste them into the Search window to construct quickly a list of terms to find. Cutting and pasting terms is especially useful for the long lists of words that are often suggested by the Thesaurus or Sounds Like option.

**To see the effects of a search option on a search term:**

- 1** Choose Search > Word Assist from the Tools menu. The Word Assistant dialog box appears.
- 2** If you do not want to use your current indexes, click Indexes to display the Index Selection dialog box and select the indexes you want to use.
- 3** Select the search option from the Assist menu.
- 4** Enter the search term in the Word text box.
- 5** Click Lookup. All the words that will be found are listed in the scrolling list.



## **To search with a term listed in the Word Assistant dialog box:**

- 1** Click the [Search button](#) to display the Search window.
- 2** Choose Search > Word Assistant from the Tools menu to display the Word Assistant dialog box.
- 3** Enter the search term in the Word box, select the search option from the Assist list, and click Lookup. The related words are listed in the list box.
- 4** Double-click a word that you want to use. The word appears in the Word text box.
- 5** Double-click the word in the Word text box to select it, and press Ctrl/Command+C to copy it.
- 6** Click the Search window title to select it; then click the Find text box and press Ctrl/Command+V to paste the selected word into the text box.
- 7** Repeat steps 4 through 6 for each word you want to use; separate each pair of words in the Find text box with [OR](#).

## Using the Refine Search feature

Refine search restricts the next search to only those documents found by the previous search. Only documents currently listed in the [Search Results window](#) are searched.

### To use the Refine Search feature:

- 1 Use any combination of search terms, [Document Info field](#) values, [Date Info field](#) values, and [search options](#) to perform a search. The found documents are listed in the Search Results window.
- 2 With one or more documents in the Search Results window, click the [Search button](#) in the toolbar to open the Acrobat Search window.
- 3 Enter any new combination of search terms, Document Info field values, Date Info field values, and search options.
- 4 Press Ctrl (for Windows) or Option (on the Macintosh) and click the Refine button. (Pressing Ctrl or Option with documents in the Search Results list changes the Search button to the Refine button.) The Search Results window lists documents that were previously in the Search Results list and that meet the new search criteria.

## Searching with AND, OR, and NOT (Boolean expressions)

You can use AND, OR, and NOT operators to build a Boolean expression that specifies combinations of words that a document must have to be returned by a search.

Suppose, for example, you were searching a collection of U.S. history articles for information about Noah Webster, who wrote the first U.S. American English dictionary. If you searched for *Webster*, you would find references to Noah Webster, but you would also find references to Daniel Webster, a nineteenth century U.S. senator from Massachusetts. To find references to Noah Webster and avoid references to Daniel Webster, you could search for articles that contain *Webster* and *dictionary* but not *congress* or *senate*.

You can also use Boolean expressions in [Document Info](#) field text boxes to specify a combination of field values that documents must contain to be returned from a search.



See the following topics for more information about Boolean expressions:

[AND searches](#)

[OR searches](#)

[NOT searches](#)

[Combining Boolean operators](#)

[Using parentheses to change the order of evaluation](#)

[Using operator names and parentheses in a Boolean expression](#)

For information about using Boolean expressions to specify Document Info field values, see also [Searching with AND, OR, and NOT \(Boolean expressions\)](#) or [Using Document Info fields.](#)

## AND searches

Use AND to specify two or more search terms that a document must contain to be returned by a search. For example,

installation AND instructions

finds only those documents that contain both *installation* and *instructions*.

You can also use the ampersand [&] to specify an AND search. For example,

installation & instructions

also finds documents that contain both *installation* and *instructions*.



Choosing the Proximity search option changes the way AND searches work. Without the Proximity option, terms in an AND search can be anywhere in a document. Searching for *red* and *blue*, for example, can find a document in which *red* is the first word on the first page and *blue* is the last word on the last page. With the Proximity option, however, terms in an AND search must be within two or three pages of each other to be found. Also, with the Proximity option selected, the closer the terms appear together, the higher the relevance ranking of the document that contains them.

## OR searches

Use OR to specify two or more search terms, any of which a document can contain and can be returned by a search. For example,

television OR tv

finds all documents that contain either *television* or *tv*.

You can also use a comma [,] or a vertical bar [|] to separate terms in an OR search. For example,

television, tv

and

television | tv

also find all documents with either *television* or *tv* or both.

Although any document that contains any term used with an OR operator is returned from a search, documents that contain both terms rank higher in the Search Results list. See [Relevance ranking](#) for more information.

## NOT searches

Use NOT to exclude documents that contain a search term. For example,

not quarterly

finds all documents that do not contain the word *quarterly*.

You can also use an exclamation point [!] to specify a NOT search. For example,

! quarterly

also finds all documents that do not contain the word *quarterly*.

**Note:** *You must place a space between the exclamation point and the search term.*

## Combining Boolean operators

This topic explains how to combine Boolean operators in a search query.

**Caution:** *Be careful when combining operators to build Boolean expressions. Unless you work with Boolean expressions frequently, it is easy to build an expression that does not mean what you think it means.*

### Combining AND and OR operators

When you combine AND and OR in the same expression, AND is evaluated before OR. For example,

darwin OR origin AND species

finds all documents that contain *darwin* or that contain both *origin* and *species*.



## **Combining AND, OR, and NOT operators**

When NOT is used with either or both of the AND and OR operators, it is evaluated before either the AND or the OR. For example,

evolution AND not darwin

finds all documents that contain the word *evolution* but not *darwin*.

## **Using parentheses to change the order of evaluation**

You can use parentheses to change the default order of evaluation for Boolean operators. For example,

(darwin or origin) AND species

finds all documents that contain either *darwin* and *species* or *origin* and *species*. Parentheses can be nested to any depth.

## Using operator names and parentheses in a Boolean expression

When you use a phrase that contains operator names or parentheses, the phrase must be enclosed in quotes. For example,

“cats and dogs” OR “cats & dogs”

finds all documents that contain either the phrase *cats and dogs* or the phrase *cats & dogs*.

Similarly, when you use a search term that contains an operator character or parentheses, the term must be enclosed in quotes. For example,

“(cats|dogs)”

finds all documents that contain the term (*cats/dogs*) as well as all documents that contain the phrase *cats dogs*. The phrase *cats dogs* is found because parentheses and the vertical bar are discarded before terms are entered into the index. They are also discarded when a search is performed. See [How terms are indexed](#) for details.



As another example,

“origin of the species” OR “step 36(a)” AND “cats and dogs”  
finds all documents that contain the phrase *origin of the species*, or that contain both the phrase *step 36(a)* and the phrase *cats and dogs*.

When the following words and characters are used within a phrase, the phrase must be enclosed in quotation marks:

AND	&[AND operators]
OR	,[OR operators]
NOT	![NOT operators]

## Viewing search results

When you enter a search query, Acrobat Reader lists in the Search Results window the documents it finds.



## **To view a document returned from the search:**

**1** Select the document name, and click View (or double-click the document's name).

**2** Use the Search buttons on the toolbar to view all the pages containing search terms:

- To highlight the next occurrence of a search term, click the Search Next button . When the last occurrence of a search term in a document is displayed, Search Next displays the first occurrence in the next document. Search Next displays documents in the order that they are listed in the Search Results window. Pressing the Shift key and clicking Search Next displays the first occurrence of a search term in the next document.

- To highlight the previous occurrence of a search term, click the Search Previous button . When there are no more occurrences of a search term in a document, the last occurrence of a search term in the previous document is displayed. Search Previous displays documents in the reverse of the order in which they are listed in the Search Results window. Pressing the Shift key and clicking Search Previous displays the first occurrence of a search term in the previous document.



## **Changing the order in which found documents are listed**

By default, documents are listed in the order of their score or [relevance ranking](#), which places the documents most likely to contain relevant information at the top of the list. With the [Acrobat Search Preferences dialog box](#), you can change the order in which documents are listed. For example, you can sort documents by creation date, by title, or by author. Choose Preferences > Search from the Edit menu to display the Acrobat Search Preferences dialog box.

## **Changing the way search terms are displayed**

By default, all the search terms on a page are highlighted and the Search Next and Search Previous buttons display the next and previous pages with found terms. You can, however, change the way found terms are highlighted by changing the Highlight option in the Acrobat Search Preferences dialog box:

- **By Word** highlights search terms one at a time; each click of the Search Next or Search Previous button moves the highlighting from one term to the next.



- **No Highlighting** displays pages with found terms without highlighting terms; each click of the Search Next or Search Previous button displays a new page.
- **By Page**, the default, displays pages with all found terms highlighted; each click of the Search Next or Search Previous button displays a new page.

Choose Preferences > Search from the Edit menu to display the Acrobat Search Preferences dialog box.

### **Limiting the number of documents returned by a search**

By default, no more than 100 documents are listed in the Search Results list. You can, however, change this limit to a higher or lower number in the Acrobat Search Preferences dialog box.

The minimum is 1 document; the maximum is 1000 documents.

Choose Preferences > Search from the Edit menu to display the Acrobat Search Preferences dialog box.



## **Keeping the Search Results window open**

By default, the Search Results window closes when you view a document returned from a search. You can, however, keep the Search Results window open while viewing search results by clearing the Hide on View option in the Acrobat Search Preferences dialog box. Choose Preferences > Search to display the Search Preferences dialog box.



When you keep the Search Results window visible while viewing search results, the Search Results window reports how many documents were found, how many pages in the current document contain a search term, and which page in the current document is being displayed.



## Relevance ranking (score)

Each document returned from a search is assigned a relevance ranking. A document's relevance ranking indicates how likely it is that the document contains the information for which you are searching.

The Search Results window uses five icons to indicate a document's relevance ranking:

-  A full circle indicates a very high relevance ranking; the document is very likely to contain relevant information.
-  A three-quarter circle indicates a high relevance ranking; the document is likely to contain relevant information.
-  A half circle indicates a medium relevance ranking; the document probably contains relevant information.
-  A one-quarter circle indicates a low relevance ranking; the document might contain relevant information.
-  An empty circle indicates a very low relevance ranking; the document is unlikely to contain relevant information.



The method used to determine a document's relevance ranking depends on the kind of search performed. With a single search term, for example, the relevance ranking indicates how frequently the term appears in the document. When two search terms are separated by an OR operator, however, documents that contain both terms have a relevance ranking higher than documents that contain just one of the terms. Similarly, when you use the Proximity search option, the closer search terms are within a document, the higher the relevance ranking for the document.

Another factor that contributes to a document's relevance ranking is the density of search terms relative to other terms in the document. The higher the proportion of search terms in a document, the higher the document is ranked.

## Setting search preferences

You can use the Acrobat Search Preferences dialog box to

- Control whether the Search window closes when you perform a search
- Control the size and contents of the Search window. (You can show or hide the [Document Info fields](#), the [document date fields](#), and the [search options](#).)
- Control whether the Search Results window closes when you view a document returned from a search
- Control the number of found documents listed in the Search Results window, and the order in which they are listed
- Control whether all search terms on a page are highlighted, whether terms on a page are highlighted one at a time, or whether no terms are highlighted
- Control whether Macintosh file server volumes that contain indexes you are using are automatically mounted when you start a search



See [Query preferences](#) for details about the preference settings that control the Acrobat Search window. See [Results preferences](#) for details about the preference settings that control the Search Results window. See [Indexes preference \(Macintosh only\)](#) for details about the automount setting for file servers that contain indexes.

## Query preferences

The Query preferences control the size, contents, and behavior of the Acrobat Search window.

**Query**

<input checked="" type="checkbox"/> <b>Show Fields</b>	<input checked="" type="checkbox"/> <b>Show Date</b>
<input checked="" type="checkbox"/> <b>Show Options</b>	
<input checked="" type="checkbox"/> <b>Hide on Search</b>	

- **Show Fields** displays the [Document Info fields](#) with the Search window.
- **Show Options** displays the [search options](#) with the Search window.
- **Show Date** displays the [Date Info selection options](#) with the Search window. The Date Info options let you limit the results of a search to documents that were created or modified during a specific time period.
- **Hide on Search** closes the Search window when you perform a search; clear this option to keep the Search window displayed while you view search results.

## Results preferences

The Search Results preferences control the behavior of the [Search Results window](#).

<b>Results</b>	
Sort By:	Score ▼
Show Top:	100 Documents
<input type="checkbox"/>	Hide on view
<b>Highlight</b>	
Display:	By Page ▼

- **Sort By** controls the order in which documents are listed in the Search Results window. By default, documents are sorted by score, which lists them in the order of their [relevance ranking](#). You can also sort found documents by creation date, modification date, or by one of the Document Info field values, such as Title or Author. When you sort found documents by Document Info field values, they are listed alphabetically by field values.



When you sort by Created or Modified date values, documents are sorted by date in descending order. The most recent dates are listed first.

Documents with empty fields are listed before documents with field values.

When documents are sorted by score, documents with the same score are listed alphabetically by title (or filename if they have no title).

When documents are sorted by any value other than score, documents with the same sort value are sorted by score.

- **Show Top \_\_ Documents** defines the maximum number of documents you want returned from a search. Enter any value between 1 and 1000.
- **Hide on View** closes the Search Results window when you view a document returned from a search; clear this option to keep the Search Results window visible while you view search results.
- **Highlight Display** controls how search terms are highlighted and how the Search Next and Search Previous buttons work.



- **By Page** highlights all the search terms on a page. Search Next and Search Previous display the next or previous page with found terms.
- **By Word** highlights found search terms one at a time. Search Next and Search Previous highlight the next or previous found term.
- **No Highlighting** does not highlight search terms. Search Next and Search Previous display the next or previous page that contain found terms.

## Indexes preference (Macintosh only)

The Indexes preference controls whether network file servers that contain currently selected indexes are automatically mounted when you start a search.

**Indexes**

**Automount servers**

Select Automount Servers to connect automatically to file servers that contain selected indexes. When Automount Servers is not selected, you must manually mount servers that contain indexes before you can use the indexes.

## About Acrobat indexes

The Acrobat Catalog program creates [full-text indexes](#) for collections of PDF documents. The Search feature uses these indexes to locate words quickly in documents that make up indexed collections.

### Words and terms included in an index

By default, an Acrobat index lists every word, number, and alphanumeric term that appears in every document in the indexed document collection. An *alphanumeric term* is a sequence of letters and numbers. See [How terms are indexed](#) for details.

### Stopwords

To reduce the size of an index, an index publisher can exclude stopwords from an index. Stopwords are not indexed. Usually, stopwords are common words that do not serve to identify topics or subjects. Carefully chosen stopwords can reduce the size of an index without reducing its usefulness.



Typical stopwords include

- Articles such as *the* and *a*
- Prepositions such as *for*, *by*, and *of*
- Conjunctions such as *or* and *and*

Each index can be built with a different stopwords list.

Because they are not placed into the index, you cannot find stopwords with the Search command. Also, you cannot find a phrase that contains a stopword.

See [Typical stopword list](#) for a list of common stopwords.

## **Numbers**

Another way index publishers can reduce the size of an index is to exclude numbers from an index. See [How Acrobat Catalog excludes numbers](#) for a description of how the Catalog program identifies numbers.

## Full-text indexes

A *full-text index* is an alphabetized list of all the words and alphanumeric terms that occur in a collection of documents. For each word and alphanumeric term in the document collection, a full-text index lists the documents and pages where the word or term appears. Given a full-text index, search software can quickly locate all the occurrences of a search term without opening and searching the documents. The following table shows part of a full-text index for Shakespeare's plays.

<b>Term</b>	<b>Document (Play)</b>	<b>Pages</b>
abed	<i>All's Well That Ends Well</i>	150
	<i>As You Like It</i>	36
	<i>Cymbeline</i>	86
	<i>Macbeth</i>	35
	<i>Othello</i>	82
	<i>Romeo and Juliet</i>	111, 142
	<i>Twelfth Night</i>	38



<b>Term</b>	<b>Document (Play)</b>	<b>Pages</b>
abel	First Part of <i>King Henry VI</i>	25
Abel's	<i>King Richard II</i>	9
Abergavenny	<i>Henry VIII</i>	2, 6, 9, 10, 11, 19, 28
abet	<i>King Richard II</i>	71
abetting	<i>Comedy of Errors</i>	33

**Note:** *Indexes distinguish between uppercase and lowercase letters only when publishers build them to support the Match Case option. Otherwise, all index terms are spelled with lowercase letters.*

See [How terms are indexed](#) for a description of how the Acrobat Catalog program recognizes words and terms.

## How terms are indexed

When indexing a PDF document, the Acrobat Catalog program uses separator characters and white space to recognize where one word or term ends and the next word or term starts. For example, in the sentence “We have nothing to fear but fear itself,” the Acrobat Catalog program uses the space characters (or white space) and the period to identify seven terms: *we*, *have*, *nothing*, *to*, *fear*, *but*, and *itself*. Having identified the terms, Acrobat Catalog eliminates any stopwords defined for the index. After removing the stopwords, the Catalog program indexes the remaining terms. (Using the typical stopword list, the Catalog program would eliminate *to* and *but* and index the terms *we*, *have*, *nothing*, *fear*, and *itself*.)

## Separator characters

Most punctuation marks and all symbols are separator characters. The most common separator characters are the space and common punctuation characters such as periods, commas, colons, semicolons, exclamation points, question marks, parentheses, and quotation marks.



The Catalog program removes separator characters when it recognizes words and alphanumeric terms; only words and alphanumeric terms are placed into the index.

As an example, consider the following two sentences:

Tell Mary Jones-Smith we're having roast chicken tonight.  
(It's not a secret anymore.)

Using no stopwords, the Acrobat Catalog program would index the following terms from these two sentences:

<i>tell</i>	<i>mary</i>	<i>jones</i>	<i>smith</i>	<i>we're</i>
<i>having</i>	<i>roast</i>	<i>chicken</i>	<i>tonight</i>	
<i>it's</i>	<i>not</i>	<i>a</i>	<i>secret</i>	<i>anymore</i>

**Note:** *The apostrophe is one of the punctuation characters that is not considered a separator.*



The following table shows more examples of how separator characters indicate where terms begin and end.

**Character sequence**

**Indexed terms  
(and phrases)**

(415)555-1212

415, 555, 1212

#33-223A-BB

33, 223A, BB

2.5\*(14-4)=25

2.5, 14, 4, 25

c:\project6\docs\proposal.doc

c, project6, docs, proposal, doc

mother-in-law

mother, in, law

6/18/50, 11-10-1954

6, 18, 50, 11, 10, 1954



Because the Search command also removes separator characters from search terms before beginning a search and because phrases do not have to be enclosed in quotes, you can usually enter a search term with separator characters and find the term as a phrase.

Searching for a phone number such as

(415)555-1212

searches for and finds the phrase

415 555 1212

Every character except the characters listed in the table below is a separator character.

### **Characters that form words and alphanumeric terms in an index**

all letters

digits [0–9]

single quote [ ' ]

right apostrophe [ ' ]

grave [ ` ]

diereses [ ¨ ]

acute [ ´ ]

cedilla [ , ]

macron [ ¯ ]

breve [ ˘ ]

dotaccent [ ˙ ]

ring [ ° ]

hungarumlaut [ ~ ]

ogonek [ ˛ ]

caron [ ˇ ]



## Characters removed from indexed terms

Some characters, such as ligatures, in Type 3 fonts are dropped from indexed terms. For example, you cannot search for the term *Æsop's fables* if the phrase is set in a Type 3 font because the *Æ* is removed before the words are placed in the index.

Ligatures are removed only from words in Type 3 fonts. Normally, you can search for a word by typing all the characters of the word. For example, you can search for the word *Æsop* by typing **Aesop**.

## How Acrobat Catalog excludes numbers

Index publishers can exclude numbers from Acrobat Catalog indexes. The Acrobat Catalog program defines a number to be a sequence of one or more numeric digits [0 through 9] that is

- Optionally preceded by a minus sign [-]
- Optionally separated by one or more commas [,] or periods [.]

Here are some examples of the kinds of numbers that the Acrobat Catalog program can exclude from an index:

23      23.54671      -37.1      3,012,222      44.223.835,5

When numbers are separated by other punctuation characters and symbols, the Catalog program removes these other characters before determining whether the remaining characters are a number.

(\$3,000.23) becomes 3,000.23, which is an excluded number.

(37A) becomes 37A, which is a search term and not a number.

## White space

When applications print to PostScript printers (or create PostScript files for the Acrobat Distiller), they often control the spaces between words by placing the words onto the page as separate units. That is, words in a PostScript file may not be separated by space characters. Rather, words may be individually placed onto the page as separate text objects.

How now brown cow ?

When a block of text, such as a paragraph, is built as a group of individual text objects, the Acrobat Catalog program must reconstruct the block of text by finding and assembling the text objects in the correct order. The Acrobat Catalog program interprets each text object as a word or term, and it indexes each text object as a separate word or term. In this case, words and terms are not separated by space characters; they are separated by the white spaces between the text objects.

## Typical stopword list

Here is a list of typical stopwords:

About	about	Above	above	After	after
Also	also	Although	although	An	an
And	and	As	as	At	at
Be	be	Because	because	Before	before
Between	between	But	but	By	by
Either	either	For	for	From	from
Further	further	Here	here	However	however
If	if	In	in	Into	into
Now	now	Of	of	On	on
Or	or	Other	other	Out	out
Over	over	Since	since	Such	such
Than	than	That	that	The	the
Then	then	There	there	Therefore	therefore
These	these	This	this	Those	those
Through	through	Thus	thus	To	to
Under	under	Until	until	Upon	upon
What	what	When	when	Where	where
Whether	whether	Which	which	While	while
With	with	Within	within	Without	without

## Troubleshooting searches

This topic provides advice for solving problems you might encounter when using the Search command. Solutions are described under the error message you will see.

### **The index is unavailable**

Indexes might be unavailable for one or more of the following reasons:

- The connection to the network server containing the index has been lost.
- The index is being purged and rebuilt; this maintenance operation takes time but can significantly reduce the size of an index.
- The index has been moved to a new location.
- The index has been deleted.

Contact your network administrator if you suspect you have lost your connection to a server.



Contact the person responsible for the index if you suspect the index is being purged and rebuilt, or if you suspect that it has been moved or deleted.

## **Highlights will not be displayed**

Acrobat Reader displays this message when it tries to open a PDF document that has changed since the index was built. The change may not have altered the locations of the words on the page. Using Acrobat Exchange to add a note to a PDF document or to change the security settings, for example, causes this message to be displayed, even though the contents of the document have not changed.

If the change to the file did alter the locations of words, the search term highlights will be incorrect. For example, if a page was deleted, highlights will indicate the wrong words.

If you think the change to the PDF document did not alter the locations of words in the document, or if you think you will be able to tell whether the highlights are correct, click the Highlight Anyway button to close the message box and view the document.



**Note:** Index creators can suppress this message by selecting the *Optimize for CD-ROM option in the Adobe Acrobat Catalog Options dialog box*. See *Optimize for CD-ROM option in the Adobe Acrobat Catalog Online Guide*.

## **No documents were found that matched your query**

Acrobat Reader displays this message when no documents in the currently selected indexes meet the criteria you specify with a search query. If you get this message, try these steps:

- Make sure you have selected the indexes that contain the documents with the information you seek.
- Make sure you are not using Document Info or Date Info field values—or search options from the previous query by mistake.
- Make sure you are not searching for a stopword in an index that has stopwords.
- Make sure you are not searching for a number in an index from which numbers have been excluded.
- If you are using an operator such as AND or NOT in a phrase, make sure the phrase is enclosed in quotation marks (“ ”).



## **Out of file handles**

You are running too many programs or you have too many windows open. Close some windows, and try the query again. If you are running two or more programs, quit all programs except Acrobat Reader and retry the query.

## **Not enough memory (Macintosh)**

If you get a message saying you do not have enough memory for Acrobat Reader to find the documents that meet your search criteria, you can try increasing the memory available to the Acrobat Reader program.

- 1** If Acrobat Reader is running, quit the application.
- 2** From the Finder, click to select the Reader program icon.
- 3** Choose Get Info from the File menu. The Get Info dialog box appears.
- 4** In the Memory Requirements box, increase the Minimum size value. For example, you might increase the Minimum size value to 2500 or 3000. (The maximum amount of memory available for the application is limited by the amount of memory installed in your Macintosh.)



**5** Click the close box in the upper left corner of the Get Info dialog box.

**6** Start Acrobat Reader. If a message appears, telling you that there is not enough memory to run the program, decrease the Minimum size value in the Acrobat Reader Get Info box.

## Keyboard shortcuts

<b>Tool or key</b>	<b>Plus</b>	<b>Result</b>
Ctrl+Shift	F	Displays the Search window
Ctrl+Shift	X	Displays the Index Selection dialog box
Ctrl+Shift	J	Displays the Search Results window
Ctrl+Shift	W	Displays the Word Assistant dialog box
Ctrl+Shift	Y	Displays the first occurrence of search term in previous document
Ctrl	Y	Displays the previous page with search term, or the previous term if Display By Word is selected



Ctrl	U	Displays the next page with search term, or the next term if Display By Word is selected
Ctrl+Shift	U	Displays first occurrence of search term in next document

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## Adobe Acrobat Search 2.1 Online Guide

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(9/95)

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NEXT



# National Exposure Research Laboratory (NERL) - Las Vegas

Site Characterization  
LIBRARY

VOLUME 1  
Revision 2



Software



Documents

# Site Characterization Library

This CD-ROM, Volume 1, Revision 2, of EPA's National Exposure Research Laboratory (NERL - Las Vegas) Site Characterization Library, contains additional electronic documents and computer programs related to the characterization of hazardous waste sites. EPA has produced this library to facilitate access to these important information resources and computer-based tools. The Site Characterization Library was developed in Portable Document Format (PDF) so that information can be easily accessed and navigated across a collection of documents that retain their original appearance.

Most of the documents can be accessed directly from this CD-ROM and viewed on screen using Adobe Acrobat Reader. Alternatively, documents can be printed from the Acrobat Reader using the menu bar. Some of the documents listed are not provided here because they are already available from another source (e.g., Volume 1 of the Site Characterization Library) or were not readily available for inclusion in this library. These are identified by a green note icon. Double-clicking on the icon reveals information about the availability of that particular document.

[NEXT](#)

# Site Characterization L I B R A R Y

Software can be easily installed from this CD-ROM by following the instructions provided on screen. As with listed documents, some software programs or the accompanying user documentation are not included in this library. Double-click on the green note icon adjacent to the particular listing for information on availability.

## Notes

1. Portions of some PDFs may not be legible due to the poor quality of the scanned original; in general, however, legibility is enhanced when the file is printed out. Also, the extent of PDF bookmarking (document hypertext links) varies.
2. The DOS programs provided on this CD-ROM may not run properly from Windows if your system has insufficient conventional memory. If you encounter problems, exit Windows and run the program in DOS from the hard drive.

NEXT

# Site Characterization LIBRARY

Documents

## Navigating within the Library

For ease of navigation, use the hand tool provided in the tool bar. This hand image changes into a pointing finger when an area of the interface is hotlinked, or “clickable.” The Site Characterization Library can be explored using any of the following approaches:

- Start from this screen by clicking on the category of interest. A list of items is then presented. Make a selection by clicking on the title of the document or software program listing.
- Search the entire library for information on a specific topic with the Adobe Acrobat Search for CD-ROMs function, which can be accessed from the tool bar. For information on search options and other Adobe Acrobat functions, click on the Help button below or select Help from the menu bar. From subsequent screens, click on the Home button to return to this screen.
- Move through the sequence of library screens using the Page Up or Page Down buttons on the keyboard.

Software

HELP

# Site Characterization Library



- Project Planning and Data Quality
- RCRA/Superfund Site Assessment Guidance
- Field Operations and Standard Operating Procedures
- General Site Assessment Guidance
- Other Site Assessment Topics: Geophysics, NAPLs, Karst, and Ecological Assessment
- Soil, Vadose Zone, Sediment, and Hazardous Waste Sampling/Monitoring
- Ground-Water Sampling and Monitoring
- Risk Assessment
- A Partial Compilation of ASTM Standards on Environmental Site Characterization

[HOME](#)

# Site Characterization Library

Project Planning  
& Data Quality

- A Comparison of the RCRA Corrective Action and CERCLA Remedial Action Processes (U.S. DOE, 1994)
- A Rationale for the Assessment of Errors in the Sampling of Soils (U.S. EPA, 1990)
- Catalog of Hazardous and Solid Waste Publications, 8th ed. (U.S. EPA, 1995)
- Catalog of Superfund Program Information Products, 1994 (U.S. EPA, 1994)
- Guidance for the Data Quality Assessment Process: Practical Methods for Data Analysis (QA/G-9) (U.S. EPA, 1996)
- Guidance for the Data Quality Objectives Process (U.S. EPA, 1994)
- Guidance for Quality Assurance Project Plans (U.S. EPA, 1998)
- Preparing Perfect Project Plans: A Pocket Guide for the Preparation of Quality Assurance Project Plans (Simes, 1989)
- Other EPA Data Quality Documents



MAIN

HOME

# Site Characterization Library

## General Site Assessment Guidance



- Characterization of Hazardous Waste Sites—A Methods Manual, Volume I: Site Investigations (Ford and Turina, 1985)
- Characterization of Hazardous Waste Sites—A Methods Manual, Volume II: Available Sampling Methods, 2nd ed. (Ford et al., 1984)
- Guide to Site Characterization for Environmental Purposes with Emphasis on Soil, Rock, the Vadose Zone and Ground Water (ASTM, 1996)
- Site Characterization for Subsurface Remediation (U.S. EPA, 1991)
- Subsurface Characterization and Monitoring Techniques: A Desk Reference Guide, Volume I: Solids and Ground Water; Volume II: The Vadose Zone, Field Screening and Analytical Methods (Boulding, 1993)

[MAIN](#)

[HOME](#)

## Site Characterization Library

### Other Site Assessment Topics

- Application of Dye-Tracing Techniques for Determining Solute-Transport Characteristics of Ground Water in Karst Terranes (Mull et al., 1988)
- Behavior and Determination of Volatile Organic Compounds in Soil: A Literature Review (Minnich, 1993)
- Characterizing Heterogeneous Wastes: Methods and Recommendations (U.S. EPA, 1992)
- DNAPL Site Evaluation (Cohen and Mercer, 1993)
- Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference (Warren-Hicks et al., 1989)
- Estimating the Potential for Occurrence of DNAPL at Superfund Sites (U.S. EPA, 1992)
- Geophysical Techniques for Sensing Buried Wastes and Waste Migration (Benson et al., 1984)
- Soil-Gas and Geophysical Techniques for Detection of Subsurface Organic Contamination (Pitchford et al., 1988)
- Use of Airborne, Surface, and Borehole Geophysical Techniques at Contaminated Sites: A Reference Guide (Boulding, 1993)

[MAIN](#)

[HOME](#)

# Site Characterization Library

## RCRA/Superfund Site Assessment Guidance

- Conducting Remedial Investigation/Feasibility Studies for CERCLA Municipal Landfill Sites (U.S. EPA, 1991)
- Guidance for Conducting Remedial Investigation/Feasibility Study Under CERCLA (U.S. EPA, 1988)
- Guidance for Performing Preliminary Assessment Under CERCLA (U.S. EPA, 1991)
- Guidance for Performing Site Inspections Under CERCLA (Interim Final) (U.S. EPA, 1992)
- PA Review Checklist (U.S. EPA, 1993)
- RCRA Facility Assessment Guidance (U.S. EPA, 1986)
- RCRA Facility Investigation Guidance (U.S. EPA, 1989)
  - Volume 1
  - Volume 2
  - Volume 3
  - Volume 4

MAIN

HOME



- A Compendium of Superfund Field Operations Methods (U.S. EPA, 1987)
- Emergency Response Team (ERT) Standard Operating Procedures (SOPs) Compendia: Compendium of ERT Soil Sampling and Surface Geophysics Procedures; Compendium of ERT Groundwater Sampling Procedures; Compendium of ERT Waste Sampling Procedures; Compendium of ERT Toxicity Testing Procedures (U.S. EPA, 1991)
- Field Methods Compendium (FMC) (Draft) (U.S. EPA, 1993)
- Field Screening Methods Catalog: User's Guide (U.S. EPA, 1988)
- Guidance for the Preparation of Standard Operating Procedures (SOPs) for Quality-Related Documents (U.S. EPA, 1995)



[MAIN](#)

[HOME](#)



- Ground-Water Monitoring in Karst Terranes: Recommended Protocols and Implicit Assumptions (Quinlan, 1989)
- Groundwater Sampling: A Workshop Summary (U.S. EPA, 1995)
- Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells (Aller et al., 1991)
- Practical Guide for Ground-Water Sampling (Barcelona et al., 1985)
- RCRA Ground Water Monitoring: Draft Technical Guidance (U.S. EPA, 1993)
- Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities: Interim Final Guidance (U.S. EPA, 1989)

[MAIN](#)

[HOME](#)

# Site Characterization Library

Soil, Vadose Zone, Sediment &  
Haz. Waste Sampling/Monitoring

- Description and Sampling of Contaminated Soils: A Field Pocket Guide (Boulding, 1991)
- Guide to Site and Soil Description for Hazardous Waste Sites (Cameron, 1991)
- Methods Manual for Bottom Sediment Sample Collection (Palmer, 1985)
- Permit Guidance Manual on Unsaturated Zone Monitoring for Hazardous Waste Land Treatment Units (U.S. EPA, 1986)
- Preparation of Soil Sampling Protocols: Sampling Techniques and Strategies (Mason, 1992)
- Samplers and Sampling Procedures for Hazardous Waste Streams (deVera, 1980)



[MORE ►](#)

[MAIN](#)

[HOME](#)





- Sediment Sampling Quality Assurance User's Guide (Barth and Starks, 1985)
- Soil Sampling Quality Assurance User's Guide, 2nd ed. (Barth et al., 1989)
- Soil Screening Guidance: Technical Background Document (U.S. EPA, 1996)
- Soil Screening Guidance: User's Guide (U.S. EPA, 1996)
- Vadose Zone Monitoring for Hazardous Waste Sites (Everett et al., 1983)

◀ BACK

MAIN

HOME

- Dermal Exposure Assessment: Principles and Applications (U.S. EPA, 1992)
- Guidance for Data Useability in Risk Assessment (Final), Part A: OSWER Directive (U.S. EPA, 1992)
- Guidance for Data Useability in Risk Assessment (Final), Part B: OSWER Directive (U.S. EPA, 1992)
- Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors (U.S. EPA, 1991)
- Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part A: Interim Final) (U.S. EPA, 1989)
- Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part B: Development of Risk-Based Preliminary Remediation Goals), OSWER Directive (U.S. EPA, 1991)

[MORE ►](#)

[MAIN](#)

[HOME](#)

## Risk Assessment



- Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part C: Risk Evaluation of Remedial Alternatives) (U.S. EPA, 1991)
- Risk Assessment Guidance for Superfund, Volume 2: Environmental Evaluation Manual (Interim Final) (U.S. EPA, 1989)
- Superfund Exposure Assessment Manual (U.S. EPA, 1988)
- Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water, Parts I and II (Mills et al., 1985)

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- General Guidance
- Data Elements
- Geophysical Methods
- Geologic Characterization
- Hydrogeologic Characterization
- Drilling Methods
- Surface Water

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- Soil Sampling
- Vadose Zone Sampling and Monitoring
- Sediment Sampling

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- General
- Water Sampling
- Ground Water Monitoring Wells
- Ground Water Sampling

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



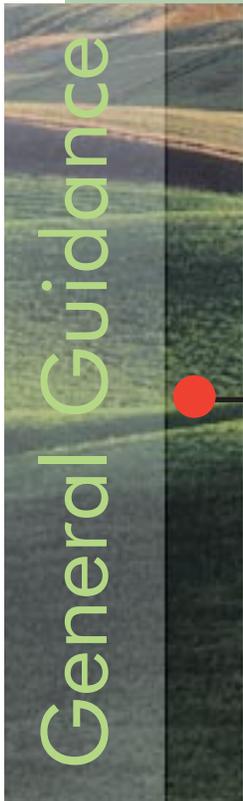
- General Guidance
- Specific Sampling Procedures

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 5730-96 Guide for Site Characterization for Environmental Purposes With Emphasis on Soil, Rock, the Vadose Zone and Ground Water
- D 5995-96 Guide for Environmental Site Characterization in Cold Regions
- D 5518-94 Guide for Acquisition of File Aerial Photography and Imagery for Establishing Historic Site-Use and Surficial Conditions
- E 1527-97 Practice for Environmental Site Assessments: Phase 1 Assessment Process
- E 1528-96 Practice for Environmental Site Assessment: Transaction Screen Process
- PS 11-95 Practice for Environmental Regulatory Compliance Audits
- PS 85-96 Guide for Expedited Site Characterization of Hazardous Waste Contaminated Sites

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- E 1689-95 Guide for Developing Conceptual Site Models for Contaminated Sites
- D 5745-95 Guide for Developing and Implementing Short-Term Measures or Early Actions for Site Remediation
- PS 3-95 Guide for Accelerated Site Characterization for Confirmed or Suspected Petroleum Releases
- E 1739-95<sup>E1</sup> Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites
- D 5746-95 Classification of Environmental Condition of Property Area Types
- D 6008-96 Practice for Conducting Environmental Baseline Surveys

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



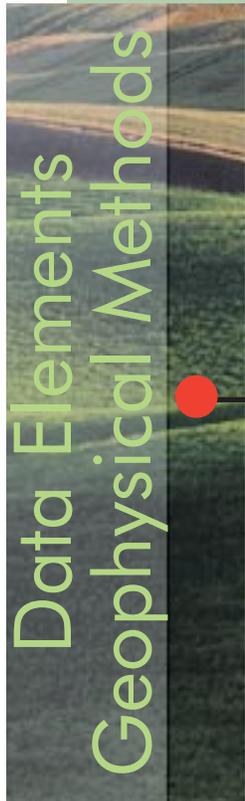
- D 5714-95 Specification for Content of Digital Geospatial Metadata
- D 5911-96 Practice for a Minimum Set of Data Elements to Describe a Soil Sampling Site
- D 5387-93 Guide for Elements of a Complete Data Set for Non-Cohesive Sediments
- D 5474-93 Guide for Selection of Data Elements for Ground-Water Investigations
- D 5254-92 Practice for the Minimum Set of Data Elements to Identify a Ground Water Site
- D 5408-93 Guide for the Set of Data Elements to Describe a Ground-Water Site, Part 1 - Additional Identification Descriptors

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 5409-93 Guide for the Set of Data Elements to Describe a Ground-Water Site, Part 2 - Physical Descriptors
- D 5410-93 Guide for the Set of Data Elements to Describe a Ground-Water Site, Part 3 - Usage Descriptors
- D 5753-95 Guide for Planning and Conducting Borehole Geophysical Logging
- D 5777-95 Guide for Using the Seismic Refraction Method for Subsurface Investigation

◀BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 5434-93 Guide for Field Logging of Subsurface Explorations of Soil and Rock
- D 6067-96 Guide for Using the Electronic Cone Penetrometer for Environmental Site Characterization
- D 2487-93 Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- D 2488-93 Practice for Description and Identification of Soils (Visual-Manual Procedure)
- D 4083-89 (1994)<sup>ε1</sup> Practice for Description of Frozen Soils (Visual-Manual Procedure)
- D 5878-95 Guide for Using Rock-Mass Classification Systems for Engineering Purposes

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 5979-96 Guide for Conceptualization and Characterization of Ground-Water Flow Systems
- D 6030-96 Guide to Selection of Methods for Assessing Ground Water or Aquifer Sensitivity and Vulnerability
- D 5980-96 Guide for Selection and Documentation of Existing Wells for Use in Environmental Site Characterization and Monitoring
- D 5126-90 Guide for Comparison of Field Methods for Determining Hydraulic Conductivity in the Vadose Zone
- D 4043-91 Guide for Selection of Aquifer-Test Field and Analytical Procedures in Determination of Hydraulic Properties by Well Techniques
- D 5737-95 Guide for Methods for Measuring Well Discharge
- D 6000-96 Guide for the Presentation of Water-Level Information From Ground Water Sites

◀BACK

MAIN

HOME

# ASTM Site Characterization Standards



● D 5781-95

Guide for Use of Dual-Wall Reverse-Circulation Drilling for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices

● D 5782-95

Guide for Use of Direct Air-Rotary Drilling for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices

● D 5783-95

Guide for Use of Direct Rotary Drilling with Water-Based Drilling Fluid for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices

● D 5784-95

Guide for Use of Hollow-Stem Augers for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



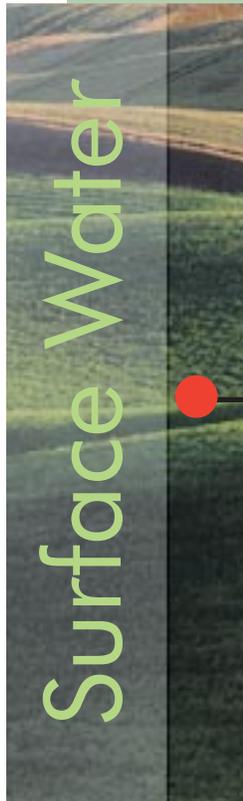
- D 5872-95 Guide for Use of Casing Advancement Drilling Methods for Geoenvironmental Exploration and Installation of Subsurface Water-Quality Monitoring Devices
- D 5875-95 Guide for Use of Cable-Tool Drilling and Sampling Methods for Geoenvironmental Exploration and Installation of Subsurface Water-Quality Monitoring Devices
- D 5876-95 Guide for Use of Direct Rotary Wireline Casing Advancement Drilling Methods for Geoenvironmental Exploration and Installation of Subsurface Water-Quality Monitoring Devices
- D 2113-83 (1993) Practice for Diamond Core Drilling for Site Investigation

◀BACK

MAIN

HOME

# ASTM Site Characterization Standards



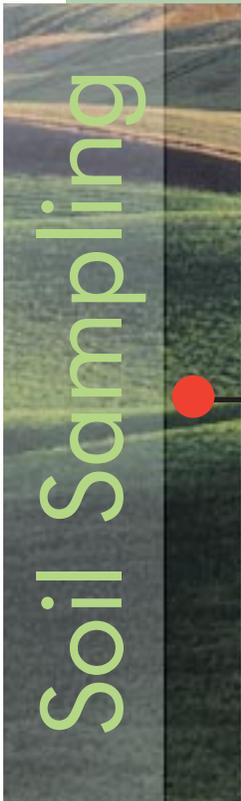
- D 4581-86 (1996)<sup>E1</sup> Guide for Measurement of Morphologic Characteristics of Surface Water Bodies
- D 5906-96a Guide for Measuring Horizontal Positioning During Measurements of Surface Water Depths
- D 5073-90 (1996)<sup>E1</sup> Practice for Depth Measurement of Surface Water
- D 5413-93 Test Methods for Measurement of Water Levels in Open-Water Bodies
- D 5674-95 Guide for Operation of a Gaging Station
- D 5640-95 Guide for Selection of Weirs and Plumes for Open Channel Flow Measurement of Water
- D 5541-94 Practice for Developing a Stage-Discharge Relation for Open Channel Flow

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 4700-91 Guide for Soil Sampling from the Vadose Zone
- D 1452-80 (1995) Practice for Soil Investigation and Sampling by Auger Borings
- D 1586-84 (1992)<sup>ε1</sup> Test Method for Penetration Test and Split-Barrel Sampling of Soils
- D 1587-94 Practice for Thin-Walled Tube Geotechnical Sampling of Soils
- D 3550-84 (1995)<sup>ε1</sup> Practice for Ring-Lined Barrel Sampling of Soils
- D 4220-95 Practices for Preserving and Transporting Soil Samples
- D 5079-90<sup>ε1</sup> Practices for Preserving and Transporting Rock Core Samples

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



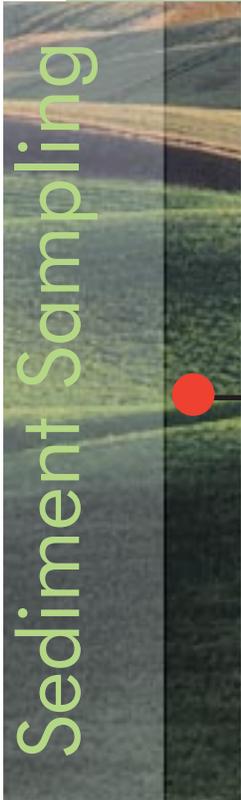
- D 5314-92 Guide for Soil Gas Monitoring in the Vadose Zone
- D 4696-92 Guide for Pure-Liquid Sampling from the Vadose Zone
- D 3404-91 Guide to Measuring Matric Potential in the Vadose Zone Using Tenslometers
- D 4944-89 (1994) Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Gas Pressure Tester Method
- D 3017-96 Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
- D 5220-92 Test Method for Water Content of Soil and Rock In-Place by the Neutron Depth Probe Method
- D 6031-96 Test Method for Logging In Situ Moisture Content and Density of Soil and Rock by the Nuclear Method in Horizontal, Slanted and Vertical Access Tubes

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 4411-93 Guide for Sampling Fluvial Sediment in Motion
- D 4823-95 Guide for Core-Sampling Submerged, Unconsolidated Sediments
- D 3213-91 Practice for Handling, Storing, and Preparing Soft Undisturbed Marine Soil
- D 3976-92 (1996) Practice for Preparation of Sediment Samples for Chemical Analysis
- E 1391-94 Guide for Collection, Storage, Characterization, and Manipulation of Sediments for Toxicological Testing

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



General

- D 5612-94 Guide for Quality Planning and Field Implementation of a Water Quality Measurement Program
- D 5851-95 Guide for Planning and Implementing a Water Monitoring Program
- D 5717-95 Guide for Design of Ground-Water Monitoring Systems in Karst and Fractured-Rock Aquifers

◀BACK

MAIN

HOME

# ASTM Site Characterization Standards



General

- D 5612-94 Guide for Quality Planning and Field Implementation of a Water Quality Measurement Program
- D 5851-95 Guide for Planning and Implementing a Water Monitoring Program
- D 5717-95 Guide for Design of Ground-Water Monitoring Systems in Karst and Fractured-Rock Aquifers

◀BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 5358-93<sup>E1</sup> Practice for Sampling with a Dipper or Pond Sampler
- D 3864-96 Guide for Continual On-Line Monitoring Systems for Water Analysis
- D 887-82 (1994) Practice for Sampling Water-Formed Deposits
- D 4489-95 Practices for Sampling of Waterborne Oils
- D 3325-90 (1996)<sup>E1</sup> Practice for the Preservation of Waterborne Oil Samples

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 3326-90 (1996)<sup>E1</sup> Practice for Preparation of Samples for Identification of Waterborne Oils
- D 5463-93 Guide for the Use of Test Kits to Measure Inorganic Constituents in Water
- D 4515-85 (1995)<sup>E1</sup> Practice for Estimation of Holding Time for Water Samples Containing Organic Constituents
- D 4841-88 (1993)<sup>E1</sup> Practice for Estimation of Holding Time for Water Samples Containing Organic and Inorganic Constituents

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 5092-90 (1995) Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers
- D 5787-95 Practice for Monitoring Well Protection
- D 5521-94 Guide for Development of Ground-Water Monitoring Wells in Granular Aquifers
- D 4750-87 (1993)<sup>E1</sup> Test Method for Determining Subsurface Liquid Levels in a Borehole or Monitoring Well (Observation Well)
- D 5978-96 Guide for Maintenance and Rehabilitation of Ground-Water Monitoring Wells
- D 5299-92 Guide for the Decommissioning of Ground-Water Wells, Vadose Zone Monitoring Devices, Boreholes and Other Devices for Environmental Activities

◀BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 5903-96 Guide for Planning and Preparing for a Ground-Water Sampling Event
- D 4448-85a (1992) Guide for Sampling Groundwater Monitoring Wells
- D 6001-96 Guide for Direct Push Water Sampling for Geoenvironmental Investigations
- PS 64-96 Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 4687-95 Guide for General Planning of Waste Sampling
- D 5283-92 Practice for Generation of Environmental Data Related to Waste Management Activities: QA/QC Planning and Implementation
- D 5792-95 Practice for Generation of Environmental Data Related to Waste Management Activities: Development of Data Quality Objectives
- D 6044-96 Guide for Representative Sampling and Management of Waste and Contaminated Media
- D 6051-96 Guide for Composite Sampling and Field Subsampling For Environmental Waste Management Activities

◀BACK

MAIN

HOME

# ASTM Site Characterization Standards

## General Guidance

- D 5956-96 Guide for Sampling Strategies for Heterogeneous Wastes
- D 5088-90 Practice for Decontamination of Field Equipment Used at Nonradioactive Waste Sites
- D 5608-94 Practice for Decontamination of Field Equipment Used at Low Level Radioactive Waste Sites
- D 4840-95 Guide for Sampling Chain-of-Custody Procedure

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- D 6009-96 Guide for Sampling Waste Piles
- D 5658-95 Practice for Sampling Unconsolidated Waste from Trucks
- D 5633-94 Practice for Sampling with a Scoop
- D 5451-93 Practice for Sampling Using a Trier Sampler
- D 5013-89 (1993) Practices for Sampling Wastes from Pipes and Other Point Discharges
- D 4547-91 Practice for Sampling Waste and Soils for Volatile Organics
- D 3694-96 Practice for Preparation of Sample Containers and for Preservation of Organic Constituents

◀ BACK

MAIN

HOME

# ASTM Site Characterization Standards



- C 998-90 (1995)<sup>ε1</sup> Practice for Sampling Surface Soil for Radionuclides
- D 3648-95 Practices for Measurement of Radioactivity
- D 6063-96 Guide for Sampling of Drums and Similar Containers By Field Personnel
- D 5680-95a Practice for Sampling Unconsolidated Solids in Drums or Similar Containers
- D 5679-95a Practice for Sampling Consolidated Solids in Drums or Similar Containers
- D 5743-95 Practice for Sampling Single or Multilayered Liquids, With or Without Solids, in Drums or Similar Containers
- D 5495-94 Practice for Sampling with a Composite Liquid Waste Sampler (COLIWASA)

◀ BACK

MAIN

HOME

## Site Characterization Library



- ASSESS (a quality assessment program)
- BIOPLUME II (a model for two-dimensional contaminant transport under the influence of oxygen-limited biodegradation in ground water)
- CalTox (a multimedia total exposure model for hazardous waste)
- CHEMFLO (a model for one-dimensional water and chemical movement in unsaturated soil)
- DEFT (a model for data quality objectives decision error feasibility trials)
- FEMWATER/LEWASTE (numerical codes for delineating wellhead protection areas in agricultural regions)
- Geo-EAS (geostatistical environmental assessment software)
- GEOPACK (a geostatistical package)
- Geophysics Advisor (a tool for developing site-specific sampling and monitoring methods)

[MORE ►](#)

[HOME](#)

## Site Characterization Library



- GEOS (a tool for management of spatial and time-series data on a site's ground water, soils, and geologic features)
- GRITS/STAT (a ground-water information tracking system with statistical analysis capability)
- HELP (a model for hydrologic evaluation of landfill performance)
- IMES (a tool for selecting models based on site-specific factors)
- MOFAT (a two-dimensional finite element program for multiphase flow and multicomponent transport)
- MULTIMED (a multimedia exposure assessment model for evaluating the land disposal of wastes)
- PESTAN (a pesticide analytical model)
- PRZM-2 (a pesticide flow-and-transport model for the root zone and vadose zone)
- RETC (retention curve program for unsaturated soils)

[MORE ►](#)

[◀ BACK](#)

[HOME](#)

# Site Characterization Library



- Scout (a data analysis program)
- STF (VIP + RITZ) (a soil transport and fate database and model management system)
- Subsurface Characterization and Monitoring Techniques (methods for detecting ground-water contamination and other aspects of the subsurface at hazardous waste sites)
- VLEACH (a one-dimensional finite difference vadose zone leaching model)
- WhAEM (a wellhead analytical element model)
- WHPA (a modular semi-analytical model for the delineation of wellhead protection areas)

◀ BACK

HOME

## Site Characterization Library



A computer-based tool for statistically assessing measurement errors in the collection of soil samples—Users can input and save information on quality assessment data, historical data, sampling considerations, and data quality objectives. ASSESS evaluates and displays errors at critical steps in the sampling and measurement stages from quality control/quality assessment data. ASSESS displays total measurement error as well as errors (i.e., variances) for the sample collection, subsampling, transportation and handling, and analytical stages. Users can perform mathematical transforms of the data and view plots. (The hypertext document “A Rationale for the Assessment of Errors in the Sampling of Soils,” by J.J. van Ee, L.J. Blume, and T.H. Starks, provides background on the use of this program.)

- [Install software 754 kb \(version 1.01\)](#)
- [Read manual](#)

[MAIN](#)

[HOME](#)



**A** simulation that computes concentrations of dissolved hydrocarbon under the influence of oxygen-limited biodegradation in an aquifer—The model solves the solute transport equation for both hydrocarbon and oxygen, assumes an instantaneous reaction between oxygen and hydrocarbon, and combines the two plumes using the principle of superposition. Computations account for convection, dispersion, mixing, and biodegradation effects. Also, the program can simulate slow hydrocarbon plumes undergoing biodegradation and can simulate in situ bioremediation schemes such as the injection of oxygenated water. Moreover, the model can simulate reaeration and anaerobic biodegradation as a first-order decay in hydrocarbon concentrations.

- Install software 358 kb (version 1.1)
- Read manual

[MAIN](#)

[HOME](#)



A program that enables users to simulate water movement and chemical transport in unsaturated soils by solving the Richards equation (water) and the convection-dispersion equation (chemicals)—Results can be displayed in graphical form for (1) water content, matric force potential, driving force, conductivity, and flux density of water versus distance or time, (2) concentration and flux density of a chemical as a function of distance or time, and (3) cumulative fluxes of water and chemical and total mass of chemical in the soil as a function of time. Results also can be output in tabular form.

- [Install software 290 kb](#)
- [Read manual](#)

[MAIN](#)

[HOME](#)

## Site Characterization Library



A program that allows users to evaluate the financial feasibility of incorporating selected data quality objective (DQO) constraints into a statistical sampling design before developing a final plan—

The program assists with the seven-step DQO process, which is used to develop statistical sampling design plans. DQO constraints are determined in steps 1 to 6 and the entire set of DQO outputs are incorporated into a sampling design during step 7. Before implementing step 7, it is efficient and cost effective to ensure that all DQO constraints are appropriate and feasible. The user can test the proposed constraints on several simple sampling designs (e.g., simple random sampling, composite sampling, stratified sampling). DEFT allows users to enter, verify, and adjust DQO outputs.

- Install software 231 kb (version 4.0)
- Read manual

MAIN

HOME

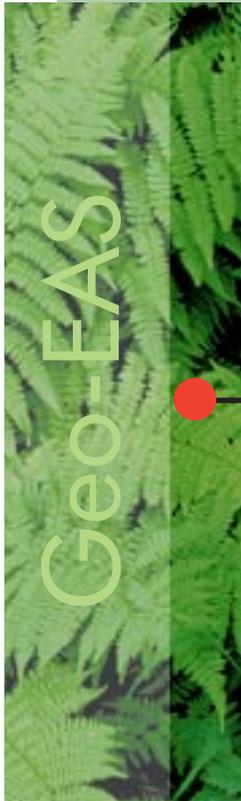


A software package of two related numerical codes that are used together to delineate wellhead protection areas in agricultural regions using the assimilative capacity criterion, which considers environmental factors that reduce the concentration of contaminants transported to wells—The model accounts for (1) flow and transport in three-dimensional, variably saturated porous media (heterogeneous and anisotropic) under transient conditions, (2) multiple distributed and point sources/sinks, (3) and processes that slow contaminant transport. The model accepts four types of boundary conditions and can simulate adsorption, dispersion, and first-order decay.

- Install software 1,097 kb
- Read manual

[MAIN](#)

[HOME](#)

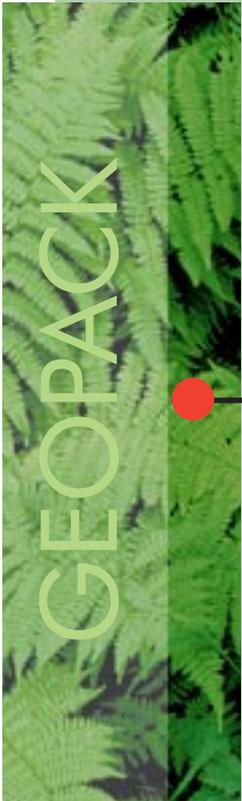


A collection of interactive software tools for performing two-dimensional geostatistical analyses of spatially distributed data—The principal functions of the package are the production of grids and contour maps of interpolated (kriged) estimates from sample data. Geo-EAS can produce data maps, univariate statistics, scatter plots/linear regression, and variogram computation and model fitting.

- [Install software 3,006 kb \(version 1.2.1\)](#)
- [Read manual](#)

[MAIN](#)

[HOME](#)



A comprehensive geostatistical software package that allows both novice and advanced users to undertake geostatistical analyses of spatially correlated data—The program generates graphics (i.e., linear or logarithmic line plots, contour and block diagrams); computes basic statistics (i.e., mean, median, variance, standard deviation, skew, and kurtosis); runs programs for linear regression, polynomial regression, and Kolomogorov-Smirnov tests; calculates linear estimations and nonlinear estimations; and determines sample semivariograms and cross-semivariograms. GEOPACK allows users to incorporate additional programs at a later date without having to alter previous programs or recompile the entire system.

- Install software 4,219 kb (version 1.0)
- Read manual

[MAIN](#)

[HOME](#)

## Site Characterization Library



A public-domain software package developed by EPA to facilitate the collection and analysis of geoenvironmental data—The term “geoenvironmental” includes soil, geologic, and ground-water data collected to assess or monitor environmental conditions at a site. Major GEOS functions include easy data entry (standard database format allows the user to enter data in a spreadsheet format); simple data management and reporting (such as sorts and queries); preliminary site visualization (contouring of soil and ground-water chemical concentration isopleths, creation of actual and interpolated geologic cross sections, and viewing of well screen intervals in relation to subsurface geology); data exchange (existing GRITS/STAT facility data can be imported into GEOS for contouring of ground-water quality data using the PSV module); access to other geoenvironmental software (GEOS provides a convenient framework for moving between multiple programs).

● Install software

MAIN

HOME





A computer-based tool for developing sampling and monitoring methodologies for use at a particular site—The program asks the user site-specific questions and then, based on responses, ranks geophysical methods (i.e., electromagnetic induction, resistivity, ground-penetrating radar, magnetic, seismic, soil gas, gravity, and radiometric) according to appropriateness. If the program detects an inconsistency in user responses, it alerts the user, who can then return to earlier questions and reconsider the responses given. Along with recommending particular approaches, Geophysics Advisor explains why certain methods are inappropriate for the specific site.

- Install software 202 kb (version 2.0)

[MAIN](#)

[HOME](#)

## Site Characterization Library



A comprehensive database system for storing, analyzing, and reporting information from ground-water monitoring programs at RCRA, CERCLA, and other regulated facilities and sites—This software program integrates EPA's Groundwater Information Tracking System, a database of ground-water information, with STAT, a statistical analysis system. The package provides a nationally responsive system that incorporates data elements from appropriate EPA program offices. The system supports data entry, report generation, export of data to other software applications (e.g., modeling programs), and statistical analysis. “Industry standard,” IMSL statistical routines are interfaced to the database in a defined, flexible, and user-friendly fashion.

- Install software 570 kb (version 4.21)
- Read manual

MAIN

HOME



## Site Characterization Library

**A** quasi-two-dimensional modeling program that simulates water movement into and out of landfills based on a waste management system's particular design—The user can conduct water-balance analyses of solid waste disposal and containment facilities. The program allows comparison of proposed landfill designs by estimating runoff, evapotranspiration, drainage, leachate collection, and liner leakage. Modeling incorporates information on, for example, cover soils, waste cells, lateral drain layers, low permeability barrier soils, synthetic geomembrane liners, and weather. Results are expressed as daily, monthly, annual, and long-term water budgets. Although applicable to most landfills HELP was developed specifically for modeling hazardous and municipal solid waste landfills as required by RCRA.



- Install software 2,835 kb (version 3.0)
- Read manuals
- User Documentation
- Engineering Documentation

[MAIN](#)

[HOME](#)

## Site Characterization Library

A computer-based tool for matching a site's characteristics with the appropriate model or models—This integrated system for model evaluation has three elements:

1. A selection system for use in choosing an exposure assessment model (currently for air, ground-water, nonpoint source, and surface water media models).
2. A validation database that includes information on models for air, ground-water, nonpoint source, and surface water assessment.
3. A model uncertainty database (currently only for six surface water models).

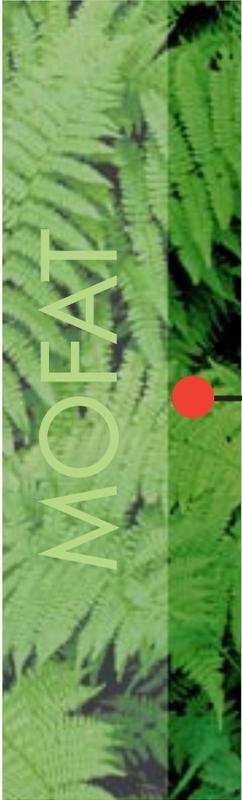
Each IMES element can be used independently. Once a model(s) has been selected, information on model uncertainty can be accessed.

● Install software 974 kb (version 1.0)

MAIN

HOME





A two-dimensional, finite element model for simulating coupled multiphase flow and multicomponent transport in planar or radially symmetric vertical sections—MOFAT evaluates flow and transport for water, nonaqueous phase liquid (NAPL), and gas. The program also can be used when gas and/or NAPL phases are absent in part or all of the domain. The flow module can analyze either two-phase flow of water and NAPL in a system of constant gas pressure or explicit three-phase flow of water. The transport module can accommodate up to five components partitioning among water, NAPL, gas, and solid phases, assuming either local equilibrium interphase mass transfer or first-order kinetically controlled mass transfer.

- [Install software 901 kb](#)
- [Read manual](#)

[MAIN](#)

[HOME](#)

## Site Characterization Library

**A** one-dimensional, steady-state model used to predict the concentration of contaminants migrating from a waste disposal facility via the subsurface, surface water, and air pathways to receptor sites—One module simulates the effects of precipitation, runoff, infiltration, evapotranspiration, barrier layers, and lateral drainage. Other modules simulate water saturation as a function of depth and simulate transient vertical transport in the unsaturated zone (taking into account longitudinal dispersion, linear adsorption, and first-order decay). A surface water module simulates surface stream contamination due to the complete interception of a steady-state saturated-zone plume. Air emission and atmospheric dispersion modules simulate the movement of chemicals into the atmosphere.



- Install software 1,322 kb
- Read manuals
- Model Theory
- Subtitle D Landfill Application

[MAIN](#)

[HOME](#)



**A** model used to estimate the vertical migration of dissolved organic solutes through the vadose zone to ground water—  
Estimates are based on a closed-form analytical solution of the advective-dispersive-reactive transport equation. The model is intended for use in conducting initial screening assessments of the potential for contamination of ground water from currently registered pesticides and those submitted for registration.

- [Install software 139 kb \(version 4.0\)](#)
- [Read manual](#)

[MAIN](#)

[HOME](#)

## Site Characterization Library



A software package that includes two major computational modules (PRZM and VADOFT) for generating a deterministic simulation of the fate of agricultural pesticides—Taking management practices into account, PRZM-2 simulates the transport and transformation of field-applied pesticides in the crop-root zone and the underlying unsaturated zone. By accounting for the variability in natural systems as well as uncertainties in system properties and processes, the program provides probabilistic estimates of exposure concentrations. The program can model multiple pesticides or parent/daughter relationships. Concentration estimates can be generated for various media for use in exposure assessments.

- Install software 2,958 kb (version 2.0)
- Read manual

MAIN

HOME

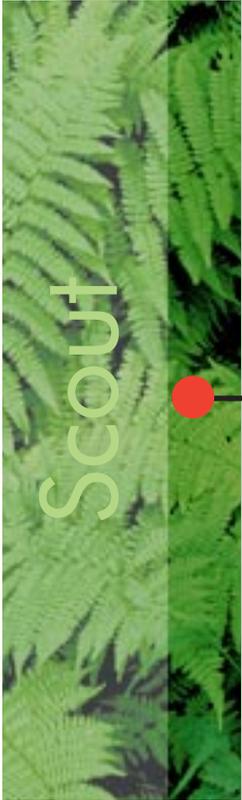


A program for analyzing the hydraulic conductivity properties of unsaturated soils—The parametric models of Brooks-Corey and van Genuchten are used to represent the soil water retention curve, and the theoretical pore-size distribution models of Mualem and Burdine predict the unsaturated hydraulic conductivity function. The simulation can be generated from observed soil water retention data, assuming that one observed conductivity value (not necessarily at saturation) is available. The program also permits users to fit analytical functions simultaneously to observed water retention and hydraulic conductivity data.

- Install software 324 kb
- Read manual

MAIN

HOME



A univariate and multivariate data analysis tool with several classical and robust procedures (e.g., outlier testing, interactive 2D/3D graphics), making it a useful package for environmental and ecological applications—Scout can transform data, assess variable normality, produce histograms and Q-Q plots of raw data and principal component scores (PCSs), and produce scatter plots of raw data, PCSs, and discriminant scores. Additionally, Scout can be used to identify univariate or multivariate outliers; produce Q-Q plots of generalized distances; perform principal component, linear, and quadratic discriminant analyses; and compute and plot various statistical intervals, including the confidence interval for mean, prediction interval, and simultaneous confidence interval.

- Install software 971 kb (version 2.0)
- Read manual

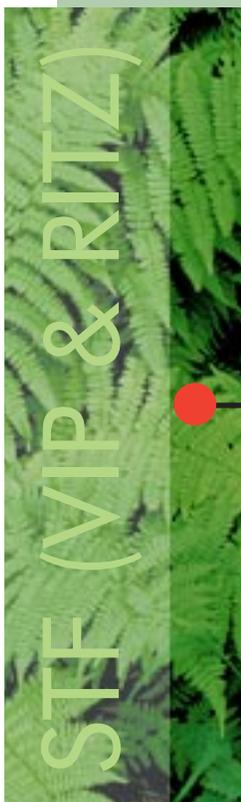
[MAIN](#)

[HOME](#)

## Site Characterization Library

A computer-based tool for selecting data on chemicals in the environment and for simulating their fate and transport in site-specific conditions—The software system consists of three components:

1. STF 2.0 (Soil Transport and Fate Database), which provides information on the behavior of chemicals in soil environments for use as input data on, for example, degradation rates and partition coefficients.
2. RITZ (Regulatory and Investigative Treatment Zone) and VIP 3.0 models. RITZ simulates hazardous chemical movement and fate during land treatment of oily wastes. VIP evaluates data using six different output options.
3. RITZ and VIP model editors, which are directly interfaced with STF 2.0 and aid in the creation of input files for the RITZ and VIP models.



● Install software 10,522 kb

● Read manuals

● STF

● RITZ

● VIP

MAIN

HOME



An interactive, multimedia version of the two-volume, EPA reference entitled “Subsurface Characterization and Monitoring Techniques” by R. Boulding—The documents include 1- to 2-page descriptions of more than 280 site characterization and field monitoring methods for detecting ground-water contamination and other aspects of the subsurface at hazardous waste sites. Geological and hydrogeological characterization topics covered include surface and borehole approaches, geophysical methods, and solids sampling; drilling; aquifer tests and ground-water sampling; water-state measurement and monitoring; vadose zone hydraulic conductivity/flux measurement; vadose zone water budget characterization; vadose zone soil-solute sampling and gas monitoring; and field chemical analytical methods. This electronic version of the guide (originally released as a CD-ROM) includes graphic support with animation and hypertext links that make all text readily accessible.

● Install software

MAIN

HOME



**A** one-dimensional, finite difference model for making preliminary assessments of the effects on ground water from the leaching of volatile, sorbed contaminants through the vadose zone—The program models four main processes: liquid-phase advection, solid-phase sorption, vapor-phase diffusion, and three-phase equilibration. In an individual run, VLEACH can simulate leaching in a number of distinct polygons, which may differ in terms of soil properties, recharge rates, depth of water, or initial conditions. Modeling results in an overall, area-weighted assessment of ground-water impact.

- [Install software 142 kb \(version 2.2\)](#)
- [Read manual](#)

[MAIN](#)

[HOME](#)



A computer-based tool used in the wellhead protection decision-making process to delineate ground-water capture zones and isochrones of residence times—Unlike similar programs, WhAEM can accommodate fairly realistic boundary conditions, such as streams, lakes, and aquifer recharge due to precipitation. The software system consists of:

1. GAEP (Geographic Analytic Element Preprocessor), which is used to simplify preparation of input data.
2. CZAEM (Capture Zone Analytic Element Model), which generates output on ground-water capture zones and residence times. CZAEM accurately defines capture zone boundaries by first determining all stagnation points and dividing streamlines in the flow domain.

● Install software 689 kb

● Read manual

● WhAEM

● CZAEM

MAIN

HOME



A semi-analytical ground-water flow simulation program used for delineating capture zones in a wellhead protection area—The program consists of four computational modules (RESSQC, MWCAP, GPTRAC, MONTEC). WHPA is applicable to homogeneous aquifers exhibiting two-dimensional, steady ground-water flow in an areal plane and appropriate for evaluating multiple aquifer types (i.e., confined, leaky-confined, and unconfined). The model is capable of simulating barrier or stream boundary conditions that exist over the entire depth of the aquifer. WHPA can account for multiple pumping and injection wells and can quantitatively assesses the effects of uncertain input parameters on a delineated capture zone(s). Also, the program can be used as a postprocessor for two-dimensional numerical models of ground-water flow.

- Install software 2,750 kb (version 2.0)
- Read manual

[MAIN](#)

[HOME](#)