CREATING ACCESSIBLE DOCUMENTS AT CBIIT

National Cancer Institute

Center for Biomedical Informatics
and Information Technology

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ACCESSIBILITY QUICK REFERENCE

The following tables list steps technical writers at CBIIT must take to create Section 508-compliant documents. These steps may overlap with but do not replace the HHS checklists for achieving Section 508 compliance.

Table 1.1 explains how to prepare a FrameMaker document for accessibility.

Table 1.1 Steps for Creating Accessible Documents in FrameMaker

Step	Steps for creating accessible documents in FrameMaker	For more information, see
1	Design with accessibility in mind. Only use our template styles, including character styles for common formatting such as bold and italic. Resist overriding template styles.	http://www.webaim.org/
2	Use our latest FrameMaker template that consolidates all paragraph styles into each file in the book. **Important note!** If you prefer to import styles from the new template rather than starting with an empty file, do not import styles into the TOC. Use the new TOC template file.	L:\Technical Writing\Templates\FrameMaker Templates\Current FM Templates

Table 1.1 Steps for Creating Accessible Documents in FrameMaker

Step	Steps for creating accessible documents in FrameMaker	For more information, see
3	Add alternate text to images. 1. Place all graphics in anchored frames. 2. Click an anchored frame one time to select it. 3. Right-click the anchored frame and select **Object Properties**. 4. Click the **Object Attributes** button. The Object Attributes dialog box appears. 5. In the Alternate box, type an alternate text description for the content of the anchored frame 6. Click **Set** and then **Set** again. A screen reader can now read the alternate text.	*Adding Alternate Text to Images* on page 9
4	Use row and column headings and captions for all tables. Do not merge table rows or columns. Do not allow rows to break across pages.	*Using Good Table Manners* on page 10
5	Use meaningful link anchors rather than URLs when possible. Use the Go to URL hypertext marker for all URLs in FrameMaker.	*Naming Link Anchors* on page 11
6	In the PDF Setup dialog box, select **Generate PDF Bookmarks**, **Generate Tagged PDF** (click **Default** to tag all styles), and **Create Named Destinations for All Paragraphs**. Use the latest book file in the template to inherit appropriate bookmark and tag options.	*Creating a Tagged PDF from FrameMaker* on page 11

Creating Accessible Word Documents

Table 1.2 explains how you can prepare your Word documents for accessibility. Note that Word documents lose some of the accessibility options you introduce once they reach Acrobat. It is likely that you will need to post-process the file in Acrobat.

Note: Refer to *wordCheckList-HHS.pdf* and *adobeCheatSheatWordToPDFa.pdf* for helpful tips.

Table 1.2 Steps for Creating Accessible Documents in Word

Step	Steps for creating accessible documents in Word	For more information, see
1	Design with accessibility in mind. Only use our template styles, including character styles for common formatting such as bold and italic. Resist overriding template styles.	http://www.webaim.org/

Table 1.2 Steps for Creating Accessible Documents in Word

Step	*Steps for creating accessible documents in Word*	*For more information, see*
2	Add alternate text to images. **Word 2003** 1. Right-click the image, then select **Format Picture**. The Format Picture dialog box appears. **Note:** If the Format Picture menu option is not available, view the Picture toolbar and click the Format Picture button. 2. Select the Web tab and then add the appropriate alternative text. **Word 2007** 1. Right-click the picture and select **Size**. The Size dialog box appears. 2. Select the Alt Text tab. The image filename is entered into the field by default. Delete that and enter appropriate alternate text.	*Adding Alternate Text to Images* on page 9
3	Use row and column headings and captions for all tables. Do not merge table rows or columns. Do not allow rows to break across pages.	*Using Good Table Manners* on page 10
4	Use meaningful link anchors rather than URLs when possible.	*Naming Link Anchors* on page 11
5	Configure PDFMaker to tag the document properly. In Word 2003, select **Adobe PDF** > **Change Conversion Settings**. ● On the Settings tab, select **Bookmarks**, **Links**, and **Enable Accessibility and reflow**. ● On the Word tab, select **Convert cross references**, **Convert footnote and endnote links**, and **Enable advanced tagging**. ● On the Bookmarks tab, select **Convert Word Headings to Bookmarks** and set the proper indent levels.	

Creating Accessible PDFs

Table 1.3 explains how to create an accessible PDF once your source file is in Acrobat.

Note: Refer to *pdfCheckList-HHS.pdf* for helpful tips.

Table 1.3 Steps for Creating Accessible PDFs in Acrobat 9.x

Step	Steps for creating accessible PDFs	For more information, see
1	In the document properties, enter `NCI CBIIT` as the Author. In the Keywords field, enter `508 Compliant` as one of your keywords.	
2	Specify document language. 1. Select **File** > **Document Properties**. 2. Click the Advanced tab. 3. In the Language list, select **English US** language.	*Characteristics of Accessible PDFs* on page 13
3	Use the document structure to prevent errors in the accessibility report. 1. Select all pages in the document. 2. Right-click and then select **Use Document Structure**.	
4	Run an accessibility full check using the Adobe PDF option. 1. Select **Advanced** > **Accessibility** > **Full Check**. The Accessibility Full Check dialog box appears. 2. Click **Start Checking**.	*Using the Adobe Acrobat Accessibility Tool* on page 14
5	Fix any problems reported by the accessibility checker. Documents from Word tend to have more problems than documents from FrameMaker. Documents from Word may need post-processing in Acrobat. Use the accessibility checker report as a troubleshooting guide to narrow down problem areas. To begin post-processing in Acrobat, select **Accessibility** > **TouchUp Reading Order**. In the TouchUp Reading Order dialog box, click **Show order panel**. ● Confirm that each numbered box in the document is properly tagged. ● Add alternate text as needed to figures as needed. ● Remove nonessential content, such as ornamental page borders, from the logical structure tree as needed. ● Note that when you remove the tags (such as by using the Delete Item Structure or Clear Page Structure commands), you cannot undo that action. Save your file often.	

Accessibility Testing

Table 1.4 suggests ways you can test your ePublisher, Flare, and PDF output for accessibility.

Table 1.4 Ways to Test Your Output

Ways to Test Your Output	For more information, see
Refer to the HHS accessibility checklists	
In ePublisher, run the accessibility report. Ignore errors about missing long descriptions and table summaries. If you use alternate text for graphics and include either a text introduction or caption for tables, you're covered on those.	*Using the WebWorks ePublisher Accessibility Report* on page 15
Download the WAVE Firefox toolbar and view the help in Text-only view.	http://wave.webaim.org/toolbar
Download an evaluation copy of JAWS and read the document out loud.	http://www.freedomscientific.com/products/fs/jaws-product-page.asp
Use the Adobe Read Out Loud feature to simulate what it would be like for other assistive technology (such as JAWS) to read your PDFs out loud.	
Turn off your monitor when you use either JAWS or Adobe Read Out Loud (this takes some practice with each tool) to simulate what it is like not to see what you are doing.	
Tab through the output to make sure that the reading order is logical.	

DEVELOPING ACCESSIBLE DOCUMENTS

This guide is intended to help the technical documentation team at CBIIT design and deliver documents that are fully compliant with Section 508 of the Rehabilitation Act of 1973. Not only is this mandatory of all Federal agencies including the National Cancer Institute but accessible documents may result in better structured documents, which can only help us as our documentation processes evolve. Accessible documents also provide text-only alternatives for graphics, which will help those with slower web connections.

This document includes the following sections:

- *About Section 508* on this page

- *Creating Accessible Documents at CBIIT* on page 8

- *Checking Documents for Accessibility* on page 13

About Section 508

For background on this Federal regulation, read the following from http://www.section508.gov:

> *In 1998, Congress amended the Rehabilitation Act to require Federal agencies to make their electronic and information technology accessible to people with disabilities. Inaccessible technology interferes with an individual's ability to obtain and use information quickly and easily. Section 508 was enacted to eliminate barriers in information technology, to make available new opportunities for people with disabilities, and to encourage development of technologies that will help achieve these goals.*

> *The law applies to all Federal agencies when they develop, procure, maintain, or use electronic and information technology. Under Section 508 (29 U.S.C. ' 794d), agencies must give disabled employees and members of the public access to information that is comparable to the access available to others.*

The [Web Content Accessibility Guidelines](#) provide an international set of guidelines. The Worldwide Web Consortium (W3C), the governing body of the web, developed them. These guidelines are the basis of most web accessibility law in the world. The latest version of these guidelines, 2.0, requires that websites adhere to the following four principles:

- **Perceivable:** Available to the senses (vision and hearing primarily) either through the browser or through assistive technologies (e.g. screen readers, screen enlargers, etc.)

- **Operable:** Users can interact with all controls and interactive elements using either the mouse, keyboard, or an assistive device.

- **Understandable:** Content is clear and limits confusion and ambiguity.

- **Robust:** A wide range of technologies (including old and new user agents and assistive technologies) can access the content.

At CBIIT, we can design our documentation to address most of these principles. The tools we use can do the rest.

Creating Accessible Documents at CBIIT

To make our documents compliant with Section 508 of the Rehabilitation Act, we must prepare our source files and then test our output files. The tools we currently use to create our source files, Adobe FrameMaker and Microsoft Word, both allow us to prepare for accessibility.

Our output files are currently in PDF and ePublisher WebHelp 5.0 formats. The tools we currently use to create those files, Adobe Acrobat 9 and WebWorks ePublisher Pro 9.2, contain tools of their own that check for how well files conform to the Section 508 accessibility standards. We can run those checks to see if we need to make any additional tweaks to our source files. We should avoid as much post-processing to output files as we can.

Most of our preparations for accessibility should be done in the source files. This document explains how to prepare a FrameMaker document for accessibility and links to procedures where you can accomplish the same goals in Word.

This section includes the following topics:

Preparing FrameMaker Files For Accessibility

See the following sections to learn how to prepare your FrameMaker files for accessibility.

- *Adding Alternate Text to Images* on page 9

- *Using Good Table Manners* on page 10

- *Naming Link Anchors* on page 11

- *Creating a Tagged PDF from FrameMaker* on page 11

- *The Problem with Automated Tools* on page 14

- *Accessibility Tools Need Human Judgment* on page 14

- *Using the Adobe Acrobat Accessibility Tool* on page 14

Adding Alternate Text to Images

Alternate (alt) text is typically used for describing an image so that screen readers can read it aloud.

FrameMaker limits alternate text to 255 characters.

To add an alternate text descriptions to an image

1. Place all graphics in anchored frames.

2. Click an anchored frame one time to select it.

3. Right-click the anchored frame and select **Object Properties**.

4. Click the Object Attributes button. The Object Attributes dialog box appears.

5. In the Alternate box, type an alternate text description for the content of the anchored frame.
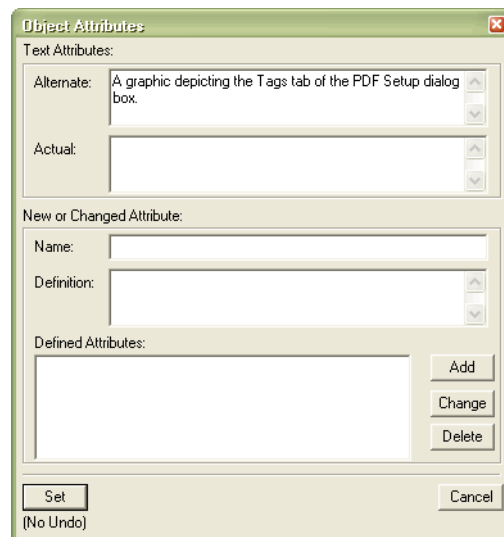

Figure 2.1 Sample alternate text for a screen shot.

Note: Actual text is for reading aloud the actual text, as in the case of a drop cap. For example, if the author is using a drop cap for the letter A in the

> word "Adobe" but still wants the screen readers to read the word as "Adobe" and not as "dobe," this can be done by filling in actual text.

6. Click **Set** and then **Set** again. A screen reader can now read the alternate text.

Using Good Table Manners

Section 508 differentiates between data tables and tables used purely for layout purposes, which it calls layout tables. A layout table would not have a table header. Most of our tables at CBIIT are data tables.

Section 508 specifies that we must do the following to create accessible data tables:

- Designate row and column headers using the `<th>` tag.

- Associate the data cells with appropriate headers.

- Use proportional sizing, rather than absolute sizing.

- Provide names or titles for data tables using the `<caption>` tag.

- Provide summaries using the summary attribute.

- Avoid spanned rows or columns.

- Avoid tables with more than two levels of row and/or column headers.

See http://www.webaim.org/techniques/tables/data.php for more information about each of these characteristics of accessible data tables.

Since we are not working in raw HTML we do not have the opportunity to control all of these characteristics.

Our current ePublisher stationery uses proportional sizing for all of our table styles.

FrameMaker does apparently support a marker called `TableSummary`, which you can insert anywhere in a table, with the content of that marker being a summary of the table's content. However, it doesn't appear that these summaries are converted correctly into PDF or web-based help, since both the Acrobat and ePublisher accessibility checkers continue to note the absence of table summaries in documents I have tested.

Our best bet is to use row and column headers where appropriate and include table captions for every table. We can write our table captions to accurately describe the content of the table. When that is not practical, it might be best to introduce a table with a summary of it.

We do not currently produce output for table or figure captions in the help we create with ePublisher. We can either change that practice or make sure to summarize a table when we introduce it, even in help output.

Naming Link Anchors

Most tips regarding the accessibility of links concern proper coding of them so that all users can tab between them using a keyboard. Links also need to have a unique appearance so that they can always be identified as links. Our tools take care of both of these things.

Since we do not code our own links but rather use FrameMaker or ePublisher to create them, we should focus on the following.

- Links should make sense out of context. When using human readable link anchors (as opposed to URLs), we should avoid non-informative link phrases such as "click here," "more," "click for details," as these are almost completely meaningless when read out of context.

- URLs used as links are fine when they are short. The key is to be considerate of screen reader users who must listen to the longer, less intelligible URLs. Human readable link anchors are better than long URLs.

It is also a good general practice to introduce any link by describing the advantage that will be gained by following it.

Creating a Tagged PDF from FrameMaker

Tagged PDF files contain a document's logical structure and metadata, and are the most reliable format for the following:

- Use with a screen reader

- Correct reflow of content into various size devices such as PDAs

- Recognition of alternative text descriptions for graphics

PDF tags exist for accessibility purposes only and have no visible effect on the PDF file.

To set up a tagged PDF

1. Click **File** > **Print** or **File** > **Print Book**. Select Adobe PDF as your printer.

2. Select the **Generate Acrobat Data** option and then click the **PDF Setup** button. The PDF Setup dialog box appears.

3. Click the **Tags** tab. Select the **Generate Tagged PDF** option and then do the following:

   a. Move paragraph tag names to the Include Paragraphs list to indicate paragraphs you want included in the PDF logical structure.

b. Select a paragraph tag name and then use the arrows located directly under that list to indicate the structure level of the selected paragraph (see *Figure 2.2*).
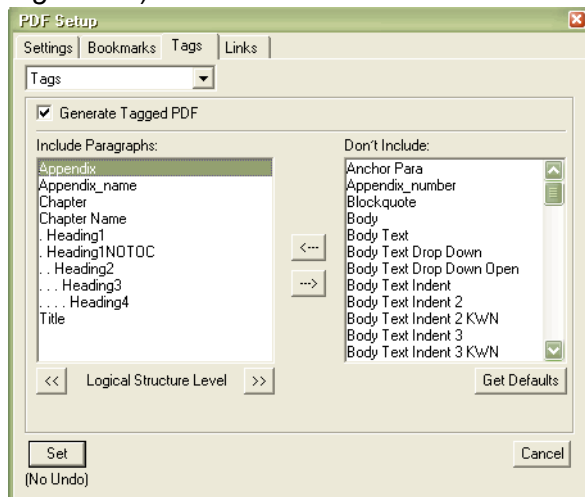
Figure 2.2 Tagged PDF requires that you define the logical structure of a document.

c. Click **Set**.

Preparing Word Files For Accessibility

Microsoft Word also contains the tools necessary to create accessible documents. Perhaps the most important contributing factor to an accessible Word document is the use of Word styles. Properly structured documents that do not use override styles but rather styles defined by a template are the easiest for a screen reader to follow.

Accessibility Quick Reference on page 1 also includes some tips for adding alternate text and creating a tagged PDF.

For detailed information about creating accessible Word files, see http://www.webaim.org/techniques/word/. You can also find detailed information in the online help for Adobe Acrobat.

Characteristics of Accessible PDFs

Adobe defines accessible PDFs as having the characteristics in the table below. The table also presents an interpretation of how each characteristic applies to the technical documentation team at CBIIT.

Characteristic of Accessible PDFs	How This Applies To CBIIT
Searchable text	Do not scan documents to create a PDF. This converts all text to an image that a screen reader cannot scan.
Fonts that allow characters to be extracted to text	Make sure we only use fonts that can be extracted to Unicode characters. **Note:** Maybe this is the problem the Accessibility Checker has with our bullet font?
Interactive form fields	We do not use form fields.
Other interactive features: buttons, hyperlinks, and navigational aids	We already use links, bookmarks, headings, and a TOC, so we are covered here.
Document language	We cannot specify the document language from FrameMaker or Word so we must do so in the final PDF. To specify the document language, do the following. 1. Select **File** > **Document Properties**. 2. Click the **Advanced** tab. 3. In the Language list, select **English US** language.
Security that will not interfere with assistive technology	We should not set any security restrictions on our PDF files. We do not currently do so. The text of an accessible PDF must be available to a screen reader.
Document structure tags and proper read order	When we create a tagged PDF, the structure of our source document creates the appropriate document structure tags. However, it appears that not all elements in our source files result in correctly structured tags. The Acrobat Accessibility Checker identifies these tags and it will be a learning process for all of us how many tags we need to fix.
Alternative text descriptions	We will start to do this in our source files.

Table 2.1 Characteristics of Accessible PDFs and How They Affect Us at CBIIT

Checking Documents for Accessibility

Both ePublisher and Acrobat contain accessibility tools that help spot glaring accessibility errors and remind us of accessibility issues that require manual checks. Using accessibility tools like these is really just one of the first steps toward Web accessibility.

Other accessibility tools are available for free on the web, though this document does not review them. See http://www.webaim.org/articles/freetools/compare.php for a full review of free, online accessibility tools.

Credit for the content of the following two sections goes to WebAIM (http://www.webaim.org/articles/freetools/).

The Problem with Automated Tools

In the same ways in which we don't always accept the results of a spell and grammar check (or they don't catch the real errors we have because words are spelled correctly), web accessibility requires more than just accessibility tools; it requires human judgment. All accessibility tools vary slightly in their interpretation of WCAG 1.0 and Section 508, and depending on the interpretation, accessibility tools can give users some automated results that require human judgment.

Here is an example. WCAG 1.0 Priority 3 checkpoint 5.5 states, "Provide summaries for tables." Interpreted strictly, this checkpoint could mean, every table in a web page should have a summary attribute. In practice, putting summary attributes into both data tables (which should have summaries) and layout tables (which do not need them) just gives individuals using screen readers more distracting information to read through.

Accessibility Tools Need Human Judgment

It is important to remember that accessibility tools can only partially check accessibility through automation. Of the sixteen standards in Section 508, only seven standards can be partially evaluated automatically. Similarly, of the combined 65 checkpoints in WCAG 1.0 Priority 1 through Priority 3, only nineteen can be partially evaluated automatically. The real key is to learn and understand the web accessibility standards rather than relying on a tool to determine if a page is accessible or not.

Using the Adobe Acrobat Accessibility Tool

Creating a tagged PDF with alt-text specified for each graphic from FrameMaker or Word is the first step in creating a truly accessible PDF file. We must also post process the PDF file to complete that process.

To prepare a PDF for an accessibility check, do the following.

1. Specify the document language as explained in *Table 2.1*.

2. Run the Adobe Acrobat Accessibility Full Check, as follows.

a. Select **Advanced** > **Accessibility** > **Full Check**.The Accessibility Full Check dialog box appears.
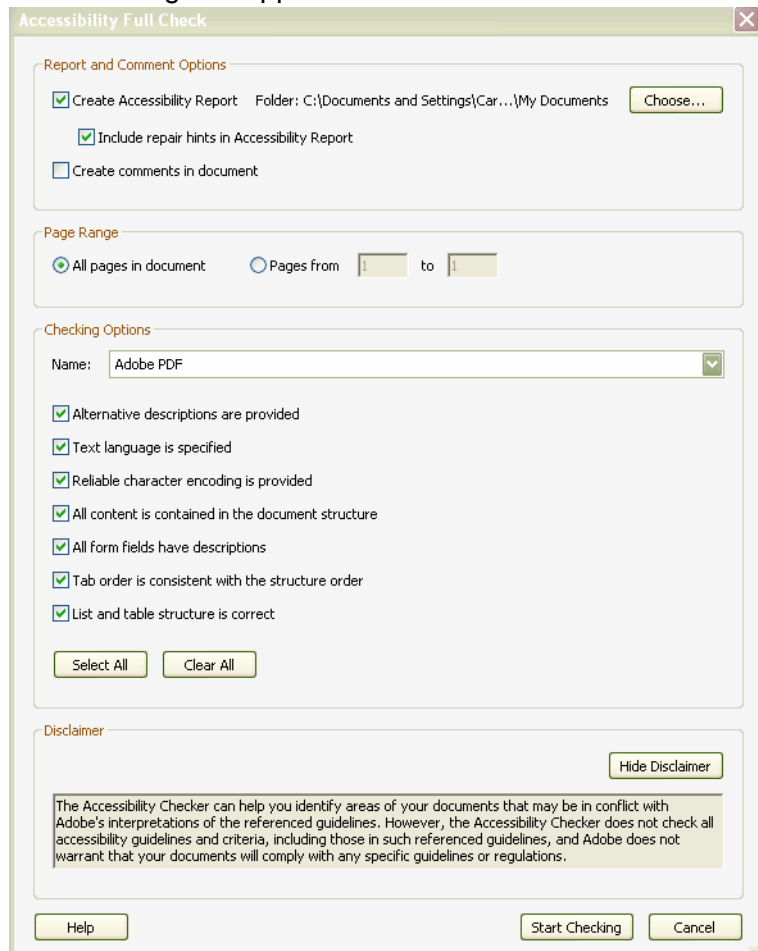
b. Accept the default options, which include the Adobe PDF checking option.

c. Click **Start Checking**. In the resulting report, follow the instructions Acrobat provides for finding and correcting accessibility errors.

Note: Some of these accessibility errors require post-processing of our PDFs. Files originating in Word tend to have more accessibility errors that result in post-processing than do those files originating in FrameMaker.

Our goal is to have no accessibility errors and to see the following message box:
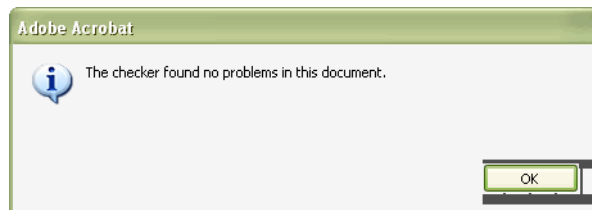
Using the WebWorks ePublisher Accessibility Report

You can use the WebWorks ePublisher Accessibility report to identify accessibility warnings or errors in your online help files.

To view the accessibility report, do the following.

1. Generate your ePublisher project.

2. In the Document Manager panel in the upper left, click the project name such as `caBIO Portlet Online Help`. Items appear in the Output Explorer below.

3. In the Reports folder, which should already be open, double-click **Accessibility Report**.The content of the report appears to the right.

Document	Description
Welcome to caBIO Portlet.fm	Image is missing a long description.
Welcome to caBIO Portlet.fm	Image is missing a long description.
Welcome to caBIO Portlet.fm	Image is missing a long description.
Welcome to caBIO Portlet.fm	Image is missing a long description.
Welcome to caBIO Portlet.fm	Image is missing a long description.
Welcome to caBIO Portlet.fm	Image is missing a long description.
Welcome to caBIO Portlet.fm	Image is missing a long description.
Welcome to caBIO Portlet.fm	Image is missing a long description.
Welcome to caBIO Portlet.fm	Image is missing a long description.
UsingthecaBIOPortlet.fm	Image is missing a long description.
UsingthecaBIOPortlet.fm	Image is missing a long description.
UsingthecaBIOPortlet.fm	Image is missing a long description.
UsingthecaBIOPortlet.fm	Table is missing a table summary.
UsingthecaBIOPortlet.fm	Table is missing a table summary.
UsingthecaBIOPortlet.fm	Table is missing a table summary.
UsingthecaBIOPortlet.fm	Table is missing a table summary.
UsingthecaBIOPortlet.fm	Table is missing a table summary.
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UsingthecaBIOPortlet.fm	Table is missing a table summary.
UsingthecaBIOPortlet.fm	Table is missing a table summary.
UsingthecaBIOPortlet.fm	Table is missing a table summary.
UsingthecaBIOPortlet.fm	Table is missing a table summary.
UsingthecaBIOPortlet.fm	Table is missing a table summary.
caBIO Portlet Glossary.fm	Table is missing a table summary.

Note: The accessibility errors and warnings that appear in this report are determined by the settings specified in the Format Settings dialog box (Format > Format Settings). The format settings in our current stationery are as follows, though a future version of our stationery may not generate warnings for images without long descriptions and tables without summaries, since those features do not seem to carry over from FrameMaker, and have alternatives.

Format Settings: WebWorks Help 5.0

Generated output location:
C:\Documents and Settings\Carolyn\My Documents\C...\WebWorks Help 5.0

Deploy to:

Setting	Value
PDF job settings	Default
Accessibility Report	
Generate accessibility report	**Enabled**
Image links without alternative text	Warning
Images without alternative text	Warning
Images without long descriptions	Warning
Tables without summaries	Warning
Filenames Report	

OK Cancel

4. If you are missing any alternate text for your images, add it to your source files, generate your ePublisher project, and view the accessibility report to confirm that you have made your project as accessible as possible.