

INSTRUCTIONS FOR PREPARING AND SUBMITTING GRAPHICS FOR THE SOUTHERN FOREST RESOURCE ASSESSMENT

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11-DEC-2000

Background: The Assessment Technical Report will be published by the Southern Research Station in two media: first as a set of HTML documents on the web, and second, after public review and revision, in printed form as a General Technical Report. Publishing in these two very different media poses a variety of production challenges, particularly given the short production schedule available. Your careful attention to these guidelines will help ensure that your work will have a consistent and attractive appearance in both our targeted outlets. It may also save you having to redo the graphics later.

Our objective is to allow you to submit a graphic one time that can be converted into 2-3 different sized images for the web (thumbnail, large, and PDF) plus a higher resolution image suitable for the publishers. We may not succeed in all cases, thus it is important that you retain the underlying files and data you used to create the graphic in the first place until the final document is sent to the printer.

An additional objective concerns making the report as accessible to various users as is practical, including users who may not be able to access or use graphics. While this is a laudable goal in its own right in this era of expanding Internet devices it is given the additional impetus of imminent Federal regulations regarding access for those with disabilities. For this effort the regulations are being interpreted to mean that, to the extent possible, graphics will be accompanied by tables of the data underlying them. For more complex graphics like maps the web site will provide links to the underlying data. Where images are not data-driven, such as illustrations, other provisions will be necessary, but those needn't be a concern at this phase.

Lastly, the logistics of this task dictate that you submit your graphics both as separate, graphics submissions and ALSO insert the graphics in the Word document. The graphics inserted in the manuscript will NOT be the ones ultimately sent to the printer but will instead serve several intermediate needs. As with the tables, insertion of graphics into the Word manuscript helps provide a one-file document for editors and peer reviewers to work with, allowing easier sharing and copying of documents. By embedding the images you also provide for the production team a cross-check that the image they are working with is the one you intended for that figure number. Members of the Production Team will be converting your graphics into appropriate formats in parallel with the technical editing and peer review processes, and before publication will replace the embedded images with others generated from the files you submit separately. Please keep this in mind should it be necessary for you to edit any of your graphics or add or remove figures from your chapter. You'll be asked to flag any figure changes as well as table changes so all necessary files reflect those changes. These procedures will be spelled out in the submission procedures.

Support: A separate document describes guidelines for the manuscript as a whole and for tables, available at <http://www.srs.fs.fed.us/sustain/data/authors/index.htm>. This document complements the manuscript guidelines but does not replace them, the reader is expected to already be familiar with those guidelines. However, this document is newer, so if there are conflicts between the two, this one has precedence.

If you have questions regarding these standards, or if they pose particular problems, please contact either:

John Pye	(919) 549-4013	mailto:jpye@fs.fed.us
Louise Wilde	(828) 257-4391	lawilde@fs.fed.us

You might also wish to check the [publication production team contacts web page](#) for further support information should additional personnel become involved.

Submission: Graphics files can be submitted three ways: (1) to the Assessment FTP site (details available shortly at <http://www.srs.fs.fed.us/sustain/data/authors/index.htm>), (2) by email to rboozer@fs.fed.us, or (3) by mailing a 3.5-inch IBM format, 100 MB Zip disk, or CD-ROM to Renee Boozer, the Manuscript Coordinator, at 3041 E. Cornwallis Rd., Research Triangle Park, NC 27709. We cannot accept diskettes formatted for Macintosh computers.

File names should tell us the question (chapter) in which it belongs, the figure number to which it corresponds as listed in the Figures section of the manuscript, its target size, and its file type or format. To that end, please name files after your question number followed by the letter “F” and then the figure number. Always use the appropriate filename extension to indicate the file format used. For example, if you have a scanned image (TIFF) as figure 4 in SOCIO-3, you would name the file SOCIO3F4.tif

Formats: It is anticipated that most charts will be produced using Excel and most maps using ArcView. Specific guidelines for those packages are provided below, and the production team will work with question managers on modifying these graphics should that be necessary. You may however use other programs to produce your graphics so long as you can submit the graphics in the file formats required. Special instructions are provided below for vector graphics produced by other programs and for bitmapped images (like photos).

1. General Guidelines

- a. In the printed report, figures will be either quarter, half, full-page portrait or full-page landscape. While landscape graphics can be awkward for production as well as for users, it’s recognized they may be necessary especially for detailed, Southwide maps. Please decide early on the smallest of these sizes that will still be acceptable for the graph you are constructing, and design it accordingly. Once at that target size, lines cannot be smaller than 0.5 points and text no smaller than 8 points, and preferably 10.

Graphic size	Width	Height
Quarter page	3.375”	4.25” but not critical
Half page	7”	4.25” but not critical
Full page portrait	7”	8.5”
Full page landscape	9.25”	6.25”

- b. You may construct your charts full-page for the Production Team to reduce in size to quarter or half page, but if you do be sure follow these guidelines for minimum element sizes in the full-page chart you construct:

Graphic size	Label size	Axis title	Data line width	Axis width
Quarter page	20 pt	25 pt bold	6 pt	2 pt
Half page	15 pt	18 pt bold	4 pt	1 pt
Full page	10 pt	12 pt bold	2 pt	.5 pt

- c. Use Helvetica fonts throughout your graphics if at all possible, otherwise Arial font style. Please use only these fonts in your figures.
- d. Do not include a title in the figure, rely on the figure caption in your manuscript for this purpose.
- e. Use white chart areas on charts (eg. not gray fill in the plot area), surrounded by a black (not gray) border, and keep charts simple by getting rid of unnecessary grid lines and using only enough label points and tic marks on the axes to get the meaning across.
- f. Capitalize the first letter only of each label or other text element unless proper names or other criteria dictate otherwise.
- g. Include the legend inside the chart boundary if possible to maximize the size of the plot area. If you describe the elements of the chart in the caption be sure descriptions do not solely rely on color perception for interpretation.
- h. Use shade differences on simple charts so figures work in black and white as well as in color.
- i. Avoid 3-D bar graphs
- j. Center x and y axis titles bold; units of measure in parentheses; titles should be 2 points larger than x and y axis labels
- k. Use tick marks on outside of axes to indicate values
- l. In bar charts, center axes labels under each group of bars
- m. Use top and right side lines to connect x and y axes
- n. Consider angled labels if there are many or lengthy x-axis labels
- o. Use grid line (light dashed) if necessary to help reader align data points
- p. Use “N” dash to indicate ranges in legends, right align numbers unless decimals (then align on decimal)
- q. Avoid boxing legend unless there are many values
- r. When possible, put legend in upper right corner
- s. No titles on legends
- t. If arrows are necessary, arrow heads should be small and unobtrusive

2. Charts in Excel:

Note: The Production Team will copy charts or other graphics from Excel and paste them individually into a general purpose graphics program for saving as stand-alone graphics files of the appropriate format. If necessary, the color palette will first be changed to fit the target media. The data used for each chart will also be copied and pasted into the Word document below the figure so each chart will have its own stand-alone web page along containing the data supporting it.

- a. Please keep all the Excel graphics for a given chapter on separate sheets in one workbook, with the file named to indicate the chapter and that it contains figures, eg. TERRA2F.xls
- b. Locate each chart on its own chart sheet, and name that sheet to indicate the figure number and target size. For example, the sheet containing figure 4 intended for a quarter page size should be named 4Q, if half size, 4H, if full-page portrait, 4P, and 4L for full-page landscape. Full-page portrait graphics can be awkward to produce in Excel, and landscape ones are awkward to print and view, so please only use these when necessary.
- c. Keep the data for each chart in the same workbook, preferably one sheet of data per chart, with the sheet named to indicate the figure number. Include variable labels as headings.

Graphic size	Text size	Data line width	Axis width
Quarter page	20 pt	Widest, with markers	widest
Half page	15 pt	Widest	Second from widest
Full page	10 pt	Second from widest	Second from widest

- d. Place legends inside the plot area if possible.
- e. Use charts in the graphics-example.xls spreadsheet as models. Rather than edit them as is, you can save each chart's design as a Custom Chart Type and use it to construct however many charts you'd like. To do this, select the chart, choose Chart, Chart Type, choose the Custom Types tab, click the User Defined button in the bottom left and Add the chart design to the User Defined chart types in the list, choosing names that indicate the chart type and its intended size. Now when you build a new chart you can choose one of the saved designs and get a quick start on many of the settings described here. If the graphics-example workbook doesn't have the exact type you need, just select one that's close and then change the chart type to what you need (Chart, Chart Type). The custom types you save will remain with your Excel installation, not in the workbook, but you can always delete them when no longer needed.

3. Maps in ArcView:

- a. You'll probably find it easiest to construct all maps as full-page layouts and let the Production Team reduce them to the target size. Try to follow the guidelines above regarding target graphic size and associated minimum font and line sizes, recognizing that ArcView makes it difficult to specify a specific font size. Ensuring sufficient font size may involve some trial and error.

- b. Ensuring the readability of the map itself once reduced is also a matter of trial and error although some tips may be helpful. The appearance of Southwide quarter- and half-page maps is approximated by setting the View scale to the following settings, depending on whether the scope includes western Texas and Oklahoma or just the FIA coverage area:

Scope of map	Final page size	Scale
All of 13 states:	Quarter-page	1:875,000
	Half-page	1:425,000
	Full-page (landscape)	1:350,000
Just FIA coverage area:	Quarter-page	1:600,000
	Half-page	1:425,000
	Full-page (landscape)	1:250,000

- c. Maps that span the entire Assessment area do not need scale indicators, nor do maps that display the entire boundaries of a state. Maps that lack sufficient locational information for viewers to understand scope may need scale indicators. If so, use graphical scale bars rather than numeric scales as images will be resized for electronic and printed media. Try and orient maps so that North is to the top so a North arrow is not needed. If North is not to the top, include a North arrow.
- d. Design your maps using the “safety.avp” palette that comes with ArcView. It provides a wide selection of colors, all of which render clearly in web browsers. That is, browsers ditch some colors and make the map look coarse and hard to read, these colors will fill as pure colors and be more clear. Go to the Symbol Palette, choose the right-most button, and click the “Load” button. You’ll find the safety.avp palette file in the folder esri/av_gis30/arcview/symbols/ folder.
- e. Avoid hatch patterns on complex maps, the patterns do not convert reliably across graphics formats and usually result in hard-to-read maps. On complex polygon maps, consider setting border to none to simplify the map. Web versions of these maps will be relatively low resolution with a maximum of about 650 pixels across so cannot communicate great detail.
- f. Legends should have rounded corner legends with oval polygon samples and straight line samples. Place the legends of Southwide maps in the Gulf of Mexico. See the sample map at the end of this document or the sample ArcView project described below for additional examples.
- g. Export each map you produce as Postscript New (EPS). The Postscript (EPS) choice should also work reasonably well. Placeable WMF or CGM binary are less preferred choices which might be accepted if truly necessary. Avoid the other Export options. It is also acceptable to produce a Postscript file using the Print command. Either Postscript version 1 or 2 is OK; if resolution is requested choose 600 dpi. Make sure the filename extension is “.ps” to indicate Postscript.
- h. Name your graphic files to indicate the chapter followed by an F for “figure” and then the figure number and target graphic size (Q for quarter, H for half, P for full-page portrait and L for full-page landscape). The filename extension should indicate the graphic format. An example would be timbr2f4h.eps.
- i. Download and extract the AV-example.zip file from the Tools For Question Managers web page (<http://www.srs.fs.fed.us/sustain/data/authors/index.htm>) and open the file in ArcView to see some illustrations of quarter-, half-, and full-page maps designed for both the complete 13 states of the Assessment area and the smaller area for which FIA data is available. Contrary to the illustration, registration marks will not be needed.

4. Other Vector Graphics:

- a. Follow relevant standards above regarding fill area, line and font treatments.
- b. Graphics should be saved one per file in Encapsulated Postscript (EPS), otherwise in plain Postscript. If these pose a special difficulty you may try Windows Metafile (WMF), otherwise contact a member of the Production Team for assistance.
- c. Filenames should follow guidelines for ArcView: name your graphic files to indicate the chapter followed by an F for “figure” and then the figure number and target graphic size (Q for quarter, H for half, P for full-page portrait and L for full-page landscape). The filename extension should indicate the graphic format. An example would be timbr2f4h.eps.

5. Bitmap (Raster) Graphics

- a. Vector formats are generally preferred because they scale flexibly to different sizes without distortion, but this option is not available for images inherently made up of pixels. These include scanned items, digital photos, GRID coverages, or remote sensing imagery.
- b. For bitmap graphics, set your palette to the minimum number of colors needed to keep filesize smaller. If it's an 8-color image there's no need for its palette to accommodate 16 million.
- c. Submit your graphics at 600 dpi resolution if feasible.
- d. Save your bitmap graphics as uncompressed TIFF to maximize compatibility, with the extension “.tif”. The uncompressed format can result in very large files. After saving the file you may wish to compress it using the zip format to save disk space and file transfer times. If you do so, the filename extension should be “.zip” to indicate this. If uncompressed, *.tif is the standard. Use the same filename standard as for ArcView or Other Vector Graphics.
- e. Photographs are the only type of graphic that should be submitted in hard copy. High quality black and white photographs are preferred, but if you need to submit a color photo, please contact Louise Wilde at lawilde@fs.fed.us. Do not mark on the photographs or write on the back. Identify each photograph by taping a small piece of paper to the back so that most of the paper hangs below the lower edge. With the image facing you, write the necessary information--chapter and figure number--on this tag. To crop photographs, make a photocopy and place crop marks on the copy.

6. Inserting the Graphics into the Manuscript

- a. In addition to submitting graphics as separate files, the graphics should ALSO be inserted into the chapter manuscript for the technical editing and peer review processes. This will also help the Production Team head off certain errors associating graphics files with the proper figure number and caption. It also provides the author a check on the readability of the graphic when reduced in size.

- b. Similar to the practice with tables, please insert each figure with its caption on its own page in the Figures section of the chapter manuscript. Place the graphic immediately BELOW the figure caption, left justified and sized according to the final image size you intend for it (see tables above for standard quarter-, half- and full-page sizes). For full-page graphics you may not have room for both the caption and figure to fit on the same page. If this is the case you may reduce the size of the graphic until it fits on the same page with the caption.
- c. Graphics can be inserted from source programs like Excel using the Windows Clipboard, but in doing so it is recommended you do not use establish live links to the source but rather insert the graphic as a Windows Metafile or other static image. This may require using the Edit, Paste Special menu choice in Word and choosing Windows Metafile.
- d. To resize the graphics to the proper size it's easiest to right-click on the graphic and choose Format Picture, then the Size tab and type in the WIDTH only, as that's almost certainly the most limiting dimension. So long as Lock Aspect Ratio is set, the image's proportions will be maintained. You may also want to make sure on the Layout tab in the same dialog box you've chosen the left-most wrapping style: "inline with text."

CONTACTS. If any of these instructions are unclear, do not hesitate to contact one of the Production Team for help. Contact information is available on the Assessment web site at:

<http://www.srs.fs.fed.us/sustain/people/productn.htm>

Example map and legend:

R8 States - Full Page
8.500" x 7.125"
Scale 1:350,000

