USGS STYLE FILES FOR LaTeX

This directory contains the LaTeX style files for implementing USGS LaTeX for typesetting USGS reports. The `usgsreporta.sty` should be readily used or adapted to other than Open-File Reports (ofr), and is expected to provide the core LaTeX support, but is named with ofr in the name to reserve/preserve name space for implementation for other report series.

Tiny Examples

What does a USGS LaTeX perhaps the simplest report look like as a `*.tex` file? Well at least the simplest preamble and document declaration.

```
\documentclass[11pt,twoside,twocolumn]{usgslatex/usgsreport}
\usepackage{usgslatex/usgsfonts}
\usepackage{usgslatex/usgsgeo}
\usepackage{usgslatex/usgsreporta}
\begin{document}
% Do your LaTeX here
\end{document}
```

So lets increase the complexity of the report. Assume that we have a report with both figures and tables (although generation code is not provided as regular LaTeX syntax works). Assume that the report requires no further preamble code (although this would not be the case in a real setting).

```
\documentclass[11pt,twoside,twocolumn]{usgslatex/usgsreport}
\usepackage{usgslatex/usgsfonts}
\usepackage{usgslatex/usgsgeo}
\usepackage{usgslatex/usgsreporta}
\begin{document}
\makefrontcover
\makefrontmatter
\pagestyle{body}
\SECTION{Abstract}
The U.S. Geological Survey
\SECTION{Introduction}
L-scale ($\lambda_2$) is $\sigma = \sqrt{\pi}\lambda_2$.
Recently, \citet{AsquithGLD2006} has summarized it.
\SECTION{Major Section}
\subsection{General Discussion}
```

```
The number of stations summarized
\SECTION{Summary}
Insert paragraphs here.
\REFSECTION
\begin{thebibliography}{9}
\bibitem[Asquith(2006)]{AsquithGLD2006}
Asquith, W.H., 2006, L- and TL-moments of the generalized lambda
distribution: Computational Statistics and Data Analysis, in
press.
\end{thebibliography}
\vspace*{\fill}
\clearpage
\pagestyle{backofreport}
\makebackcover
\end{document}
```

PACKAGE CONTENTS

The layout of the USGS LaTeX style distribution has at least the following files.

truncate.sty	usgsfloat.sty	usgsnullpages.sty
usgsack.sty	usgsfonts.sty	usgsreporta.sty
usgsasada.sty	usgsftnote.sty	usgsrptdocpage.sty
usgsattr.sty	usgsgeo.sty	usgssec.sty
usgsbalpage.sty	usgsgloss.sty	usgssym.sty
usgsbib.sty	usgshdr.sty	usgstable.sty
usgscaption.sty	usgshyperref.sty	usgstoc.sty
usgscolor.sty	usgsidx.sty	usgstocconvert.sty
usgsdvtable.sty	usgsidxlist.sty	
usgsenote.sty	usgsmath.sty	

The `truncate.sty` package is included because some recent distributions of LaTeX are lacking this package. We need it here only to truncate the section name for a running header (odd pages) to about 90 percent of the `\textwidth` (see `usgshdr.sty`). Detailed descriptions of each USGS style file are provided in the following sections.

usgsack.sty

Sets up a couple of commands for making an acknowledgements section. The command `\makeacknowledgements` actually places the section. The section (actually a `\subsection`) has a default title of `Acknowledgements` defined by `\acknowledgetitle`. The font size of the section is `\small` by default in the `\acknowledgefontsize` command. The command `\acknowledgements` contains the actual text or even paragraphs to set in the section.

```
\renewcommand{\acknowledgements}{Here is some discussion of
those involved in the project.

And an second paragraph is needed to discuss the rest of
the team.}

\makeacknowledgements
```

usgsasada.sty

This package is experimental and not truly designed for integration in a report. This package illustrates some of my thoughts regarding making various "graphical" elements (equations, line math, figures, tables) into alternative textual components for Section 508 accomodation. See the file

usgsattr.sty

Sets up numerous (dozens and dozens) of commands that contain repetitive words, phrases, or small syntatic structures for a USGS report. Many of these require population in the preamble of the document. For example:

```
\renewcommand{\cooperator}{the Texas Commission
on Environmental Quality}
```

which is used on the cover and title pages. The user could even use this command in their document. This package is intended as a general dumping

ground for attributes of a report that are expected to change from report to report. This package feeds dozens of commands to the other packages in this suite. Users should read through the source code of this package. The package loads the standard lastpage package to gain access to the label `LastPage`, which is used to reference the page count in the citation on the fly page (back of the title page). (Isn't LaTeX cool!)

There are a very selected number of apparently attribute commands that are actually defined in their parent package files. For example, see the `\reportrefname` command, which contains the title of the Bibliography section from the usgsbib.sty package.

usgsbalpage.sty

The last page of text in a USGS report should have balanced columns. (Actually, all columns should be, but the last page is the most critical.) The standard multicol package provides for this—stock LaTeX does not. The usgsbalpage.sty package provides a `balpage` environment. The environment switches to one-column mode, which will force a page break. The environment then switches to a two-column `multicols` environment. In this environment, only floats spanning both columns (the starred forms) are permitted. The contents will be balanced. You no longer can use `\pagebreak` to break the column as this will literally start a new page of text; in the `multicols` environment, you must use `\columnbreak` instead. The `balpage` environment knows whether one or two column was the previous setting and stores this when it terminates. Finally, the `balpage` environment might need to start within an paragraph. There should be no space between the last word of that paragraph and the `\begin{balpage}`. You will likely produce a line in the paragraph that now thinks it is the last line of the paragraph and will not be full. Therefore, balpage.sty defines a `\myhfill` that could be placed between as many as each word in that line to stretch interword spacing to fill the line. An example of paragraph breaking into a `balpage` environment.

```
the month and dividing by the number of days of observed record
for the month. For purposes of the summaries in this\myhfill
report, \myhfill incomplete\myhfill months\myhfill are\myhfill
plotted\begin{balpage} as well with the requisite change in
sample size. The second and third components are the monthly
```

```
mean and median percentage of zero streamflow for each month
and are indicated by the solid and dashed ‘‘steps.’’

\subsection{General Discussion}
The number of stations summarized in this report is too large
for effective discussion and interpretation of station-
specific results. Conceptually there are numerous attributes
or factors of a watershed that influence the potential for
zero daily mean streamflow. These \end{balpage}
```

usgsbib.sty

Sets up the USGS style of bibliographic typesetting. The fundamental framework is provided by the standard natbib package. The section title is provided by the `\reportrefname`, which defaults to the LaTeX `\refname`. The `\REFSECTION` introduces the standard bibliography environment; the standard `\bibsection` command is redefined to do nothing. A preamble can be typeset via the `\REFSECTION` command and is contained in `\refpreamble`.

```
\REFSECTION
\begin{thebibliography}{9}
\bibitem[Asquith(2006)]{AsquithGLD2006}
Asquith, W.H., 2006, L- and TL-moments of the generalized lambda
distribution: Computational Statistics and Data Analysis, in
press.
\end{thebibliography}
```

The usgsbib package also supports annotations or reference notes to potentially provide links to external references. There are numerous settings, but the two primary user commands are `\refnote` and `\hyperrefnote`. The first command (`\refnote`) places the text “Available Online” on a near right justified position on the last line of the reference. If one wants to actually build a link on this note, then the `\hyperrefnote{http://insert.your.link}` should be used. One still needs to activate the hyperref package in the preamble to activate the link. The package is implemented like this. Note that trashing of all auxiliary files before performing at least two passes through LaTeX. In the preamble, add the following

```
\usepackage[linkbordercolor=(0 0 0)]{hyperref}
```

Further details about the use of reference notes can be found with examples and discussion in the `usgsbib.sty` file.

usgscaption.sty

This is a simple package that declares the options to pass to the `caption` package in general compliance (and extension) of USGS style. See the notes in the package for alternative handling of the trailing period on a typeset caption in the body of the report.

usgscolor.sty

Sets up a color scheme by which the cover pages can be made a separate color. The banner for the front and back covers can be controlled as can the simple border on the cover photograph. The package provides `\pagecolor` and `\bannercolor` commands. The colors are set by an RGB [0,1] color model. A light grey for the cover paper is the default, and USGS green is default for the banner. The precise RGB mixture can be controlled by six commands: `\bannerXcolor` `\colorXcolor` where `X` is replaced with R, G, or B. For example, in the preamble:

```
\renewcommand{\coverBcolor}{0.70}
```

will change the Blue mixture for the cover. The cover would now be a yellowish hue that mixes well with USGS green.

usgsenote.sty

Sets up the endnote convention for USGS reports. The fundamental framework is provided by the standard endnotes package. Endnotes are placed as a separate section or on a separate page like a Glossary or Index. Endnotes are declared like footnotes. An endnote is declared for the following

"word": `word\endnote{This is my endnote}`. The endnotes can be used simultaneously with footnotes. The endnotes have a different textual superscript than footnotes. One might want a Conventions section to explain a report using both footnotes and endnotes (see usgstocconvert.sty and the `\usgsenotesFORconvent` command of usgsenote.sty). If you want the endnotes to typeset as a simply section in a report use the `\makeusgsenotes` command where you want them to be. If you want the endnotes to sit on a separate page having two columns in same layout as the report body and to start on a odd page do the following

```
\begin{usgsenotes}
  \makeusgsenotes
\end{usgsenotes}
```

One can even include pre- and postambles to the endnote section through the use of the `\notepreamble` and `\notepostamble` commands. Quite a few other settings can be tweaked using commands provided by the usgsenote package, further one still has access to those features provided by the endnotes standard package.

usgsfloat.sty

This is a simple package that resets parameters related to floats within LaTeX. The default `bottomfraction` is way too small; so this is increased.

usgsfonts.sty

Sets up the font convention for USGS reports. You should have the package `visid_latexfont_univers` installed first to get the Univers Condensed family (not builtin to LaTeX) for the San Sarif font and Times Roman family (builtin to LaTeX) for the Roman font. The optional argument `romanmath` will load the mathptmx package. If users are going to use the dcolumn package for decimal alignment in tables, they will want to use the `romanmath` option because dcolumn typesets in math mode. Further, again and again trusted sources in typesetting theory indicate that the computer modern font does not blend will with Times Roman, so the `romanmath` likely is preferred.

The `markern` option for usgsfonts.sty turns on margin kerning, which is the practice of protruding some characters into the left or right margins to achieve even less raggedness on justified paragraphs. This is an extremely cool feature and greatly enhances the professional appearance of the paragraphs. The `markern` defaults to new line breaking behavior as it considers the side effects of the kerning. If you desire to see standard TEX line breaking then add the `texbreaks` option. The margin kerning is only available if `pdflatex` is being used for rendering.

usgsftnote.sty

Sets up the footnote convention for USGS reports. The basic LATEX footnotes are used with minor redefinition of a few commands for more appropriate layout of a USGS report. The footnotes are provided on a per column basis and increase sequentially throughout the report. A footnote is declared for the following "word": `word\footnote{This is my footnote}`.

usgsgeo.sty

Sets the geometry of the page in general accordance with USGS styles with some minor adaptations to a justified spread.

usgsgloss.sty

Sets up an environment for construction of a Glossary or other similar section at arbitrary locations, but designed for the very end of a report. A brief example is provided below. All aspects of the Glossary can be set by renewing commands as needed.

```
\begin{usgsglossary}
  \item[First entry]The first entry of the glossary contains
  a single line that should extend on to two different lines
  of text. Isn't this cool!
```

```
  \item[hyetograph]A hyetograph is the temporal distribution.

  Further description of hyetograph in separate pargraph.
  \item[$\sqrt{(\pi)}$]Goofy equation
  \item[$\sum^{n}_{i=0}x^i$]The sum of self-powered data?
  That was a meaningless equation.
\end{usgsglossary}
```

usgshdr.sty

Sets the placement of running headers for a twosided output; in other words the page styles. The fundamental framework is provided by the standard fancyhdr package. The usgshdr package has one option, bodyfootrule, which adds a footer ruler. Some page styles are set by the usgsreporta package say for the table of contents, but some situations will call for explicit setting in the document by the user. Suggest that one looks at the source for a USGS report already set in LaTeXfor guidance.

usgsidx.sty

Sets an environment for typesetting an index. Although an index is certainly unusual for a USGS report, since LaTeX facilitates index generation with the MakeIndex program—why not add an index in a USGS style. The makeidx package provides the backbone. The usgsidx package renews `theindex` environment following some guidance from The LaTeX Companion. Index generation must be specifically requested. To generate a USGS index, the following provides a complete example:

```
\documentclass[11pt,twoside,twocolumn]{usgslatex/usgsreport}
\usepackage{usgslatex/usgsfonts}
\usepackage{usgslatex/usgsgeo}
\usepackage{usgslatex/usgsreporta}
\usepackage{usgsidx}
\makeindex
\begin{document}
```

```
Here is a sample paragraph\index{paragraph} with a single
index entry. Run latex on this file, run MakeIndex, and
then rerun latex. An index should be seen.
\printindex
\end{document}
```

The user needs to have previous experience with LaTeX indexing, but beyond generating the entries in the document, the three critical commands are `\usepackage{usgsidx} \makeindex \printindex`.

usgsidxlist.sty

usgsmath.sty

Sets the environment and a few commands for typesetting mathematics using the standard amsmath package. For USGS reports, equations are numbered (tagged) on the right. I've taken liberty to number split env equations on the last line and on the right. Also, I've take liberty and flush left setting the equations with a `\mathindent` length.

usgsnullpages.sty

Sets up several styles of blank, empty, or other null pages as part of the overall layout for a report. These pages are called internally by the usgsreporta package.

usgsreporta.sty

The primary interface for implementing a USGS report in LaTeX. This package calls the subordinate packages and calls other needed standard packages. The primary code in this package is the set up the commands for the front

and back material; null pages are inserted as called for in twosided printing. The primary commands are `\makefrontcover`, `\makefrontmatter`, `\makebackcover`. The package takes three options (figuretoc, tabletoc, doublespace). The first two toggle the generation of the list of Figures and list of Tables in the table of contents. Doublespace will double space the body of the report. Example of body usage follows:

```
\begin{document}
\makefrontcover
\makefrontmatter
\pagestyle{body}
\section{Abstract}
Add your report here.

\makebackcover % provided by usgsreporta
\end{document}
```

usgsrptdocpage.sty

Our work with Texas Department of Transportation requires a report documentation page. We have been placing these on the inside of the front cover. The page consists of 22 entries that are set by commands such as the numbered commands shown below. The page is actually rendered with the `\rptdocpage`:

```
\rptdocpageOne{FHWA\slash TX--06/0--4405--1}
\rptdocpageFive{August 2005}
\rptdocpageNine{U.S.\thinspace Geological Survey \newline
8027 Exchange Drive \newline
Austin, Texas 78754-4733 \newline
(512) 927-3500}

\rptdocpage % actually typeset the table
```

The `usgsreporta.sty` package provides the `\insertextrabackoffrontcover` hook that typesets content prior of a vertical fill above the cover credits. So for users of the `reporta` package one can do this:

```
\renewcommand{\insertextrabackoffrontcover}{\rptdocpage}
```

For reasons that I do not understand and have tried hard to eliminate, items Ten and Thirteen likely will require pre and post vertical space. The commands

```
\itemTenPrecorrection
\itemTenPostcorrection
\itemThirteenPrecorrection
\itemThirteenPostcorrection
```

can be used for fine tuning.

usgssec.sty

Sets the typography of the report sections, not inclusive of the bibliography (see usgsbib). The bibliography defines its own sectioning command (`\REFSECTION`), but internally implements `\SECTION`.

The fundamental framework for sectioning layout is provided by the standard titlesec package. The commands `\section`, `\subsection`, and `\subsubsection` are redefined by that package. In general for USGS reports, users need to use the `\SECTION` command, which is defined by usgssec, so that the `\rightmark` can be redefined for the running header. Further, this package supports the Appendix sections of reports, which in internally use the `\section` command. In general, we suggest that users consult a USGS report already set in LaTeX for guidance. However, the following should summarize major features of the usgssec package.

```
\SECTION{Abstract}
Insert your text here
\SECTION{Introduction}
More text
\SECTION{SUMMARY}
End of a report with no References section, but with
two appendices.
\begin{appendix}
\APPENDIX{Water Quality Data Used in Interpretation of the
Processes Involved}{---{\mdseries This is the optional
subtitle of the appendix lacking a bold face type.}}
Here is the text of the appendix, which is set in a one
```

```
column layout. The numbering for tables and figures have been
redefined to reflect the appendix letter. The subtitle is not
set in the table of contents.
\begin{table}
\caption{My first table in this appendix}
\end{table}
\begin{table}
\caption{My second table in this appendix}
\end{table}

\APPENDIX{Surface Water Data}{}
There is no subtitle on this appendix.
\begin{figure}
\caption{My first figure in this appendix}
\end{figure}
\begin{figure}
\caption{My second figure in this appendix}
\end{figure}
Some additional text to discuss the table.
\begin{table}
\caption{My only table in this appendix}
\end{table}
\end{appendix}
```

The Appendices must be wrapped in the appendix environment as this environment sets up many things such as equation, figure, and table number formats. The Appendix sections are typeset in a centered `parbox`. The width of this box is controlled by the `\appendixwidth` length. This length does not change the one column margins of the document that remain under the control of the usgsgeo package. The `\appendixbefore` and `\appendixafter` commands are called before and after the command to typeset the Appendix section. These commands default to `\vspace*` commands using lengths of `\appendixbeforelen` and `\appendixafterlen`, respectively. The separator for the table of contents between the Appendix Letter and the appendix title; the default is an em-dash. Some minor `\appendixtocsecvsep` length is used to add vertical space between the setting of the Appendix titles in the table of contents. The length `\appendixtocvsep` is used to add vertical space between setting of the figure and table titles in the table of contents.

usgssym.sty

Sets up some basic symbol combinations frequently seen in USGS reports. Most notably is the use of two hyphens for missing entries in a table using the `\doubledash` command. See the usgssym.sty file for more (if any) examples.

usgstable.sty

Sets up some basic table conventions seen in USGS reports. Most notably is the definition of the tablenote environment for settings the bracketed table note below the table caption and above the actual table. See the usgstable.sty file for more (if any) features.

usgstoc.sty

Sets the typography of the report table of contents. The fundamental framework is provided by the standard titletoc package. The commands `\section`, `\subsection`, and `\subsubsection` are redefined. Suggest that one looks at the source for a USGS report already set in LaTeX for guidance. Numerous subcommands are used to control or influence the spacing, indents, and other parts of the basic table of contents structure.

usgstocconvert.sty

Sets up numerous commands for controlling the content of the Conversion Factors table and the Datums for the last page of the table of contents. The command `\conversionpage` is the sole interface to the contents of the conversion page. This command is used by the usgsreporta package. Although, numerous other commands can be renewed to control the appearance.

Tips

A period following uppercase is not interpreted as an end of sentence. So use the following "`work with USGS\@.`" for end of sentence occurrences. For abbreviations using a period, the non-line breaking tilde or force space are used: `fig.~\ref{fig:label}` and "`Comp.\ Stat.\ Data Analysis`".

This sentence, with poor spacing, ends with USGS. This sentence, with correct spacing, ends with USGS. The following sentence is this. Note the very slight, but discernible, differences in the spacing following the acronym for U.S. Geological Survey, which is self should be written as `\mbox{U.S.} Geological Survey`.

For line breaking: `\\` and `\newline` break a line and interword spacing for the line is not adjusted to fill the line. Alternatively, `\linebreak` can be used to break a line and the text that remains on the line is spread or stretched to fill the text width.

For phrases consisting of forward slashes (/), the line breaking algorithm works better if one uses `\slash` instead of the character `/`.