

## Users Guide

### US Topos

### “Digital Maps – Beta”

### Historical Topographic Maps

This guide explains how to access and use USGS topographic maps on the Web: US Topos; their predecessors, “Digital Maps – Beta;” and the scanned collection of paper USGS Historical Topographic Maps which were printed from the late 1800’s until 2009. The most numerous and best-known of the USGS topographic map series is the 7.5-minute quadrangle map, published primarily at 1:24,000 scale. More than 55,000 of these maps cover the United States.

**US Topo** maps include geographically referenced base information from *The National Map* and other sources, including roads, hydrography, contours, boundaries, woodland cover, and geographic names on an aerial image base. The prototype version, “**Digital Map – Beta**,” does not contain hydrographic features, contours, boundaries, or woodland cover. These earlier maps are being replaced by revised US Topos. Once replaced, they will no longer be available. Additional features such as Public Land Survey System and mainline railroads are being added to newly produced or revised US Topos. More information about these products is available on the Web at <http://nationalmap.gov/ustopo/index.html>

**Historical topographic maps** include all editions and all scales of USGS topographic maps that were originally published as paper maps. Lithographic copies of these maps have been scanned and converted to digital files that are compatible with US Topos. More information about historical topographic maps is available at <http://nationalmap.gov/historical>.

US Topos, “Digital Maps – Beta” and historical topographic maps are available on the Web at no cost, in the PDF format with geospatial extensions (GeoPDF®). Free tools allow users to determine coordinates, measure distances and angles between points, measure areas, track positions using a GPS device, display coordinates in various map projections and datums, turn layers on and off (US Topos and “Digital Maps – Beta” only), zoom in and out, and print the map image.

This guide applies to all USGS digital topographic maps as all share the PDF file format. The general search and download instructions apply to all versions. However, there are unique characteristics to each series. For example, historical topographic maps are a single layer raster file so instructions regarding data layers do not apply. Geographic navigation and most tools work identically for all maps. Key differences are noted in the text.

# Quickstart

## Prerequisites.

A computer with a recent Windows® or MacOS® operating system.

Internet access.

Adobe® Reader® software.

For full functionality, the TerraGo Technologies Toolbar™ is recommended.

## Access to Maps.

Go to <http://store.usgs.gov> and click on “Map Locator and Downloads.”

## Locating US Topo Maps and “Digital Maps – Beta”.

Click on the button labeled “Show US Topo and ‘Digital Maps – Beta’” button on the Map Locator page.

Zoom in to the area of interest.

Use the “Mark Points” option to select a quadrangle

Click on the red marker to display a list of available maps.

## Locating Historical Topographic Maps

Zoom in to the area of interest.

Use the “Mark Points” option to select a quadrangle

Click on the red marker to display a list of available maps.

## Downloading.

Click the file size shown for the selected map and save the file on your hard drive.

Unzip the compressed file to extract the GeoPDF file.

## Opening the Extracted Map File.

Click on the extracted file name to display the map.

Install TerraGo Technologies Toolbar for full functionality (recommended).

## Using the Map.

Open and close map layers by clicking on the ‘eye’ icon in the layers list\*.

Expand and collapse the layers by clicking on the ‘+’ and ‘-’ icons\*.

Use the Adobe and TerraGo Technologies Toolbar menus and tools to zoom, pan, display coordinates, measure, and perform other operations on the map image.

**Printing.** Select “File” and “Print” in the Adobe menu.

\* Applies to US Topos and “Digital Maps – Beta” only. Historical topographic map files are a single layer.

## Contents

This guide is divided into sections addressing access, use, and printing of US Topos, “Digital Maps – Beta” and historical topographic maps. Instructions in one section are not generally repeated in following sections. Therefore, it may be necessary to read more than one section to fully understand specific actions.

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## Prerequisites

Microsoft® operating systems Windows® XP, Windows Server™ 2003, Windows Vista™, or Windows® 7 are required. **MacOS® users should refer to the section “Viewing and Using Maps in the MacOS Environment” later in this guide.** Users employing other operating systems may be able to access and display digital topographic maps, but may not have full geospatial functionality. Internet access is required; broadband access is highly recommended.

Adobe® Reader® software is required and may be downloaded for free at <http://get.adobe.com/reader/>. Adobe Acrobat® software may be used in lieu of Adobe Reader.

TerraGo Toolbar™, a plug-in for either Adobe Reader or Acrobat, is required for full geospatial functionality. The download and use of the TerraGo Toolbar are free. To download, go to <http://usgs.terragotech.com/home/>. Note: Prior to installation, please refer to the TerraGo Toolbar requirements for compatible versions of either Adobe Reader or Acrobat. Adobe Reader or Acrobat must be installed prior to installing the TerraGo Toolbar. For information about viewing and using map files without TerraGo Toolbar, see the section “Viewing and Using US Topo Files in the Windows Environment without the TerraGo Toolbar” later in this guide.

## Locating US Topo Maps and "Digital Maps – Beta" Through the USGS Store

At the USGS Store (<http://store.usgs.gov>), click on “Map Locator and Downloader.” Then select the orange “Show US Topo and Digital Maps – Beta” button to the lower right of the map graphic. When selected, a layer showing the available US Topo maps appears in red. The older “Digital Maps – Beta” appear in yellow. By zooming into a location, the map cells become quadrangle outlines filled with red or yellow hatching. Use the “MARK POINTS” option to select the desired quadrangle. Click on the red marker that marks the selected quadrangle to display a list of available maps for that quadrangle. The list also will include available historical topographic maps.

You can also search for USGS quadrangles by quadrangle name or by address/place. Note: Full National coverage of US Topos, including Alaska, Puerto Rico, and the U.S. Virgin Islands, will require some time to complete. A map showing the production work plan is at <http://nationalmap.gov/ustopo/about.html>.

## Locating Historic Topographic Maps Through the USGS Store

At the USGS Store (<http://store.usgs.gov>), click on “Map Locator and Downloader. Click on the “Mark Points” option. Zoom into a location. The quadrangle outlines are shown. Click on the desired quadrangle. Click on the red marker that marks the selected quadrangle to display a list of available maps for that quadrangle. The list also will include available US Topos and “Digital Maps – Beta.”

You can also search for USGS quadrangles by quadrangle name or by address/place. Note: National coverage of historical topographic maps will require some time to complete. A map showing the production status is at <http://nationalmap.gov/historical/status/index.html>.

## Downloading Maps

Click on the file size (e.g., 21.2MB) for the desired map, then click “Save” to save the downloaded file to a directory and file name you specify on your local hard drive. The map is delivered to you in a compressed zip file (.zip). To access the map file contained therein, unzip and extract the file. Please note the possibility of file corruption exists if the file is not extracted properly from the zip file.

To unzip and extract the map file from a compressed zip file, locate the compressed zip file from which you want to extract the GeoPDF. Then right-click the compressed zip file, click Extract All, and then follow the instructions.

You can also use your favorite third-party compression utility to unzip and extract files. Please follow their instructions on how to properly unzip and extract files.

More information about using compressed zip files in the Windows environment can be found in your Windows help or go to <http://windowshelp.microsoft.com/Windows/en-US/Help/7050d809-c761-43d4-aae7-587550cd341a1033.msp#EEB>. Additional information about the .zip file format is available at [http://en.wikipedia.org/wiki/Zip\\_file](http://en.wikipedia.org/wiki/Zip_file).

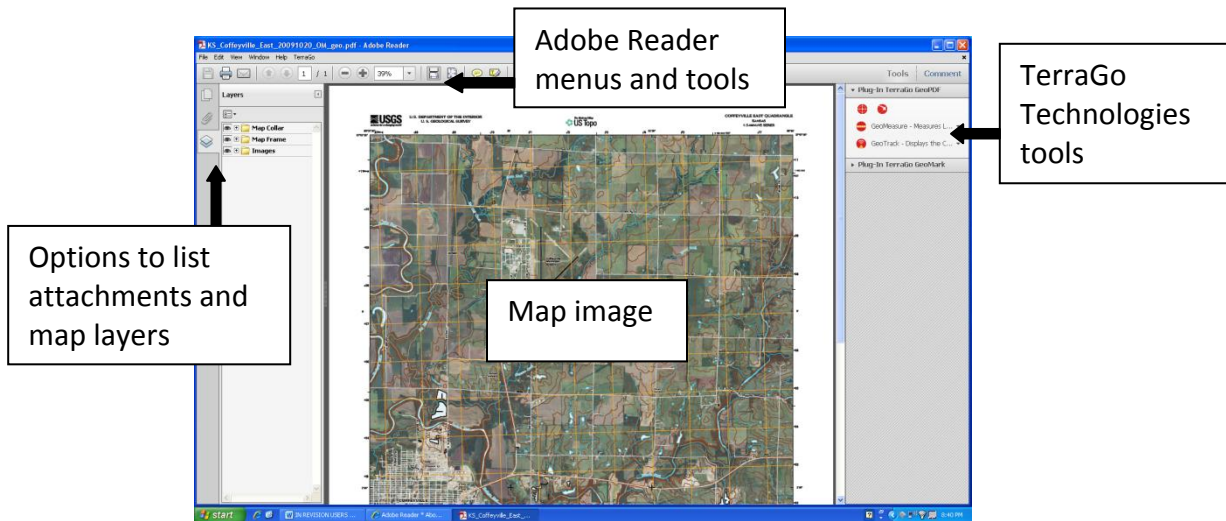
## Opening the Extracted Map File

Find the extracted file on your hard drive. Double click on the file icon or name to open the file. The map will open in an Adobe Reader (or Adobe Acrobat, if installed) window.

If the TerraGo Toolbar hasn't already been installed, you will be offered an opportunity to download and install at this time. This download is free and installation is only required once. These tools supplement Adobe Reader capabilities by providing added capabilities to use the digital topographic maps. More information is available at <http://usgs.terragotech.com/home>.

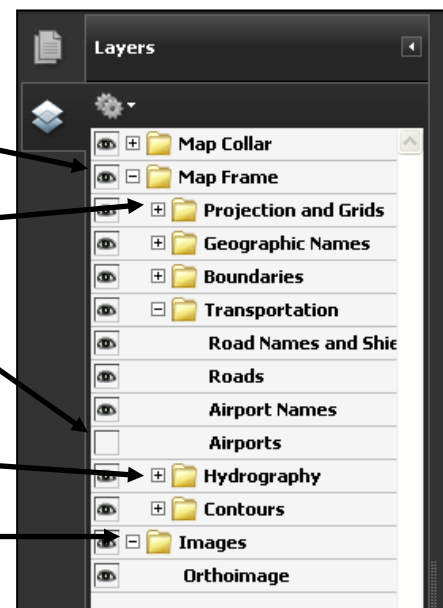
## Using the Map

The display has four sections:



### Map Layers (US Topos and "Digital Maps – Beta" Only)

- Left click on the "eye" icon to turn a layer off in the map image.
- Left click on the "+" icon to expand the list of layers. Note that you can turn these subordinate layers on or off by clicking on the "eye" icon/box, as above.
- Left click on the box where the "eye" icon was to turn the layer back on.
- Left click on the "+" icon to expand the list of layers. Note that you can turn these subordinate layers on or off by clicking on the "eye" icon/box, as above.
- Left click on the "-" icon to collapse the list of layers.



It may take a few seconds for the map image to refresh when the layer selection is changed.

To turn on Adobe tools, left click on "View" then on "Show/Hide" and then on "Toolbar Items." Click on "Select and Zoom" and then select the tools you want to turn on in the toolbar (such as "Marquee Zoom" and "Hand Tool.") Clicking the right mouse button within the map image will open a window within which some tools can be selected.

## Zoom In and Out

The options for zooming are:

- Click on the “+” and “-” icons in the Adobe toolbar (Section C),
- Enter a percent in the window to the right of the “+” icon in the Adobe toolbar and press “Enter”,
- From the “Tools” pull-down menu at the top of the screen, choose “Select & Zoom”. Select “Marquee Zoom” from the flyout menu. Place the cursor over the area of interest on the map and hold down the left mouse button to create a zoom rectangle over the desired area.
- If the “Marquee Zoom” tool has been turned on as described above, select that tool from the menu bar.

The map image can be reset to show the entire quadrangle by clicking on the arrow to the right of the percent box on the Adobe toolbar and selecting “Fit Page”

## Pan

To move around the map image, choose “Hand Tool” and then reposition the cursor over the map and left click the mouse. Then hold down the left mouse button and move the cursor around the map to reposition the image. (Note: you cannot pan if the map display shows the entire map image. If you have already turned on the “Hand Tool” as described above, select that tool from the menu bar.)

## TerraGo Toolbar Tools

Click on “Tools” in the upper right of the screen and select “Plug-In TerraGo GeoPDF.”



GeoTool – Locks/unlocks coordinates, Google™ Map It, and launches other GeoPDF tools.



GeoLocator – Shows and finds coordinates and provides the ability to modify coordinate system displays.



GeoMeasure – Measures either length or area.



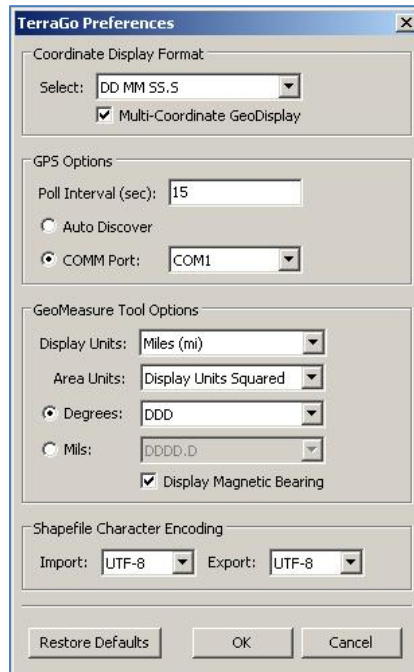
GeoTrack – Displays the current position of an attached GPS device.

Note: The TerraGo Collaboration tool (replaced the GeoInfo tool in TerraGo Toolbar Version 5.0) imports, exports, and deletes data. TerraGo Collaboration is not currently available for use in Adobe Reader because US Topo, “Digital Map – Beta,” and historical topographic map GeoPDF files do not yet support this tool.

Complete information on using the GeoPDF tools is explained in depth in the TerraGo Toolbar help. If you need further assistance in using TerraGo Toolbar, view a Tutorial Video at <http://www.terragotech.com/products/terrago-toolbar>.

## Modifying TerraGo Toolbar Preferences

Users can change how the TerraGo Toolbar functions by modifying preferences. To modify the preferences click on “Edit” in the menu bar, then click “Preferences,” and then click on “TerraGo” to launch the “TerraGo Preferences” panel:



This panel provides options for how the coordinate display(s) are formatted; for a GPS receiver; for how the GeoMeasure tool displays length and area measurements; and for encoding import and export of shape files. Please note importing and exporting shape files is not currently available for use because USGS digital topographic map GeoPDF files do not yet support this tool.

## **Modifying Geospatial Location Tool Preferences**

Users can modify the “Geospatial Location Tool” preferences to change how coordinate information is measured and displayed. To modify the preferences, launch the “Preference Panel” (see previous section), click on “General” in the menu and then click on “Preferences.” Then select “Measuring (Geo)” from the categories listed on the left of the panel. To change how the coordinate information is measured and displayed make changes in either the “Geographic Location” section or the “Latitude and Longitude Format” section, depending which version of Adobe software in use. Note there are also preferences that affect length and area measurements. However, these tools are not currently available for use in Adobe Reader because US Topo, “Digital Map – Beta,” and historical topographic map GeoPDF files do not yet support this tool.

## **Viewing and Using US Topo Files in the Windows Environment without the TerraGo Toolbar**

When first opening a US Topo on a Windows computer using Adobe Reader or Adobe software, without the TerraGo Toolbar previously installed, users are given the option to download and install the free plug-in from TerraGo Technologies. If download is not desired, click on “No.”

### **Measuring Coordinate Information**

To measure coordinate information, launch the “Geospatial Location Tool.” If using Adobe Reader 9.x or Acrobat 9.x select “Tools” from the menu bar, then select “Analysis,” then select the “Geospatial Location Tool.” If using Adobe Reader X or Acrobat X, select “Edit” from the menu bar, then select “Analysis,” and then select the “Geospatial Location Tool.”

### **Modifying the Geospatial Location Tool Preferences**

Users can modify the “Geospatial Location Tool” preferences to change how coordinate information is measured and displayed. To modify the preferences, launch the “Preference Panel,” click on “Edit” in the menu and then click on “Preferences” (Ctrl+K). Select “Measuring (Geo)” from the categories listed on the left of the panel. Make changes in either the “Geographic Location” section or the “Latitude and Longitude Format” section, depending the version of Adobe software in use. Note: there are also preferences that affect length and area measurements. However, these tools are not currently available for use, because USGS digital topographic map GeoPDF files do not yet support this tool.

## **Viewing and Using Maps in the Mac OS® Environment**

### **Prerequisites**

Adobe Reader 9.x or Adobe Reader X software is required and may be downloaded for free at <http://get.adobe.com/reader/>. Adobe Acrobat 9.x or Adobe Acrobat X software may be used in lieu of Adobe Reader, if available.

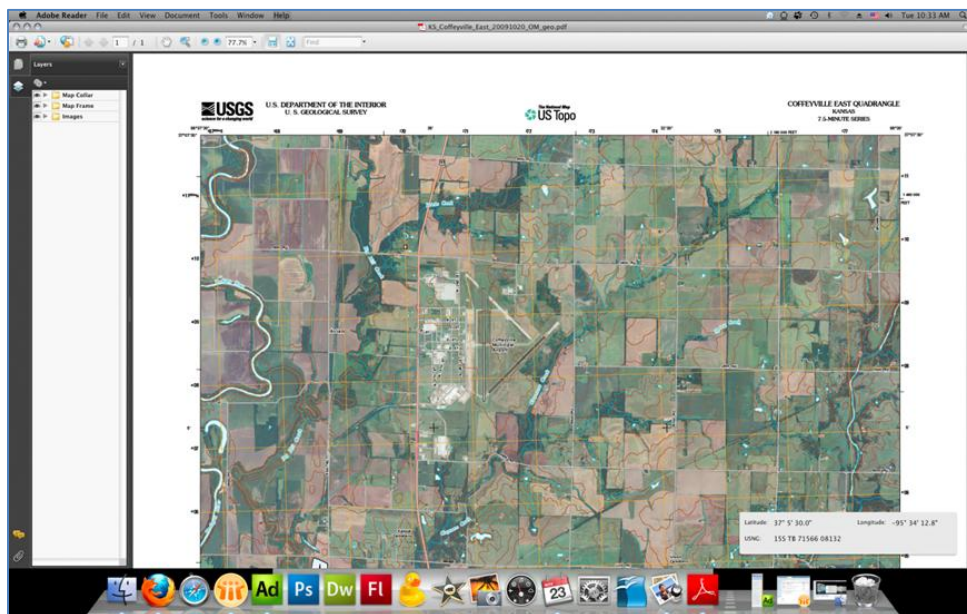
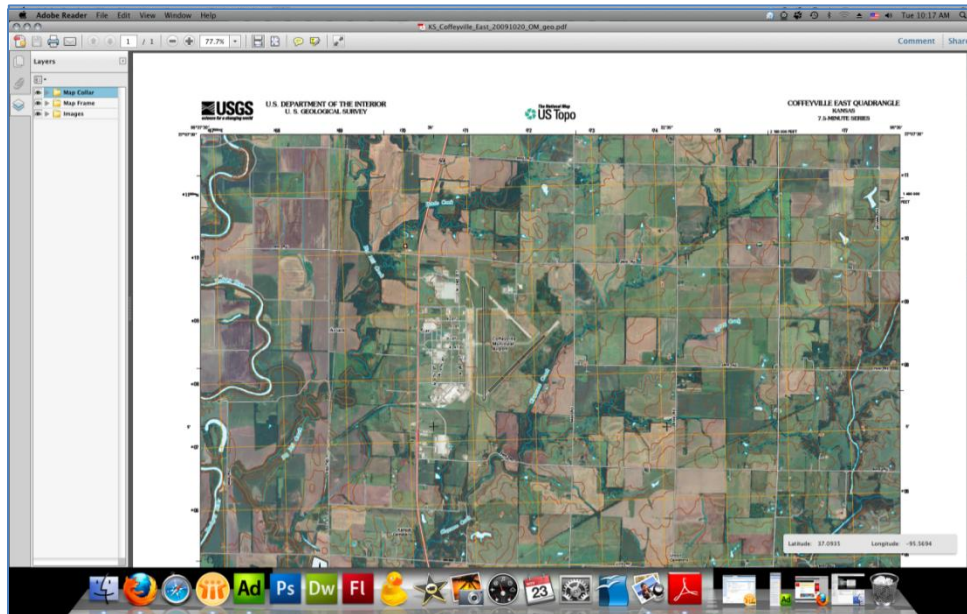
### **Opening the Map File**

When first opening a map on an Apple® Mac® computer, users receive a warning with a brief description that this is a GeoPDF, and are given the option to download and install the free plug-in from TerraGo Technologies (illustration below). Click on “No.” TerraGo Technologies currently does not support the Mac OS.

### **Using the Adobe “Geospatial Location Tool”**



To measure coordinate information, launch the “Geospatial Location Tool.” If using Adobe Reader 9.x or Acrobat 9.x select “Tools” from the menu bar, then select “Analysis,” and then select the “Geospatial Location Tool.” If using Adobe Reader X or Acrobat X, select “Edit” from the menu bar, then select “Analysis,” and then select the “Geospatial Location Tool.” The “Geospatial Location Tool” Adobe Reader 9.4 and Adobe Reader X screens appear as:



## Printing

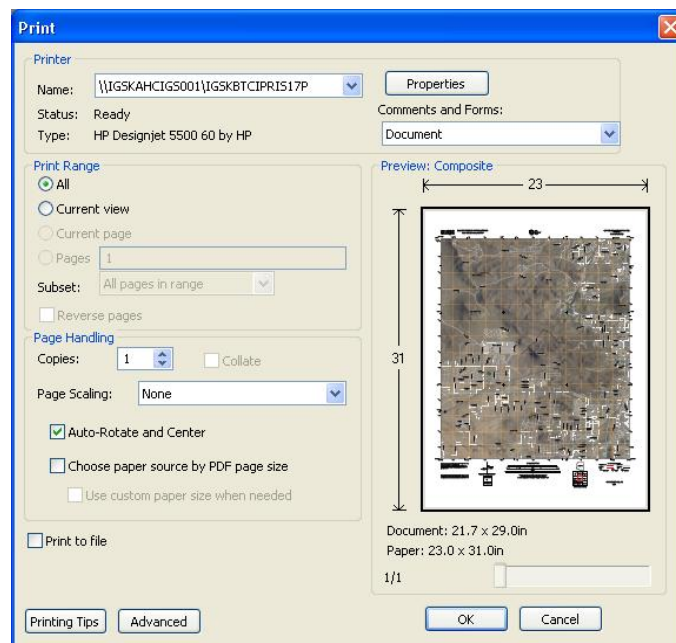
Printing uses the Adobe Reader Print dialog box. Select “File” from the Menu bar and then select “Print” or type “Ctrl+P” on your keyboard or click on the “Printer” icon on the toolbar to open the Print dialog box.

### Printing - Option 1

To print the entire map at 1:24,000-scale, open the Print dialog box, then:

1. In the “Printer” section of the Print dialog box
  - a. Select the printer to be used from the Printer Name drop down list. A large format graphics printer/plotter is required to print the entire map at 1:24,000-scale.
  - b. Select the “Properties” button to access the properties panel for the selected printer/plotter. Define the paper page size. Make sure the printer/plotter paper page size is large enough to accommodate both the map page size and the nonprinting margins for the selected printer/plotter combined. Also at this time the other settings can be defined. Select “OK” to return to the Adobe Reader Print dialog box.
  - c. Set the drop down list in the “Comments and Forms:” dialog, to “Document.”
2. In the “Print Range” section of the Print dialog box select the “All” button.
3. In the “Page Handling” section of the Print dialog box, make the following selections.
  - a. Set the number of copies needed using the “Copies” dialog.
  - b. Set the “Page Scaling” drop down list to “None.”
  - c. Check the box next to “Auto-Rotate and Center.”

After following all of the steps above, the Adobe Reader Print dialog box should like the following:



Note that the “Preview: Composite” section shows the entire map fits within the paper size defined in step 1b above.

4. Click on the “OK” button to send the map to the selected printer/plotter.

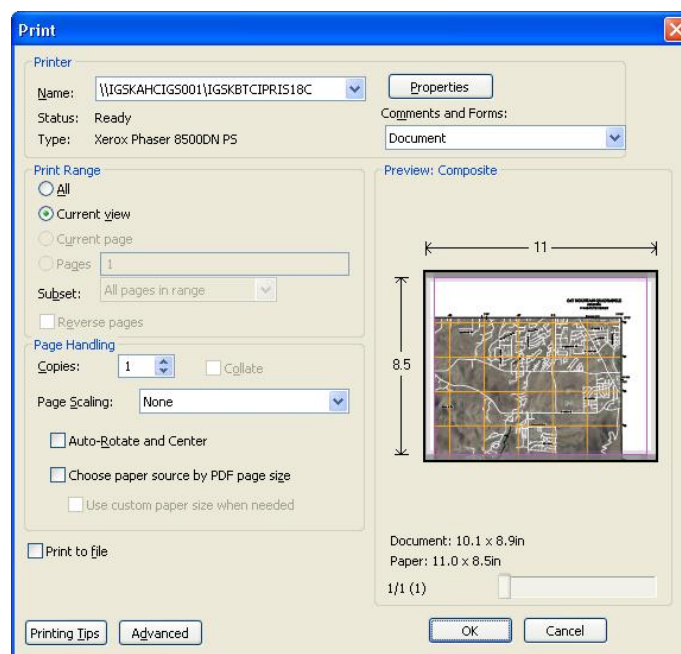
## Printing – Option 2

If you do not have access to a large format graphics printer/plotter to accommodate the entire map page size or if you simply want to print a portion of the map at 1:24,000-scale on a smaller piece of paper, position the map in the Adobe Reader window. To print the exact desired part, move the map and zoom in or out to the area you want to print. Then set magnification in Adobe Reader to 100%. (Note: you can set the magnification higher, but that actually lessens the overall area to be printed.) Then open the Print dialog box.

1. In the “Printer” section of the Print dialog box:
  - a. Select the printer to be used from the “Printer Name” drop down list.
  - b. Select the “Properties” button to access the properties panel for the selected printer. Define the paper page size and desired page orientation. Also at this time the other printer settings can be defined. Select “OK” to return to the Adobe Reader Print dialog box.
  - c. Set the drop down list in the “Comments and Forms” dialog to “Document.”
2. In the “Print Range” section of the Print dialog box select the “Current view” button.
3. In the “Page Handling” section of the Print dialog box, make the following selections.
  - a. Set the number of copies needed using the “Copies” dialog.
  - b. Set the “Page Scaling” drop down list to “None.”
4. Check the “Preview: Composite” section to verify the desired area to be printed.

The size of the Adobe Reader window, position of the map within the Adobe Reader window, or both may need to be adjusted to get the area desired for printing. Also, if you are zoomed in further than 100% you may have to zoom out to get the desired area for printing.

After following all of the steps above, the Adobe Reader Print dialog box should look like this:



Note the “Preview: Composite” section, shows the desired portion of the map that will print on a landscape 8.5 x 11 inch paper size defined in step 1b.

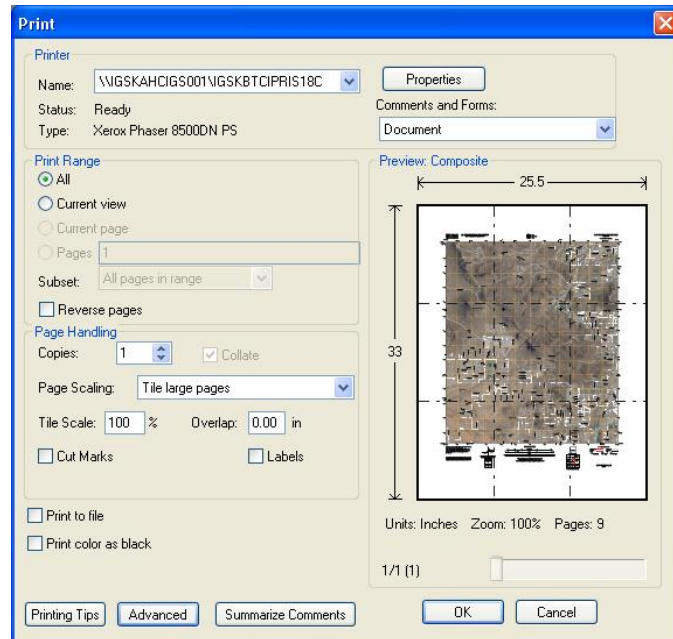
5. Click on the “OK” button to send the map to the selected printer.

### Printing – Option 3

If Adobe Acrobat is the program being used (not the free Adobe Reader) the capability to print the entire map on smaller pieces of paper is available. Open the Print dialog box, then:

1. In the “Printer” section of the Print dialog box
  - a. Select the printer to be used from the “Printer Name” drop down list.
  - b. Select the “Properties” button to access the properties panel for the selected printer. Define the paper page size and desired page orientation. Also at this time the other printer settings can be defined. Select “OK” to return to the Adobe Reader Print dialog box.
  - c. Set the drop down list in the “Comments and Forms:” dialog to “Document.”
2. In the “Print Range” section of the Print dialog box select the “All” radio button.
3. In the “Page Handling” section of the Print dialog box, make the following selections.
  - a. Set the number of copies needed using the “Copies” dialog.
  - b. Set the “Page Scaling” drop down list to “Tile large pages.”
  - c. Set the “Tile Scale:” to 100%
  - d. Set desired “Overlap:”. (Overlap specifies the minimum amount of duplicated information printed on each tile for ease in assembly. The “Overlap” option uses the unit of measure specified for the document. The value should be greater than the minimum nonprinting margins for the printer. You can specify up to one-half the size of the shortest side of the document page to overlap. For example, tiles for a page that measures 11-by-17 inches (279.4mm-by-431.8mm) can overlap up to 5.5 inches (139.7mm).
  - e. Check “Labels” if desired. (Checking “Labels” prints the PDF name, date of printing, and tile coordinate on every sheet. For example, Page 1 (1,1) means row 1, column 1 of the first page. Tile coordinates are used for reassembling the tiles.
  - f. Check “Cut Marks” if desired. (Checking “Cut Marks” prints marks on each corner of a tiled page for ease of assembly. Use this option in conjunction with the Overlap option. When an overlapping edge is specified and the edges are superimposed, you can use the cut marks to line up the tiles.

After following all of the steps above, the Adobe Acrobat Print dialog box should look like the following:



Note the “Preview: Composite” section shows the tiles of the map that are to print on 8.5 x 11 inch paper size in portrait orientation, as defined in step 1b.

4. Click on the “OK” button to send the map to the selected printer.

For information on additional printing options or other use issues for Adobe Reader or Adobe Acrobat, access the “Help” pages from “Help” on the Menu bar or press the F1 key. Also, you can visit the appropriate Adobe Product Support Center at <http://www.adobe.com/support/>.

## **Additional Information**

More information about US Topos and “Digital Maps – Beta” and their use is available on the Frequently Asked Questions (FAQ) page at <http://nationalmap.gov/ustopo/faq.html>. FAQ answers address more advanced topics such as mapped features and program and policy matters that are beyond or outside of the scope of this Users Guide. More information about historical topographic maps is available at <http://nationalmap.gov/historical>.

## **Thanks**

We value your interest in USGS digital topographic maps. We encourage your feedback and invite you to send your suggestions to [http://nationalmap.gov/ustopo/ustopo\\_feedback.html](http://nationalmap.gov/ustopo/ustopo_feedback.html) or click the “Contact Us” tab on the [US Topo home page](#) or on the [historical topographic map home page](#).

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