

ARMY GEOSPATIAL PORTABLE DOCUMENT FORMAT (GEOPDF) PROJECT

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Winner:

2006 Director's Award - TEC

2008 Achievement Award / Military – USGIF

2010 SRP Outstanding Presentation at TSS Workshop

Finalist:

2009 Public Sector Max Award - Adobe



US Army Corps of Engineers
BUILDING STRONG®

Unclassified

GeoPDF Overview

- Provides a Standard format for use and exchange of GIS documents with non-GIS users [soldiers, marines, sailors and airmen] and allows them to leverage valuable geospatial assets
- A **stand alone file**; no web or data links; image, text, fonts, graphics, customer data, GIS data and metadata are all contained in one file
- Leverages **free** Adobe Reader (ISO standard) multiple languages
- Intuitive Adobe Reader interface - no training required
- **Free** TerraGo Toolbar for Adobe Reader plug-in to view “Geo” part of GeoPDF
[all TerraGo tools have Army Certificates of Networthiness & the free toolbar plug-in is on the Army Golden Master | other acceptance & certification: NGA.Net baseline, CIA.Net baseline, NGA IEC Program Acceptance, NGA NDS Program Acceptance, Navy Marine Corps Internet / U.S. Army Armament Research and Development Center (ARDC), Research, Development and Engineering Center (RDEC) acceptance and deployment, US Dept of Agriculture's (USDA) Natural Resource Conservation Service (NRCS)]
- Significantly smaller data files than traditional GIS formats (COTS or MILSPEC)
- Complies with Adobe's PDF specification
- Identified as “Best Practice” by Open Geospatial Consortium (OGC)



“...there are about 1 million users of GIS software. There are about 6 billion people. So there are 5.999 billion other people who don’t like using GIS software. We built something for them.”

*Michael Jones, Google Earth - Chief Technology Office
Geospatial Solutions May 2006*

“I want to take what NGA has done for the user and put that power directly in their hands – on a mobile device or the means of their choosing.”

*Letitia Long, National Geospatial-Intelligence Agency (NGA) - Director
GEOINT 2010*



GeoPDF Creation

Vector GeoPDF

- GIS data is output directly into GeoPDF format

Raster GeoPDF

- Paper maps are scanned or use existing jpg/tiff files which are then saved in a PDF format and georeferenced

Hybrid GeoPDF

- Both Raster and Vector data

Topographic Line Map (TLM) 1:50,000 scale - 300 dpi

Seoul	312.0	MB	GeoTIFF (uncompressed)
	10.0	MB	MrSid
	9.7	MB	JPEG
	8.8	MB	TIFF/ZIP
	5.0	MB	GeoPDF



GeoPDF activities complete

Raster

- **NGA Research Center has converted most of their standard Aero and Topo products into raster GeoPDF (33,000+)**
 - **Army Geospatial Center has packaged up these maps by country with an Index Map; now distributes via DVD and has them posted on websites [193 available]. NGA has begun to take over production, maintenance and distribution [via DLA] of these GeoPDF Country Coverages**
 - **AGC converted nearly 60,000 USGS Digital Raster Graphic files from GeoTIFF to GeoPDF. USGS has posted all of them on the USGS store website along with new GeoPDF U.S. Topo [USDA imagery and National Map data] – <http://store.usgs.gov>**
- 2010 | 1.5 million downloads**
- **AGC will produce State Datasets with Index Map which will be distributed by USGS**



GeoPDF activities on going

Vector

- Every new and updated map contract NGA signs has a provision that requires a vector GeoPDF be produced as a map sheet is created.

As the vector GeoPDFs are created they replace the raster GeoPDF

- Army produced mission specific products

All Army Geospatial Engineering Teams [via the Army's Digital Topographic Support System (DTSS v11 or Digital Common Group Station System Geospatial [DG] 2.0 as it now known is being fielded now)] along with EUCOM and PACOM Theater Geospatial Databases have TerraGo's tools for Adobe Acrobat and ESRI ArcGIS.

Other

AGC will convert its ADRG and CIB holdings to GeoPDFs and its Inland Electronic Navigation Chart (IENC) Data Team plans to publish all IENC data [~7800 miles of navigable waterways in the USA], in GeoPDF format.

NGA - *Geospatial Intelligence Baseline for Contingency Operations [GIBGO], Iraq & Afghanistan Atlases, Olympics support, Enterprise Product on Demand Services (ePODS) deployed CENTCOM support, co-production partners – Canada, UK, South Korea, Australia, NZ, Germany, France using or soon to use GeoPDF*

Army Sustainable Range Program creates Military Installation Maps in GeoPDF



Intel Community: Windows Mobile software using GeoPDF

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GeoPDF activities - on going II

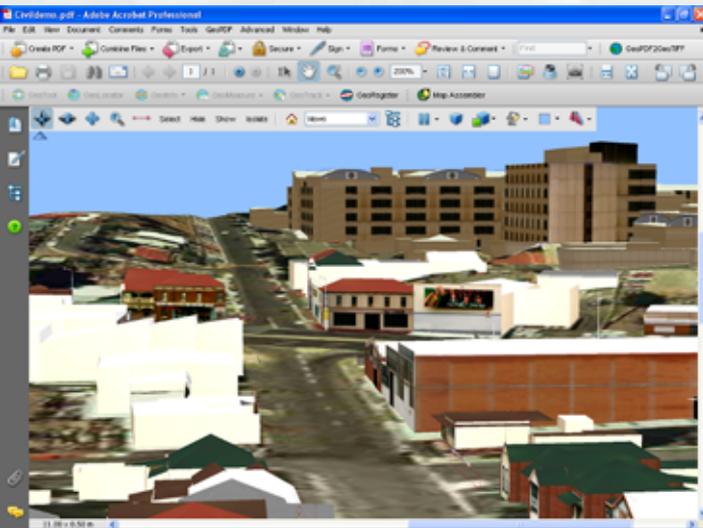
- **NGA Research Center has begun to convert their holdings of native maps into raster GeoPDF**
- **All Army Geospatial Engineering Team's DTSS is loaded with TerraGo software suite for creation and manipulation of GeoPDF**
- **AGC Imagery Library's online imagery distribution system [iCubed's DataDoors] exports to GeoPDF**
also GeoEye and DigitalGlobe provide products in GeoPDF
- **AGC converting their Urban Tactical Planners (UTP),
...Engineering Route Studies (ERS) and Library holdings of non-
...NGA products and atlases into GeoPDFs**
- **AGC creating Urban Water Graphics (UWG), Buckeye Map
...Book (BMB), Cultural Maps and Country/Area Overviews
...in GeoPDFs**



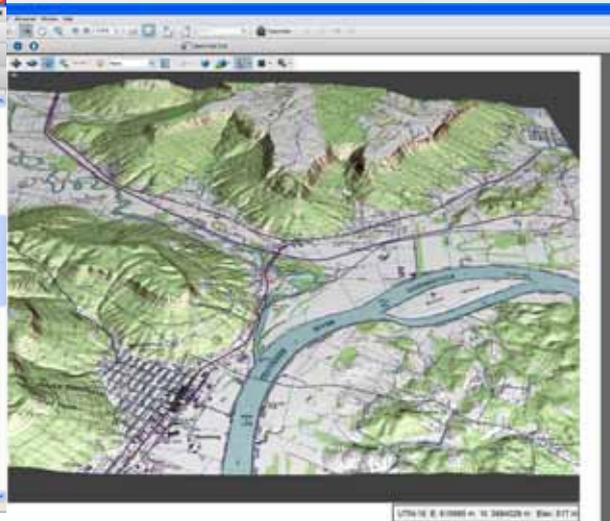
GeoPDF activities - on going III

- Seamless viewing of GeoPDF in Adobe Reader
- Reading of GeoPDF in Voyager GIS [a web style search tool]

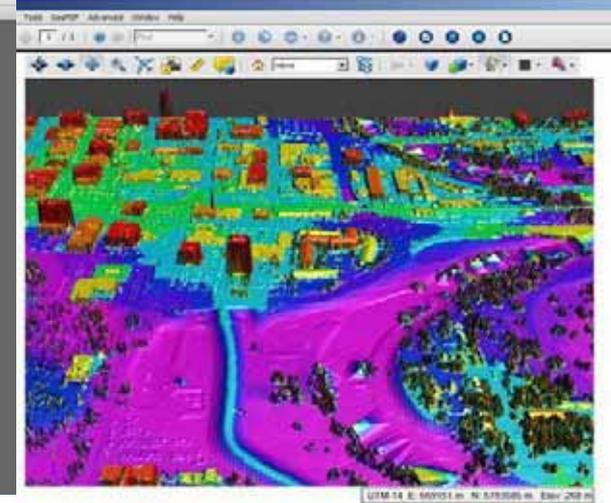
3D GeoPDF



fly-throughs



elevation data



[LiDAR derived]



GeoPDF feedback

"...literal lifesaver"..."has revolutionized the way we do business. We get more workable products out to the warfighter"

"So far the DVDs with the map data from TEC has been a huge success. I even passed a few to a soldier on an MTT while waiting for our flight. Folks who don't have access to much data are extremely appreciative when they get something with nothing expected in return."

"a tremendous asset to my operations"

"...used the geopdf country dvds as mini-DLAs and printed the sheets all the time!!!!
The country dvds are geospatial heroes of the war!!!! "

"That's a pretty awesome product."

"The GeoPDF's you sent provided us with the following:

- Instant access to much needed mapping data

"This is great stuff!"

I love the GeoPDF!

"data will be of real help"

- Ability to send data over secure net to Commanders

"They are such great products"

- MGRS capability

guys here in the field...love the GeoPDFs

"I'm not a GIS professional; I'm an artilleryman. Recently, I discovered the GeoPDF files.. and thoroughly enjoy them. They make maps easy!"

- Delivered media (PDF's)

- Size of data (less is better)

- Ease of use for incorporating into presentations

"Wohooo!"

I just can't get enough of your GeoPDF program. It is fantastic.

"The CDs you sent were fantastic"

- Clear, viewable, aerial photography and topographical maps.

"we have some useful maps now to use."

"I think it's a kick azz product... Probably the best product out there for my use..."

"We love the geopdf format.

"these DVDs will be very helpful"

It's been very popular among our users here in Korea."

"GeoPDF is the way of the future"

"The GeoPDF tool for the reader has proven invaluable"

"...the map depot was closed we were able to quickly rely on our GeoPDF DVD and crank out the copies of the map sheets we needed in less than an hour."

"...a huge success and has gone over very well"

"The CD with maps on it that you gave me is very, very impressive!!!! "

"We will be encouraging the VHPA [Vietnam Helicopter Pilots Association] members to share...memories with others whom served with them. I believe the maps are the very best vehicle for doing that."

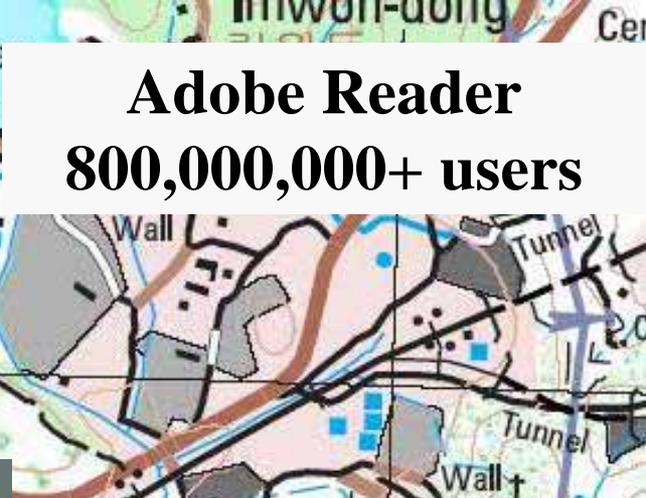
"It has truly transformed CET operations."



GIS/Mapping software

2,000,000 + users*

* Geographic Information Systems and Science
by Longley, Goodchild, Maguire, and Rhind



Adobe Reader

800,000,000+ users



**20
disks
for
Iraq***



*As order from the
DLA Map Catalog

**2
DVDs
for
Iraq**



CADRG

GeoPDF

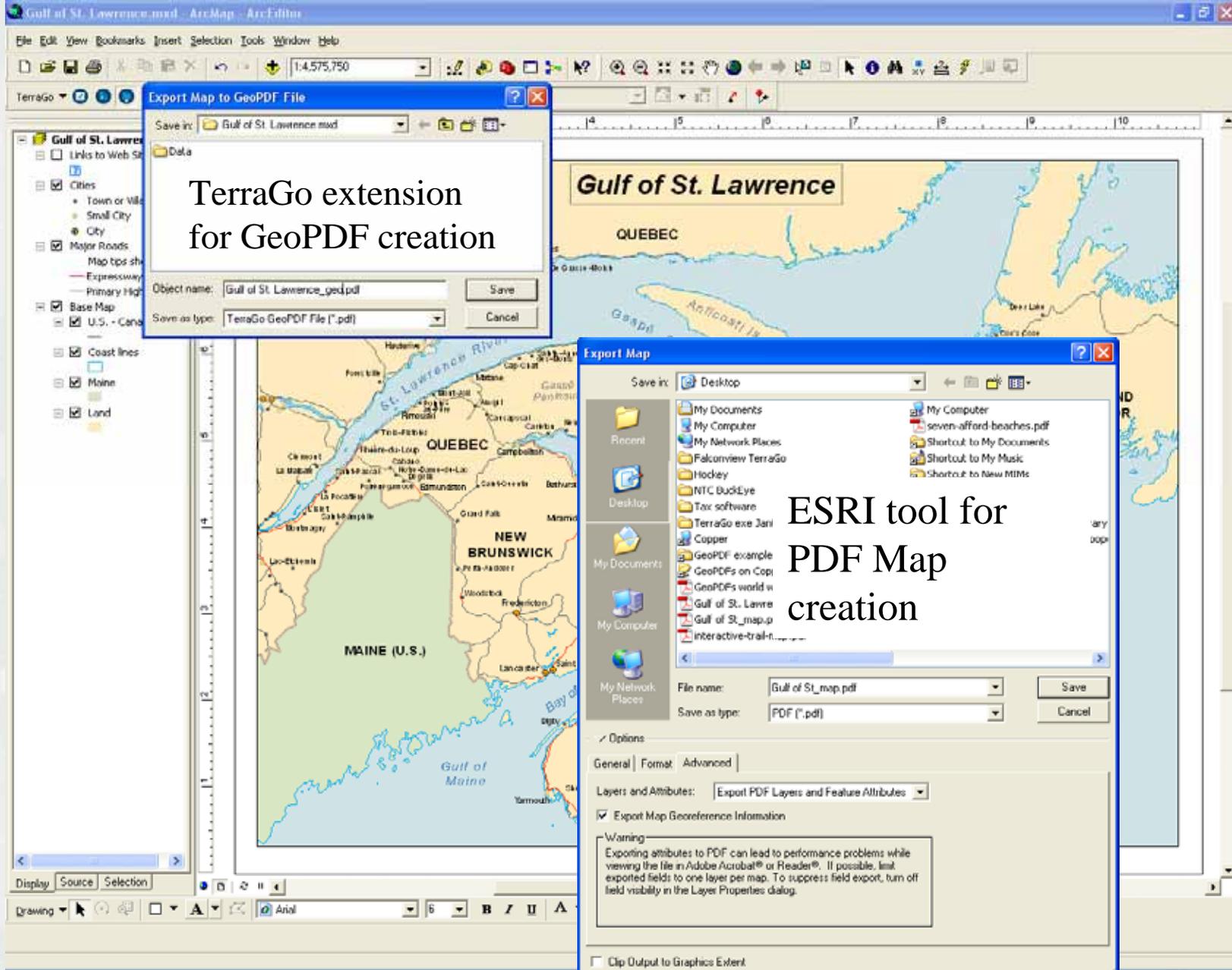


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Geospatial PDF: using ESRI tools



Export from ArcGIS



TerraGo extension
for GeoPDF creation

ESRI tool for
PDF Map
creation

- Model Tree
- Major Roads : 2
 - Major Roads : 1A
 - Major Roads : 2
 - Major Roads : 0
 - Major Roads : 16
 - Major Roads : 104
 - Major Roads : 4
 - Major Roads : 1A
 - Major Roads : 13
 - Major Roads : 1
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 - Major Roads : 1
 - Major Roads : 1
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 - Major Roads : 104
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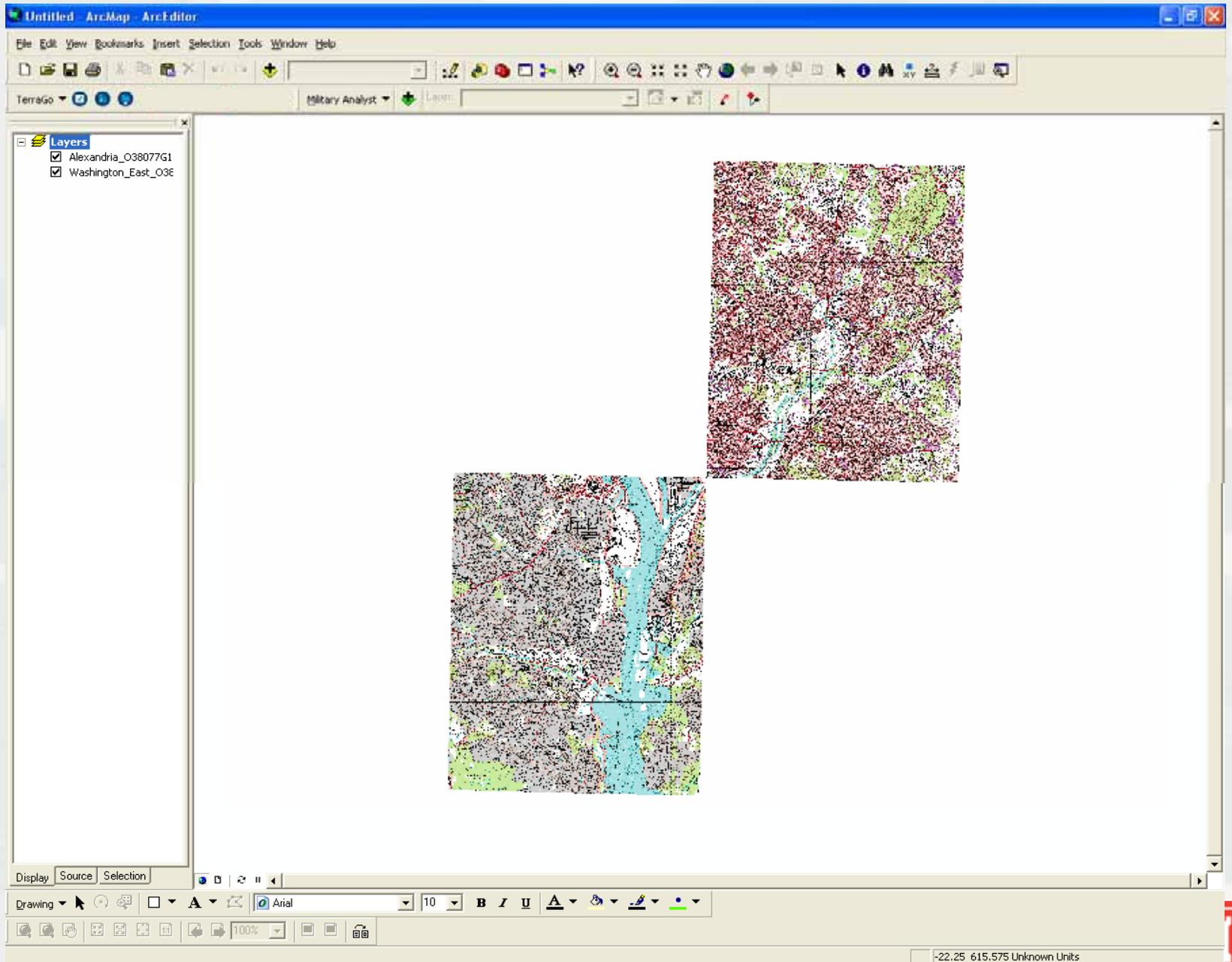
Options

<No 3D Model Selected>

Property	Value
Road Name	Highway 11
Type	Expressway
Number	11

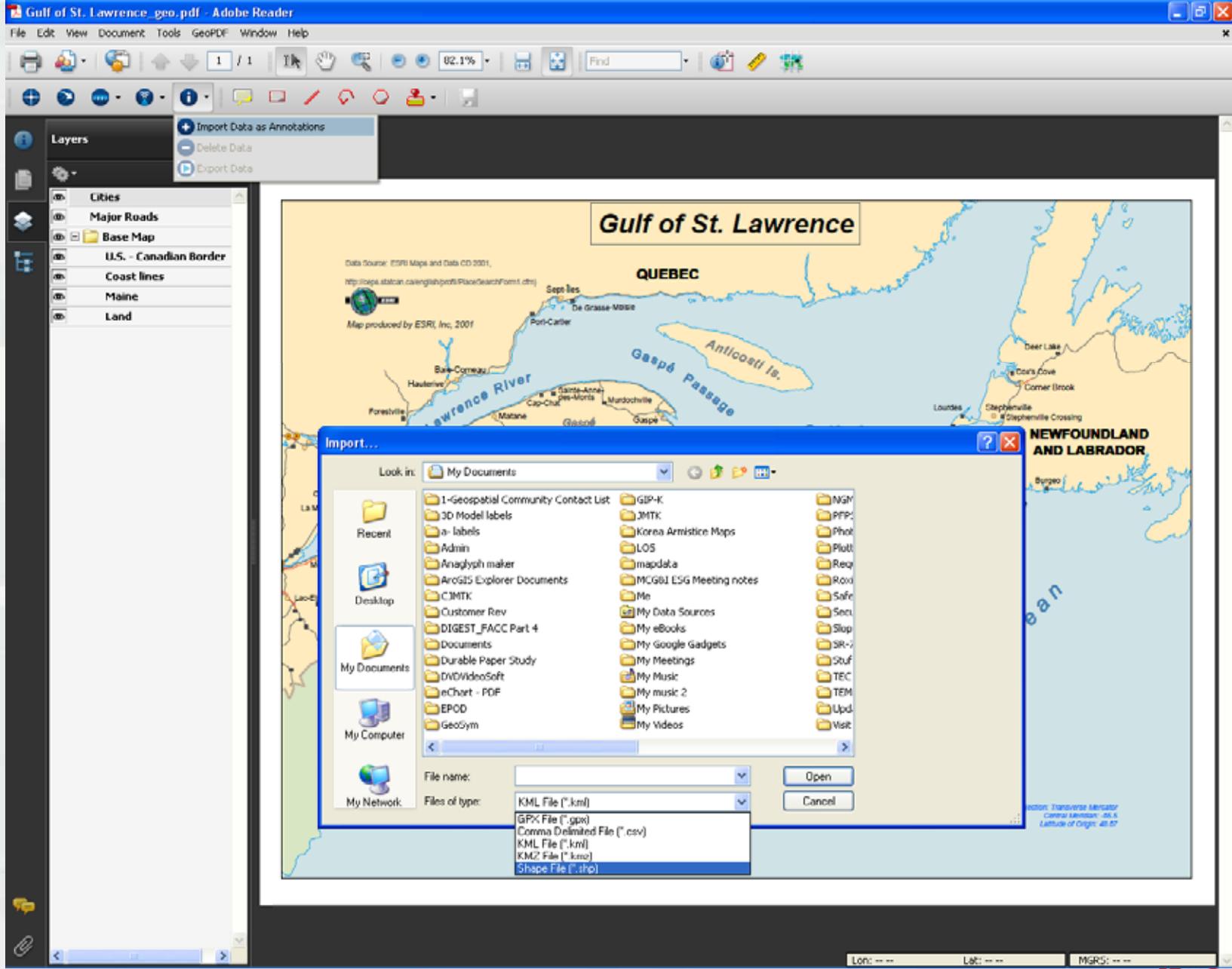


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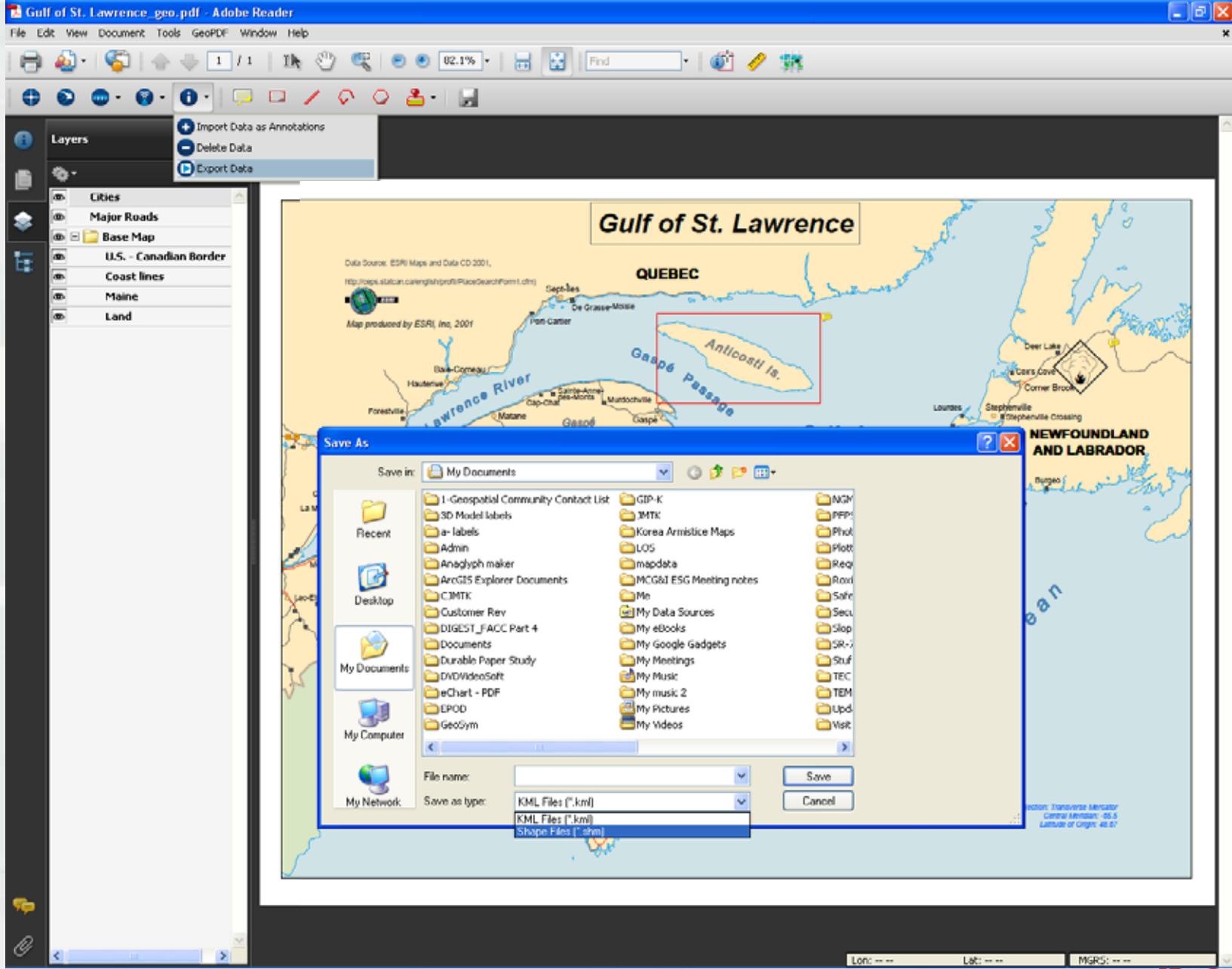


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Export to shapefile



How to obtain GeoPDFs

On DVD:

<http://www.agc.army.mil/cmb/request/cmbrequestForm.cfm>

via the Web:

Unclassified PKI web site (CAC card and reader needed):

<https://tsunami.tec.army.mil/Products/MapArchive>

SIPRNET

www.tec.army.smil.mil/Products/MapArchive

JWICS

www.tec.ic.gov/Products/MapArchive



Other contact info

NGA

www.nga.smil/products/echart

www.nga.ic.gov/products/echart

files via the NGA Resource Center's Maps Online or Voyager

TerraGo Technologies: www.terragotech.com

Adobe Systems: www.adobe.com

ESRI: www.esri.com





Thank you

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