

An Introduction to Standards-Based GIT and the U.S. National Grid

Geospatial Information Technologies (GIT), like Geographic Information Systems (GIS) and Global Positioning Systems (GPS), can facilitate critical decision-making before a disaster impacts an area. In the early, crucial stages of a disaster or emergency and throughout the disaster process, responders, emergency managers, public works and utility entities, and the general public use geospatial technologies and products (maps) because they provide important information, quickly and in ever more so easy-to-understand standardized formats.

Every day there are hundreds of natural disasters world-wide. Some are dramatic, whereas others are barely noticeable. A natural disaster is commonly defined as a natural event with catastrophic consequences for living things in the vicinity. Those events include earthquakes, floods, hurricanes, landslides, tsunamis, volcanoes, and wildfires. Human-caused disasters are events that are caused by man either intentionally or by accident, and that directly or indirectly threatens public health and well-being. These occurrences span the spectrum from terrorist attacks to accidental oil spills.

To assist in planning and preparing for, mitigating of, and responding to emergencies and natural and potential human-caused disasters, geospatial technologies help ensure a unified and informed enterprise, effective command and control and rapid coordination through accurate and precise exchange and communication of spatial information. Every activity related to incident response, from command and coordination, logistical support, to informing the public is related to location...the location of things, events, and people.

The information that follows, including the NETC campus map, illustrates one important National Spatial Data Infrastructure (NSDI) standard, the U.S. National Grid (USNG), adopted in order to reduce confusion among GIT manufacturers, GPS/GIS users and map producers. It reduces training for map users to a single, mature, flexible, easy-to-use system. USNG is required for integrated operations and a common operating picture. It ensures interoperability of geospatial information among different response organizations and their equipment. Information technologies (IT) used for the Incident Command System (ICS), Personnel Accountability Systems (PAS), emergency vehicle transponders and much more will grow in their reliance on location services and, thus, the national grid. Logistically, a national grid ensures that equipment purchased by the multitude of agencies and government at all levels will be interoperable, regardless of where they respond.

Geospatial Technology Resources and Information Online:

US Geological Survey (USGS)	http://www.usgs.gov/
Federal Geographic Data Committee (FGDC)	http://www.fgdc.gov/usng
Geospatial Information & Technology Association (GITA)	http://www.gita.org/
Delta State University	http://mississippi.deltastate.edu/
Minnesota Governor's Council on Geographic Information and U.S. National Grid Resources	http://www.mngeo.state.mn.us/committee/emprep/ http://www.mngeo.state.mn.us/committee/emprep/download/USNG/index.html
Florida Division of Emergency Management	http://www.floridadisaster.org/gis/USNG/

Sample Appendix for a Statewide Emergency Response Plan — US National Grid Information

The US National Grid (USNG) is the preferred coordinate system for use by Florida responders. It is functionally identical to Military Grid Reference System (MGRS). It allows for interoperable positional reporting amongst many users and agencies and is primarily for ground-based operations. MGRS and/or USNG is found in hand-held and some vehicle GPS units.

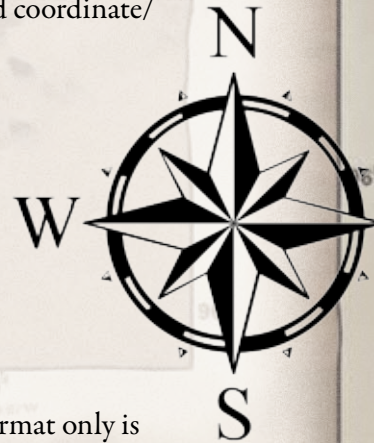
Web Tools:

Allows for determination of USNG coordinates from a computer or to display a field reported coordinate/location on a computer.

- <http://dhost.info/usngweb/> USNG Google Mash-Up
- <http://www.floridadisaster.org/gis/kml/viewer.htm> Florida Incident Mapper
- <http://tnm2beta.cr.usgs.gov/viewer/> National Map Viewer

GPS Setup:

- Set map datum to NAD83. If not found, use WGS 84.
- Set coordinate system to: US National Grid (USNG). If not found, use MGRS.
- Dual display with USNG as primary and Lat/Long as secondary, in DD-MM.mmm format only is recommended. See Lat/Long information below.



Typical USNG use:

Report locations of the incident, staging areas, fuel depots, command posts, etc. with the address if known and the USNG coordinate, which is scalable.

Examples:

- 900 Nicolson Road, Jacksonville, USNG: **17R MP 38 53** (1000 meter square area containing this address)
- 3699 North Prospect Drive, Sunrise Park, USNG: **17R NJ 749 437** (100 meter square area containing this address)
- 2514 Airport Blvd., Pensacola, USNG: **16R DU 8121 7163** (10 meter square area at this address)
- Parking Lot @ I-110 x I-10, Biloxi, MS, USNG: **16R CU 180 710** (Address not known, determined by Web Tool)

Note: 10 meter square accuracy equates to eight(8) USNG digits and is the same approximate accuracy of a typical hand-held GPS device. If more than eight(8) USNG digits are displayed, the last digit of the easting and northing component is truncated (not reported).

Latitude & Longitude:

Air & water assets may prefer Lat/Long. Realize that there are three(3) versions of Lat/Long and this has caused considerable confusion / operational friction in the past. Per the National Search & Rescue Committee (NSARC), only one version of Lat/Long is approved for use; the degrees, minutes, decimal minutes version which is abbreviated as: **DD-MM.mmm** EOCs and ESFs should have software at the ready to convert between coordinate systems. Such software is available on the Internet.

Source: Florida Statewide Emergency Response Plan (2010) - Appendix I