

## **Guidelines and Best Practices for Tsunami Evacuation Mapping Guidelines**

DRAFT Developed by the NTHMP Mitigation and Education (MES) Subcommittee June 2010

Revised August-September 2010

Reviewed and finalized by the MES [insert date here]

### **Purpose of Tsunami Evacuation Map Guidelines:**

The purpose of these guidelines are to promote a consistent visual look and feel in evacuation maps produced by NTHMP-funded entities. Currently, there is not a consistent approach to evacuation map development by agencies producing these products. This can lead to confusion in the public and incorrect assumptions about tsunami evacuation maps. Groups and agencies producing tsunami evacuation maps are strongly encouraged to adopt these guidelines.

### **Intended audience:**

These guidelines and best practices are intended for the purpose of public education and outreach in order to support the goals of reduction of loss of life during a tsunami event. Though these guidelines apply to partners who receive NTHMP funding, they are also recommended for use by other organizations looking for direction in producing tsunami evacuation maps.

### **Objective and scope of the guidelines:**

- To promote a consistent look and feel to tsunami evacuation maps in order to provide information upon which citizens may base their actions;
- Facilitate emergency management planning activities;
- Depict the area of effect from a tsunami;
- Create viable maps through a thorough assessment of local risks.

### **Proposed Mapping Guidelines**

Tsunami evacuation map recommendations from the Mapping and Modeling Subcommittee that were reviewed and finalized in January 2010.

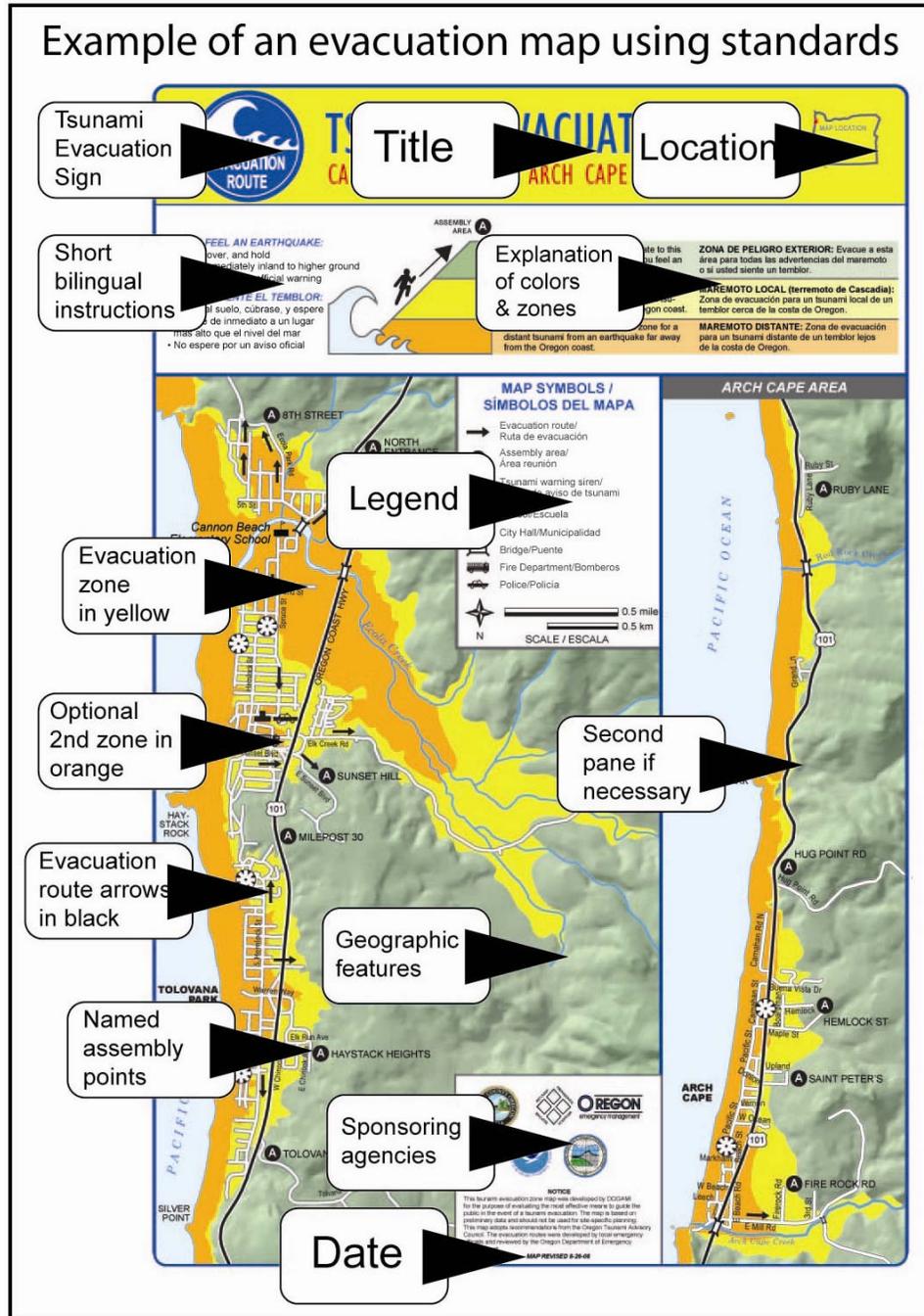
- 1. Tsunami evacuation maps** (Map products may include printed maps, digital map files, or interactive web-based maps.):
  - All evacuation maps should include a title, scale, geographic location (coordinates), intended use, and appropriate explanatory information.
  - All evacuation maps should be accompanied by technical documentation on how the map was made and intended use of map.

- Evacuation maps should delineate zones that should be evacuated in the event of a tsunami.
- When detailed tsunami inundation assessments (ie, inundation map) are available, the evacuation area should encompass all areas the inundation map indicates will be inundated. If this is not the case, as determined by collaboration between modelers and emergency managers, then a detailed explanation shall be provided.
- Evacuation maps should include streets, bridges, escape direction arrows, assembly areas and well known landmarks to help people identify the avenues of egress and safe locations.
- Evacuation zones should be legible for all users, including people with color vision disabilities.
- When possible evacuation maps should identify all appropriate modes of evacuation (e.g., via foot, vehicle, vertical, and marine evacuation).
- When possible, maps should identify features that may impede evacuation during or after an event such as terrain obstacles, areas of unstable land or other earthquake-related ground or structure failures. These areas should be identified by professional geologists with the purpose to inform the public of unstable areas.
- Evacuation zone boundaries should, wherever possible, conform to logical administrative boundaries (eg. Roads, property lines, etc.).

### **Basic Map Content**

- Evacuation zone will be indicated by a contrasting color from the surrounding landscape. Multiple evacuation zones can be used, depending on local hazard. (For instance, local and distant source tsunamis)
- Designated evacuation routes will be indicated by bolded streets and directional arrows leading away from the coast.
- Bilingual where possible, with English and a secondary language
- Brief instructions on what to do in event of a tsunami.
- If in an electronic form, GIS Data to create the map should be provided with metadata about source, projection, data use restrictions and considerations.

**Map Format**



## Symbols

- Recommend a modified adoption of the Homeland Security Mapping Standard symbols, found in ANSI INCITS 415-2006. They are available as a true type font at [www.fgdc.gov/HSWG](http://www.fgdc.gov/HSWG)

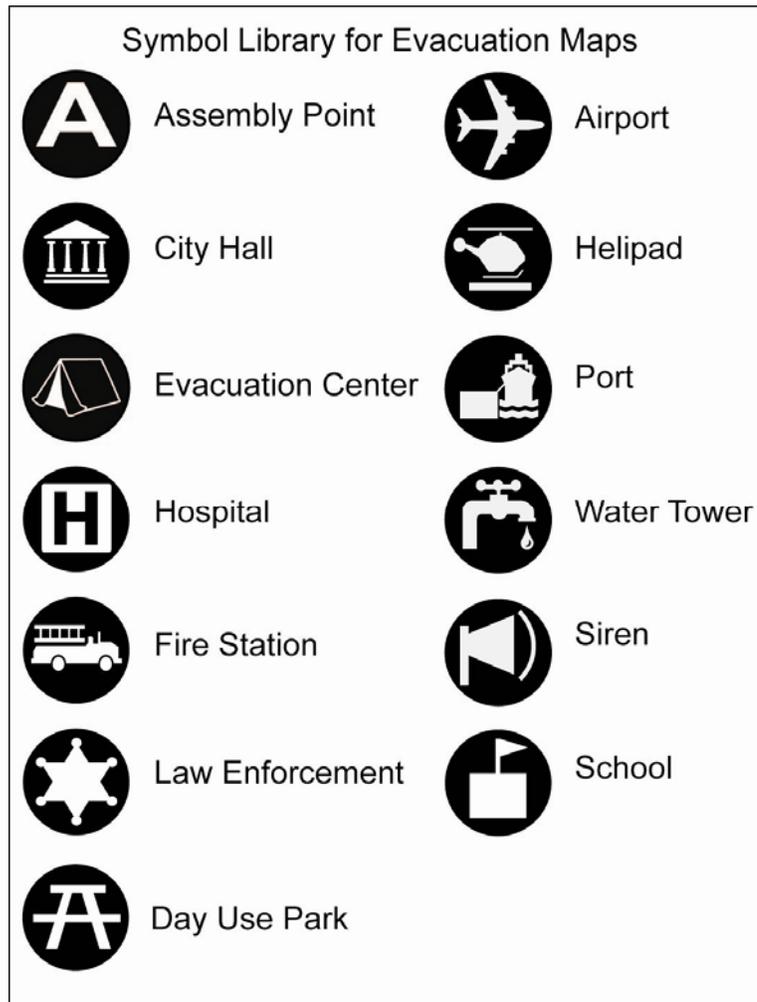


Figure 1. Standardized Mapping symbols

- Symbols should be black. If they are against a dark background, a line of white should separate the symbol from the background image.
- Symbols should be easily perceived in terms of size and scalable according the size of the final map product.
- Symbols should have precise meaning without a need for explanation on the map other than in the legend.

**Colors**

- Readable by the color blind
  - Avoid putting the color red next to the dark green color.
- Reproducible in black and white

Palette for tsunami evacuation mapping guidelines				
		RGB Values	CMYK Values	Hexidecimal
Yellow		255 242 0	0 0 100 0	#FFF200
Orange		251 169 25	0 38 100 0	#FBA920
Red		230 6 15	3 100 100 1	#E6060F
Blue		12 7 248	88 78 0 0	#0C07F8
Cyan		0 174 239	100 0 0 0	#00AEEF
Dark Green		74 140 3	75 23 100 8	#4A8C03
Light Green		161 187 132	40 13 60 0	#A1BB84

**Figure 2. Standardized Cooler for evacuation mapping**

Resources:

Homeland Security Working Group Emergency Symbology

<http://www.fgdc.gov/HSWG/index.html>

Field Guide to Humanitarian Mapping

<http://www.mapaction.org/images/stories/publicdocs/mapaction%20field%20guide%20to%20humanitarian%20mapping%20first%20edn%20low-res.pdf>

Emergency and Hazards Mapping Symbology

<http://www.desastres.org/pdf/kentuniversity.pdf>

Color Blind Image Corrections

<http://www.vischeck.com/daltonize/>

Cannon Beach Tsunami Evacuation Map

<http://www.oregongeology.com/pubs/tsubrochures/CannonEvac.pdf>

Crescent City Tsunami Evacuation Map

[http://www.crescentcity.org/Forms/Tsunami\\_Preparedness\\_Crescent%20City.pdf](http://www.crescentcity.org/Forms/Tsunami_Preparedness_Crescent%20City.pdf)

State of California Tsunami Inundation Maps

<http://tsunami.ca.gov>