

## Canadian HAZUS users group

CanHUG teleconference 2011-02-16, 10:30 – 11:30

### Introductions

This group will use the acronym CanHUG instead of CHUG, which has been used so far.

The forum is the second of monthly opportunities to share knowledge about using HAZUS-MH software to quantitatively assess the risk in Canada. HAZUS calculates the losses from model earthquakes, floods and hurricanes, is a freeware add-on to ESRI's Arc GIS program and is supplied by the USA Federal Emergency Management Agency (FEMA).

The forum is supported by NRCan's Quantitative Risk Assessment Project of the Public Safety Geoscience Program.

Background information on CanHUG and its topics of discussion can be found at:

<http://Georisk.ca> in the CanHUG workspace. You need to register to use the space (email, login name and generate your own password).

Jamie Caplan, who runs the FEMA HAZUS user group program in the US, operates the useHAZUS.com website which is an excellent resource for HAZUS knowledge and for connecting with knowledgeable HAZUS users. She will be making a CanHUG web page for this group on that useHAZUS website.

At this meeting we heard from William Chow and Carol Wagner, Geological Survey of Canada in Vancouver, BC and of the NRCan project team working to adopt implement and promote HAZUS and quantitative risk assessment in Canada. They described what they have done to create a Canadian HAZUS data structure equivalent and how they applied that to a case study in the District of North Vancouver, in British Columbia.

### People on line at this meeting

Peter Stodolak, Property and Casualty Insurance Compensation Corporation (PACICC), Toronto, Canada

Dilprit Shergill, Public Safety Canada, Yellowknife, Canada

Jamie Caplan, HAZUS user group coordinator, Massachusetts,

Paul Childs, Planetworks Vancouver,

Luc Chouinard, McGill Montreal,

William Chow, NRCan Vancouver,

Fiona Dercole, District of North Vancouver,

Kristopher Hayne, Emergency Management BC, Surrey

David Hamilton, ESRI Canada Vancouver

Kris Holms, BGC Vancouver,  
Murray Journeay, NRCan Vancouver,  
Gilles Larose, Environment Canada, Ottawa, Ontario  
Patricia Martel, Emergency Management Ontario, Toronto, ?  
Marie-José Nollet, Ecole Technologie Superieur Montreal ?  
Kate Ploeger, University of Ottawa, Ottawa, Ontario  
Bert Struik, NRCan Vancouver,  
Malaika Ulmi, Geological Survey of Canada, Vancouver, BC  
Carol Wagner, NRCan Vancouver,  
Margaret Walton, PBSJ Contractors and HAZUS user support network, Georgia,  
Lily Yumagalova, School of Community and Regional Planning, UBC, BC

## Vignettes

The following presentations and the discussion about them were recorded and are available for download. See:

<http://Georisk.info> in the CanHUG workspace for the February 16, 2011 meeting.

### **Canadian Surrogate Data Structure for HAZUS: by William Chow**

HAZUS is hard-wired for American geographical political information.

William spent the last 4 months building a Canadian data structure that will accommodate Canadian geographical information in a way that HAZUS will accept.

All data types accommodated in USA applications of HAZUS will be able to be used in this Canadian version.

HAZUS uses two databases:

1. SyBoundary for Geographic information
2. State data (infrastructure and census)

The Canadian boundaries are based on provinces = territories and the national census boundaries.

Main geographic boundaries equivalents

state = province or territory

county = census division

tract = census subdivision or census tract where subdivision is unavailable

census block = census dissemination area.

For the SY boundary database fields had to be matched. For example, the USA census block ID is 15 digits and the Can equivalent field is 8 digits, so that Canadian field had to be expanded.

Some fields did not have a direct match.

Each province has its own collection.

The State / Province database was populated with the Canadian census data.  
Philosophy of USA version maintained.

### **Data acquisition for use in HAZUS for the District of North Vancouver, BC: by Carol Wagner**

Overview of data input for HAZUS:

- General Building Stock
- demographic information
- Essential services (care facilities, emerg centres, police, fire, schools)
- High potential loss (dams, hazardous material, military facilities, nuclear facilities)
- transportation systems (highway segments/tunnels/bridges, railway, port facilities, etc)
- utility systems (oil, natural gas, potable water, waste water pipelines & facilities, electrical facilities)
- Other information required to process hazards includes earthquake parameters, soil map, and liquefaction maps

Sources of information for this study:

#### 1. Municipal GIS data and Asset Management information

building footprints: calculated square footage, determined occupancy codes based on use of building or name of building; converted footprints to point data; calculated replacement costs; this became source for aggregate building data in bndry.gdb file

needed to massage the information to aggregate

extracted fire stations and schools from the building data to put them into Essential services, but not all information available for essential services database

Municipality provided information on Dams locations and replacement costs

Municipality provided information on roads, bridges, pipelines locations and replacement costs

Municipality provided information for water pipelines, sewer pipelines, and storm water pipelines; had to combine sewer and storm to make wastewater database

#### 2. building detail information obtained from work done by UBC associates; building construction material; number of stories, seismic coding/upgrades

This information added to the Building database before going through aggregate process

#### 3. Demographic information calculated using Canadian Census data for each tract and block and put into Bndry.gdb file by Will Chow

#### 4. Earthquake seismic parameters generated by contractor for this study

Conclusions:

this was a test to use municipal GIS data to populate a “state” database  
used SyBoundary files and demographic files generated from Canadian Census data  
data from Municipality is good but needed much massaging to make it usable in a state database format  
(units converted, polygon to point conversion, etc)  
ran earthquake scenarios and are currently checking to see if they make sense  
still searching for more data sources

**Next meeting March 16 10:30, 1 877-413-4790 ; code is 3381344#**