

Canadian Technical Landslide Guidelines and Best Practices for Landslide Professionals

**AEG Professional Forum on Landslides
Seattle, WA; February 2015**

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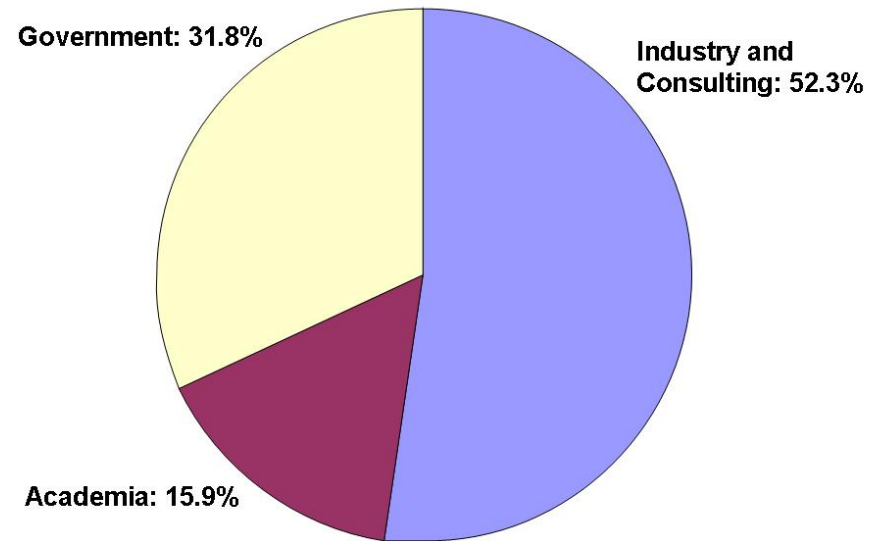
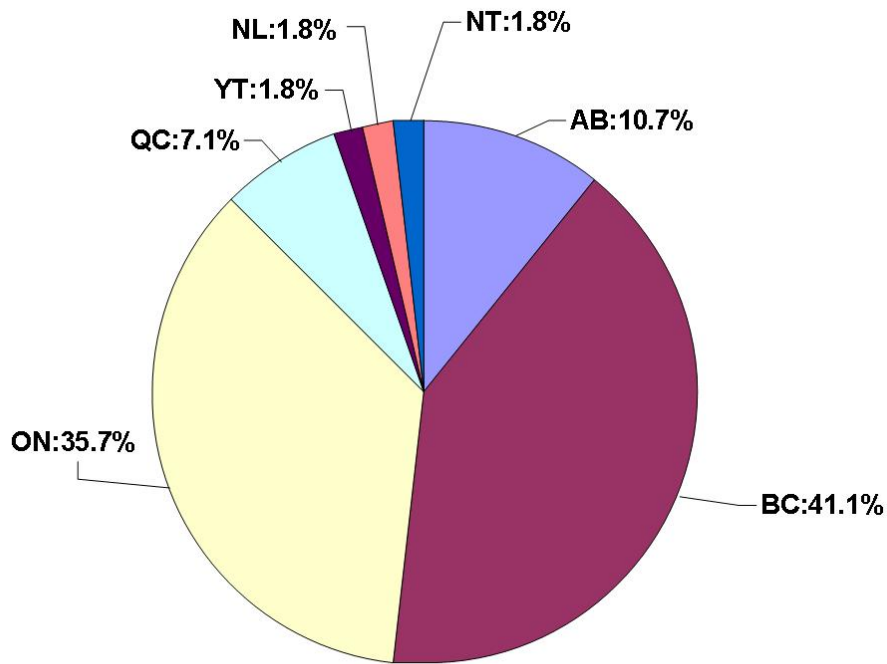


Background

- initiative began in 2010 with consultation with Canadian landslide professionals and stakeholders in 40 information-gathering meetings across Canada
- some provincial guidelines exist (eg British Columbia); but no national guidelines exist as in other countries (eg Australia)
- majority agreed it was a good idea and GSC should lead the initiative in partnership with the Canadian Geotechnical Society (CGS)

Consultation Process

% individuals by location and organization



Purpose of Guidelines

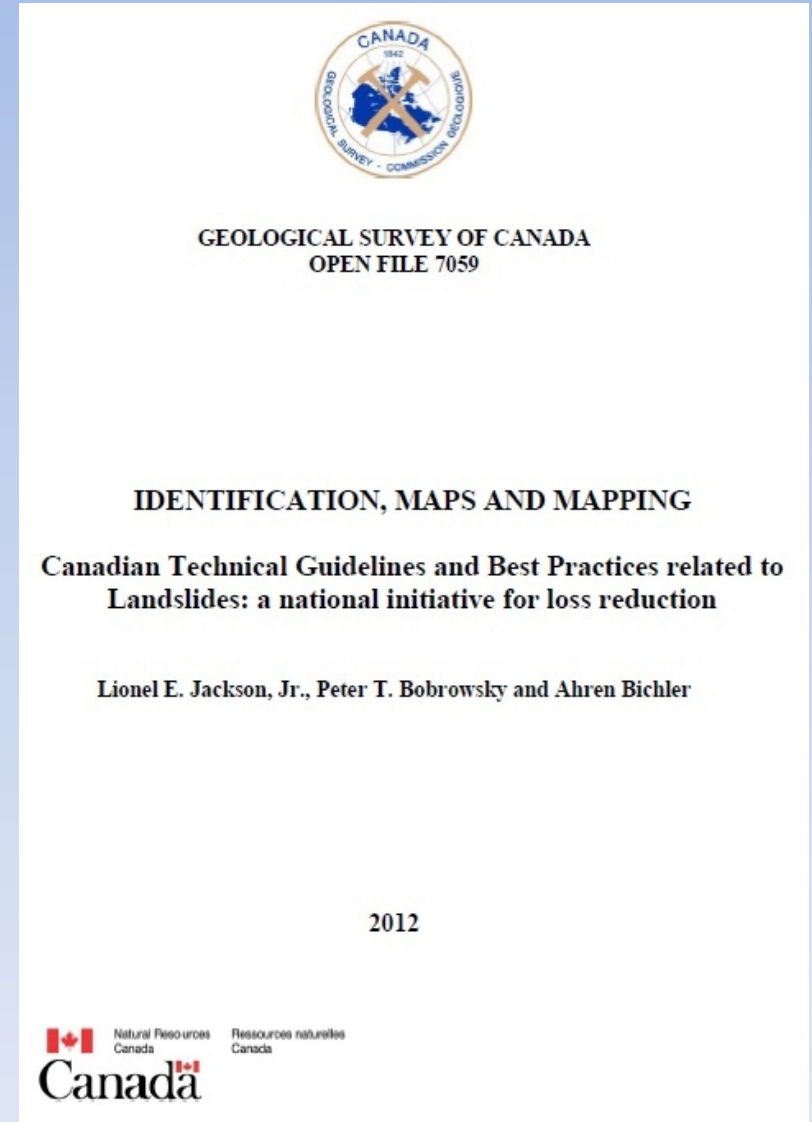
- for Canadian landslide professionals (PEngs and PGeos)
- also a resource for all levels of government
- ‘guidelines’ not ‘standards’ (learnt from AEG)
- describe ‘what should be done’, not ‘how to do it’
- update, but not unnecessarily duplicate, existing information
- focus on Canadian issues and needs
- include all types of natural and engineered slopes in soil and/or rock
- provide a common landslide terminology

Personnel

- Project Lead, NRCan GSC: Rejean Couture (2010-2012); Peter Bobrowsky (2013-present)
- Scientific Co-ordinators and Editors: Doug VanDine and Jean Lafleur
- Advisory Panel: Jacques Locat (Chair), Dave Cruden, Corey Froese/Mike Porter (CGS rep), Matthias Jakob, Nordie Morgenstern, Mario Ruel, + above 3 people
- the above, in consultation, selected....
 - 12 Chapter Leads and 27 Authors for 11 Chapters
 - >60 contributors from all across Canada

Typical Evolution of a Chapter




- outline by Chapter Leads; reviewed and approved
- contributions by Contributors
- compiled and written by Chapter Leads and Authors
- reviewed by Scientific Editor, two External Reviewers, one Internal (GSC) Reviewer and Advisory Panel
- final draft published as GSC Open File



Current Status

Chapter	Author(s)*	Year	GSC Open File
Introduction	R Couture	2011a	6765
Terminology	R Couture	2011b	6824
Terminology (revised)	P Bobrowsky and R Couture	2014	7623
Classification, Description, Causes and Indirect Effects	D Cruden and D VanDine	2013	7359
Socio-Economic Significance	R Guthrie	2013	7311
Review of Existing Guidelines	B Wang, M Ruel, R Couture, P Bobrowsky and A Blais-Stevens	2012	7058
Professional Practice and Insurance Issues	D VanDine	2011	6981
Risk Management	D VanDine	2012	6996
Identification and Mapping	L Jackson, Jr., P Bobrowsky and A Bichler	2012	7059
Investigation, Analysis, Monitoring and Treatment	P Bobrowsky, S Bean, M-A Brideau, M Lato, S McDougall, S Powell, and D VanDine		pending
Risk Evaluation and Communication	M Porter and N Morgenstern	2013	7312
Examples of Common Landslide Types	O Hungr and J Locat		in press

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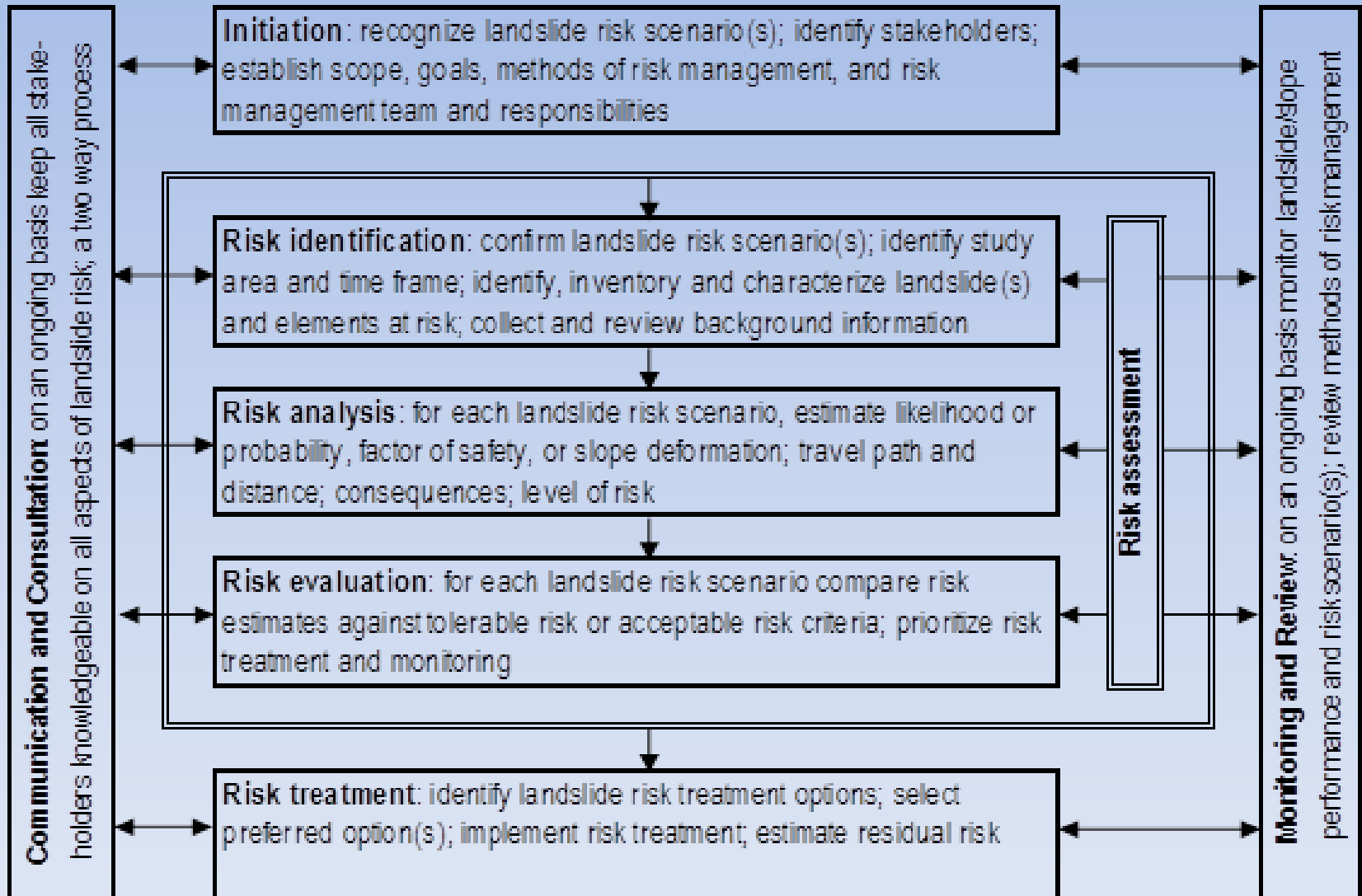
Highlights

- Terminology (revised): provides a glossary of common landslide-related terms used in Canada and elsewhere, and provides a reference citation for each term.
- Classification, Description, Causes and Indirect Effects: updates Cruden and Varnes (1996) and also discusses landslide size, intensity, travel angles, causes and indirect effects.
- Socio-Economic Significance: puts Canadian landslides in context with other natural hazards, and landslides world-wide; includes a summary of losses associated with 56 notable Canadian landslides.

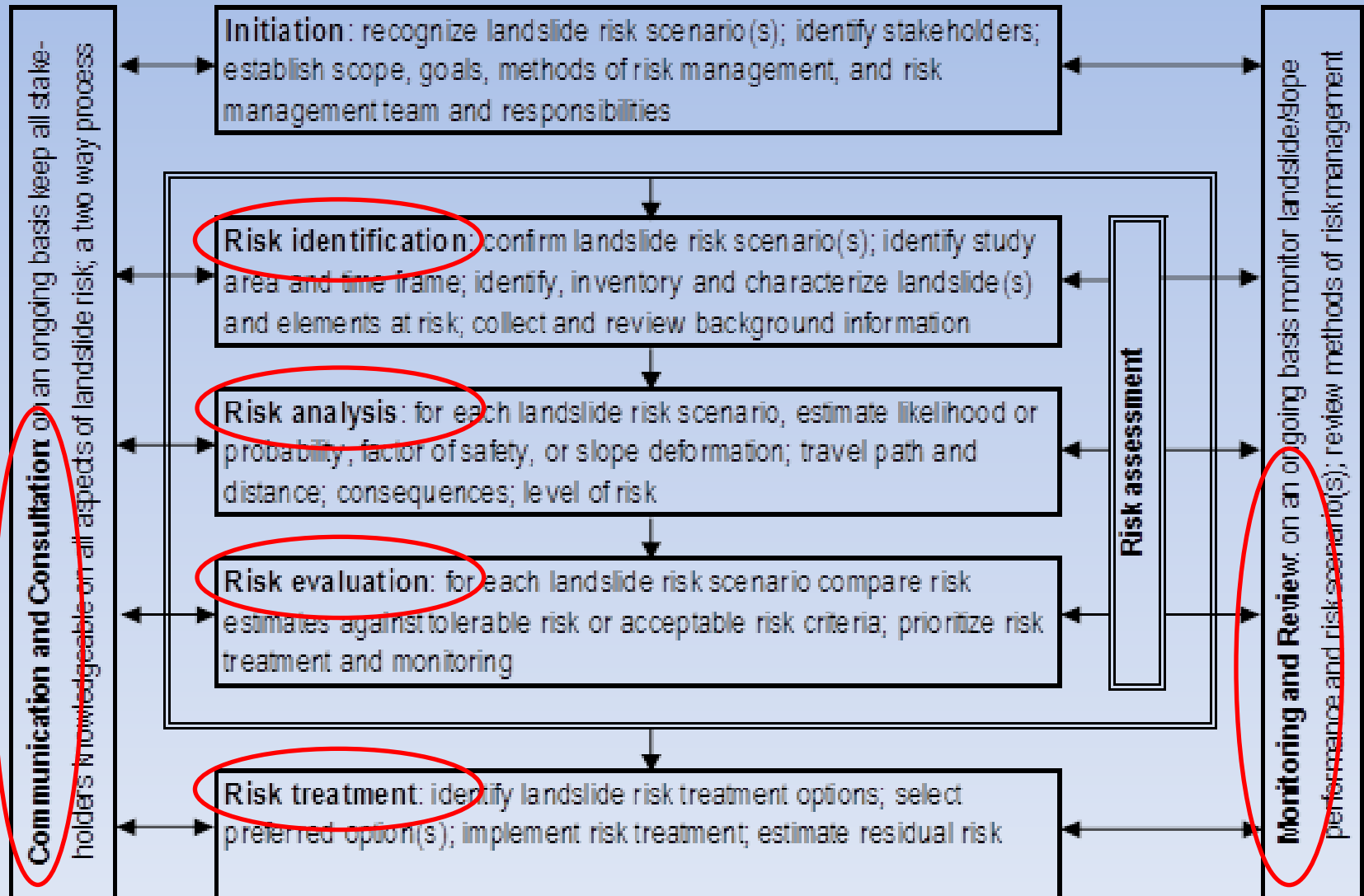
Highlights

- *Review of Existing Guidelines*: reviews 35 national and international guidelines (9 US), standards, and best practices-type publications related to risk management, zoning, geotechnical assessment, land use planning, treatment, and codes of responsibilities.
- *Professional Practice and Insurance Issues*: summarizes current requirements for landslide studies and professionals; current status of insurance for property owners.
- *Risk Management*: reviews the steps of an effective landslide risk management process

Risk Management Process (from ISO 2009)



Risk Management Process (from ISO 2009)



Highlights

- *Identification and Mapping*: addresses identification, mapping, map elements, components and types of landslide maps; field mapping and description of landslides.
- *Investigation, Analysis, Monitoring and Treatment* (*pending*): will briefly review commonly used methods and introduce new methods and techniques.
- *Risk Evaluation and Communication*: examines aspects of landslide risk: individual/societal; voluntary/involuntary; tolerable/ acceptable; qualitative/quantitative; and partial risk, and includes examples of current landslide tolerable risk criteria across Canada.

Highlights

- *Examples of Common Landslide Types* (*in press*): provides examples of common Canadian landslide types and their typical characteristics.



Photo by Oldrich Hungr






Photo by Mathias Jakob

From Here?

- ‘pending’ chapter to be completed; ‘in press’ chapter to be published
- all available from <http://geopub.nrcan.gc.ca/> type ‘Open File XXXX’ (see next slide)
- still open for review and comments
- all to be revised, updated and compiled into a GSC Bulletin-series publication
- translated into French

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In case you've forgotten why we are doing this...
St. Jude Landslide 2010



Photo by Jacques Locat