Geological Association of Canada
Mineral Deposits Division

Pb: Sullivan

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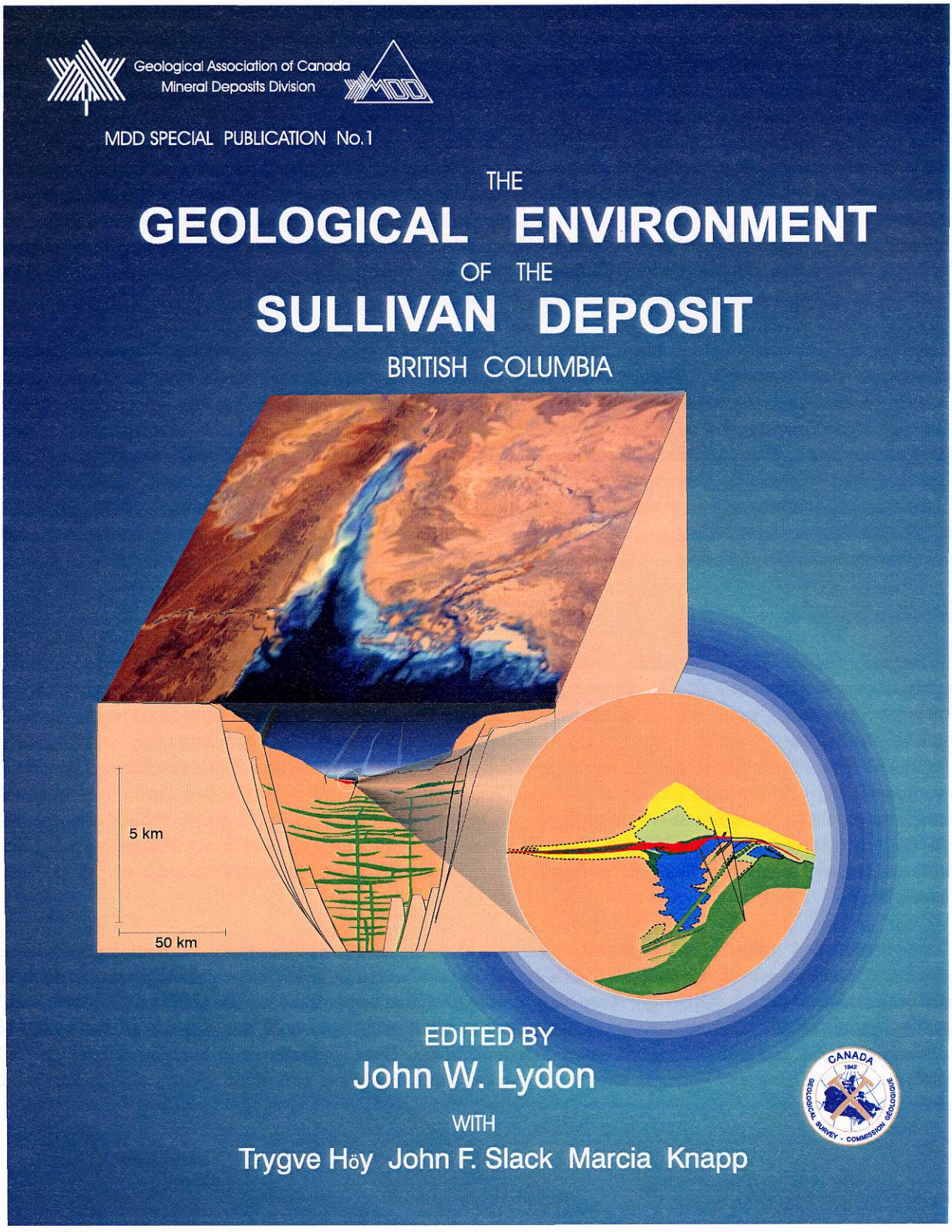
The Mineral Deposits Division of the Geological Association of Canada and the Geological Survey of Canada are please to announce the impending May 2000 release of the highly anticipated MDD Special Volume #1 on the world class Sullivan Zn-Pb Mine, British Columbia, Canada. The publication will be released at the GEOCANADA 2000- The Millennium Geoscience Conference being held in Calgary from May 29 to June 2, 2000



The final cost of the volume for sale to GAC members and the general geoscience community will not be set until GEOCANADA 2000. There are no plans for a pre-publication sale price. All sales will be made through the GAC.

"The Geological Environment of the Sullivan Deposit, British Columbia"

Geological Association of Canada, Mineral Deposits Division, MDD Special Volume No.1.

"The Geological Environment of the Sullivan Deposit, British Columbia" is an integrated collection of papers that report results of the Sullivan Project. The Sullivan Project was a collaborative effort between the Geological Survey of Canada, Cominco Ltd. and the British Columbia Geological Survey to document for the public record the geological characteristics of the Sullivan deposit before the mine closed and geological records and samples became dispersed. The Project was also a platform for carrying out research to further understanding of the geological environment of this renowned mineral deposit, and involved the participation of over twenty scientists from the sponsoring organizations, the USGS and the university community.

The volume contains 40 scientific papers and an accompanying CD, which contains all data gathered or compiled during the project in a digital form, which greatly enhances the value of the volume as a reference or research tool. The volume is systematically laid out, working its way from studies at the regional scale to studies at the deposit and smaller scale. Although admitting to not be the final word on the topic, this volume is certainly the latest word on our level of knowledge and understanding of the Purcell Supergroup and the Zn-Pb deposits that it contains.

Papers at the regional scale detail understanding of the stratigraphy, sedimentology, tectonic history, palinspastic reconstruction, lithogeochemistry, igneous petrology, radiometric dating, metamorphic history, various regional scale isotopic (Pb, S, B, Sr), REE, fluid inclusion studies, and a geophysical survey. Papers concerned with the intermediate "sub-basin" scale describe the lithologies, structure, lithogeochemistry, biogeochemical responses, hydrothermal alteration patterns and isotopic (O, H, S,) characteristics of what is essentially a mud volcano complex within an axial graben. Studies at the deposit scale concentrate on compilations of mine data, new lithogeochemical, isotopic (S, O, C, B, Si) and fluid inclusion data. Although each paper contains interpretation, throughout the volume the emphasis is on the presentation of the data, which makes it a particularly valuable reference work.

Synopsis of results

Collectively the studies demonstrate that the Purcell Supergroup (and its Belt equivalent in the U.S.A.) represents the infilling of a Middle Proterozoic intracontinental rift. The rift and its extensional faults cut across the structural grain of the Archean and Lower Proterozoic basement at a high angle, but rift transfer faults, as are most major post-Purcell vertical displacements, are controlled by basement structures. The clastic fill of the rift was supplied by large river systems draining a continental landmass into a marine environment of a tropical climate. Although open to the ocean in one direction during the rift-fill stage, the water column was stratified with anoxic lower layers. Voluminous tholeiitic magmatic activity associated with the rifting resulted in a sediment-sill complex but few volcanic rocks. The northern part of the modern Gulf of California would be a reasonably close modern analogue of the Belt-Purcell basin.

The hydrothermal system, which formed Sullivan deposit, like most contemporaneous hydrothermal activity of the time, was close to the rift axis and their seafloor vent fields were spatially associated with mud volcano activity. Although there was much seafloor expression of the Sullivan hydrothermal activity, much of the current geological and geochemical architecture of the deposit is the result of contemporaneous subsurface hydrothermal reconstitution, later hydrothermal activity related to sill emplacement and perhaps younger magmatic events, metamorphism, and most spectacularly, Laramide tectonism.

John Lydon
Editor