Mountain Pine Beetle Infestation Area (Parts of NTS 082, 092, 093), Central British Columbia: Regional Geochemical Data Repository Project[1]

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KEYWORDS: mountain pine beetle, mineral exploration, geochemistry, multi-element, multimedia, GIS, database

INTRODUCTION

A large area in central British Columbia has been infested by the mountain pine beetle (MPB), parts of this area have been the focus of several federal and provincial geoscience initiatives over the last 25 years (Fig 1; Struik *et al*., 2002). Results of this work have produced a large collection of publicly available multimedia regional geochemical information. Previous projects include regional-scale stream sediment and water surveys (Lett, 2005), lake sediment and water surveys (Cook *et al*., 1997, 1998, 1999; Jackaman, 2006; Jackaman, in press), till programs (Levson and Giles, 1997; Levson *et al*., 2001; Plouffe *et al*., 2001; Levson, 2002; Lett *et al*., 2006; Paulen and Lett, 2006), biogeochemistry studies (Dunn, 1997; Cook and Dunn, 2006) plus numerous associated research activities. To date, over 22 000 regional sites have been sampled in parts of the 150 000 km^2 MPB infestation area (Fig 2). Survey results include in excess of 750 000 analytical determinations for a wide range of metals and pathfinder elements.

The MPB Infestation Area Regional Geochemical Data Repository Project will produce a GIS database of existing regional geochemical data and associated geospatial information. The resulting digital framework will improve access to the information for the mineral exploration industry, assist in the planning of detailed surveys and targeted studies, identify gaps in geochemical data that can be profiled for future attention, and provide long-term data management advantages.

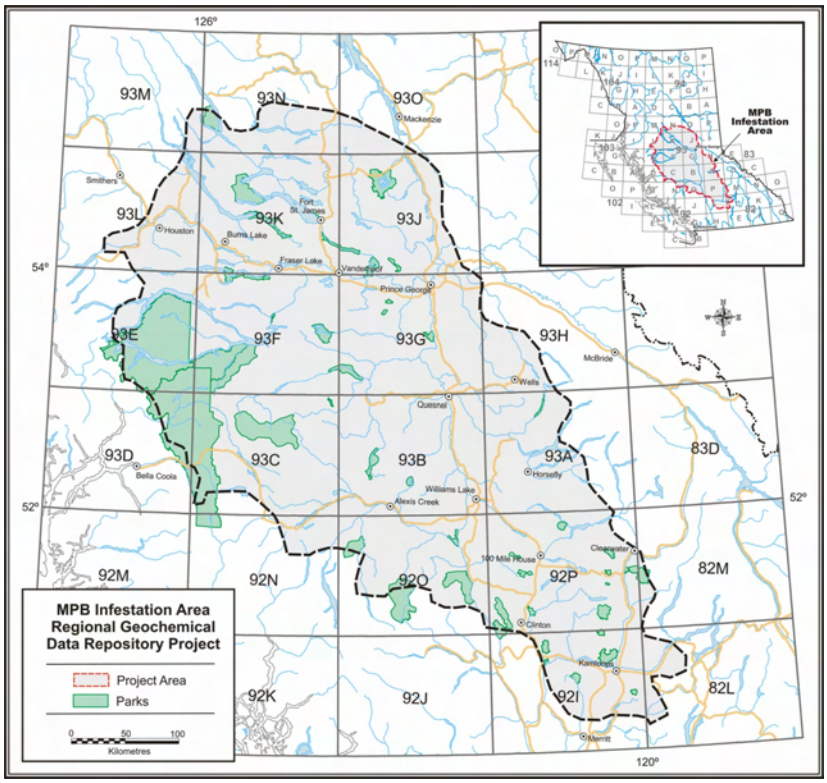

Figure 1. Location of study area, central BC.

PROJECT DESCRIPTION AND METHODOLOGY

The primary goal of this project is to consolidate this diverse data landscape into a functional data repository. The resulting framework will include valuable regional geochemical data and associated geospatial information that can be easily accessed and incorporated into a wide range of exploration and research activities. The repository will provide immediate benefits of data access, delivery and functionality.

Within the study area, in excess of 22 000 multimedia regional geochemical sample sites have been identified. Although this data is publicly available there is no central repository that provides comprehensive access to the information and associated geospatial datasets. To accomplish this task various actions are being taken. These include repository framework development and implementation; data acquisition and documentation; data compilation, profiling and quality assessment; and data manipulation and presentation.

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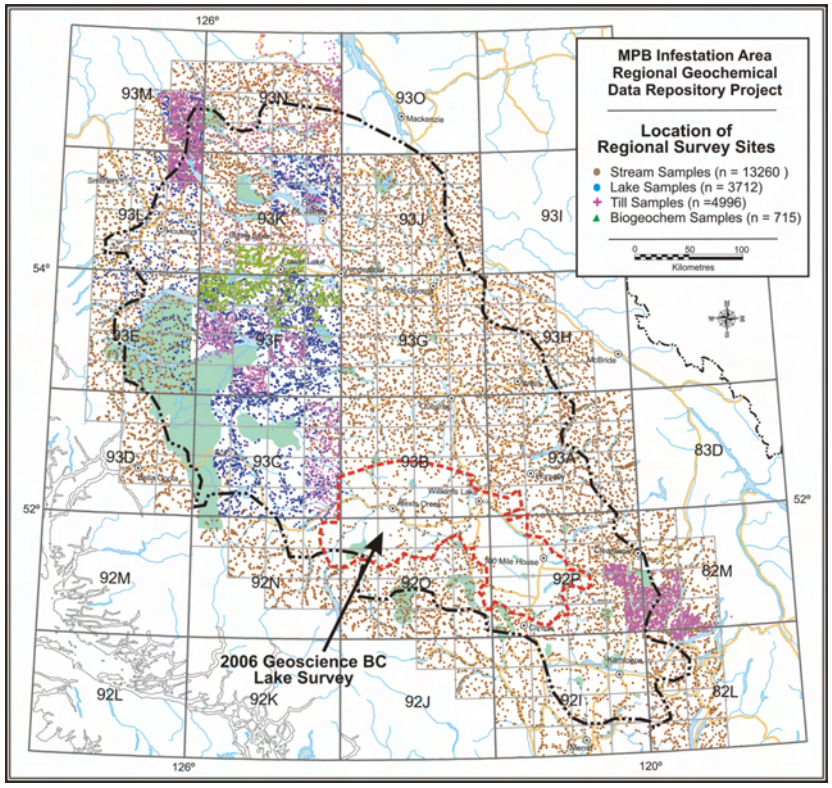

Figure 2. Location of various regional geochemical sample sites in the study area, central BC.

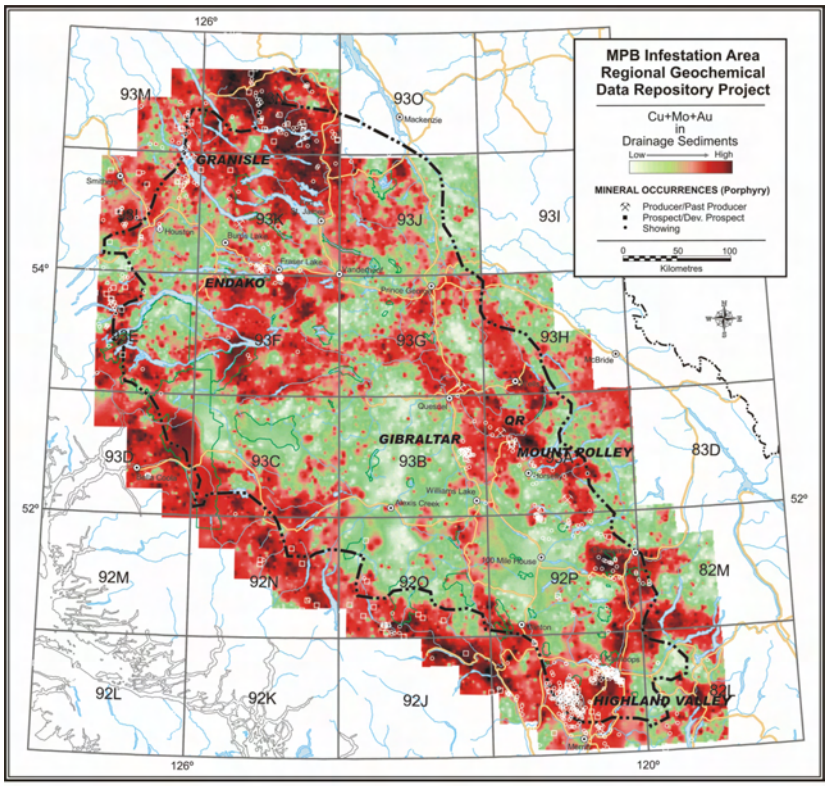

Figure 3. Distribution of Cu+Mo+Au in drainage sediment samples in the study area, overlain by known porphyry mineral occurrences (MINFILE, 2006), central BC.

The initial stage of the project is to establish a digital framework that will provide easy access to the repository and improved functionality of the multifaceted geochemical information. This structure must meet the needs of a client base with a wide range of computer expertise and also be compatible with common GIS applications. In addition, future repository updates and amendments must be easily accomplished.

Secondly, potential data source agencies and data custodians have been contacted to establish access to the most recent versions of their datasets. This will provide an opportunity to acquire and generate a complete and accurate inventory and understanding of the information and its attributes including data history, features and limiting factors.

Once the collected information has been assembled into the digital framework, quality assurance checks will be conducted to ensure data is accurate and complete. At this point, attribute relationships can be defined between datasets and initial data manipulations can proceed. The merging of the geochemical data with digital topographic and other geospatial base maps within a GIS environment will enable the production of a wide range of regional thematic maps of the study area. For example, Figure 3 represents the distribution of Cu+Mo+Au in 16 000 drainage sediment samples. Overlying the contoured geochemical map image are known porphyry occurrences that were extracted from the provincial mineral inventory (MINFILE, 2006) database.

DATA DELIVERY

To demonstrate the utility of the collection, a number of thematic maps will be produced in a style similar to a geochemical atlas. The initial series of maps plus the first version of raw geochemical data, statistical summaries and associated geospatial data coverage will be presented on a CD and distributed at the Cordilleran Roundup in Vancouver, BC, in 2007. The compilation will also be made available on the ministry's MapPlace website (BC Geological Survey, 2006).

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