

Documentation and Assessment of Exploration Activities Generated by Geoscience BC Data Publications

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Introduction

In 2007, Geoscience BC launched the QUEST (QUesnellia Exploration STrategy) Project in central British Columbia (Figure 1). It was aimed at stimulating exploration interest and investment in an underexplored region between Williams Lake and the District Municipality of Mackenzie, and to help diversify local forestry-based economies impacted by the mountain pine beetle infestation. Presently in its eighth year of operation as an industry-led, publicly funded organization, Geoscience BC is trying to track how successful it has been in positively impacting its target zones in early projects. The QUEST Project with its years of data is felt to be mature enough that it can now serve as the focus of an effective study of Geoscience BC's impacts in that region and by extension its potential effectiveness elsewhere in BC.

The purpose of this preliminary summary report is to lay out a framework for reviewing and/or assessing the impact of any public exploration initiative by synthesizing various information streams as they become available. Identifying which metrics to use and what timeframes to study are difficult to pin down, but in order to ensure that the methodology will be repeatable in the future, this study will use public sources of information.

At a grassroots level, the business of exploration, discovery and development is subject to reporting delays, confidentiality delays, commodity price fluctuations and other complications. The mine cycle of prospecting and exploration, discovery and advanced exploration, development and production, and finally reclamation, can easily take decades. As an initial study, this project will look past singular short-term gauges of success, such as mineral title acquisition, and look deeper into the temporal development of exploration opportunities, the impact of follow-up compilation studies funded by Geoscience BC and the effect the

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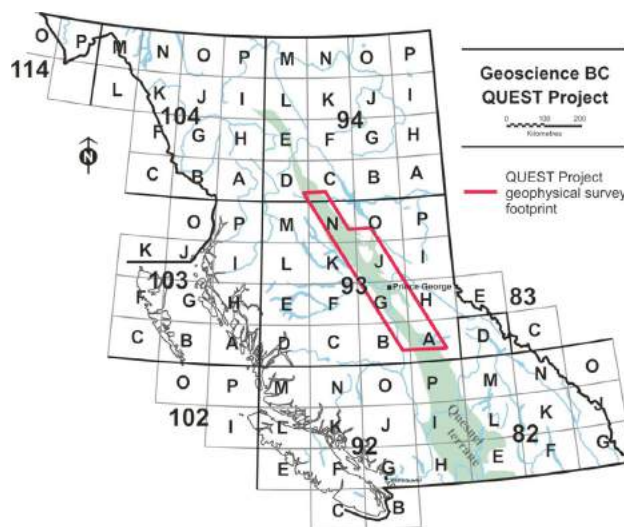


Figure 1. Location of Geoscience BC's QUEST (QUesnellia Exploration STrategy) Project geophysical survey footprint, central British Columbia. The Quesnel terrane, which was the focus of the project, is shaded in greenish-blue.

organization has had in attracting investment capital for private companies.

Geoscience BC QUEST Project

In May of 2007, Geoscience BC declared its intention to fund the QUEST Project, Geoscience BC's first major initiative since it was founded in 2005. Partnered with the Northern Development Initiative Trust, the QUEST Project was described initially as "... a \$5 million program of new geoscience data collection and compilation designed to stimulate exploration interest and investment in BC's interior, specifically in the highly prospective Quesnel Terrane, where the bedrock is obscured by glacial cover." (Anglin, 2008). The project activities originally consisted of geophysical surveys using airborne electromagnetic (EM) and airborne gravity techniques (Geotech Limited, 2008; Sander Geophysics Limited, 2008), geochemical sampling (Jackaman, 2008b) and reanalysis of archived samples (Jackaman, 2008a). Releasing the raw data throughout the following year (2008), Geoscience BC went a step further and funded a number of follow-up value-added projects, which were released in 2009 and 2010 as case studies that could serve as tools for the exploration community. These

included a case study of the Mount Milligan deposit using a z-axis tipper electromagnetic (ZTEM) and aeromagnetic survey (Geotech Limited, 2009), modelling of the various geophysical datasets (Phillips et al., 2009), a compilation and assessment of all available geochemical data (Barnett and Williams, 2009; Fraser and Hodgkinson, 2009), and review and revisions of BC Geological Survey (BCGS) Property File and MINFILE (Barlow et al., 2010; Owsiaci and Payie, 2010). As a result, companies have enjoyed a multi-year stream of announcements, field programs, data releases and added-value projects to help facilitate their efforts to raise capital, develop properties and create lasting connections with local communities.

Methodology

This preliminary paper is being drafted to ensure that all appropriate guidelines for documenting and reporting are considered, deemed beneficial and synthesized into a succinct, repeatable method. To create a quantifiable database summarizing the extent of development in exploration targets within the study area, the strengths and limitations of different reporting variables, such as land staking, assessment reports, press releases and company reports, will be examined. This is important in evaluating the actual or eventual impact of the QUEST Project since the progress of exploration targets can quickly become murky as companies change ownership, engage in joint ventures, adjust land inventory, shift focus to other properties or change exploration ideologies. As an initial study parameter, the research area will be bounded by the QUEST Project geophysical survey footprint (Figure 1) in order to test the value of a variety of parameters and ideas. For the final paper, the study area will be expanded to cover the greater QUEST project area, encompassing all geophysical, geochemical and value-added projects.

Acquiring data from public government-managed databases, private institutional reports and public company reports is subject to several time lags. The primary source of information will be assessment reports (BC Geological Survey, 2012a) which are, according to the Mines Act, technical assessment reports pertaining to geological, geophysical, geochemical, drilling and prospecting investigations. A qualified professional must compile the report for each property and it may be submitted for credit within the anniversary year of the actual fieldwork and, importantly for this project, will remain under confidential status for a period of one year from the date of the submission. As a result, there are significant time delays between fieldwork and public access to the data; e.g., an exploration project in the summer of 2011 may not become publicly available until 2013. Assessment reports include a number of important pieces of information for the purpose of this project, including location, previous work, key personnel, type of exploration, breakdown of expenditures and recommendations

for the future. Considering reporting and confidentiality restraints, this project will examine staking beginning after the initial announcement of the QUEST Project (May 14, 2007; Geoscience BC, 2007) and all available assessment reports published until the end of the 2010 calendar year.

A second source of information, in conjunction with assessment reports, are mineral titles from the government-run Mineral Titles Online (MTO; BC Geological Survey, 2012b). Mineral titles can be filed under one of three types, coal, mineral or placer, and as the bulk of research projects in the QUEST Project area have focused on the discovery of bedrock mineralization, only tenures classified as mineral will be used. Mineral titles and the total area of ground staked are important as revenue generators for the province, as indicators of interest in an area, and sources of information on who is staking land, which tenures are being renewed or held in inventory, and which areas have been transferred, shared or dropped.

The provincial mineral inventory database, MINFILE (BC Geological Survey, 2012c), is another publicly available source of geological, economic and exploration data used by industry for exploration strategies, geoscience research and resource potential. Recent attention has been given to updating MINFILE for the QUEST Project area (Owsiaci and Payie, 2010) and is another source that may be used for temporal investigations.

The cycle of announcement, fieldwork, data release and follow-up release is an important indicator of market responsiveness to Geoscience BC's efforts to encourage and stimulate industry growth, and when tied into ground staking, it is possible to see initially what information had the greatest impact, which companies took the most interest, which areas have maintained momentum and which areas have changed hands or seen little development.

Focusing on physical activities on the ground and development of exploration targets may be the major factor in determining long-term success in fostering a diversified economic community for central BC, but other factors need to be considered. A company's ability to generate investment capital each year is of fundamental importance and successfully tapping into capital markets depends on investor confidence, global economic developments, commodity price fluctuations, foreign competition and even shifts in interest to new areas. A review of company profiles, including share offerings, market prices and stock promotion, can provide a relative indication of continued investor interest in central BC. For publicly listed companies, the equity markets may be a good barometer of how well Geoscience BC projects attract follow-on development. Accelerated share trading in the stock markets may pinpoint heightened interest and presage a coming period of growth and expansion in the company's target area.

Results

The staking of new claims before and after the start of the QUEST Project is an example of an activity that can potentially show the impact of the project. In the QUEST Project geophysical survey footprint, the area of new claims staked (on previously unstaked or lapsed tenure ground) totalled 543 199 ha in 2006, this total rose to 1 307 126 ha in 2007 (BC Geological Survey, 2012b). Such increases in activity may be due to a combination of pre-emptive staking, online claim jumping, claim flipping, ground inventorying and new exploration targets; however, the size of the increase is suggestive and calls for further analysis. When filtering the numbers to include only those new claims with reports of work done on them and correlating them to important QUEST Project public releases, large spikes become evident (Figure 2). Total land tenure is an important aspect of provincial revenue in BC as the cost per hectare for new claims (throughout this time period) has been \$0.40/ha/year, increasing to \$4/ha/year and \$8/ha/year in subsequent years as the tenure is continually renewed. A practice of allowing a claim to lapse and immediately re-staking it was noticeable in some instances and needs consideration when examining the actual new land staked per year (Figure 3). While total land staked is valuable, it is the amount of land being explored and developed that will account for long-term benefits for BC.

For the reporting period after May 14, 2007 until the end of the 2010 calendar year, there were 294 assessment reports submitted on ground within the QUEST Project geophysical survey footprint (Figure 4). Fully 125 of these assessment reports were submitted by 37 unique operators on new ground staked by 44 unique owners. Of these tenure permits, 16 were joint ventures. Total reported expenditures for a range of exploration activities on new ground totalled \$5,139,335.36 for the May 14, 2007 to December 31, 2010 period. The relationship between tenure owner and operator was one of three combinations: one owner and operator, joint ventures with two owner-operators or independent owner and independent operator.

Categories of claim operator rise in scale from independent prospector up to major mining company and while some operating costs were covered by personal or private investments, the bulk of investments undoubtedly came from publicly reported channels (primary or secondary markets). Examples can be found in the mainstream media relating the QUEST Project to investment capital fundraising. An examination of available data should provide a reasonable ballpark of total dollars raised by operators for the QUEST Project area. Success in raising capital can be included in a discussion of the impact of the QUEST Project as well as provide estimates of company spending power and future activity within the region.

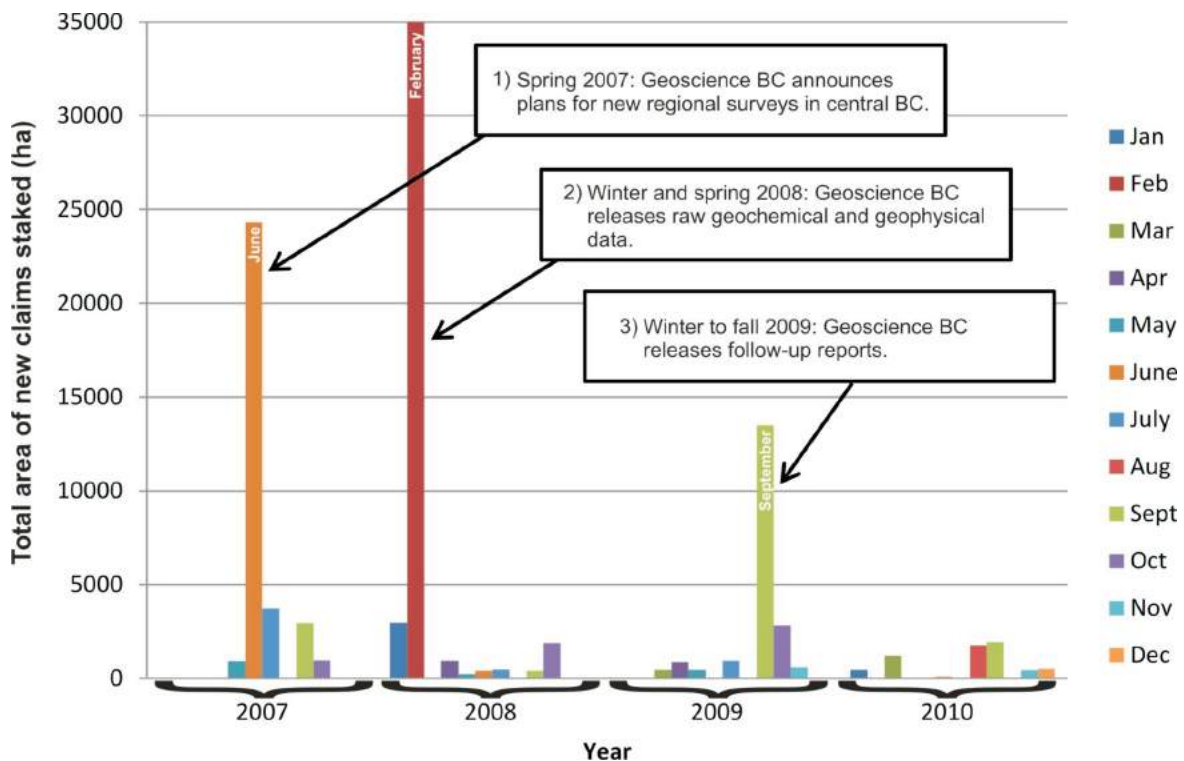


Figure 2. The number of new claims, within the QUEST Project geophysical survey footprint (central British Columbia), with reports of work done on them and the correlation to important QUEST Project public releases, 2007–2010.

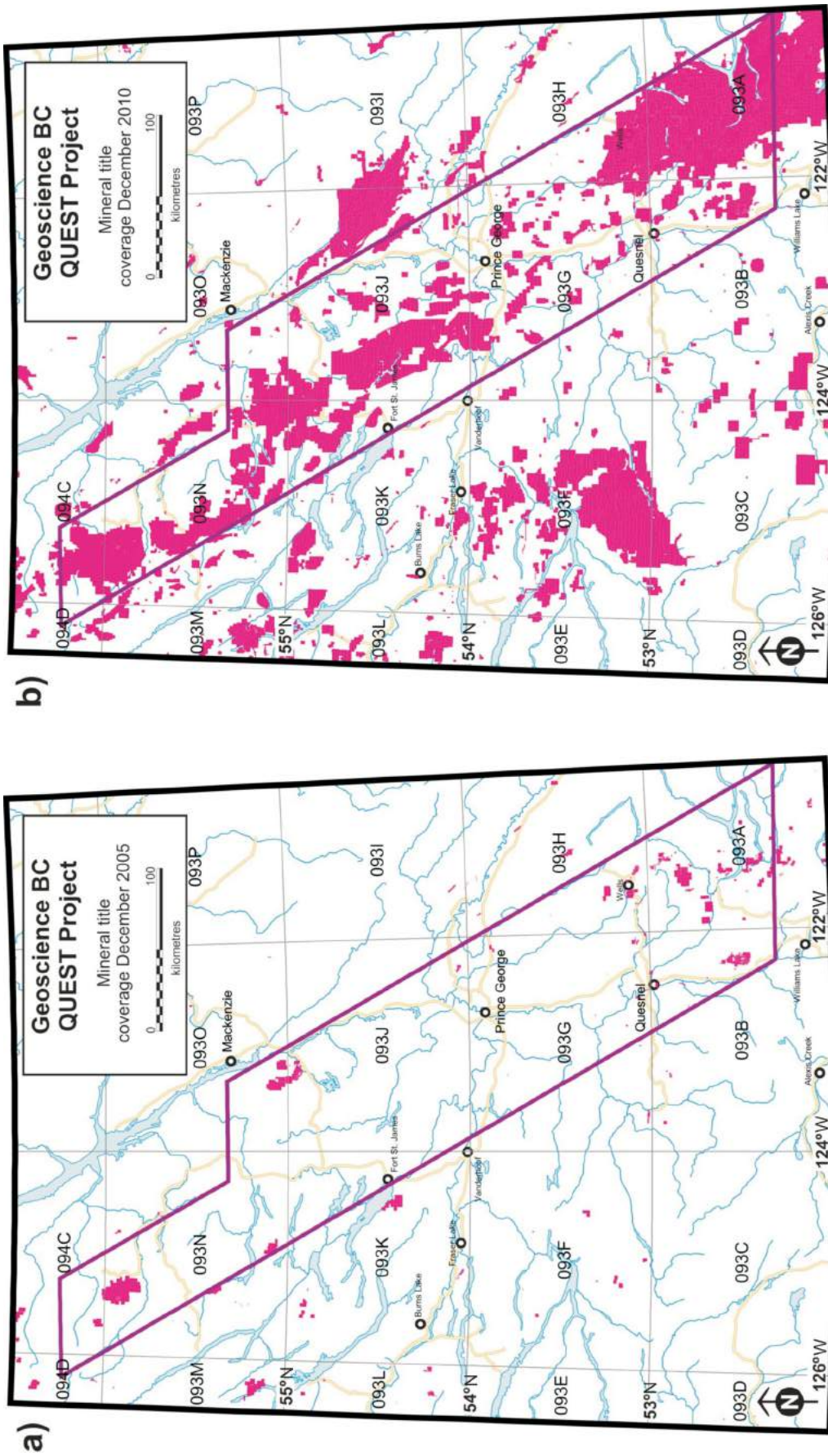


Figure 3. Maps showing the change in mineral title activity from a) 2005 to b) 2010 in the QUEST Project geophysical survey footprint and surrounding area, central British Columbia. Areas shaded in pink represent the coverage of mineral titles.

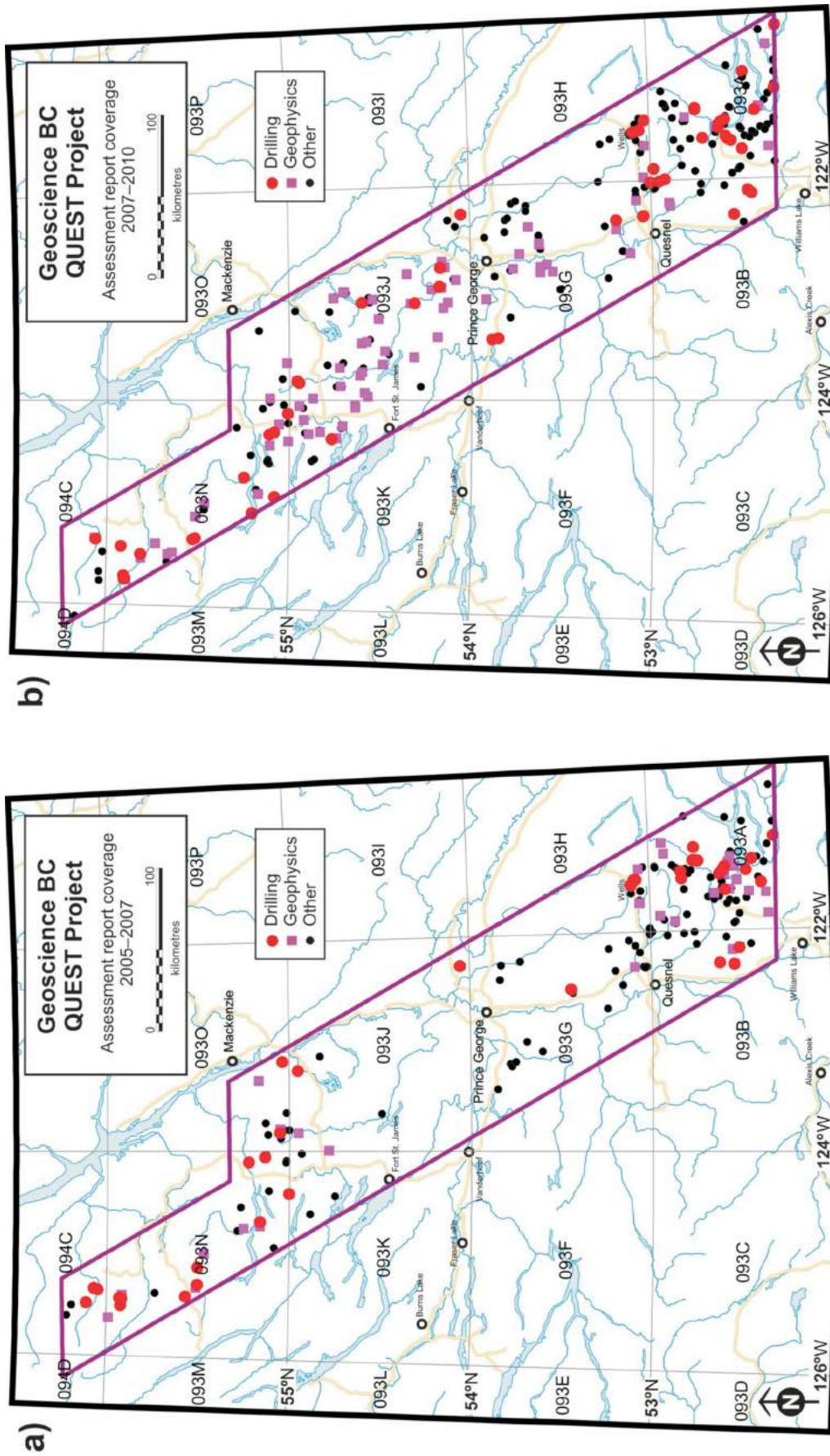


Figure 4. Maps of the QUEST Project geophysical survey footprint, central British Columbia, showing distribution of assessment reports submitted during the reporting years of a) 2005–2007 and b) 2008–2010.

Summary

The methodology illustrated in this preliminary document will serve as the framework for the comprehensive report to follow, which will offer measures of performance built from a diverse sample of publicly available sources of information and synthesized into a quantifiable and repeatable method for evaluating the effectiveness of any publicly funded exploration initiative. It will bring to light insights into the success of the Geoscience BC QUEST Project model, and serve as a guide to expanded studies of Geoscience BC projects in the future. While this preliminary document is not all inclusive and guidelines and methods are still being considered in order to provide the best achievable product, it is strongly believed the methods have merit and will produce a multiplicity of valuable results and outcomes down the road. The maturity of the QUEST Project with its documented track record and availability of government provided information, press releases and company information makes it an ideal first case.

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