

Documentation and Assessment of Exploration Activities Generated by Geoscience BC Data Publications, QUEST Project, Central British Columbia (NTS 093A, B, G, H, J, K, N, O, 094C, D)

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Introduction

This study focuses on the QUEST (QUesnellia Exploration STRategy) Project, launched by Geoscience BC in 2007. Its goal was to stimulate exploration interest and investment in the underexplored region between Williams Lake and the District Municipality of Mackenzie, in part to help diversify the local forestry-based economies impacted by the mountain pine beetle infestation. Geoscience BC initially funded the re-analysis of 5000 archived regional geochemical samples and the collection of 2200 new geochemical samples, plus two large-scale airborne geophysical surveys (Geotech Limited, 2008; Jackaman, 2008a, b; Sander Geophysics Limited, 2008). The raw data was made available to the public starting in 2008, at which point Geoscience BC also commissioned a number of follow-up, value-added projects that were released in subsequent years (Barnett and Williams, 2009; Fraser and Hodgkinson, 2009; Geotech Limited, 2009; Barlow et al., 2010; Owsiacski and Payie, 2010), providing the industry with announcements and data to continue to attract exploration to the area. As indicated in the preliminary paper for this project (Reichheld, 2013) it is felt that the QUEST Project, with its years of data and development, now has a sufficient track record to produce quantifiable and meaningful results.

This paper details the research completed in order to lay out a framework for reviewing and assessing the impact of this and any public exploration initiative. To ensure the method remains repeatable into the future, only public sources of information are used.

Method

The study area encompasses the greater QUEST area, including all or parts of NTS map areas 093A, B, G, H, J, K,

N, O and 094 C, D. Exploration data was presented in GIS shapefiles, or in Excel[®] spreadsheets with co-ordinates attached to georeference the datasets. Each dataset used was clipped to the nearest 1:50 000 NTS map area around the QUEST area to maintain equal datasets. ArcGIS 10.2 was used as a platform for working with much of the data. Stock market index and price charts were created using MetaStock Pro software.

The framework for this project includes assimilating relevant data from Mineral Titles Online (MTO), the Assessment Report Indexing System (ARIS), MINFILE and evaluating anecdotal sources including corporate press releases, financial statements, share offerings and stock price data for companies listed on the TSX Venture Exchange.

The period covered is 2007–2010 to ensure that a large portion of the data is publicly available. In 2005, changes in claim staking techniques from on-ground to online methods using MTO and internet staking led to a surge that potentially distorts the true extent of operator participation in the field. As a baseline, only data from 2005 to 2006 are used to offer perspective on developments leading up to the study period.

The MTO claim staking has been used as a general indicator of success within a given region, but while this approach has merit, it must be considered carefully. For QUEST area staking, the presence of large, long-established claims, operating mines and known past anomalies can have a trickle-down effect on the activity statistics because large blocks of surrounding land may be staked as a combination of ground inventorying, pre-emptive staking or claim jumping, but not necessarily for speculative purposes. Determining which staking is genuinely motivated by exploration is a complex task. Rather than break down what could be called ‘defensive staking’, with regards to locking up high-potential lands before they can be worked on by the owner, the merits of mineral titles were used to analyze actual on-the-ground activities. By considering length of tenure, frequency of new claims staked and work submitted on the land through assessment reports, a truer relationship of claim use can be distinguished. ArcGIS was used to exam-

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ine land tenures to find total land tenure for each year, new land tenure for each year and to determine under what category of tenure assessment reports were submitted (BC Ministry of Energy and Mines, 2013).

The second major source of information, assessment reports for the study period, is just now becoming available to the public (BC Geological Survey, 2013). Assessment reports found in ARIS were examined using ArcGIS to evaluate important variables including expenditures, yearly submissions and exploration location. Given rising demand and commodity prices during this period, a rise in overall exploration spending in the region is at least partly indicative of increased exploration throughout British Columbia. To differentiate this spending from overall totals that may be somewhat misleading, assessment reports were examined using ArcGIS to find the number of assessment reports submitted for each year within the study area, the total reported dollars spent and their locations on newly tenured or previously tenured land. Expenditures could then be broken down into yearly data from which totals and trends within the region could be identified. Questions to ask are: just how successful has the \$5 million investment by Geoscience BC been as a return for the province? Is there a noticeable difference in total activity in general, and in generating new exploration specifically?

Factors often considered peripheral to in-the-field exploration and development, such as the performance of a company's shares in the stock market, can be instrumental to its success. The ability to raise new investment capital each year is an important part of the mine cycle, and investors frequently base their buying decisions on financial performance. How well an enterprise performs in the stock market is often a bellwether to its long-term success in the field. A fundamental question then is: does participation in Geoscience BC projects like QUEST endow companies with superior prospects on public stock exchanges?

Evaluating the financial component includes analysis of the trading record of stock prices and share volumes to ascertain whether individual companies involved in the QUEST Project enjoyed increased market activity, and at an industry level, whether mining stocks in general performed well in the market during the study period. Most firms studied here are micro- and small-cap companies trading on the TSX Venture Exchange. The S&P/TSX Venture Composite Index was tracked as a proxy for observing the industry's performance during the study period. It is described in the exchange's own literature as "...a broad market capitalization-based index which is designed to measure the performance of securities listed on the TSX Venture Exchange, Canada's primary venture equity market" (TSX Inc., 2013).

Next, a 'mini' index, herein named the QUEST venture stock index, comprising eight publicly listed companies with properties in the QUEST Project area, was created for this study using Equis MetaStock Pro and its FIRE add-on (Figure 1). The eight companies range from less than \$1 million in overall exploration projects to tens of millions. The index incorporates the shares of the following companies (using names as they appeared during the period of study): Alpha Gold Corp., Amarc Resources Ltd., Barker Minerals Ltd., Dajin Resources Corp., Fjordland Exploration Inc., Happy Creek Minerals Ltd., Richfield Ventures Corp. and Serengeti Resources Corp.

The S&P/TSX Venture Composite and the mini QUEST venture stock indices were charted in MetaStock Pro (Figure 2).

The research also took an anecdotal look into several larger public companies operating within the QUEST area using ARIS and SEDAR (system for electronic document analysis and retrieval; 2013), the latter of which provides access to public securities documents and information filed by public companies and investment funds. Here, important avenues for research include press releases, corporate financial statements and annual reports. Using SEDAR and ARIS, company press releases and assessment reports were sampled to get an indication of how frequently, or infrequently, Geoscience BC data and the QUEST Project received mention in the media.

Although financial reports and news releases are valuable sources of information, they offer it in a labour-intensive format. Company name changes, mergers and acquisitions, joint ventures and partnerships all tend to muddy the waters of research and hamper understanding of an operator's business. A stock exchange-listed company offers the widest scope for research, but navigating annual reports can be a limiting factor, requiring interpretation in light of accepted accounting principles.

Results

Mineral tenures were divided into two groups: total ground tenured within each year and newly tenured ground within each year (Figure 3). Both groups peaked in 2007, with total ground staked at 2 916 922 hectares (ha) and newly staked ground at 1 428 387 ha. Evaluating the staking of ground can be difficult due to 'dead staking', which is evident to the eye when examining the large areas of tenure that were allowed to lapse and then return as fresh tenures the following year (Figure 4). With that caveat, land tenured averaged 2 477 037 ha, an increase of more than 35% from its 'pre-QUEST' 2006 value of 1 834 055 ha. Newly staked land averaged 919 823 ha during the same period.

In contrast to the interpretive challenges arising from practices like dead staking and the complexities of claim owner-

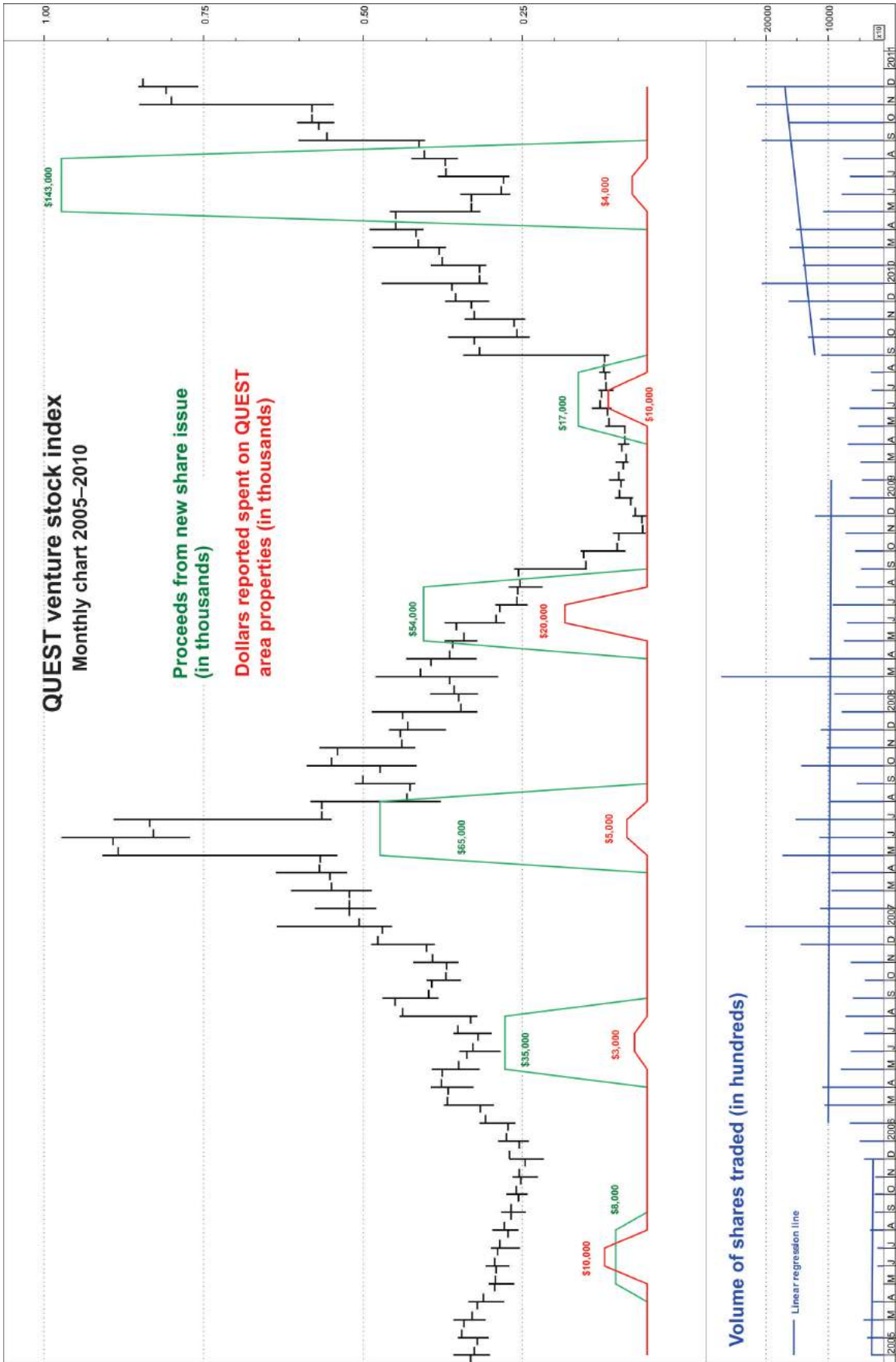


Figure 1. Monthly stock price chart of the QUEST venture stock index, representing eight operators within the QUEST (Quesnellia Exploration Strategy) area. The red indicator represents estimated expenditures on QUEST projects as reported in assessment reports. The green indicator represents estimated proceeds arising from new share issues.

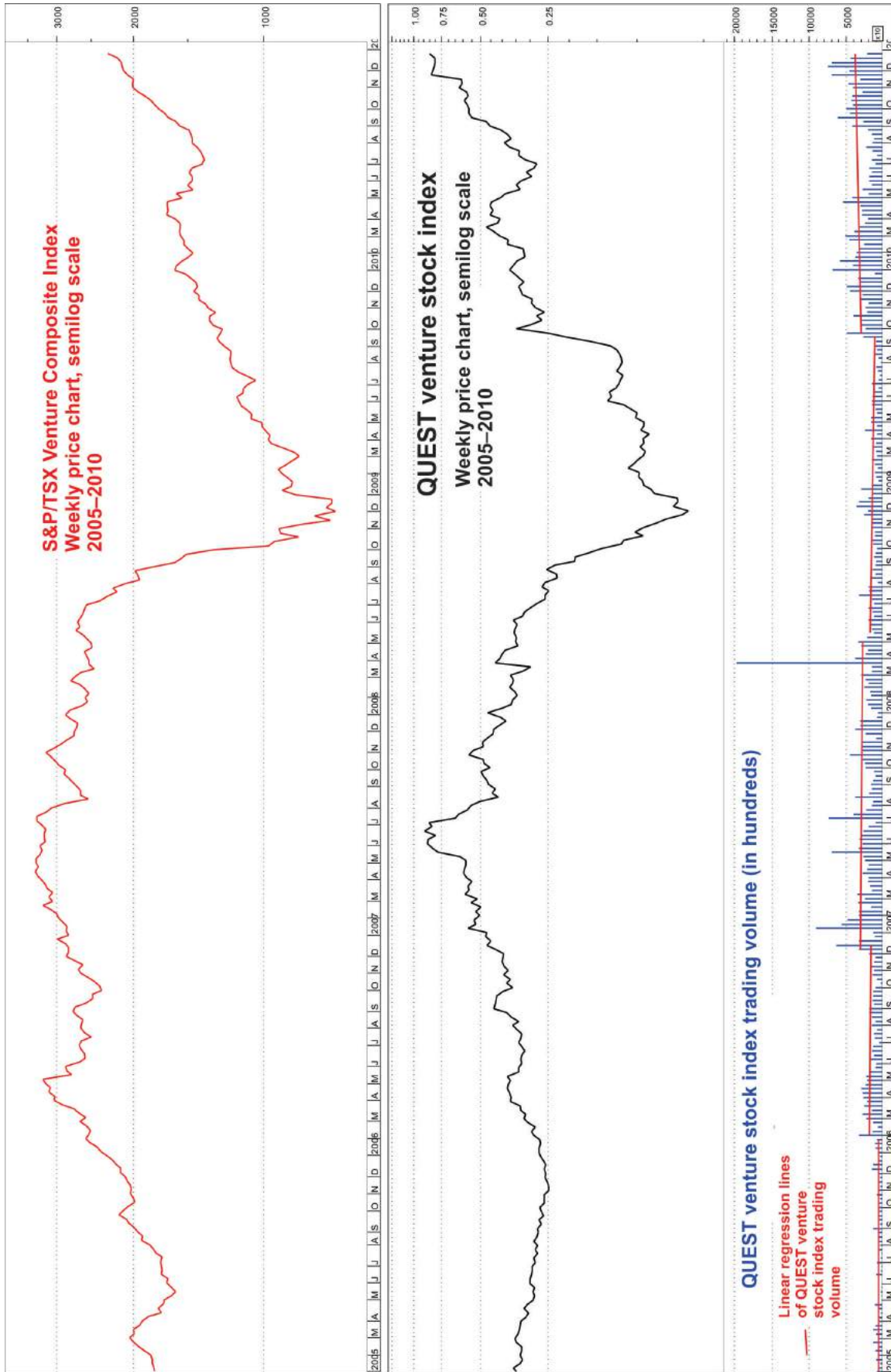


Figure 2. Weekly price chart comparing the S&P/TSX Venture Composite Index with the QUEST venture stock index during the 2008 market downturn. The linear regression lines of trading volume for the QUEST venture stock index reveal an upward 'stairstep' pattern of increasing stock market activity leading into the 2008 collapse.

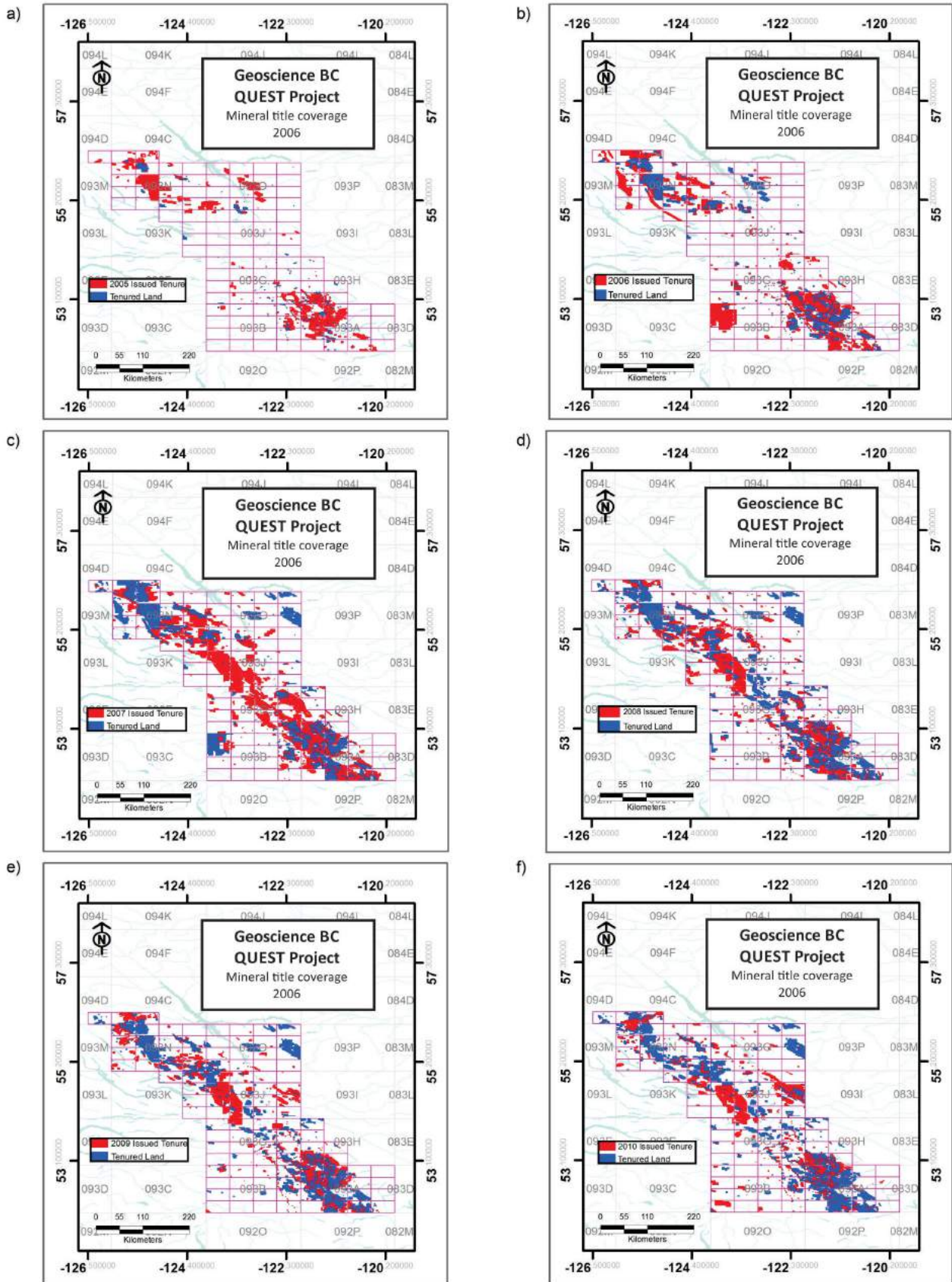


Figure 3. Changes in mineral title tenure for the greater QUEST (QUesnellia Exploration STRategy) area: **a)** 2005; **b)** 2006; **c)** 2007; **d)** 2008; **e)** 2009; **f)** 2010.

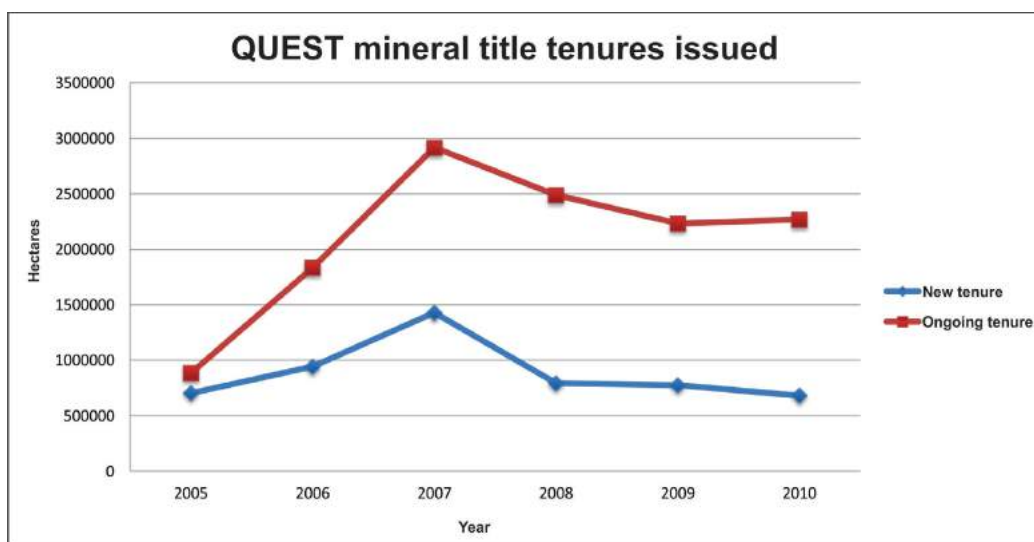


Figure 4. QUEST (Quesnellia Exploration Strategy) mineral title tenures issued from 2005 to 2010. The blue line indicates area of new claims issued. The red line shows total tenured land. The increase in tenure is indicative of sustained interest in the area.

ship, assessment reports represent basic, quantifiable results of exploration in terms of monetary expenditure. For the reporting period of 2007–2010, there were 501 assessment reports submitted on the ground within the QUEST Project footprint (Figure 5). In the baseline years 2005 and 2006, there were a total of 153 assessment reports submitted in the same area, indicating an average of 125 per year during the QUEST Project compared to 76 per year before the QUEST Project. Reported expenditures for the study period totalled \$79,106,618.97 (BC Geological Survey, 2013a). The average yearly expenditures for the two years prior to the QUEST Project amounted to \$10,910,220, compared to the four-year QUEST Project average of \$19,776,655—a rise in overall reported spending activity for the area of nearly 100%. Although these numbers clearly reflect a significant increase in exploration within the QUEST area, they do not specifically point to an increase in new exploration development. On land previously untenured before the study period, assessment reports indicate a total of \$15,508,622.51 was spent. Further, as a comparison to work completed on previously tenured land, this data was examined temporally as a proportion of total yearly expenditures. The percentage of exploration work undergone on post-announcement land staked has steadily increased in the QUEST area, to nearly 40% of the total reported exploration expenditures (see Figure 6).

Anecdotal Results

Anecdotal evidence for the impact of exploration activities generated by Geoscience BC data publications is harder to identify because companies are neither motivated by competition (in staking and developing land before other companies) nor by economics (maintaining claims by registered exploration) to acknowledge government-related organizations within technical documents. A review of 50

assessment reports did not find any explicit mention of Geoscience BC, although a number of times descriptors such as ‘historical BC Geological Survey data,’ or ‘government data’ were used.

As a tool to generate new investor interest and raise capital, however, Geoscience BC could be used as a lightning rod. News releases accessed through SEDAR show several companies crediting Geoscience BC and related work. For example, a Fjordland Exploration Inc. press release from August 1, 2007, announced their ‘QUEST JV’, a joint venture with Serengeti Resources Inc. in anticipation of the Geoscience BC program to be released the following year. They go on to explain what they describe as a ‘mini-staking rush,’ with more than 400 000 ha of new lands registered with MTO. Notably, plans to complete a 3600 line-kilometre airborne geophysics survey were included in the report as an initial start to the program (Schroeter, 2007).

Similarly, Rimfire Minerals Corp. announced adding holdings to its claims in the Quesnel Trough, and the addition of airborne geophysical surveys to work with the coming geophysical and geochemical data from Geoscience BC, in their September 13, 2007 press release (Caulfield, 2007).

Richfield Ventures Corp. (now New Gold Inc.) reported in their February 7, 2008 press release, “the QUEST program covered the entire 250 000 acre land package of Richfield Ventures, and it appears to have yielded encouraging results.” Exploration for the following summer in the QUEST area included preliminary drilling at two properties (Bernier, 2008).

Stock Market and Share Issuance

Increased activity within the QUEST area during 2005–2010 suggests that the project has stimulated financial ac-

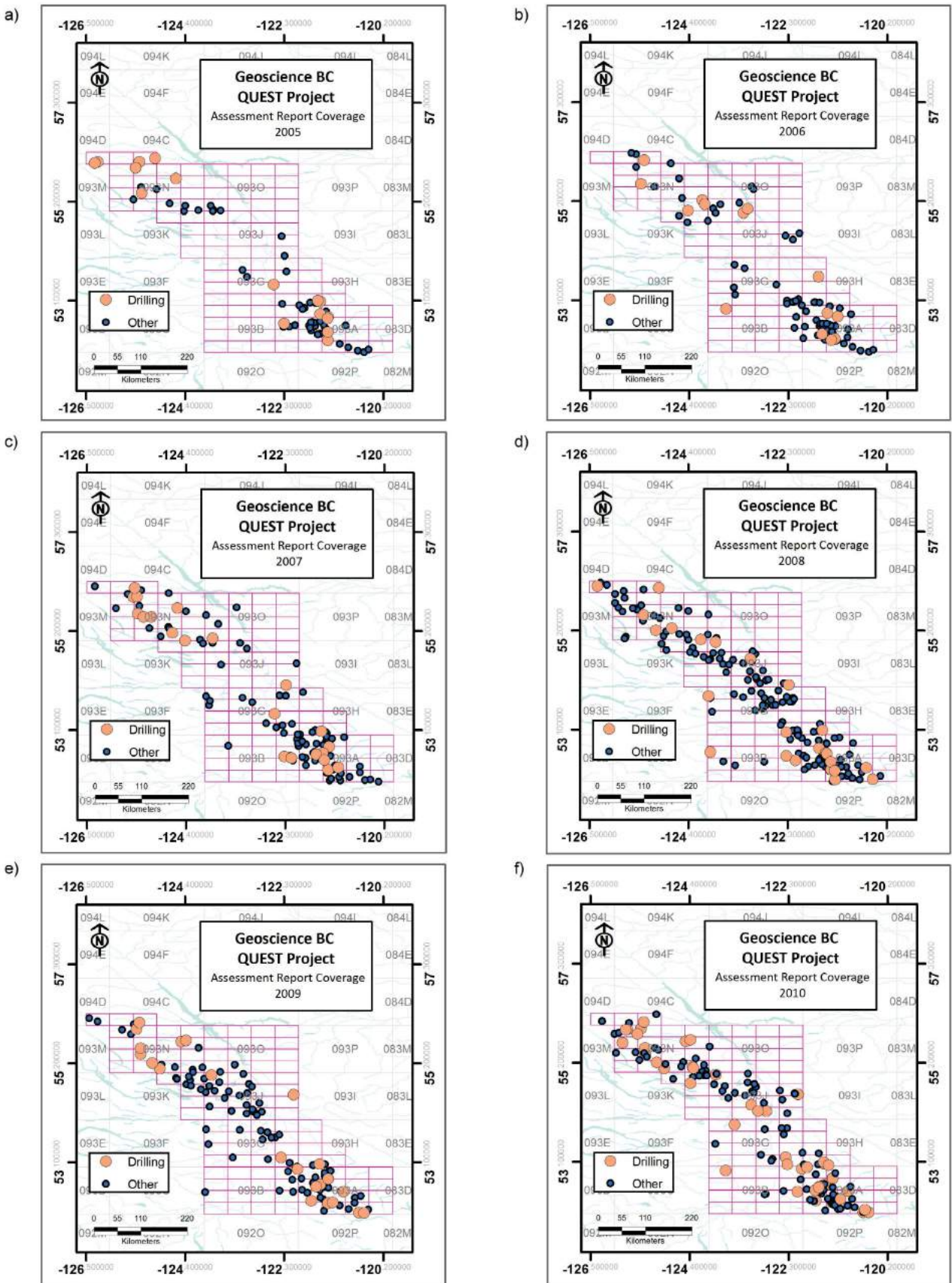


Figure 5. Greater QUEST (QUESnellia Exploration Strategy) area, comparing the increase in exploration activity (via assessment reporting) from prior to the QUEST Project (2005–2006) to during the QUEST Project (2007–2010).

tivity and promoted industry growth, while also mirroring the financial climate of the time. This latter aspect is an interesting artifact of the data.

The two venture indices, the 'mini' QUEST venture stock index of eight companies created for this study and the S&P/TSX Venture Composite Index, chart compellingly similar paths despite being vastly different in size (Figure 2; the S&P/TSX Venture Composite Index includes nearly 400 issues valued at close to \$20 billion), suggesting that financial imperatives prevail irrespective of scale. It is also evident from the price chart of the QUEST venture stock index that average share trading volumes on the Toronto Venture Exchange during the critical years of the QUEST Project tended to be much higher than those immediately preceding the start of the study period (2005), especially late 2006 to late 2008, and then again mid-2009 to 2010, when average trading volumes were triple those prevailing in 2005. Early 2008 witnessed the largest spike of trading volume in the period, coinciding with the public release of geochemical results and airborne electromagnetic survey data by Geoscience BC. While this increase in the publicly traded share volume of the QUEST index (and its constituent companies) cannot be attributed entirely to the heightened profile associated with the QUEST Project, a cursory examination of the chart strongly suggests a relationship.

Similarly, the QUEST venture stock index witnesses a parallel progression of price increase accompanied by increases in proceeds from new share issues and a rising level of expenditures on properties in the QUEST area, a trend that continued until the market downturn of 2008. Notably, the QUEST venture stock index almost immediately began a price recovery from that low and in 2010 saw a large surge in the value of new share issues.

This pattern also scales down to individual companies, as analysis of news releases on private placements of shares and securities archived in SEDAR shows. As one example, Alpha Gold Corp. issued news releases concerning private placements of its shares and securities starting in August 2005 with the closing of a \$600,000 private placement of nearly 1 million units comprising shares, flowthrough shares and stock warrants (Figure 7). In 2006, it announced private placements totalling \$1.4 million, with the bulk of the proceeds used to "... fund the ongoing exploration program at the Company's 100% owned Lustdust Property in central B.C." (Newswire, 2006).

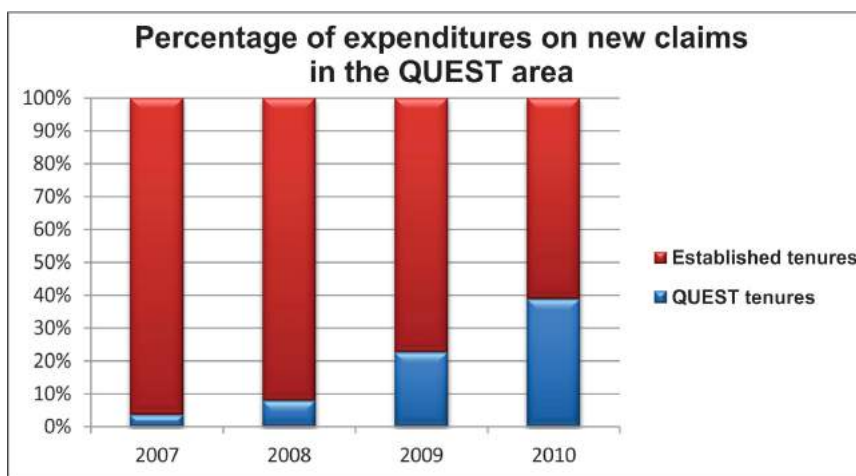


Figure 6. Gradual increase in proportional spending on land staked from 2007 to 2010 within the QUEST (Quesnellia Exploration STrategy) area.

Figure 7 shows the amounts raised¹ (in thousands of dollars; in green), amounts spent² (in thousands of dollars; in red) and share volumes³ (in hundreds). Blue lines are linear regression lines reflecting average volumes traded before Geoscience BC started the QUEST Project and then during the critical 2007 and 2008 years. From 2005 to 2006, share volumes traded on the exchange are approximately 160 000 per month; by 2007 this had tripled to 500 000.

In June 2007, it closed private placements totalling \$4 million for use in its exploration programs (Canada Newswire, 2007) and in 2009 announced that its drilling program for the year was estimated at \$1.3 million, with \$3 million in the company's treasury (Canadian Newswire, 2009).

The monthly stock chart of Alpha Gold Corp. (now ALQ Gold Corp.) from 2005 to 2010 shows that according to the company's audited financial reports, it raised \$440,000 and \$470,000 in 2005 and 2006, respectively, from the proceeds of share issues. Beginning midway through 2006 and extending to 2009, a period coinciding first with anticipation in the markets of Geoscience BC's proposed project, its official announcement in 2007 and the public release of large amounts of data from geochemical and airborne geophysics surveys in 2008, share volumes of Alpha Gold Corp. traded on the TSX Venture Exchange tripled from an average of 160 000 shares per month in 2005 and 2006 to

¹Amounts raised are the proceeds raised from the issuance of company shares, taken from the audited annual financial statements of Alpha Gold Corp. for 2005–2010 (<http://www.sedar.com>; statements of cash flows under Financing activities, Proceeds on issuance of shares, Net of issue costs).

²Amounts spent are estimates (similar to amounts raised) derived from the section under Investing Activities, Investment in and expenditures on exploration properties.

³Share volumes reflect the trading activity of Alpha Gold Corp.'s shares (trading symbol ALQ) on the TSX Venture Exchange in Toronto.

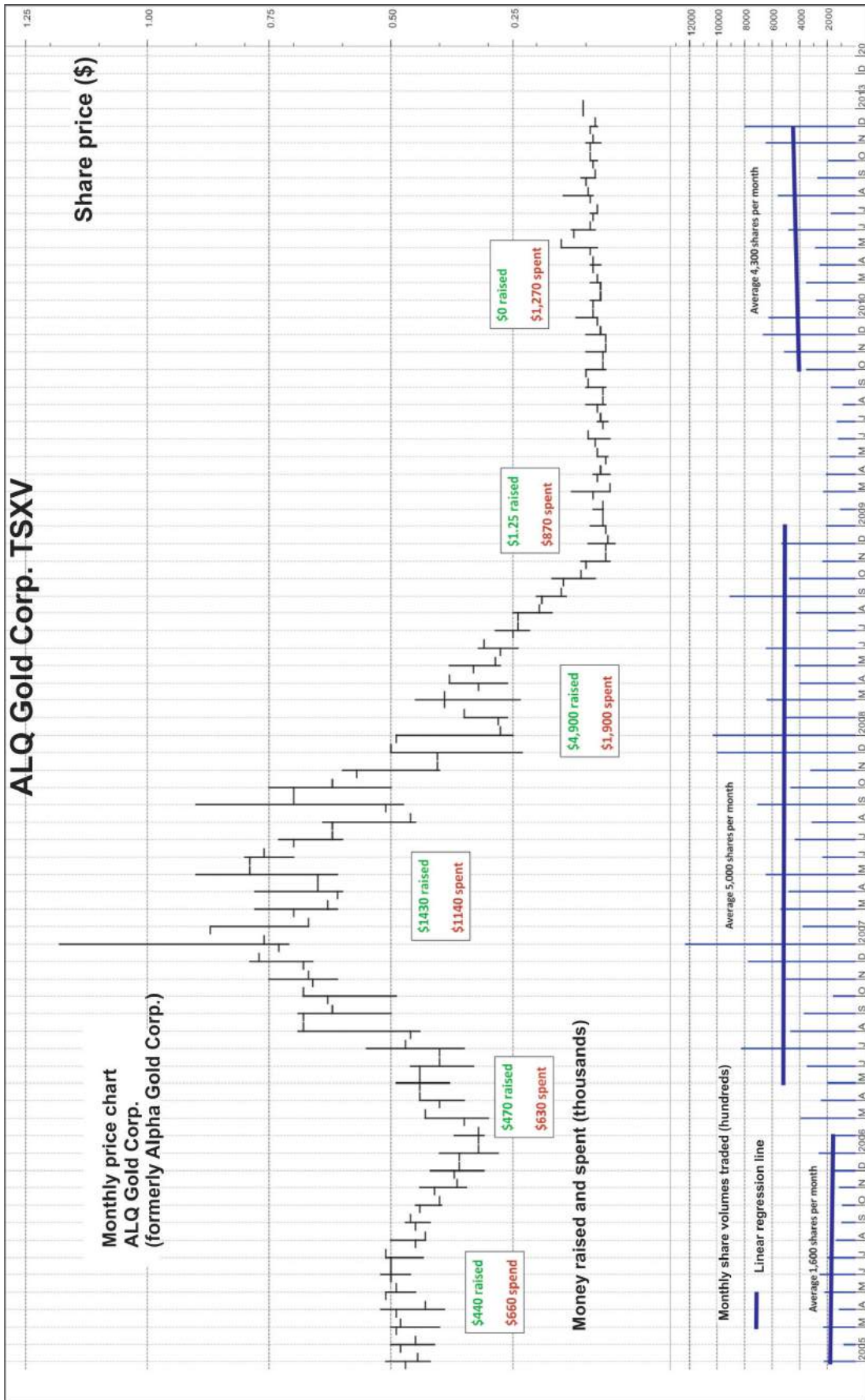


Figure 7. ALQ Gold Corp. (formerly Alpha Gold Corp.) monthly stock price chart 2005–2010.

500 000 shares in 2007 and 2008. During a crucial period of the QUEST Project, Alpha Gold Corp.'s heightened profile, reflected by large trading volumes on the stock exchange, enabled it in 2007 to raise three times as much funding as in previous years (\$1.4 million) and in 2008, more than ten times as much (\$4.9 million) from private placements as in 2006—despite watching its publicly listed share price drop to historic lows in concert with the market downturn of 2008.

Conclusions

The QUEST initiative has enjoyed success and this is readily revealed in the public sources of information. Marked increases in fundraising and expenditures on new exploration and development by companies working in the QUEST area strongly supports arguments justifying the initial \$5 million that Geoscience BC committed to the project. Operators and mining companies enjoyed a clear boost in visibility in public financial markets and were able to raise much greater levels of funding than would otherwise have been the case in the absence of a 'great story' like the QUEST Project and the tangible contributions of a government-backed incentive program.

The method used here to characterize and measure these successes, based on readily available public sources, makes it repeatable and suggests that similar analytical projects could be undertaken and expanded upon using this preliminary study as a working basis.

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