



# **Golden Triangle Geophysics Data Compilation Project Summary Report**

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## **1.0 BACKGROUND**

The Golden Triangle Geophysics Data Compilation Project was focused on identifying, evaluating and purchasing airborne geophysical data collected in BC's Golden Triangle, that was previously not available in the public domain. The area of the Golden Triangle is only loosely defined, encompassing Stikine Terrane from near Dease Lake in the north to south of the District Municipality of Stewart. The area includes most of the major deposits in the western Stikine terrane, including the operating Red Chris and Brucejack mines, the proposed Galore Creek, KSM, Red Mountain, and Premier mines, and the past-producing Snip, Eskay Creek, Dolly Varden and Granduc deposits, many of which are experiencing new exploration activity (Clarke et al., 2021). In 2019, the Northwest mining region in BC saw over 50% of mineral exploration expenditures in the province, in large part because of industry activity in the Golden Triangle (Clarke et al., 2020). This abundance of mineral exploration work in the Golden Triangle provided Geoscience BC with the opportunity to find and compile proprietary industry data, including high-resolution airborne magnetic data. In contrast, the public airborne magnetic surveys for much of the area are low resolution, widely spaced surveys that date back to the 1970s, apart from three surveys flown as part of Geoscience BC's QUEST-Northwest project in 2011-2012 (Simpson et al., 2013). Geoscience BC's Golden Triangle Geophysics Data Compilation project was focused on updating the publicly available airborne magnetic data by acquiring privately held and unpublished airborne magnetic data, however when spectrometer or electromagnetic (EM) data was available that was also considered for purchase and inclusion in the final deliverables. The project boundaries that were used by Geoscience BC were determined through early engagement with local Indigenous groups and communities and modified through those consultations (Figure 1). Early engagement was a crucial and critical component of this project and Geoscience BC encourages any mineral exploration operations to engage early and engage often as they plan their work.

## **2.0 AVAILABE DATA**

Despite the abundance of mineral exploration expenditures in the Golden Triangle there is a limited amount of publicly available recent airborne geophysics data. Typically, exploration work is reported to the Ministry of Energy, Mines and Low Carbon Innovation annually in the form of an assessment report where the amount of money spent on eligible exploration expenditures is used to apply credit to minerals claims to keep claims in good standing for subsequent years. After a period of confidentiality for assessment reports that lasts 1 year, the assessment reports and data are released publicly adding to the wealth of geological knowledge available to the mineral exploration industry. However, files associated with airborne geophysics are often so massive that it has not been required that the raw data be included with assessment report submissions. This results in many reports that discuss airborne geophysical surveys in the Golden Triangle but as of spring 2021 only 9 included the original data collected during the survey. Geoscience BC's compilation project looked to add the original survey data of as many of those surveys as possible as well as surveys that had not been reported for assessment.

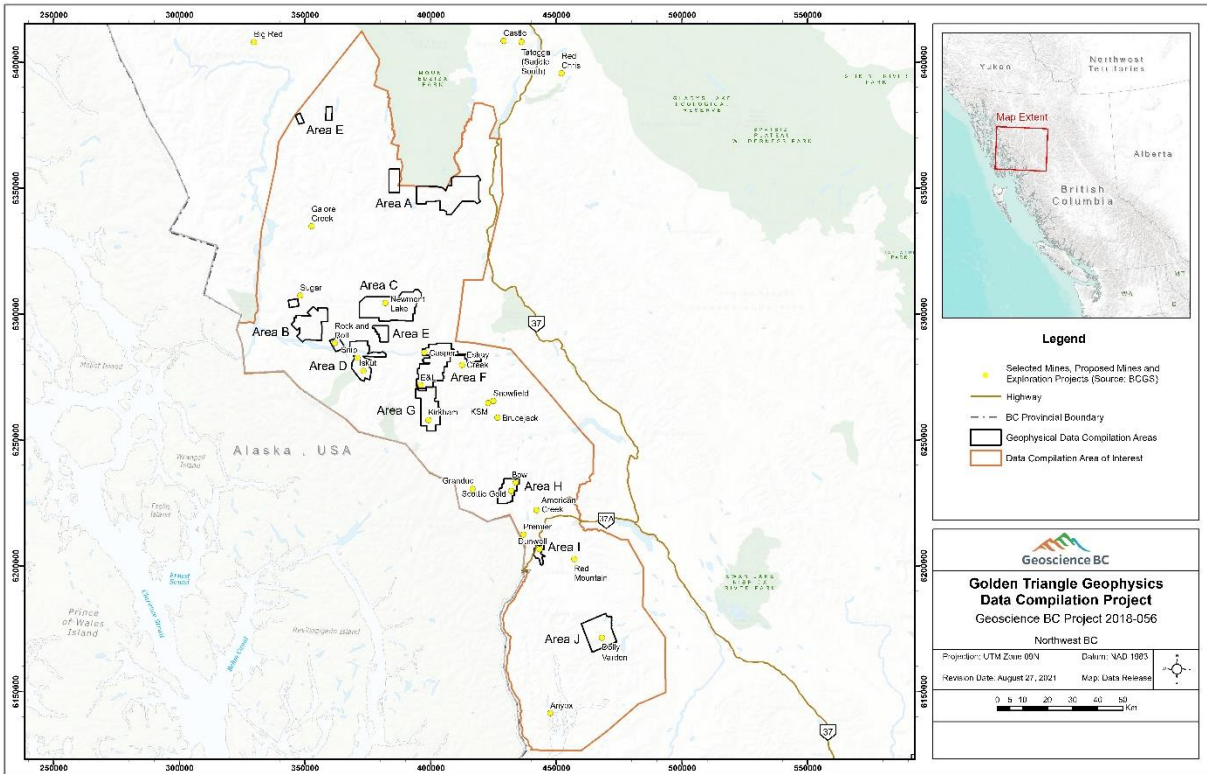


Figure 1 Areas where data was contributed to the Geoscience BC Golden Triangle Data Compilation project and select major deposits and mines that have been discovered in the area.

### 3.0 EVALUATION PROCESS

To be eligible for the project, data must have been collected within the project boundaries (Figure 1) and not had the original survey data previously released publicly. With these simple criteria Geoscience BC put out a call for expressions of interest in the summer of 2020 and collected and reviewed data through to the spring of 2021. Once a company had expressed interest, they submitted their data for review. The data was reviewed and assessed and a formula to determine a value was applied. Variables that affected the purchase price included the age of the survey, data collection method (helicopter vs. fixed wing), height above ground level of the survey and line spacing among other variables. If the vendor accepted the purchase price, Geoscience BC was able to purchase the data for the compilation.

### 4.0 DATA COLLECTED

Ultimately, ten companies provided data to the compilation project, which included 26 survey blocks covering 1,329 km<sup>2</sup> within the Golden Triangle. All 26 survey blocks included airborne magnetic data, 19 survey blocks included EM data and 6 survey blocks included spectrometer data. As the data purchased was from several different types of surveys collected over different time periods and conditions, there was a need to establish some commonality between products. Each company's submission was considered as an area and assigned a letter (between A-J) relative to its location within the project boundaries, where in general A is the northernmost survey and J is the southernmost survey (Figure 1).

The data was then processed to create new layers that are common to each survey which includes Reduced To Pole (RTP), Reduced To Pole First Vertical Derivative (RTP 1VD) and Reduced To Pole Total Gradient Amplitude (RTP TGA). For all 26 survey blocks RTP, RTP 1VD and RTP TGA layers were created so that each survey had similar and comparable products. To ensure usability of these new layers all are available as Geosoft database (GDB), ASCII XYZ text file, Grids GRD (Geosoft), Grids TIF (GeoTIFF, RGB images do not contain actual magnetic data values) and Grids GXF (ASCII grid format) that can be used by a number of different spatial softwares. Along with the newly created products the original data as it was received and the original report from the geophysical contractor are available for download (Figure 2). Where the company’s submission included spectrometer or EM data it is included in the contractor archive folder and no new spectrometer or EM products were created.

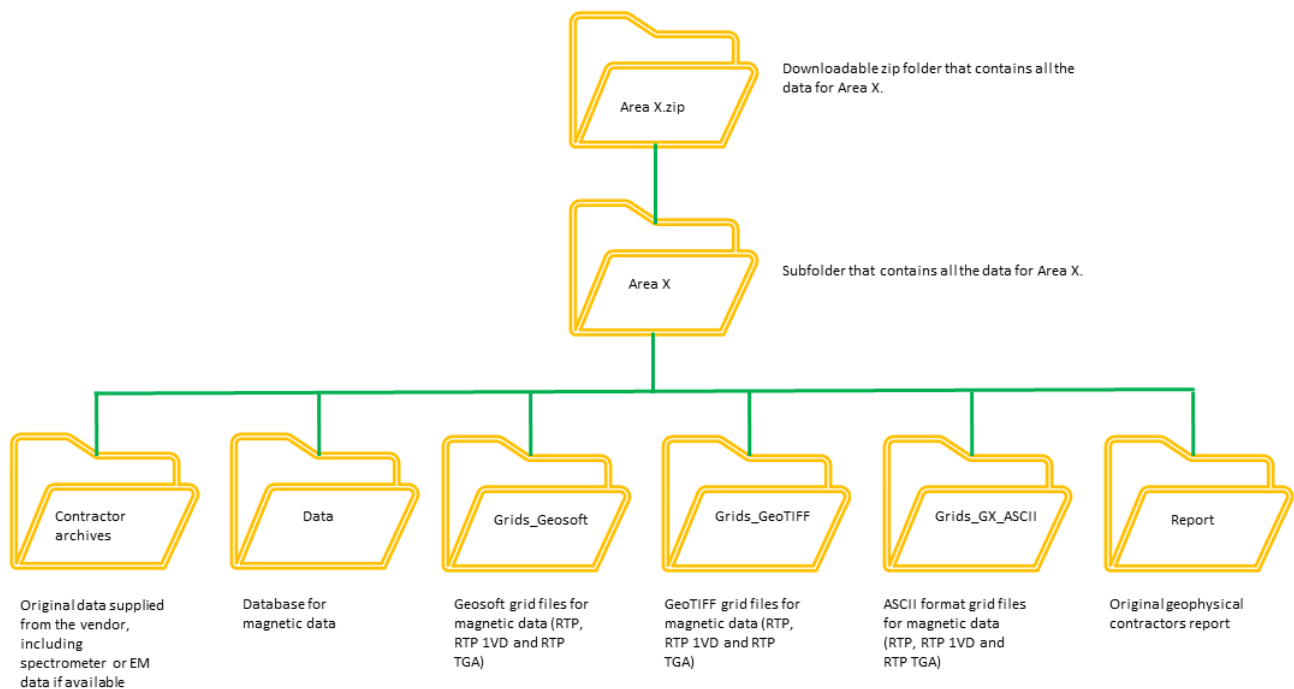


Figure 2 File structure and descriptions of contents for downloadable airborne geophysics data for each area (company) that has a contributions to the project.

## 5.0 FINAL DELIVERABLES AND OTHER DATA

To simplify the search for airborne magnetic data from a number of sources in the Golden Triangle, a hub has been created on Geoscience BC’s website (<http://www.geosciencebc.com/projects/2018-056/>). In the Deliverables section for this projects webpage the newly public data from the ten contributing companies is available along with links to the nine publicly available assessment reports that include airborne geophysical data and to Natural Resources Canada’s Geoscience Data Repository for Geophysical Data. The newly public data is also available for viewing through Geoscience BC’s Earth Science Viewer.

## **6.0 ACKNOWLEDGEMENTS**

Geoscience BC would like to thank the ten companies that participated in this project and provided data.

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