



# Geoscience BC

Vancouver Island North Project  
Airborne Magnetic and Radiometric Survey

## REQUEST FOR PROPOSALS 2019-03

**Geoscience BC is seeking a contractor to fly a helicopter airborne magnetic and radiometric survey for its Vancouver Island North project.**

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## 1. REQUEST FOR PROPOSALS (RFP) KEY DETAILS

Geoscience BC is accepting proposals to fly a helicopter airborne magnetic and radiometric survey for its Vancouver Island North project (<http://www.geosciencebc.com/projects/2018-055/>).

Title:	RFP 2019-03: Vancouver Island North Project Airborne Magnetic and Radiometric Survey
Issue Date:	June 13, 2019
Submission Deadline:	June 28, 2019, 12:00 PM Pacific Time
Proposal Validity Date:	August 15, 2019
Earliest Contract Start Date:	July 15, 2019
Final Deliverables Deadline:	December 1, 2019
Remuneration Style:	Invoice at phased milestones
Funding Available:	Unspecified
RFP Documents and Addenda	This document comprising 15 pages and ESRI Shapefiles of project location on Geoscience BC website
RFP Coordinator:	Brady Clift, Manager, Minerals Email: <a href="mailto:clift@geosciencebc.com">clift@geosciencebc.com</a>

## 2. BACKGROUND INFORMATION

### 2.1 About Geoscience BC

Geoscience BC generates independent, relevant, public earth science research and data about British Columbia's minerals, energy and water resources. This advances knowledge, informs responsible development, encourages investment and stimulates innovation.

Our collaboration with the resource sectors, academia, communities, Indigenous groups and government develops and shares unbiased and credible earth science research and data.

Geoscience BC is a not for profit society incorporated under the BC Societies Act. Visit [www.geosciencebc.com](http://www.geosciencebc.com) to find out more.

### 2.2 Project Background

This project (<http://www.geosciencebc.com/projects/2018-055/>) will generate valuable new geophysical earth science information for an area of northern Vancouver Island. It

fits under Geoscience BC's *Identifying New Natural Resource Opportunities* Strategic Objective, as identified in the [Strategic Plan 2018-2022](#), and the goal:

- Continue regional-scale surveys that deliver large data sets in support of identifying prospective targets and increasing discovery rates of deposits.

Vancouver Island has a long history of mining and mineral exploration, but some areas remain relatively under-explored or have not been actively explored for many years. This project will cover an area toward the northern end of the island where packages of rocks known to host mineralization in nearby areas occur. Similar projects, such as Geoscience BC's adjacent [Northern Vancouver Island \(NVI\)](#) project undertaken in 2012-2013 in partnership with the Island Coastal Economic Trust, have sparked exploration, discovery and new economic activity in similar under-explored areas.

Up-to-date, unbiased earth science information is essential to inform decisions relating to the development of BC's mineral resources. Long-term demand for the metals and minerals that might be uncovered in this area is growing because they are important in the production of renewable energy, batteries and our everyday electronic devices.

This project will:

- (a) Produce new geophysical data using latest methodologies.
- (b) Identify regional geological and structural mineral exploration targets.
- (c) Provide economic stimulation.
- (d) Engage communities and share information or explore any training needs.

The new geoscience information generated by this project may spark a new wave of mineral exploration activity in this region of BC. If mineral deposits do occur in this area, the information generated by this project will help the exploration sector, communities, Indigenous groups, and governments to make informed decisions about future land use.

The project is anticipated to cover a portion of the area between Campbell River, Port McNeill, Port Alice, and Zeballos at the northern end of Vancouver Island (refer to map in section 9).

Geoscience BC encourages the use of local services when developing a Proposal.

### 3. SERVICES REQUIRED

Geoscience BC is accepting proposals (each a "Proposal") from qualified contractors (each a "Bidder") to provide services ("Services Required") of flying a helicopter airborne magnetic and radiometric survey for its Vancouver Island North project.

Bidders providing a Proposal to this RFP may propose alterations to the specifications requested taking into account Geoscience BC's objective to acquire high quality aeromagnetic and radiometric data. These will be considered on their merits.

The selected Bidder shall provide all of the necessary facilities, equipment, backup equipment, materials, competent and experienced personnel and supervisory and administrative support to complete the Project.

3.1 The Services Required include the following details:

3.1.1 Airborne Data Acquisition Specifications

The data acquisition specifications are:

- (a) The survey shall acquire magnetic data and radiometric data. Horizontal gradient magnetic data is desirable and should be included in the Proposal if available.
- (b) The collection of high-quality magnetic data is the focus of this Project: the collection of radiometric data should not dictate flight scheduling, altitudes or flight paths.
- (c) The survey location is available as ESRI Shapefiles that are available on the Geoscience BC website for download at <http://www.geosciencebc.com/working-with-us/request-for-proposals/>.
- (d) Flight line spacing shall be 250 m with flight lines oriented 56.5° on a UTM-based grid. Tie lines will be flown perpendicular to flight lines at an average spacing of 2500 m and be designed to maximize the usefulness of tie points.
- (e) Flight lines shall not deviate from the planned flight line by more than 50 m over a distance of 1500 m.
- (f) Altitude during survey operations will be controlled within 15 m, providing tie-line fits of less than 30 m.
- (g) Any tie-line with more than 10% of the tie-line intersections not meeting this specification (f) must be reflown.
- (h) The desired ground clearance is 80 m.
- (i) The Bidder may propose either a constant elevation (80 m) or drape surface survey, or options reflecting both, and recognize that cost is one parameter that is considered in the award of a contract.
- (j) The magnetic data will be delivered as 10 samples per second. A noise envelope of 0.1 nanoteslas is required.
- (k) Multiple base station magnetic recorders shall be operated within the survey area to provide a magnetic storm record and data for diurnal correction. The number of stations and their location will be determined by the contractor. Survey operations must be restricted to periods of low geomagnetic activity. Using the method of chords on the geomagnetic base station record, the non-linearity of the diurnal activity over any five-minute period shall not exceed 10 nanoteslas.

The base stations will be located in a suitable location away from sources of local magnetic interference.

- (l) All coordinates will be delivered as latitude and longitude, and as UTM eastings and northings in the NAD83 datum (for both zones 9 and 10).
- (m) Daily updates which include:
  - i. Progress reports briefly summarizing progress and any acquisition problems or delays, and
  - ii. Preliminary data delivered as often as feasible.
- (n) Weekly updates that incorporate the contractor's QA/QC procedures in an accessible format of:
  - i. Line kilometres flown,
  - ii. Flight line paths completed (ESRI format),
  - iii. Weather and magnetic diurnal variation/magnetic storm events, and
  - iv. A summary of data quality issues or out of specification issues (such as deviation for safety reasons).
- (o) Backup equipment must be readily available with adequate spares on site and at the company's home office. Replacement of major equipment, not on site, must be completed within 3 days.
- (p) Pre-survey tests such as lag, compensation, radar and barometric altimeters will be delivered to Geoscience BC upon completion.

### 3.1.2 Safety, Environmental, and Community Requirements

- (a) The contractor shall provide an acceptable safety plan to Geoscience BC prior to the start of the Project.
- (b) The contractor may be asked to schedule or alter flight activities to lessen impact upon sensitive wildlife habitat areas, legal entry hunting activities or to accommodate requests from communities received by Geoscience BC.
- (c) The contractor may be asked to participate with Geoscience BC on outreach and engagement activities in communities in the vicinity of the Project. **Note:** This work has already begun, and will continue to be led by Geoscience BC.
- (d) The contractor shall strive to utilize local services where possible.

### 3.1.3 Data Processing Specifications and Project Deliverables

The contractor shall deliver a final logistics and processing report with accompanying maps and digital data that includes:

- (a) One (1) print copy and a digital copy in PDF format of a report that includes:
- i. A report number supplied by Geoscience BC,
  - ii. The name and location of the survey,
  - iii. The name and address of the contractor, the phone and fax numbers of the company and the date of the survey,
  - iv. A list of contents, and
  - v. Information on processing strategy, testing and selection of final processing parameters, including:
    - Details of individual processing steps applied.
    - A summary of specific problems encountered during processing and solutions developed.
    - All corrections applied during the data reduction period with documentation and the data provided in a manner such that each correction can be examined and removed if desired by future users of the data. For example, data corrections may comprise aircraft heading corrections, position lag corrections, adjustments for vertical sensor position, diurnal corrections, tie line corrections, micro-levelling corrections and International Geomagnetic Reference Field (IGRF) removal. These will be individually documented in the digital database supplied as a final deliverable. A current IGRF model shall be used and documented.
- (b) Survey data will be provided as both a digital Geosoft database (\*.GDB) and ASCII format archive (\*.XYZ) for:
- i. Magnetic Data (GDB and XYZ)
  - ii. Radiometric Data (GDB and XYZ)
  - iii. Flight line path delivered in ESRI Shapefile format

The data processing flow from raw to final data will be documented and delivered in separate database channels. The data delivery must include a fully processed magnetic data channel (just prior to any control line levelling) that is suitable for 3D magnetic inversions (magnetic data need to correspond properly with respect to altimeter height above ground – levelling changes this relationship).

- (c) Image and Grid files in Geosoft grid (.grd) and Georeferenced images (.tiff) formats (using a naming format to be provided in advance by Geoscience BC) for the following parameters:

Data Type	Parameter
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Magnetic Data	Total Magnetic Intensity (TMI)
	Residual Magnetic Intensity (RMI)
	First Vertical Derivative
	Analytic Signal of RMI
	Horizontal Magnetic Gradient (if available)
	Gradient Enhanced Products if gradients available
	Reduced to Pole of Residual Magnetic Intensity
	Tilt Angle of Reduced to Pole of Residual Magnetic Intensity
	Residual Magnetic Intensity levelled to the Geoscience BC 2012 magnetic survey of Northern Vancouver Island
Base Mapping	Processed Digital Elevation Model
Radiometric Data	Natural Air Absorbed Dose Rate
	Corrected Total Counts
	Corrected Potassium Concentration
	Corrected Uranium Concentration
	Corrected Thorium Concentration
	Equivalent Uranium/Equivalent Thorium ratio
	Equivalent Uranium/Potassium ratio
	Equivalent Thorium/Potassium ratio

- (d) Digital (georeferenced .pdf) and one (1) print copy of maps at a regional scale where the survey is displayed on a single sheet (e.g. 1:150,000) in a template/style to be approved by Geoscience BC for the following parameters:
- i. Residual Magnetic Field
  - ii. First Vertical Derivative
  - iii. Air Absorbed Dose Rate
  - iv. Ternary image of K-eTh-eU radioelements
  - v. Digital Elevation Model
- (e) Digital maps (georeferenced .pdf format) at a scale suitable for project-level interpretations (e.g. 1:50,000) in a template/style to be approved by Geoscience BC for the following parameters:
- i. Residual Magnetic Field



- ii. First Vertical Derivative
- iii. Air Absorbed Dose Rate
- iv. Ternary image of K-eTh-eU radioelements
- v. Digital Elevation Model

## 4 RFP SUBMISSION GUIDELINES

### 4.1 Confirmation of Interest

Each Bidder who intends to submit a Proposal in response to this RFP shall confirm their intention and provide a single point of contact, phone number, and e-mail address to the RFP Coordinator at Geoscience BC at least two business days before the Submission Deadline.

### 4.2 Proposal Submission

Proposals should contain the following information:

- (a) A summary of the Bidder's relevant past project work, including any previous projects completed for Geoscience BC.
- (b) A timeline for the Project, including an undertaking to start the Project in a timely manner.
- (c) A specification of the airborne system to be used, including the aircraft, system geometry, compensation system and equipment specifications. The most recent magnetic compensation test for the proposed aircraft will be included.
- (d) For radiometric data acquisition, preliminary calibration numbers for the system indicating the sensitivity of the system at different altitudes should be supplied. A formal calibration is not required at this stage.
- (e) The operational specifications of the aircraft proposed, including rate of climb, and airspeed.
- (f) A summary of pilot experience, including the number of hours a pilot has flying geophysical surveys in low-level mountainous terrain.
- (g) Supporting information and rationale if a constant elevation survey is proposed.
- (h) If a drape surface is proposed, a digital copy of the proposed drape surface (in Geosoft grid format), and a histogram of the expected ground clearances over the survey area, must be submitted. Note that different drape options may be proposed, taking into account that a more aggressive drape may provide more useful data at a higher cost.

- (i) A specification of the data processing methodology to be used. The data processing flow from raw to final data will be documented in separate database channels. A list of proposed database channels will be provided.
- (j) An all-inclusive price for the survey in Canadian dollars including all mobilization, logistical support and aircraft costs, and including the final presentation of the data in maps and digital formats.
- (k) An all-inclusive price per line kilometre in Canadian dollars to fly additional line kilometres. The contractor will be obliged to fly additional line kilometres up to an additional 25% of the total contracted line kilometres if Geoscience BC should desire to do so. Further increases in the size of the survey will be by mutual agreement.
- (l) In the event of delays due to weather (including forest fire and smoke-related hazards), a standby cost may be proposed after 45 days of standby. Then once a standby charge has been incurred, Geoscience BC may terminate the contract pro-rata.
- (m) Project initiation and completion timelines.
- (n) A commitment to work with local businesses/services in/near the project area.

The submission of standard business development or promotional materials, corporate profiles, annual reports, standard marketing or sales brochures and other like materials is discouraged.

Each Bidder is solely responsible for conducting their own independent research, due diligence, and any other work or investigation, and seeking any independent advice necessary for the preparation of the Proposal. Nothing in this RFP is intended to relieve the Bidders from forming their own opinions and conclusions with respect to the matters addressed in this RFP.

#### 4.2.1 Format for Submission of Proposals

Proposals will be accepted in the form of an electronic submission in PDF format to the RFP Coordinator. Proposals will not be returned and will be kept confidential.

#### 4.2.2 Final Deliverables Deadline

Final processed data and reports must be delivered to Geoscience BC by the Final Deliverable Deadline. A penalty may be assessed for late delivery of the final deliverables where no external factors contributed to the delay.

#### 4.2.3 Clarification of Submission Requirements

Any clarification regarding this process must be directed to Geoscience BC at least two (2) working days before the Submission Deadline. Geoscience BC shall not be responsible for any misunderstanding of the RFP Documents.

To ensure all participants in the RFP have equal information, answers to enquiries which are relevant to the RFP process will be communicated through the Geoscience BC website and to Bidders who have already submitted a Proposal.

#### 4.2.4 Changes to the RFP Documents

Geoscience BC may, prior to the Submission Deadline, without liability, cost or penalty, alter the Submission Deadline and amend or supplement the RFP Documents by addenda only. No other communications of any kind whatsoever will modify the RFP Documents.

#### 4.2.5 Validity of Proposal

Any cost estimates or rates associated with the Proposal must remain valid for acceptance up to the Proposal Validity Date.

#### 4.2.6 Amendment of Proposal

A Proposal may be amended prior to the Submission Deadline by withdrawing the original Proposal and submitting a revised one.

After the RFP Submission Deadline, no updates to a Proposal will be accepted, unless requested by Geoscience BC.

#### 4.2.7 Costs of a Proposal Preparation

The Bidder shall bear all costs and expenses with respect to the preparation and submission of its Proposal and any other activity pertaining to its Proposal, including its participation in the RFP process and contract negotiation, if any. Geoscience BC shall not be liable to pay any such costs/expenses regardless of the conduct or the outcome of the RFP process.

#### 4.2.8 Absence of Contractual Obligation During RFP Process

Geoscience BC shall have no obligation to enter into a contract with a Bidder in respect of the provision of Services Required that are the subject of this RFP. Geoscience BC shall only have obligations to a Bidder if it decides to execute a written agreement with a Bidder and such obligations shall be in accordance with the terms and conditions of that agreement as finalized between Geoscience BC and the Bidder.

#### 4.2.9 Incurring of Costs

No costs incurred before receipt of a signed Service Agreement or third-party contract or specified written authorization from Geoscience BC can be charged to any resulting contract.

## 5 REVIEW PROCESS AND SELECTION

## 5.1 Review Process

After the Submission Deadline has passed, Geoscience BC staff will evaluate the Proposals received. Where required, subject matter experts may be utilized in the review process.

### 5.1.1 Review criteria

Geoscience BC shall, in its sole discretion, use any evaluation criteria (whether subjective or objective), it deems suitable to evaluate the Proposals.

During the evaluation Geoscience BC may request one or more Bidders to clarify, supplement and resubmit their Proposal.

### 5.1.2 Confidentiality in the Review Process

Geoscience BC's Proposal ranking results, and recommendations for a selected Bidder will remain confidential to Geoscience BC.

Geoscience BC and its partners will take all reasonable precautions to maintain the confidentiality of the information submitted by the Bidders, subject to any disclosure required by law. Geoscience BC reserves the right, however, to disclose the Proposal to employees, servants, agents, advisors and consultants of Geoscience BC and its partners and affiliates for the purpose of assisting Geoscience BC in evaluating the Proposal.

The employees, servants, agents, advisors and consultants of Geoscience BC and its partners and affiliates will not be liable for any damages resulting from any disclosure before, during or after the issuance of this RFP and the submission of a Proposal.

Bidders will take all reasonable precautions to maintain the confidentiality of any information provided by Geoscience BC, subject to any disclosure required by law. Bidders reserve the right, however, to disclose the Proposal to employees, the servants, agents, advisors and consultants of the Bidder and its affiliates for the purpose of assisting the Bidder in preparing the Proposal.

### 5.1.3 Clarification in Review Process

Geoscience BC may, at its sole discretion, seek clarification of any matter in a Proposal in any manner it considers appropriate including investigating the abilities and experience of the project participants, seeking information from other parties, requiring the Bidders to submit supplementary documentation and seeking the validation of Geoscience BC's interpretation of the Proposal.

## 6. REVIEW NOTIFICATION AND SERVICE AGREEMENTS

### 6.1 Notification of Accepted Proposal

Geoscience BC will provide a letter via email to the selected Bidder indicating their Proposal was accepted.

#### 6.2 Notification of Unsuccessful Proposal

Geoscience BC will provide a letter via email to each unsuccessful Bidder indicating their Proposal was not accepted.

#### 6.3 Negotiation of a Service Agreement

Geoscience BC may negotiate a Service Agreement with one or more Bidders who wish to proceed with their Proposal. A Bidder may propose to use a third-party agreement that is mutually acceptable.

Geoscience BC reserves the right to ask for revisions or modifications of the Proposal during Service Agreement or third-party contract negotiations.

Geoscience BC may award Service Agreements without competition for follow-on work, if any, to the accepted Bidders for this RFP.

Information on projects and the name of the accepted Bidders may be published on Geoscience BC's website and used in news releases, promotional materials and community engagement work.

#### 6.4 Applicable Laws

Any Service Agreements or third-party contracts subsequently negotiated and awarded with respect to this RFP shall be interpreted and governed, and the relations between the Parties determined, by the laws in force in the province of British Columbia and the parties attorn to the jurisdiction of the British Columbia courts.

### 7. ADDITIONAL INFORMATION

#### 7.1 Overarching Rights of Geoscience BC

Geoscience BC may, in its sole discretion, for any reason and at any time, take any action in respect of the Proposals it receives including:

- (a) Inviting any of the Bidders to participate in another competitive process to carry out the Services Required,
- (b) Accepting or rejecting any Proposal,
- (c) Annuling this RFP process and rejecting all Proposals,
- (d) Annuling this RFP process and commencing a new process, or
- (e) Give preference to Bidders based in British Columbia

at any time without incurring any liability to any Bidder and without any obligation to inform Bidders of the reasons for Geoscience BC's actions.

#### 7.2 Information Provided by Geoscience BC

No representation or warranty, expressed or implied, is made and no responsibility of any kind is accepted by Geoscience BC, or its advisors, employees, consultants or agents, for the completeness or accuracy of any information contained in the RFP Documents or that is provided during the RFP process or Service Agreement negotiation process, or under a contract that may be entered into, if any.

#### 7.3 No Public Statements

Recipients of and Bidders to this RFP shall not issue any public statement or news release pertaining to this RFP without the prior written consent of Geoscience BC.

### 8. CONTACT INFORMATION

Requests for further information, clarification or for any other purpose related to this RFP can be directed to the RFP Coordinator **by email only**.

# 9. PROJECT AREA MAP

