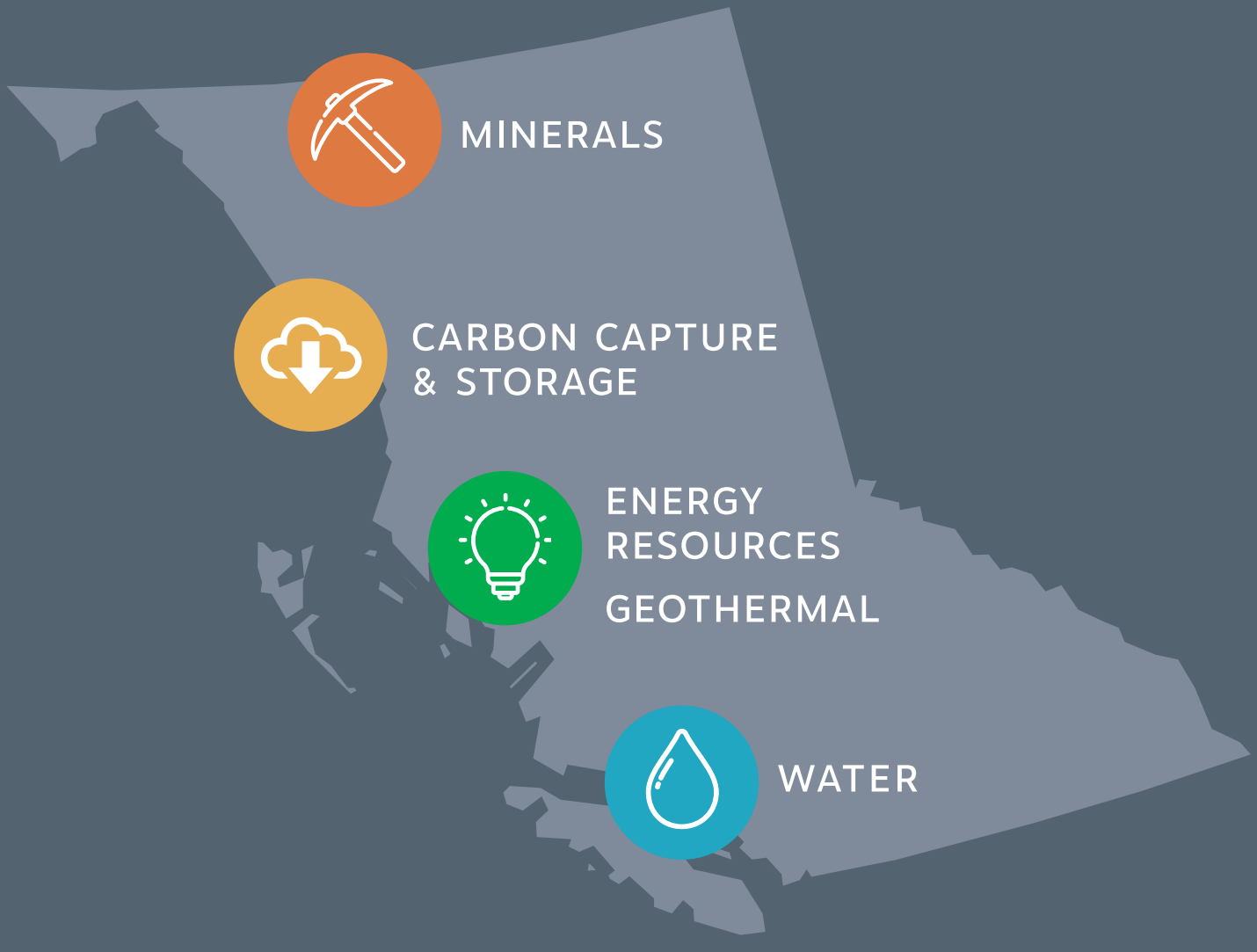
Geoscience BC

ANNUAL REPORT

2023/24



MEMBERSHIP & SPONSORSHIP

Supporting Independent Public Geoscience

Geoscience BC has been through a significant transition in recent years, introducing new membership classes, diversifying funding sources and responding to changing research needs. This is designed to ensure a stable and successful model that can continue to provide independent, peer-reviewed public geoscience research that informs evidence-based decisions.

To thrive, we need your continued support.

Membership

Geoscience BC membership is an essential part of our evolving collaborative model because it provides a space to discuss and refine future research. It has led to several organizations and communities contributing in-kind support and funding to research projects. By joining Geoscience BC, you stay up to date and become part of an influential network guiding future research.

MEMBERSHIP LEVELS

CORPORATE

$10,000 – Large
$5,000 – Medium
$2,500 – Small

$100 INDIVIDUAL

$25 STUDENT

$0 ASSOCIATE

Project Contributions & Sponsorship

Sponsoring Geoscience BC initiatives and contributing funding to research is key to ensuring Geoscience BC continues to prosper.

Organizations that contribute funding to Geoscience BC research projects can secure significant tangible benefits, such as early access to valuable data. In addition, industry contributions help to attract further support and investment from others.

Supporting research projects and sponsoring Geoscience BC initiatives demonstrates that your organization understands the value of independent public geoscience, increases your profile and demonstrates thought leadership. We thank the organizations that supported research and sponsored initiatives in 2023/24.

Advocacy

Supporting Geoscience BC publicly and advocating for funding helps to secure revenue for future research projects, and to turn Geoscience BC Project Concepts into reality. We encourage industry, government, Indigenous and community leaders to share the value they derive from Geoscience BC research, and the independent public geoscience ideas and resulting research they need to achieve their goals.

Geoscience BC 2024/25 Sponsorship Opportunities

$2,500
$2,000
$1,000

SUMMARY OF ACTIVITIES 2024

- Annual volume with technical research update papers
- Half- and full-page advertising opportunities
- Logo and recognition on promotional materials

AME Association for Mineral Exploration

Thank you to AME and Canadian Discovery Ltd. for advertising on the Summary of Activities 2023.

Canadian Discovery Ltd.

$10,000
$5,000
$2,500

RECEPTION AT AME ROUNDUP 2025

- Booth or signage at reception
- Tickets to reception
- Logo recognition on promotional materials
- Plus additional advantages depending on sponsorship level

$10,000
$5,000
$1,000

SCHOLARSHIP PROGRAM 2025

- Logo on website scholarship page
- Logo on website and email announcements
- Logo on Scholarship Program promotional materials sent to universities in Canada and beyond
- Sponsor recognition on social media
- Plus additional advantages depending on sponsorship level

Teck

Thank you to Teck Resources Limited for sponsoring the 2023 & 2024 Geoscience BC Scholarship Program.

$2,000
Minerals & Energy

SCHOLARSHIP RECIPIENTS WEBINAR 2025

- 1 slide of promo included in the welcome intro
- Opportunity to be the moderator
- Logo recognition on promotional materials
- Sponsor recognition on social media

$2,500

QUARTERLY eNEWS

- Quarterly email newsletter includes updates on Geoscience BC research projects
- Your logo or advert and link included on quarterly email newsletter

SGS

Thank you to SGS Canada Inc. for sponsoring the 2024/25 Geoscience BC Quarterly eNews.

For more information, email info@geosciencebc.com

CHAIR & CEO MESSAGE

Donna Phillips
CHAIR OF THE BOARD

Gavin C. Dirom
PRESIDENT & CEO

Geoscience BC's independent public geoscience research is essential to attracting investment and assessing British Columbia's critical minerals and metals, cleaner energy, water and carbon capture and storage opportunities.

Geoscience BC's significant evolution in recent years is progressing towards a stable model with diversified revenue sources and a wide variety of engaged and knowledgeable partners. This positions us well to deliver on a significant need for independent research to enable investment, innovation, informed decisions and reconciliation with Indigenous Peoples.

The Power of Collaboration

Launched in early 2022, our new classes of membership are at the core of Geoscience BC's collaborative model. We finished the 2023/24 year with a record 198 members including corporations, Indigenous groups and communities as well as individuals and students. Through this model, members are able to provide input on new research; to share research results more effectively; and to attract additional support, including funding.

Diversified Revenues Enable Research

Funding and in-kind contributions from industry and other partners help to demonstrate how Geoscience BC research is valued, and in turn attract much-needed funding from provincial and federal governments. We are proud that in 2023/24 Geoscience BC's revenues increased six-fold over 2021/22 and look forward to further building on this model. We gratefully acknowledge the continued financial support of our partners, including the Province of British Columbia through the Ministry of Energy, Mines and Low Carbon Innovation.

In 2023/24 we made significant progress towards our goal to diversify and build research funding and in-kind contributions, resulting in more collaborative and valuable outcomes. For example, we were delighted to welcome Foresight Canada as a contributor to two research projects in 2023/24. Foresight is matching funding from industry partners such as Arca Climate, Enbridge and New Gold Inc., and is also providing in-kind support in the form of complementary research. For the Central Interior BC Carbon Storage Assessment, current and future potential emissions mapping work from Foresight will be layered with our geological research to better assess potential carbon storage opportunities across Central and Northern BC.

Impactful Volunteer Network

None of this would be possible without the contributions of more than 50 Geoscience BC volunteers, who contribute approximately 1,500 hours of time every year to the Board of Directors, Indigenous Relations and Reconciliation Advisory Council, Technical Advisory Committees as well as project-specific committees. Thank you to all Geoscience BC volunteers for their continued support in 2023/24. We look forward to working with them in 2024/25 to continue to advance an independent public geoscience model that informs decisions supporting BC's transition to a net-zero emissions economy.

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Indigenous Relations & Reconciliation Advisory Council Member
Membership & Sponsorship Committee Member
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Vice Chair of the Board, Director

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Doug Donaldson

Director

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Indigenous Relations Strategist
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Consultant
Nisga'a

Maxine Bruce
Lil'wat
Lil'wat

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Gavin C. Dirom
President & CEO
Geoscience BC

Richard Truman
Vice President, External Relations
Geoscience BC

GEOSCIENCE BC STAFF SUPPORT:

Rhonda Schultz
Accountant & Corporate Secretary

MINERALS

Independent public geoscience helps to identify potential sources of critical minerals and metals. This is vital to developing secure supply chains needed to power Canada's transition to a net-zero emissions economy and is reflected in both provincial and federal priorities. For example, in January 2024, the Government of British Columbia announced the first phase of its Critical Minerals Strategy.

How We Contribute

Geoscience BC's collaborative approach and peer-reviewed, independent public minerals geoscience is a valuable tool used by industry, government, academia, communities and Indigenous groups to understand mineral exploration opportunities. Analysis of assessment reports submitted by the mineral exploration sector suggest that every $1 invested by Geoscience BC in minerals research influences more than $7 of mineral exploration investment in BC.

This section highlights our completed, ongoing and new minerals research from April 1, 2023, to March 31, 2024.

PROJECT CONCEPTS

Geoscience BC Project Concepts are new research ideas in development for which we are seeking input and investment from Geoscience BC members, industry, government, academia, communities and Indigenous groups. **If you have suggestions, input or are interested in contributing to a project, contact us at info@geosciencebc.com.**

High-resolution Geophysical Surveys

Geoscience BC has a reputation for delivering high-quality regional geophysical surveys that attract investment in BC mineral exploration. We are working with – and want to hear from – partners that can contribute to and benefit from these valuable programs, including those who can contribute existing data for new public datasets.

Piloting Carbon Storage in Ultramafic Rocks

Ultramafic rocks can potentially permanently store large volumes of CO_2, as minerals within them react with CO_2 to form stable carbonate minerals. Previous Geoscience BC-supported research has identified ultramafic units in British Columbia that are candidates to test this type of CO_2 storage. This Project Concept proposes to build upon earlier research to advance a pilot-scale test site for carbon storage in ultramafic rocks. The technical data and information generated would inform those looking to make evidence-based decisions to attract investment and de-risk emerging opportunities.

> *Critical minerals are a key pillar of BC's competitive mining sector. Research projects like the one being conducted by Geoscience BC will assist us in identifying potential new sources of these needed minerals...*
>
> **Honourable Josie Osborne, Minister of Energy, Mines and Low Carbon Innovation**

Critical Minerals in Tailings & Waste Rock

Critical minerals and metals are essential to technologies required for electrification – needed to meet net-zero emission goals. The *Critical Minerals and Metals in BC Mine Tailings and Waste Rock* program aims to assess and highlight opportunities to extract further value from mining by-products and address potential environmental liabilities.

Phase 1, which will be completed by Purple Rock Inc., will collate and analyze existing information from current and historic mining operations to identify sites for future laboratory and fieldwork studies, looking to identify potential sources of critical metals and minerals that were not considered recoverable or valuable at the time of extraction but that may now prove otherwise. It will also include other essential datasets, such as infrastructure.

Current funders are Arca Climate, Foresight Canada, New Gold Inc. and Geoscience BC, with in-kind contributions from the Ministry of Energy, Mines and Low Carbon Innovation's Abandoned Mines Branch. The Association for Mineral Exploration and the Mining Association of BC have also expressed their support for the project.

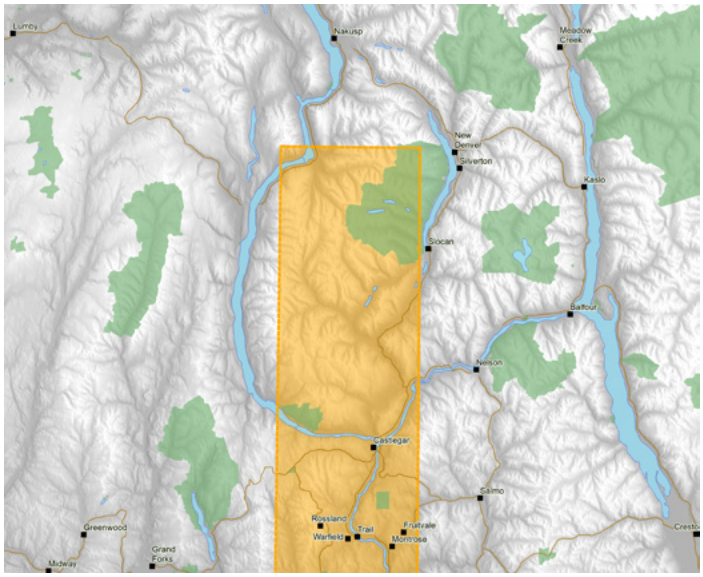
New Central Interior Till Analysis Datasets

The *Central Interior Copper-Gold Research: Surficial Exploration Project* provided high-quality surficial geology data to support mineral exploration in BC's North Central and South Central regions, where much of the bedrock that potentially hosts mineral deposits is overlain by extensive unconsolidated Quaternary sediments. The project was completed in spring 2023 with the release of reanalyzed archived till sample results, enhancing the geochemical database with a new dataset that is directly compatible and comparable with data sourced from other analyzed till samples.

This final dataset also complements drift thickness and till sampling suitability maps that were released earlier in the project. Together, these datasets and maps contribute to the understanding of the surficial geology that can enable evidence-based decisions for the mineral exploration sector.

Updated Geological Maps in the West Kootenays

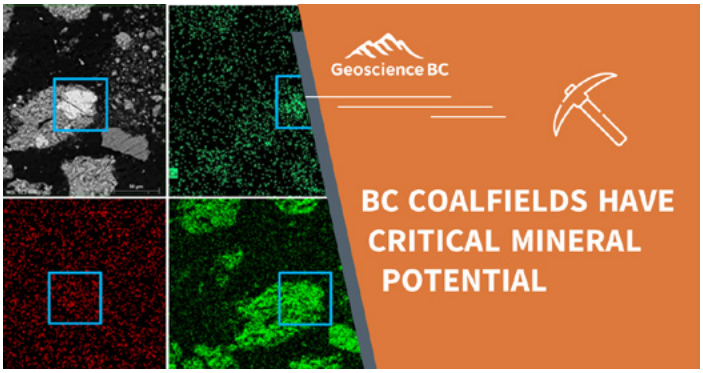
The *West Kootenay Geology: Mineral Potential and Regional Compilation* project is undertaking data compilation and selective geological mapping in the four western 1:50 000 scale maps of the Nelson map sheet (NTS 082 F). This collaborative project between Geoscience BC and the BC Geological Survey will enhance access to publicly available geological data and geological maps in an area with an extensive history of mineral exploration and mining activity. The results of this project will help enable evidence-based decisions for new mineral exploration activity or investments. The project is expected to be completed in 2024.



Rare Earth Elements in Coal Deposits

As demand for rare earth elements (REEs) continues to grow in the transition to a net-zero emissions economy, REEs as a group are considered among the top six critical minerals by the federal government's Critical Minerals Strategy.

The *Characterization and Extraction of Rare Earth Elements from East Kootenay Coalfields* project sought to quantify REEs in East Kootenay coal deposits, as coal deposits are thought to be a potential economic source.



Over 100 samples were collected and analyzed from mines and operating plants. The results showed that monzonite, xenotime and zircon were the dominant REE-bearing minerals and suggest that some of the tested coalfields may indicate resource potential and are worthy of further study. Separation techniques were also tested, with gravity-based separation showing the most promise and flotation being worthy of further study.

Deep Geology in the Quesnel Terrane

The *Undercover and Deep Geology from QUEST Electromagnetic and Gravity Data* project is deriving new information about bedrock geology in the central Quesnel terrane, located between Williams Lake and Mackenzie.

By reanalyzing existing regional geophysical data from Geoscience BC's QUEST project, researchers will be able to distinguish between different volcanic units within the Quesnel terrane and identify magnetic or nonmagnetic intrusive rocks and structure. Geophysical data and models will be compiled in 3-dimensional digital platforms, along with geological maps and bedrock observation data.

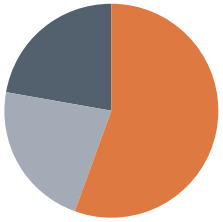
Exploratory data analysis allowed for the preliminary identification of spatial correlations between gravity data and geological models, and for distinguishing massive volcanic and intrusive domains from more permeable and porous sedimentary-rock-dominated domains.

2023/24 Minerals Projects

The *Summary of Activities 2023* volume contains nine minerals research project and Scholarship Program papers. View and download your copy at geosciencebc.com.

Minerals Strategic Objectives

- Identifying New Natural Resource Opportunities
- Advancing Science & Innovative Geoscience Technologies
- Facilitating Responsible Natural Resource Development



Completed Projects	5
Ongoing Projects	2
New Projects	2

ENERGY RESOURCES

Geoscience BC's independent energy resources research supports BC and Canada's transition to a net-zero emissions economy by providing the foundational research essential to understanding nascent carbon management opportunities, and responsible natural gas production.

As liquefied natural gas export terminals come online, demand for BC's low carbon intensity natural gas is set to continue to grow, and with it the need for independent research to guide the sector and its regulation.

With a growing interest in carbon capture and storage (CCS) opportunities, Geoscience BC is well-placed to provide the essential research required for evidenced-based decisions.

How We Contribute

Geoscience BC energy resources research helps governments, communities, Indigenous groups and industry to make more informed decisions on their path to a net-zero emissions economy. We partner with industry, governments and organizations to enable such collaborative projects. Geoscience BC research is independent and available to the public.

There has been a significant increase in the need for independent public geoscience to guide carbon management development. In addition, research that brings low carbon innovation to the natural gas sector continues, as well as new research into the potential for the extraction of critical metals such as lithium from produced formation waters.

This section highlights completed and ongoing research projects from April 1, 2023, to March 31, 2024.

Extending Seismic Monitoring

Geoscience BC is working with other BC Seismic Research Consortium members to extend the *Northeast BC Seismic Research* project. This established project monitors induced seismicity associated with hydraulic fracturing in BC's Northeast Region. We are seeking funding and in-kind contributions to continue this work as natural gas development continues in the region.

If you have suggestions, input or are interested in contributing to a project, contact us at info@geosciencebc.com.

> *As a regulator, we're pleased to be a part of initiatives like this that help keep us at the forefront of seismicity oversight associated with unconventional gas development.*
>
> **Stuart Venables, Supervisor, Energy Geoscience, BC Energy Regulator, and TAC Member.**

Ongoing Seismic Monitoring in Northeast BC

The ongoing BC Seismic Research Consortium Northeast BC Seismic Research project continues to monitor induced seismicity associated with hydraulic fracturing in the Northeast Region, using data from 37 monitoring stations deployed in the region.

Four new stations were added in the Montney development area, and four existing stations decommissioned elsewhere. The Montney stations record seismicity in the Kiskatinaw Seismic Monitoring and Mitigation Area and the Ground Motion Monitoring Permit Condition Area. Over the reporting period, the stations recorded 4,113 events, the vast majority of which had a local magnitude below 2.0, and an estimated 10% or less were natural earthquakes. No reports of damage from seismicity were reported to the BC Energy Regulator. This routine seismic monitoring has matured to the point of reaching a relatively stable state of operation, with few changes required in 2023/24.

Prince George continues to support sustainable industrial development so we are very excited to partner on this project with Geoscience BC. The carbon storage potential of the Nechako Basin may not only create an opportunity to diversify our economy, create good jobs, and support the emergence of low-carbon fuel sector, but it could help significantly contribute to the net-zero economy we're striving to achieve.

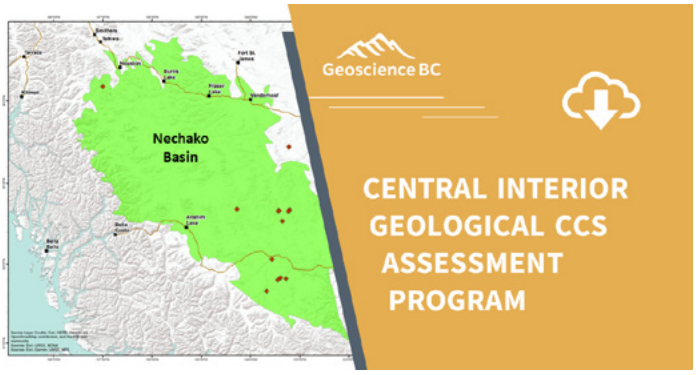
Mayor Simon Yu, City of Prince George

Carbon Sequestration Potential in BC's Central Interior

The *Central Interior BC Carbon Storage Assessment* project is assessing carbon storage potential for the Nechako Basin. Historical geological exploration in the basin south-southwest of Prince George has revealed good reservoir characteristics in certain zones. This, along with its proximity to current and potential future greenhouse gas emitters, places the basin among the geological structures in the province with carbon sequestration potential. The project will be used to inform decisions relating to emissions reduction and clean energy development, including the potential for hydrogen produced using natural gas.

The project is compiling all available geoscience data and reports for the basin, focusing on deep saline aquifers, to identify and quantify carbon storage potential.

Current research funders are the Ministry of Energy, Mines and Low Carbon Innovation, Enbridge, Foresight Canada's BC Net Zero Innovation Network and Geoscience BC. The project is also supported by the Canadian Hydrogen Association, City of Prince George and the First Nations Climate Initiative. Geoscience BC continues to seek additional partners to contribute to this project.



Carbon Storage Potential in the Granite Wash

To continue with the assessment of geological formations with carbon sequestration potential in BC, the *Northeast BC Granite Wash Geological CCS Atlas* project is building on the 2023 completion of the *Northeast BC Geological Carbon Capture and Storage Atlas* project. The deeper Granite Wash Formation was not included in the previous study due to the limited well data. This project is providing regional mapping and an assessment of carbon storage potential by gathering, cataloguing and interpreting existing relevant geoscience data.

To make this possible, a consortium of industry partners has been assembled to contribute seismic information and participate in the carbon storage assessment. The project is funded by the Ministry of Energy, Mines and Low Carbon Innovation and the consortium also includes the BC Energy Regulator, the Canadian Hydrogen Association, Canlin Energy Corporation, the City of Fort St. John and Logan Energy Corporation. Geoscience BC is seeking additional partners to share access to their seismic data for this project.

Luncheon at the Calgary Petrolum Club on January 30, 2024 to provide highlights of the *Northeast BC Geological Carbon Capture and Storage Atlas*. From left to right: Randy Hughes, Geoscience BC; Natalie Sweet, Canadian Discovery; and Dan Allan, Canadian Society for Evolving Energy.

The identification and utilization of lithium deposits represent a significant opportunity in the region.

Joel McKay, CEO, Northern Development

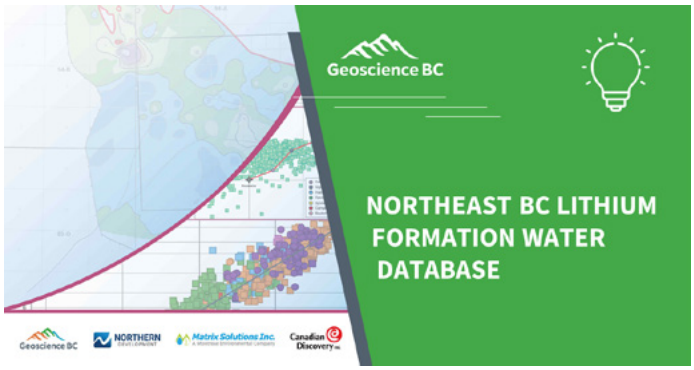
Lithium Potential in Northeast BC

The announcement in February 2024 of the completion of the *NEBC Lithium - Formation Water Database* was a significant milestone for Geoscience BC. This extensive project is the first independent, public project to map lithium concentrations in brines in BC's Northeast Region.

The aim of this project was to prioritize areas with lithium potential in the region, an area with comparable geology to Alberta and Saskatchewan where several lithium extraction

projects are underway. The project used existing natural gas and oil wells to collect brine samples from geological formations and analyze them to create maps showing concentrations of lithium and other metals.

The study found that certain areas within the Montney Formation had sufficient lithium concentrations for lithium extraction to be potentially economically viable if extracted formation water volumes are gathered during natural gas production. The study also provided information on proxies for lithium mapping and lithium-enrichment models. This project was a collaboration between Geoscience BC, LithiumBank, Natural Resources Canada and Northern Development.

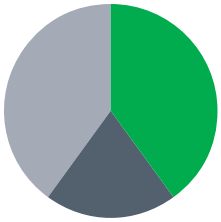


2023/24 Energy Resource Projects

The *Summary of Activities 2023* volume contains one energy resources Scholarship Program paper. View and download your copy at geosciencebc.com.

Energy Resources Strategic Objectives

- Identifying New Natural Resource Opportunities
- Advancing Science & Innovative Geoscience Technologies
- Facilitating Responsible Natural Resource Development
- Enabling Clean Energy



Completed Projects	2
Ongoing Projects	1
New Projects	2

GEOTHERMAL

Geothermal heat and energy have significant potential to contribute to Canada's net-zero emissions economy. This includes playing a role in hydrogen production.

How We Contribute

Geoscience BC's collaborative approach to generating independent, public geothermal research is being used by geothermal explorers and developers, communities, Indigenous groups and governments to make decisions about potential projects. It includes a significant partnership with Natural Resources Canada for the *Garibaldi Geothermal Volcanic Belt Assessment Project*. It also aligns with provincial and federal hydrogen strategies by aiding the development of potential hydrogen production facilities.

This section highlights completed, ongoing and new geothermal research from April 1, 2023, to March 31, 2024.

PROJECT CONCEPTS

Geoscience BC Project Concepts are new research ideas in development for which we are seeking input and investment from Geoscience BC members, industry, government, academia, communities and Indigenous groups. **If you have suggestions, input or are interested in contributing to a project, contact us at info@geosciencebc.com.**

Geothermal Potential in Southeast and Northwest BC

As Canada seeks new, feasible sources of cleaner energy, including the development of low carbon intensity hydrogen production, there is a need to better understand the energy potential of BC's geothermal hotspots.

Geoscience BC's foundational research has helped to attract investment and inform evidence-based decisions at Fort Nelson First Nation's *Tu Deh-Kah Geothermal* project and Meager Creek Development Corporation's *Meager Creek Geothermal Project.*

Two Project Concepts, the *Southeast BC Geothermal Energy Potential Assessment* and the *Northwest BC Geothermal Energy Potential Assessment*, seek to assess the geothermal energy potential in these regions. BC's Southeast Region has hot fluid flow systems associated with deep-seated crustal faults that can bring hydrothermal fluids from depth. BC's Northwest Region hosts numerous volcanoes and hot springs, and therefore has potentially significant geothermal energy resources.

Kootenay Lake Geothermal Project – Phase 4

The east shore of Kootenay Lake offers a potential clean source of direct geothermal heat. Phase 4 of this program will focus on the Crawford Creek area, with detailed geological mapping and geochemical sampling of thermal seeps and springs verified in Phase 3. Geochemical and geophysical findings from Phase 4 will be used to further refine a geological model considering permeability and structure, commencing the development of a hydraulic flow and heat transfer model. This will provide the data to plan drilling locations for a planned Phase 5.

Geothermal research conducted to date on the east shore of Kootenay Lake has pinpointed areas that are worthy of further research.

Gord MacMahon, Project Lead

Geothermal Potential of Southwest BC's Garibaldi Volcanic Belt

A collaborative effort between Geoscience BC, Natural Resources Canada (Geological Survey of Canada) and seven universities, the *Garibaldi Geothermal Volcanic Belt Assessment Project* continued to map and define Canada's premier geothermal hot spot in 2023/24. New mapping techniques developed at Mount Meager in Phase 1 of the research have been applied in the Mount Cayley region as part of Phase 2. This, as well as further findings from the Mount Meager area, have helped efforts to develop an assessment model to de-risk geothermal exploration in this and other areas of BC and Canada. An initial geothermal resource assessment has been generated for the Mount Meager area.

A final project report and data will be published in 2024, with additional research findings to be published in peer-reviewed journals by the project researchers.

This project has directly influenced decisions, tenure acquisition and investment in Meager Creek Development Corporation's proposed green hydrogen *Meager Creek Geothermal Project*.

Kootenay Lake Area Reveals Geothermal Potential

Geothermal assessment in BC's Southeast Region continues with the completion of the *Kootenay Lake Geothermal Project – Phase 3*. This phase focused on the Crawford Creek area, an area identified in earlier phases as having high direct-use geothermal potential owing to proximity to a deep-seated fault and permeability within the highly fractured Hamill H1 quartzite. The analysis of geological, geochemical and geospatial data collected in this phase point to a low temperature, shallow circulation geothermal system constrained by the host quartzite.

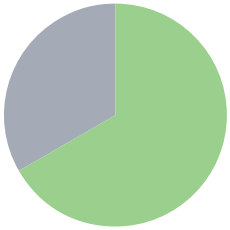
Modelling suggests potential to generate geothermal fluid temperatures up to 75°C or greater and establishes the research required for future subsurface hydrology mapping and test drilling.

2023/24 Geothermal Projects

The *Summary of Activities 2023* volume contains one geothermal paper. View and download your copy at geosciencebc.com.

Geothermal Strategic Objectives

- Enabling Clean Energy



Completed Projects	2
Ongoing Projects	0
New Projects	1

WATER

The sustainable use and management of water in BC's Northeast Region protects this resource for communities to be healthy and for the economy to thrive. Our projects contribute to this by facilitating research that provides the necessary data for informed decision-making, while also combining settler and Indigenous science.

How We Contribute

Geoscience BC aligns with federal agencies and provincial policies such as the Canada Water Agency and CleanBC through water research programs relating to energy and mineral development. Collaborative research ensures that Indigenous perspectives are incorporated to ensure that any decisions regarding water resources or development that impacts such resources can more meaningfully consider impacts to First Nations.

This section highlights our ongoing water research from April 1, 2023, to March 31, 2024.

Collaborative Water Monitoring in Northeast BC

The *Pilot Collaborative Water Monitoring Program, Northeastern British Columbia* aims to improve understanding of water quality and quantity in BC's Northeast Region, an area of active and historic natural gas development.

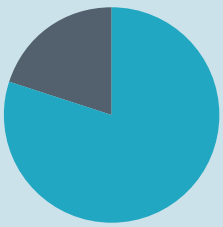
This multi-year project provides a dataset of surface water, groundwater, climate and benthic invertebrate conditions, for five new sites in Northeast BC. The projects, conducted in partnership with Treaty 8 First Nations, the BC Energy Regulator, BC Energy, Mines and Low Carbon Innovation, Matrix Solutions Inc. and Integral Ecology Group, were the *Northeast BC Hydrometric Monitoring Network Improvements* project, the *Traditional Knowledge and Scientific Data Education, Comparison and Collaboration in Northeast BC Surface Water Use* project and the *Coordinated Groundwater, Surface Water and Climate Monitoring Program, Northeast BC* project.

The data has been collected via installed and co-located hydrometric water stations, groundwater monitoring wells and climate stations. Researchers also worked with First Nation representatives to collect cultural indicators associated with water quantity in a first step toward a "two-eyed seeing" research approach that compares and combines settler and Indigenous science.

2023/24 Water Projects

Water Strategic Objectives

- Understanding Water



Completed Projects	4
Ongoing Projects	1
New Projects	0

GOVERNANCE, MANAGEMENT & FINANCE

Central to the successful governance of Geoscience BC are the estimated 1,500 hours contributed by more than 50 of its volunteers. This includes our Board of Directors, who are responsible for overall governance and strategic direction, including research project budget decisions based on recommendations from the Board's Minerals, Energy Resources and Geothermal Technical Advisory Committees (TACs). Our IRRA Council, which held its first meeting in May 2023, brings a new level of Indigenous input to our governance.

A Geoscience BC volunteer meeting in September 2023 saw many ideas shared between our volunteer groups.

Ensuring Transparency, Accountability & Responsibility

On September 21, 2023, we held our 18th Annual General Meeting. At the meeting, we thanked Dr. Robert Quartermain for his tireless efforts as he stepped down after serving nine years as a Board Director and providing significant contributions as a Minerals TAC member. Chair of the Board Donna Phillips, Vice Chair Lana Eagle, Treasurer John Milne, and Accountant and Corporate Secretary Rhonda Schultz were reappointed as officers of the Society.

Dr. Robert Quartermain (right) stepped down as a Board Director in September 2023. We thank him for his contributions as a Director and valued member of Geoscience BC's Minerals TAC.

In July, we were saddened by the passing of Geothermal TAC member Tim Sadlier-Brown. In October, we welcomed Stuart Venables of the BC Energy Regulator to our Energy Resources TAC. Stuart replaces the BC Energy Regulator's Jeff Johnson. In February, IRRA Council member Bill Adist stepped down. We thank all current and departing Directors, TAC, Council and Committee members for their dedication to Geoscience BC.

Building Future Opportunities

A major milestone for Geoscience BC in 2023/24 was receiving a threefold increase in gross revenues, compared to fiscal 2022/23, from an increasing number of diversified funding sources.

Following the launch of new classes of Geoscience BC membership in January 2022, we were pleased to finish the 2023/24 year with 198 Member including eight voting members (Directors), and 16 Corporate, 84 Individual, 14 Student and 76 Associate members representing diverse groups including industry, government, academia, communities, Indigenous groups and more. This is in addition to collaboration agreements in place with groups such as Natural Resources Canada's Geological Survey Canada and industry groups, and wider informal and project-specific agreements with organizations such as Northern Development and Foresight Canada. These are all essential to building a sustainable funding model with contributions from governments, industry, trusts and other partners.

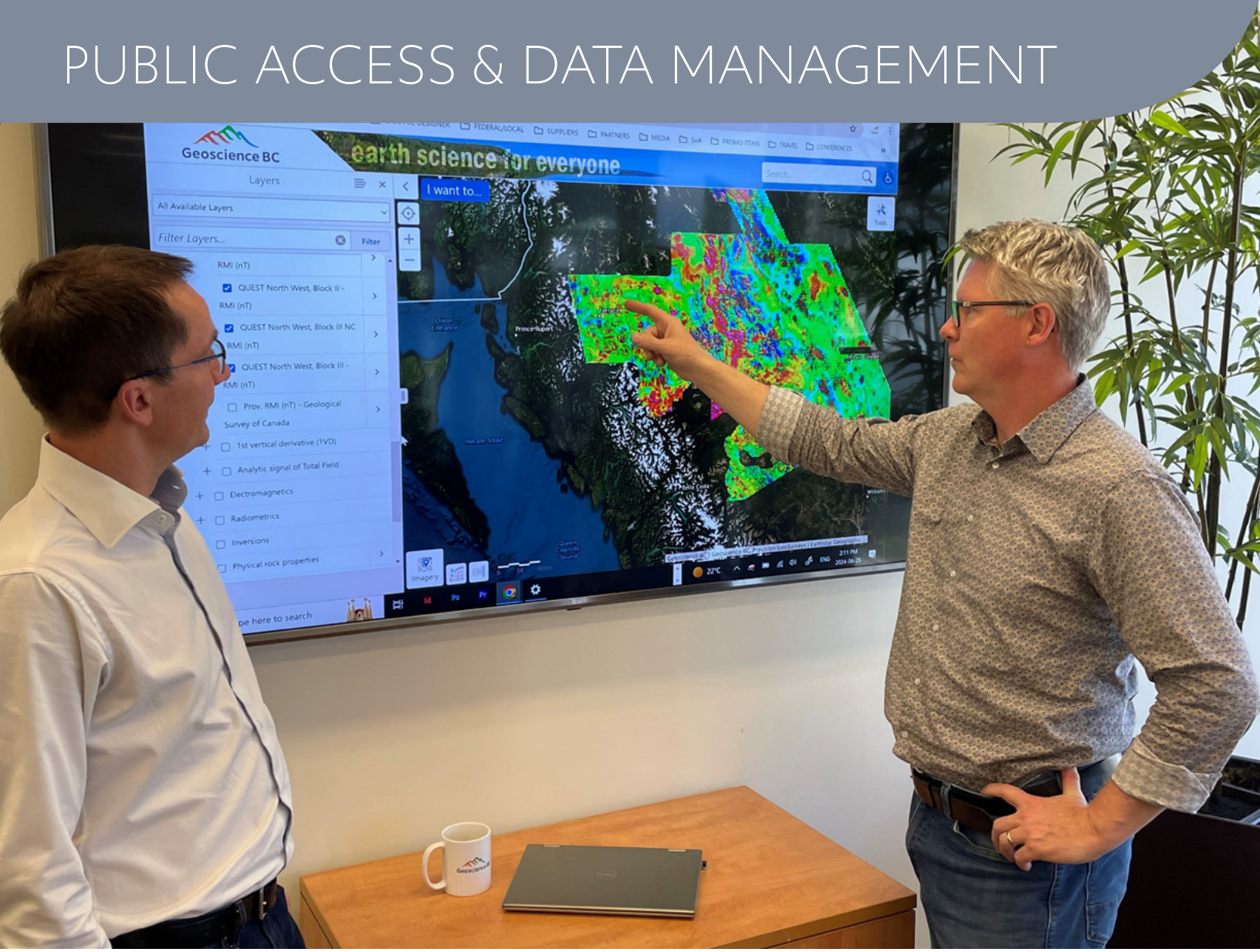
Geoscience BC Completed & Current Projects Since 2005

Strategic Research Area	Completed Research Projects	Current Research Projects
Minerals	155	4
Energy Resources	37	3
Geothermal	14	0
Water	30	1
TOTAL	**236**	**8**

In its Budget 2024 Consultation Report, the BC Select Standing Committee on Finance and Government Services once again recommended provincial government support for Geoscience BC, specifically that it "sufficiently fund and prioritize the implementation of a critical minerals strategy including funding for geological research through Geoscience BC and other organizations". This is in addition to multi-year policy support from communities, including Union of BC Municipalities and BC Chamber of Commerce resolutions.

Geoscience BC's membership model and collaborative approach to research also create new ways for communities and Indigenous groups to be involved in research projects. For example, the City of Prince George and City of Fort St. John are Geoscience BC members and partners in current projects.

PUBLIC ACCESS & DATA MANAGEMENT



Public access to Geoscience BC's independent critical mineral, cleaner energy, water and carbon capture and storage research plays an important role in the decisions needed to transition to a net-zero emissions economy.

Geoscience BC's Public Access & Data Management focus area supports our data management system and public access to research. All research reports and data are on our Geoscience BC website.

Providing Access to Public Data

Information on our website and Earth Science Viewer (ESV) are driven by internal project and report databases, which also ensure that project outlines and links to projects are available on the provincial government's Data BC tool.

Maintaining Secure Digital Data

We continued to advance work to maintain safe and secure databases, digital data project libraries, information technology infrastructure and management controls to professional standards and practices throughout 2023/24.

We also completed a transition to a hybrid cloud-based system supported by remotely accessible physical servers as some of Geoscience BC's team continues to work remotely.

The ESV is our custom web-based map and data service. Outlines for all projects, along with data from many projects and reports, are viewable along with other valuable layers such as mineral tenures, Dominion Land Survey (DLS) grid and orthoimagery. The ESV can be accessed via geosciencebc.com without the need for specialized software.

ADDING VALUE TO PUBLIC GEOSCIENCE

Ensuring equitable and easy access to our independent research adds significant value to Geoscience BC projects. Open access to reports and data enhance economic growth, research and innovation in BC, and support education, awareness and inclusion in decision-making.

Geoscience BC research is used by a diverse range of groups including the critical minerals and metals, cleaner energy and environmental sectors, as well as academia, communities, Indigenous groups and governments.

EXTERNAL RELATIONS & COMMUNICATIONS

Geoscience BC's External Relations & Communications focus area has evolved as we adapt to an updated collaborative funding model and as research interest grows in areas such as critical minerals and metals and carbon capture and storage.

This focus area adds value to our independent public geoscience by developing and maintaining relationships with the natural resource sectors, community leaders, Indigenous groups, academia and governments. It plays an important role in ensuring that we operate and communicate in a transparent manner; make our research easy to understand and share; that we are responsive to the needs of our members, partners and interest groups; and that we attract funding for Geoscience BC's in-demand research projects.

Increasing Awareness & Expanding Collaborative Network of Partners

A major focus in 2023/24 was securing interest and partners for Project Concepts, including Indigenous communities. We attended conferences, meetings and other events, including the Beyond Net Zero and the First Nations Major Project Coalition's The Values Driven Economy conference.

Geoscience BC's Brady Clift (left) interviewed by the Northern Miner at Roundup 2024.

This has helped to secure significant support. For example, at the 2024 BC Natural Resources Forum, partner Enbridge confirmed support for our carbon capture and storage research in a keynote speech, with additional partnerships confirmed with the City of Prince George and the First Nations Climate Initiative.

Enbridge confirmed its contribution to Geoscience BC research at the BC Natural Resources Forum. From left to right: City of Prince George Mayor Simon Yu, Enbridge's Cynthia Hansen and Geoscience BC's Gavin C. Dirom.

As well as new project contributions and Geoscience BC members, we continued to expand our network of collaborative partners in 2023/24. In May 2023, staff and volunteers visited Ottawa to discuss research needs with the Geological Survey of Canada; Innovation, Science and Economic Development Canada; Natural Resources Canada; and the Prime Minister's and Deputy Prime Minister's Offices.

Geoscience BC messaging was updated to ensure all communication reflects the focus of our independent, public geoscience as being the first link in the supply chain for Canada's net-zero emissions economy.

Geoscience BC discussed research needs with members and potential partners at the March 2024 PDAC conference.

EXTERNAL RELATIONS & COMMUNICATIONS

Demonstrating Research Value & Building Broader Support

Geoscience BC further built on previous support for funding our research, including continuing our quarterly email reporting updates to all members, partners and a network of more than 1,400 contacts.

New sponsorship and partnership opportunities were created, with encouraging uptake. More detail can be found on page 2. This also included co-hosting webinars with the Association for Mineral Exploration, Canadian Hydrogen Association and the Canadian Society for Evolving Energy as part of evolving partnerships.

Serving Technical & Academic Partners

In June, we announced ten 2023 Scholarship Program recipients. Details of each recipients' research can be found on pages 18 and 19. We were pleased to welcome Teck Resources Limited as 2023 Scholarship Program sponsor.

Our *Summary of Activities 2023* was published in January 2024, providing updates on eleven Geoscience BC projects and Geoscience BC Scholarship 2023 recipients' research. Summary of Activity papers were also featured in our regular Digging Deep blogs. Digging Deep brings together several projects into a concise blog and is a valuable tool to demonstrate the continued relevance of current and past research projects. For the first time, we sold advertising space in the Summary of Activities publication, with the Association of Mineral Exploration and Canadian Discovery taking part.

5 Webinars hosted to share valuable independent geoscience

21 Conferences and events attended

29 News announcements

12 Sponsorship opportunities created

Top 10 Projects by Website Page Views

(Apr. 1, 2023 – Mar. 31, 2024)

1	Critical Minerals and Metals in BC Mine Tailings and Waste Rock
2	NEBC Lithium - Formation Water Database
3	Northeast BC Geological Carbon Capture and Storage Atlas
4	Garibaldi Geothermal Volcanic Belt Assessment Project
5	Kootenay Lake Geothermal Project — Phase Three
6	Central Interior BC Carbon Storage Assessment
7	Northeast BC Granite Wash Carbon Storage Assessment
8	Pilot Collaborative Water Monitoring Program, Northeast BC
9	Golden Triangle Geophysics Data Compilation Project
10	Extracting Geological Value from Search Airborne Magnetic Data, West Central British Columbia

Geoscience BC Social Media Summary

	Apr. 1, 2022 – Mar. 31, 2023	Apr. 1, 2023 – Mar. 31, 2024	% increase
LinkedIn	4,826 followers	5,414 followers	**12.1%**
X	2,478 followers	2,526 followers	**1.93%**
Facebook	1,033 fans	1,050 fans	**1.64%**
Instagram	1,142 fans	1,253 fans	**9.71%**

Increasing Geoscience Literacy & Capacity

The Geoscience BC Scholarship Program supports graduate students working on BC-based geoscience projects. In 2023, we awarded scholarships to ten students working on research related to BC's minerals, energy and water resources. The Program has supported 154 students with $770,000 in funding since 2007. We gratefully acknowledge Teck Resources Limited for its sponsorship in 2023.

Teck

Cottonbelt Pb-Zn Deposit of Southeast BC

Ph.D. Student **Lindsey Abdale** is testing the hypothesis that regional alkaline and carbonatitic magmatism played a role in generating the lead-zinc-magnetite stratiform Cottonbelt deposit of BC's Southeast Region. The study aims to develop a new deposit model through analysis on the Pb isotopic ratios in galena and from feldspars in related rocks to indicate source, timing and potential genetic relationship.

→ University of British Columbia

Topsoil Influence on Ecosystems in Tailings Storage

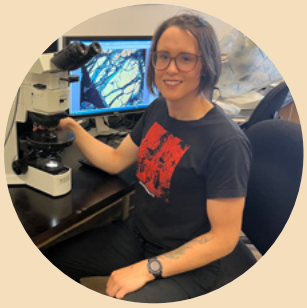
M.Sc. Student **Behnaz Bahroudi** is researching sustainable technologies in tailings storage facility reclamation. Though adding subsoil and topsoil enriches the biochemistry of tailings, a limited supply of soil materials means optimization is necessary to best promote ecosystem development. This research is investigating the impact of zeolite, leonardite, and fortified compost within different soil cover depths on ecosystem reclamation of tailings storage facilities.

→ Thompson Rivers University

Trace Elements and Sulphur Isotopes in the Golden Triangle

M.Sc. Student **Joanna Dlugosz** is focusing on the critical mineral potential in the Burgundy Ridge deposit in the Northwest Region's Golden Triangle through sulphur isotopes and trace element maps. The research will enhance the understanding of the poorly understood silica-undersaturated copper-gold alkalic porphyry deposits. Trace element maps will also be utilized for identifying the occurrence and concentrations of critical minerals.

→ University of British Columbia (Okanagan Campus)



Nickel Mineralization of the Turnagain Complex

Ph.D. Student **Kiera Broda** is examining the interplay of magmatic and hydrothermal processes in creating favourable conditions for significant nickel-sulphide mineralization in the Turnagain Complex in BC's Northwest Region. The results will provide a better understanding of the controls on nickel-sulphide mineralization, which will aid in the development of metallurgical protocols.

→ McGill University

Geothermal 3-D Modelling of Garibaldi Volcanic Belt

Ph.D. Student **Fateme Hormozzade** is on her second year of Scholarship Program support. As part of Geoscience BC's *Garibaldi Geothermal Volcanic Belt Assessment Project*, she is using audio-magnetotelluric data to explore for shallow geothermal resources. A new electrical resistivity model will provide information about the hydrothermal system and fluid flow in the subsurface of Mount Meager.

→ ***Carleton University***

Structure of the Galore Creek Porphyry Deposit

M.Sc. Student **Russell Johnston** is researching structural controls for the alkalic porphyry Galore Creek deposit in the Golden Triangle in BC's Northwest Region through traditional structural field geology and modern analytical techniques. The research will help improve both a regional tectonic model of the Stikine terrane and a model for the Galore Creek deposit.

→ ***University of British Columbia***

Carbon Sequestration Potential in the Georgia Basin

Ph.D. Student **Maziyar Nazemi** is contributing to the analysis of the potential for the storage of CO_2 in the Georgia Basin in BC's Southwest Region. The research aims to better understand the sedimentary strata in the basin through building an integrated 3-D geological static model, to estimate storage capacity and the long-term fate of injected CO_2 and define subsurface geohzards.

→ ***Simon Fraser University***

Compression Breakage Analysis

Ph.D. Student **Giovanni Pamparana** is researching comminution in High-Pressure Grinding Rolls used in mineral processing industries. The research aims to address the high cost and material requirements as well as examining the influence of feed characteristics. The results can contribute to reducing overall energy consumption and carbon emissions, and also enhance design and planning of mining projects.

→ ***University of British Columbia***

Stratigraphy and Mineralization in the Golden Triangle

M.Sc. Student **Kyle Powers** is researching the stratigraphy of the Hazelton Group in BC's Northwest Region. The age and lithological provenance of this zinc-lead deposit are uncertain. Through field studies and laboratory analysis, the results will establish the geological framework of the mineralizing system in relation to the geographically close Dolly Varden and Eskay Creek volcanogenic massive sulphide deposits.

→ ***University of British Columbia***

Mineralogy and Geochemistry at the Lorraine Cu-Au Deposit

M.Sc. Student **Huaze (Derek) Xu** is researching the Lorraine alkalic copper-gold porphyry deposit in the Quesnel arc in BC's North Central Region. Laboratory analysis is investigating the mineralogy and petrogenesis of the deposit to identify alteration assemblages and footprints. The results will provide vectors for mineral exploration at the deposit and contribute to base knowledge at similar deposits elsewhere in BC.

→ ***University of British Columbia***

Geoscience BC membership is an essential part of our evolving collaborative funding model because it provides a space to discuss and refine future research needs. It has led to several organizations expressing an interest in contributing cash and in-kind funding support for research projects.

Thank you to all Geoscience BC members for your support!

Geoscience BC

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