

BC OGRJS

BC Oil and Gas
Research and Innovation Society

Annual Report

Fiscal Year 2015/16



The BC Oil and Gas Research and Innovation Society (BC OGRIS), formerly the Science and Community Environmental Knowledge (SCEK) Fund, is a not-for-profit society overseen by the Canadian Association of Petroleum Producers (CAPP), the Explorers and Producers Association of Canada (EPAC) and the BC Oil and Gas Commission (Commission).

Vision

To continuously improve understanding and management of the impacts of oil and gas activities in B.C.

Mission

The BC OGRIS supports practical studies that develop credible and relevant information to address knowledge gaps in the understanding and management of high priority environmental and social matters related to oil and gas exploration and development in B.C. Research findings from funded projects are shared with organizations in the oil and gas industry as well as regulators and government agencies, other stakeholders and First Nations.

BC OGRIS Report

This report documents the operational and financial achievements for the 2015/16 fiscal year (April 1, 2015 to March 31, 2016) along with an overview of plans for the 2016/17 fiscal year.

Contact Us

For further information, please contact the BC OGRIS,
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www.bcogris.ca

Cover Photo: courtesy Pamela Giesbrecht, BC Oil and Gas Commission.

Message from the BC OGRIS Board of Directors

Fiscal year 2015/16 was a dynamic year for the BC Oil and Gas Research and Innovation Society as we began our first year operating as a not for profit society. Transition activities from the Science and Community Environmental Knowledge Fund to the BC OGRIS were completed in the early part of the year.

BC OGRIS activities are broadly divided into two funds—a Caribou Research Fund and an Operating Research Fund. The Caribou Fund continued its programs to collect data and analyze findings to support the development of management options for the B.C. government's boreal caribou initiative. Preparations to restore boreal caribou habitat were building momentum with a view to starting restoration activities in December 2016. The Operating Fund continued several multi-year projects already under way that are closely tied to research aligned with identified B.C. Government policy priorities.

In fiscal year 2016/17, we will continue supporting our research projects under the Caribou and Operating funds. Key themes in our research include continuing to analyze our finding regarding boreal caribou populations and habitat; impacts of restoration on Boreal Caribou and their predators; seismicity; and water and air quality. Strategic partnerships with other research organizations will continue to ensure we have the capacity to respond to the information needs and expectations of our stakeholders—including attracting good research, leveraging our investments and avoiding duplication of research activity.

Capacity to fund future research projects will become an issue as the oil and gas industry adjusts to reduced revenue and funding challenges. We will continually monitor our investments and administrative activities to reflect our revenue stream and align activities accordingly and prudently take proactive action to realize cost savings and synergies wherever possible.

Going forward, the Board of Directors will continue its efforts to oversee a well governed research fund that delivers high quality results to inform public policy; aid decision making and enhance operating practices for oil and gas activities that are important to the sector and the people of British Columbia.

Geoff Morrison
Chair, BC OGRIS Board of Directors
October, 2016

Report on the BC OGRIS (FY 2015/16)

Introduction

The BC OGRIS is a professional research fund that focuses on researching the environmental and social impacts of upstream oil and gas activities in B.C. Key principles of flexibility, responsiveness and transparent operations help distinguish the BC OGRIS and attract quality research projects that address significant and timely issues and knowledge gaps.

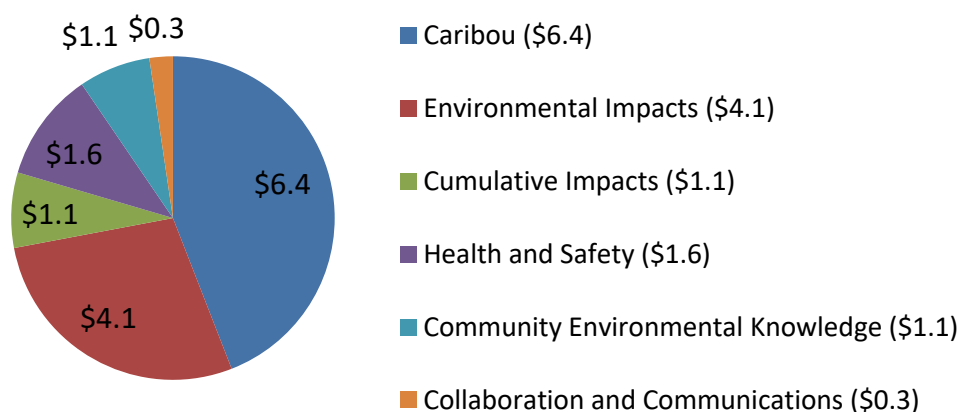
The BC OGRIS is funded through contribution by the upstream oil and gas companies, large and small, through fees and levies administered by the Commission and is part of industry's commitment to responsible development and the Commission's mission to regulate oil and gas activities for the benefit of British Columbians.

The BC OGRIS operates two main funds:

- **Caribou Fund**—focused on Boreal Caribou research. The Fund is overseen and directed by the MoU Strategic Leadership Team (MSLT) comprising senior representatives of the B.C. government and industry who recommend projects to the BC OGRIS for funding. The MSLT is supported by a Research and Effectiveness Monitoring Board (REMB) comprising representatives of the scientific committee who assess and monitor boreal caribou projects and their findings.
- **Operating Fund**—comprising five funding envelopes—Health and Safety; Environmental Impacts; Community Environmental Knowledge; Cumulative Impacts Management; and Collaboration and Communication. This fund is overseen and directed by the BC OGRIS Board of Directors who fund projects based on recommendations from our stakeholders. External subject matter experts assist in the assessment and monitoring of projects and their findings.

The charts below and in the following section summarizes investment since inception in 2000 under the SCEK Fund and BC OGRIS. More information on the BC OGRIS, including the terms of reference and business plan, can be found on the website at: www.bcogris.ca.

Investment To-date (Millions)*



* Since project expenditures commenced in 2000.

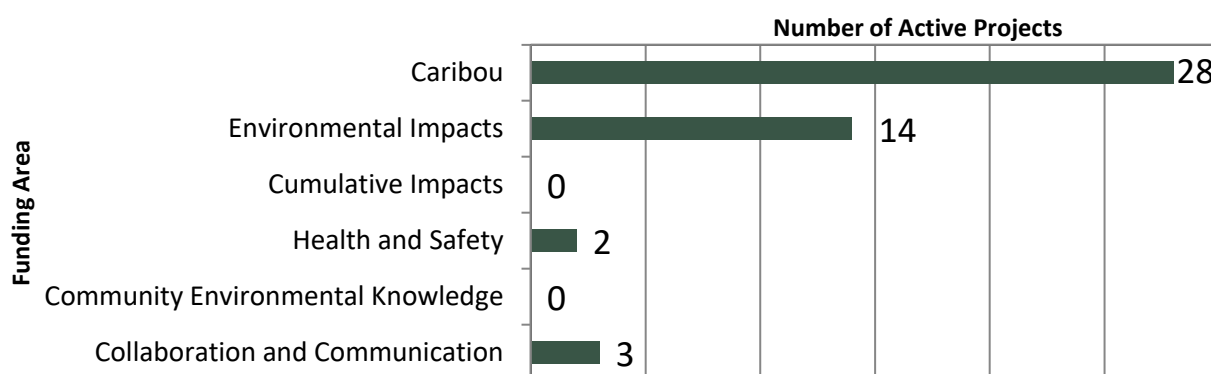
Accomplishments (FY 2015/16)

Project and Proposal Activity

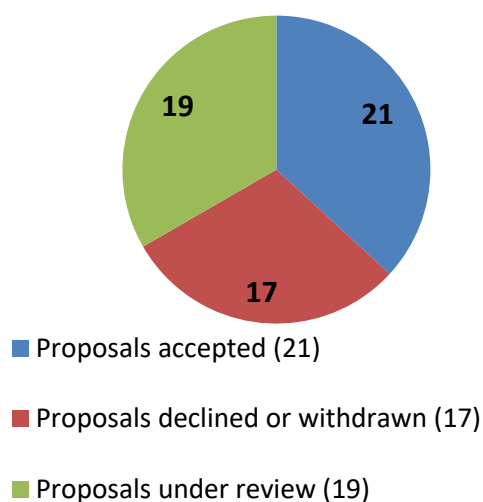
Proposal and project activity for the 2015/16 fiscal year is summarized in the charts below.

Projects accepted for support in the 2015/16 fiscal year were within the funding areas of Caribou, Environmental Impacts, Health and Safety and Collaboration and Communication. In total, 21 new projects were approved for funding while 10 projects were completed.

Active Projects in 2015/16



Proposal Activity

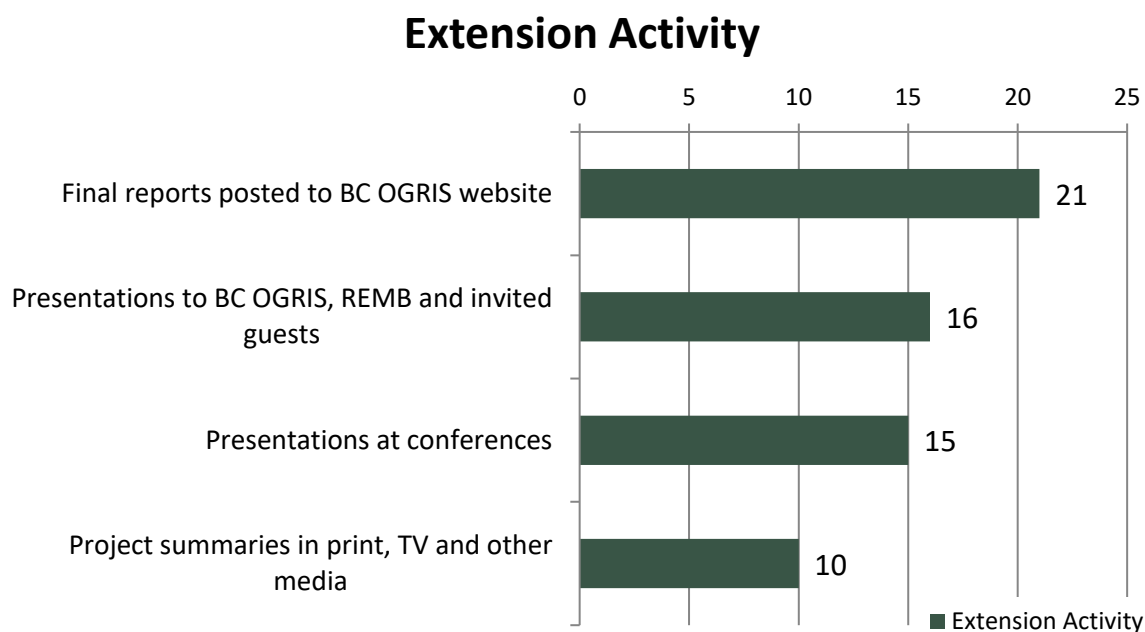


The review and recommendation of projects for funding is divided into Caribou Fund projects and Operating Fund projects. Recommendations to fund boreal caribou related projects were made by the MSLT and REMB as described on page 4. Non-boreal caribou projects were strategic requests from our major stakeholders to support the collection of science-based information to inform emerging public policy discussions and support decision making.

More information on projects and findings within the Caribou Fund can be found in the Research and Effectiveness Monitoring Board (REMB) Annual Report available on the BC OGRIS website at: <http://www.bcogris.ca/boreal-caribou/extension>.

Extension Activity

Extension activities undertaken this year to disseminate findings and raise awareness about BC OGRIS funded research projects are summarized below.



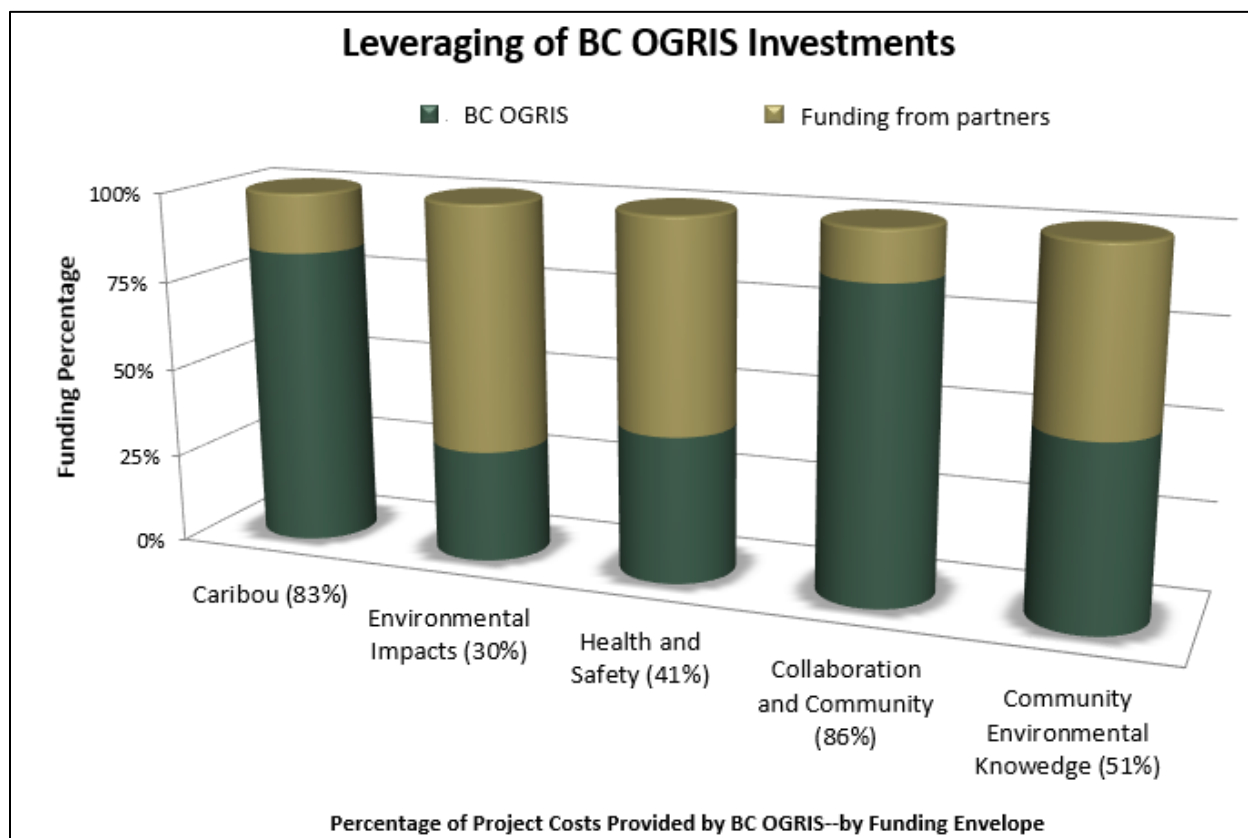
Final reports—all projects delivered a report explaining the project and its findings. These reports—prepared by the project team—were posted on the BC OGRIS website for distribution.

Presentations—in FY 2015/16, 16 project presentations were made to the BC OGRIS Board of Directors, the REMB under the Caribou Fund and/or invited guests such as representatives from government, regulators and industry. Fifteen other presentations were made at environmental themed conferences. The REMB ran two series of webinars, with a combined total of 11 webinars, designed to disseminate the findings from Boreal Caribou research. The highly attended webinar series explained the project’s findings and potential applications and will be continued in FY 2016/17.

Project summaries in print, TV and other media—in FY 2015/16, the BC OGRIS and its extension partners published 10 releases such as newspaper articles, press releases and project profiles and engaged in social media activities to raise awareness about projects funded by the BC OGRIS in communities where we operate.

Leveraging our Investments

An increasing number of the BC OGRIS' research projects involve collaboration with external subject matter experts, research and extension partners. This enables the BC OGRIS to leverage its investment in projects as well as share the management and extension activities with other organizations. The resulting extension activities are significantly enhanced through the combined resources of the participating organizations—leading to wider exposure and use of the research findings.



Leveraging of BC OGRIS Funds in research projects undertaken in FY 2015/16
(by Funding Envelope)

The illustration above summarizes the leveraging of BC OGRIS funding in 2015/16. The illustration shows the percentage of funding provided by the BC OGRIS and the percentage by our research partners. Funding envelopes with no activity are not shown. The Operating Fund (i.e., non-Caribou funding envelopes) supported an average of between 30 per cent and 86 per cent of the total value of research projects in which it participated while the Caribou Fund supported 83 per cent.

Governance and Management

The BC OGRIS is a provincially incorporated not-for-profit organization under the BC Societies Act whose members are the Canadian Association of Petroleum Producers (CAPP), Explorers and Producers Association of Canada (EPAC) and the BC Oil and Gas Commission (Commission). The BC OGRIS Board of Directors consists of 3 directors—1 director representing each of the members and is responsible for the governance and management of the BC OGRIS.

Administration of the BC OGRIS is carried out under the supervision of the Board of Directors by the Program Manager. Financial services and technical support of the website are provided under a services agreement with the Commission.

Operating Principles

Operating principles established by the BC OGRIS Board of Directors include the following:

Priority	Description
Ensure good governance of the BC OGRIS	Providing oversight of projects and ensuring all projects use and follow applicable processes, tools and policies while ensuring flexibility to respond to additional opportunities as they arise. Governance of individual projects will be undertaken applicable to the investment level, type of research and project specific risks.
Ensure good use of the investment funds	Soliciting research proposals and making decisions on funding research consistent with the following BC OGRIS principles:
<ul style="list-style-type: none"> • Targeting research 	<ul style="list-style-type: none"> • at known knowledge gaps that are important to our major stakeholders such as undertaking projects to inform emerging public policy topics, regulatory discussions in government and best management practices in industry.
<ul style="list-style-type: none"> • Leveraging our research funding 	<ul style="list-style-type: none"> • by including other stakeholders and research partners in our funding agreements and being flexible in our funding models.
<ul style="list-style-type: none"> • Conducting extension activities 	<ul style="list-style-type: none"> • to ensure research findings and the application and implications of the research findings are easy to find and use by our target audiences.
<ul style="list-style-type: none"> • Minimizing administrative expenses 	<ul style="list-style-type: none"> • through sharing administrative and overhead costs with research partners and structuring simple, yet maintaining flexible and appropriate funding agreements.

Financial Report (FY 2015/16)

Results of Operations

The BC OGRIS receives most of its funding from levies on production volumes and fees from well licence applications. In March 2015, the Commission made a financial contribution of \$3.5 million to the BC OGRIS to support expenditures for 2015/16. Subsequent to receipt of this funding, the revenue to BC OGRIS from fees and levies in was suspended.

A summary of financial activity in FY 2015/16 is shown below. The activity is broken down by funding envelopes with the Operating Fund column representing all the funding envelopes except the Caribou Fund. The annual financial audit of the BC OGRIS was completed by external auditors. Copies of the audit statement and the audited financial reports are available on the BC OGRIS website at <http://www.bcogris.ca/about>.

Statement of Financial Position (as at March 31, 2016)

	Operating Fund (000's)	Caribou Fund (000's)	Total
Assets			
Current assets			
Cash	\$ 2,375	\$ 4,205	\$ 6,580
Accounts receivable	76	34	110
Due from the Commission	200	—	200
Prepays	1	20	21
Sub-total	\$ 2,652	\$ 4,259	\$ 6,911
Capital assets			
Caribou collars	—	136	136
Total Assets	\$ 2,652	\$ 4,395	\$ 7,047
Current liabilities			
Accounts payable	\$ 387	\$ 454	\$ 841
Holdbacks	24	—	24
Due to Commission	4	13	17
Deferred contributions	200	—	200
Sub-total	\$ 615	\$ 467	\$ 1,082
Fund Balances			
Caribou	—	3,928	3,928
Operating	2,037	—	2,037
Sub-total	\$ 2,037	\$ 3,928	\$ 5,965
Total Liabilities and Net Assets	\$ 2,652	\$ 4,395	\$ 7,047

Statement of Operations and Net Assets (for year ending March 31, 2016)

	Operating Fund (000's)	Caribou Fund (000's)	Total
Revenue			
Interest	\$ 30	\$ 61	\$ 91
Contributions	—	2,025	2,025
Fees	—	—	—
Levies	8	16	24
Sub-total	\$ 38	\$ 2,102	\$ 2,140
Expenses			
Project costs	746	2,122	2,868
Professional services	52	131	183
Management fees	14	30	44
Extension and communication	—	26	26
Collars—Maintenance	—	14	14
Other Expenses	2	—	2
Amortization expense	—	93	93
Loss on disposal of assets	—	—	—
Sub-total	\$ 814	\$ 2,416	\$ 3,230
Deficiency of revenue over expenses	(776)	(314)	(1,090)
Fund balance beginning of year	2,813	4,242	7,055
Fund balance end of year	\$ 2,037	\$ 3,928	\$ 5,965

Research Activities (FY 2016/17)

The table below illustrates the forecasted research funding, by funding envelope, over the next three years. Expenditures in the Caribou Fund are forecasted to end after FY 2016/17 as per the terms of the funding MoU between industry and the B.C. Government. This may be extended into FY 2017/18 as some projects extend beyond the end of FY 2016/17. Expenditures in the Operating Fund will be approved and released by the Board of Directors to match the declining revenue from our stakeholders. Over the coming fiscal year, the Board of Directors will be reassessing the path forward and considering alternative funding sources. In the interim, the Board of Directors will be restricting applications for funding new projects.

The BC OGRIS will continue to fund a diversity of research projects while ensuring the projects focus on addressing knowledge gaps important to the oil and gas sector and our major stakeholders.

The funding priorities for FY 2016/17 include the following items:

- Caribou—support research completing under the final year of the MoU between government and industry to support Boreal Caribou research in B.C. Work with government and industry to plan and transition to the next funding model for Boreal Caribou research in B.C.
- Seismicity—maintain a seismic array network to collect and analyze data on seismic activity in northeast B.C.
- Air—continue to support projects collecting and analyzing data on air quality in northeast B.C.
- Water—inventory, analyze and provide access to information on surface water quantity and ground water quality.
- Green House Gas (GHG) reductions—collect baseline data for use in emission factors.
- Collaboration and Communication—support projects in building capacity to understand and monitor oil and gas activity in First Nation areas.

Forecasted Research Funding (FY 2016/17)

	2016/17*	2017/18*	2018/19*	Total*
Project expenditure (by funding envelope)				
Caribou Fund	\$2,270	--	--	\$2,270
Operating Fund:				
- Environmental Impacts	\$596	\$145	--	\$741
- Community Environmental Knowledge	\$140	--	--	\$140
- Health and Safety	\$125	\$50	--	\$175
- Cumulative Impact Management	--	--	--	\$0
- Collaboration and Communication	\$620	--	--	\$620
- Unallocated	\$85	\$50	\$75	\$210
Total	\$3,836	\$245	\$75	\$4,156

* Numbers in thousands.

Active Projects

The following projects, listed by funding area, were undertaken in FY 2015/16. More information on these projects can be found on the BC OGRIS website at www.bcogris.ca or by contacting the Program Manager at info@bcogris.ca.

Caribou

Investment to-date: \$6.4 million

Focus

Supporting the Government of British Columbia's implementation plans for the ongoing management of caribou in B.C. through conducting research on caribou and their habitat. The governance around the implementation plan and underlying activities is supported by a Memorandum of Understanding (MoU) between industry and the B.C. Government signed on Aug. 8, 2011. The signatories to the MoU will be reviewing the MoU and may extend the term into next fiscal year.

Active projects (FY 2015/16)



Images From Motion-Sensing Cameras Installed to Monitor Large Mammal Use of Linear Features (courtesy Matrix Solutions).



Boreal Caribou Telemetry Program

Collect, monitor and report population and habitat information through a network of over 200 GPS/VHF radio collars deployed on boreal caribou and wolves. This includes conducting monitoring surveys to obtain approximate locations, investigating mortalities and carrying out a spring recruitment survey to refine population growth estimates (*Caslys Consulting; Diversified Environmental Services*).

Restoration Planning and Preparation

Several projects to plan and prepare for restoration activities in 2017 along with researching the implications of restoration on boreal caribou habitat and predator usage.

REMB Annual Report

More information on projects in the Boreal Caribou Fund can be found in the REMB Annual Report available on the BC OGRIS website: <http://www.bcogris.ca/boreal-caribou/extension>.

Collaboration and Communication

Investment to-date: \$0.3 million

Focus

Improving communication between industry, regulators and government agencies, other stakeholders and First Nations.

Active projects (FY 2015/16)



Review of Northeast Crown Conservation Land Designations

Analysis of the Crown conservation lands in northeast B.C. and the associated volume of referrals to agencies for authorization applications (*Ducks Unlimited Canada*).

First Nations Environmental Monitor Program

Supporting the development of capacity within First Nations to monitor environmental activities in northeast B.C. (*BC Oil and Gas Commission*).

Cumulative Impacts Management

Investment to-date: \$1.1 million

Focus

Advancing the understanding and management of the cumulative impacts of oil and gas projects in the context of landscape level management.

Active projects (FY 2015/16)

No active projects in FY 2015/16.

Environmental Impacts

Investment to-date: \$4.1 million

Focus

Collecting information and identifying methods to avoid, minimize, or mitigate the impacts of oil and gas activities on terrestrial and aquatic ecosystems.

Active projects (FY 2015/16)



Aerial Equipment Mapping Groundwater Aquifers
in the Peace Region
(courtesy Geoscience BC).

Water Related Projects

Four projects to research water quality and quantity in northeast B.C. Projects included mapping groundwater aquifers in the Peace Region; analyzing the potential to dispose of fluids in deep aquifers; understanding the distribution and flow pathways of springs in northeast B.C.; and identifying protocols for sustainable withdrawal of water from lakes.

Seismic Array Network Project

Year four of a five-year project to establish and maintain a network to collect and analyze data on seismic activity in northeast B.C. (*Geoscience BC*).



Seismic Array Network project
equipment—an installed seismograph station
(courtesy Geoscience BC).

Technical Related Research

Two technical reports researching the storage of saline fluids in engineering liner systems; and alternatives to pneumatic pumps used in cold weather.

PNEUMATIC PUMP
ALTERNATIVES
FOR COLD WEATHER



Report on Pneumatic Pump Alternatives for Cold Weather
(GreenPath Energy).

Health and Safety

Investment to-date: \$1.6 million

Focus

Advancing oil and gas practices related to human health and safety.

Active projects (FY 2015/16)



Northeast Air Monitoring project equipment—an air monitoring environmental laboratory (courtesy B.C. Ministry of Environment).

Northeast Air Monitoring Project

Year two of a three-year project to establish a monitoring network in northeast B.C. to capture air quality data for use in making informed public health decisions (*B.C. Ministry of Environment*).

PM2.5 Emission Factors

Research to update PM2.5 emission factors and chemical speciation profiles for use in federal and provincial air quality permitting and licensing applicable to engines used in oil and gas operations in Canada (*Canadian Energy Partnership for Environmental Innovation*).

Prepared for:
Canadian Energy Partnership for Environmental Innovation
Petroleum Technology Alliance Canada
BC Oil and Gas Research and Innovation Society
Prepared by:
Ramboll Environ,
 Irvine, California
Document type:
Final (Revision 0.2)
Date:
8 July, 2016 (revised September 15, 2016)

**CEPEI PM2.5 EMISSION FACTOR
DEVELOPMENT
UPDATE: ALTERNATIVE PM2.5 EMISSION FACTORS
FOR NATURAL GAS-FIRED ENGINES**

RAMBOLL ENVIRON

Report on PM2.5 Emission Factors (CEPEI)

Community Environmental Knowledge

Investment to-date: \$1.1 million

Focus

Documenting, demonstrating and improving the application of community environmental knowledge to oil and gas planning, development and restoration.

Active projects (FY 2015/16)

No active projects in FY 2015/16. Some community environmental knowledge activities were undertaken under the Boreal Caribou Fund and as part of projects in the Collaboration and Communication funding envelope.

In Closing

From our beginning in 1999, we have supported close to 125 projects ranging in size from short studies and reports to multi-year projects involving multiple researchers and organizations. In the last four years, our level of activity in funding research has steadily increased to reach record numbers of projects supported. Our projects are getting larger and focused on strategic alignment with priorities of the B.C. Government.

We thank all our stakeholders, researchers, technical reviewers and administration team for their assistance in delivering these research projects. Your support and assistance enable us to meet our goals and deliver findings that address important knowledge gaps in environmental and social aspects of oil and gas development in B.C.

Comments and questions on this report and/or the BC OGRIS can be sent to info@bcogris.ca.



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