ENERGY TRANSITION
THETFORD MINES REGION

40 YRS

BBA

CANADIAN CONSULTING ENGINEERING AWARDS 2020

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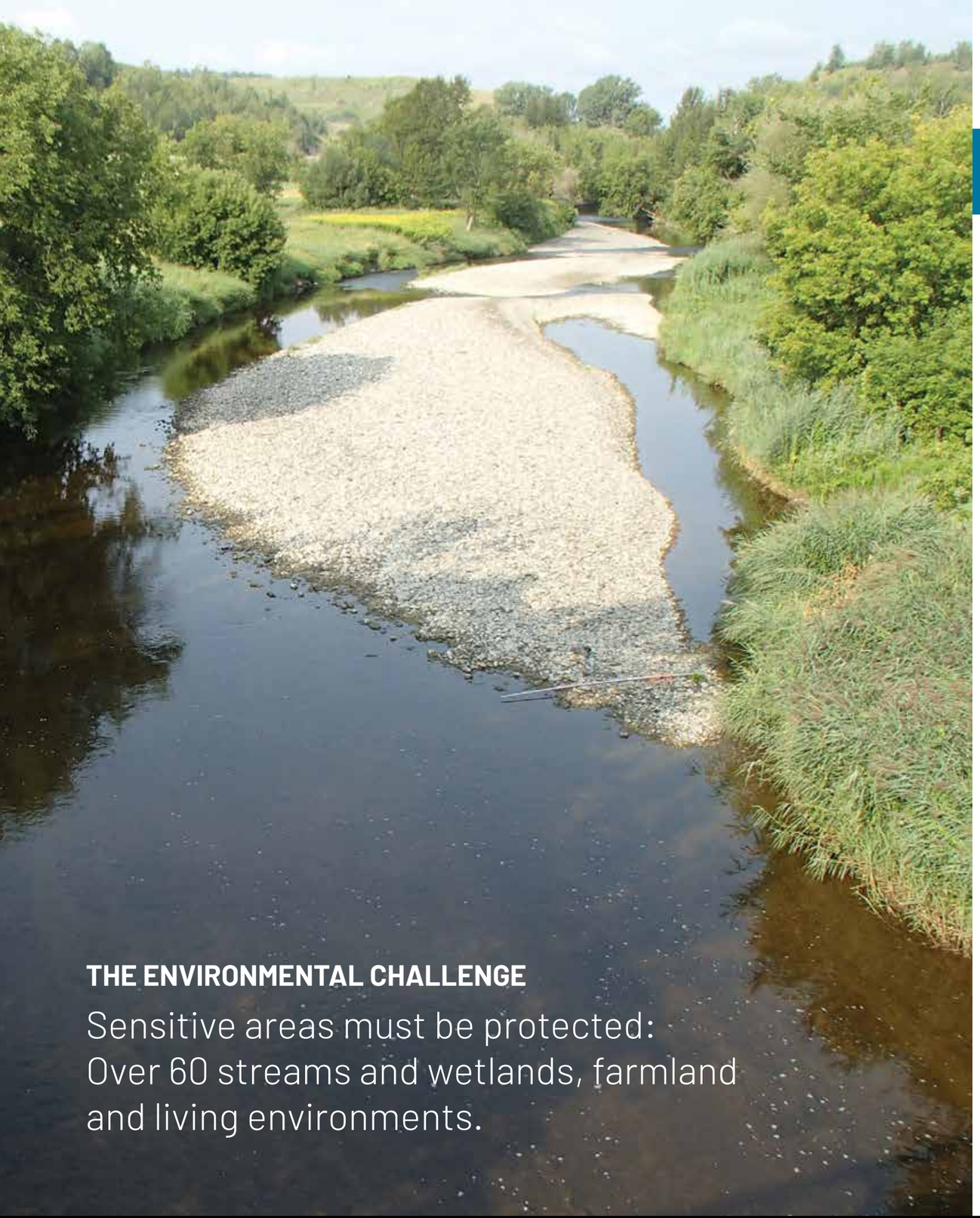

THE ENVIRONMENTAL CHALLENGE

Sensitive areas must be protected:
Over 60 streams and wetlands, farmland and living environments.

INNOVATION

MOVING TOWARD A BETTER SOURCE OF ENERGY

Since fuel oil is the key source of energy used by industrial businesses in Thetford Mines, the region is seeking a solution to switch to cleaner and more efficient energy. The time is right, as the region undergoes a revitalization.

Natural gas was identified as an ideal transitional source of energy to help with regional economic development. The BBA mandate is to assist Énergir with routing 52 km of natural gas pipelines and with reducing environmental impacts.

PROTECTING ECOSYSTEMS

Installing pipelines over great distances poses an environmental challenge because sensitive areas must be protected: over 60 streams and wetlands, farmland and living environments. The presence of asbestos tailings in existing infrastructures is also a significant health, safety and environmental challenge.

When asked to advise Énergir about the best practices to adopt, BBA leveraged its vast environmental expertise to assess the impacts on the receiving environment and then proposes effective solutions to reflect the needs of local communities.

Special attention was given to protecting over 30 plant and animal species that make up the ecosystems affected by the work. The preferred option was to avoid sensitive areas to minimize the project's footprint. When crossing streams and wetlands was unavoidable, a directional drilling method helped avoid excavating in these high ecological value areas. Mitigation measures were implemented to ensure water, soil and air quality was maintained.

INNOVATIVE RECLAMATION STRATEGIES

BBA used an innovative approach to protect and restore natural environments. During the work, critical and structural elements of the ecosystem were carefully recovered and placed in reserve. After the pipelines were installed, rather than importing foreign materials that could affect the area's balance, the natural substrate and indigenous vegetation were put back in place so the various species could return to their original habitat as quickly as possible.

COMPLEXITY

LOWERING IMPACTS

Among the project challenges was protecting fish species that were highly popular with surrounding communities, like brook trout, or species at risk like the Northern Dusky Salamander. In order not to harm these species, BBA experts considered their precise location and spawning periods when managing schedules.

As for the local flora, a vulnerable species called the ostrich fern (Matteuccia Structhiopteris), fiddlehead was of particular concern. As for the at-risk Northern Maidenhair fern, BBA experts managed not to encroach on its habitat. They took precautions to control invasive alien plant species by reminding workers of their presence,

while ensuring careful machine maintenance and performing rigorous soil management.

SCIENCE SERVING THE ENVIRONMENT

BBA's multidisciplinary project team holds a range of expertise, including climatology (rainfall history), hydrology (stream flow) and hydrogeology (ground water), to ensure work is carried out safely and streambeds and wetlands affected by the work are properly re-naturalized. All the i's were dotted and the t's crossed: for example, an engineer specialized in hydrogeology performed a comprehensive inspection of the area to ensure work would not affect the water table and surface wells of residents.

OMBLE DE FONTAINE
© BBA

OSTRICH FERN (MATTEUCCIA STRUTHIOPTERIS)
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SOCIAL AND ECONOMIC BENEFITS

REVITALIZATION OF THETFORD MINES

The economy of the Thetford Mines region has long depended on mining asbestos, a mineral that has proven to be harmful to our health. Implementing a gas network helped revitalize the region by providing reliable energy distribution that benefitted everyone. The network now reaches the heart of rural Beauce, a benefit for the region's agricultural industries and producers.

IN NUMBERS

The natural gas pipeline serves the industries of Black Lake (2.2 km) and Thetford Mines (6.2 km), and extends the distribution network (43.6 km) in the agricultural sectors and the village centres of Saint- Pierre-de-Broughton, Adstoc, Sainte-Clotilde-de- Beauce and Saint-Éphrem-de-Beauce. The project is expected to benefit over 45 industrial, commercial, institutional and agricultural customers. The annual consumption at maturity for all customers is estimated at more than 3 million cubic meters.

LESS EXPENSIVE ENERGY SOURCE

Whether it is to lower production costs, increase performance or help reduce GHGs, it is in the best interest of business leaders to integrate energy efficiency into their practices, and more and more of them are doing so. Natural gas is the least expensive energy in most markets, which is why it is so attractive. It costs up to 50% less than fuel oil and is stable.

THETFORD MINES © Michel G, Flickr

ENVIRONMENTAL BENEFITS

MAKING GOOD CHOICES

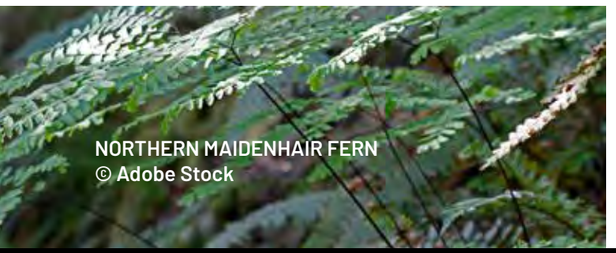
Since Canada's greenhouse gas reduction targets are ambitious, industrial organizations are under heavy pressure to lower their emissions. Many of them are turning to natural gas, a cleaner energy source than oil, gas or coal. Converting oil to natural gas lowers GHGs by approximately 32%[1]. By adding natural gas to the energy mix, the Thetford Mines region can now help businesses achieve their objectives.

THE ENVIRONMENT IS KEY TO THE ECONOMIC PROJECT

In order to meet Énergir's need to carry out a project under the highest sustainable development standards, BBA experts made sure to respect the region's conservation areas, parks, protected territories, agricultural zones, living environments and receiving habitats. They avoided crossing high-value land as much as possible, including land where ferns are grown to feed dairy cows.

Our experts implemented a protection and mitigation strategy that combined using existing rights-of-way, conserving arable soils and ensuring the re-vegetation of indigenous species. BBA recommended the most advanced techniques to help nature take back what rightfully belongs to it.

[1] http://www.environnement.gouv.qc.ca/changements/ges/guide-quantification/guide-quantification-ges.pdf



NORTHERN MAIDENHAIR FERN
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UPA Chaudière-Appalaches

MEETING CLIENT NEEDS

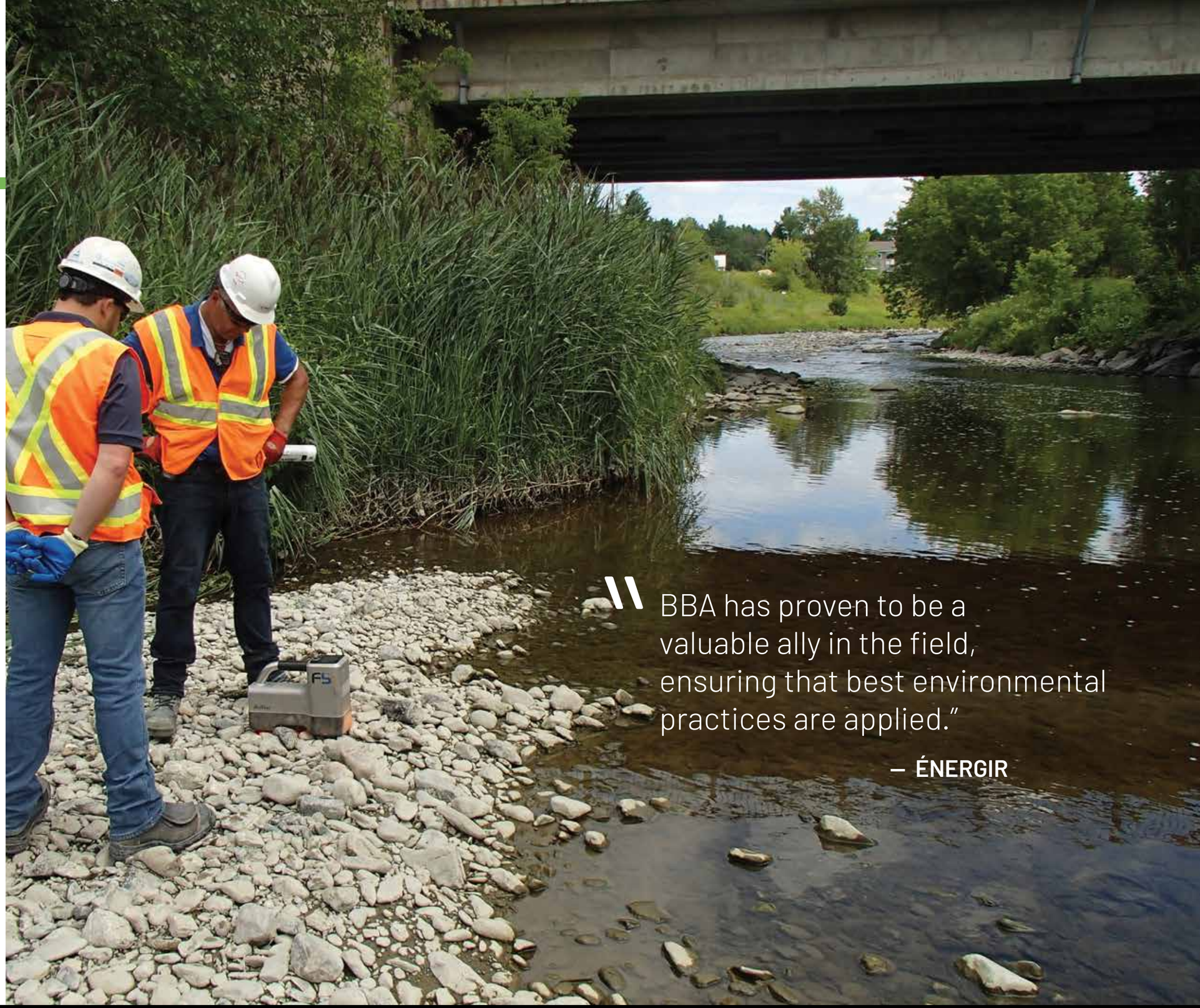
COMBINING ECONOMY AND ECOLOGY

The concepts of economic growth and environmental protection have long been in opposition, but things have changed. Today, when we talk about development projects, we are also talking about environmental services. By choosing to work with BBA, a multidisciplinary firm that unites engineers, biologists and environmental experts, Énergir's goal was to carry out a high-performing, socially acceptable and economically viable project, while lowering environmental impacts. All the solutions BBA proposed to Énergir fully met expectations.

The success of this major project depended on working closely with the client and its partners to understand the realities and constraints of the upstream environment, including those of residents, agricultural producers, Indigenous communities and local conservation organizations.

WORKING WITH NATURE'S PACE

Among the quieter but equally important project stakeholders are animals and plants. They follow their own natural calendar for reproducing or flowering that humans cannot, of course, change. BBA's project management expertise made it possible to optimize the work sequence while considering the receiving environment and therefore avoiding these sensitive timeframes.



"BBA has proven to be a valuable ally in the field, ensuring that best environmental practices are applied."

— ÉNERGIR

APPENDIX 1

BROADER THINKING. ON-POINT ENGINEERING

BBA has been providing a wide range of consulting engineering services for 40 years. Engineering, environment and commissioning experts team up to quickly and accurately pinpoint the needs of industrial and institutional clients. Recognized for its innovative, sustainable and reliable solutions, the firm stands out for its expertise in the fields of energy and mining and metals, biofuels, and oil and gas. BBA has 12 offices across Canada to provide local support and offer clients increased onsite presence.

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Energy

Mining and Metals

Biofuels, oil and gas

Other industries

THETFORD MINES | REHABILITATION AFTER WORK. BEING RECLAIMED BY NATURE. © BBA

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