

NORTHEAST REGION: A SNAPSHOT

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¹The regional geologist position for the North-Central and Northeast regions was vacant from June until December 2009. Therefore this report is based only on information published by companies.

SUMMARY AND TRENDS

Despite the global financial crisis, 2009 saw exploration activity and mine development in the Northeast Region continue at high levels, comparable to 2008. The coalfield continued to attract interest from Asian investors due to the potential to open new mines and make use of the under-utilized rail and port facilities. The number of mine employees also grew through the year with the transition from contractors to staff.

Peace River Coal Inc (PRC), the operating entity for the Peace River Coal Limited Partnership (73.8% Anglo Coal Canada Ltd, 14.2% Hillsborough Resources Ltd, 12.0% Northern Energy and Mining Inc), continued mining its **Trend** property south of Tumbler Ridge, with the intent of adding to production from the nearby **Roman Mountain** deposit beginning in 2013. However, PRC put its work program for the **Horizon** project to the north of Roman Mountain on hold in 2009. In November 2009, Anglo American (UK) announced that the PRC assets were not considered part of the core assets of the corporation and would be sold. It is not expected that this decision will affect operations in the short term.

Western Coal Corp (WCC), formerly Western Canadian Coal Corp, continued operation of the **Perry Creek** mine within the **Wolverine Project** west of Tumbler Ridge, and of the **Brule** mine south of Chetwynd. The **Willow Creek mine** reopened in 2008 with the anticipation of coal sales in mid-2009. In late November 2008; however, mining operations were suspended temporarily at Willow Creek due to market uncertainties and the project remained on hold through 2009. Other projects, which the proponents intend to advance for mine development, are **EB** and **Hermann** (WCC), **Goodrich Central South** (First Coal Corp), **Gething** (Canadian Dehua International Mines Group Inc), and **South Hasler** and **B.C. Coal Project** (Unicorn International Mines Group Inc). In late November 2008, the **Hermann** project was granted an Environmental Assessment (EA) certificate.

First Coal was particularly active on its **Goodrich Central South** project east of Chetwynd, obtaining permits necessary for taking a 100 000 t bulk sample in 2010 and moving the components for the Addcar mining

system onto the site. The Belcourt-Saxon Coal Limited Partnership, a 50/50 joint venture of Peace River Coal with Western Canadian Coal, undertook a drilling project on the **Belcourt West** project southeast of Tumbler Ridge.

Estimated exploration expenditures for 2009 stood at \$20.1 million, only slightly below the \$21 million spent in 2008, but above the \$10.5 million in 2007. Similarly, 2009 drilling activity, at about 41 800 m, was down from 54 600 m in 2008 (Figures 2.1, 2.2), as some projects moved to more advanced stages of development activities. Locations of mines, developments and exploration projects are shown in Figure 2.3.

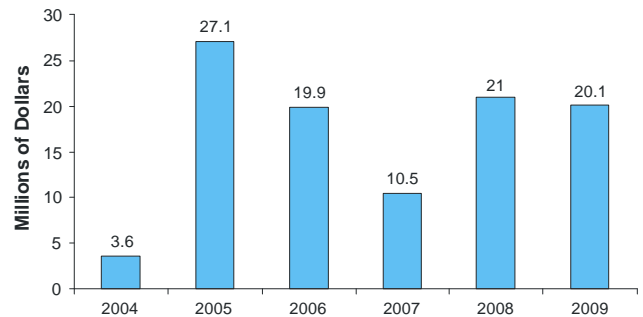


Figure 2.1. Annual Exploration Expenditures, Northeast Region.

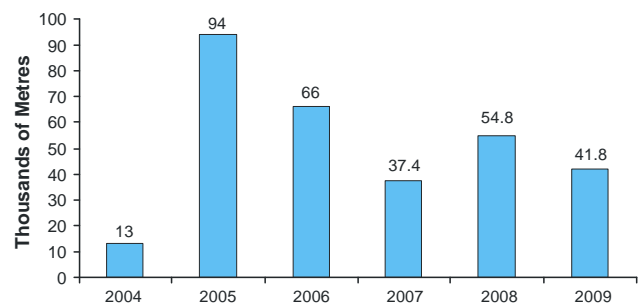


Figure 2.2. Annual Exploration Drilling, Northeast Region.

Operating Mines and Selected Major Exploration Projects in North East British Columbia 2009

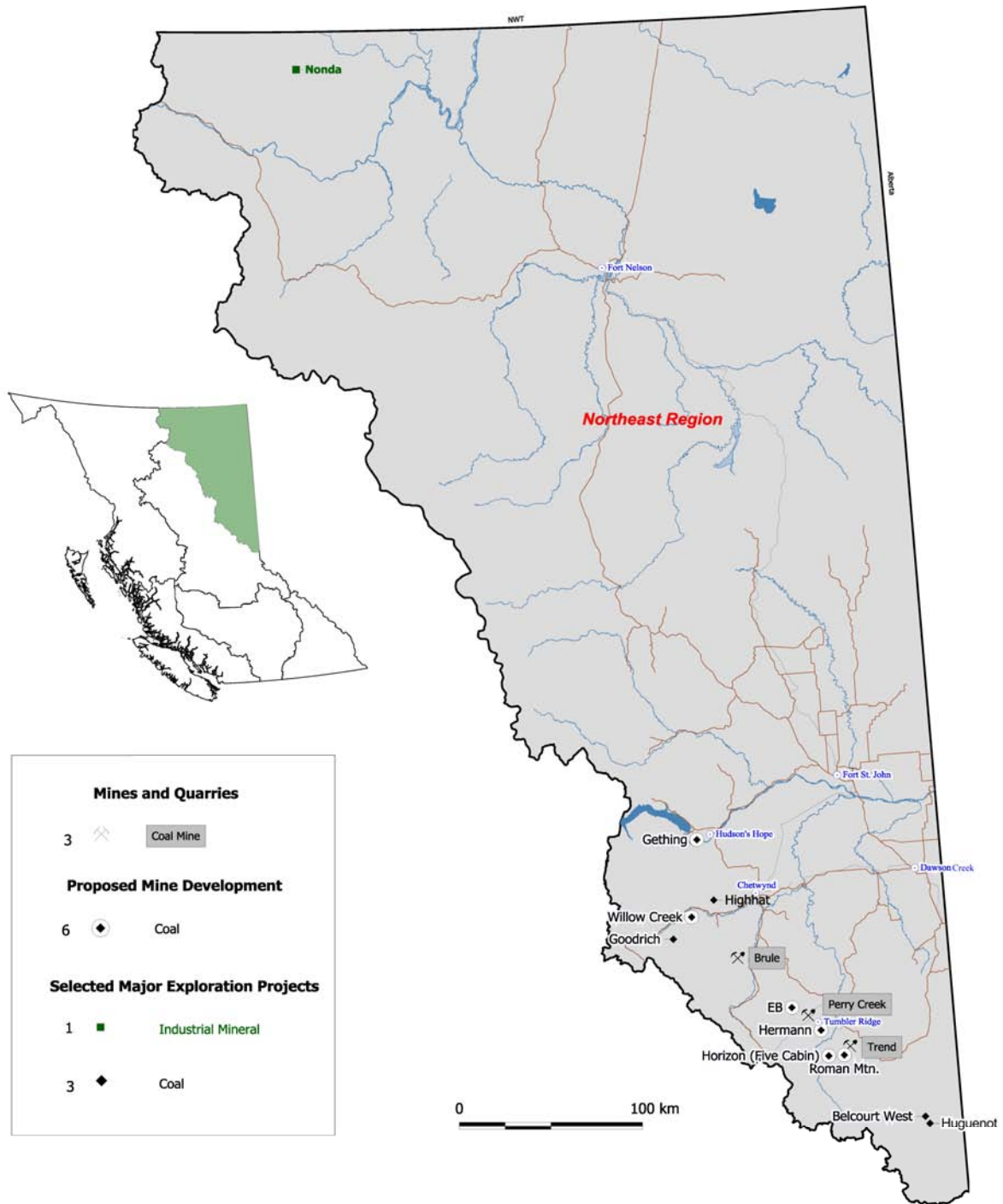


Figure 2.3. Operating Mines, Development Projects, and Major Exploration Projects, Northeast Region, 2009.

In 2009, the British Columbia Geological Survey, in cooperation with Peace River Coal and Western Coal Corp, held a coal symposium (Figure 2.4) and a geological field trip in the Tumbler Ridge area examining coal deposits and host stratigraphy. The symposium was well attended by industry geologists. Andrew Legun, Coal Geologist for the Geological Survey, led the regional fieldtrip (Figure 2.5) and presented concepts on the origin of the coal deposits.



Figure 2.4. Barry Ryan, consultant and ex of the BC Geological Survey. Presenting at the Northeast BC Coal Symposium in Tumbler Ridge.



Figure 2.5. Andrew Legun, coal geologist for the B.C. Geological Survey, leading the Coal Symposium field trip.

MINES AND QUARRIES

COAL MINES

Three coal mines were operating in the Northeast region in 2008, namely PRC's **Trend** mine, and WCC's **Perry Creek (Wolverine Project)** and **Brule** mines. Mining activity is summarized in Table 2.1.

Peace River Coal's **Trend** mine, commissioned in January 2006, is located about 25 km south of Tumbler Ridge. Medium-volatile bituminous coal is being mined from the Lower Cretaceous Gates (D, E, F, G/I and J seams) and Gething formations with a cumulative coal thickness of 15 metres, in a narrow pit that exploits a tight upright fold. Production in 2009 was targeted at 1 Mt of mostly metallurgical coal with a small amount of thermal coal. The estimated production life of the **Trend** mine is about ten years, based on reserves of 17 Mt (December, 2009). Peace River Coal's work force increased from 80 to about 333 in 2009 as PRC moved from contractor mining to owner operated mining. PRC's loadout rail facility, a few kilometres north of the Trend mine, was completed in 2007. From here the company ships, through the Ridley Terminals Inc at Prince Rupert, to markets in Japan, Korea and Europe. In 2010, PRC anticipates commencing mining from the Gething formation (phases 1-3) and returning to the Gates formation (phases 4-6) in 2012.

Western Coal Corp's **Wolverine** Project, about 25 km to the northwest of Tumbler Ridge, reached the cumulative production landmark of 5 Mt in 2009 and saw continued production from the **Perry Creek** mine, which began operations in July 2006 (Figure 2.6). Estimated production in 2009 is 1.46 Mt of clean metallurgical coal from the Gates Formation (E, F, G and J seams) with a cumulative coal thickness of 15 m. Mining operations, carried out by 398 employees, were primarily associated



Figure 2.6. Moving waste rock at WCC's Wolverine Mine.

TABLE 2.1. FORECAST MINE PRODUCTION, NORTHEAST REGION, 2009

Mine	Operator	Deposit Type/ Commodity	Work Force	Forecast Production (2009) tonnes	Measured and Indicated Resources (effective date)
Trend	Peace River Coal Inc	Metallurgical Coal	~330	1 000 000 t	17 Mt (December 2009)
Wolverine (Perry Creek)	Western Canadian Coal Corp	Metallurgical Coal	~400	1 461 000 t	28.9 Mt (April 2009)
Brule	Western Canadian Coal Corp	PCI Coal	~80	475 000 t	34.3 Mt (April 2009)

with Phase 3 of open pit development and the company is examining options for underground operations as it follows the coal seam. Subject to regulatory approvals, output is projected to increase to 3 million tonnes per year (Mt/yr), which would equal the capacity of the preparation plant. The projected pit life is ten years. Shipping is through Ridley Terminals Inc to markets in Asia, Europe and South America.

Current total reserves stand at 28.9 Mt measured and indicated for Perry Creek, to which could be added a total of 42.4 Mt if the nearby **EB** and **Hermann** deposits are included.

The WCC's **Brule** mine is located about 45 km south-southwest of Chetwynd adjacent to the former Dillon mine, which closed in September 2006 after reserves were exhausted. Brule began shipping "ultra-low volatile" pulverized coal injection (PCI) (bituminous) coal in March 2007, releasing coal from seams designated Upper, Lower and Seam 60, in the Gething Formation with a cumulative thickness of 12.2 m. Forecast production in 2009 was 0.48 Mt run-of-mine coal. *In situ* reserves as of April 2009 stood at 34.3 Mt. The Brule Mine employs about 79 WCC workers on-site, and the operation is in the transition process from contractor mining to owner-operated mining. At present, coal is trucked to the Bullmoose loadout facility. Plans had been to build a road northward to the **Willow Creek** mine (the Falling Creek haul route) to make use of that facility's wash plant and shipping infrastructure (Figure 2.7), but those plans were put on hold with the suspension of operations at Willow Creek. Western Coal Corp's two operating mines offer the combined potential of 6 Mt/yr of coal production for at least 15 years.

The agreement to acquire **Willow Creek** by WCC was finalized in 2009. Willow Creek produced from August 2004 to October 2006 under previous owner,

Pine Valley Mining Corporation. WCC began stripping operations again at Willow Creek in October 2008 only to suspend them at the end of November, 2008 with no production. In 2009, 9 staff were on site as the mine continued under care and maintenance. WCC's Willow Creek mine area is more complex structurally than those to the south, and is characterized by tight anticlines and synclines overturned to the west. Pulverized Coal Injection and metallurgical coal had been extracted previously from two pits in the "Central Zone," from the Gething Formation in which Seams 1 through 8 are accessible in tight upright folds. Initial production from the central zone of the re-opened mine, subject to approvals, could be about 900 000 tonne/yr, potentially increasing over the following two years to as much as 2.2 Mt/yr as the "North Zone" is developed (Figure 2.8). In 2009, WCC continued an on lease drilling program to define better the coal resource in the North Zone and conducted condemnation drilling for a potential waste site west of the north property adjacent to North Zone coal resources. Total *in situ* measured and indicated resources, as of April 2009, stood at 36.0 Mt. Mine life could be as long as 15 years depending, of course, upon the rate of production.

MINE DEVELOPMENT PROJECTS

An Environmental Assessment (EA) certificate is in place for WCC's **EB** deposit, with 11.8 Mt of *in situ* coal resource (April 2009), located near the Perry Creek operation, which would supplement production. A further deposit of WCC, the **Hermann** project, is located 16 km southwest of Tumbler Ridge, and would add an additional 30.6 Mt of *in situ* coal resources. An EA certificate for the Hermann coal mine project was granted in late November 2008.

MINE EVALUATION PROJECTS

Peace River Coal plans to supplement production from its **Trend** mine with production from **Roman Mountain**, which has a proposed 15-year life expectancy at an annual production of 2.5 Mt commencing in 2013. An EA submission for the Roman Mountain project is anticipated. Like Trend, Roman Mountain would exploit both the Gates and Gething formations. The main pit would release coal from the Gates Formation within an upright syncline; and Gething Formation coal would be mined from two small pits, one on each side of the main pit. To the north of Roman Mountain, PRC also proposes to develop the **Horizon** block as a combined open pit/underground operation.

First Coal Corp continued to work on its **Goodrich Central South** property southwest of the former Willow Creek mine. About 41 Mt of measured and indicated and 32 Mt of inferred metallurgical coal resource have been identified, principally in the Bickford Formation but with some in the overlying Gething Formation (Figure 2.9). First Coal plans to extract a 100 000 t bulk sample by remote means using an adaptation of a conventional AddCar unit to the steeply-dipping seams at the proposed mine site (Figures 2.10, 2.11). Contingent upon a successful outcome, the property may advance to EA and mine permitting in 2010. In 2009, no drilling activity was undertaken as the company prepared permits and equipment for bulk sampling. Some initial trenching was completed.



Figure 2.7. Willow Creek wash plant.



Figure 2.8. John Stockman, WCC geologist explaining Willow Creek geology.



Figure 2.9. Skender Sulaj, First Coal's site geologist, showing coal seams at the Goodrich Project.



Figure 2.10. Addcar components arriving at the Goodrich Property.

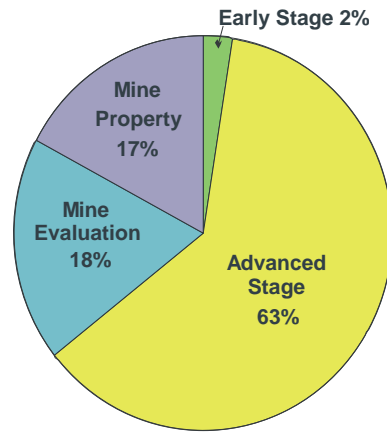


Figure 2.12. 2009 exploration expenditures by category.

COAL EXPLORATION

Significant exploration projects in the Northeast Region are listed in Table 2.2. This compilation was assembled prior to the end of the calendar year and contains some estimates of the work completed. Figure 2.12 offers an estimated breakdown of 2009 expenditures by category (early stage exploration, advanced-stage exploration/deposit appraisal, mine evaluation, and mine property exploration). Please refer to the introduction to this publication for the definitions of each of these exploration stage categories.

EXPLORATION HIGHLIGHTS

South Of Tumbler Ridge

During 2009, Peace River Coal Inc continued the development process for its **Roman Mountain** project, located adjacent to the Trend mine, with submission of an application to the Environmental Assessment Office anticipated. About 30 Mt of coal had been identified in

the Roman Mountain deposit. The coal measures at Roman Mountain occur in a tight upright syncline at the top of the mountain and extend for up to 7 km along strike. The pre-application environmental assessment process for the project began in 2007, and the intent is to commence production in 2013. In 2009, the Partnership also completed 7000 m of on-lease drilling at the adjacent **Trend** mine to extend reserves. At PRC's **Horizon** project, there was no drilling activity in 2009 as the company models a new resource estimate that incorporates the Horizon, **South Ridge**, and **Barbara** projects, to be combined under the Horizon project. About 45 Mt of metallurgical and PCI coal resource have been identified historically, and this is expected to increase under the new modelling.

The Belcourt-Saxon Coal Limited Partnership, a 50/50 joint venture of Peace River Coal with WCC, undertook a 5-hole drill project comprising approximately 1000 m on the **Belcourt West** project, located about 90 km southeast of Tumbler Ridge. The partnership is exploring a set of Gates Formation coal seams. In January 2009, a National Instrument (NI) 43-101 statement was filed that indicated 86 Mt of proven reserves, 167 Mt of measured and a further 4 Mt of

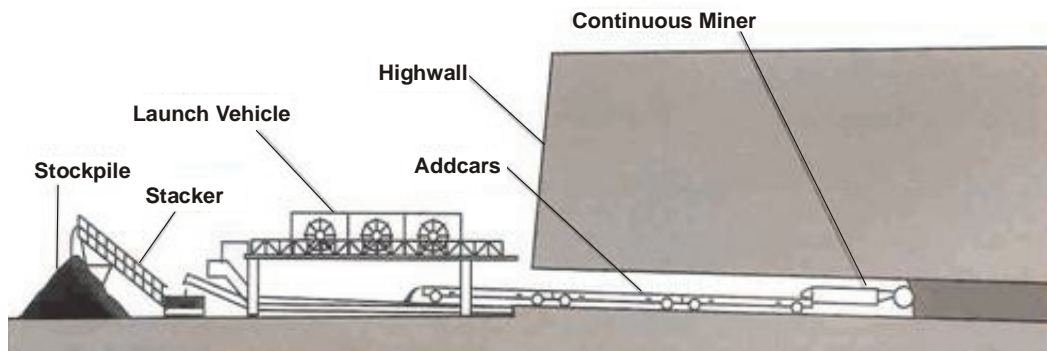


Figure 2.11. Addcar mining system.

TABLE 2.2. SIGNIFICANT EXPLORATION PROJECTS IN THE NORTHEAST REGION

Property	Operator	MINFILE (NTS ref.)	Commodity	Deposit Type	Work Program
Belcourt West	Belcourt-Saxon Coal Limited Partnership	093I 014, 016	Metallurgical Coal	Sedimentary	A, PD (1000 m)
Brule (Blind Pit)	Western Canadian Coal Corp	093P 007	ULV PCI Coal	Sedimentary	PD (1 050 m)
Goodrich Central South	First Coal Corp	093O 034	Metallurgical Coal	Sedimentary	TR, EN, OP-BU
Highhat	Trefi Coal Corp	(093P.041)	Metallurgical Coal	Sedimentary	G, PD (1000 m)
Horizon (Five Cabin)	Peace River Coal Inc	(093I.086)	Metallurgical Coal/PCI Coal	Sedimentary	On hold
Huguenot	Colonial Coal Corp	(093I.049, 50)	Coal	Sedimentary	G
EB (Wolverine)	Western Canadian Coal Corp	093P 015	Coal	Sedimentary	On hold
Perry Creek (Wolverine)	Western Canadian Coal Corp	093P 025	Metallurgical Coal	Sedimentary	A, PD (6 635 m) DD (200)
Roman Mountain	Peace River Coal Inc	093I 030	Metallurgical Coal	Sedimentary	A, EN, PF, PD (9 000 m) DD (1 000 m)
Trend Mine Extension	Peace River Coal Inc	093I 030	Metallurgical Coal	Sedimentary	PD (4 000 m) DD (3 000 m)
Willow Creek	Western Canadian Coal Corp	093O 008	Metallurgical Coal/PCI Coal	Sedimentary	DD (455 m) PD (2 030 m)

Work Program Abbreviations:

A = access (trail, road construction on claims); AB-EM = airborne electromagnetics; AB-MG = airborne magnetics; AB-RD = airborne radiometrics; BU (X tonnes) = bulk sample (weight in tonnes if known); CD = condemnation drilling; CQ = coal quality testing; CT = carbonization test (coal); DD (Xm) = diamond drilling totalling X metres; EN = environmental baseline studies/monitoring, remediation work; FS = feasibility studies; G = geology, mapping etc.; GC = geochemical sampling (rock, soil, silt etc.); GD = geotech drilling; GP = geophysics (general); IP = Induced Polarization; 3D-IP; MG = magnetics; MK = marketing (primarily for industrial mineral products); MS = metallurgical studies; OB = overburden drilling; OP-BU = open-pit bulk sample; P = prospecting; PD = percussion drilling; PF = pre-feasibility studies; R = reclamation; RC = reverse circulation drilling; TR = trenching; UG (Xm) = X metres of underground development; UG-BU = underground bulk sample; UT = UTEM; VLF; WT = washability test (coal)

indicated resources. Following an exploration program in 2008 on its nearby **Huguenot** project, Colonial Coal Corp did not undertake further drilling in 2009 as it prepared a NI 43-101 statement. The company was following the southeast extension of the Belcourt South coal deposit onto their property and successfully defined coal seams in both the Gates and Gething formations in the northwestern portion of the property. In 2009, the company did some minor work to extend the investigation

to the remainder of the property, south of Holtslander Creek.

Wolverine Valley Area

Western Coal Corp continued its on-lease drilling program around the **Perry Creek** mine in its Wolverine Project area, planning to define and extend reserves to about ten years at the projected production rate. Thirty-eight rotary and one diamond drill boreholes were

completed, totalling about 60 800 m. Included in the Wolverine Project is the nearby **EB** deposit. Whereas the Gates Formation beds at the Perry Creek operation are characterized by tight upright folds, at EB the unit is nearly flat-lying. About 8 Mt of run-of-mine (ROM) metallurgical coal are available at EB (April 2009), and no further work occurred on this property in 2009. Western Coal Corp also conducted an on-lease exploration program at its **Brule** mine, completing some 2500 m of percussion drilling in 33 holes. WCC's **Hermann** project is located south of the Perry Creek mine and about 16 km southwest of Tumbler ridge. Exploration drilling on the property is complete, and in late November, 2008 the Province granted the company an EA certificate for the proposed mine. Mining is proposed from four pits to access five seams (E, E4, F, G and J) of the Gates Formation, having an aggregate thickness of 14.8 m. From a coal resource of 10.7 Mt (April, 2009), production would be at the rate of 0.8 to 1.1 Mt/yr.

Hudson Hope Area

Canadian Dehua International Mines Group Inc intends to develop its **Gething** property, located about 25 km west of Hudson's Hope, as an underground operation. Production would be from the upper 150 m of the Lower Cretaceous Gething Formation, in which previous exploration identified 8 significant coal seams with an inferred resource of 98 Mt of coal. By late 2007, the project was in the EA pre-application stage. In 2009, the company completed 14 drill holes with a total of approximately 11 200 m to further define the resources. The **Highhat** project, operated by Trefi Coal Corp, was also the site of drilling activity in 2009, and a NI 43-101 statement was issued that estimated measured and indicated reserves of 39 Mt and resources of nearly 91 Mt.

OUTLOOK FOR 2010

Coal prices remained strong in 2009 compared to historic values, although reduced from the highest prices ever in 2008. These high prices tended to insulate the coal sector in otherwise uncertain economic times and the region around Tumbler Ridge benefited from the coal mining and exploration jobs and demands for services. Metallurgical coal prices are expected to remain high for 2010 driven largely by Demand from Asian markets.

The opportunity to attract Asian investment to the northeast coalfields is significant. The Ministry of Energy, Mines and Petroleum Resources is working with investor groups, trading houses and mining companies in China, Japan and South Korea to promote investment, through the provision of information, in B.C.'s mineral resources. During the 2009 Asia Investment Mission, coal opportunities attracted very strong interest from investors in this region as economies generally remain

strong (and particularly so in China) despite the financial crisis. Marketing B.C.'s investment opportunities to the Asia region is coordinated by the Marketing and Investor Relations Branch and the British Columbia Mineral Development Office of the Ministry of Energy, Mines and Petroleum Resources.

ACKNOWLEDGMENTS

This snapshot is less than complete for 2009 as the position of Regional Geologist in the Ministry's Prince George Office was vacant for most of the year. In order to provide some basic information on activities in the region, ministry staff undertook a brief review of activity in the NE Region. The writer wishes to thank John DeGrace, former Regional Geologist for the extensive records that he left, without which this summary would be much less complete. The writer also wishes to acknowledge, with thanks, the support of staff in the Prince George Regional Office, and in particular Mines Inspectors Victor Koyanagi for his assistance in providing information. Special thanks are also extended to Patrick Saunders, of the Geological Survey Branch, for his work in preparing the regional map. Also, thanks to Dave Lefebure, Chief Geologist, and Tania Demchuck, Manager of Geoscience Marketing and Partnerships in the Geological Survey Branch for providing valuable suggestions and feedback. Of course, any errors or omissions are the sole responsibility of the author.