EXPLORATION AND MINING IN NORTHEAST REGION, BRITISH COLUMBIA

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SUMMARY AND TRENDS

In the Northeast Region, 2011 was a year dominated by takeovers and acquisitions in the coal sector (Figure 1). Anglo Coal plc acquired the balance of interests in the Peace River Coal Limited Partnership to become sole owner. Walter Energy Inc purchased Western Coal Corp, now a wholly-owned subsidiary company, and with it Western's three mines – Perry Creek, Brule and Willow Creek – and all exploration interests. Xstrata Coal acquired First Coal Corp and also 100% of Cline Mining Corp's Lossan deposit. Cardero Resource Corp bought Coalhunter Mining Corp (which now operates as a subsidiary of Cardero), and with it acquired Coalhunter's Carbon Creek deposit.

Mining operations continued at the four operations in the Northeast Region, namely the Trend, Perry Creek, Brule and Willow Creek mines, with a projected total 2011 production of about 5.6 Mt of clean metallurgical and PCI coal, compared to 4.8 Mt in 2010 (see Table 1).

Peace River Coal was stalled in advancing the **Roman Mountain** project adjacent to its Trend Mine because of environmental concerns relating to the mountain caribou population, but continued to work toward expanding the mine along strike. Work also paused on Western and Peace River Coal's **Belcourt Saxon** Coal Limited Partnership project.

The Northeast Region saw an approximate doubling of exploration expenditures over 2009 and 2010 levels to about $44.3 million ($39.5 million excluding on-lease exploration). Exploration drilling, at about 66 000 m, was also up substantially. This increase in activity levels occurred in spite of significant environmental and cultural constraints on activities.

Figure 2 offers a year-over-year comparison of exploration expenditures, and Figure 3 sets out the approximate allocation of 2011 expenditures among advanced phase, mine evaluation and on-lease exploration in the region. Figure 4 compares annual drilling statistics. Note that Figures 2 and 4 offer only roughly approximate data for 2010. Figure 5 shows the locations of mines and major exploration projects in the Region, while Table 2 lists details of the major exploration programs in 2011.

COAL MINES AND PLANNED PRODUCERS

In 2011 there were four producing coal mines in the Northeast Region, with more properties in various stages of planning for development. Summary statistics for the producers, and forecast production, are summarized in Table 1.

Coal measures in Northeastern British Columbia are contained within the Gething and the younger Gates formations, both Early Cretaceous in age. All of the currently-producing mines are located in tightly-folded, fault-constrained blocks near the eastern margin of the Cordilleran orogen. All of the mines access bituminous coal, of metallurgical and Pulverized Coal Injection (PCI) quality, by open pit methods from steeply-dipping seams. Projects under consideration for development further to the east commonly are in flat-lying strata, and would be accessed by underground mining methods. Generally, in these mines, coal is won from multiple seams; and in some cases from both formations.

Peace River Coal (PRC) continued production from its **Trend Mine**, located about 25 km south of Tumbler Ridge. Mostly metallurgical coal is being extracted from both the Gates and Gething Formations, tightly-folded at the mine site, and the cumulative coal thickness of the several seams is about 15 m (Figure 6). Production for 2011, mostly from the Gething Formation, is estimated to be about 1.4 Mt – up slightly from 2010 but still well short of intended production, which had been based on bringing the adjacent **Roman Mountain** deposit into production. Environmental concerns have delayed the development of Roman Mountain, on which exploration continues. Once in production, Roman Mountain would have about a 15-year life expectancy, producing between 2 and 3 Mt of clean coal per year. Meanwhile PRC is continuing to develop the Trend Mine along strike to the southwest (Figure 7).

PRC has also been evaluating the **Horizon** project, about 10 km to the west of the Trend Mine. The objective is to produce about 2 Mt per year, mostly underground, over a life span of about 15 years.

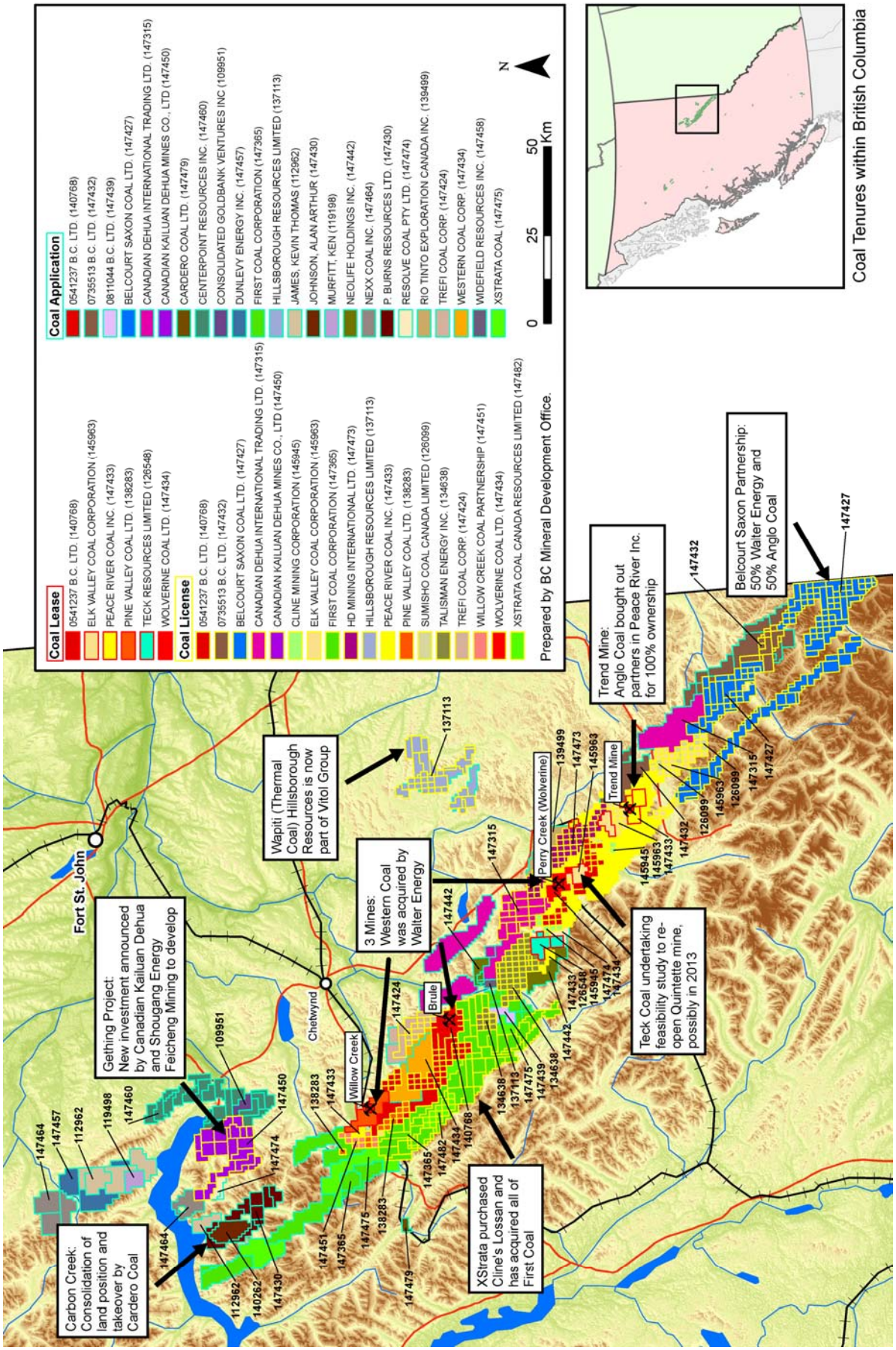

Figure 1. Northeast Region 2011 coal titles, current to 2 November 2011, indicating areas of corporate activity (source: Mineral Titles, Ministry of Energy & Mines).

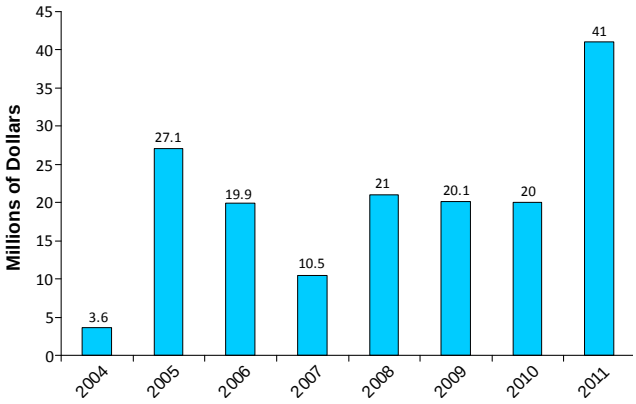

Figure 2. Annual exploration spending estimates in millions of dollars, Northeast Region (amount for 2010 is a rough estimate).

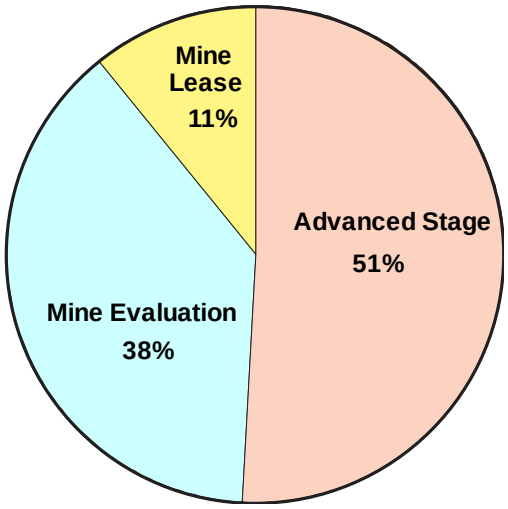

Figure 3. 2011 exploration expenditures by exploration stage (Advanced Stage: resource delineation; Mine Evaluation: focus on environmental and engineering studies, community consultation, and government approvals including EA certification; Mine Lease: on-lease infill and mine development exploration).

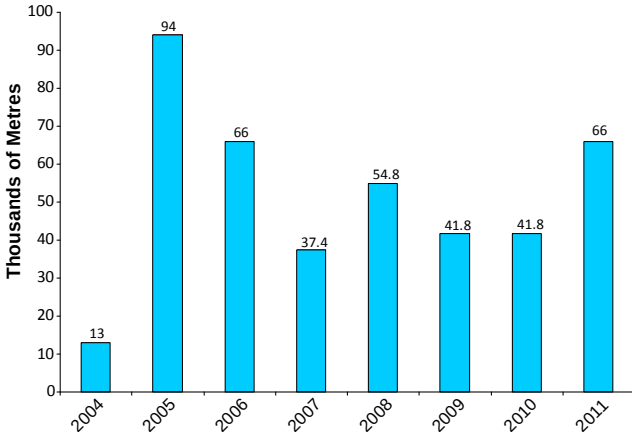

Figure 4. Annual exploration drilling estimates in thousands of metres, Northeast Region (amount for 2010 is rough estimate).

At present the measured resource at the Trend Mine stands at 38.84 Mt, with an additional indicated resource of 8.0 Mt. PRC ships clean coal by rail through Ridley Terminals Inc at Prince Rupert, from a loadout facility that it completed in 2007 a few kilometres to the north of the mine.

The other three open-pit producing mines in the region mines are owned by Western Coal (WC), now a subsidiary of Walter Energy Inc. The largest of these is the **Perry Creek** Mine, part of Western's "**Wolverine Project**" located about 30 km NW of Tumbler Ridge. In 2011, about 1.8 Mt of hard coking coal were produced from four seams, with a cumulative thickness of about 15 m, in the Gates Formation. The coal preparation plant at Perry Creek has a capacity of 3.0 Mt per year, which is expandable to 3.5 Mt. The rail facility can load a 12 500 tonne unit train in about 4.5 hours.

Other components of the Wolverine Project in the vicinity of the Perry Creek Mine include the **EB** and **Hermann** deposits. Both projects have approved Environmental Assessment certificates and are awaiting approvals for production; and production from EB could begin as early as 2013. EB and Hermann have a combined measured resource of 40 Mt.

Western Coal's **Brule** Mine is located about 45 km south-southwest of Chetwynd, and produces "ultra-low volatile" pulverized coal injection (ULV-PCI) coal for the steel industry (Figure 8). Production is from three seams in the Gething formation, with a combined thickness of about 12.2 m. Production in 2011 totalled about 1.3 Mt, up slightly from 2010. Raw coal is trucked to the processing facility at the Willow Creek Mine east of Chetwynd along the recently-completed 60 km Falling Creek haul road, thus avoiding highway travel and cutting hauling distance by about 40 per cent. Only about one-third of the raw coal delivered to Willow Creek actually requires washing, and the rest is loaded directly onto rail cars at Willow Creek for shipment to customers *via* Ridley Terminals.

Finally the **Willow Creek** mine, located about 45 km west of Chetwynd, continued production in 2011 after re-opening in June of 2010. The mine has seen intermittent production since 2004. Western Coal, the current owner, took over the operation in 2008 and began stripping operations that year; but suspended activities later in 2008 without production. Production resumed in 2010, with production from coal seams within the Gething Formation. Deformation is more complex at Willow Creek than at other operations in the Northeast Region, limiting the potential rate of extraction. Production in 2011 was anticipated to be 0.9 Mt of combined PCI and hard coking coal.

The overall processing capacity (coal washing, drying and loadout) at the Willow Creek facility is 0.9 Mt, but Western Coal has applied to increase the capacity to 3.7 Mt per year.

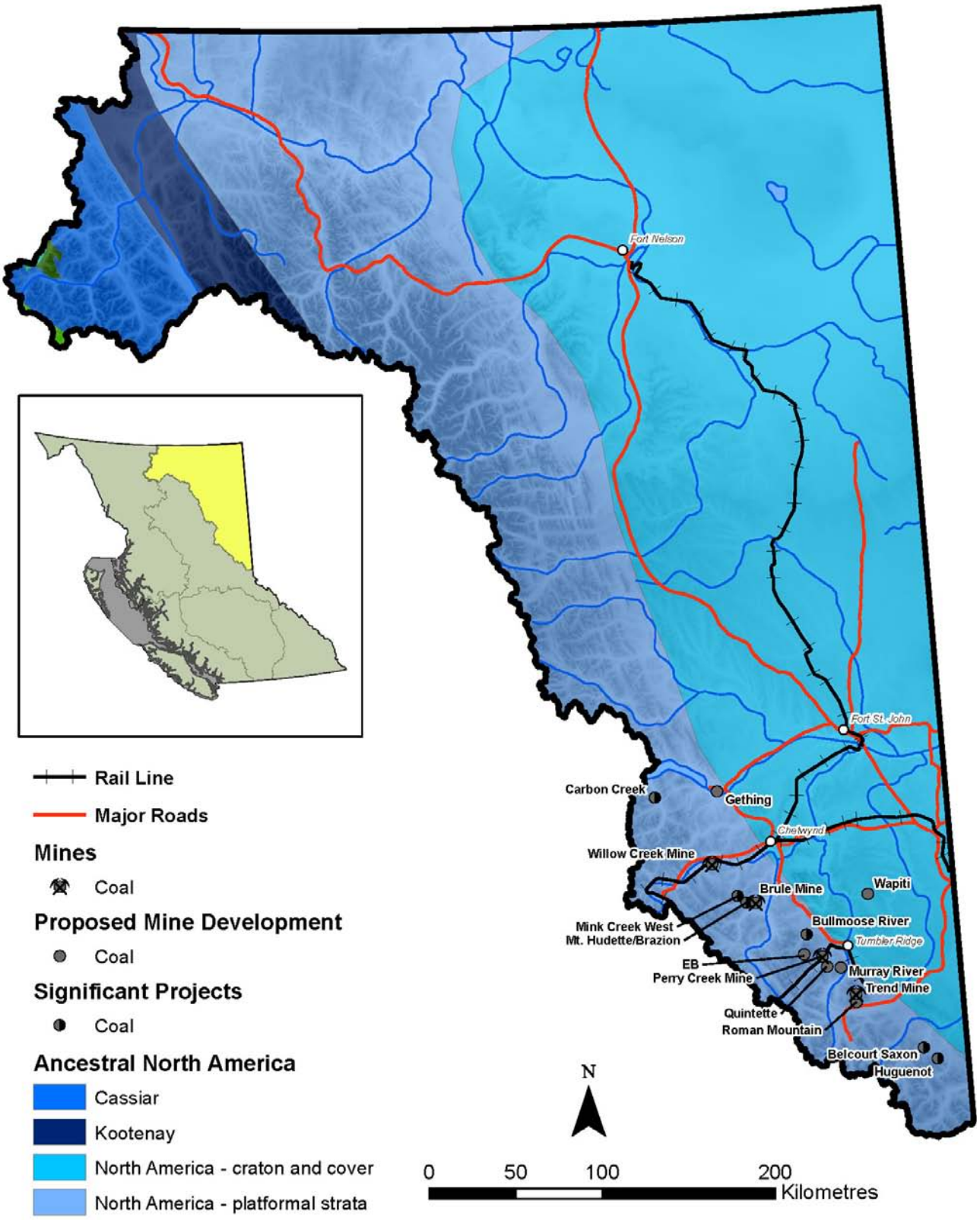

Figure 5. Mines and major exploration projects, Northeast Region, 2011.

TABLE 1. FORECAST MINE PRODUCTION, NORTHEAST REGION, 2011

Mine	Operator	Deposit Type/ Commodity	Actual Production in 2010 (Mtonnes)	Forecast Production in 2011 (Mtonnes)	Number of Employees	Proven and Probable Reserves, Mtonnes (effective date)
Brule	Western Coal Corp	ULV-PCI coal	1.2	0.3	416, includes contract and temporary	33.6 measured + indicated, reserves under review (March 2010)
Perry Creek (Wolverine Project)	Western Coal Corp	Hard coking coal (HCC)	2	1.8	477, includes contract and temporary	28 measured + indicated, reserves under review (March 2010)
Trend	Peace River Coal	Metallurgical coal	1.2	1.4	350	38.84 measured, 8.0 indicated (current Nov 2011)
Willow Creek	Western Coal Corp	PCI, HCC	0.4 (0.3 PCI, 0.1 HCC)	0.9 (0.8 PCI, 0.1 (CC)	510 including contract and temporary	Under review

COAL EXPLORATION AND DEVELOPMENT PROJECTS

Exploration expenditures, at an estimated $41 million, were about double the levels of 2009 and 2010. Major projects are summarized in Table 2. "Major," in the context of this report, generally refers to 2011 expenditures in excess of $250 000.

South of Tumbler Ridge

Colonial Coal International Corp continued aggressive exploration on its **Huguenot** property in the extreme south of the Region. Both access trail and heli-support were used in completing 2394 m of diamond drilling and 2190 m of reverse circulation drilling; and testing of samples recovered from large diameter cores is in progress. The Huguenot Coal Project consists of one contiguous block of 13 coal licenses covering a total area of about 7500 ha. The "north block" of the property contains an estimated 45.5 Mt of NI 43-101 compliant metallurgical coal resources (categories unspecified), with the middle and south blocks containing up to 113 Mt of potential resources.

Peace River Coal was idle in 2011 on its **Belcourt-Saxon** 50/50 joint venture with Western Coal. The project has undergone extensive exploration in the past, investigating the potential of coal seams in the Gates Formation. A 2009 NI 43-101 compliant report on the **Belcourt West** portion of the property identified 86 Mt of proven reserves; contained within 167 Mt of measured resources. Additional work is planned.

A program involving 300 m of diamond drilling and 4000 m of reverse circulation drilling was completed on PRC's **Roman Mountain** project adjacent to its Trend Mine. Once bought into production, Roman Mountain is expected to have a 15-year life expectancy at an annual production of 2.5 Mt.

Wolverine Valley area

Teck Coal Limited has been actively examining the possibility of re-opening the former **Quintette** mine

Figure 6. Preparing for a blast at the Trend Mine (courtesy Peace River Coal).

TABLE 2. MAJOR EXPLORATION PROJECTS, NORTHEAST REGION, 2011

Property	Operator	MINFILE (NTS ref)	Commodity	Deposit Type	Work Program
Bullmoose River	Canadian Kailuan Dehua Mines Co Ltd	093P 001,012, 013	coal	sedimentary	EN, FS
Carbon Creek	Coalhunter Mining Corp	093O 028	coal	sedimentary	A, EN, BU, CT, WA, DD (8 500 m), RC (6 000 m)
EB	Western Coal Corp	093P 015	coal	sedimentary	TR, RC (150 m)
Huguenot	Colonial Coal International Corp	(093I.049,050)	coal	sedimentary	A, CQ, DD (3401 m), RC (3 109 m)
Mink Creek West	Western Coal Corp	(093P.041)	coal	sedimentary	A, RC (4 320 m)
Mt. Hudette/Brazion	Western Coal Corp	(093P.041)	coal	sedimentary	A, RC (2 300 m)
Murray River	Canadian Kailuan Dehua Mines Co Ltd	(093P.005)	coal	sedimentary	EN, A, DD (18 000 m), RC (2 000 m)
Quintette	Teck Coal Ltd	093P 019	coal	sedimentary	EN, WT, DD (2 491 m), RC (964 m)
Roman Mountain	Peace River coal	093I 030	coal	sedimentary	DD (300 m), RC (4000 m)
Wapiti	Hillsborough Resources Ltd	093P 021	coal	sedimentary	EN, DD (65 m), RC (375 m)
Willow Creek South	Western Coal Corp	(093O.059,060)	coal	sedimentary	DD (450 m), RC (5 800 m)
Willow Creek West	Western Coal Corp	(093O.059,069)	coal	sedimentary	RC (5 000 m)

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 intonnes 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 = geotechnical drilling; GP = geophysics (general); IP = induced polarization; 3D-IP; MG = magentics; 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; PP = pilot plant; R = reclamation; RC (Xm) = reverse circulation drilling totalling X metres; TR = trenching; UG (Xm) = X metres of underground development; UG-BU = underground bulk sample; UT = UTEM;

(Windy and Window pits), located about 20 km south of Tumbler Ridge. The Qunitette Mine had been a coal producer for almost 18 years up to August 2000. A feasibility study was expected to be completed during 2011 and, if positive, Quintette might see renewed production as early as 2013. A re-opened mine could see a 15- to 17-year mine life with a production rate of 3 to 3.5 Mt of clean coal per year. Between 350 and 400 direct jobs would be created. Meanwhile, the company conducted environmental baseline studies in support of a possible re-opening. Almost 2500 m of conventional drilling and 1000 m of reverse circulation drilling were completed, and washability tests conducted on core samples.

Contextually, in September 2011 Teck Resources Ltd and Ridley Terminals Inc announced an agreement extending from 2015 to 2024 (as successor to the current agreement extending to the end of 2014), which contemplates the shipment of 2.5 Mt per year through the port.

Figure 7. Drilling along strike from the Trend Mine. Roman Mountain is in the background to the left (courtesy Peace River Coal).

Close by, Canadian Kailuan Dehua Mines Co Ltd (Dehua), in joint venture with HD Mining International Corp, is developing its **Murray River** metallurgical coal project. Canadian Kailuan Dehua is a partnership formed in July 2010 by the Kailuan Group Co Ltd, the Shougang Group, and Canadian Dehua International Mines Group Inc. Work on Murray River began in 2009 when the tenure was acquired from Kennecott Copper Corp, and in 2011 an extensive program of 18 000 m diamond and 2000 m reverse circulation drilling was completed, exploring mostly Gates Formation seams. An environmental baseline study is underway, and preparation of a formal resource assessment is in progress. The next planned stage in exploration and development is collection of a bulk sample for testing.

A resource of about 780 Mt has been identified at Murray River, and the project is potentially much larger. The resource would be accessed by underground mining methods. An initial production capacity of 6 Mt per year is planned, and the project would include construction of a new coal preparation plant.

Dehua also acquired tenure on the **Bullmoose River** project in 2009. Since then, the company has engaged in extensive consultations with First Nations to seek accommodation of their concerns, and in the meantime has not carried out further exploration on the property. Bullmoose River would be developed into an underground mine, and a feasibility study is expected to be completed in 2012.

Hillsborough Resources Ltd (part of the Vitol Group since 2009) reactivated its development activities on the **Wapiti** thermal coal project located between the Trend and Perry Creek Mines. Progress had been stalled since 2007 over concerns about the economics of carbon sequestration if the resource were to be consumed locally. Environmental baseline studies were initiated and a small exploration program of 65 m diamond drilling and 375 m reverse circulation was carried out. The Wapiti project has a measured plus indicated coal resource of 80.1 Mt in place, and 35.2 Mt inferred. In October 2011 Hillsborough announced the conclusion of an agreement with Ridley Terminals Inc in Prince Rupert for handling its coal production at least until the end of 2021.

Western Coal Corp continued exploration of its **EB** project, near the Perry Creek mine, with a modest program of trenching and about 150 metres of diamond drilling.

Figure 8. Ex 8000 shovel loading waste at the Brule Mine (courtesy Western Coal).

Chetwynd-Pine River area

Western Coal Corp completed about 2300 m of reverse circulation drilling on its **Mt Hudette/Brazion** property near the Brule Mine. A short distance to the Northwest, the **Mink Creek West** project was the object of exploration by trenching and about 150 m of diamond drilling.

Western Coal mounted an extensive drill program explored at its **Willow Creek South** and **Willow Creek West** areas near the Willow Creek Mine. Totals included about 450 m conventional and 5800 m reverse circulation drilling at Willow Creek South, and 5000 m reverse circulation at Willow Creek West. Five boreholes were installed at Willow Creek South to test water quality.

Hudson's Hope area

Canadian Kailuan Dehua Mines Co Ltd plans to develop its proposed underground **Gething** mine, about 25 km west of Hudson's Hope. The projected mine life would be about 40 years, producing 2 Mt of clean coal per year. A major Chinese-backed funding arrangement was announced in 2011 as part of a total investment of about $860 million. The neighbouring West Moberly First Nation stands strongly opposed to the development, however, and the potential for eventual development remains unclear.

Further to the west, Coalhunter Mining Corp has been developing its **Carbon Creek** metallurgical coal property (Figure 9). Carbon Creek has an estimated coal resource of 114.0 Mt in the measured and indicated category, and 89.1 Mt inferred. In 2011 the company initiated an environmental baseline study and began geotechnical investigation for a future wash plant site.

Figure 9. Coal seam exposure at Carbon Creek (courtesy Coalhunter Mining).

Bulk sample collection by large-diameter drilling for washability and carbonization testing was carried out. In all, about 8500 m conventional, and 6000 m reverse circulation drilling were completed.

OUTLOOK FOR 2012

Industry confidence in the long-term outlook for coal was underscored, in 2011, by an approximate doubling in investment for exploration and development in the Northeast Region. Barring global economic turmoil and a loss of confidence in steel production (and therefore of metallurgical coal consumption), there is every reason to expect a very active season in 2012 as companies vie to access currently-underutilized rail and port infrastructure.

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