TECHNICAL REPORT ON THE

Elan Coal Property

ALBERTA, CANADA

Prepared for Elan Coal Ltd.

Report for NI 43-101

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Effective Date: September 10, 2013

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LIST OF ABBREVIATIONS

Abbreviation	Definition
µ	Micron
°C	degrees Celsius
°F	degree Fahrenheit
µg	Microgram
A	Ampere
A	Annum
Bbl	Barrels
Bcm	bank cubic metre
Bcy	bank cubic yard
Btu	British thermal units
C$	Canadian dollars
Cal	Calorie
Cfm	cubic feet per minute
Cm	Centimetre
cm^2	square centimetre
Cps	counts per second
D	Day
dia.	Diameter
Dlt	dry long ton
Dmt	dry metric tonne
Dst	dry short ton
Dwt	dead-weight ton
FSI	free swelling index
Ft	Foot
ft/s	foot per second
ft^2	square foot
ft^3	cubic foot
G	Gram
G	giga (billion)
Gal	Imperial gallon
g/L	gram per litre
g/t	gram per tonne
Gpm	Imperial gallons per minute
gr/ft^3	grain per cubic foot
gr/m^3	grain per cubic metre
Hr	Hour
Ha	Hectare
Hp	Horsepower
In	Inch
in^2	square inch
J	Joule
K	kilo (thousand)
Kcal	Kilocalorie
Kg	Kilogram
KJ/kg	kilojoules per kilogram
Km	Kilometre
km/h	kilometre per hour

Abbreviation	Definition
km^2	square kilometre
kPa	kilopascal
kVA	kilovolt-amperes
kW	kilowatt
kWh	kilowatt-hour
L	Liter
L/s	litres per second
LOM	life of mine
m	metre
M	mega (million)
m^2	square metre
m^3	cubic metre
Ma	million years
MASL	metres above sea level
Mbcm	million bank cubic metres
min	minute
mm	millimetre
mph	miles per hour
MVA	megavolt-amperes
MW	megawatt
MWh	megawatt-hour
m^3/h	cubic metres per hour
opt, oz/st	ounce per short ton
oz	Troy ounce (31.1035g)
oz/dmt	ounce per dry metric tonne
pop.	population
ppb	part per billion
ppm	part per million
QA	quality assurance
QC	quality control
RL	relative elevation
RMax	Maximum reflectance
ROM	run of mine
s	second
st	short ton
stpa	short ton per year
t	tonne
tpa	metric tonne per year
tpd	metric tonne per day
US$	United States dollar
USgpm	US gallon per minute
V	Volt
W	Watt
wmt	wet metric tonne
yd^3	cubic yard
yr	year

1 SUMMARY

Elan Coal Ltd. ("Elan") is a privately owned coking coal development company based in, Calgary, Alberta. The Elan Coal Property is located in the foothills and front ranges of the Rocky Mountains of Alberta, between about 15 and 70 km north of the Municipality of Crowsnest Pass. This Technical report summarizes historical coal exploration on and immediately adjacent to the Property, and presents a resource estimate based upon historic drill information, trenching, adits and measured sections.

1.1 PROPERTY DESCRIPTION

The centre of the Property is located at 49°56'26"N, 114°26'14"W, approximately 30 km north of the town of Coleman in Alberta, Canada (Figure 2-1). The Property can be accessed by driving north from Coleman via Range Road 43A, turning onto Township Road 101A and then continuing east on Range Road 35A. The Property comprises 27 coal lease applications that cover a 50 x 20 km area and approximately 22,951 ha of leased land (Figure 4-1). Historic work has divided the property into Savanna Creek, Isola Peak, Isolation Ridge, Isolation South (Oldman River or OMR), Wildcat (Cat Mountain) and Grassy North (Oldman River South) areas. Each of these areas has additional local divisions.

1.2 LAND TENURE

The Property is currently comprised of 27 coal lease applications totalling approximately 22,951 ha of land. Portions of 6 of the 27 coal lease applications have been withdrawn or reserved by the Alberta government's Land and Forest Services. The affected leases include A13 120286508, A13 120071204, A13 120071205, A13 120071208, and A13 130011403. The total area withdrawn is approximately 1,005 ha and is illustrated in Figure 4-2. The Property falls within the Rocky Mountain Forest Reserve, which is managed by the Alberta Government; no road use agreements with any private companies are required for access to the Property.

1.3 GEOLOGY AND MINERALIZATION

The Property lies within the Front Ranges of the Canadian Rocky Mountains in the Crowsnest Pass area and spans the north-trending, west-dipping, Coleman, McConnell and Isolation thrust sheets. Stratigraphy on these thrust sheets is highly deformed due to fault splays that displace strata up to 10 km, and from complex folding (McDonald et al., 1989). The Crowsnest Pass area is characterized by Jurassic to Lower Cretaceous rocks of the Fernie, Blairmore and Kootenay Groups, and the Crowsnest Formation (Figure 7-1 and 7-2). In the Crowsnest Pass area, economic coal potential exists in the Kootenay Group, which is disconformably overlain by pebble conglomerates of the Cadomin Formation of the Blairmore Group. The Kootenay Group has a maximum thickness of 1,100 m near Sparwood, thins eastward and grades into the Nikanassin Formation near the North Saskatchewan River (Stockmal et al., 2001).

The Late Jurassic to Early Cretaceous Kootenay Group is subdivided into three formations, the Morrissey, Mist Mountain, and Elk formations; however, in the Crowsnest Pass area, the Elk Formation is absent due to erosion and/or thinning. Faulting and folding in the Crowsnest Pass area make confirmation of the number of coal seams difficult. Historical drilling on and near the Property suggests there are 10 to 16 coal seams that range from 3 to 10 m in thickness, many with economic potential (Kim, 1976).

Stratigraphy in the Crowsnest Pass area has been subjected to first and second order faulting, as well as complex folding. The major faults, the Coleman, McConnell and Livingstone thrusts, trend north and dip to the west at 08°, and displace the stratigraphy approximately 9.5 km eastward. Major folds, including the Crowsnest Syncline and Allison Anticline (Rushton et al., 1972), also trend north. Secondary local thrusts trend north, and occur within each thrust sheet, resulting in local structure units or packages affecting the coal seam thickness and occurrence

Ten coal seams have been correlated in the Isolation South (OMR) and Isolation areas on the McConnell Thust sheet. These are labeled S1 through S10, from lowest to highest stratigraphically. Seams S5, S7, and S8 have the most economic potential as they are relatively thick and extensive. Three coal seams have been identified on the Coleman Thrust sheet but do not seem to correlate with the other identified seams. Ten coal seams have been identified on the Livingstone Thrust sheet north of Grassy Mountain, three of which (Seam S6, S7A, and S7b) carry most of the resource and are probably correlateable with the seams at Grassy Mountain. Coal rank is low– to medium–volatile bituminous with variable but generally moderate ash content, good washability, and good coking properties.

1.4 EXPLORATION

This technical report is a compilation and evaluation of historic exploration on the Property. Except for some reconnaissance work, as of the effective date of this report, Elan has not completed exploration work on the Property.

- Documented coal exploration on what is now the Property began in 1949 and continued intermittently until 1976. Additional coalbed methane exploration was completed between 1971 and 2002.

In 1970, Scurry Rainbow Oil Ltd. began a program of road construction, mapping, trenching, drilling, and bulk sampling on the Oldman North Property.

From 1969 to 1971, CanPac Minerals Ltd. conducted an extensive program of road construction, mapping, trenching, drilling, and bulk sampling in the Isolation Ridge area. Granby Mining Corp. optioned the property in 1973, continued drilling, trenching and bulk sampling for coal quality in 1974 and released a pre-feasibility report in 1975 incorporating all the work completed to that date.

From 1969 to 1972, Bralorne Can-Fer Resources Ltd. conducted a program of mapping, trenching, drilling, and bulk sampling in the Savanna Ridge area in the northwest part of the Elan Property. A pre-feasibility report was completed for the south part of their property in 1975 (Croome and Gallant, 1975).

Several other historic exploration programs were conducted in the property area, including drilling by Coleman Collieries Ltd., Canadian Hunter Exploration Ltd., Devon Canada Corp., and Northstar Energy Corp. who completed a coalbed methane drill program.

1.5 DEVELOPMENT AND OPERATIONS

Development on the Property, completed by various companies, consists of an extensive road network that was built mostly in the early 1970's, trenching, and a total of 19 adits developed to provide bulk samples for coal washability testing. No coal production, aside from very small amounts for domestic use, is known from the Elan Property.

1.6 MINERAL RESOURCE ESTIMATES

The in-place resources for the Isolation South (OMR), Isolation, and Savanna project areas are summarized in Table 1-1. These areas are outlined in Figure 14-1. Assumptions and methodology are provided in Section 14.

Table 1-1 In-Place Coal Resources Summary (kilotonnes)

Area	In-Place Coal Resources (KTONNES)		
	ASTM Group	**Indicated**	**Inferred**
Isolation South (OMR)	Low to Medium Volatile Bituminous	31,873	53,828
Isolation	Medium Volatile Bituminous	1,267	828
Savanna	Medium Volatile Bituminous	28,750	29,927
Total		**61,890**	**84,583**

The Property hosts a large exploration target of low to medium volatile bituminous coal that requires additional drilling prior to completing resource definition. Exploration targets which are in part down-dip projections of the coal resources are provided for the Isolation South (OMR), Isolation, and Savanna project areas. For three areas along the Livingstone Trend (North, Central, and South) data point density allowed only estimation of exploration targets (Table 1-2). The target areas are outlined in Figure 14-1:

Table 1-2 Modelled Exploration Targets Hosted on the Elan Property (kilotonnes)

Area	Exploration Target (KTONNES)
Isolation South (OMR)	38,000
Isolation	20,000
Savanna	186,000
Grassy North (Livingstone Trend South)	252,000
Wildcat (Livingstone Trend Central)	215,000
Isola (Livingstone Trend North)	32,000
Total (rounded to nearest megatonne)	**743,000**

1.7 CONCLUSIONS AND RECOMMENDATIONS

The Property hosts significant coal resources and exploration targets, which warrant further exploration. The Property is considered one of merit.

Exploration Targets

A preliminary exploration program is recommended to geologically map and design a drill program focused on confirming seam locations and coal quality. Grassy North, which falls within Livingstone Trend, has been identified as the primary exploration target. This target is located on the southernmost leases of the Property package and is proximal to established infrastructure.

Resource Areas

Dahrouge Geological Consulting Ltd. ("Dahrouge") recommends expansion and infill drilling for the Isolation South (Oldman River or OMR), Isolation, and Savanna resource areas. Drilling should focus on increasing the resource classifications to indicated and measured, extending the current defined resources, and confirming the coal quality and coking potential. Future coal quality work should include large diameter coring to evaluate the size distribution of processed coal using attrition techniques. Washability and detailed coking coal analysis on a range of size fractions will be required to determine the optimum size and density at which coking properties are present in the resource. Petrographic studies by size fraction will provide additional information on optimising vitrinite content in potential products. Detailed coking coal tests should be completed on simulated clean coal products including carbonisation studies to develop preliminary market specifications for the resource.

1.7.1 GRASSY NORTH (LIVINGSTONE TREND RECOMMENDATIONS)

A two phase program is recommended for the Grassy North Exploration Target. The first phase would include a two-week exploration and reconnaissance program that would undertake surface mapping, coal sampling, and complete drill targeting for Phase 2. This work program would provide the required information to complete a coal exploration permit for a follow-up drill program.

The second phase of exploration, which is conditional upon favorable results obtained from the first phase of exploration, consists of 5-12 drill holes, totalling up to 1,000 - 2,500 m (Figure 26-1). Drilling would aim to establish a preliminary inferred resource, establish preliminary coal quality, and define additional exploration targets.

1.7.2 ISOLATION SOUTH (OMR) RECOMMENDATIONS

Minimal drilling is required to increase the current Isolation South Resource classification to Indicated and, potentially, to a Measured Resource. Infill drilling at 200-400 m spacing is proposed for the currently defined resource, in order to confirm structure and define coal quality. Additional confirmation drilling is proposed north and south of the historic drilling to extend the resource area and follow up on the exploration target.

The first phase of drilling includes 96 drill holes, totalling 8,400 m, targeting the S10 and S7 modelled seams (Figure 26-2). These include angled holes designed to best represent true seam thickness. Drill holes will be sampled (reverse circulation and large diameter coring) for quality testing.

The second phase of exploration, which is conditional upon favorable results obtained from the first phase of exploration, is designed to support mine plan requirements. The second phase of drilling includes 25 drill holes, totalling 4,000 m, targeting areas that require additional definition (Figure 26-2).

1.7.3 ISOLATION RECOMMENDATIONS

The Isolation Area is a coal deposit with merit that has defined resources. No current drilling is recommended for the area, as land holdings are currently fragmented over the resource. A ground program is recommended to validate the historic work and to target key areas for future programs. Recommended work in this area has been grouped with Isolation South (OMR) to join the on-Property resource areas.

1.7.4 Savanna Recommendations

The first phase of drilling includes 40 drill holes, totalling 8,000 m, to increase classification of the current Savanna resource (Figure 26-3).

The second phase of exploration, which is conditional upon favorable results obtained from the first phase of exploration, consists of 80 drill holes, totalling 21,000 m, to increase resource definition and classification (Figure 26-3).

2 INTRODUCTION

Dahrouge Geological Consulting Ltd. ("Dahrouge") has been retained by Elan Coal Ltd. ("Elan") to prepare an independent Technical Report on the Elan Coal Property ("the Property"), located in Alberta, Canada (Figure 2-1). The report was commissioned by Elan to comply with regulatory disclosure and reporting requirements outlined in Canadian National Instrument 43-101, Standards for Disclosure of Mineral Projects ("NI 43-101"), companion policy NI 43-101CP, and Form 43-101F ("Technical Reports").

John Gorham, P. Geol, William Miller, P. Geo, and Bradley Ulry, P. Geo, all employees of Dahrouge Geological Consulting Ltd, are the Qualified Persons responsible for preparing the Technical Report on the Property. Mr. Gorham, Mr. Miller, and Mr. Ulry are jointly responsible for all sections of this report.

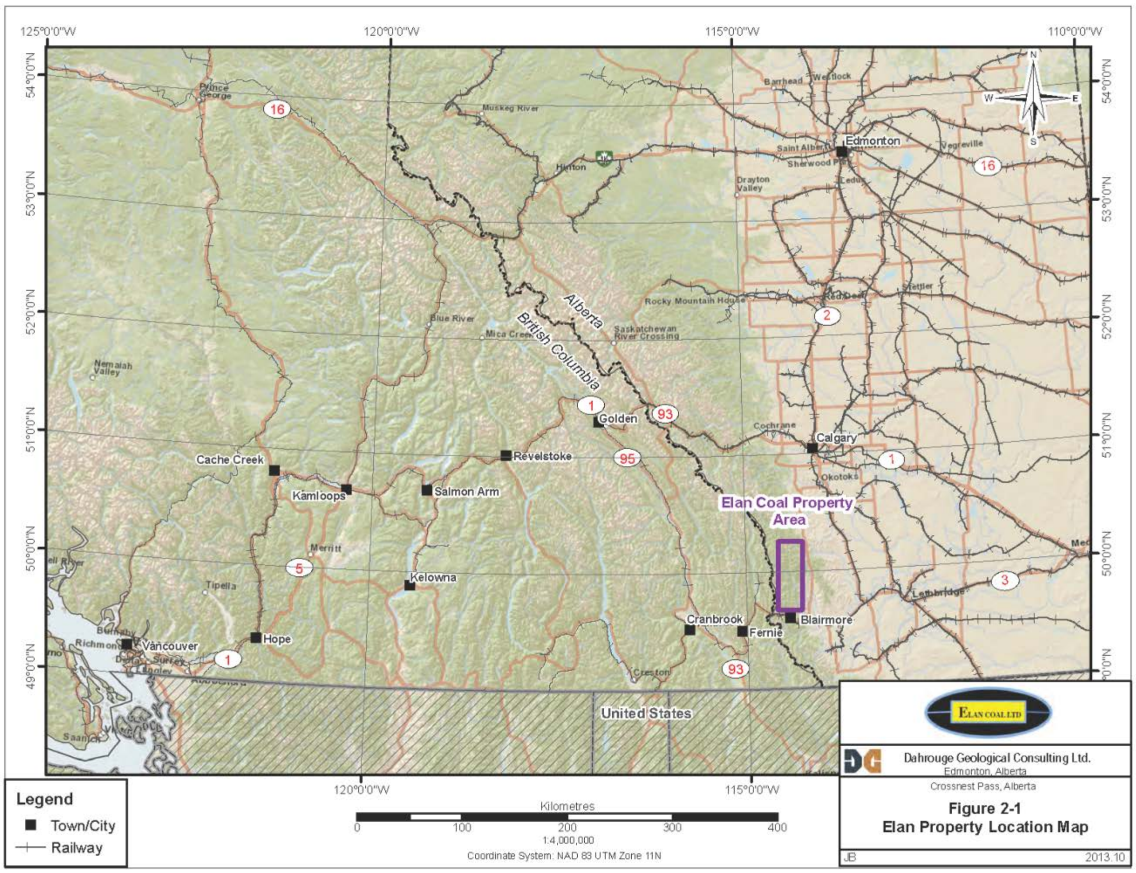

Figure 2-1 Location of the Elan Coal Property

The purpose of this report is to review and summarize the historic coal exploration data on the Property and, using the historic data, present NI 43-101 compliant resource estimates for the various deposits located within the Property.

Information, conclusions, and recommendations contained in this report are based on field observations as well as published and unpublished data (see Section 27: References). Details of data validation are provided in Section 12.

- Reports used in this compilation include: (see Section 27: References)

  - Western Canadian Collieries Ltd. (1954)
  - Bralorne Can-Fer Resources Ltd. (1969-1972)
  - CanPac Mineral Ltd. (1969-1971)
  - Scurry Rainbow Oil Ltd. (1970)
  - Canadian Industrial Gas and Oil Ltd.(1971)
  - Coleman Collieries Ltd. (1971)
  - Granby Mining Corp. (1974-1976)
  - Consolidation Coal Company of Canada (1976)
  - Canadian Hunter and Devon Canada (1989)
  - Northstar Energy Corp. (2001-2002)
- Diamond drilling, rotary drilling, coalbed methane ("CBM") drilling
- Trenching
- Adits
- Measured sections
- Government maps, reports, assessment reports

Mr. John Gorham, Mr. William Miller and Mr. Bradley Ulry visited the Property from May 13 to May 15, 2013, and inspected access, trenches, and surface coal exposures.

3 Reliance on Other Experts

This report has been prepared by, John Gorham, P. Geol, William Miller. P. Geo, and Bradley Ulry, P. Geo of Dahrouge Geological Consulting Ltd. for Elan Coal Ltd. ("Elan"). The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to the authors at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report, and
- Data, reports, and other information supplied by Elan and Lawrence Consulting and Resources Ltd.

The authors have relied upon the professional quality of the historical work reported in various studies ranging from exploration reports to preliminary feasibility studies. The authors have no reason to believe that the information used in the preparation of this report is false or purposefully misleading, and have relied on the accuracy and integrity of the data referenced in Sections 12 and 27 of this report.

For the purpose of this report, the authors have relied on ownership information provided by Elan and verified through the Alberta Government interactive coal tenure map system at:

http://www.energy.alberta.ca

While title documents were reviewed for this study, it does not constitute, nor is it intended to represent, a legal, or any other opinion as to title.

Some relevant information on the Property presented in this report is based on data derived from reports written by geologists and/or engineers whose professional status may or may not be known in relation to the NI 43-101 definition of a Qualified Person. The authors have made every attempt to accurately convey the content of those files, but cannot guarantee the accuracy or validity of the work contained within those files. However, the authors believe that these reports were written with the objective of presenting the results without any misleading intent. In this sense, the information presented should be considered reliable, unless otherwise stated, and may be used without any prejudice by Elan Coal Ltd.

The results and opinions expressed in this report are based on the authors' review of the geological and technical information listed in Section 27 of this report. Although the authors have carefully reviewed all of the information provided by Elan and believe it to be reliable, the authors have not conducted an in-depth independent investigation to verify its accuracy and completeness.

Except for the purposes legislated under provincial securities laws, any use of this report by a third party is at that party's sole risk.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 LOCATION

The centre of the Property is located at 49°56'26"N, 114°26'14"W, approximately 30 km north of Coleman in Alberta, Canada (Figure 2-1). The Property can be accessed by driving north from Coleman via Range Road 43A, turning onto Township Road 101A and then continuing east on Range Road 35A. The Property comprises 27 coal lease applications that cover a 50 x 20 km area, totalling approximately 22,951 ha of Crown Land (Figure 4-1). Historic work has divided this area into Savanna Creek, Isola Peak, Isolation Ridge, Isolation South (Historically Oldman River or OMR), and Grassy North (Historically Oldman River South). These general areas have smaller local divisions or historic targets within them. The Technical Report on the Property groups these areas into Savanna (Coleman Structural Unit), Isolation (McConnell Structural Unit), Isolation South (McConnell Structural Unit), and the Livingstone Trend (Livingstone Structural Unit (Figure 6-1 to 6-3; 7-1).

The Livingstone Trend starts north of Grassy Mountain and extends 45 km through Grassy North to Isola Peak (north extension of the Property). Several oilfield access roads, the Maycroft (Gap) road, and several now partly overgrown coal exploration roads and trails provide access to the area from points along Highway 40 (Hwy 940).

The Isolation South Area is most easily accessed by driving approximately 35 km north from Coleman via Highway 40 (Hwy 940), and then 5 km northwest on Oldman River Route. Access beyond this is by limited-use roads and trails. The Isolation Area has the same access route to the junction of the Oldman River Route and then 13 km northwest on the Oldman River Route. Access beyond this is by limited-use roads and trails.

The Savanna Area can be accessed by driving approximately 72 km north from Coleman via Highway 40 (Hwy 940) or 30 km south on Hwy 22 from Longview, Alberta, then southwest onto Hwy 532 for 25 km, and finally 10 km south on Range Road 42A (41A, 40A). Access beyond this is by limited-use roads and trails.

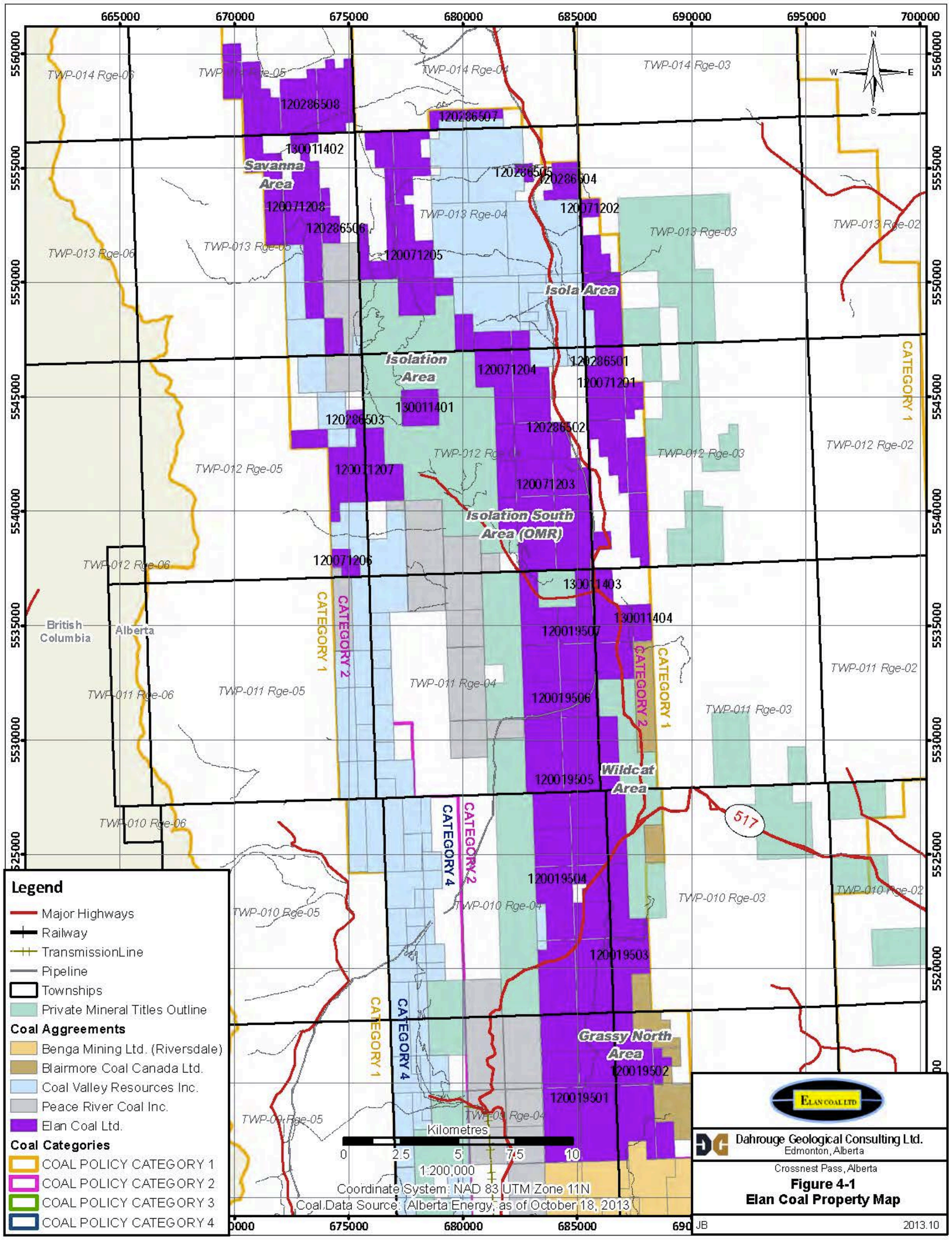

Figure 4-1 Elan Coal Property Map

4.2 MINERAL TENURE

The Property consists of 27 coal lease applications encompassing an area of approximately 22,951 ha. The land that comprises the Property is Crown Land. The A13 coal agreements that contain the resources for this report are held by Elan Coal Ltd and are summarized in Table 4-1. They can be viewed on the Alberta Government Energy Website using the interactive coal map:

http://www.energy.alberta.ca

The coal leases applications were acquired between January 20, 2012 and January 21, 2013 and are held by Elan Coal Ltd.

Applications for coal lease agreements in Alberta must be accompanied by the $625.00 application fee, the first year's rent ($3.50 per hectare with a minimum of $50.00), plus GST as applicable. For a coal lease in a road allowance, the first year's rent is $50.00. Once received, an application is checked to confirm the requested mineral rights are available. The application is then reviewed with respect to development restrictions or policies, and the appropriate method of disposition. Depending upon the circumstances, a successful coal lease application may lead to an agreement being issued directly to the applicant, or may result in competitive bidding.

A coal lease grants the right to explore the land within the boundaries of the lease. A coal lease does not grant surface rights; a surface lease or grant is required. Elan has not received or applied for a surface lease on the Property. Elan has not applied for legal access; however, the Property falls within the Rocky Mountain Forest Reserve, which is managed by the Alberta Government. As such, no road use agreements with private companies are required for access to the Property.

Coal leases are granted for a term of 15 years, with option to apply for renewal at expiry. Once the lease applications have been granted, Elan Coal must pay an annual rent of $3.50/hectare to the Alberta government to retain the Property, as well as royalties according to the Coal Royalty Regulation if any production occurs. The current royalty rate for Crown-owned bituminous (Mountain/Foothills) coal is 1% of mine mouth revenue before mine payout, and 1% of mine mouth revenue plus 13% of net revenue after mine payout.

Table 4-1 Details of the Elan Coal Property Claims

Lease Type	Lease Number	Area (hectares)	NTS Map Sheet	Date Recorded
A13	120019501	1541.8	82G16, 82G09	20-Jan-2012
A13	120019502	1621.1	82G16, 82G09	20-Jan-2012
A13	120019503	1729.9	82G16	20-Jan-2012
A13	120019504	1681.1	82G16	20-Jan-2012
A13	120019505	1545.0	82G16	20-Jan-2012
A13	120019506	773.4	82G16	20-Jan-2012
A13	120019507	1808.9	82G16	20-Jan-2012
A13	120071201	1938.8	82G16, 82J01	20-Mar-2012
A13	120071202	63.1	82J01	20-Mar-2012
A13	120071203	1851.6	82G16	20-Mar-2012
A13	120071204	1657.6	82J01	20-Mar-2012
A13	120071205	1590.5	82J02	20-Mar-2012
A13	120071206	116.9	82G15	20-Mar-2012
A13	120071207	975.0	82G15, 82J02	20-Mar-2012
A13	120071208	1698.1	82J02	20-Mar-2012
A13	120286501	16.1	82J01	3-Oct-2012
A13	120286502	15.8	82J01	3-Oct-2012
A13	120286503	66.2	82J02	3-Oct-2012
A13	120286504	207.9	82J01	3-Oct-2012
A13	120286505	48.4	82J01	3-Oct-2012
A13	120286506	142.5	82J02	3-Oct-2012
A13	120286507	143.5	82J01, 82J02	3-Oct-2012
A13	120286508	1071.9	82J02	3-Oct-2012
A13	130011401	258.6	82J02	21-Jan-2013
A13	130011402	129.1	82J02	21-Jan-2013
A13	130011403	129.7	82G16	21-Jan-2013
A13	130011404	129.0	82G16	21-Jan-2013

There are two surface disposition types that cover portions of the Property. The activity types include Consultative Notation – Provincial Government (CNT) and Protective Notation (PNT). CNT does not impose any land use restriction but indicates that an agency wishes to be consulted prior to any commitment or disposition of the land. A CNT must not prevent the taking of applications or the cancellation of an application. All applications must be referred to the holding agency. The holding agency may request special conditions with respect to proposed disposition. If the holding agency wishes to restrict the proposed land use, the holding agency must apply for a Protective Notation (PNT) that will permit the appropriate level of restriction with respect to the surface disposition. Generally speaking, the purpose of these restrictions is either managing natural hazards (erosion, flood risk, slope stability) or land management (wildlife, grazing, irrigation, watercourse protection). The Property dispositions are consultative only, and non-restrictive for development.

Portions of 6 of the 27 coal lease applications have been withdrawn by the Alberta government's Land and Forest Services. The affected leases include A13 120286508, A13 120071204, A13 120071205, A13 120071208 and A13 130011403. The total area withdrawn is predominantly SHA-0022-01 Mountain Goat and Bighorn Sheep Ranges and Buffers and totals approximately 1,005 ha (Figure 4-2).

Elan has entered into an Exploration and Option Agreement, announced August 12, 2013, with Altitude Resources Inc. ("Altitude"), a publicly traded coal exploration company based in Calgary, Alberta. Altitude will acquire an option to earn up to a 51% undivided working interest in the 27 Alberta Crown coal lease applications described above. The agreement allows Altitude the right to enter upon and conduct exploration activities in and on all parts of the lease applications. In consideration, Altitude will make an initial refundable cash payment of $200,000 to Elan to fund reconnaissance field work during calendar 2013. Upon receipt of the initial payment, Altitude will obtain a 120 day exclusivity period to complete due diligence and a financing of a minimum of $2,000,000.

The initial payment shall be reimbursed by Elan to Altitude in the event that the financing is not completed and final approval of the TSX Venture Exchange has not been obtained. In the event that the financing is completed and the Altitude is not satisfied with the results of the due diligence, 50% of the initial payment will be returned upon Altitude notifying Elan of its intention not to proceed with the Option.

1. Upon closing of the financing, Altitude will commit $1,500,000 in exploration expenditures by December 31, 2013; upon completion of this expenditure Altitude will be granted an initial 11.25% interest in the lease applications.
2. No later than December 31, 2014, Altitude will incur $3,300,000 in exploration expenditures, upon completion of which Altitude will earn an additional 11.25% interest in the lease applications.
3. Following completion of (1) and (2), and in recognition of its contribution as operator, Altitude will earn a further 2.5% interest in the lease applications, for an aggregate interest of 25%.
4. On or before December 31, 2015, Altitude will have the option to incur an additional $5,000,000 in exploration expenditures which would earn an additional 13% interest in the lease applications.
5. Finally, on or before December 31, 2016, Altitude has an option to incur an additional $5,000,000 in exploration expenditures; upon completion of which it shall be granted an additional 13% interest in the lease applications for a cumulative 51% interest in the lease applications.

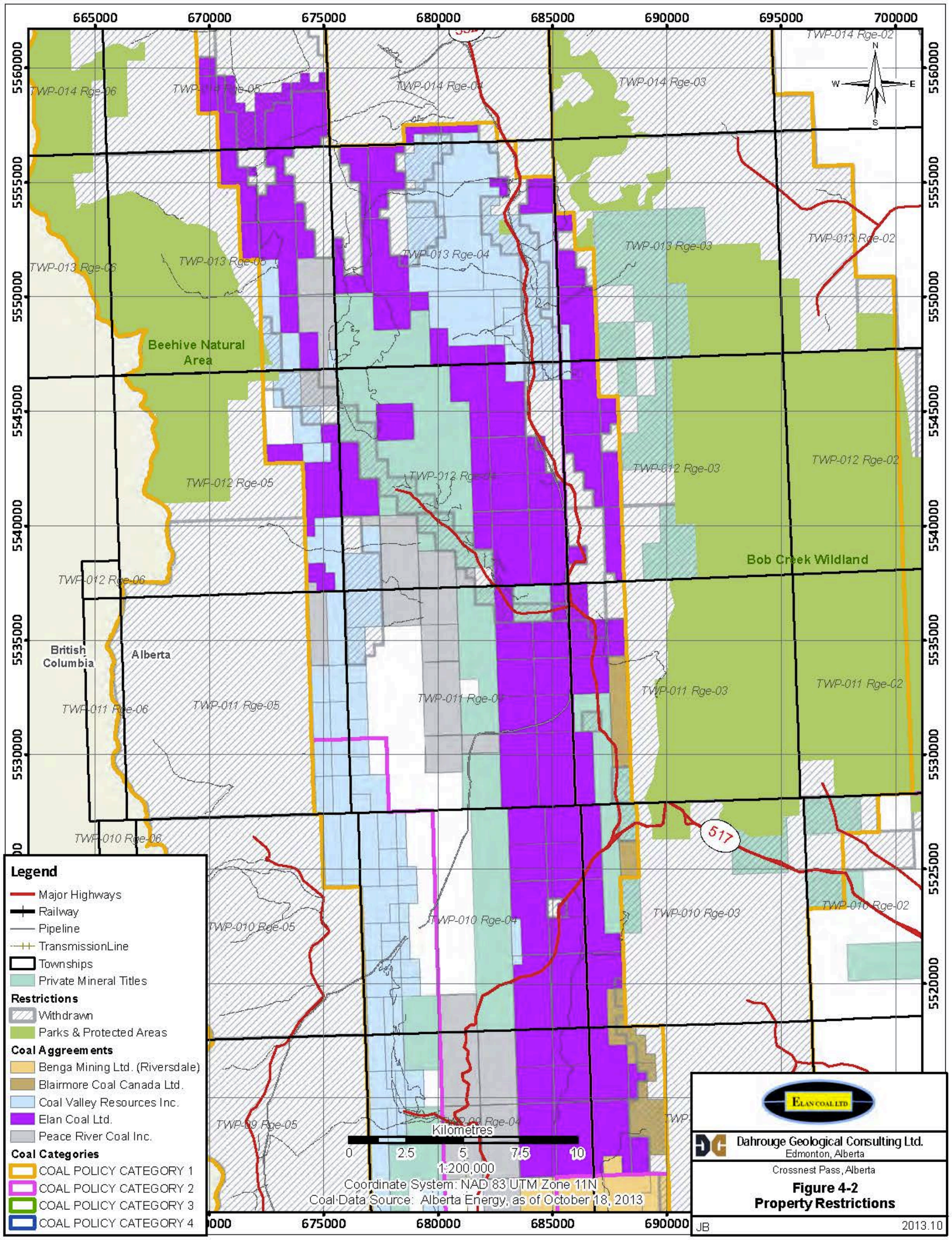

Figure 4-2 Property Restrictions

4.3 ENVIRONMENTAL LIABILITIES

Although surface access restrictions related to Fish and Wildlife Services exist on the northern portions of the Property, the authors are not aware of any environmental liabilities associated with the Property.

4.4 REQUIRED PERMITS

The exploration proposed in Section 26 will require a Coal Exploration Permit from the Alberta Government. As of the effective date of this report, Elan has not applied for a Coal Exploration Permit.

4.5 OTHER SIGNIFICANT FACTORS AND RISKS

Currently, there are several surface access restrictions on portions of the Elan Coal leases. The entirety of the Property lies within Category 2 land zone with respect to coal exploration and development as designated by the 1976 Coal Development Policy for Alberta. This land category allows for limited exploration under strict controls. Approved development is generally restricted to in-situ or underground, as the area is considered to have moderate environmental sensitivity and minimal existing infrastructure (Figure 4-2). A recent draft proposal tabled by the Alberta Government, the “South Saskatchewan Regional Plan 2014-2024”, has proposed the designation and expansion of new provincial park boundaries. These proposed boundaries may overlap Elan’s lease boundaries and may impact some the reported resources and/or exploration targets. No provincial park modifications or restricts have been placed on Elan’s coal lease applications prior to the release of this report.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 TOPOGRAPHY, ELEVATION, AND VEGETATION

The Property is situated within Alberta's southernmost sub-alpine-montane sub-region of the larger Rocky Mountain Natural Region. In general, the terrain is steep and mountainous with highly variable elevations. The topographic elevation on the Property ranges from 1,550 to 2,500 m. Vegetation on the Property is dominated by Engelmann spruce and subalpine fir at higher elevations and lodgepole pine, Douglas fir and mixed grasslands at lower elevations.

5.2 INFRASTRUCTURE AND LOCAL RESOURCES

The southern part of the Property is highway accessible by driving approximately 20 km north from Coleman via Kananaskis Highway (Forestry Trunk Road - Hwy 40, 940, or range Rd 40a). The northern part of the Property can be accessed 42 km north of Coleman, via the Kananaskis Highway and the Oldman River Route. These routes provide maintained access to the limited-use road network that reaches, from south to north, the Isolation South (OMR), Isolation, and Savanna areas. Transport to and from the Property is by 4x4 truck and ATV.

A secondary Canadian Pacific rail line runs through Coleman and connects with the main CNR east-west line for access to Vancouver and Prince Rupert ports or as far as the Great Lakes eastwardly. The nearest airport is located in Pincher Creek, Alberta, approximately 50 km east of Coleman along Highway 3 (Crowsnest Hwy).

Accommodations, food, fuel and other necessary services are available in Coleman and Blairmore, Alberta, which are located 10 to 60 km south of the Property. Coleman and Blairmore have a combined population of approximately 4,000. The local economy is primarily based on tourism, forestry, and coal-mining. Three waste treatment plants, 2 secondary oxidation ditches and 1 extended-aeration lagoon are available locally. In addition, mobile waste disposal services are available to manage drill-site generated waste. The Oldman River, which cuts through the Property, is a potential water source for operations.

Several coal mines, including Teck Coal's and Coal Mountain mines, are currently in operation in the area. Mining personnel for the Property could potentially be sourced from Coleman and Blairmore or other surrounding settlements including, Nanton (pop. 2,000), Sparwood (pop. 4,500), Bellevue (pop. 800) and Cowley (pop. 250). Sparwood, a major coal mining community located 35 km west of Coleman across the Alberta/British Columbia border, has many relevant services available to potentially support development of the Elan Property. There is currently no existing mine infrastructure on the Property.

5.3 CLIMATE

Climate is sub-alpine with mild summers and long, cold winters. Average summer temperatures are 15° to 22°C and winter temperatures are -5° to -12°C, with extremes of 35°C and -40°C. Rainfall averages about 23 cm per year; snowfall averages 75 cm per year with the majority falling in December and January. Chinook wind patterns are common in the area.

6 HISTORY

Coal was first noted in the district around 1845 by Father Pierre-Jean DeSmet, a Jesuit missionary. Michael Phillips made note of coal exposures along Elk River in 1873 and sent samples to Dr. G.M. Dawson of the Geological Survey of Canada, who later evaluated the coal deposits as part of a mapping program in 1878. The extensive history of coal mining in the Crowsnest Pass area began in 1898 at Fernie BC, and in 1901 at Frank, Alberta. In the study area, coking coal was mined from the Kootenay Group seams about 50 km south of Isolation Ridge at Hillcrest, Coleman, Bellevue, and smaller communities, continuing into the 1950's. The final mine closure, at Coleman Collieries, took place in 1983.

Historic work on the Elan Property began between 1949 and 1955 when Western Canadian Collieries completed geologic mapping and measured sections in the area from Oldman River to Daisy Creek (Twp 9-12, Rng 3-4W5). Coal was briefly mined at surface just north of Racehorse Creek in Sec. 23, Twp 10, Rng 4W5 from 1949 to 1951 by C. and L. Shultze (ERCB Serial File ST45, 2010). Interest in metallurgical coal sparked widespread exploration in the Alberta foothills at the end of the 1960's. Three areas within the Property received extensive exploration, which are, from south to north: Isolation South (OMR), Isolation Ridge, and Savanna Ridge. The Grassy Mountain Property, located immediately south of the Elan Property, has seen extensive exploration and production. It is discussed further in Section 15 of this report.

In 1970, Scurry-Rainbow Oil Ltd (Scurry) conducted exploration including drilling, trenching, adit development and road building on a portion of what became known as the Oldman North Property. In 1976, Consolidation Coal Company (Consol) conducted geologic mapping on a portion of the area, Oldman South, as part of its 50% interest agreement with Scurry.

Coal was discovered on Isolation Ridge during helicopter reconnaissance by CanPac Minerals Ltd. (CanPac) in 1969. During the following two seasons, an extensive road network was built to facilitate exploration by CanPac throughout the area. Work continued through 1975 by Granby Mining Corporation (Granby), culminating in a pre-feasibility study on that portion of the property.

Exploration in the Savanna Creek area began in 1969 with geological reconnaissance by Bralorne Can-Fer Resources Ltd. (Bralorne). A North and South Block of leases were explored, mainly between 1969 and 1972, and in part under a 50-50 partnership with Canadian Industrial Gas and Oil Ltd. (CIGOL). A preliminary feasibility study was conducted on the South Block in 1975 and a preliminary mine plan was developed.

Fifteen coalbed methane wells were completed by Northstar Energy Corporation throughout the project area between 2001 and 2002. Drilling was also conducted by Coleman Collieries Ltd. in the Isola area in 1971 (3 holes), and by Canadian Hunter Exploration Ltd. and Devon Energy Corp. in 1989 (one hole) along the Livingstone Trend.

6.1 PRIOR OWNERSHIP

The leases acquired by Scurry in the OMR North area were a wholly-owned contiguous package of 2,590 ha (6,400 acres) straddling the Oldman River in Twp 11 and 12, Rng 4W5. The OMR South area, which was mapped by Consol in 1976, consisted of 1,493 ha (4,800 acres) of freehold leases in Twp 10 and 11, Rng 4W5. A further 1,230 ha (3,040 acres) of freehold land contiguous with the Oldman North property was later acquired, but to the knowledge of the authors, no work was completed.

The initial leases acquired by CanPac in the Isolation Ridge area, which included both freehold and crown leases, totalled 14,860.5 ha (36,721 acres), and were located in Twp 11 to 14, Rng 3 to 5W5. In

October 1973, Granby optioned the leases from CanPac and conducted a data review of the property; they completed their own field work in 1974, which culminated in reserve estimates and a coal quality evaluation. The authors do not have access to all documents and reports from either CanPac or Granby.

The initial leases acquired by Bralorne in the Savanna Ridge area comprised 9,065 ha (22,400 acres) in Twp 13 to 15, Rng 5W5. Initially a coal reservation, the property was converted into leases in September 1971. The North and South Blocks were separated by leases owned by CIGOL who entered into a 50% partnership with Bralorne.

6.2 PREVIOUS EXPLORATION AND DEVELOPMENT

Coal exploration on what is now the Property began in 1949, extending to 1976. Additional exploration was completed between 1971 and 2002 for coalbed methane.

Table 6-1 Historic Exploration Summary for the Elan Property

Area	Operator	Campaign	Core holes	Bore holes/ Wells	Adits	Trenches	Mapping	Access Trails (km)
OMR (Isolation South)	Scurry	1970	19	-	3	24	-	22.5
Savanna	Bralorne	1969-72	8	57	5	15	1:4,800 ft	-
Savanna	CIGOL	1971	2	-	-	-	-	-
Isolation	CanPac	1969-71	76	5	6	76	1:12,000 / 1:2,400	~117.5
Isolation	Granby	1974	18	9		45	1:2,400	
Regional-OMR	W.C.C	1949-55	-	-	-	33	1:12000	Extensive
Regional-Isola	CCL	1971	3	-	-	15	-	-
Regional-OMR	Consol	1976	-	-	-	-	1:12,000	-
Regional	CHE & Devon	1989	-	1	-	-	-	-
Regional	NEC	2001-02	-	20	-	-	-	-

6.2.1 ISOLATION SOUTH (OMR) AREA

Initial exploration and development in the Oldman River (OMR), or Isolation South, Area by Scurry began in May 1970 with construction of 22.5 km (14 miles) of access roads. Work completed by Scurry and Consol is summarized in Table 6-1, Figure 6-1 and Figure 10-1. Exploration completed by Scurry consisted of 19 HQ-sized diamond drill holes totalling 3,286 m (10,780 ft) and twenty-four trenches. In addition, three adits were driven for a total of 177 m (580 ft) of underground excavation; the adits provided bulk samples of key seams for large-scale washability and coking tests.

The coal-bearing Kootenay Formation (now Group) was determined to be 168 to 183 m (550 to 600 ft) thick in the area. Five seams and splits were identified by Scurry, of which No. 4 and No. 1 were most significant. Coal was identified as medium volatile bituminous (23-31% volatile matter), with a Free Swelling Index (F.S.I) ranging from 1 to 9 with an average of 5. Scurry commissioned Cyclone Engineering Sales of Edmonton to complete washability tests for bulk sample extractions from Adits 1A, 1B, 1C (No. 4 seam and splits) and Adits 2 and 3 (No. 1 Seam). Results are discussed in Section 13.

In 1976, mapping at a scale of 1:12,000 was carried out by Consol on their OMR South Property, which was located south and slightly west of the Scurry Property. No exposures of coal were found on the property. Exposures to the east of the property in the valley of Racehorse Creek were interpreted to dip at 30° to 50° and were considered too deep to warrant further exploration (Daniells et al, 1976).

6.2.2 ISOLATION AREA

Initial exploration and development work by CanPac in the Isolation Ridge area began in 1969 with construction of access roads, including a main road in the valley of Honeymoon Creek connecting with the forestry road in the Oldman River valley to the south, drill access roads on Isolation Ridge, and an exploratory road to the south on the Isolation escarpment. In 1970, a camp was established in the Oldman River Valley and access roads were expanded to serve the Twin Ridge and the Coal Top areas. In 1971, extensions to these routes and numerous branch roads were built. The total road system comprised 117.5 km (73 miles). Work done by CanPac and Granby is summarized in Table 6-1, Figure 6-2 and Figure 10-1.

Seventy-six diamond drill holes were completed on the property totalling 12,702 m (41,674 ft). In areas of economic interest, the holes were located on 305 m (1,000 ft) centres, with other areas tested by holes at selected locations. An additional six rotary holes were drilled, totalling 622 m (2,042 ft). In conjunction with the drilling, Spartan Aero Ltd. surveyed the property for the preparation of base maps. Geological mapping of most of the property at a scale of 1:12,000 was completed and the areas of current economic interest were mapped at a scale of 1:2,400. Trenching of coal exposures was carried out wherever feasible, by hand, backhoe or bulldozer as practical. Six adits were driven for a total of 426 m (1,398 ft) of underground excavation; the adits provided bulk samples of the various seams for large scale washability and coking tests (Rushton et al, 1972).

No exploration took place in 1972 and 1973. During the last two months of 1973, Granby Mining Corp. and Hulbert & Thomson Co. Ltd. reviewed the basic data submitted to Granby by CanPac and undertook an independent interpretation of the geological characteristics of the renamed Granridge Coal Property. All lithologic and geophysical logs were reviewed and available coal quality data was analyzed for criteria for seam correlation and then digitized. A structural interpretation of the CanPac data, based upon contouring, isopach and isoburden plans, was developed for Seams 7 and 8 in the Isolation and Coaltop structures. In 1974, Granby completed an exploration program consisting of geological mapping, diamond and rotary drilling, backhoe trenching, and adit development, as well as the installation of piezometers on select holes. All of the CanPac and Granby exploration data was compiled to identify and correlate the major coal seams and define stratigraphy on the property. The geological in-situ coal resources (reserves as defined in 1975) were calculated following the structural configuration of the major coal seams and preparation of isopach and isoparting plans at 1:2,400 scale for seam thickness (Kim, 1975).

Elan Coal currently holds rights to isolated lease blocks within the historic CanPac and Granby project areas, as well as lease blocks that cover the east and north boundaries. Not all of the exploration described above was completed in areas now covered by the Property.

6.2.3 SAVANNA CREEK AREA

Initial exploration by Bralorne in the Savanna Ridge area began in the fall of 1969 on the more accessible South Block and consisted of geological reconnaissance and subsequent bulldozer trenching. By the end of the season, 57 rotary drill holes, totalling 2,056 m (6745 ft), were completed on the South Block, as well as an aerial photography program. In 1970, a similar program was conducted on the less accessible North Block, which included reconnaissance, trenching and the completion of 10 rotary drill holes totalling 895 m (2,935 ft). An adit on the 'A' Seam was driven 84 m (277 ft) and a 5½ ton bulk sample was taken. In 1971, field work consisted of geologic mapping, diamond drilling of 4 holes totalling 683 m (2,242 ft), and the development of two adits with cross-cuts totalling 107 m (351 ft) to provide bulk samples. In 1971, CIGOL completed two diamond drill holes totalling 471 m (1,544 ft) at

Pasque Mountain. In 1972, Bralorne drilled four core holes totalling 857 m (2,812 ft) and drove an additional 78 m (256 ft) of adits. Work completed in the Savanna Ridge area is summarized in Table 6-1, Figure 6.3 and Figure 10.3.

The historic Savanna Property lies within the Coleman Thrust block, the westernmost major structure on the Elan Property. Bralorne identified three seams, 'A' through 'C' from stratigraphically highest to lowest, of which Seam 'A' and Seam 'C' were the focus of bulk sampling, coal quality testing, and resource estimation (Weishaupt, 1971).

6.3 HISTORICAL MINERAL RESOURCES

6.3.1 ISOLATION SOUTH (OMR) AREA

In 1970, Scurry estimated strippable historic coal reserves and evaluated coal quality for the OMR North area based on drilling, trenching, and adit data. Most of the calculated historical reserves were in the No. 4 Seam and No. 1 Seam and splits. They estimated about 100,000,000 short tons (90,718,000 tonnes) of coal in-place, of which 48,887,000 short tons (44,350,000 tonnes) were at stripping ratios <6:1 (Lane, 1970). It must be noted that although these estimates were termed 'reserves', and followed accepted industry practices at the time of their calculation, the estimates can only be considered historical resources in the context of this report and NI 43-101 standards. The authors consider the estimates reasonable in the context of work completed.

Methods and assumptions for the Scurry calculations were:

- In each area, geological sections were created at 1:2,400 scale, at a spacing of 305 m (1,000 ft) or smaller in structurally complex areas.
- Areas with potential 6:1 (cubic yd. rock/short ton coal) or less stripping ratio were blocked out for each section.
- Coal seam thickness was arithmetically averaged between sections.
- Density for coal in-place was 25 ft^3 = 1 short ton (2000 lb) or 1.28 g/cc.

The authors do not treat these historical estimates as current coal resources, and they should not be relied upon as such. Section 14 of this report presents coal resources calculated as part of the current, NI 43-101 compliant assessment of the property.

6.3.2 ISOLATION AREA

Both CanPac and Granby estimated coal resources and coal quality for the Isolation ridge area based on drilling, trenching, and adit data. It must be noted that although accepted industry practices were observed at the time of calculation of their 'reserves', these estimates can only be considered historical resources in the context of this report and NI 43-101 standards.

In 1972, CanPac calculated resources (then termed reserves) for the Isolation Ridge (north), Isolation South, Honeymoon, Coal Top and Outlook Ridge areas of the Property (Table 6-2) (Rushton et al, 1972). Methods and assumptions for these calculations were:

- Geological sections were derived from 1:2,400 mapping, at 61 m (200 ft) spacing in structurally complex areas and at 122 m (400 ft) spacing in less complex areas.
- Coal intersections and overburden thickness were interpolated between sections using trench and adit data. Partings within seams were treated as overburden.
- Density for coal in-place was 26 ft^3 = 1 long ton (2240 lb) or 1.38 g/cc.
- Pit highwall angle was 57° with cut-off ratio of 10:1 and overall ratio of 8.83:1.

- Mining losses assumed as 5% of raw coal and 5% for oxidized coal
- Plant losses were based on composites of washability tests such that:
    - **RECOVERY = %+200 mesh x % float** (Considered conservative)

Table 6-2 summarizes the historic reserves determined by CanPac. Originally, estimates were reported as long tons of dry coal; they have been recalculated to metric tonnes for comparison purposes. Strip ratios were based on cubic yards per dry ton (long).

Table 6-2 Historic Reserves for Isolation Area: CanPac (after Rushton et al, 1972)

Area	Seam	Raw Coal In-Place (tonnes)[1]	Strip Ratio	Clean Coal (tonnes)[2]	Net Clean Coal(tonnes)[3]	Strip Ratio
Isolation Ridge	8	2,580,411	8.4:1	1,863,306	3,804,119	12.4:1
	7	3,020,768		2,363,554		
Isolation South	8	3,243,112	10.2:1	2,529,808	7,273,068	14.2:1
	7	6,958,965		5,551,379		
Honeymoon	8A	3,116,043	9.1:1	2,345,700		
	8B	747,795		492,338	3,219,149	14.5:1
	7B	1,231,324		738,794		
Coal Top	8	1,596,312		1,269,946		
	7U	15,074,249	8.3:1	11,841,653	17,942,151	12.5:1
	7L	10,464,003		6,824,125		
Outlook Ridge	8	310,536		248,430		
	7U	1,566,244	4.2:1	1,147,854	2,226,363	7.1:1
	7L	1,889,458		1,077,460		
Total (rounded)	**All**	**51,799,000**	**8.3:1**	**38,294,000**	**34,466,000**	**12.7:1**

[1]density used is 1.38 or 26 ft^3(bcy) = 1 long ton
[2]clean coal = raw in place x weighted average recovery
[3]net clean coal = clean coal less 5% (pit loss) less 5% (oxidized coal)

In 1975, Granby calculated resources (at the time considered reserves) on parts of the Isolation area as part of a pre-feasibility summary, compiling reviewed CanPac data plus results of their own 1974 exploration (Table 6-3) (Kim, 1975). This completed pre-feasibility work is not compliant with the current NI 43-101 requirements and is provided for historic reference only.

Methods and assumptions for these calculations were:

- In each area, geological sections were derived from 1:2,400 mapping, at 152 m (500 ft) spacing. Drill information, trenches, and adits were projected onto sections.
- Top-of-seam structural contours were drawn for each seam of economic interest considering:
    - Parting less than 0.9 m (3 ft) were included in coal thickness.
    - Isolated seams <1.2 m (4 ft) in thickness were excluded.
    - Total seam thickness was >75% coal and <25% rock partings.
- Isopach maps, as well as isoparting maps, were prepared for each unit seam within each area.
- Density for coal in-place was 27 ft^3 = 1 long ton (2,240 lb) or 1.33 g/cc. A rock specific gravity of 2.66 and parting specific gravity of 2.00 were utilized.
- Overall pit highwall angle of 45° with maximum stripping ratio of 12.5:1 and average of 10:1.
- Exclusion of coal within 15 m (50 ft) of surface for oxidation.

- Rock dilution 10% of in-place raw coal volume.
- Mining loss of 10% of in-place raw coal volume (after oxidation exclusion).
- Breaker reject of 50% of rock dilution and partings.
- Underground (below pit floor) mining by hydraulic method.
- Minimum underground thickness 3.7 m (12 ft).
- Minimum underground seam dip of 7°.
- Maximum cover of 460 m (1,500 ft) for underground cut-off.
- Mining recovery 50%.
- Washability yield (CanPac and Granby bulk samples).

Table 6-3 summarizes the historic reserves calculated by Granby. Originally, estimates were reported as long tons of dry coal; they have been recalculated to metric tonnes for comparison purposes. Strip ratios were based on cubic yards per dry ton (long).

The areas considered by Granby are more restricted than CanPac and the criteria and assumptions for estimations are more conservative. The authors consider the methodology used in both estimates reasonable for industry standards at the time. The Granby compilation was more rigorous as it was done at a pre-feasibility level. The authors do not consider these historical estimates current coal resources, and they should not be relied upon as such. Section 17 of this report presents coal resources calculated as part of the current NI 43-101 compliant assessment of the Property.

Table 6-3 Historic Reserves for Isolation Area: Granby (after Kim, 1975)

Deposit Area	Deposit Type	Seam	Raw Coal In-Place (tonnes)[1]	Recoverable Raw Coal (tonnes)[1,2]	Net Clean Coal (Dry Tonnes)
Isolation North	Surface	7	2,660,538	-	2,131,091
	Surface	8	3,159,527	-	2,644,524
	Underground	7	6,597,193	3,298,088	2,797,177
	Underground	8	4,661,623	2,330,812	2,008,725
Isolation South	Surface	7	4,597,521	-	3,682,614
	Surface	8	2,254,053	-	1,886,643
	Underground	7	3,176,163	1,588,081	1,295,460
	Underground	8	408,451	408,451	181,872
Coal Top	Surface	7	4,878,718	-	3,205,317
	Surface	8	6,240,411	-	4,436,932
	Surface	9	173,961	-	117,424
Outlook	Surface	7	640,622	-	420,888
	Surface	8	1,189,726	-	845,895
Total (rounded)		**All**	**40,638,000**	**7,625,000**	**25,655,000**

[1]density used is 1.33 or 27 ft^3(bcy) = 1 long ton
[2]estimated mining recovery 50%
[3]determined at 10% ash level

6.3.3 SAVANNA CREEK AREA

As part of their 1971 report on the Savanna Ridge Area, Bralorne produced a preliminary evaluation of coal resources and coal quality on the Savanna South Block. Their estimates assumed 8 m (25 ft) of oxidized coal, 20% pit loss, a plant yield of 80%, and a coal density 27 ft^3 per ton. Estimates for coal recoverable by underground methods assumed 60% raw coal recovery and 80% plant yield. They estimated recoverable coal reserves of 6.5 Mt at a 6:1 stripping ratio; 13 Mt at a 10:1 ratio; and an underground recoverable coal reserve of 15 Mt. Coal was medium-volatile bituminous with low ash (9.5% in Seam 'A' and 16.5% in Seam 'C') and low sulphur, with F.S.I's >5.5 (Weishaupt, 1971). It must be noted that although termed 'reserves' and accepted industry practices for the time were observed in their calculations, these estimates can only be considered preliminary historical resources in the context of this report and NI 43-101 standards.

In 1974, Bralorne undertook a pre-feasibility study based on all work completed on the North and South Blocks to that date. The recommendation of the report was to pursue further work towards design and development of a 1,000,000 tonne/yr raw coal (750,000 tonne/yr clean metallurgical coal) operation on the South Block, using hydraulic mining methods. They calculated resources (then considered reserves) for both blocks (Table 6-4) (Croome and Gallant, 1975). Methods and assumptions for these calculations were:

- In each area geological sections were derived from 1:4,800 mapping, at 91 m (300 ft) spacing in some areas and at 305 m (1,000 ft) spacing in most areas.
- Coal intersections were averaged from intercepts using drill hole, trench, and adit data.
- Mining loss assumptions, and allowance for oxidization were not defined.
- Density used for coal in place was not defined.
- Minimum pillar size of 33 m (100 ft) for the crown pillar, 67 m (200 ft) in shaft areas, and 33 m (100 ft) in mine units.
- South Block calculation:

  Avg. Seam thickness x dip distance (1.1 of vertical distance) x strike distance / 27 ft^3 = metric tonnes

- Estimated plant yield of 70% based on washability tests.

Table 6-4 summarizes the historic reserves determined by Bralorne. Originally, estimates were reported as short tons of dry coal; they have been recalculated to metric tonnes for comparison purposes. Strip ratios were based on cubic yards per dry ton (long).

Table 6-4 Historic Reserves for Savanna Area: Bralorne (after Croome and Gallant, 1975)

Area	Classification	Seam ID.	Raw Coal In-Place (tonnes)	Recoverable Raw Coal (tonnes)	Weighted Ave Recovery %	Net Clean Coal (Dry Tonnes)
Savanna	Probable	A	17,163,940			
South	Probable	C	14,378,882	19,700,000	74.1	14,597,700
Block	Probable	minor	4,730,970			

6.4 Production

To the knowledge of the authors, the only production that has taken place on the Property is south of the Isolation South (OMR) Area at Racehorse Creek. It was estimated to be on the order of 100 tonnes (ERCB Serial Publication ST45, 2010). To the knowledge of the authors, no production has taken place in the Isolation Ridge or Savanna areas, or along the Livingstone Trend.

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The Property lies within the Front Ranges of the Canadian Rocky Mountains in the Crowsnest Pass area, and spans the north-trending, west-dipping, Coleman, McConnell and Isolation Thrust sheets. Stratigraphy on these thrust sheets is highly deformed due to fault splays that displace strata up to 10 km, and from complex folding (McDonald et al., 1989). The Crowsnest Pass area is characterized by Jurassic to Lower Cretaceous rocks of the Fernie, Blairmore and Kootenay Groups, and the Crowsnest Formation (Figure 7-1 and 7-2). Economic coal potential lies in the Kootenay Group, which in the Crowsnest area, is disconformably overlain by pebble conglomerates of the Cadomin Formation of the Blairmore Group. The Kootenay Group has a maximum thickness of 1,100 m near Sparwood, with an eastward thinning and grade into the Nikanassin Formation near the North Saskatchewan River (Stockmal et al., 2001).

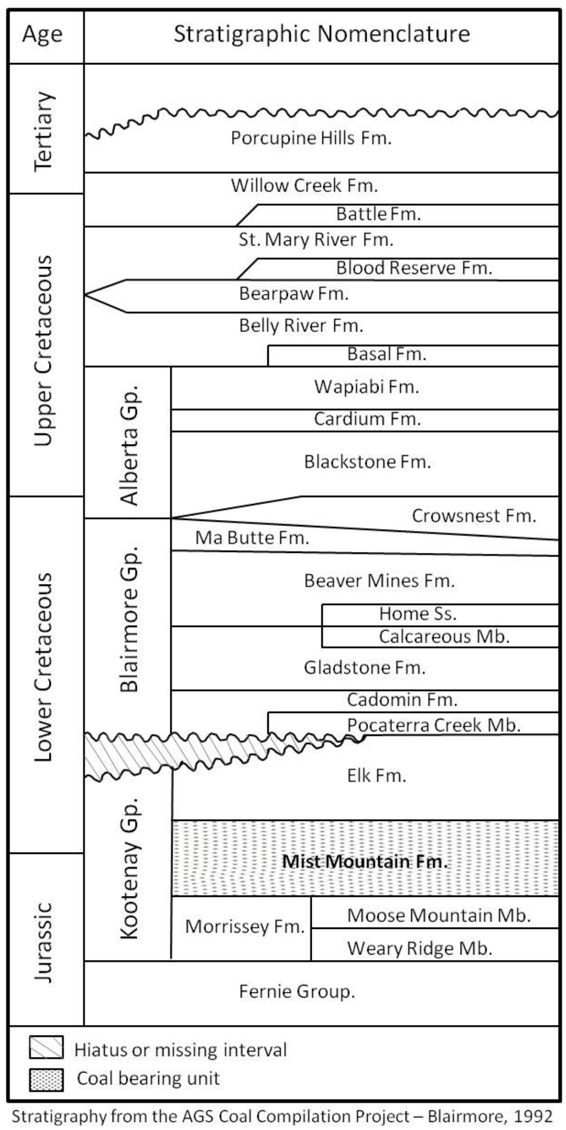

Figure 7-1 **Stratigraphic Column** (Modified from Richardson et al., 1992)

The oldest relevant unit in the area, the Jurassic Fernie Group, is comprised of dark-grey and black shales locally interbedded with phosphatic sandstones and limestones; cherty limestones, bedded siltstones, sandstones and oolitic limestones; coquinas; concretionary bands; and glauconitic sandstones (Hall, 1984).

The Late Jurassic to Early Cretaceous Kootenay Group is subdivided into three formations, the Morrissey, Mist Mountain and Elk Formations; however, in the Crowsnest area, the Elk Formation is absent due to either erosion and/or thinning. Faulting and folding in the Crowsnest area make confirmation of the number of coal seams within the Kootenay Group difficult. Historical drilling near the Property suggests that there are between 10 and 16 individual coal seams with economic potential, ranging from 3 to 10 m in thickness (Kim, 1976).

- The Morrissey Formation overlies the Jurassic Fernie Group and is comprised of sandstone of varying composition, including an argillaceous and carbonaceous, calcareous sandstone with minor interbedded siltstone and mudstone, and a more siliceous sandstone that is less carbonaceous and argillaceous (Gibson, 1985). Thin (less than 50 cm thick) coal seams occur rarely in the Morrissey Formation.
- The Mist Mountain Formation overlies the Morrissey Formation and bears coal seams with economic potential (Kim, 1976). It is comprised primarily of dark-grey siltstone, with lesser sandstone, mudstone, shale and local conglomerate interbeds (Gibson, 1985). Coal seams in the Mist Mountain Formation vary in thickness and can be up to 18 m thick; they range, from south to north, from bituminous to semi-anthracite in rank (Smith et. al, 1994).
- The Elk Formation is comprised of interbedded sandstone, siltstone, mudstone, shale and chert-pebble conglomerate; however, it is absent in the Crowsnest area (Gibson, 1985).

The Early Cretaceous Blairmore Group is divided into four formations: from bottom to top, the Cadomin, Gladstone, Beaver Mines, and Ma Butte Formations (Gibson, 1985).

- The Cadomin Formation disconformably overlies the Mist Mountain Formation in the Crowsnest area and is comprised of a resistant pebble conglomerate with local quartzose sandstone interbeds. This unit is a marker unit for the coal-bearing Kootenay Group.
- The Gladstone Formation is divided into two main lithologies, an interbedded mudstone and sandstone and a dark-grey, argillaceous limestone with fossiliferous, calcareous shale.
- The Beaver Mines Formation is characterized by interbedded mudstone and very-fine-grained sandstone, with prominent interbedded coarser sandstone with a sharp base that fines upwards.
- The Ma Butte Formation is primarily comprised of mudstone and very-fine-grained sandstone with lesser interbedded coarser sandstone and common tuffaceous mudstones in the upper part of the formation. The Ma Butte Formation grades into the Crowsnest Formation.

The Late Cretaceous Crowsnest Formation is characterized by bedded pyroclastic and epiclastic deposits consisting of agglomerates, tuffs and volcanic sandstones with minor flows and dikes (Pearce, 1969). Common minerals found in the formation include sanidine, melanite garnet, aegirine-augite and analcime (Adair and Burwash, 1994). The Crowsnest Formation has a maximum thickness of 426 m.

7.2 STRUCTURAL GEOLOGY

Stratigraphy in the Crowsnest Pass area has been subjected to first and second order faulting, as well as complex folding. The major faults, the Coleman, McConnell and Livingston thrusts, trend north and dip to the west at 08°; they displace the stratigraphy approximately 9.5 km eastward. Major folds, including the Crowsnest Syncline and Allison Anticline (Rushton et al., 1972), also trend north. Secondary local thrusts trend north, and occur within each thrust sheet, resulting in local structure units or packages affecting the coal seam thickness and occurrence (Table 7-1).

Table 7-1 Summary of Thrust Faults and Structural Units

Regional Thrusts Faults	Regional Structural Unit	Local Thrusts Faults	Local Structure Unit
McConnell Thrust	McConnell Thrust Sheet	Honeymoon	Honeymoon Structure
		Isolation Ridge	Isolation Structure
		Coaltop	Coaltop Structure
		Outlook Ridge	Outlook Ridge Structure
		Twin Ridge	Twin Structure
		Cabin	Cabin Structure
Livingstone Thrust	Livingstone Thrust Sheet	Bear Creek	none defined
		Station Creek	none defined
Coleman Thrust	Coleman Thrust	none defined	none defined

7.3 Property Geology

The Property is primarily located within the Livingston and McConnell Thrust sheets, and only partially within the Coleman Thrust Sheet. The Isolation and Isolation South (OMR) areas are located on the McConnell Thrust sheet (Figure 7-3 and 7-4), whereas Savanna is located on the Coleman Thrust sheet (Figure 7-5). The Mist Mountain Formation of the Kootenay Group and the Cadomin Formation of the Blairmore Group are the two most important units in the area. The first contains economic coal seams, whereas the latter bears a resistant pebble conglomerate used as a marker unit. The thickness of the Kootenay Group varies from 168 to 183 m in the Oldman River area, 213 to 243 m in the Isolation Area and up to 210 m in the Savanna Area. Based on work by CanPac, modifications by Granby, work by Bralorne, and work by Scurry, there are 13 identified coal seams on the Property, including 10 on the McConnell and Livingston Thrust sheets and 3 on the Coleman Thrust sheet.

Secondary thrusts and folds in the Isolation and Isolation South (OMR) areas on the McConnell Thrust sheet have affected the occurrence and thickness of coal-bearing horizons, which has resulted in identifiable structure units (or zones). These faults and folds have caused repetition, truncation and discontinuity of coal seams. From west to east, the thrust faults on the McConnell Thrust include the Honeymoon, Isolation Ridge, Coaltop, Outlook Ridge, Twin Ridge, and Cabin thrusts (Table 7-1). The structure units define extensive structures, and coal seam occurrence. The structure units are as follows (Kim, 1976):

- The Honeymoon structure unit is a large north-south trending anticline that extends for over 10 km and flattens out to the south, where it forms the west limb of the Isolation Syncline (Kim, 1976). Limbs dip to the west at 60-90° and, where overturned, at 25-45° to the west. Five to seven coal seams have been identified in the Honeymoon structure unit. Throughout the structure unit, the three main seams range in thickness from 1 to 10.2 m with partings between 0.2 to 0.9 m thick.
- The Isolation structure unit is an asymmetric syncline. The east limb dips west at 30-40° and forms several prominent ridges and hills, including Isolation Ridge, Knoll Hill, and Forepeak Ridge. The west limb dips 25-45° and forms the east limb of the Honeymoon Anticline. In the Isolation structure unit, the Kootenay Group ranges from 213 to 244 m in thickness. Three

coal seams have been identified in the northern part of the structure unit and range in thickness from 0.1 to 7.9 m, with parting thicknesses between 0.45 and 0.60 m.

- The Coaltop structure unit is a west-dipping (45°) tabular unit with westerly dipping faults throughout that commonly truncate the coal seams. Locally, coal seams are thickened to 18 m by a subsurface syncline. This structure unit continues to the west for 4.8 km and forms several prominent hills including Tomorrow Hill, Coaltop Hill and Poncho Hill.
- The Outlook Ridge structure unit is an anticline-syncline pair that has been separated; the anticline is now thrust overtop of the syncline. Limbs of this structure are west-dipping at 50-60° and are occasionally overturned. Coal seams range from 5.3 to 13.5 m in thickness with parting thicknesses ranging from 0.09 to 3.84 m. The coal seams are interpreted to be up to twice their original thickness as a result of the complex thrusting.
- The Twin Ridge structure unit is characterized by abundant tight folding and fracturing of the stratigraphy. Extensive, high-grade coal seams are rare; however, the high-grade seams range from <1 m to 8 m in thickness with parting thicknesses ranging from 0 to 2.8 m.
- The Cabin structure unit is located south of the Twin Ridge structure, but due to structural simplicity, it is separated into its own entity. It is comprised of the eastern limb of the Syncline Hill syncline, which has an extensive Blairmore conglomerate and Kootenay sandstone contact. Limb steepness varies from 50-60° in the north to 75° in the south. There may be economic coal potential in the Cabin structure; however, this structure unit lacks the historic drilling and geological data to correlate seams from the Twin Ridge structure unit.

A number of other, predominantly unnamed thrust faults, including Station Creek, occur within the Property on the Livingstone Thrust; however, no related structure units have been characterized. The Coleman (Savanna Area) and Livingstone thrust sheets have simpler structure than the McConnell thrust sheet, as they have fewer documented secondary folds and faults, in addition to a lack of significant displacement.

7.4 MINERALIZED ZONES

Ten coal seams have been correlated in the Isolation South (OMR) and Isolation areas. Three coal seams have been identified on the Coleman Thrust sheet but do not seem to correlate with the other identified seams. The seam numbering has been adapted from historic drill hole data from CanPac, modifications made by Granby, and data from Bralorne and Scurry (Table 7-2). Seams vary in thickness and number of partings. There is some difficulty correlating seams across major thrusts. The coal is mainly medium volatile bituminous, with variable ash. Coal quality is discussed in Section 11.

Table 7-2 Correlated Coal Seam Summary

Regional Trend	Modelled Seam ID		Historic Seam ID		
	Seam	Seam Splits	CanPac & Granby	Bralorne	Scurry
McConnell & Livingstone Structural Units	S10	S10A – S10C	-	-	1A - 1B
	S9	S9A – S9C	9	-	2
	S8	S8A - S8C	8L & 8U	-	3
	S7	S7A -S7C	7L & 7U	-	4
	S6	S6A - S6C	6	-	5
	S5	S5A - S5B	5	-	-
	S4	S4A - S4B	4	-	-
	S3	S3A - S3C	3	-	-
	S2	-	2	-	-
	S1	-	1	-	-
Coleman Structural Unit	S3	-	-	A1 & A2	-
	S2	-	-	B	-
	S1	-	-	C	-

Isolation South (OMR) Coal Seams (Figure 6-1):

Coal seams were originally named by Scurry from top to bottom. Seam S10 and S7 contain most of the historic resources, with S7 containing the majority.

- Seam S10: (Scurry "1") ranges from 1.7 to 3.1 m, up to three splits may be present.
- Seam S9: (Scurry "2") ranges from 1.1 to 3.1 m, mostly thin.
- Seam S8: (Scurry "3") ranges from 0.9 to 2.7 m, mostly thin.
- Seam S7: (Scurry "4") up to three splits ranging from 5.5 to 24.4 m.
- Seam S6: (Scurry "5") ranges from 1.4 to 2.4 m, absent in many drillholes.

Isolation Coal Seams (Figure 6-2):

Seam S5, S7 and S8 have the most economic potential as they are relatively thick and extensive. Seam S9 is locally thicker in the Coaltop and Isolation structures.

- Seam S10: (CanPac "10") only locally identified, with variable thickness
- Seam S9: (CanPac "9") up to 2.1 m in northern areas of the Property (Isolation, Coaltop), generally of little economic interest.
- Seam S8: (CanPac "8 Upper & Lower") outcrops at Isolation, Twin Ridge, and Coaltop areas with average thicknesses over 6 m, 3 m, and 6 m respectively. Up to three seam splits have been identified at the Honeymoon Ridge area.
- Seam S7: (CanPac "7 Upper & Lower") outcrops at Tomorrow Hill, Coaltop, Outlook Ridge, and North Twin Peak areas, up to three splits ranging in thickness from 4 to 8 m.
- Seam S6: (CanPac "6") up to 1.2 m, generally of little economic interest.
- Seam S5: (CanPac "5") outcrops at Twin Ridge, Cabin Ridge, and Repent hill areas; ranges from 5.8 to 6.1 m.
- Seam S4: (CanPac "4") ranges up to 1.3 m and frequently contains partings, of little economic interest.
- Seam S3: (CanPac "3") Historically reported as minor seam less than 1 m and of little economic interest.
- Seam S2: (CanPac "2") outcrops at Twin Ridge and Isolation Ridge, with apparent maximum thickness of 3.4 m, containing many small partings.
- Seam S1: (CanPac "1") outcrops at Twin Ridge and Coaltop, reported to be 1.2 m thick.

Savanna Coal Seams (Figure 6-3):

Three coal seams have been identified in the area, Seam S1 and S3 are of economic interest as they are thick and extensive. Seams at Savanna do not correlate with those on the Livingstone and McConnell Thrust sheets, although correlation south along the Coleman Trend in the Racehorse Creek area appears consistent.

- Seam S3: (Bralorne "A") ranges from 7.3 to 11.0 m in drilling, 14.8 m intersection in adit, rare partings noted in drilling.
- Seam S2: (Bralorne "B") generally thin, up to 5.8 m thick in one drillhole.
- Seam S1: (Bralorne "C") ranges from 1.5 to 6.2 m in drilling, 10.3 m intersection in adit, rare partings.

Livingstone Coal Seams:

Ten seams are identified on the Livingstone Thrust sheet and are believed to correlate with those on the McConnell Thrust sheet. Seams S6, S7A and S7B are considered to have econonmic potential.

8 Deposit Types

A coal deposit, unlike most mineral deposits, is a distinct entity. As such, its characteristics are not defined by mineralization type, distribution and grade. Key characteristics contributing to the classification of a coal seam, or multiple seams, as a coal deposit include seam thickness, seam continuity and correlation, and coal quality. Deposit type will also refer to the probable extraction method (i.e. surface or underground) and to the ultimate use for the coal (i.e. metallurgical or thermal), due to the fact that physical coal properties, such as the potential to coke, will restrict end use.

Coal deposit types are defined in Geological Survey of Canada (GSC) Paper 88-21, a core reference for coal deposits as specified in NI 43-101. Four categories are proposed:

1) surface mineable - extracted by removing overburden from surface using dragline, truck and shovel, or other techniques;
2) underground mineable - extracted using room-and-pillar, longwall, shortwall, hydraulic or other techniques from surface drivages;
3) non-conventional - deposits too deep or inaccessible by first two methods, requiring in situ gasification or other techniques; or
4) sterilized - unavailable for mining due to legislative, environmental or other restrictions. Section 2.2 of the NI 43-101 requires the disclosure of coal resources or reserves to follow the categories set out in CIM Definition Standards (2010) although the framework of GSC Paper 88-21 can be used for development and characterization of estimates which must then be converted to equivalent CIM Definition categories.

GSC Paper 88-21 also refers to geology types, which define the amount of geological complexity, usually imposed by the structural complexity of the area. This classification helps determine the approach to be used for resource estimation methodology, as well as limits to be applied to certain key estimation criteria. Four classes are provided:

1) 'low' - essentially flat-lying deposits of the Alberta plains type with low tectonic disturbance (deposits of Ravenscrag and Judith River Formations);
2) 'moderate' - characterized by broad folds and homoclines (wavelength >15 km, dips <30°) typical of outer foothills (Obed, Marsh, McLeod River, Ram River, Bullmoose deposits);
3) 'complex' - high tectonic disturbance, tight, steep, sometimes overturned folds, fault offsets present but individual fault-bounded plates (Harmer, Fording River, Grassy Mountain, Smokey River deposits);
4) 'severe' - extreme tectonic disturbance, tight, overturned folds, large-displacement faults, stratigraphic discontinuities, structurally thickened or thinned coal seams (Byron Creek Deposit, parts of Grassy Mountain Deposit).

The Property contains low- to medium- volatile bituminous coal suitable for metallurgical uses. Potential for both surface and underground-mineable resources exist. Resources fall mainly in the 'complex' category with some in the 'severe' category (parts of Isolation area).

Defining resources in a 'complex' coal deposit requires close-spaced drilling. Typically, Measured Resources require cross-sectional drilling lines 150 m apart, Indicated Resources require lines 300 m apart, and Inferred Resources require lines 600 m apart. Drill hole data along these lines should be at a mean spacing of 100 m, 200 m and 400 m, respectively. Pit design requires measured and indicated resources at minimum in order to estimate tonnage and potential recovery. These criteria have been used in the resource estimation described in Section 14 of this report.

9 EXPLORATION

This technical report is a compilation and evaluation of historic exploration on the Property. As of the effective date of this report, Elan has not completed exploration work on the Property. A site visit the authors is described in Section 16. Details of the historic exploration programs reviewed for this report are presented in Sections 6, 13, and 14. A brief summary follows.

Work completed on or directly adjacent to the Property includes:

- Nineteen adits have been driven to provide bulk samples for coal washability testing. Of the 19 adits, 3 were completed at OMR, 11 at Isolation, and 5 at Savanna. Adit locations are provided in Figure 6-1 to 6-3.
- Extensive local- and regional-scale trenching that has been used to define surface coal orientation and thickness. Trench locations are provided in Figure 6-1 to 6-3.
- Geological mapping has been completed in areas of exposed outcrop and areas of natural exposure. A large road and trail network has exposed near-surface rock outcroppings and coal seams. Many near-surface coal seams had been excavated as trenches.
    - From 1949 to 1955, regional geologic mapping and measuring of stratigraphic sections was completed by Western Canadian Collieries in the OMR – Livingstone Range area.
- Extensive rotary, core, and wellsite drilling (see Section 10)

Detailed mapping has been completed at the OMR, Isolation, and Savanna Creek areas. Additional exploration was completed between 1971 and 2002 for coalbed methane.

10 DRILLING

Elan has not conducted any drilling on the Property; all geological control points have been compiled from work completed by previous operators. Dahrouge created a drill database for the Property consisting of work completed by eight coal and coalbed methane companies between 1969 and 2002 (Table 10-1).

A total of 229 drillholes and 19 Adits, located on or directly adjacent to the Property, were used to constrain the current geological interpretation. Drilling consisted of 127 core holes and 82 rotary holes. Data compiled from the historic reports displayed different degrees of reliability. Uncertainties in the drillhole dataset result from undefined or unavailable collar survey methodologies and down-hole directional information. Rotary and core hole collar information was generally well constrained for X-Y co-ordinates, but less reliable for Z co-ordinates. Down-hole directional information was only available for coalbed methane drill holes. It is the authors' opinion that the drilling was of acceptable quality for the purposes of this report.

Historic drill hole and adit locations were extracted from original exploration reports, geological logs, and geophysical logs when available. Local grid locations were converted to a UTM NAD 83 Zone 12N projection format and confirmed against exploration maps. If collar locations were not provided, approximate locations were georeferenced from exploration maps and validated against cross-sections and topography. Locations that could not be confirmed were removed from the model dataset.

Table 10-1 Drill Campaign Summary Defining Modelled Drillholes

Category	Deposit	Campaign	Operator	Total Holes	Metres Drilled	Rotary Holes	Core Holes	CBM Wells
Resource	Isolation South (OMR)	1970	Scurry	19	3,295	-	20	-
	Sub-Total			**19**	**3,295**	**0**	**20**	**0**
Resource	Isolation	1969	CanPac	5	1,554	-	5	-
Resource	Isolation	1970	CanPac	24	3,459	5	19	-
Resource	Isolation	1971	CanPac	52	8,144	-	52	-
Resource	Isolation	1974	Granby	27	4,071	9	18	-
	Sub-Total			**108**	**17,228**	**14**	**94**	**0**
Resource	Savanna South	1969	Bralorne	57	2,063	57	-	-
Resource	Savanna North	1970	Bralorne	10	895	10	-	-
Resource	Savanna South	1971	CIGOL	2	471	-	2	-
Resource	Savanna South	1971	Bralorne	4	683	-	4	-
Resource	Savanna South	1972	Bralorne	4	857	-	4	-
	Sub-Total			**77**	**4,969**	**68**	**10**	**0**
Target	Isola	1971	Coleman	3	991	-	3	-
Target	OMR South	1989	Devon	1	800	-	-	1
Target	OMR South	2001-02	NEC	20	12,402	-	-	20
	Sub-Total			**24**	**14,192**	**0**	**3**	**21**
	TOTAL			**229**	**39,684**	**82**	**127**	**21**

Table 10-2 Adit Bulk Sample Campaign Summary

Category	Deposit	Campaign	Operator	Total Adits	Series (*Adit ID Modified)	Total Metres
Bulk Sample	OMR (Isolation South)	1970	Scurry	3	AD-SR-OMR01 to OMR03	151
	Sub-Total			**3**		**151**
Bulk Sample	Isolation	1969-1971	CanPac	6	AD-CP-01 to 06	426
Bulk Sample	Isolation	1974	Granby	5	AD-GB-74-01 to 05	212
	Sub-Total			**11**		**638**
Bulk Sample	Savanna	1970-1972	Bralorne	5	AD-BR-70-01 to AD-BR-72-02	270
	Sub-Total			**5**		**270**
	Total			**19**		**1,059**

Drill intersection results were compiled using available geological logs, geophysical logs, and reported coal intersection summary logs. Historic coal intersections were reconciled to geophysical logs to identify areas of core loss and define core recoveries. Core recoveries were extracted from historic reports and geological logs and summarized in Table 10-3. Recoveries ranged from 11% to 100%, resulting in coal intervals that could not be sampled for quality or contain inaccurate quality analysis. Whenever possible, all three logs were compared for accuracy.

Historic drilling was completed using a network of access roads and trails, many of which have been deactivated, but not reclaimed. These deactivated access roads might be reactivated in lieu of new road construction for future drill programs.

Table 10-3 Typical Core Hole Recoveries

Category	Deposit	Campaign	Operator	Core Holes	Core Size	Average Core Recovery	DDH Recovery Ranges
Resource	OMR (Isolation South)	1970	Scurry	19	HQ	79%	28% - 100%
Resource	Isolation	1969	CanPac	5	HQ	84%	79% - 88%
Resource	Isolation	1970	CanPac	19	HQ	64%	22% - 98%
Resource	Isolation	1971	CanPac	52	HQ	75%	27% - 100%
Resource	Isolation	1974	Granby	18	HQ	58%	11% - 97%
Resource	Savanna	1971	CIGOL	2	HQ	NA	83% - 95%
Resource	Savanna	1971	Bralorne	4	HQ	85%	70% - 90%
Resource	Savanna	1972	Bralorne	4	HQ	95%	NA
Target	Isola	1971	Coleman	3	NA	NA	NA

10.1 Isolation South (OMR) Area Drilling

This area was the primary focus of drilling by Scurry in 1970. Historic drilling focused on an anticline structure adjacent to the McConnell Thrust. Core (diamond) drilling was the main focus in this area, as a total of 19 HQ diameter core holes were completed, totalling 3,295 m. A summary of the historic drilling is provided in Table 10-1 and drillhole locations are provided in Figure 10-1. Adits were driven at 3 locations to provide bulk samples for coal washability test work. Adit locations were selected by utilizing drill results and targeted Seam S10 (1) and Seam S7 (4). An adit summary is provided in Table 10-2 and locations are provided in Figure 6-1.

Scurry completed geological and geophysical (B.P.B Instruments) logging on all holes, except for OMR-008 and OMR-016, which were stopped due to poor ground conditions and water problems. Dahrouge compiled a coal intersection database using the B.P.B log and drill hole log summaries, as only OMR-010's original geological and geophysical logs were provided.

Scurry selected and analyzed coal samples from 17 of the 19 completed core holes. Variable core recoveries were recorded by Scurry and an average core recovery of 79% was calculated (Table 10-3). The methodology used to identify core recoveries was not provided in the available historic reports, but appears to be reasonable when compared to reported recoveries in surrounding deposits.

10.2 Isolation Area Drilling

Drilling completed from 1969 to 1971 by CanPac consisted of diamond and rotary drill holes. Additional diamond and rotary drilling was completed in 1974 by Granby. A total of 94 HQ core holes and 14 rotary holes have been reported in the Isolation Area. A summary of the historic drilling is provided in Table 10-1 and drill hole locations are provided in Figure 10-2. Adits were driven at 11 locations to provide bulk samples for coal washability test work. Adit locations were selected by utilizing drill results and targeted Seams S7 and Seams S8. An adit summary is provided in Table 10-2 and locations are provided in Figure 6-2.

CanPac and Granby completed geological and geophysical logging on core (diamond) holes, and geophysical logging on rotary holes. The downhole geophysical surveys included gamma ray/neutron, hard rock density, and caliper.

Dahrouge was provided 88 of the 94 original core hole geological logs and 12 of the 15 rotary hole geophysical logs. No geophysical logs were provided for the completed core holes. Coal intersections were compiled from the drill hole summary logs and validated using the provided geological logs. Only minor discrepancies were identified between the summary logs and the geological logs. Coal intersections for the 6 core holes that were not accompanied by their original geological logs were compiled from the drill hole summary logs.

CanPac and Granby selected and analyzed coal samples from 89 of the 94 completed Isolation core holes. Sampling was not completed for all core holes due to the friable nature of the coal and reduced core recoveries. Documented recoveries range from 11 to 95%, with large recovery ranges for each campaign.

10.3 Savanna Area Drilling

This area was the primary focus of drilling by Bralorne in 1971 to 1972. A total of 7 core (diamond) holes and 58 rotary holes were completed on the Savanna south block. In 1971, CIGOL completed two diamond drill holes at Pasque Mountain. The historic drilling is summarized in Table 10-1 and drill hole locations are provided in Figure 10-3. Adits were driven at 5 locations to provide bulk samples for coal washability test work. Adit locations were selected by utilizing drill results and targeted S3 (Seam "A") and S1 (Seam "C"). An adit summary is provided in Table 10-2 and locations are provided in Figure 6-3.

Bralorne and CIGOL completed geological and geophysical logging on all core (diamond) holes and footage rock intersection summaries for the 57 rotary holes. Geological records indicate that Bralorne limited core sampling to field free swelling index measurements and did not select samples for laboratory submission. Analytical core samples were submitted for the two CIGOL core holes. Campaign core recovery averages ranged from 83 to 95% (Table 10-3). The methodology used to identify core recoveries was not provided for all drill holes, but shows a higher recovery than surrounding areas. Based on variations in drill quality and the limited number of core holes in this area, the recoveries are considered reasonable when compared to reported recoveries in surrounding deposits.

10.4 REGIONAL DRILLING

Drilling completed by Coleman Collieries Ltd. (CCL), Devon Canada Corp (Devon), and Northstar Energy Corporation (NEC) extends along the north-south trend of the Livingstone Thrust Block. In 1971, CCL completed three core (diamond) exploration holes in the Isola Ridge Area. In 1989, a single coalbed methane well was completed by a joint venture of Canadian Hunter Exploration Ltd. (CHE) and (Devon); an additional 20 CBM wells were completed by (NEC) in 2001 and 2002. Dahrouge compiled downhole geophysical correlations and R_o values from the 21 CBM wells. The historic drilling is summarized in Table 10-1.

11 SAMPLE PREPARATION, ANALYSES, AND SECURITY

Dahrouge has not performed any sampling or coal quality investigations on the Property. Instead, Dahrouge completed a compilation and review of the historic coal sample procedures and analytical work reported by Scurry, CanPac, Granby, and Bralorne. Many of the records provided are not original documents and/or are missing detailed procedural information. The information provided appears reasonable for the type of coal deposit and the industry standards at that time.

Detailed sample preparation summaries were reported for the Isolation Area by CanPac (Rushton et al., 1971) and Granby (Kim, 1976). Few records were available for the historic sample preparation procedures utilized by Scurry (OMR) and Bralorne (Savanna Creek), but external coal quality reports were available for core samples and bulk samples.

Coal samples were collected for 117 of the 127 cored (diamond) drill holes. Ten holes were not sampled as they failed to return sufficient core recoveries or did not reach the target interval. Core recovery ranged from 11% to 100%, as a result of the friable nature of the coal (Table 10-3). The historic core sampling programs provide a large scale overview of the coal quality in the various seams within each distinct area. Potential areas of coal quality variability introduced into the historic results are:

1. Different coal sampling techniques used by each coal company;
2. Variability in sample treatment;
3. Laboratory bias, resulting from the different laboratories used for the different project areas and/or different campaigns;
4. Inconsistent core recoveries and inconsistent parameters used to calculate core recoveries; and
5. Small and dispersed core samples may not represent true coal quality and are subject to change with additional infill drilling and sampling.

Typical coal quality results are presented in Section 13 (Table 13-1 to 13-7).

11.1 PRE-ANALYSIS SAMPLE PREPARATION AND QUALITY CONTROL

Coal sampling was completed independently for Isolation South (OMR), Isolation, and Savanna areas, by four different companies over different campaigns. Documented procedures are often incomplete or lacking for the project areas, but provide a reasonable overview of the procedures followed during the historic exploration programs.

11.1.1 CORE SAMPLING

CanPac Drill Core Sampling Procedure

- Partings were excluded from whole core samples
- Samples intervals were constrained to less than 1.5 m (~5 ft)
- Whole core samples were bagged and shipped for analysis
- Testing Laboratories
    - Warnock Hersey Laboratory, Vancouver, AB.
    - Loring Laboratory, Calgary, AB.
    - Cyclone Engineering Sales of Edmonton, Edmonton, AB.
- A.S.T.M methods were used for all analyses
- Raw Coal Analysis
    - Proximate analysis (Moisture, Ash, Volatile Matter), sulfur, P_2O_5, FSI

- Coal composites were constructed and the plus 200 mesh coal for each sample was floated at an SG of 1.58, producing "clean coal"
- Clean Coal Analysis
    - Proximate analysis (Moisture, Ash, Volatile Matter), sulfur, P_2O_5, BTU

Granby Drill Core Sampling Procedure

- Core was geologically logged and photographed, prior to sampling and bagging
- Minor seams greater than 0.15 m (~0.5 ft) were sampled separately
- Single samples were taken from non-major seams
- Sampled major seam thicknesses ranged from 1.2 to 21 m (~4 to 70 ft), including seam partings
- Samples were collected over 1.5 m (~5 ft) intervals
- In-seam partings less than 0.3 m (~1 ft) were included in 1.5 m samples
- Partings greater than 1.2 m (~4 ft) were excluded from the sample
- Partings between 0.3 and 1.2 m (~1 and 4 ft) were sampled separately
- Raw Coal Analysis
    - Specific gravity, moisture (received and inherent), volatile matter, ash, fixed carbon, sulfur, chlorine, FSI, BTU, P_2O_5
- Parting Analysis
    - Specific gravity, moisture (received and inherent), volatile matter, ash, fixed carbon, sulfur, chlorine, P_2O_5

Granby Rotary Core Sampling Procedure

- Coal zones cuttings were sampled over 0.6 m (~2 ft) intervals when carbonaceous material was observed. Composite chip sampling extended 3 m (~10 ft) into the footwall rock
- Composite chip samples were collected in 4 gallon cans with consecutive aluminum tags
- Seam and parting thickness was determined using remote logs or nearby core holes
- Collected samples were composited to form 1.2 to 1.8 m (~4 to 6 ft) samples

11.1.2 BULK SAMPLING

CanPac Bulk Sampling Procedure

- Samples included partings less that 1 m (~3 ft)
- Quality and washability testing was completed by Birtley Engineering (Canada) Ltd. in Calgary, AB.
- Washability tests covered all size fraction ranges of sampled coal
- Plus 28 mesh coal was separated at ranges of SG using heavy organic liquid
- Minus 28 mesh coal was treated in two stages of froth floatation
- CanPac selectively removed portions of major coal seams that were deemed as non-coking

Granby Bulk Sampling Procedure

- Bulk sample locations within adits were selected using 3 m (~10 ft) discontinuous free-swelling index (FSI) field testing of the coal. Samples were collected from zones with consistently high FSI results, avoiding oxidized coal
- Channel samples 5 x 5 cm (2 x 2 inch) were collected across the full seam thickness
    - Partings greater than 1 m (~3 ft) of true thickness were excluded from the sample
    - Partings between 0.3 and 0.9 m (~1 and 3 ft) of true thickness were sampled separately

    - Partings less than 0.3 m (~1 ft) of true thickness were included within the coal sample
- Bulk sampling was completed following the above criteria, extending from hanging wall to footwall
    - Partings less than 1 m (~3 ft) of true thickness were included in the bulk sample
- Raw coal analysis was completed by General Testing Laboratory in Vancouver, BC
- Quality and washability testing was completed at Birtley Engineering (Canada) in Calgary, AB and General Testing Laboratory in Vancouver, BC

Bralorne Bulk Sampling Procedures

- Coal seam cross-cut was exposed and cleaned
- Sample was taken from floor to roof as a 1.2 m (~4 ft) section mined at a 10 cm (4 inch) depth
- Samples were bagged and placed in coal drums
- Quality and washability testing was completed at Commercial Testing & Engineering Co. in Chicago, IL.

11.2 LABORATORY SAMPLE PREPARATION AND ANALYSIS

Selected core and bulk samples were submitted for coal seam quality analysis at several different ASTM certified laboratories. The analytical work completed on this program predates the current ISO certification standards for analytical laboratories.

Coal Testing Laboratories included:

- Warnock Hersey Laboratory, Vancouver, BC.
- Loring Laboratory, Calgary, AB.
- General Testing Laboratory, Vancouver BC.
- Birtley Engineering (Canada) Ltd., Calgary, AB.
- Cyclone Engineering Sales of Edmonton, Edmonton, AB.
- Commercial Testing & Engineering Co., Chicago, IL.

Detailed core and bulk sample flow sheets are provided for the completed Isolation and Savanna Creek programs (Figure 11-1 to 11-5).

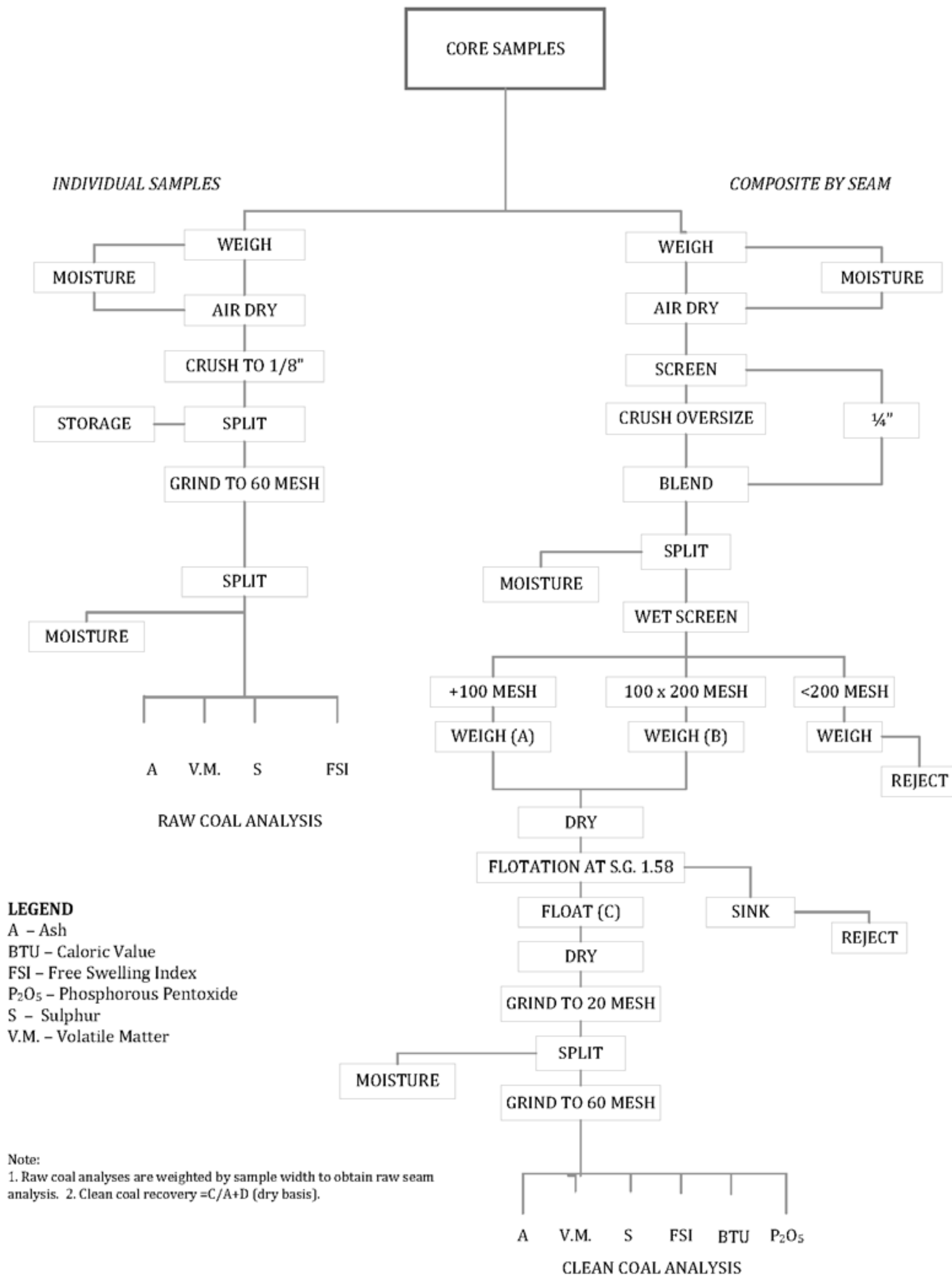

Figure 11-1 CanPac, Isolation Core Sample Processing Flow Sheet

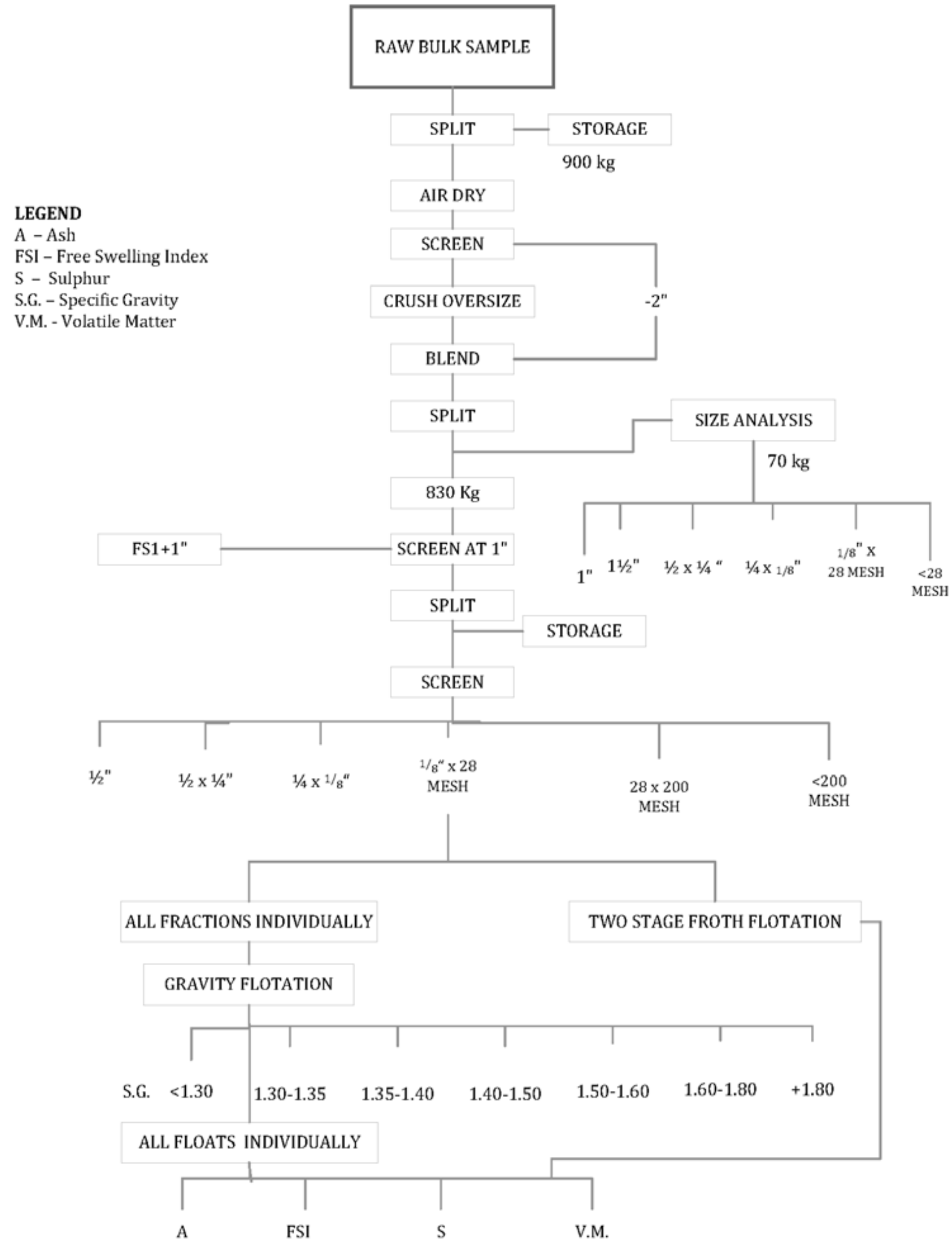

Figure 11-2 CanPac, Isolation Bulk Sample Processing Flow Sheet

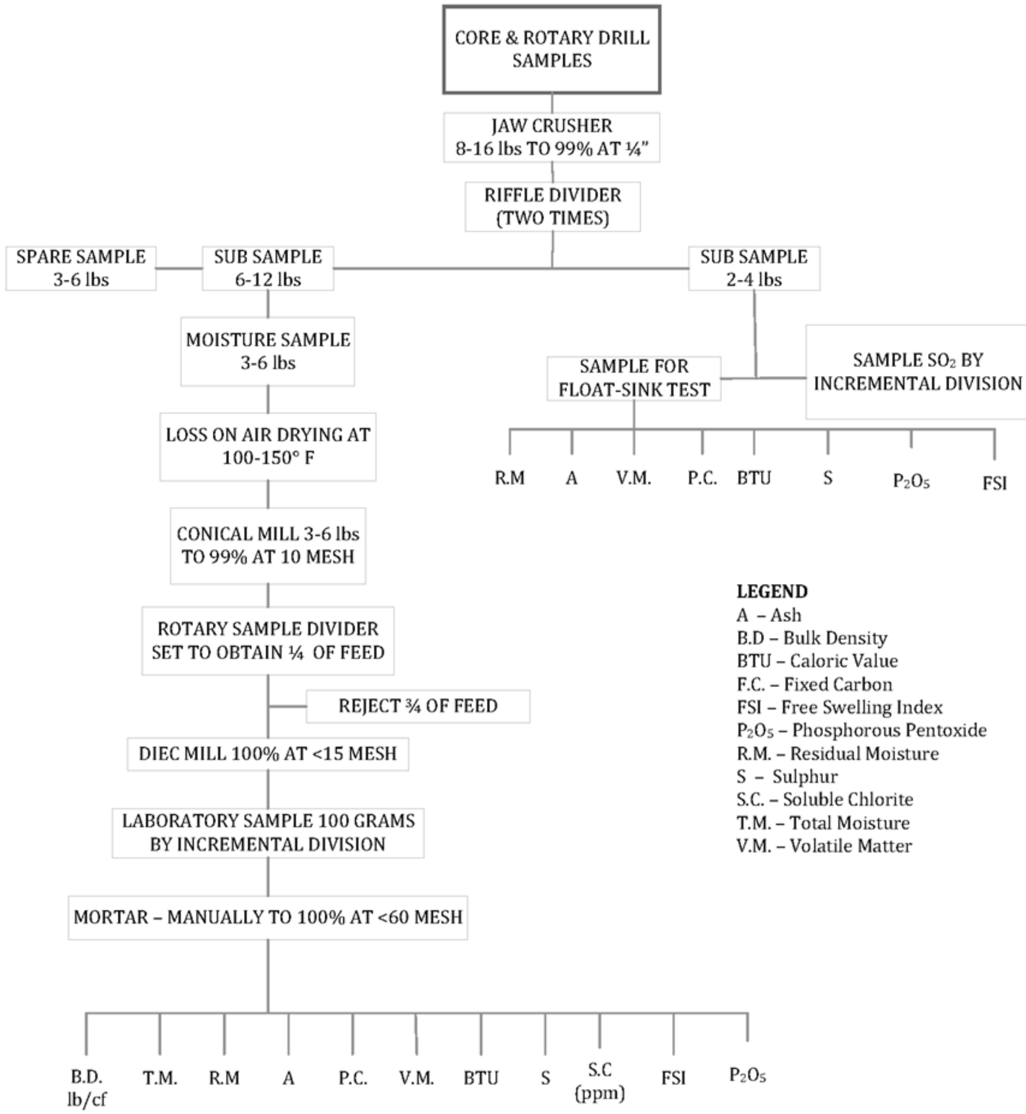

Figure 11-3 Granby, Isolation Core Sample Processing Flow Sheet

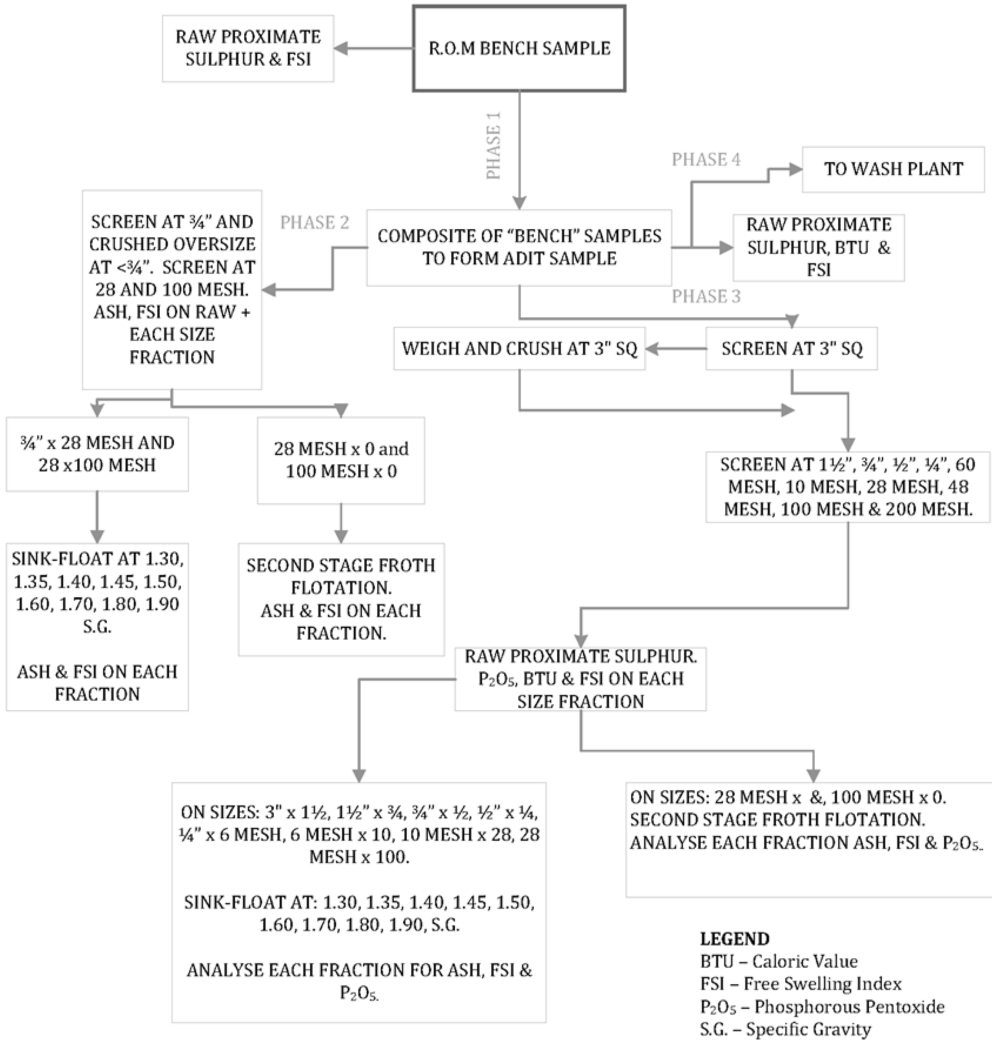

Figure 11-4 Granby, Isolation Bulk Sample Processing Flow Sheet

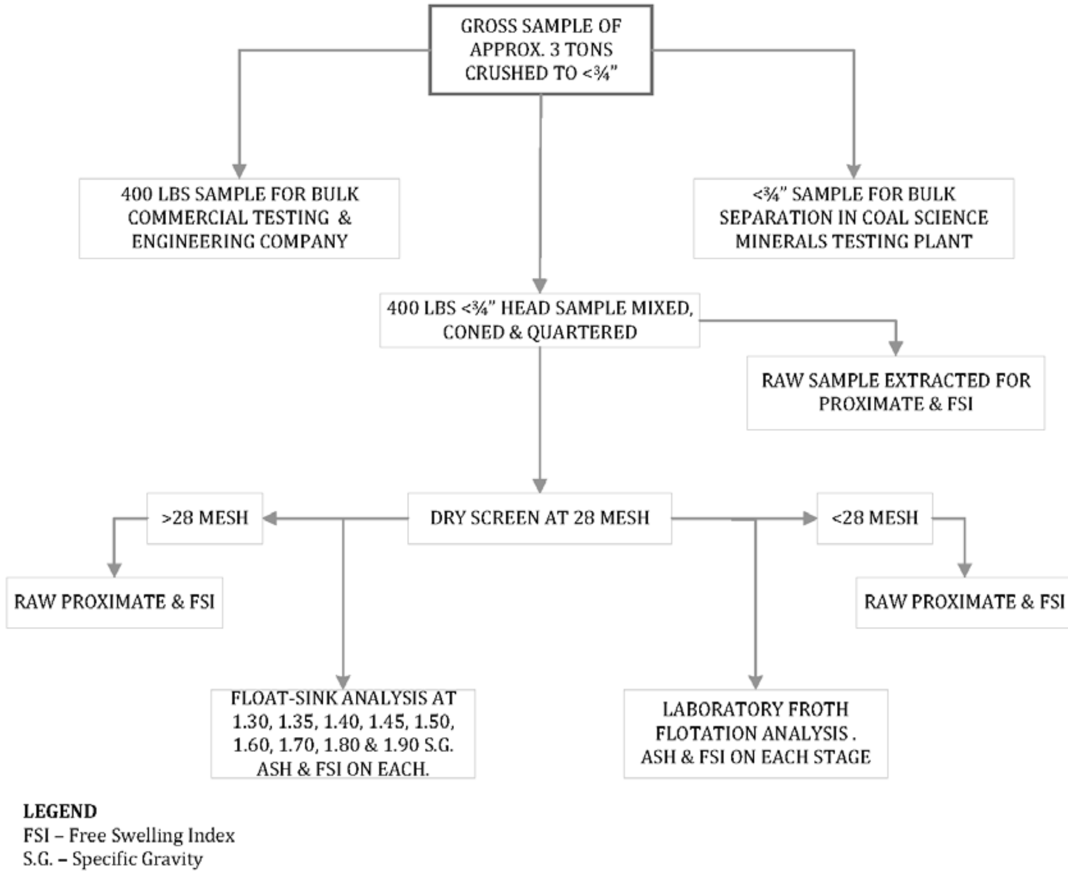

Figure 11-5 Bralorne, Savanna Creek Bulk Sample Flow Sheet

11.3 Quality Control and Quality Assurance

Elan and Dahrouge were not involved in the historic coal quality sampling programs. Sampling programs included HQ diameter core samples, adit channel samples, and adit bulk samples. Analytical and petrographic analyses were completed at A.S.T.M certified labs; however, the analyses predate the current ISO laboratory certification requirements. Elan has recently retained Bob Leach Pty. Ltd. of Maleny, Australia to provide an independent review of historic coal quality programs and coking coal potential for the Property. Independent quality analysis had been completed for each of the defined historic resource areas, Isolation South (OMR), Isolation, and Savanna.

Core intervals containing coal were sampled using project-defined procedures, processed as raw and clean core samples, and analysed. The typical core quality results are summarized in Table 6-1 and 6-2. A high degree of variability in the core coal quality results has been observed and attributed to the large number of analytical laboratories employed, different project specific sampling procedures, and variable core recoveries. The high degree of variability in core recovery and poor documentation of its calculation methods provide an additional degree of uncertainty with regard to cored coal quality. For this reason quality assessment focuses on the adit bulk samples.

12 DATA VERIFICATION

This report is a compilation and evaluation of historic exploration on the Property. The authors have relied on the professional quality of the historic work, but other than a brief site visit, have not directly confirmed any of the drill, trench, or adit data used in resource estimation. Coal exploration on what is now the Property began in 1949 and continued intermittently until 1976. Additional coalbed methane exploration was completed between 1971 and 2002. Elan has not yet completed exploration work on the property as of the effective date of this report.

The resource estimates which form part of this report were based on historical drilling, trenching, and adit data collected mainly in the period from 1969 to 1976 by companies then active in the area now forming the Property. Dahrouge completed a 100% validation of available historic work and created an independent database. The data sets, including analytical data, are incomplete in some instances, and analytical certificates and details of QA/QC programs were not necessarily included in the summary reporting. Not all data addressed in summary reports could be located by Dahrouge and could not be utilized in this report. The authors have reviewed the data for consistency between the different projects and companies, and eliminated data that could not be constrained or confirmed in reports or government databases. The authors have concluded that work completed by the coal production and exploration companies (listed below) was completed in a professional manner that was consistent with the data collection and reporting standards at that time.

The historical reports used for this compilation included historic reserve and resource estimates that no longer meet NI 43-101 criteria. While the authors have presented and reviewed the methods and results of these estimates (Section 6), they should be considered historical and used only for comparison to resource estimates presented in this report. Variations in available data density and quality used for these estimates have led the authors to report inferred and indicated resources only, and to present the balance of coal in place as exploration targets. Confirmatory and further exploration drilling are required to validate these estimates.

Reports used in this compilation are: (see Section 27: References)

- Bralorne Can-Fer Resources Ltd. (1969-1972)
- CanPac Mineral Ltd. (1969-1971)
- Scurry Rainbow Oil Ltd. (1970)
- Canadian Industrial Oil and Gas Ltd. (1971)
- Coleman Collieries Ltd. (1971)
- Granby Mining Corp. (1974-1976)
- Consolidation Coal Company of Canada (1976)
- Canadian Hunter and Devon Canada (1989)
- Northstar Energy Corp. (2001-2002)
- Western Canadian Collieries Ltd. (1954)

John Gorham, William Miller and Brad Ulry conducted a site visit to the Elan Property on May 13th to 15th, 2013. Access routes to the Savanna, Isolation, Isolation South (OMR), and Livingstone Trend (Isola to Grassy North) were investigated. Most of the historic access trails have been blocked or partly reclaimed, restricting access to historical trench and adit sites. Residual snow cover also restricted access to the historical exploration areas, which are at higher elevations. Attempts by the authors to relocate coal exposures were restricted. Many of the old exploration trails are overgrown in part but could be restored for future exploration. The authors were able to hike in to historically trenched sites near Cat Mountain (Wild Cat) and verify two historically trenched coal seams. Additional coal seam outcrops were verified in the Grassy North, Isolation South (OMR), and Isola areas, confirming seam thickness ranging between 2 to 8 m.

Samples from each of two seams were sent to Loring Laboratories Ltd. of Calgary Alberta for proximate analysis, and to David E. Pearson and Associates Ltd. of Victoria BC for petrographic analysis. Results are presented in Table 12-1.

Table 12-1 Verification Samples, Livingstone Trend – Wild Cat

Sample	Moist %	Ash %	Volatile Matter %	Fixed Carbon %	BTU/lb	Sulphur %	S. G.	Reflectance R_0Max
E13-CAT-01	2.15	12.0	22.89	63.00	-	0.62	1.37	1.32
E13-CAT-02	2.59	9.6	23.03	64.80	-	0.54	1.35	1.30

The seams are both medium volatile bituminous coal. Because of their weathering, coking characteristics could not be determined, but the R_oMax values plot between the minimum and maximum ranges for the medium volatile bituminous coal.

13 Mineral Processing and Metallurgical Testing

Elan has not completed any quality sampling on the Property and Dahrouge was not involved in any of the historic sampling programs. Independent quality analysis had been completed for each of the defined historic resource areas, Isolation South (OMR), Isolation, and Savanna. Sampling programs included HQ diameter core samples, adit channel samples, and adit bulk samples. Analytical and petrographic analyses were completed at A.S.T.M certified labs; however, the analyses predate the current ISO laboratory certification requirements. Core intervals containing coal were sampled using project-defined procedures (Figure 11-1 to 11-5), processed as raw and clean core samples, and analysed.

The typical core quality results are summarized in Table 13-3 and 13-4. A high degree of variability in the core coal quality results has been observed and attributed to the large number of analytical laboratories employed, different project specific sampling procedures, and variable core recoveries. The high degree of variability in core recovery and poor documentation of its calculation methods provide an additional degree of core coal quality uncertainty. For this reason quality assessment focuses on the adit bulk samples.

Table 13-1 Raw Coal Averaged Core Seam Analysis by Area, Target, and Seam

Area	Target	Modelled Seam	Historic Seam	Moist. %	Ash %	Volatile Matter %	Fixed Carbon %	BTU/lb	Sulphur %	P_2O_5 %	FSI
Isolation South (OMR)		S10	1	0.61	27	24.3	47.8	10833	0.52	NA	5
	-	S9	2	0.61	30	22	50	10883	0.38	NA	2
	-	S8	3	0.59	20	25	55	11920	0.37	NA	4.5
		S7	4	0.58	30	22.5	47.5	10305	0.36	NA	2.5
	-	S6	5	0.63	22	26	52	11320	0.28	NA	6
Isolation	Coal Top S	S8	8	0.52	24.1	19.02	56.52	9760	0.49	0.37	3
	Coal Top S	S7	7	0.58	26.7	18.51	54.3	9580	0.39	0.32	2
	Coal Top N	S9	9	0.62	25.9	18.47	55.25	9493	0.59	0.32	3.5
	Coal Top N	S8	8	0.38	15.9	18.96	64.6	11660	0.59	0.38	4
	Coal Top N	S7	7	0.43	26.3	18.15	55.22	10060	0.46	0.77	1
	Outlook Ridge	S8	8	0.6	25	19.31	54.65	-	0.5	-	4
	Outlook Ridge	S7	7	0.5	21.7	20.53	57.51	11720	0.42	0.84	3
	Honeymoon	S8	8	0.53	23.2	17.19	59.12	-	0.66	-	4
	Honeymoon	S7	7	0.41	27.1	16.93	55.53	-	0.58	-	3
	Twin Peak	S8	8	0.5	14.6	18.58	66.35	-	0.68	-	2
	Twin Peak	S7	7	0.93	22.8	17.91	58.39	-	0.54	-	1
	Isolation S	S9	9	0.12	18.1	19.39	62.22	10090	0.76	0.4	6
	Isolation S	S8	8	0.54	20.7	18.96	59.9	11380	0.69	0.19	4.5
	Isolation S	S7	7	0.56	24.2	17.27	58.22	10340	0.51	0.23	4
	Isolation N	S9	9	0.5	45.3	17.15	37.53	8515	1.13	0.13	3.5
	Isolation N	S8	8	0.33	20.8	18.5	60.39	11410	0.58	-	4.5
	Isolation N	S7	7	0.3	17.6	17.05	65.04	19560	0.58	-	4.5
Savanna	-	S3	A	-	-	-	-	-	-	-	6
	-	S1	C	-	-	-	-	-	-	-	3.5

Note: Averaged estimates were created using a combination of historic compilations and compiled reports. Original documents were not available.

Table 13-2 Clean Coal Averaged Core Seam Analysis by Project and Local Target Areas

Area	Target	Modelled Seam	Historic Seam	Moist %	Ash %	Volatile Matter %	Fixed Carbon %	BTU/lb	Sulphur %	P_2O_5 %	FSI
Isolation South (OMR)		S10	1	-	7.5	29			0.5		7.5
	-	S9	2	-	8.8	25	-	-	0.45	-	3.5
	-	S8	3	-	7.2	27	-	-	0.42	-	6.5
		S7	4	-	10.5	26	-	-	0.49	-	5.5
	-	S6	5	-	8.9	30	-	-	0.26	-	8.5
Isolation	Coal Top S	S8	8	0.41	6.2	21.77	69.52	14190	0.57	0.47	6
	Coal Top S	S7	7	0.45	10.0	20.09	68.72	13930	0.51	0.18	4
	Coal Top N	S9	9	0.32	8.7	21.7	69.36	14090	0.68	0.57	4.5
	Coal Top N	S8	8	0.4	7.4	19.77	72.47	14190	0.54	0.45	4
	Coal Top N	S7	7	0.42	10.0	20.03	69.76	13850	0.45	0.12	3
	Outlook	S8	8	0.49	9.1	21.75	68.76	14080	0.61	0.3	6
	Outlook	S7	7	0.32	9.5	22.54	67.8	14030	0.5	0.18	3
	Honeymoon	S8	8	0.49	6.7	19	71.61	14190	0.73	0.21	6
	Honeymoon	S7	7	0.4	10.9	18.81	69.93	13850	0.69	0.39	4
	Twin Peak	S8	8	0.61	9.8	18.32	71.27	13980	0.39	0.33	2
	Twin Peak	S7	7	0.75	8.9	19.69	70.71	13960	0.57	0.41	2
	Isolation S	S9	9	0.28	7.9	20.15	71.72	14180	0.64	0.4	5
	Isolation S	S8	8	0.47	8.5	20.08	70.98	14230	1.81	0.22	6
	Isolation S	S7	7	0.38	8.2	19	72.41	14220	0.6	0.47	4
	Isolation N	S9	9	0.1	23.6	20.52	55.91	11700	0.75	0.27	5
	Isolation N	S8	8	0.4	7.1	19.9	72.63	14520	0.66	0.28	7
	Isolation N	S7	7	0.31	8.6	10.03	72.26	14290	0.65	0.4	7

Note: Averaged estimates were created using a combination of historic compilations and compiled reports. Original documents were not available.

Historic bulk sample analysis has been completed for the three resource areas, Isolation South (OMR), Isolation, and Savanna. Detailed washability results are available for 11 of the 19 adits located on or directly adjacent to the Property. A summary of the bulk sample results is provided in Table 13-3. The ASTM defined clean coal classification for this area has historically been reported as low volatile bituminous to medium volatile bituminous.

Table 13-3 Bulk Sample, Clean Coal Analysis and Coal Rank Summary

Area	Target	Model Seam ID	Historic Seam	Ash %	Moist %	Volatile Matter %	Fixed Carbon %	BTU/lb	Sulphur %	F.S.I.	Rank
Isolation South (OMR)	-	S7	4	24	0.51	23.3	52.3	11076	0.64	-	mvb
	-	S10	1	16	0.96	25.41	58.2	11992	0.83	-	mvb
Isolation	Coal Top	S7	7	9.4	0.75	19.75	70.1	13870	0.325	3.5	lvb
	Coal Top	S8	8	8.8	0.8	21.2	69.2	13937	0.385	6.5	lvb
	Isolation N	S7	7	8.4	0.4	18.9	72.3	14061	0.6	7	lvb
	Isolation N	S8	8	8.2	0.6	21.2	70	14269	0.6	7	mvb
	Isolation S	S7	7	9.3	0.6	19.1	71	14028	0.4	3	-
	Outlook	S7	7L	8.1	0.7	20.8	70.4	14202	0.5	6.5	mvb
	Outlook	S8	7U	7.9	0.9	20.7	70.5	14252	0.6	7.5	mvb
Savanna	-	S3	A	9.5	-	24	70	-	0.31	-	mvb
	-	S1	C	17	-	21	70	-	0.35	-	mvb

Abbreviations: lvb = low volatile bituminous, mvb = medium volatile bituminous.

Note: Areas with multiple single seam or laboratory analysis have been averaged to provide generalized result.

Bulk samples, collected from individual coal seams, were evaluated for both Fluidity and Dilatation analysis to qualify the rheological properties of the coal. The results are summarized in Table 13-4 and 13-5, showing Grindability, Fluidity, Dilatation Analysis, and Stability.

The Gieseler Fluidity Test is a measure of the coals' viscosity (measured in ddpm) as it melts during carbonization. The results show a relatively consistent temperature envelope where the coal becomes plastic and re-solidifies. The Maximum Fluidity values for the property are low (Table 13-4 and 13-5) and characteristic of Canadian foothills to Front Range metallurgical coals.

The Dilatation tests are a measure of the coals' coking capacity (the ability to incorporate Inerts during the melting phase). Generally, coals that display Dilatation values from 0 to 50% are considered Coking coals. The Isolation area seam S7 and S8 show moderate fluidity and dilatation on carbonization (Table 13-4 and 13-5).

The ASTM Stability test targets values greater than 50% for coking stability and strength. The Isolation coal seam S7 was used four of six tumbler tests with results greater than 50% (Table 13-4). Coal seams S1 and S3, for the Savanna Area, produced results greater than 50% (Table 13-5).

Table 13-4 Grindability, Fluidity, Dilatation and Tumbler Test Analysis for Isolation Seams S7 and S8

Sample *(Seam ID)*	**AD-CP-01** (S8)	**AD-CP-03A** (S7 lower)	**AD-CP-04** (S7 upper)	**AD-CP-05** (S7)	**AD-CP-06A** (S7 upper)	**AD-CP-06B** (S7 upper)	**AD-CP-06C** (S7 lower)
Grindability							
Hardgrove Index	138	-	-	-	-	-	-
Gieseler Plasticity							
Initial Softening Temp	468	443	448	462	437	434	442
Fusion Temp	-	-	461	-	449	448	453
Maximum Fluidity Temp	485	467	468	477	465	463	466
Final Fluid Temp	497	482	486	484	488	487	484
Solidification Temp	505	488	495	490	492	492	490
Maximum Fluidity (ddpm)	4	2.9	8	2.5	80	65	9.2
Melting Range	29	39	38	22	51	53	42
Dilatation							
T1 Softening Temp	392	428	434	437	422	407	402
T2 Max. Contraction Temp	457	500	477	475	466	456	451
T3 Max. Dilatation Temp	457	500	503	497	494	479	471
Contraction %	28	24	25	22	27	26	27
Dilation %	-28	-	4	-8	41	21	15
Tumbler Test (ASTM)							
Stability Factor %	-	48.3	57.2	53.5	55.3	50.3	48.4
Hardness Factor %	-	59.7	68.1	64.5	69.2	70	66.1

Table 13-5 Grindability, Fluidity, Dilatation and Tumbler Test Analysis for Savanna Seams S1 and S3

Sample *(Seam ID)*	**AD-BR-70-01** (S3 or "A")	**AD-BR-72-01** (S3 or "A")	**AD-BR-72-02** (S1 or "C")
Grindability			
Hardgrove Index	127	101	115
Gieseler Plasticity			
Initial Softening Temp	449	425	444
Fusion Temp	-	442	-
Maximum Fluidity Temp	468	460	464
Final Fluid Temp	480	482	476
Solidification Temp	492	490	486
Maximum Fluidity (ddpm)	3.8	20.5	3.4
Melting Range	31	57	32
Dilatation			
T1 Softening Temp	428	425	430
T2 Max. Contraction Temp	469	467	479
T3 Max. Dilatation Temp	494	485	485
Contraction %	24	26	23
Dilation %	-17	-4	-22
Tumbler Test (ASTM)			
Stability Factor %	55.4	67.9	52.5
Hardness Factor %	64.9	71.5	65.1

A general classification of coal rank can be completed using petrographic reflectance (Table 13-6). Variations in reflectance define classification changes over the Property and between the different coal seams. Using historic results a regional database of petrographic reflectance results has been compiled and presented in Table 13-7, for the Property.

Table 13-6 Petrographic Reflectance Rank Classification

Rank	**Maximum Reflectance (%$R_{o\ max}$)**
Sub-bituminous	< 0.47
High volatile bituminous C	0.47 - 0.57
High volatile bituminous B	0.57 - 0.71
High volatile bituminous A	0.71 - 1.10
Medium volatile bituminous	1.10 - 1.50
Low volatile bituminous	1.50 - 2.05
Semi-anthracite	2.05 - 3.00 (Approx.)
Anthracite	> 3.00

Source: *Ward (1984)*

Table 13-7 Compiled Petrographic Reflectance Results

Area	Company	Data Point	Modelled Seam	Hist. Seam	Reflectance R_o
Isolation South (OMR)	NEC	CBM100-13-12	S8	-	1.29
Isolation South (OMR)	NEC	CBM100-13-12	S7	-	1.32
Isolation South (OMR)	NEC	CBM100-13-12	S6	-	1.36
Savanna	Bralorne	AD-BR-71-01	S3	C	1.28
Savanna	Bralorne	AD-BR-71-02	S1	A	1.25
Savanna	Bralorne	AD-BR-72-01	S1	A	1.27
Savanna	Bralorne	AD-BR-70-01	S1	A	1.26
Savanna	Bralorne	AD-BR-72-02	S3	C	1.28
Isolation	CanPac	AD-CP-01	S8	8	1.45
Isolation	CanPac	AD-CP-03	S7	7L	1.33
Isolation	CanPac	AD-CP-04	S7	7U	1.31
Isolation	CanPac	AD-CP-05	S7	8U	1.42
Isolation	CanPac	AD-CP-06	S7	7U	1.22
Isolation	CanPac	AD-CP-06	S7	7U	1.21
Isolation	CanPac	AD-CP-06	S7	7L	1.27
Regional	NEC	CBM100-10-19	S8	-	1.15
Regional	NEC	CBM100-10-19	S7	-	1.15
Regional	NEC	CBM100-10-19	S6	-	1.11
Regional	NEC	CBM100-10-19	S4	-	1.16
Regional	NEC	CBM100-10-19	S3	-	1.13
Regional	NEC	CBM100-13-13	S8	-	1.25
Regional	NEC	CBM100-13-14	S7	-	1.33
Regional	NEC	CBM100-13-15	S6	-	1.38
Regional	NEC	CBM100-13-16	S5	-	1.45

14 MINERAL RESOURCE ESTIMATES

Geological Classification

As the stratigraphic and structural complexity of a coal deposit increases, a greater number of data points are required to assign the coal to measured, indicated, or inferred resource categories. Data points are defined as locations where a coal seam, or a marker horizon indicating the proximity to a coal seam, is exposed. Valid data points were obtained from drillhole intersections, trenches, adits, and surface outcrop. Table 14-1 outlines the resource classification criteria for different geology types.

Table 14-1 Resource Classification Categories (Hughes et al., 1989)

Geology Type	Resource Classification (Distance from Point)		
	Measured	Indicated	Inferred
Moderate	0-450 m	450-900 m	900-2,400 m
Complex	0-100 m	100-200 m	200-400 m
Severe	0-50 m	50-100 m	100-200 m

A **moderate geology** type occurs where the deposit has only been subjected to limited tectonic deformation. This may include faults with displacements of less than 10 m, although these should be uncommon. Homoclines and broad open folds with wavelengths less than 1.5 km may also be present and bedding should not exceed 30 degrees.

A **complex geology** type occurs where a deposit has been subjected to relatively high levels of tectonic deformation. Fault bounded blocks within this deposit type generally retain their normal stratigraphic sequence and seams will have only rarely been modified from their pre-deformational thickness. Tight folds with steeply dipping or overturned limbs can be present and offsets by faults are common.

A **severe geology** type occurs where extreme tectonic deformation has occurred. The stratigraphic sequence is commonly disturbed and difficult to ascertain, whereas coal seams are often structurally thickened and thinned from their pre-deformational state. Tight folds, steeply inclined and overturned beds, and large displacement faults are common.

Density

Historic density information for deposits on the Property is relatively sparse. A constant bulk density value was assumed across the property and was determined from the coal rank and average ash contents as defined in GSC 88-21. Average dried ash content was determined to be 15-20 percent by weight, with a rank classification of low-medium volatile bituminous coal. This produced a bulk density of 1.44 g/cm^3.

Geological Interpretation and Block Modelling

The modelling methodology used for the resource estimation for all areas of the property consisted of the following steps:

- Import data into the mining software package (Maptek Vulcan 8.2™).
- Database validation and error checking.
- Create fault surface triangulations using surface and subsurface fault traces as well as fault/drillhole intersections.
- Create area data subsets and blank fault block triangulations.

- Correlate drill holes, trenches, adits and surface exposures on or directly adjacent to the Property.
- Create final fault blocks by applying a Boolean Test to a blank fault block solid using the fault surface triangulations.
- Grid the topography and base of weathering triangulation surfaces. Base of weathering was created 10 m below topography in the Isolation South (OMR), Savanna, and Livingstone areas and 15 m below topography in the Isolation Area.
- Run FixDHD on each sub area to create Mapfiles.
- Create seam grids and triangulations in Model Stratigraphy using the FixDHD Mapfiles, topography grid, and base of weathering grid. Seam grids were cropped against the base of weathering grid to remove oxidized coal.
- Run macros to create the seam thickness and parting quality grids from the faulted Model Stratigraphy triangulations.
- Create HARP (Horizon Adaptive Rectangular Prism) block models for each sub area using the parting and thickness grids as qualities. Blocks were 25 m x 25 m with a sub-blocking of 2 (x and y directions) except in the Livingstone area where blocks were 100 m x 100 m with a sub-blocking of 2.
- Create coal/parting fraction attributes for each seam in the HARP and populate it using the quality grids (coal thickness/aggregate seam thickness).
- Classify block confidence using the distance of the block centroid to the nearest data point based on the criteria in Table 14-1.
- Determine the cumulative stripping ratio for each block of coal within the model (total volume of waste/total tonnage of product).
- Calculate the coal resources for each sub area based on the criteria in Table 14-2.
- Constrain resource estimation by the current Elan Lease boundaries.
- Constrain resource estimation to seam thickness greater than 0.5 m for indicated and inferred classification.

Table 14-2 Resource Reporting Criteria

Area	Resource Criteria	
	Coal (Aggregate Thickness)	**Partings**
Isolation South (OMR)	> 0.5 m	Not included in resource
Isolation	> 0.5 m	Not included in resource
Savanna	> 0.5 m	Aggregate partings with thickness less than 1 m and a coal to parting ratio greater than 1.5:1 are included in the resource estimation.

Probable Method of Extraction

For the purpose of resource classification a division between surface minable resources and underground mineable resources was used. Surface resources were considered to be resources with a cumulative stripping ratio of less than 1:20 (tonne coal to cubic metre of waste) and aggregate coal seam thicknesses greater than 0.5 m.

14.1 Resource Summary

The in-place resources for the Isolation South (OMR), Isolation, and Savanna Project areas are summarized in Table 14-3. These areas cover the following approximate areas and are outlined in Figure 14-1:

- Isolation South (OMR): 716 ha
- Isolation: 259 ha
- Savanna: 373 ha

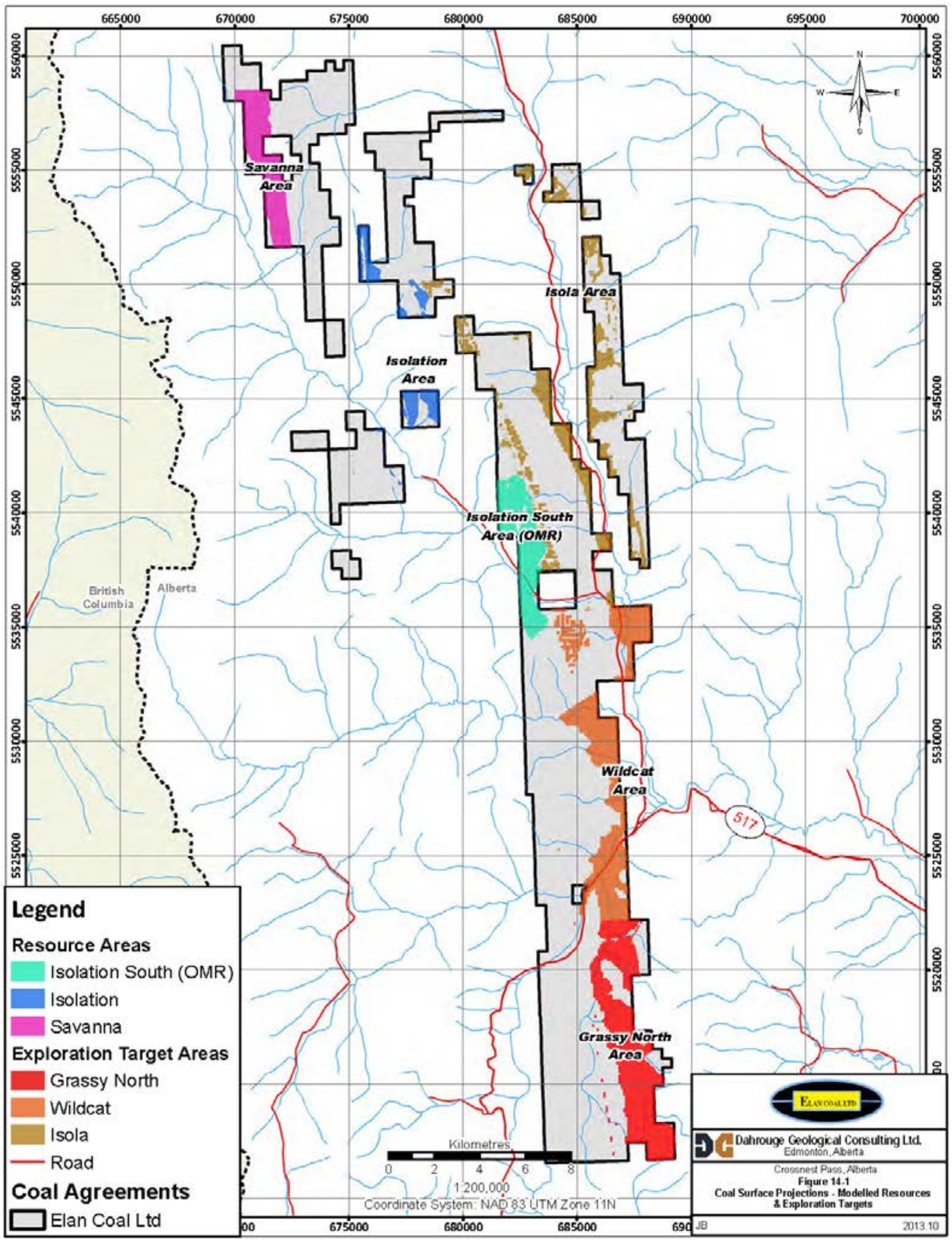

Figure 14-1 Coal Surface Projections for Resources & Exploration Targets

Representative sections from the Isolation, Isolation South (OMR) and Savanna resource areas are shown in Figure 14-2 to 14-6 (drillholes may be projected onto section causing apparent misalignment of seam intersections).

Table 14-3 In-Place Coal Resources Summary (kilotonnes)

Area	In-Place Coal Resources (KTONNES)		
	ASTM Group	**Indicated**	**Inferred**
Isolation South (OMR)	Low to Medium Volatile Bituminous	31,873	53,828
Isolation	Medium Volatile Bituminous	1,267	828
Savanna	Medium Volatile Bituminous	28,750	29,927
Total		**61,890**	**84,583**

14.2 EXPLORATION TARGET SUMMARY

The Elan Property hosts a large exploration target of low to medium volatile bituminous coal that requires additional drilling prior to completing resource definition. Exploration targets, which are in part down-dip projections of the coal resources, are provided for the Isolation South (OMR), Isolation, and Savanna Project areas. For three locations along the Livingstone Trend data density restricted estimation to exploration targets only (Table 14-4). These results are presented in kilotonnes and rounded to the nearest million tonnes to represent a reduced degree of accuracy and control. The targets cover the following approximate areas and are outlined in Figure 14-1 and 14-7 (drillholes may be projected onto section causing apparent misalignment of seam intersections):

- Isolation South (OMR): 2,299 ha
- Isolation: 1,578 ha
- Savanna: 605 ha
- Grassy North (Livingstone Trend South): 4,621 ha
- Wildcat (Livingstone Trend Central): 4,541 ha
- Isola (Livingstone Trend North): 5,126 ha

The exploration targets presented in Table 14-4 were generated with the same methods described for estimated resources. Cut-offs for each area were:

- Isolation South (OMR): Limited east-west by bounding faults. Limited north-south by distances from drill holes (5,500 m north, 3,750 m south due to drilling densities or limitations on drill hole information)
- Isolation: Limited east-west by bounding faults. Limited north-south by distances from drill holes (800 m north, 800 m south)
- Savanna: Limited to the east by faulting, limited to the west by the Property boundary. Limited to the north 1,350 m from drill holes, limited to the south by the Property boundary.
- Livingstone trend: Limited east-west by bounding faults. Limited north-south by the boundary of the Property

Table 14-4 Modelled Exploration Targets Hosted on the Property (kilotonnes)

Area	Exploration Target (KTONNES)
Isolation South (OMR)	38,000
Isolation	20,000
Savanna	186,000
Grassy North (Livingstone Trend South)	252,000
Wildcat (Livingstone Trend Central)	215,000
Isola (Livingstone Trend North)	32,000
Total	**743,000**

15 Mineral Reserve Estimates

There are no mineral reserves, as defined by NI 43-101 criteria, on the Property at this time.

16 MINING METHODS

Given the stage of exploration on the Property, mining methods have not yet been considered.

17 Recovery Methods

Given the stage of exploration on the Property, recovery methods have not yet been considered.

18 PROJECT INFRASTRUCTURE

Given the stage of exploration on the Property, project infrastructure requirements have not yet been considered.

19 Marketing Studies and Contracts

Given the stage of exploration on the Property, marketing studies and contracts have not yet been considered.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

Given the stage of exploration on the property, environmental studies, permitting and social or community impact have not yet been considered.

21 Capital and Operating Cost

Given the stage of exploration on the Property, capital and operating cost have not yet been considered.

22 ECONOMIC ANALYSIS

Given the stage of exploration on the Property, an economic analysis has not been performed.

23 ADJACENT PROPERTIES

The area immediately south and west of the Elan Property has a long history of production of coking-quality coals from the Mist Mountain Formation. At least 75.5 Mt of coal have been produced from 28 mines on the Blairmore and Maycroft map sheets (NTS 89G/9 and 16) between 1900 and 1979 (Table 23-1). There are two properties with past production adjacent to the Elan Property that closely reflect geologic conditions on the Property, the Grassy Mountain and Vicary Creek mines.

Table 23-1 Coal Production from Adjacent Mist Mountain Deposits (after Richardson et al, 1992 and ERCB Serial File ST45, 2010)

Mine Name	Type	Years of Operation	Production (Tonnes)
Adanac	Underground	1942 - 1962	692,000
Mohawk	Underground	1950 - 1952	929,900
Passburg	Underground	1906 - 1907	NA
South Passburg	Underground	1907 - 1915	393,000
Byron Creek	Underground	1927 - 1934	55,000
Burmis	Underground	1924 - 1962	3,900
Rhodes	Underground	1925	NA
Davenport	Underground	1907 - 1943	159,000
North Passburg	Underground	1909 - 1915	430,600
Byron Creek	Underground	1905 - 1939	5,874,900
Bellevue	Underground	1903 - 1961	13,597,100
Maple leaf	Underground	1907 - 1952	3,754,800
Little's	Underground	1924 - 1925	<100
Frank	Underground	1900 - 1918	1,465,900
Great Northern RR	Underground	1902 - 1903	800
West Canadian Collieries	Underground	1909 - 1919	423,100
Pitt's	Underground	1934 - 1936	<100
Bear Valley	Underground	1902 - 1913	900,800
Bear Valley	Underground	1904	NA
International	Underground	1903 - 1957	13,847,000
Greenhill	Underground	1913 - 1968	14,071,800
Carbondale	Underground	1909 - 1960	10,777,600
Grassy Mountain	Surface	1974 - 1975	49,000
Greenhill	Surface	1956 - 1960	383,400
Vicary Creek	Underground	1957 - 1979	7,481,100
Vicary Creek	Surface	1972 - 1974	152,600
Racehorse	Surface	1966 - 1971	64,200
Vicary Creek No. 2	Surface	1960 - 1964	<1,500

The Grassy Mountain Property, located 8 km NNE of Blairmore, adjoins the south end of the Property on the same outcrop band of the Mist Mountain Formation within the Livingstone Thrust Sheet (Figure

4-1). Between 1947 and 1960, Western Canadian Collieries removed approximately 3.5 Mt of coal from small surface pits at stripping ratios of less than 2:1. Scurry-Rainbow Oil Ltd. purchased the property in 1966, and conducted drilling, trenching and bulk sampling of four adits in 1971. In 1973, Consolidation Coal Company (now Consol Energy Corp.) acquired an option on the property and undertook extensive drilling, trenching, and bulk sampling. The exploration culminated in the estimation of a historic reserve of 28.2 million clean short tons (25.6 tonnes) at an average stripping ratio of 11.45:1 for three coal seams (Daniells et al, 1975). The authors have not verified this historic reserve, and it is not necessarily indicative of any coal resources on the Property.

In recent years, Consol Canada and Devon Energy Corp. have completed further private evaluations of the Grassy Mountain Property, and in December, 2012, entered into an agreement with Riversdale Resources Ltd. of Australia to sell a portfolio of coal assets that includes the Grassy Mountain Project. A reserve value and a compliant resource value were provided in the announcement (Riversdale Resources Ltd. news release; January 7th, 2013), but the authors have been unable to verify this information and no Technical Report has been filed. As noted above, this resource is not necessarily indicative of any coal resources on the Elan Property.

The Vicary Creek Mine, and subsidiary Vicary Creek No. 2 and Racehorse mines, located 20 km NNW of Blairmore between Vicary Creek and Racehorse Creek, were operated by Coleman Collieries Ltd. between 1957 and 1979. They are located about 6 km west of the Cat Mountain (Livingstone Gap) area in the southern part of the Elan Property, within the Coleman Thrust sheet (Figure 7-1 and 14-7). Historic aggregate coal production was reported to be approximately 7.5 Mt (surface and underground) from two seams in the Mist Mountain Formation (ERCB Serial File ST45, 2010). The authors have not been able to verify these production figures or any reserve/resource information on this property and note that these figures are not necessarily indicative of any coal resources on the Elan Property.

24 OTHER RELEVANT DATA AND INFORMATION

The authors are unaware of any other relevant information.

25 INTERPRETATION AND CONCLUSIONS

This report presents the results of review of available historical reports and data. Not all the historical exploration information is available, but the authors are satisfied that the information used to create the resource estimates and exploration targets presented in this report are reflective of coal seam thickness and quality on the Property. To date, Elan has not carried out any exploration to validate historical results, but the authors consider the historical exploration to be of professional quality and can see no reason for the results presented to have been intentionally misleading.

Historic resources in the Savanna, Isolation, and Isolation South (OMR) areas contain significant thicknesses of metallurgical quality coal. Areas within the property should be investigated with initial geological confirmation to locate historic exposures, trenches, adits, and drill sites in order to plan and permit future exploration programs. The Livingstone Trend, extending north of the Grassy Mountain Area, contains a large exploration target which should be the focus of initial field exploration and drilling. Access by road and historic exploration trails is generally good and can be rehabilitated or upgraded. Proximity to rail and municipal infrastructure and services is also good, with the towns of Coleman and Blairmore (combined population about 4000) approximately 20 and 25km by road via Hwy 40/ Hwy 3. The Canadian Pacific rail line runs through Coleman and connects with the main CNR east-west line for access to Vancouver and Prince Rupert ports or to the Great Lakes eastwardly.

There are five producing coking coal mines, owned by Teck Coal currently in operation in the area across the border in Southeast British Columbia. Mining personnel for the Property could potentially be sourced from Coleman and Blairmore or other surrounding settlements.

Currently, there are several surface access restrictions on portions of the Property. The entirety of the Property lies within Category 2 land zone with respect to coal exploration and development as designated by the 1976 Coal Development Policy for Alberta. This land category allows for limited exploration under strict controls. Approved development is generally restricted to in-situ or underground, as the area is considered to have moderate environmental sensitivity and minimal existing infrastructure. The draft south Saskatchewan Regional Plan 2014-2024 tabled by the Alberta Government is currently in a consultation phase. Two new proposed Wildland Provincial Parks; Bob Creek and Livingstone Range which are part of that plan could overlap parts of the Property.

The authors conclude that the Property contains significant coal resources and exploration targets, which warrant further exploration. The Property is considered one of merit.

26 RECOMMENDATIONS

The Property contains significant coal resources and exploration targets, which warrant further exploration. The Property is considered one of merit.

Exploration Targets

A preliminary exploration program is recommended to geologically map and design a drill program focused on confirming seam locations and coal quality. Grassy North, which falls within Livingstone Trend, has been identified as the primary exploration target. This target is located on the southernmost leases of the Elan property package and is proximally located to established infrastructure.

Resource Areas

Dahrouge recommends expansion and infill drilling for the Isolation South (OMR), Isolation, and Savanna Resource areas. Drilling should focus on increasing the resource classifications to indicated and measured, extending the current defined resources, and confirming the coal quality and coking potential. Future coal quality work should include large diameter coring to evaluate the size distribution of processed coal using attrition techniques. Washability and detailed coking coal analysis on a range of size fractions will be required to determine the optimum size and density at which coking properties are present in the resource. Petrographic studies by size fraction will provide additional information on optimising vitrinite content in potential products. Detailed coking coal tests should be completed on simulated clean coal products including carbonisation studies to develop preliminary market specifications for the resource.

26.1 GRASSY NORTH (LIVINGSTONE TREND RECOMMENDATIONS)

A two phase program is recommended for the Grassy North Exploration Target. The first phase would include a two-week exploration and reconnaissance program that would undertake surface mapping, coal sampling, and complete drill targeting for Phase 2 (Table 26-1). This work program would provide the required information to complete a coal exploration permit for a follow-up drill program.

Table 26-1 Grassy North First Phase Proposed Budget

Item	Estimated Cost
Access mapping and Assessment	$10,000
Geological Mapping & Sampling	$30,000
Laboratory, Coal Testing	$10,000
Drill Plan Targeting	$5,000
Data Compilation / Final Reports	$15,000
Contingency 15%	**$10,000**
Total Estimate	**$80,000**

The second phase of exploration, which is conditional upon favorable results obtained from the first phase of exploration, consists of 5 - 12 drill holes, totalling up to 1,000 – 2,500 m. Drilling would aim to establish a preliminary inferred resource, establish preliminary coal quality, and define additional exploration targets.

Table 26-2 Grassy North Second Phase Proposed Budget

Item	Estimated Cost
Permitting	$50,000
Access Constructions and Reclamation	$350,000
RC / Core Drilling	$600,000
Geological Supervision	$80,000
Geophysical Logging	$30,000
Drill Site Survey	$10,000
Laboratory, Coal Testing	$240,000
Data Compilation / Final Reports	$40,000
Contingency 15%	**$210,000**
Total Estimate	**$1,610,000**

26.2 ISOLATION SOUTH (OMR) RECOMMENDATIONS

Minimal drilling is required to increase the current Isolation South Resource classification to Indicated and, potentially, to a Measured Resource. Infill drilling at 200-400 m spacing is proposed for the currently defined resource, in order to confirm structure and define coal quality. Additional confirmation drilling is proposed north and south of the historic drilling to extend the resource area and follow up on the exploration target.

The first phase of drilling includes 96 drill holes, totalling 8,400 m, targeting the S10 and S7 modelled seams. These include angled holes designed to best represent true seam thickness. Drill holes will be sampled (reverse circulation and large diameter coring) for quality testing.

Table 26-3 Isolation South (OMR) First Phase Proposed Budget

Item	Estimated Cost
Permitting	$60,000
Access Constructions and Reclamation	$400,000
RC Drilling	$1,050,000
Coring / Bulk Sampling	$600,000
Geological Supervision	$200,000
Geophysical Logging	$180,000
Drill Site Survey	$20,000
Laboratory, Coal Testing	$250,000
Geological 3-D Modelling	$80,000
Data Compilation / Final Reports	$60,000
Contingency 25%	**$725,000**
Total Estimate	**$3,625,000**

The second phase of exploration, which is conditional upon favorable results obtained from the first phase of exploration, is designed to support mine plan requirements. The second phase of drilling includes 25 drill holes, totalling 4,000 m, targeting areas that require additional definition.

Table 26-4 Isolation South (OMR) Second Phase Proposed Budget

Item	Estimated Cost
Permitting	$60,000
Access Constructions and Reclamation	$200,000
RC Drilling	$600,000
Coring / Bulk Sampling	$400,000
Geological Supervision	$120,000
Geophysical Logging	$100,000
Drill Site Survey	$10,000
Laboratory, Coal Testing	$200,000
Geological 3-D Modelling	$50,000
Data Compilation / Final Reports	$60,000
Contingency 25%	**$450,000**
Total Estimate	**$2,250,000**

26.3 ISOLATION RECOMMENDATIONS

The Isolation Area is a coal deposit with merit that has defined resources. No current drilling is recommended for the area, as land holdings are currently fragmented over the resource. A ground program is recommended to validate the historic work and to target key areas for future programs. Recommended work in this area has been grouped with Isolation South (OMR) to join the on property resource areas.

26.4 SAVANNA RECOMMENDATIONS

The first phase of drilling includes 40 drill holes, totalling 8,000 m, to increase classification of the current Savanna resource.

Table 26-5 Savanna First Phase Proposed Budget

Item	Estimated Cost
Permitting	$60,000
Access Constructions and Reclamation	$400,000
RC Drilling	$1,000,000
Coring / Bulk Sampling	$420,000
Geological Supervision	$200,000
Geophysical Logging	$180,000
Drill Site Survey	$20,000
Laboratory, Coal Testing	$200,000
Geological 3-D Modelling	$60,000
Data Compilation / Final Reports	$60,000
Contingency 25%	**$650,000**
Total Estimate	**$3,250,000**

The second phase of exploration, which is conditional upon favorable results obtained from the first phase of exploration, consists of 80 drill holes, totalling 21,000 m, to increase resource definition and classification.

Table 26-6 Savanna Second Phase Proposed Budget

Item	Estimated Cost
Permitting	$50,000
Access Constructions and Reclamation	$100,000
RC Drilling	$2,000,000
Coring / Bulk Sampling	$300,000
Geological Supervision	$250,000
Geophysical Logging	$220,000
Drill Site Survey	$20,000
Laboratory, Coal Testing	$100,000
Geological 3-D Modelling	$40,000
Data Compilation / Final Reports	$60,000
Contingency 25%	**$785,000**
Total Estimate	**$3,925,000**

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28 Date and Signature Page

This report, entitled "**Technical Report on the Elan Coal Property**" and with an effective date of September 10th, 2013, was prepared on behalf of Elan Coal Limited and is signed by the authors, John Gorham, William Miller, and Bradley Ulry.

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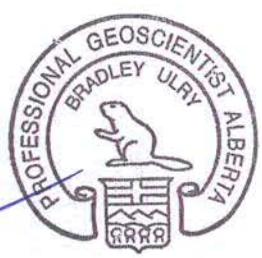
October 24, 2013



Bradley J Ulry

Suite 18 – 10509 81st Avenue

Edmonton, Alberta

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October 24, 2013

29 CERTIFICATE OF QUALIFIED PERSONS

I, John Gorham, of #18- 10509 81st Avenue, Edmonton, Alberta, hereby certify that

- I, John Gorham, P.Geol, am employed as a Senior Geologist with Dahrouge Geological Consulting Ltd.
- This certificate applies to the Technical Report titled "Technical Report on the Elan Coal Property" with an effective date of September 10, 2013 (the "Technical Report").
- I graduated from the University of Calgary, Canada with a B.Sc. degree in Geology in 1976.
- I am a Professional Geoscientist in the Provinces of Alberta, British Columbia and the Northwest Territories, Canada.
- I have practiced my profession for 37 years since graduation. I have been directly involved in green fields and brown fields exploration, and consulting, with experience in gold, base metals, precious and rare metals and rare earth deposits, coal, industrial and precious gem minerals.
- As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* (NI 43–101).
- I inspected the Elan Coal Property during a site visit from May 13th to May 15th, 2013.
- I am jointly responsible for Sections 1 to 27 of this Technical Report.
- I am independent of the issuer of this report, Elan Coal Ltd. as defined by Section 1.5 of NI 43-101.
- I have no prior involvement with the Elan Coal Property.
- I have read NI-43-101 and this report has been prepared in compliance with this Instrument.
- As of the effective date of this report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

'Signed and Sealed"
John Gorham, P. Geol.

PROFESSIONAL GEOLOGIST ALBERTA
JOHN H. GORHAM

Dated: October 24, 2013

I, William Miller, of #18- 10509 81st Avenue, Edmonton, Alberta, hereby certify that

- I, William Miller, P.Geo, am employed as a Project Geologist with Dahrouge Geological Consulting Ltd.
- This certificate applies to the Technical Report titled "Technical Report on the Elan Coal Property" with an effective date of September 10, 2013 (the "Technical Report").
- I graduated from the University of Alberta, Canada with a B.Sc. degree in Geology in 2009.
- I am a Professional Geoscientist in the Province of Alberta, Canada.
- I have practiced my profession for 4 years since graduation. I have been directly involved in green fields and brown fields exploration, and consulting, with experience including industrial minerals, phosphate, gold, nickel-PGEs, rare earths and coal.
- As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* (NI 43–101).
- I inspected the Elan Coal Property during a site visit from May 13th to May 15th, 2013.
- I am jointly responsible for Sections 1 to 27 of this Technical Report.
- I am independent of the issuer of this report, Elan Coal Ltd. as defined by Section 1.5 of NI 43-101.
- I have no prior involvement with the Elan Coal Property.
- I have read NI-43-101 and this report has been prepared in compliance with this Instrument.
- As of the effective date of this report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

'Signed and Sealed"
William Miller, P. Geo.

PROFESSIONAL GEOSCIENTIST WILLIAM MILLER ALBERTA

Dated: October 24, 2013

I, Bradley Ulry, of #18- 10509 81st Avenue, Edmonton, Alberta, hereby certify that

- I, Bradley Ulry, P.Geo, am employed as a Project Geologist and Manager with Dahrouge Geological Consulting Ltd.
- This certificate applies to the Technical Report titled "Technical Report on the Elan Coal Property" with an effective date of September 10, 2013 (the "Technical Report").
- I graduated from the University of Alberta, Canada with a B.Sc. degree in 2006 and completed the APEGA professional Geology requirements in 2008, through after degree coursework.
- I am a Professional Geoscientist in the Province of Alberta, Canada.
- I have practiced my profession for more than 5 years since graduation. I have been directly involved in green fields and brown fields exploration, and consulting, with experience including rare metals, nickel-PGEs and coal.
- As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* (NI 43–101).
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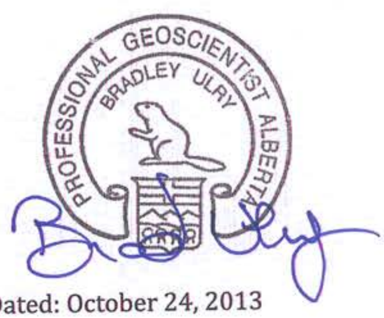
- I am jointly responsible for Sections 1 to 27 of this Technical Report.
- I am independent of the issuer of this report, Elan Coal Ltd. as defined by Section 1.5 of NI 43-101.
- I have no prior involvement with the Elan Coal Property.
- I have read NI-43-101 and this report has been prepared in compliance with this Instrument.
- As of the effective date of this report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

'Signed and Sealed"
Bradley Ulry, P. Geo.



Dated: October 24, 2013

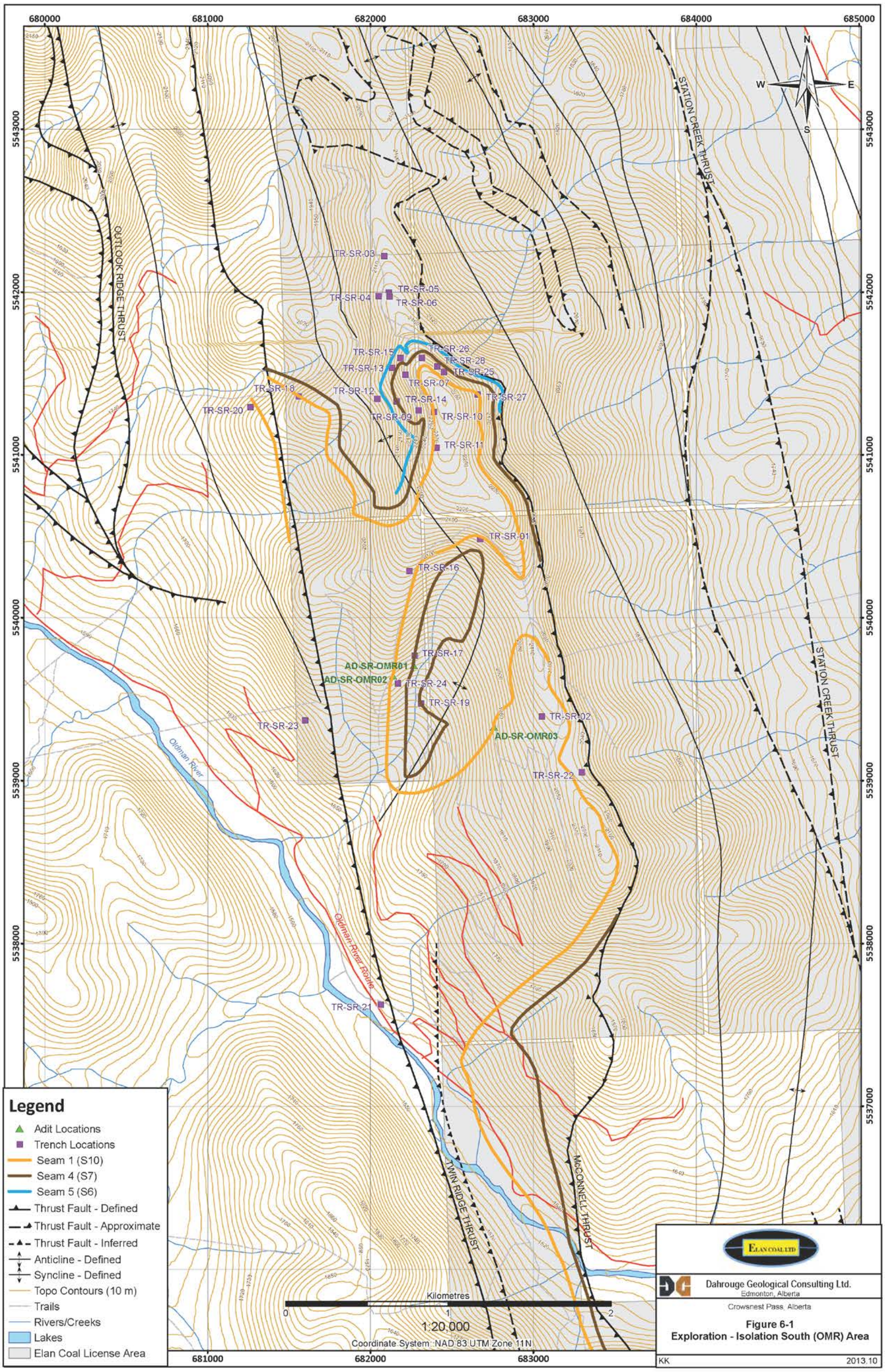


Figure 6-1 Exploration – Isolation South (OMR) Area

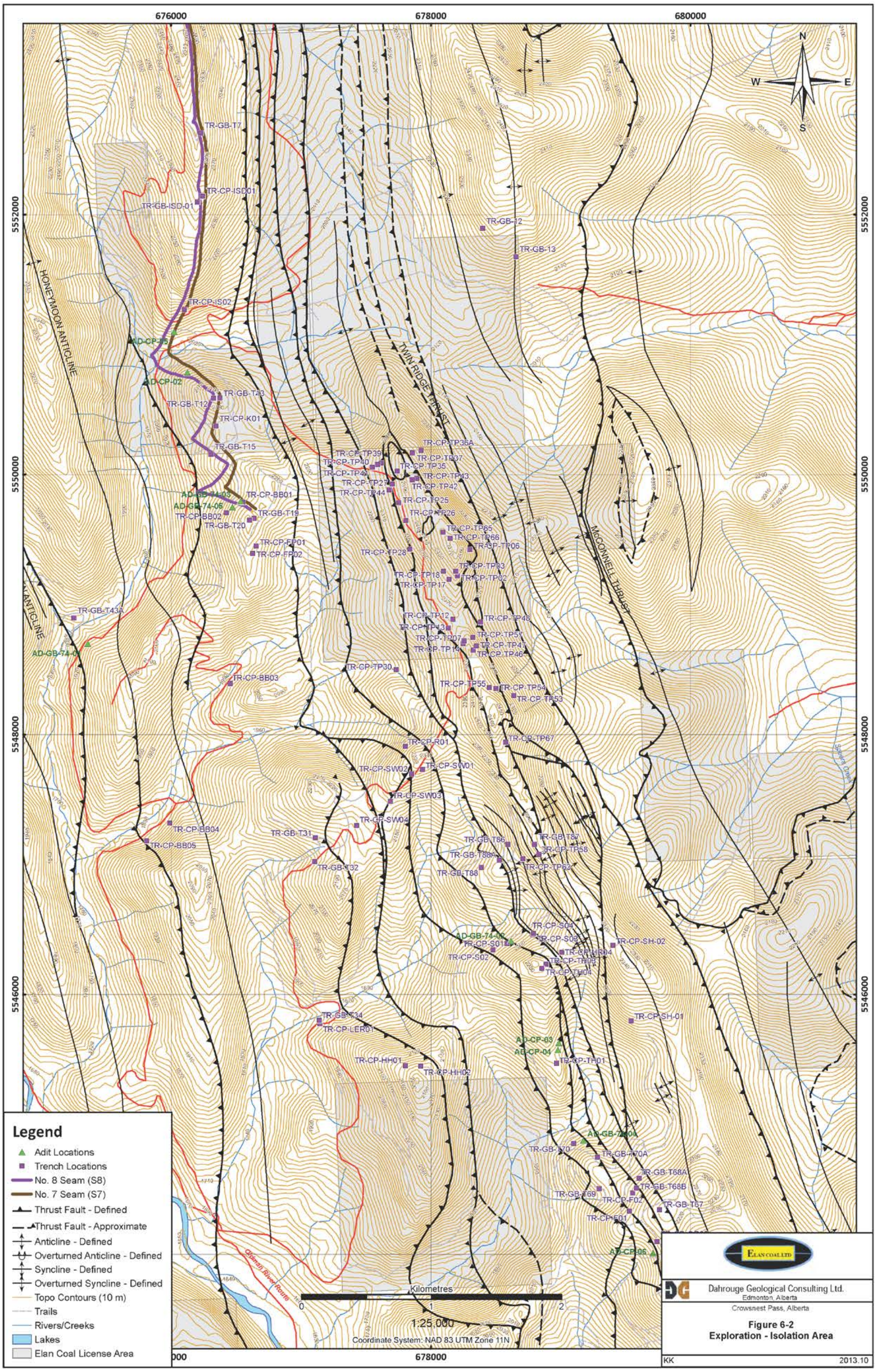


Figure 6-2 Exploration – Isolation Area

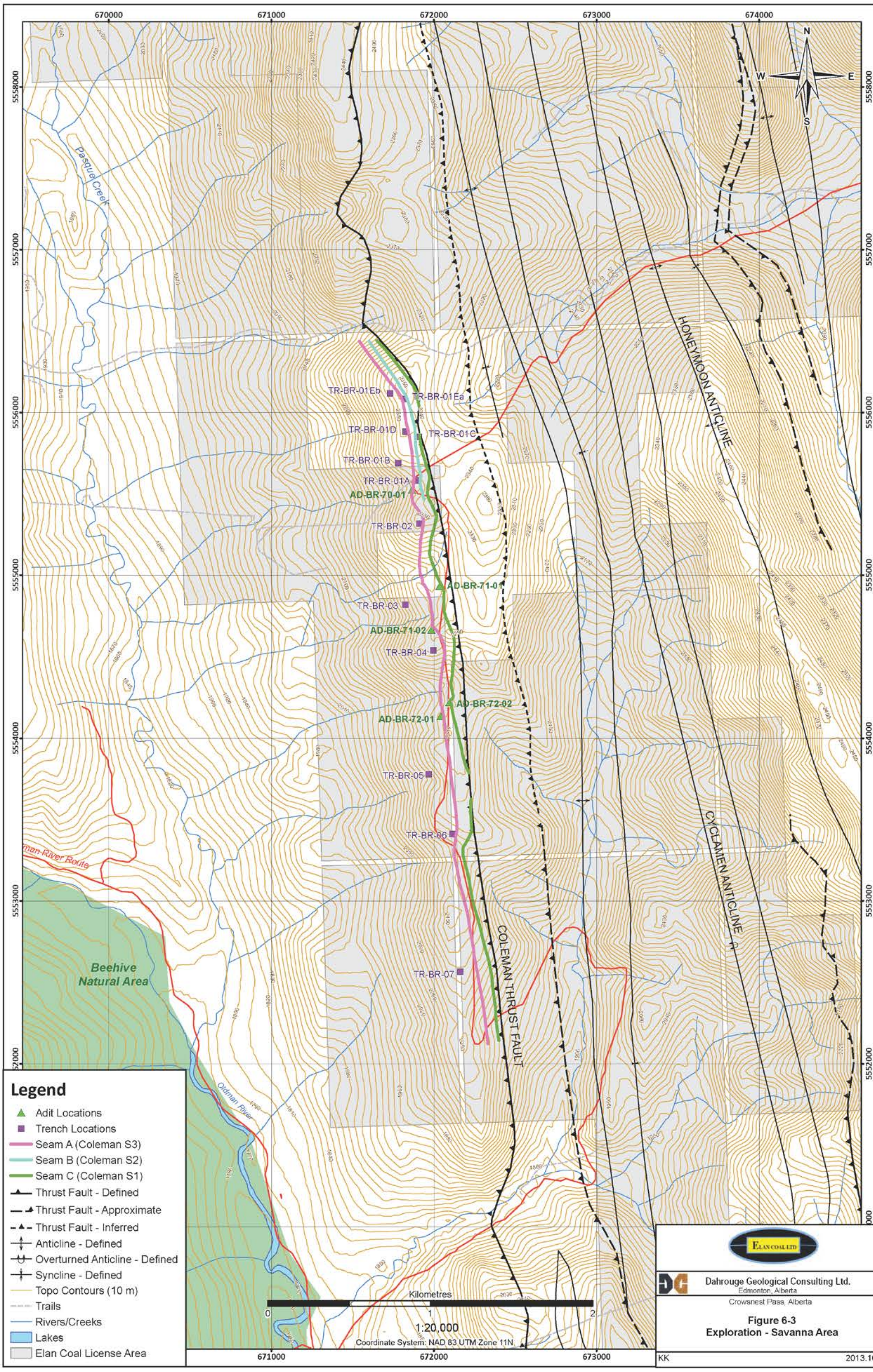


Figure 6-3 Exploration - Savanna Area

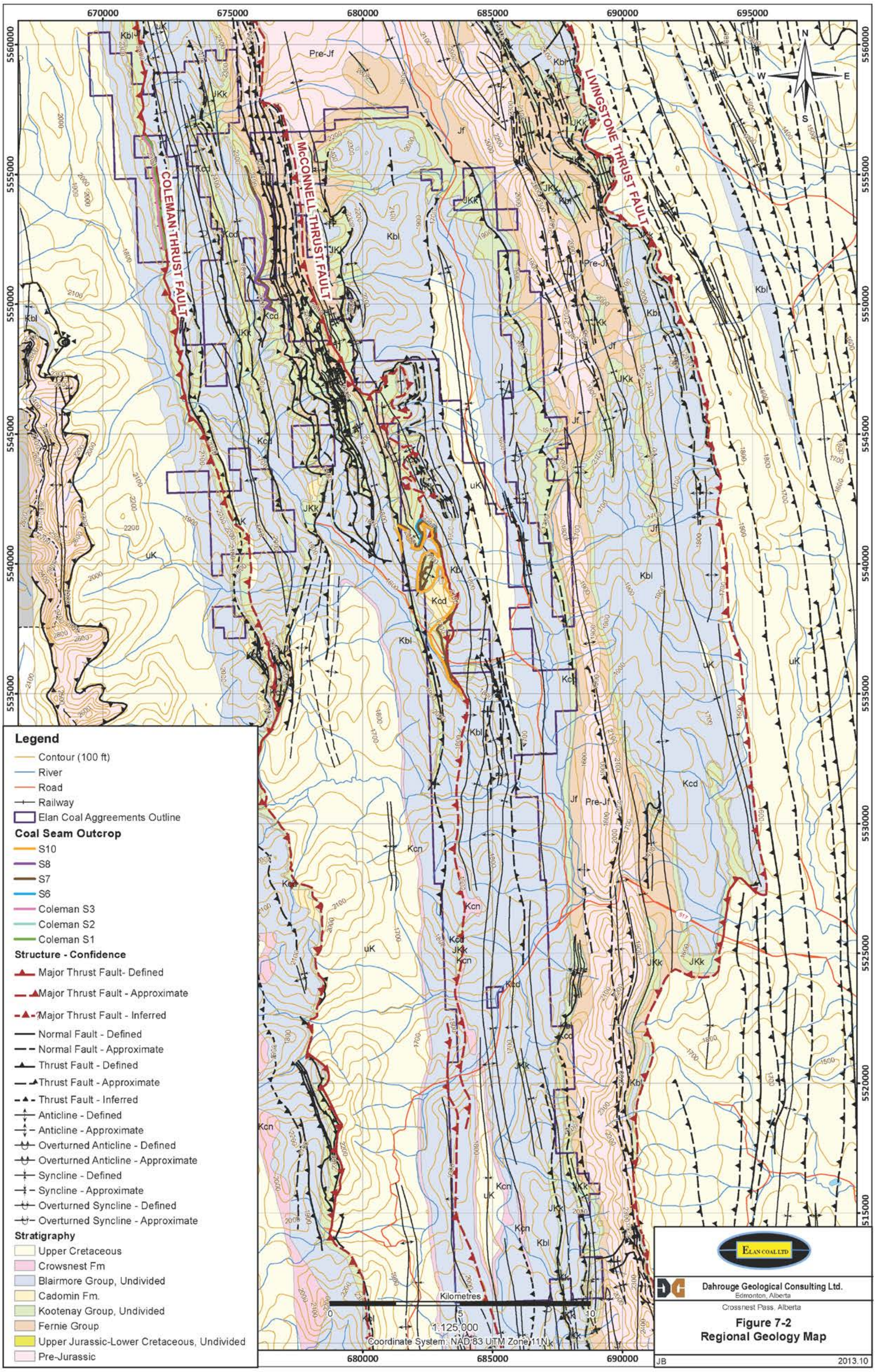


Figure 7-2 **Regional Geology**

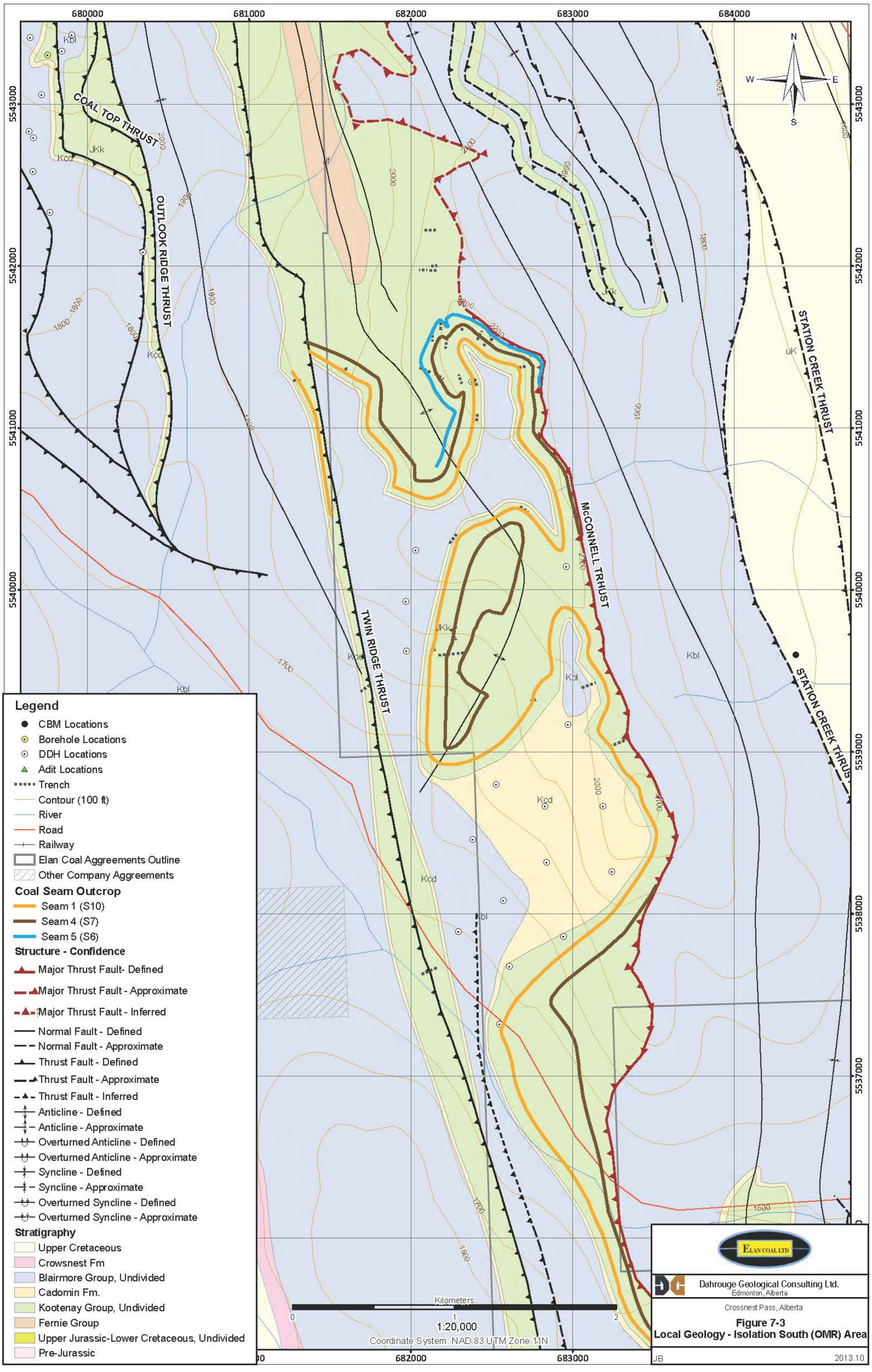


Figure 7-3 Local Geology - Isolation South (OMR) Area

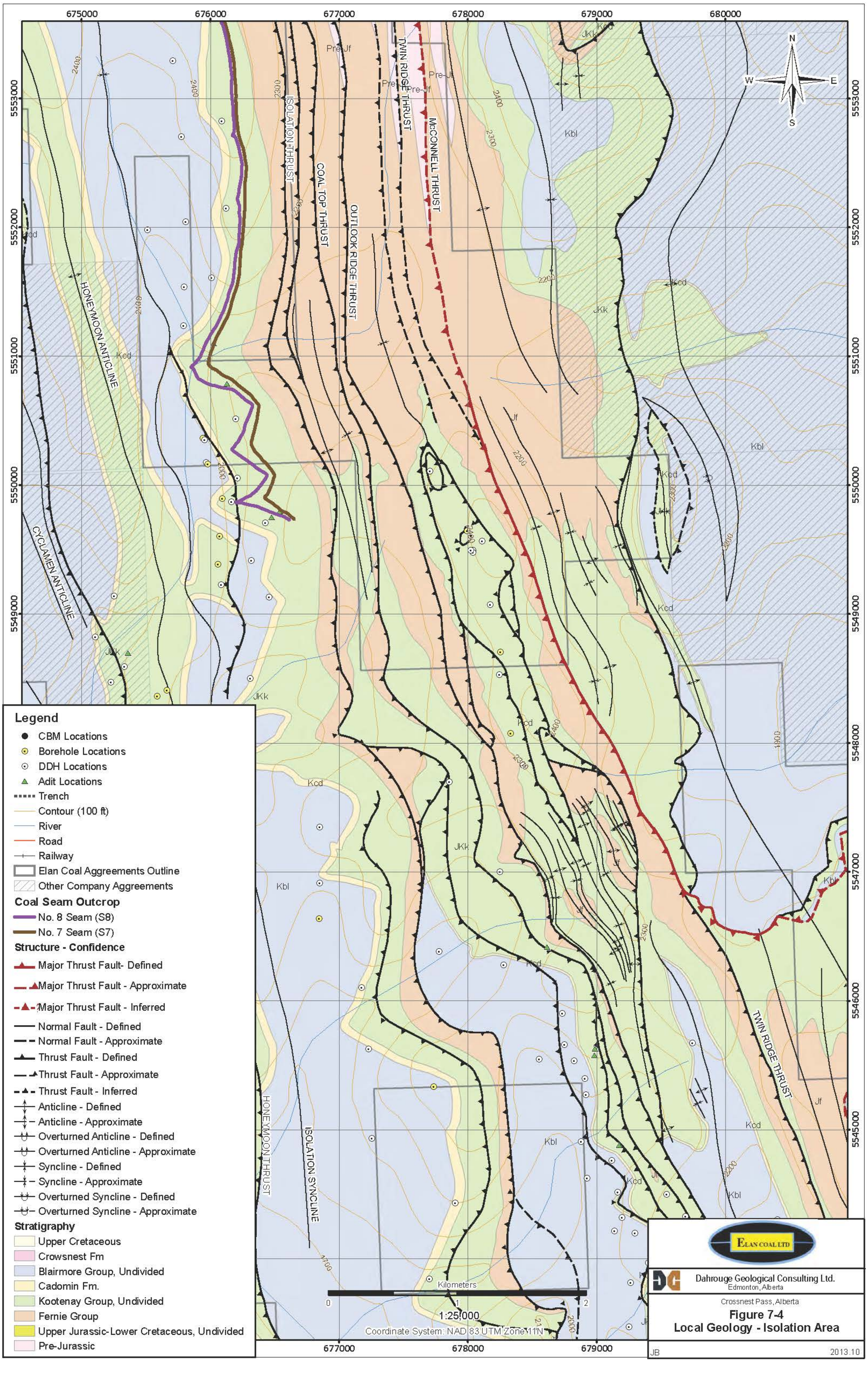


Figure 7-4 Local Geology – Isolation Area

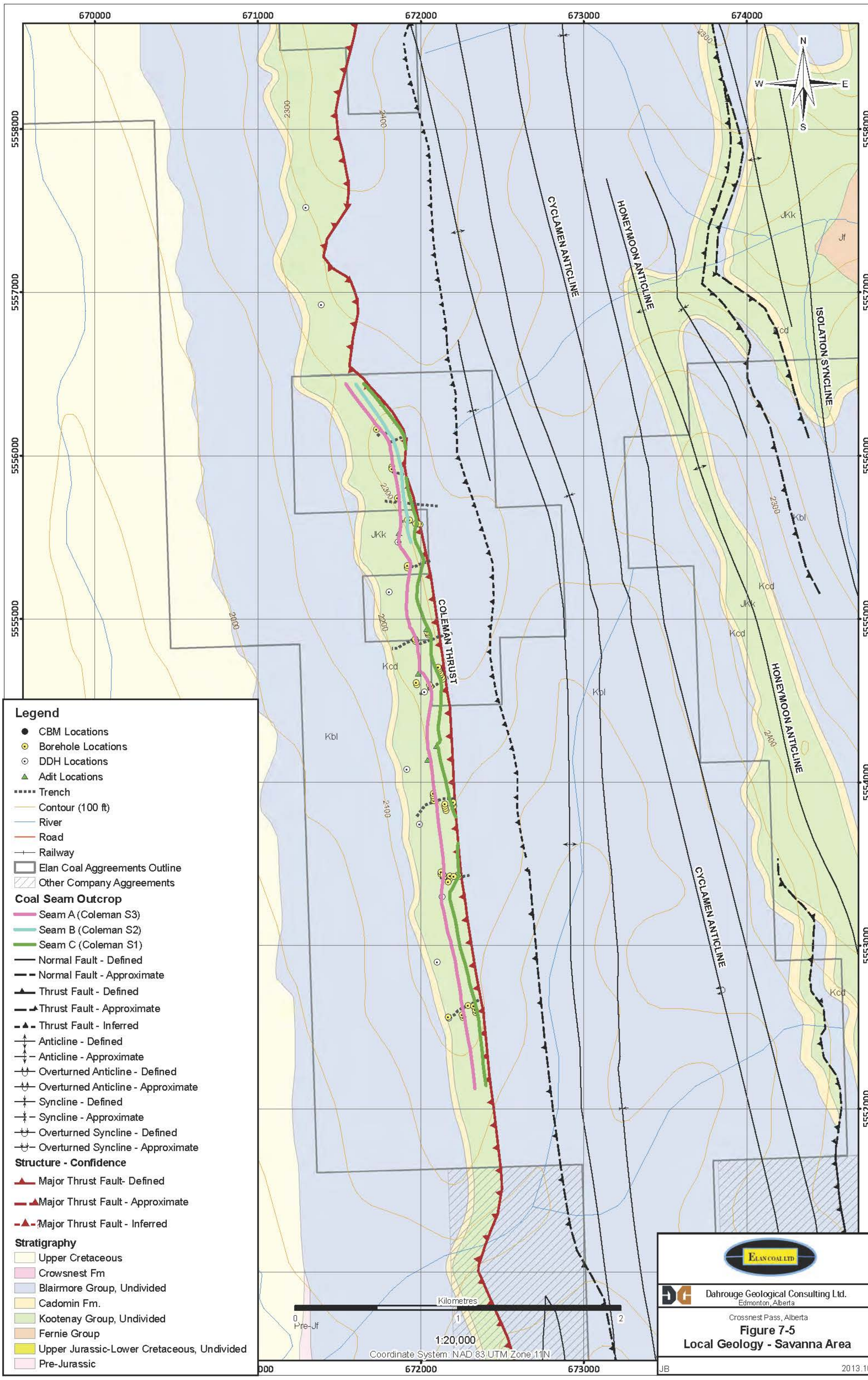


Figure 7-5 Local Geology – Savanna Area

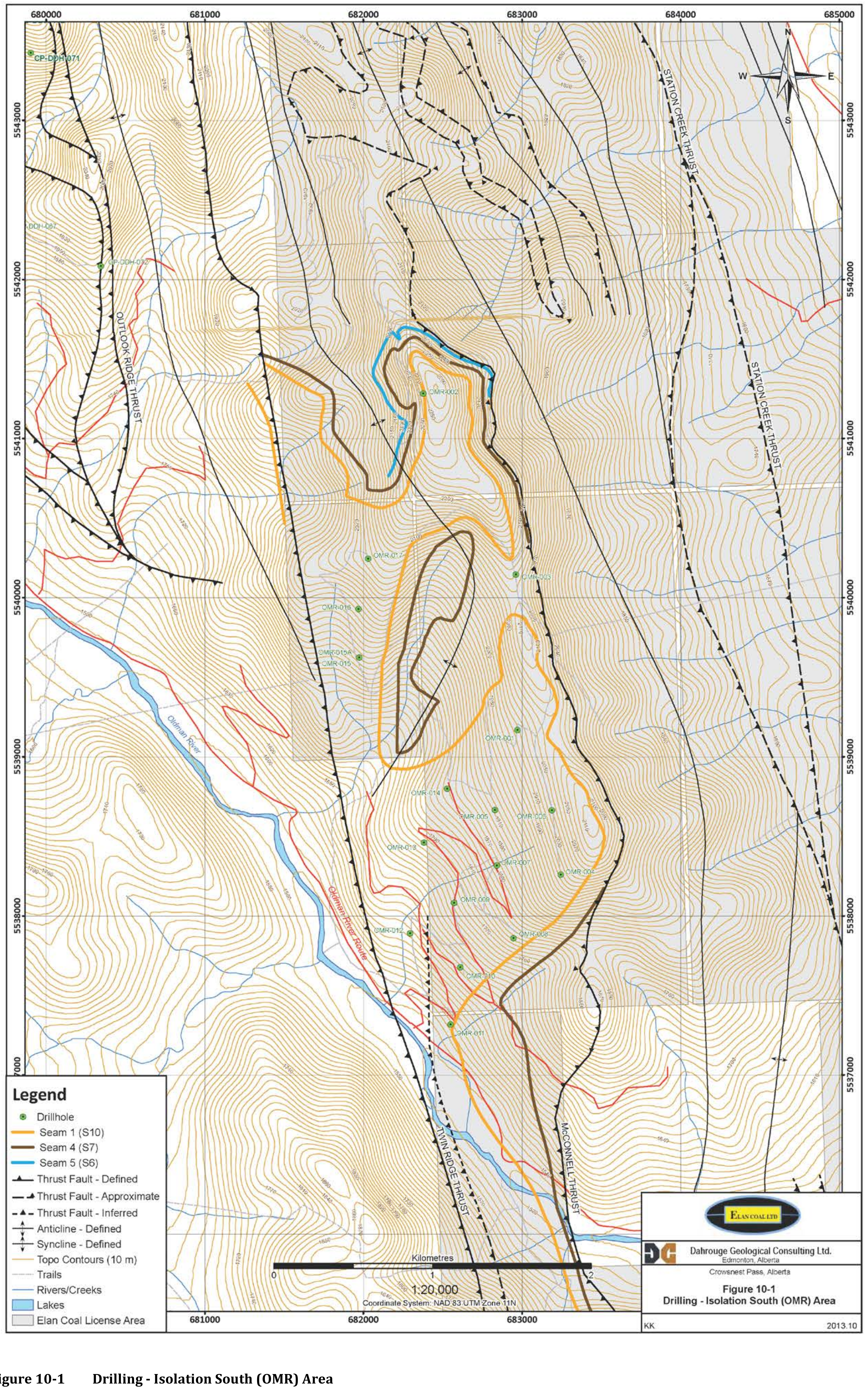


Figure 10-1 Drilling - Isolation South (OMR) Area

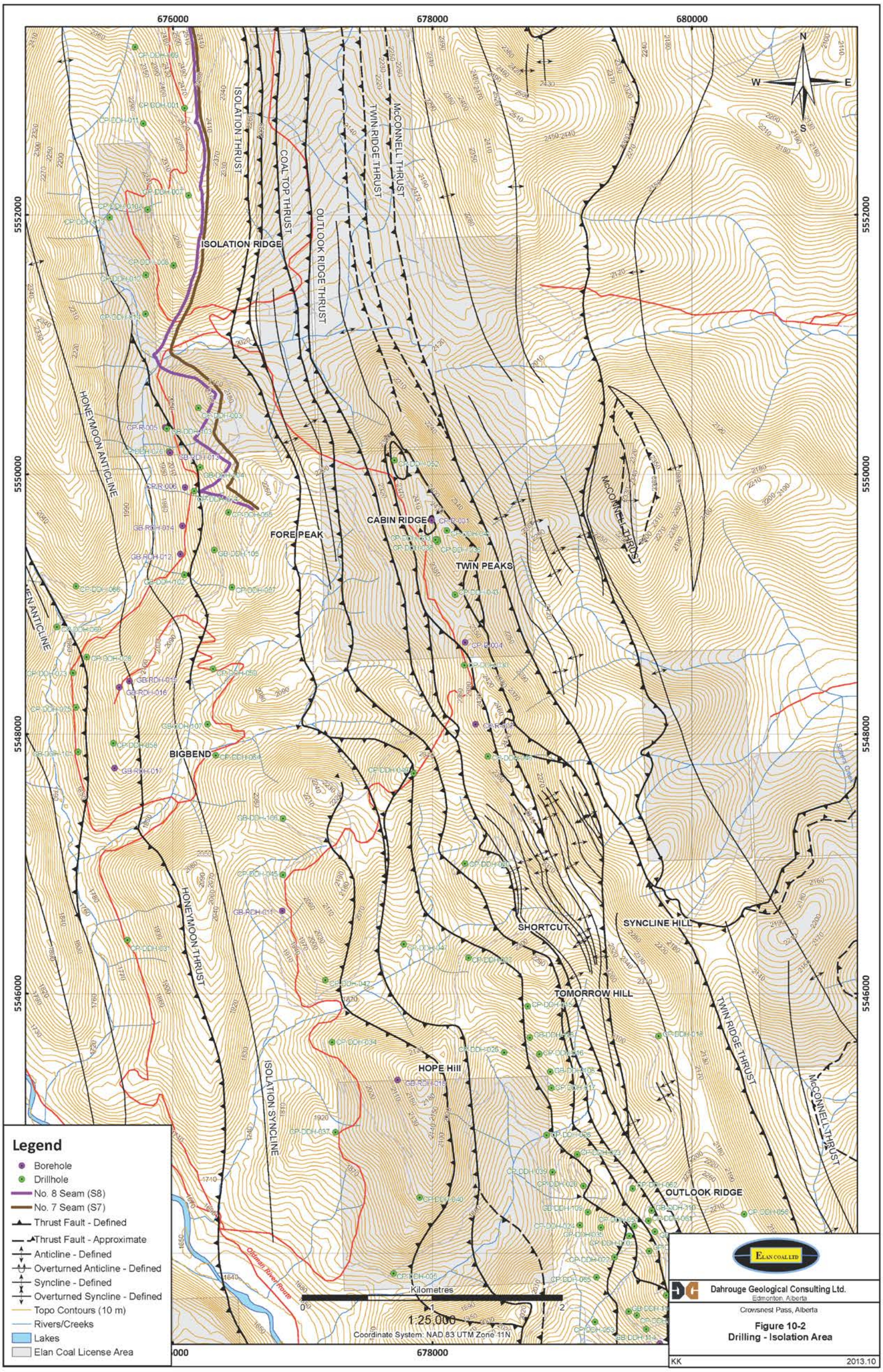


Figure 10-2 Drilling - Isolation Area

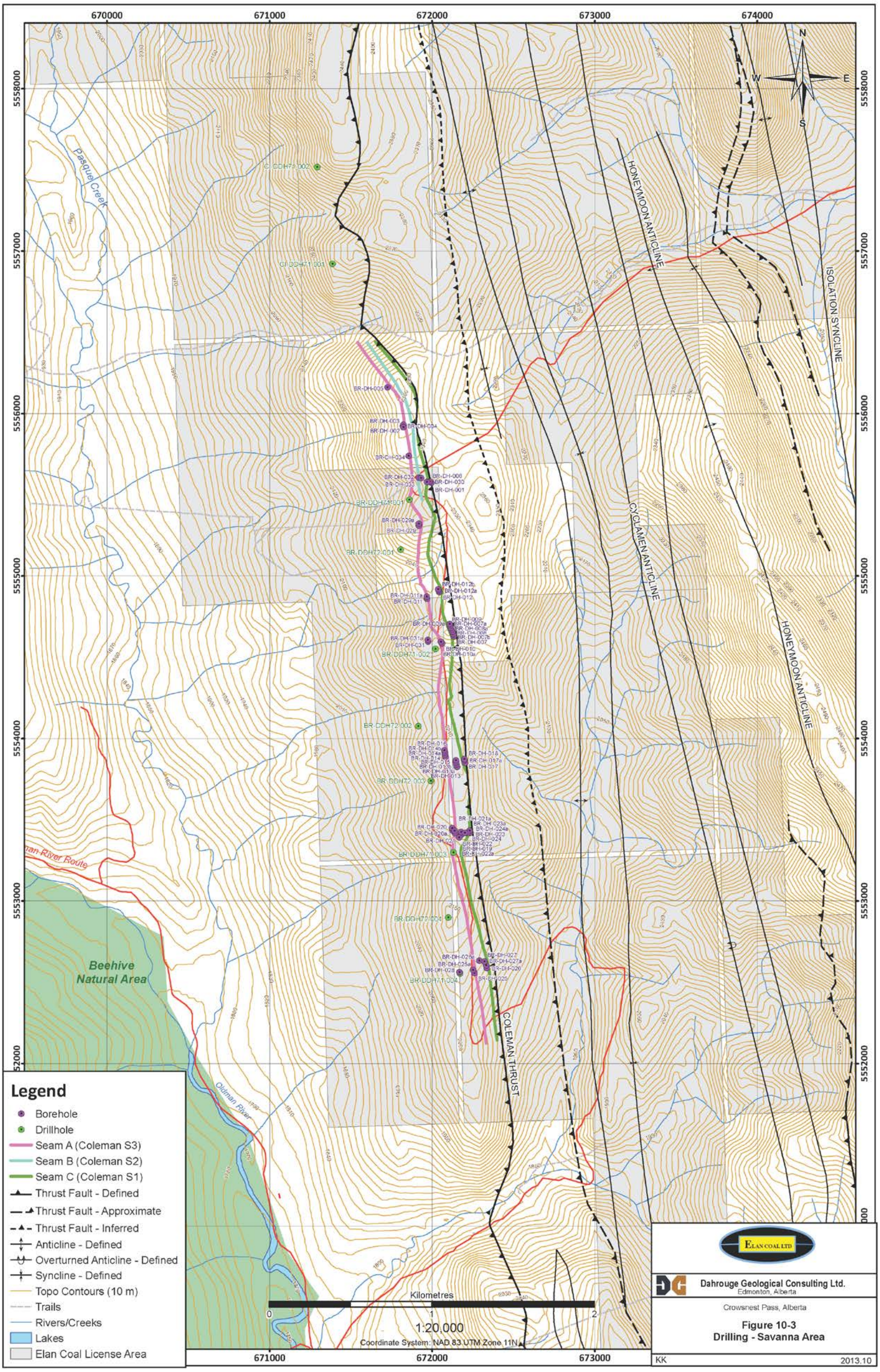
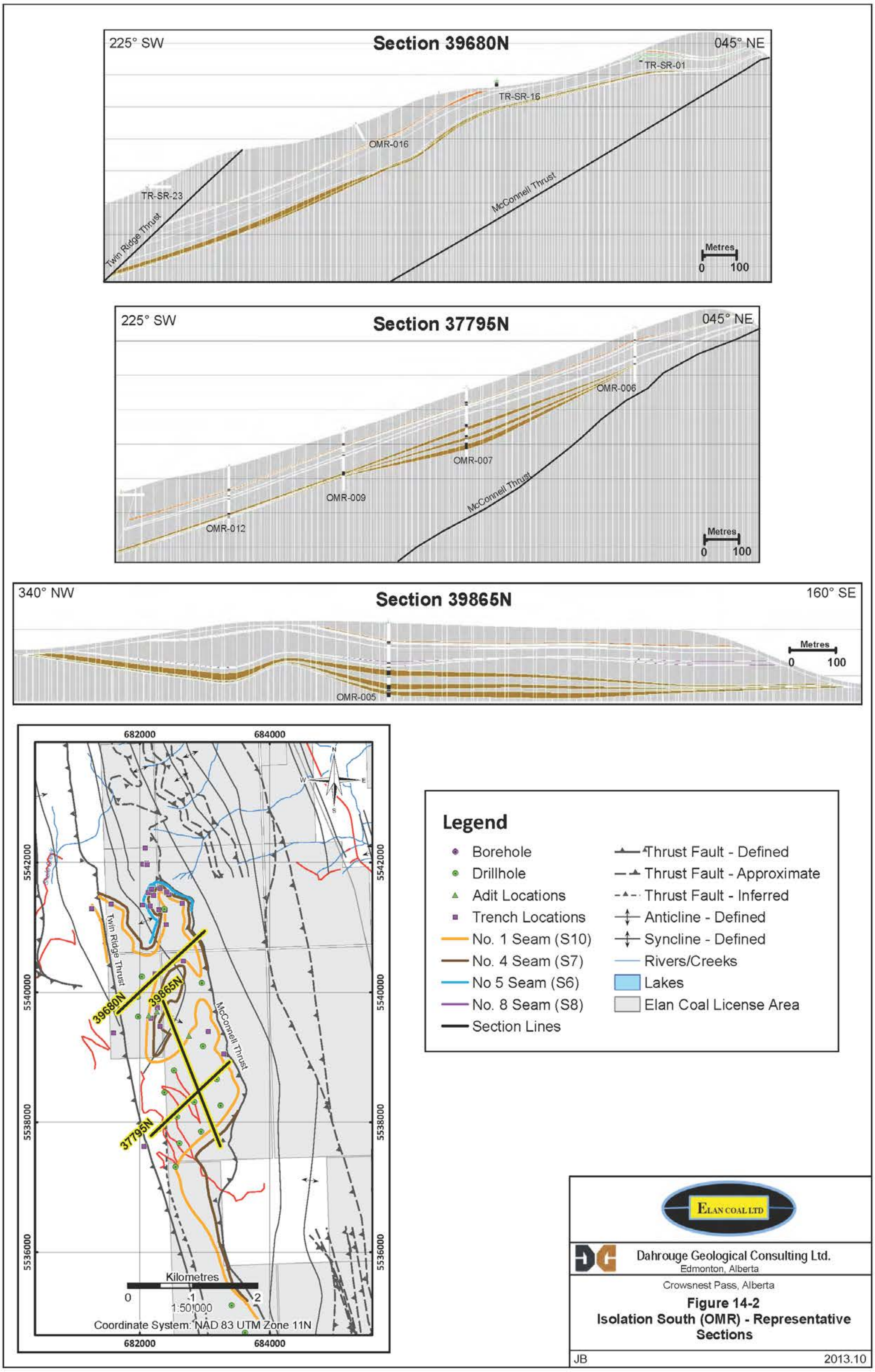


Figure 10-3 Drilling - Savanna Area



Figures 14-2 Isolation South (OMR) Representative Sections (Projected Drillholes)

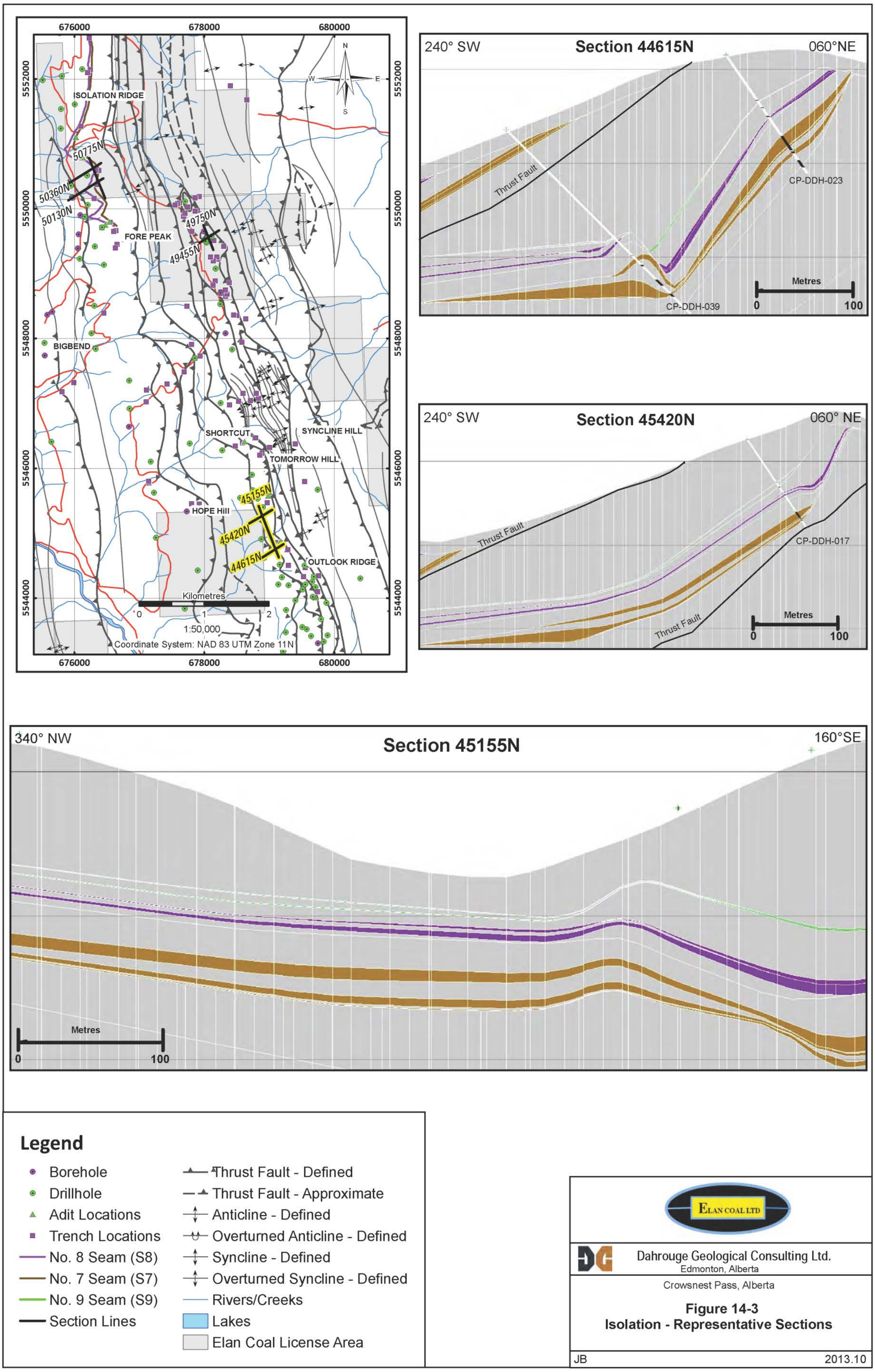


Figure 14-3 Isolation Representative Sections, Southern Sections (Projected Drillholes)

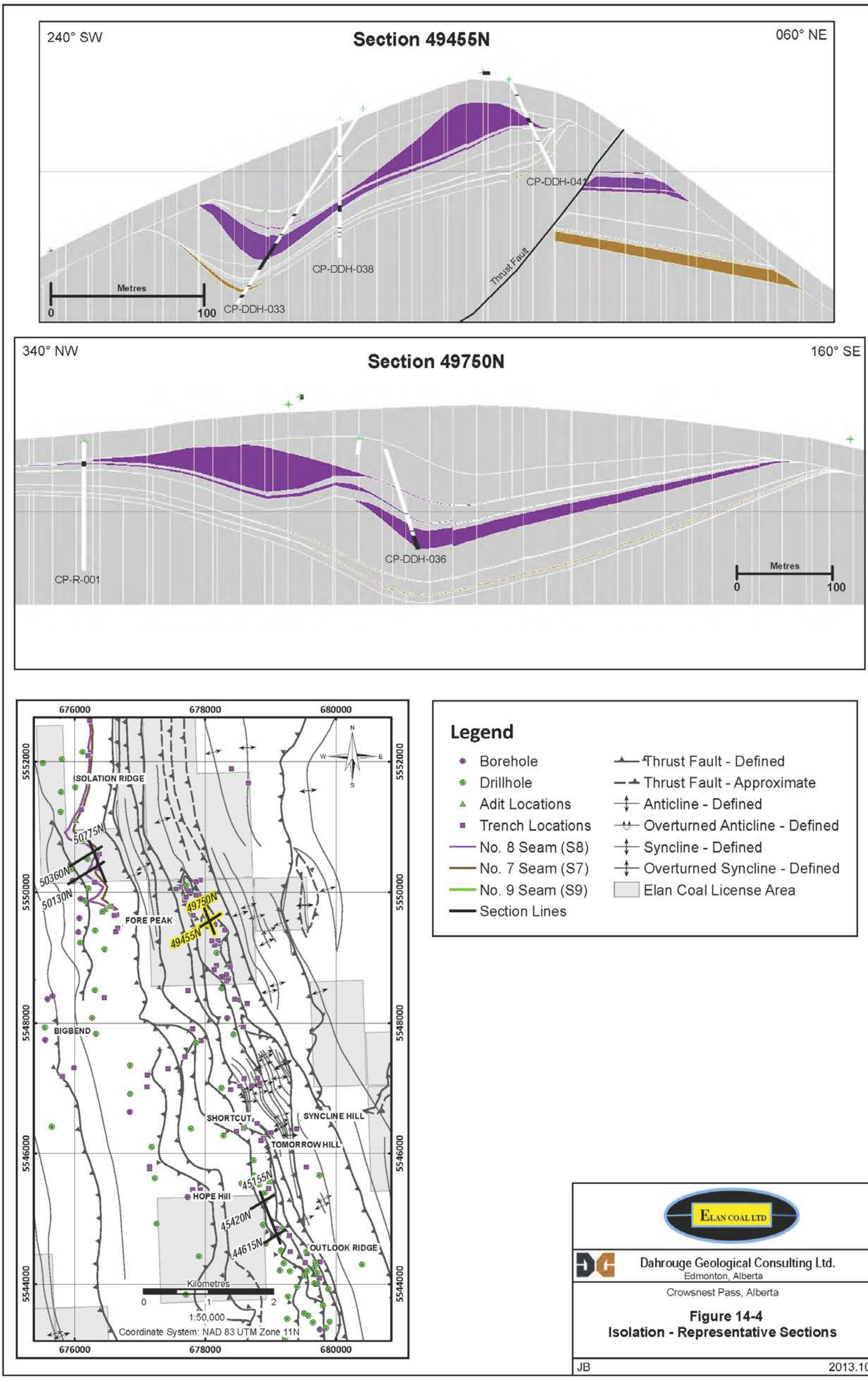


Figure 14-4 Isolation Representative Sections, Central Sections (Projected Drillholes)

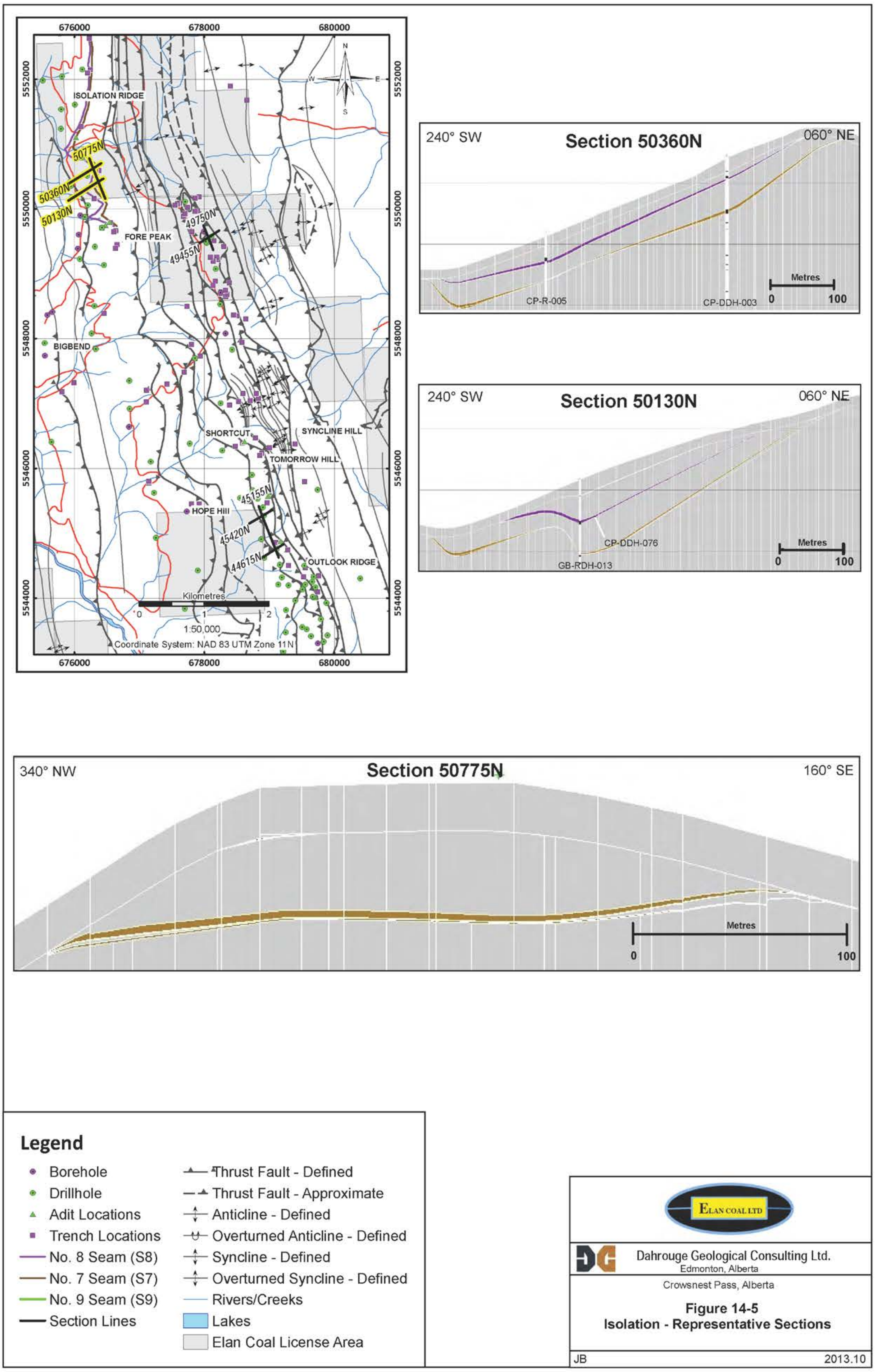


Figure 14-5 Isolation Representative Sections, Northern Sections (Projected Drillholes)

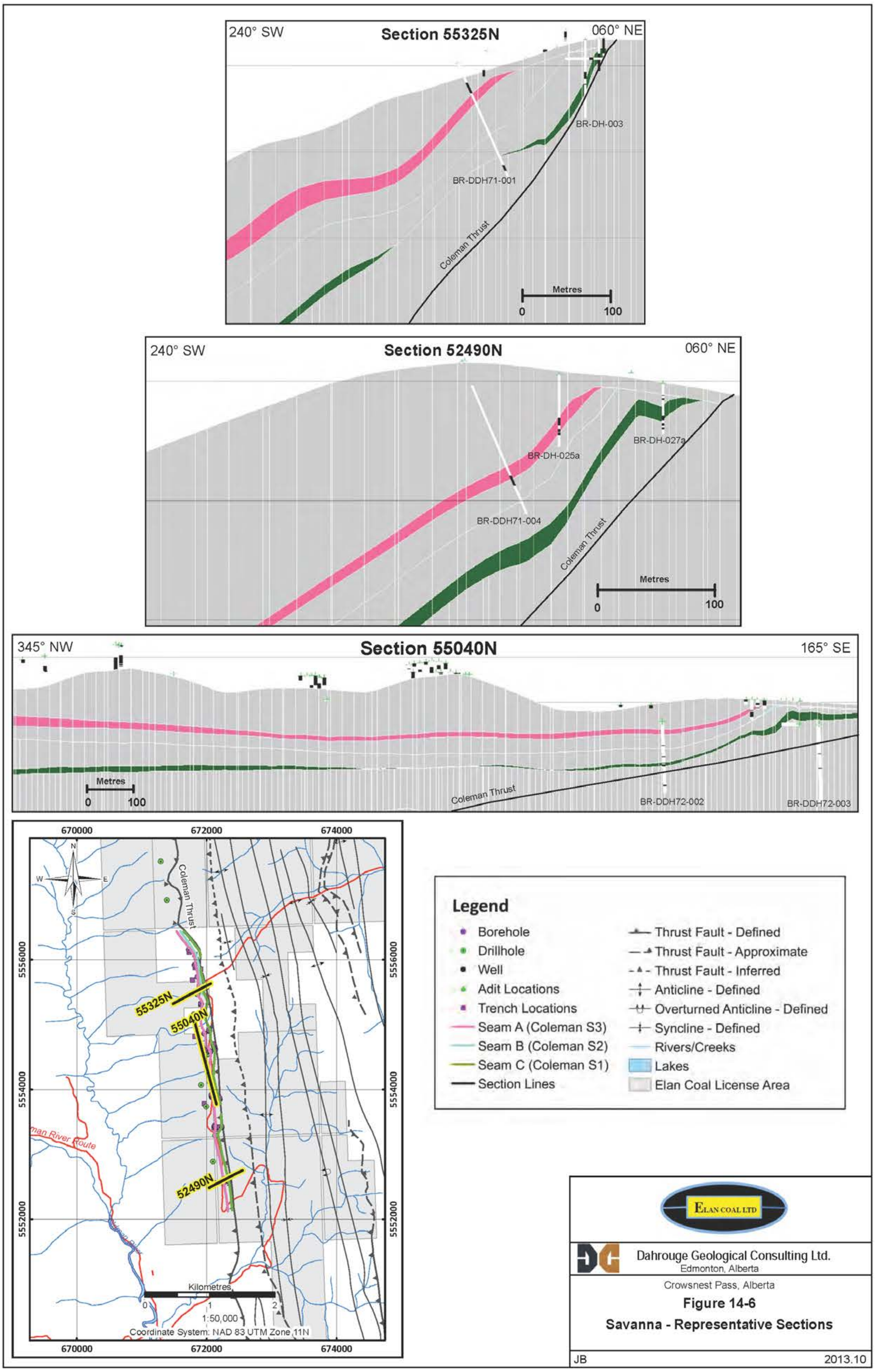


Figure 14-6 Savanna Representative Sections (Projected Drillholes)

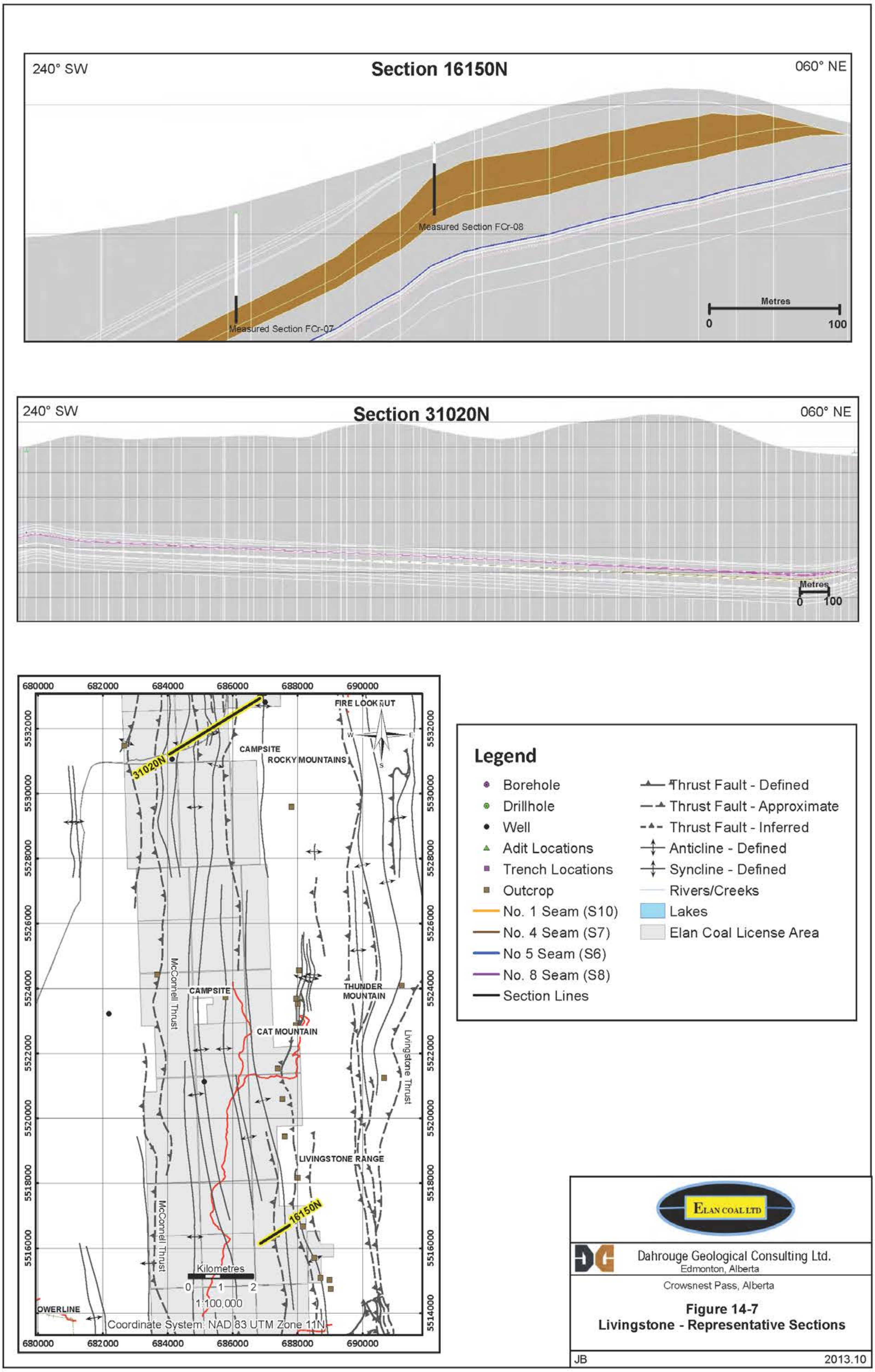


Figure 14-7 Linvingstone Representative Sections (Projected Drillholes)

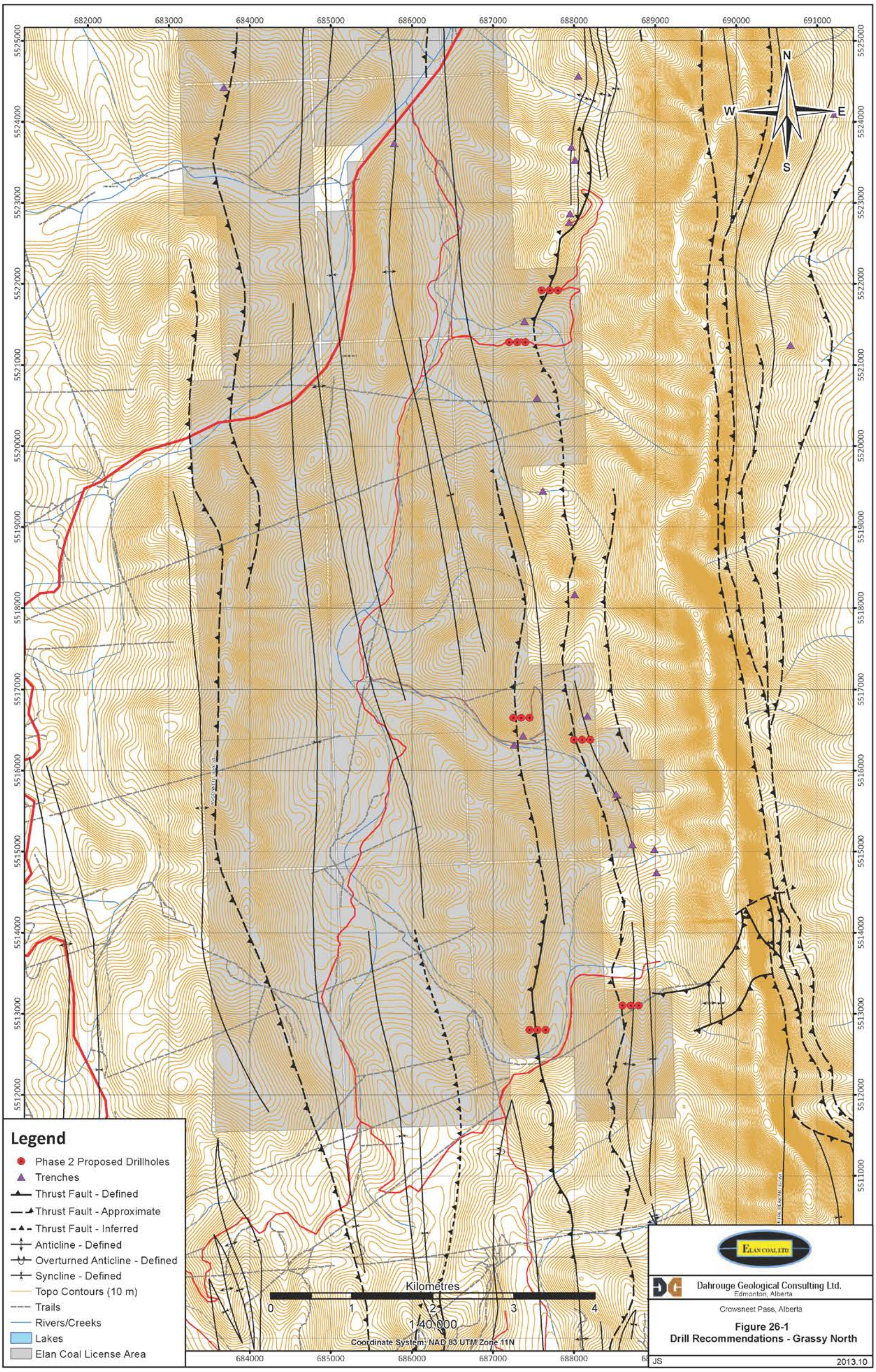


Figure 26-1 Drill Recommendations – Grassy North (Livingstone Trend)

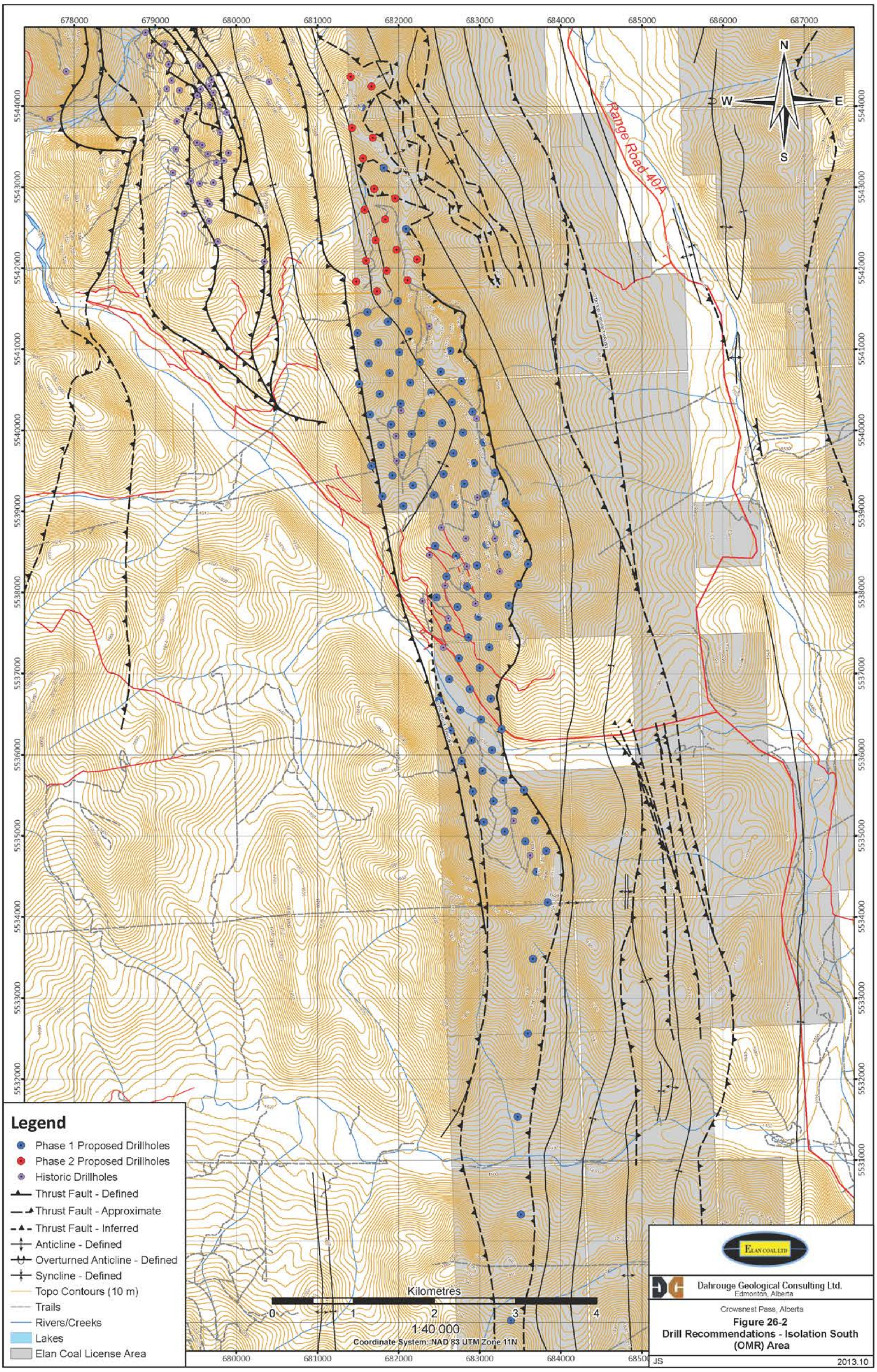


Figure 26-2 Drill Recommendations – Isolation South

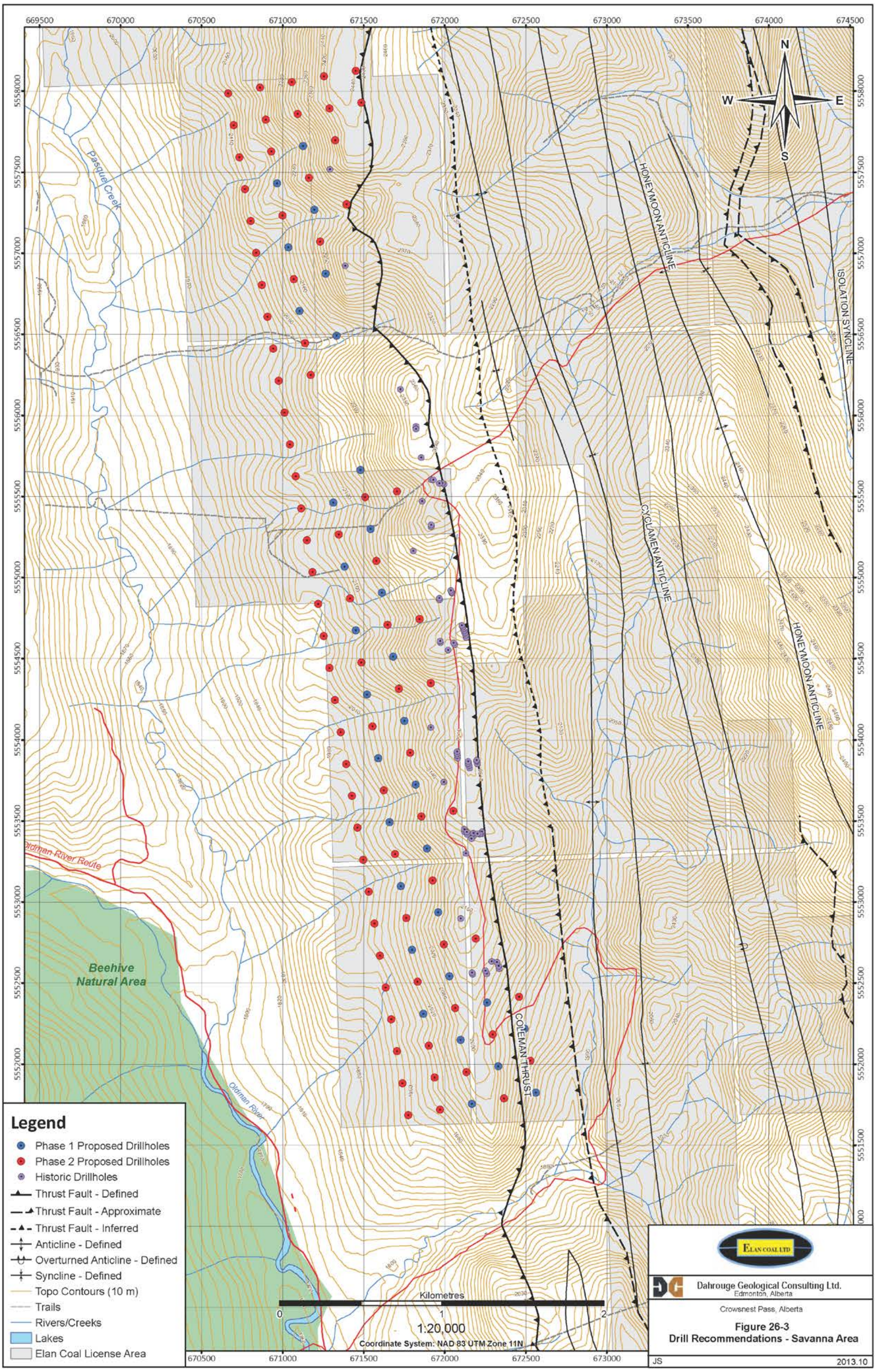


Figure 26-3 Drill Recommendations – Savanna Area