

# BC Geological Survey Assessment Report 1071



## COAL ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT:

TOTAL COST:

AUTHOR(S):

SIGNATURE(S):

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):

YEAR OF WORK:

PROPERTY NAME:

COAL LICENSE(S) AND/OR LEASES ON WHICH PHYSICAL WORK WAS DONE:

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:

MINING DIVISION:

NTS / BCGS:

LATITUDE: \_\_\_\_\_° \_\_\_\_\_', \_\_\_\_\_"

LONGITUDE: \_\_\_\_\_° \_\_\_\_\_', \_\_\_\_\_" (at centre of work)

UTM Zone: \_\_\_\_\_ EASTING: \_\_\_\_\_ NORTHING: \_\_\_\_\_

OWNER(S):

MAILING ADDRESS:

OPERATOR(S) [who paid for the work]:

MAILING ADDRESS:

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**)

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:

SUMMARY OF TYPES OF WORK IN THIS REPORT		EXTENT OF WORK (in metric units)	ON WHICH TENURES
GEOLOGICAL (scale, area)			
	Ground, mapping		
	Photo interpretation		
GEOPHYSICAL (line-kilometres)			
	Ground		
	(Specify types)		
	Airborne		
	(Specify types)		
	Borehole		
	Gamma, Resistivity,		
	Resistivity		
	Caliper		
	Deviation		
	Dip		
	Others (specify)		
DRILLING			
	Core		
	Non-Core		
SAMPLING AND ANALYSES			
	Proximate		
	Ultimate		
	Petrographic		
	Vitrinite reflectance		
	Coking		
	Wash tests		
PROSPECTING (scale/area)			
PREPARATORY/PHYSICAL			
Line/grid (km)			
Trench (number, metres)			
Bulk sample(s)			

Appendix A, Appendix G, and Table 8 remain confidential under the terms of the Coal Act Regulation and have been removed from the public version.

[https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/251\\_2004](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/251_2004)

# 2020 Rocky Creek Coal Assessment Report

Peace River Land District and Liard Mining Division

Northeast BC, Canada

## Coal License Numbers

1071915	1071920	1071925	1071934	1071941
1071916	1071921	1071927	1071936	1071942
1071917	1071922	1071928	1080729	1080728
1071918	1071923	1071931	1071937	1080730
1071919	1071924	1071932	1071940	1080731

BCGS Map No.: 093P/031, 093P/032, 093P/021, 093P/022, 093P/023

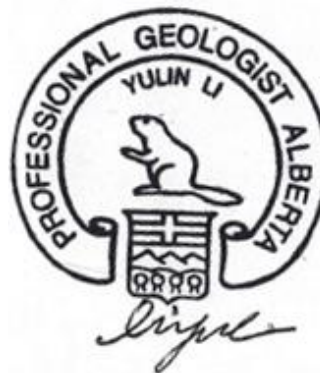
UTM NAD83 Zone 10: Easting : 571307 - 592139

Northing : 6135413 - 6119575

Latitude: 55°12'58.72"N - 55°21'29.46"N

Longitude: 121°52'35.47"W - 121°33'3.07"W

Prepared for: Mineral Titles Branch, Province of British Columbia



Prepared by: Vincent Li, P.Eng., P. Geo. Yulin Li, P. Geol.

**CTI Plus Resources Ltd.**

2021.05.25



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# **1 INTRODUCTION**

## **1.1 Ownership and Property Description**

CTI Plus Resources Ltd. (CTI Plus) wholly owns the Rocky Creek coal property, that is composed of 25 coal tenures, licensed in October 2019 and January 2020.

The Rocky Creek coal property is separated into the West Rocky Creek and East Rocky Creek by the Sukunka River (Figure 1). The property of West Rocky Creek is grouped as Northwest Block (NW Block) and Southeast Block (SE Block) respectively. The property of East Rocky Creek is named as the East Block (E Block) in this report.

The coal licenses of CTI Plus Rocky Creek property are summarized in Table 1, that the aggregate area is 10981.22 ha. CTI Plus' 2020 coal exploration drilling only occurred within 11 licenses of NW Block and SE Block.

## **1.2 Location and Access**

The Rocky Creek coal property is located approximately 65 km south of Chetwynd, northeast BC. The location of the property is depicted as Figure 2, within the map-area 093P/031-032 and 093P/021-023 of Canada's National Topographic System. The coordinates at the centre of the property are below:

West Rocky Creek: UTM Zone 10, NAD 83

NW Block: 574164 (Easting)  
6127316 (Northing)

SE Block: 579518 (Easting)  
6122249 (Northing)

East Rocky Creek: UTM Zone 10, NAD 83

East Block: 586021 (Easting)  
6127864 (Northing)

Highways 29 (29 HYW) and 97 (97 HYW) intersect in the town of Chetwynd. Highway 97 connects the Chetwynd to Prince George and Dawson Creek. Highway 29 connects Tumbler Ridge and Hudson's Hope. A rail line branches off in three directions

from Chetwynd, northward to Fort St. John, eastward to Dawson Creek, and westward through the Rockies to Prince George.

The property of NW Block is accessed at 8.0 km on the Jilg Road via the road traffic from the town of Chetwynd to south 23.5 km along 29 HYW, then turning to the Sukunka Forest Service Road (FSR) continually south forward approximately 16.5 km, then turning west on the Lower Burnt Road 15.5 km. The SE Block is accessed at 3 km on the Gulf Creek Road which is connected at 7.65 km of the Rocky Creek FSR from Sukunka FSR at 28 km. The E Block is accessed at approximately 19.5 km on Smokehouse Road which runs from the east of the property and pulling at 45.5 km of 29 HYW.

### **1.3 Physiography**

CTI Plus Rocky Creek coal property is situated within the eastern foothills of the Rocky Mountains. The regional topography is comprised of the low, rounded and/or belt mountains and wide valleys dominated by a series of northeast to southwest elongated ridges. There are three major water courses (Figure 1). The Sukunka River flows between the West Rocky Creek property and East Rocky Creek property from South to North. The Lower Burnt River flows through the north side of the NW Block from west to east and then joins into the Sukunka River. The third major water course, namely the Rocky Creek, flows through the West Rocky Creek property from southwest to northeast and then joins into Sukunka River.

### **1.4 Climate**

The climate in the region is characterized by a long, cold winter, a warm spring, and a short-cool summer as the influences from the Rocky Mountains, the Pacific warm current, and the dry cold northern polar air.

The average monthly temperature changes in the year are from -5°C to 22.2°C. The highest temperature recorded in history is 33.8°C and the lowest temperature of the year was -52.0°C. The average annual rainfall in the area is 306.4 mm, and the snowfall is 1.77 m.

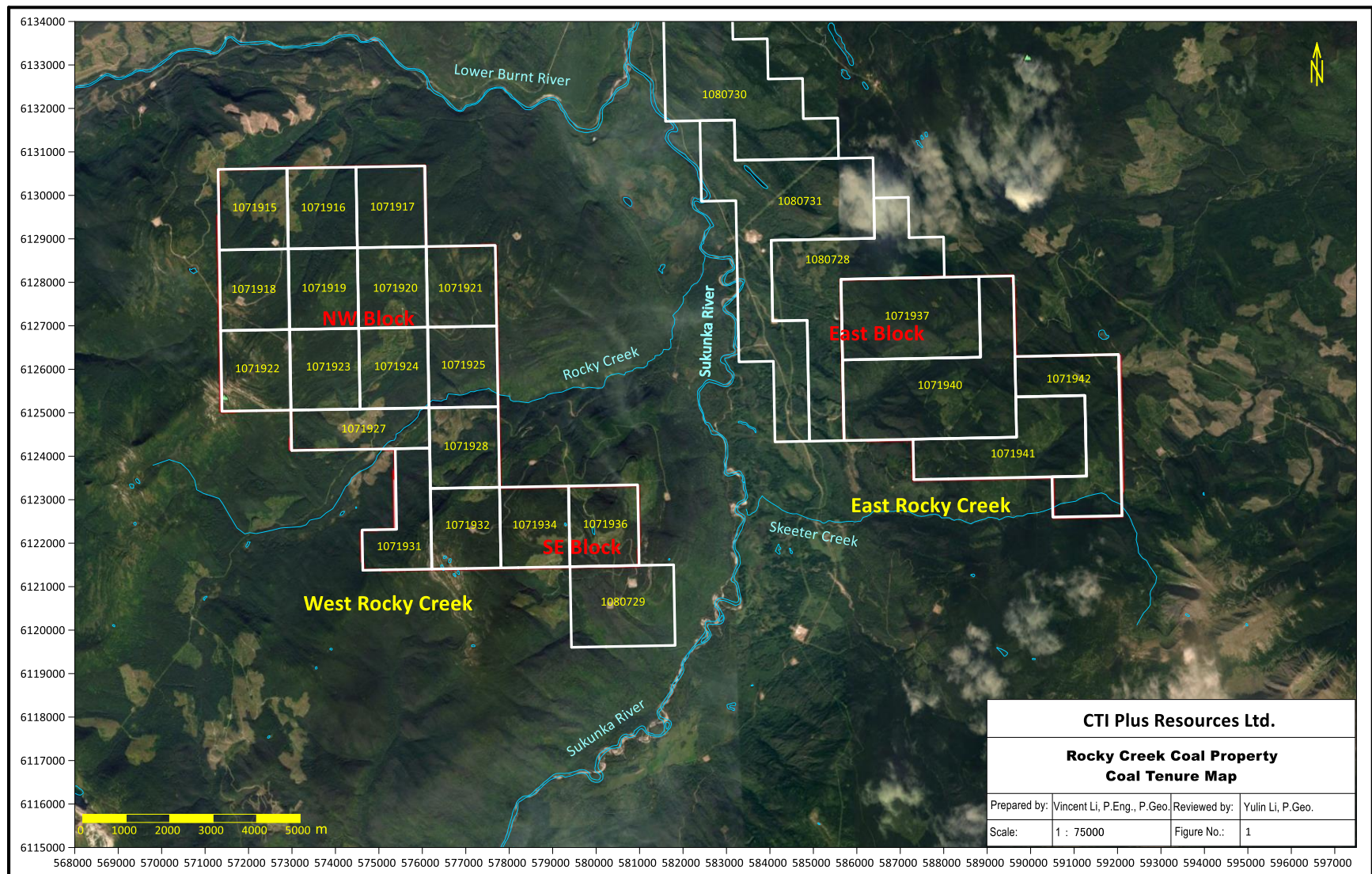


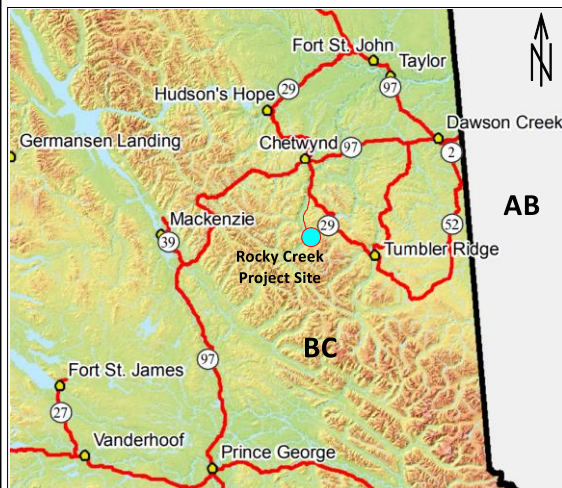
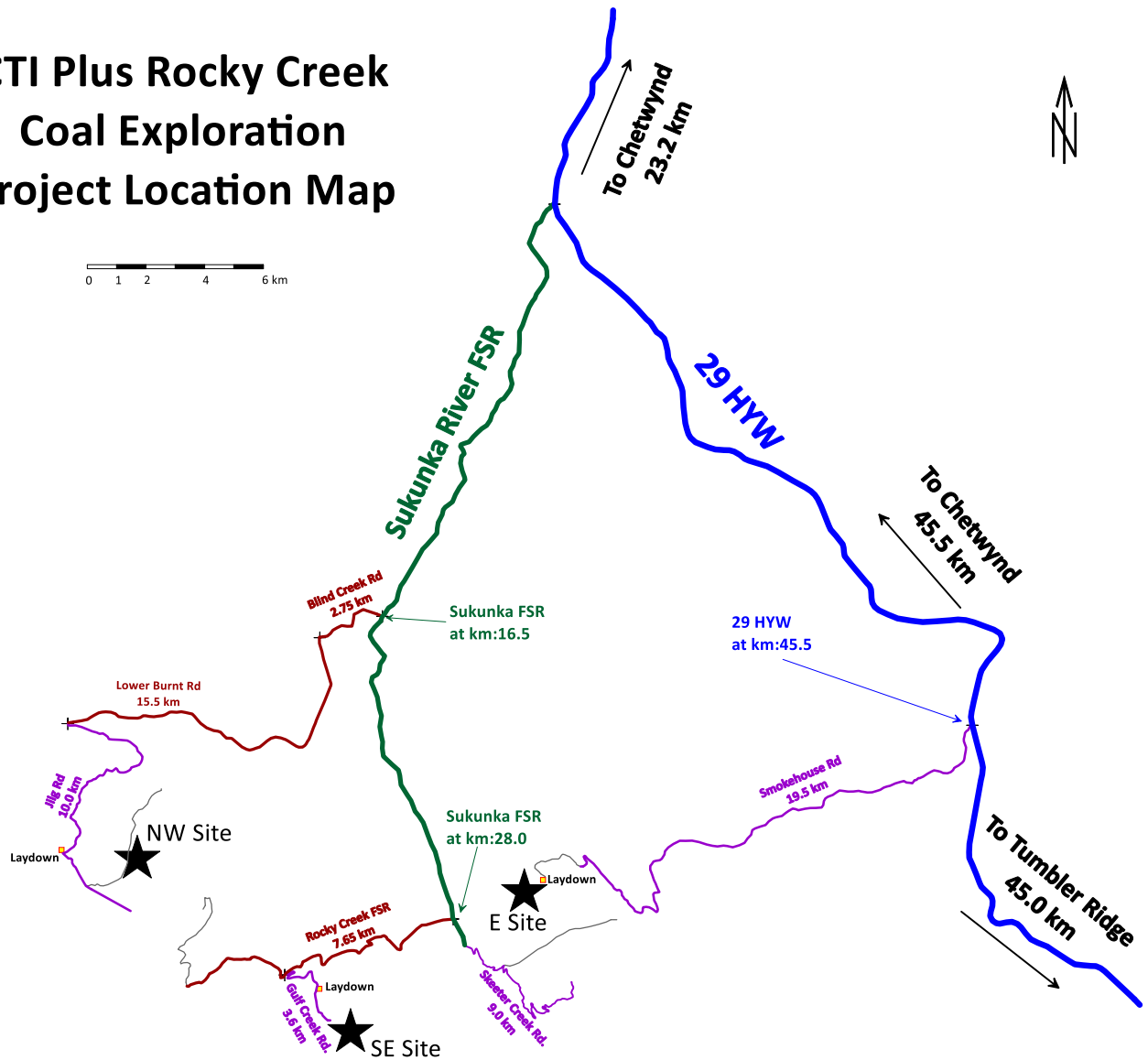
Table 1 Summary of Coal Tenures at West and East Rocky Creek

Area	Block	Title Number	Owner	Title Type	Title Sub Type	Issue Date	Good To Date	Status	Area (ha)	2020 Exploration Program (Yes/No)
West Rocky Creek	NW Block	1071915	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.59	Y
		1071916	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.59	Y
		1071917	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.59	N
		1071918	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.72	Y
		1071919	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.72	Y
		1071920	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.71	Y
		1071921	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.71	N
		1071922	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.84	Y
		1071923	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.84	Y
		1071924	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.84	N
		1071925	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.84	N
		1071927	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.93	Y
		1071928	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	294.96	Y
		1071931	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	295.07	N
		1071932	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	295.09	N
	SE Block	1071934	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	295.09	Y
		1071936	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	295.09	Y
		1080729	286671 (100%)	Coal	License	2021/JAN/25	2022/JAN/25	GOOD	442.83	N
East Rocky Creek	E Block	1071937	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	589.56	N
		1071940	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	884.64	N
		1071941	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	516.21	N
		1071942	286671 (100%)	Coal	License	2019/OCT/17	2021/OCT/17	PROTECTED	516.16	N
		1080728	286671 (100%)	Coal	License	2021/JAN/25	2022/JAN/25	GOOD	810.54	N
		1080730	286671 (100%)	Coal	License	2021/JAN/25	2022/JAN/25	GOOD	1030.39	N
		1080731	286671 (100%)	Coal	License	2021/JAN/25	2022/JAN/25	GOOD	1178.67	N
Total									10981.22	



# CTI Plus Rocky Creek Coal Exploration Project Location Map

0 1 2 4 6 km



CTI Plus Resources Ltd.			
Rocky Creek Coal Property 2020 Exploration Project Location Map			
Prepared by:	Vincent Li, P.Eng., P.Geo.	Reviewed by:	Yulin Li, P.Geo.
Scale:	1 : 200,000	Figure No.:	2



## **1.5 Exploration Program of 2020**

The 2020 exploration program was intended to validate the historical exploratory data, and gather the sufficient additional geological data to confirm, identify and evaluate on the resource of any further exploration, and define the coal resources for the opportunity of the coal mine development.

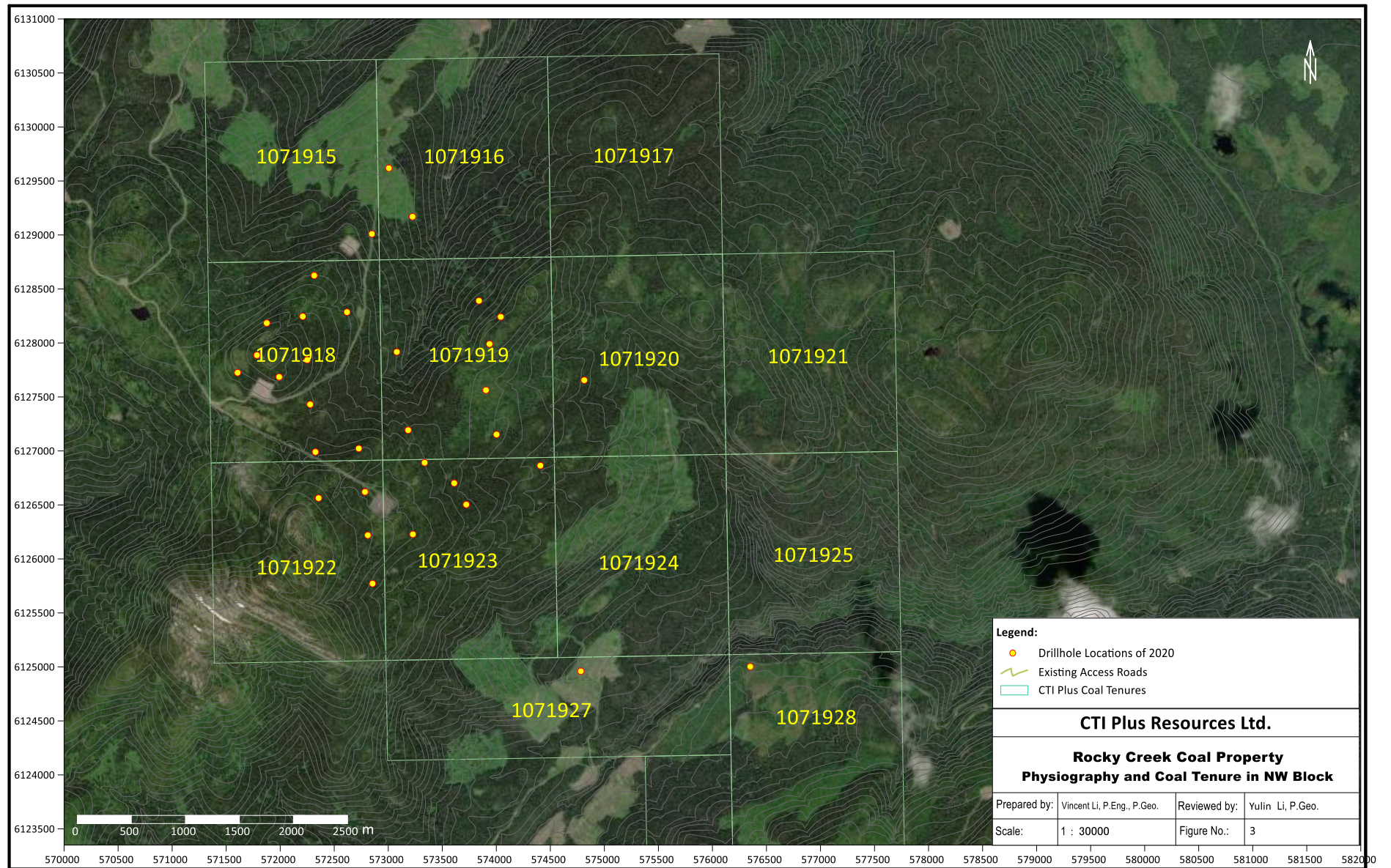
The coal deposit in the exploration area is considered as the “Moderate” of the coal geology type under the guidelines of GSC Paper 88-21, which suggests that a distance of 0 – 450 m, 450 – 900 m and 900 – 2400 m from nearest “data point” is needed to satisfy the requirements of a structurally Measured, Indicated and Inferred classification, as well increasing the “data point” density is applied to increase confidence in coal zone correlations and local geological structures across the deposit.

Historical drilling data indicate that the Lower Gething Formation contains the coking coal in the subject area.

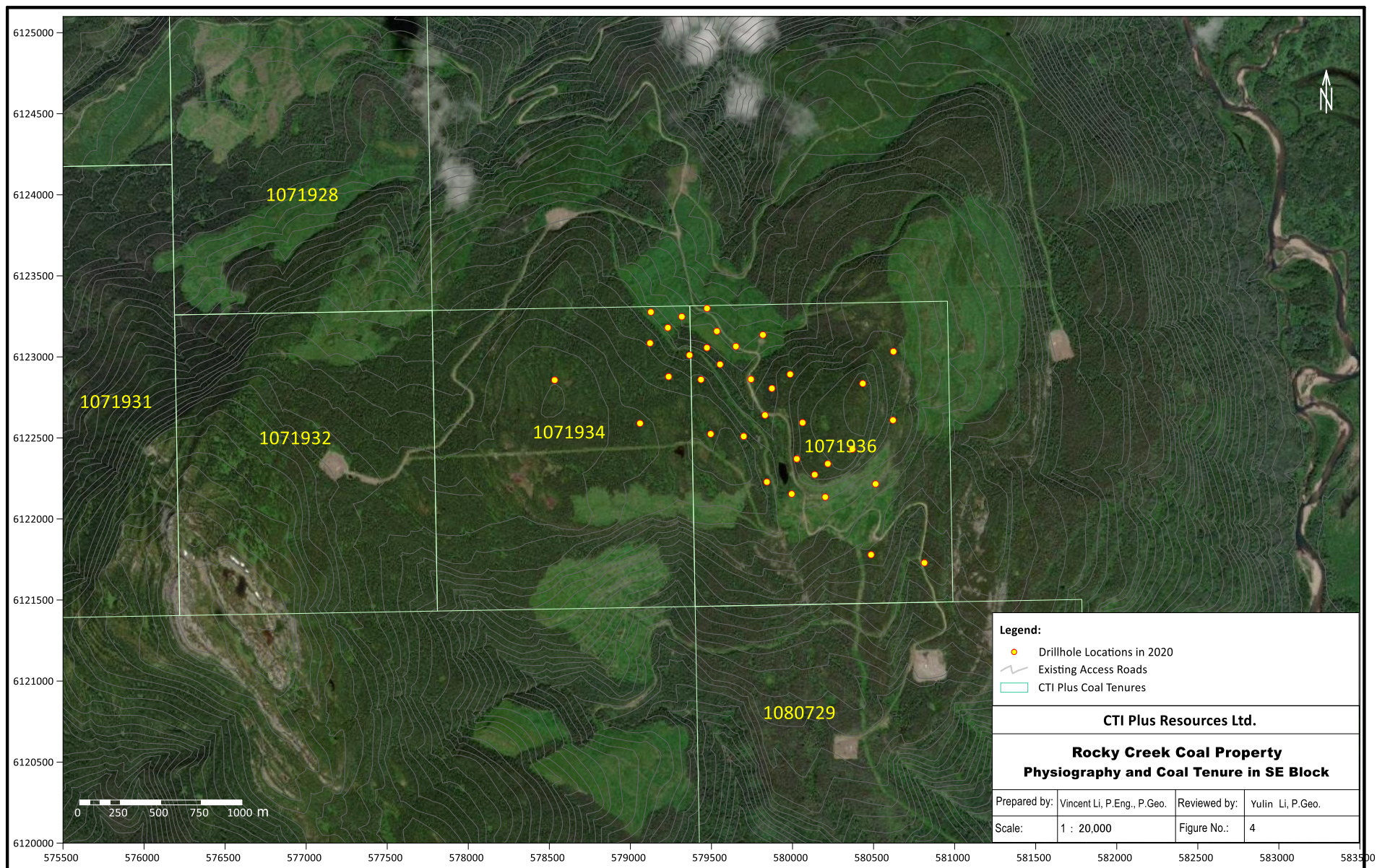
Exploration works were done by CTI Plus during the year 2020, that focused on the potential resource areas in the NW Block and SE Block of West Rocky Creek property, to expand on historical drilling data, refine geological structure interpretation and coal seam correlation, increase the confidence onto coal resource, and develop 3D geology models. Figure 3 and 4 illustrate the local physiography and coal tenures where the exploration drilling was occurred in 2020.

The 2020 exploration comprised 25 fully cored holes and eight (8) rotary holes with a total of 5,614.15 m in the NW Block, and 25 fully cored holes and 11 rotary holes with a total of 5,536.46 m in the SE Block. Nine (9) holes were selected for the hydrogeological testing and groundwater monitoring well installation. Acoustic and Optical Televiewer’s drillhole logging were completed from 11 selected open-holes in the NW and SE Block.

All of the exploration in 2020 were completed under the supervision of the authors.







## **2 HISTORICAL EXPLORATION**

Extensive coal exploration was carried out in 1970's and 1980's in the area including CTI Plus' coal licenses. Total of 19 diamond drillholes were drilled historically, among them, 12 drillholes are located in current CTI Plus' coal licenses.

In 1979 BP Exploration Canada Ltd. (BP) initiated a helicopter supported and detailed field mapping program. During this program over 500 outcrop stations were plotted and described, and 1:10,000 scale surface geological map was produced. In 1980, a helicopter supported field mapping, trenching and drilling program again were executed with over 1,000 outcrop stations being visited and described, five diamond drillholes were completed for a total of 1,400 m core, and 23 coal seam outcrops were measured and sampled. From May to August in 1981, BP carried out another helicopter supported coal exploration program. The exploration program was conducted as a mapping and core drilling program, including drill site preparation and reclamation, drilling, geophysical logging, and coal quality analysis. Over 150 outcrop stations were plotted and described, ten trenches were dug, measured, described and sampled, and fourteen diamond drillholes were completed with total of 2800 m core.

As the results from historical exploration, local stratigraphy and coal-bearing series were established, and structures were better understood, that was the foundation and base for the 2020 exploration program. Thick Cadomin conglomerate beds are regional geological marker either from surface mapping or drilling. Above the Cadomin conglomerate (inclusive), the Lower Gething Formation is the major coal seam-bearing formation; below the Cadomin conglomerate, the Minnes Group bears the thinner coal seams which is not the primary exploration target in 2020 drilling program.

There are number of thrust faults and tight folds developed regionally, however, in the area of CTI Plus coal licenses, the folds (synclines) are more broadly with less faults developed. The major coal seams occur in the synclines which are often bordered by Cadomin conglomerate outcrops.

### **3 EXPLORATION PROGRAM 2020**

#### **3.1 Objective and Scope**

The objective of the 2020 exploration program in the NW Block and SE Block was intended to validate the historical exploratory data, and gather the sufficient additional geological data to confirm, identify and evaluate on the resource of any further exploration, and define the coal resources for the opportunity of the coal mine development, as well investigate and characterize the geotechnical, geochemical and hydrogeological features from the drill cores and open hole testing.

2020 exploratory works commenced within NW and SE Blocks, that comprised the scopes including:

- Site layout and construction of the access roads and drill pads
- HQ and PQ diamond core drilling
- PQ air rotary drilling
- Hydrogeological open-hole preparation
- Drill core and cutting logging
- Coal and parting core sampling
- Geophysical open-hole logging
- Geotechnical core logging and sampling
- Geochemical sampling
- Acoustic and Optical Televiewer's drillhole logging
- Drillhole collar survey
- Reclamation
- 3D geo-model development and insitu coal tonnage calculation

#### **3.2 Site Layout and Construction Pre-Drilling**

The 2020 exploration works were planned and done under the Notice of Work Permit CX-9-062 and the Occupant Licence to Cut L51690. The exploration access roads, laydown yards, drill pads, pipeline crossings and stream crossings were established via the existing roads, trails, and clear-cuts as such disturbed areas, and developed via the new

surface disturbance after the site layout, preliminary environmental assessment, and stream classification.

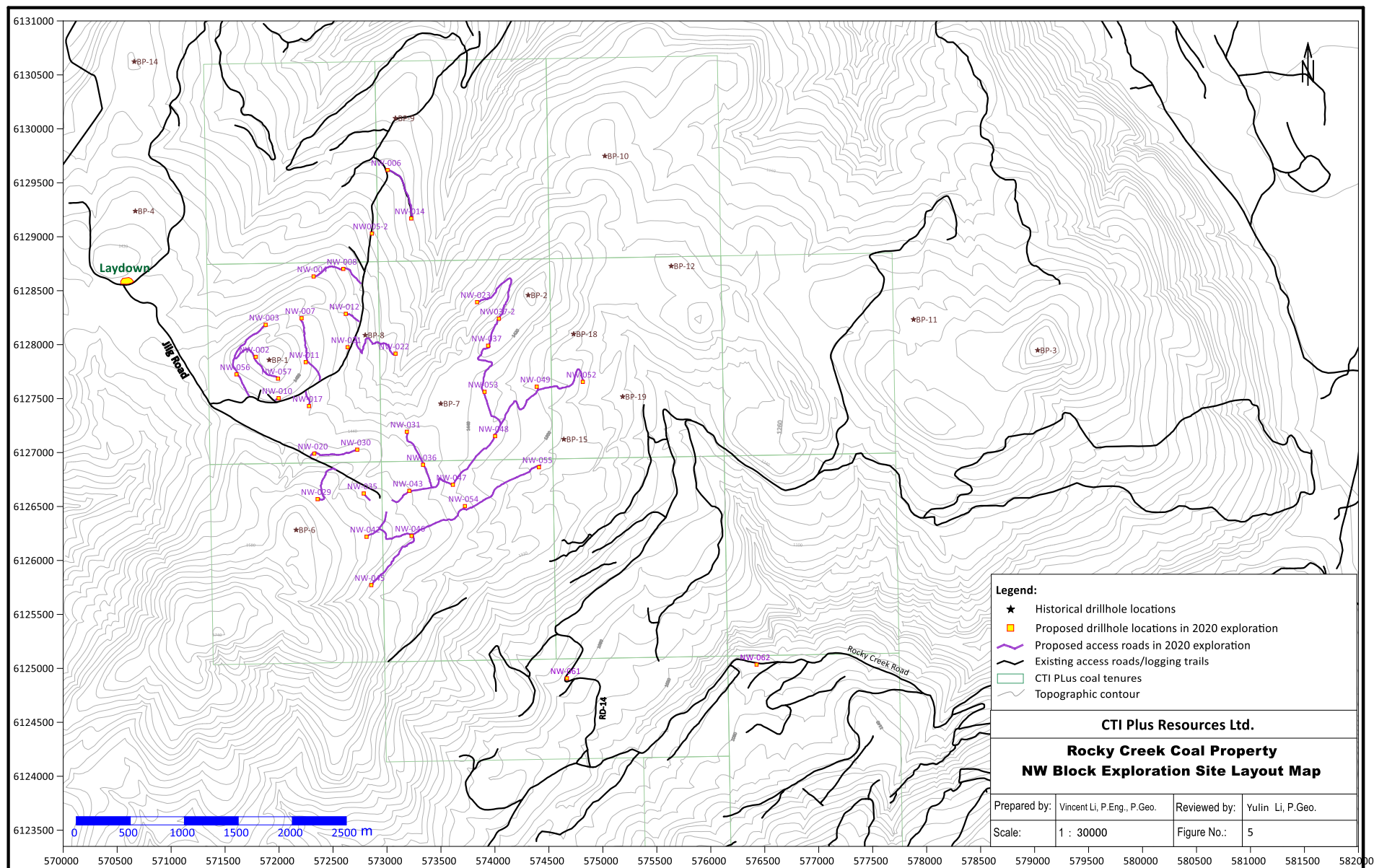
The site layout was conducted in NW Block and SE Block from July 3<sup>rd</sup> to July 28<sup>th</sup>, 2020, meantime the field archeological investigation, preliminary environmental assessment pre-clearing, BC One Call pipeline locating, and stream survey for stream classification and crossings assessment were conducted from July 3<sup>rd</sup> to September 9<sup>th</sup>, 2020. A total of 11,789 m exploration access roads, 54 drill pads and one laydown yard were prepared in SE Block by 4 Evergreen Resources LP (4EG) solely owned by Saulteau First Nations. A total of 13,936 m exploration access roads, 38 drill pads and one laydown yard were prepared by Duz Cho Construction LP wholly owned by McLeod Lake Indian Band during the period from August 22<sup>nd</sup> to October 29<sup>th</sup>, 2020. Sean Sharpe Environmental Consulting Ltd. (Sean Sharpe) was retained to carry out the preliminary environmental assessment and stream classification, and Ecofor Natural and Cultural Resource Consultants (Ecofor) was retained to conduct the archaeological overview assessment and impact assessment for the 2020 exploration program in the NW and SE Blocks pre site clearing and disturbance.

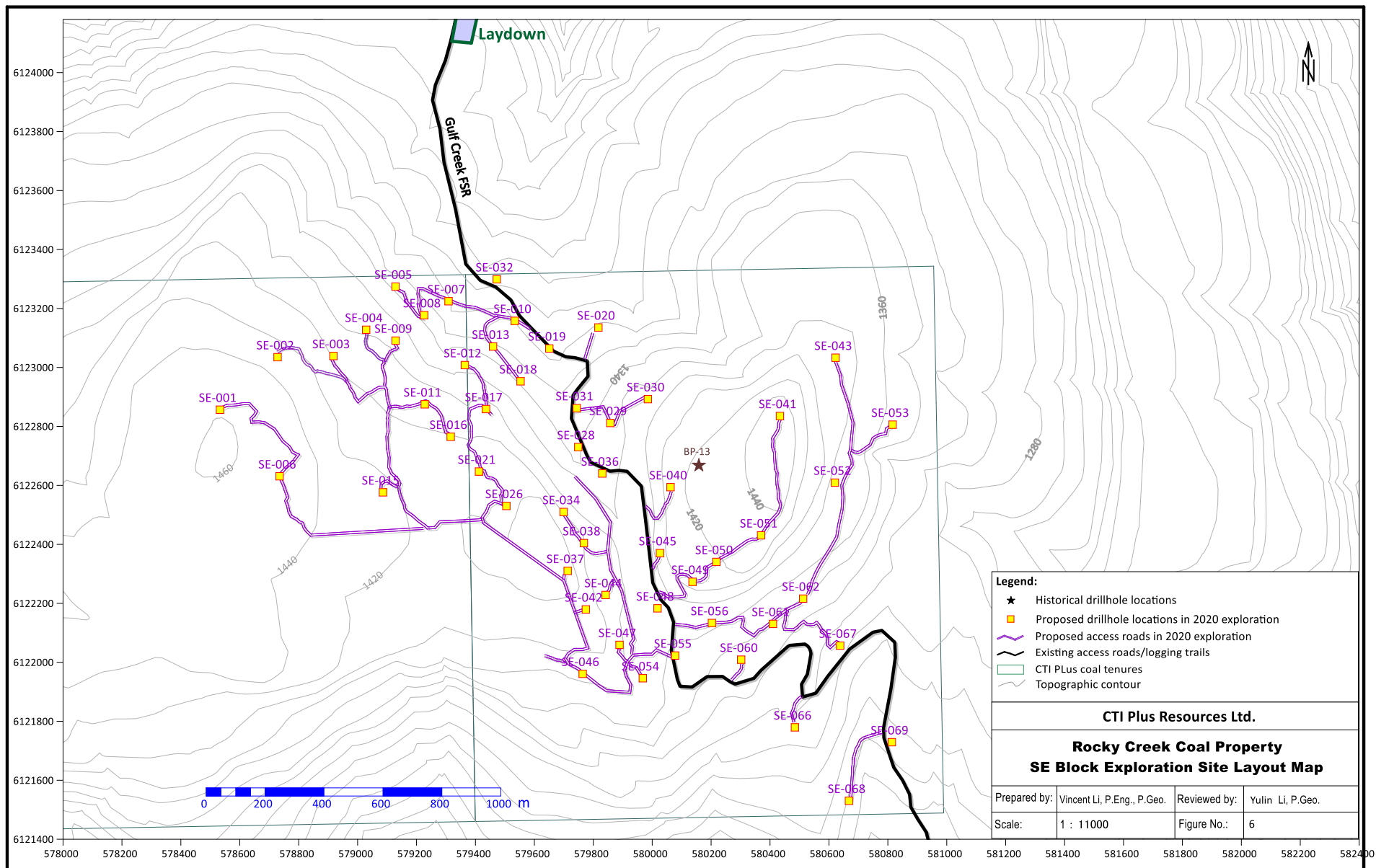
The 2020 exploration site layout of NW Block and SE Block is presented in Figure 5 and 6 respectively.

Appendix A provides the archaeological overview assessment report and archaeological impact assessment interim report that were prepared for the 2020 exploration project by Ecofor Natural and Cultural Resource Consultants in 2020.

Appendix B provides the preliminary environmental report pre-clearing, and Appendix C provides the stream classification and crossing assessment pre-clearing. Both reports were prepared for the 2020 exploration project by Sean Sharpe Environmental Consulting Ltd. in 2020.









### **3.3 Drilling**

The drilling in the NW Block and SE Block commenced in the early September and ended in the early November 2020. Foraco Canada Ltd. and Geotech Drilling Services Ltd. were retained by CTI Plus to conduct the vertical open-hole drilling with the diamond coring rigs and air rotary rigs. A total of 11,150.96 m of open-hole drilling in 69 drillholes was carried out at NW Block and SE Block. There were 49 fully cored drillholes except for the drillhole NW062. Drillhole NW062 was drilled to the depth of 43.7 m and abandoned as that of the unstable of the top casing. 30 drillholes were not cored by using the rotary drilling. The initial drillhole SE069-1 was abandoned at 46.59m because the artesian water encountered in the air rotary drilling. The depth of the drillholes varied between 43.7 m and 250.7 m.

Table 2 and 3 summarize the drillhole's type, depth, and percentage of the core recovery.

Table 2 Drillhole Summary of NW Block in 2020

Drillhole ID	Drilling Date		Open-Hole Size	Drillhole Depth	Azimuth	Dip	Type	Total Core Recovery
	Spud Date	Complete Date		m	degree	degree		%
NW-002	2020.09.08	2020.09.10	HQ	173	0	-90	Coring	99.8
NW-003	2020.09.01	2020.09.04	HQ	196	0	-90	Coring	96.2
NW-004	2020.09.21	2020.09.24	HQ	210	0	-90	Coring	97.7
NW-005-2	2020.10.02	2020.10.03	HQ	133.6	0	-90	Coring	94.6
NW-006	2020.09.23	2020.09.24	127 mm	193	0	-90	Rotary	NA
NW-007	2020.09.16	2020.09.19	HQ	199.75	0	-90	Coring	96.2
NW-011	2020.10.09	2020.10.15	121 mm	249	0	-90	Coring	99.6
NW-012	2020.09.11	2020.09.13	127 mm	145.89	0	-90	Rotary	NA
NW-014	2020.09.29	2020.10.02	HQ	182	0	-90	Coring	97.3
NW-017	2020.09.13	2020.09.15	HQ	142	0	-90	Coring	98.3
NW-020	2020.09.01	2020.09.02	120.7 mm	138	0	-90	Rotary	NA
NW-022	2020.09.26	2020.09.28	HQ	165	0	-90	Coring	99.0
NW-023	2020.10.03	2020.10.05	HQ	152	0	-90	Coring	97.5
NW-029	2020.10.06	2020.10.09	HQ	203.8	0	-90	Coring	95.7
NW-030	2020.10.04	2020.10.05	HQ	160.8	0	-90	Coring	97.9
NW-031	2020.09.12	2020.09.16	HQ	236	0	-90	Coring	99.0
NW-035	2020.09.03	2020.09.04	127 mm	154	0	-90	Rotary	NA
NW-036	2020.10.01	2020.10.02	HQ	140.75	0	-90	Coring	100
NW-037	2020.09.07	2020.09.10	HQ	200	0	-90	Coring	99.2
NW-037-2	2020.10.06	2020.10.07	HQ	71.2	0	-90	Coring	98.2
NW-042	2020.09.17	2020.09.20	HQ	173.9	0	-90	Coring	99.7
NW-045	2020.09.22	2020.09.24	HQ	120	0	-90	Coring	99.7
NW-046	2020.09.08	2020.09.10	127 mm	180	0	-90	Rotary	NA
NW-047	2020.09.14	2020.09.16	127 mm	231.75	0	-90	Rotary	NA
NW-048	2020.09.18	2020.09.22	127 mm	250.66	0	-90	Rotary	NA
NW-052	2020.09.05	2020.09.07	127 mm	180	0	-90	Rotary	NA
NW-053	2020.09.02	2020.09.07	HQ	200	0	-90	Coring	99.3
NW-054	2020.09.25	2020.09.27	HQ	163.7	0	-90	Coring	100
NW-055	2020.09.28	2020.09.30	HQ	176	0	-90	Coring	99.2
NW-056	2020.09.11	2020.09.12	HQ	120	0	-90	Coring	99.4
NW-057	2020.09.05	2020.09.07	HQ	180	0	-90	Coring	98.8
NW-061	2020.10.24	2020.10.26	HQ	149	0	-90	Coring	99.4
NW-062	2020.10.22	2020.10.24	HQ	43.7	0	-90	Coring	48.3

Table 3 Drillhole Summary of SE Block in 2020

Drillhole ID	Drilling Date		Open-Hole Size	Drillhole Depth	Azimuth	Dip	Type	Total Core Recovery
	Spud Date	Complete Date		m	degree	degree		%
SE-001	2020.09.27	2020.10.10	HQ	162.18	0	-90	Coring	99.7
SE-005	2020.10.09	2020.10.11	HQ	199.92	0	-90	Coring	96.0
SE-007	2020.10.03	2020.10.04	127 mm	125.46	0	-90	Rotary	NA
SE-008	2020.09.12	2020.10.15	HQ	200	0	-90	Coring	95.2
SE-009	2020.10.18	2020.10.20	HQ	200	0	-90	Coring	99.1
SE-010	2020.09.15	2020.09.20	HQ	200	0	-90	Coring	98.5
SE-011	2020.10.23	2020.10.24	HQ	150.06	0	-90	Coring	97.6
SE-012	2020.10.18	2020.10.21	HQ	181.9	0	-90	Coring	85.9
SE-013	2020.10.18	2020.10.21	HQ	148.77	0	-90	Coring	98.0
SE-015	2020.10.21	2020.10.22	HQ	124.86	0	-90	Coring	99.5
SE-017	2020.10.24	2020.10.26	HQ	119.8	0	-90	Coring	98.0
SE-018	2020.10.15	2020.10.17	HQ	155	0	-90	Coring	98.6
SE-019	2020.09.25	2020.09.29	HQ	70.94	0	-90	Coring	96.3
SE-020	2020.09.27	2020.10.01	133.4 mm	199.32	0	-90	Rotary	NA
SE-026	2020.10.12	2020.10.17	HQ	119.16	0	-90	Coring	96.0
SE-029	2020.10.07	2020.10.08	HQ	124.65	0	-90	Coring	98.6
SE-030	2020.09.24	2020.09.25	HQ	125.06	0	-90	Coring	98.0
SE-031	2020.09.08	2020.09.13	HQ	198.64	0	-90	Coring	98.0
SE-032	2020.09.27	2020.09.28	HQ	149	0	-90	Coring	97.7
SE-034	2020.09.07	2020.09.10	120.7 mm	200	0	-90	Rotary	NA
SE-036	2020.09.01	2020.09.02	120.7 mm	102.22	0	-90	Rotary	NA
SE-040	2020.09.22	2020.09.23	HQ	125	0	-90	Coring	99.6
SE-041	2020.09.10	2020.09.13	HQ	199.92	0	-90	Coring	97.7
SE-043	2020.09.13	2020.09.17	127 mm	199.68	0	-90	Rotary	NA
SE-044	2020.09.03	2020.09.05	120.7 mm	134.76	0	-90	Rotary	NA
SE-045	2020.09.21	2020.09.22	HQ	105.9	0	-90	Coring	98.4
SE-048	2020.10.02	2020.10.02	127 mm	84.56	0	-90	Rotary	NA
SE-049	2020.09.10	2020.09.12	127 mm	201.53	0	-90	Rotary	NA
SE-050	2020.09.18	2020.09.21	HQ	200	0	-90	Coring	99.9
SE-051	2020.09.15	2020.09.17	HQ	199.58	0	-90	Coring	99.2
SE-052	2020.09.30	2020.10.01	HQ	104.3	0	-90	Coring	99.0
SE-056	2020.10.05	2020.10.07	HQ	150	0	-90	Coring	99.1
SE-062	2020.09.20	2020.09.26	133.4 mm	200	0	-90	Rotary	NA
SE-066	2020.09.28	2020.09.30	127 mm	177.4	0	-90	Rotary	NA
SE-069-1	2020.09.18	2020.09.19	cemented artesian hole	46.59	0	-90	Rotary	NA
SE-069	2020.09.23	2020.09.24	HQ	150.30	0	-90	Coring	99.0

CTI Plus followed the typical and common coal exploration method, practice, guideline and standard in the Rocky Creek project. The drill core and cutting logging, geophysical open-hole logging and drillhole collar survey were completed for each hole. The acquisition and sorting of all logging and survey records were done on a timely matter.

Figure 7 and 8 present the finally completed drillholes in NW Block and SE Block. Appendix D provides the detailed core description of 50 cored drillholes.

All drillholes were cemented from bottom to ground surface after all down hole logging and survey except for the drillholes that were remained for the hydrogeological testing and groundwater monitoring well installation.

All data from core logging, core photograph, and sampling are entered into the CTI Plus exploration database, and all cores are stored at the rented yard in the Town of Chetwynd. Non-core holes' cutting was logged by the site geologist and cutting was not retained.

### **3.4 Geophysical Drillhole Logging**

Century Wireline Services (Century) of Red Deer, Alberta was contracted to run the geophysical logging program. Century supplied two logging operators, two pick-up truck mounted logging units and one helicopter transportable logging unit. The helicopter logging unit was used when the pick-up logging truck unit was not accessible due to whether conditions. Three Geophysical "Standard Coal Suites" were provided to the drilling program include 9239 Density which was capable of doing gamma, caliper, shallow resistivity and compensated density, 9058 Neutron which was gamma, deviation, neutron tool and 9067 which was for logging through rods of gamma and in-pipe neutron.

All drillholes were run with the geophysical logging, either diamond coring holes or rotary non-coring holes, 33 drillholes in NW Block and 36 drillholes in SE Block. One hole of SE069-1 in SE Block was abandoned at 46.59 m due to excessive water coming out the hole while using air drilling which was out of the capacity of rig handling. Drillhole SE069 was drilled in nearby in the same pad of SE069-1 and was logged to the total depth. One drillhole of NW062 was abandoned at 43.7 m due to continuing unstable of top casing. This hole was not geophysical logged. In addition to that, two drillholes in SE Block of

SE013 and SE069 were logged through drill pipe due to the holes were not stable and not safe to log in open hole. The rest of drillholes were all geophysical logged by open hole.

The open hole logs are:

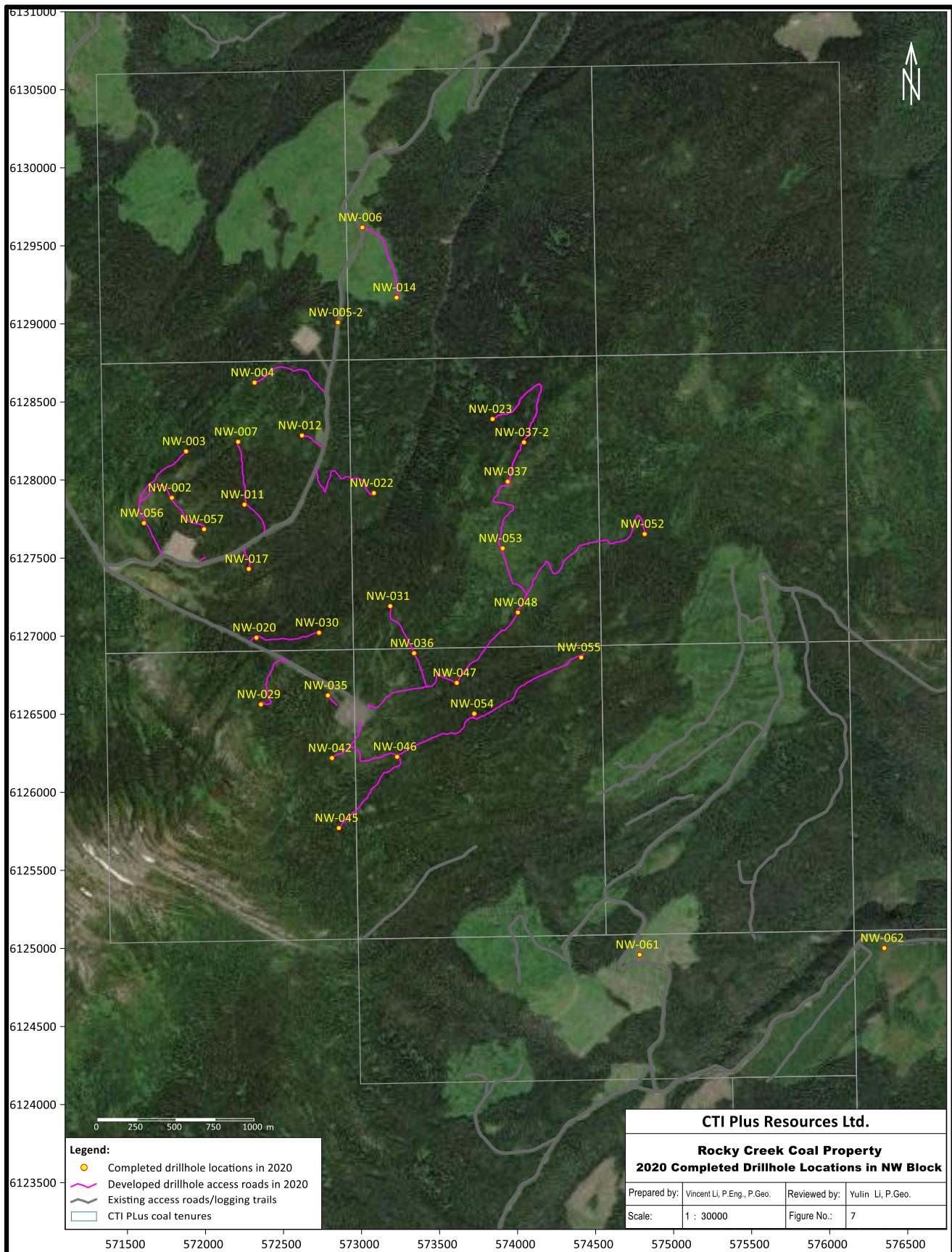
1. Caliper
2. Gamma
3. Deviation
4. Compensated bulk density
5. Neutron, and
6. Resistivity

The logging through rods are:

1. Gamma
2. Deviation, and
3. Neutron

Table 4 and 5 shows the drillholes with the geophysical logging status and the type of geophysical logging in NW and SE blocks.

Appendix E provides the drillhole geophysical logs in the LAS, PDF and Tiff format of electronic version from the 2020 drilling program.





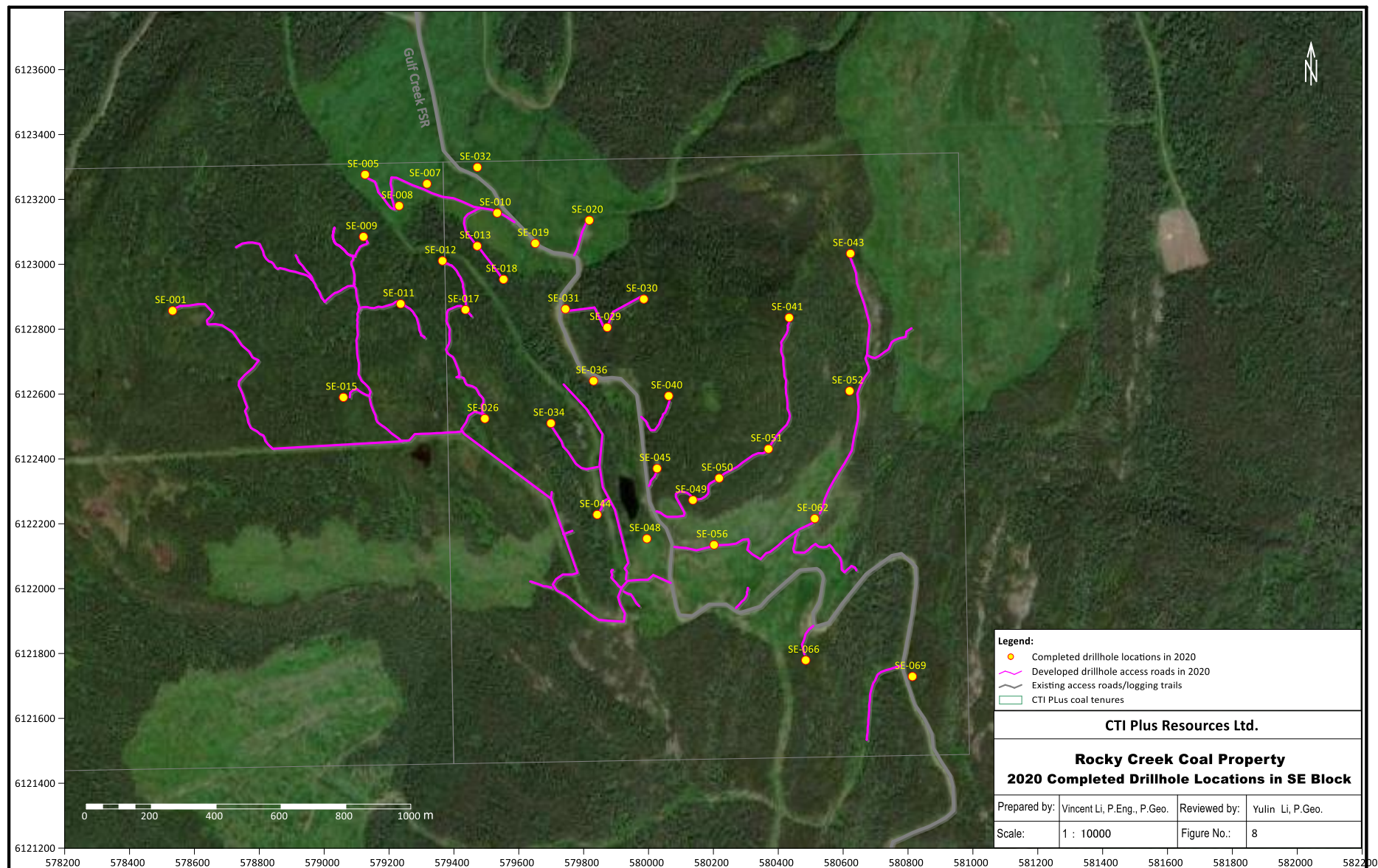


Table 4 Summary of Drillhole Geophysical Logging Traces in NW Block

Drillhole ID	Casing Depth (m)	Wireline Logger's Depth (m)	Geophysical Logging Items					
			Caliper	Gamma	Deviation	Compensated Density	Neutron	Resistivity
NW-002	1.50	173.00	YES	YES	YES	YES	YES	YES
NW-003	3.00	196.00	YES	YES	YES	YES	YES	YES
NW-004	3.00	210.00	YES	YES	YES	YES	YES	YES
NW-005-2	6.00	133.60	YES	YES	YES	YES	YES	YES
NW-006	6.00	193.00	YES	YES	YES	YES	YES	YES
NW-007	3.00	199.75	YES	YES	YES	YES	YES	YES
NW-011	7.50	249.00	YES	YES	YES	YES	YES	YES
NW-012	18.29	145.89	YES	YES	YES	YES	YES	YES
NW-014	6.00	182.00	YES	YES	YES	YES	YES	YES
NW-017	3.00	142.00	YES	YES	YES	YES	YES	YES
NW-020	7.60	138.00	YES	YES	YES	YES	YES	YES
NW-022	15.50	165.00	YES	YES	YES	YES	YES	YES
NW-023	6.00	152.00	YES	YES	YES	YES	YES	YES
NW-029	3.00	203.80	YES	YES	YES	YES	YES	YES
NW-030	6.00	160.80	YES	YES	YES	YES	YES	YES
NW-031	3.50	236.00	YES	YES	YES	YES	YES	YES
NW-035	9.14	154.00	YES	YES	YES	YES	YES	YES
NW-036	6.00	140.75	YES	YES	YES	YES	YES	YES
NW-037	6.00	200.00	YES	YES	YES	YES	YES	YES
NW-037-2	3.00	71.20	YES	YES	YES	YES	YES	YES
NW-042	5.00	173.90	YES	YES	YES	YES	YES	YES
NW-045	6.00	120.00	YES	YES	YES	YES	YES	YES
NW-046	3.05	180.00	YES	YES	YES	YES	YES	YES
NW-047	6.10	231.75	YES	YES	YES	YES	YES	YES
NW-048	21.33	250.66	YES	YES	YES	YES	YES	YES
NW-052	27.43	180.00	YES	YES	YES	YES	YES	YES
NW-053	10.50	200.00	YES	YES	YES	YES	YES	YES
NW-054	6.00	163.70	YES	YES	YES	YES	YES	YES
NW-055	3.00	176.00	YES	YES	YES	YES	YES	YES
NW-056	1.50	120.00	YES	YES	YES	YES	YES	YES
NW-057	1.50	180.00	YES	YES	YES	YES	YES	YES
NW-061	3.00	149.00	YES	YES	YES	YES	YES	YES



Table 5 Summary of Drillhole Geophysical Logging Traces in SE Block

Drillhole ID	Casing Depth (m)	Wireline Logger's Depth (m)	Geophysical Logging Items					
			Caliper	Gamma	Deviation	Compensated Density	Neutron	Resistivity
SE-001	3.50	162.18	YES	YES	YES	YES	YES	YES
SE-005	3.00	199.92	YES	YES	YES	YES	YES	YES
SE-007	21.00	125.46	YES	YES	YES	YES	YES	YES
SE-008	4.50	200.00	YES	YES	YES	YES	YES	YES
SE-009	3.00	200.00	YES	YES	YES	YES	YES	YES
SE-010	9.00	200.00	YES	YES	YES	YES	YES	YES
SE-011	3.00	150.06	YES	YES	YES	YES	YES	YES
SE-012	3.00	181.90	YES	YES	YES	YES	YES	YES
SE-013	3.00	148.77	NO	YES*	NO	NO	YES*	NO
SE-015	3.00	124.86	YES	YES	YES	YES	YES	YES
SE-017	10.50	119.80	YES	YES	YES	YES	YES	YES
SE-018	3.00	155.00	YES	YES	YES	YES	YES	YES
SE-019	1.50	70.94	YES	YES	YES	YES	YES	YES
SE-020	6.10	199.32	YES	YES	YES	YES	YES	YES
SE-026	5.00	119.16	YES	YES	YES	YES	YES	YES
SE-029	1.50	124.65	YES	YES	YES	YES	YES	YES
SE-030	1.50	125.06	YES	YES	YES	YES	YES	YES
SE-031	4.50	198.64	YES	YES	YES	YES	YES	YES
SE-032	6.00	149.00	YES	YES	YES	YES	YES	YES
SE-034	18.29	200.00	YES	YES	YES	YES	YES	YES
SE-036	13.72	102.22	YES	YES	YES	YES	YES	YES
SE-040	2.10	125.00	YES	YES	YES	YES	YES	YES
SE-041	10.00	199.92	YES	YES	YES	YES	YES	YES
SE-043	3.00	199.68	YES	YES	YES	YES	YES	YES
SE-044	13.72	134.76	YES	YES	YES	YES	YES	YES
SE-045	10.00	105.90	YES	YES	YES	YES	YES	YES
SE-048	4.50	84.56	YES	YES	YES	YES	YES	YES
SE-049	3.00	201.53	YES	YES	YES	YES	YES	YES
SE-050	1.30	200.00	YES	YES	YES	YES	YES	YES
SE-051	1.10	199.58	YES	YES	YES	YES	YES	YES
SE-052	1.50	104.30	YES	YES	YES	YES	YES	YES
SE-056	3.00	150.00	YES	YES	YES	YES	YES	YES
SE-062	17.5	200.00	YES	YES	YES	YES	YES	YES
SE-066	4.56	177.4	YES	YES	YES	YES	YES	YES
SE-069	6.00	150.3	YES	YES*	YES*	YES	YES*	YES

**Note:** YES\* indicates that the logs were run through rods.

### **3.5 Drillhole Collar Survey**

Final collar survey of all completed drillholes was completed by Amar Surveys Ltd. and Plan B Technical Services on September 19<sup>th</sup> to 21<sup>st</sup>, October 3<sup>rd</sup> to 5<sup>th</sup>, October 15<sup>th</sup> to 16<sup>th</sup>, and October 24<sup>th</sup>, 2020 respectively. A Trimble GNSS RTK GPS survey technology was utilized to capture the collar co-ordinates. Horizontal co-ordinates were referenced to the NAD 1983 (CSRS) datum and projected in the World Wide UTM Grid Zone 10. Elevations were referenced to the HT 2.0 Geoid from Natural Resources Canada. Static GPS data was captured and the Natural Resources Canada Precise Points Positioning portal was used to correct the base station coordinates used.

Table 6 summarizes the collar survey results of NW Block and SE Block. Drillhole collar survey reports are attached in Appendix F.

Table 6 Summary of Drillhole Collar Survey of NW and SE Block

No.	Drillhole ID	Easting	Northing	Elevation		Drillhole ID	Easting	Northing	Elevation
		m	m	m			m	m	m
1	NW-002	571784.378	6127886.768	1508.272		SE-001	578532.794	6122856.800	1457.595
2	NW-003	571875.378	6128184.055	1465.790		SE-005	579126.227	6123276.362	1332.384
3	NW-004	572314.676	6128624.348	1396.368		SE-007	579317.000	6123248.000	1294.020
4	NW-005-2	572848.567	6129009.335	1290.120		SE-008	579231.000	6123180.000	1329.824
5	NW-006	573005.214	6129618.143	1228.193		SE-009	579121.184	6123084.761	1370.384
6	NW-007	572208.791	6128245.182	1448.016		SE-010	579533.479	6123158.125	1295.704
7	NW-011	572249.992	6127843.082	1458.812		SE-011	579235.946	6122877.931	1385.213
8	NW-012	572618.225	6128285.557	1386.911		SE-012	579364.703	6123010.675	1351.440
9	NW-014	573224.429	6129169.379	1199.403		SE-013	579471.943	6123056.271	1323.486
10	NW-017	572277.164	6127430.944	1436.005		SE-015	579059.374	6122589.707	1421.444
11	NW-020	572326.228	6126990.407	1468.909		SE-017	579435.430	6122860.009	1375.491
12	NW-022	573079.020	6127916.645	1311.428		SE-018	579552.976	6122953.539	1328.406
13	NW-023	573839.340	6128390.788	1331.366		SE-019	579650.704	6123064.398	1295.777
14	NW-029	572355.295	6126563.223	1542.457		SE-020	579817.380	6123135.573	1301.892
15	NW-030	572727.266	6127022.468	1473.546		SE-026	579495.432	6122524.062	1413.516
16	NW-031	573183.821	6127192.485	1422.326		SE-029	579872.764	6122805.291	1348.062
17	NW-035	572784.442	6126620.421	1486.133		SE-030	579985.441	6122892.636	1371.968
18	NW-036	573336.572	6126891.089	1431.324		SE-031	579743.942	6122861.955	1328.541
19	NW-037	573936.713	6127990.192	1432.994		SE-032	579472.463	6123299.035	1274.056
20	NW-037-2	574040.858	6128241.680	1407.097		SE-034	579699.151	6122509.810	1393.761
21	NW-042	572810.710	6126219.578	1513.827		SE-036	579830.460	6122640.435	1348.211
22	NW-045	572854.423	6125771.433	1465.129		SE-040	580062.190	6122594.021	1401.626
23	NW-046	573227.729	6126227.953	1474.128		SE-041	580433.581	6122835.419	1450.782
24	NW-047	573610.204	6126701.569	1410.509		SE-043	580622.566	6123033.050	1385.207
25	NW-048	574001.710	6127152.255	1380.439		SE-044	579841.822	6122228.213	1385.552
26	NW-052	574814.000	6127654.914	1283.249		SE-045	580026.343	6122370.371	1380.498
27	NW-053	573904.098	6127562.863	1386.927		SE-048	579995.000	6122154.000	1368.700
28	NW-054	573722.073	6126503.546	1405.167		SE-049	580136.939	6122273.050	1411.078
29	NW-055	574407.514	6126864.094	1324.203		SE-050	580217.724	6122340.525	1424.506
30	NW-056	571605.414	6127724.748	1467.638		SE-051	580369.607	6122430.735	1425.036
31	NW-057	571990.625	6127685.298	1499.031		SE-052	580619.935	6122609.388	1368.025
32	NW-061	574782.043	6124959.931	1075.129		SE-056	580202.040	6122135.015	1361.378
33	NW-062	576350.000	6125002.570	1035.130		SE-062	580512.340	6122215.944	1333.681
34						SE-066	580484.545	6121779.363	1291.277
35						SE-069	580813.616	6121729.121	1229.122
Note: co-ordinate at the datum NAD 1983 (CSRS) and UTM Grid Zone 10									

## **3.6 Core Handling and Core Description**

### **3.6.1 Core Handling**

When core was retrieved from the hole while drilling, it was properly handled, labeled and boxed for the core description later. The core handling was supervised by wellsite geologist. The core was briefly described on the wellsite before the core boxes were transported to the core logging facility for detailed core logging and sampling. The core handling procedure for wellsite geologist and drilling crew is summarized as below:

- Record the core run number, the length of cored interval, the length of core recovered.
- Place core into core boxes gently, not dumped on the floor and pieced back together into the box. If this occurs, make note of it.
- Put core into the boxes in the right order and mark/check the depth recorded correctly.
- Identify lost core with a marking block, place the core loss block at where the core loss is identified, and mark loss core intervals on the block.
- If the core is coated with drilling fluids upon boxing, carefully clean it off before doing description, handling the core gently so as not to cause undue breakage.
- Label core boxes with hole number, box number and depth cored on the inside edges of the boxes, on the box ends and the lid as well. Figure 9 is an example of labeling the core box.
- Make note of any water/mud gains or losses – ask driller if unsure.
- Transport core boxes from the rigs to the core logging facility.
- Take care, cover, and keep the core from excessive exposure air, light, heat and moisture during transport and storage of the core.



Figure 9 Labeling Core and Core Box

### 3.6.2 Core Description

All core from cored drillholes were described in detail. At the beginning of the drilling program, a core logging facility modified by C-Can with good lighting and heating was set up in each of laydown area in NW and SE blocks. Wood table of 3 m long and 1.2 m high was built for geologist to log the core. Total 9 m long tables were set up in each of the coring facilities. One geologist with one assistant as a group to do the core logging. Two helpers were hired for laying core boxes down on the logging table before logging the core and moved out after the logging was finished. The core logging procedure is summarized as below:

#### A. Depth Correction

- Before core description, the depth of the core was corrected to the geophysical logs. The driller's depth record was used as a reference, but the final depth is the one corrected to the geophysical logs.
- Lost core amount, location and rock type were determined and recorded. Effort was made to determine the location and nature (composition) of the lost core.
- When the top and bottom of coring run was determined and the lost core has been found, recorded this data on a core recovery sheet.

#### B. Photographing Core

- Once depth correction has been completed, photograph the boxes of core before any detailed core logging or sampling begins.
- Photograph the core, 3 boxes at a time, using a digital camera,
  - Keep core photograph conditions and camera settings as similar as possible from photograph to photograph.
  - Core photographs were taken at the maximum resolution available on the camera being used.
  - Ensure all core was clearly visible and that important core features were discernable in all core photographs.
- Core photos were stored in a secure fashion on a computer/flash drive and uploaded/backed up at appropriate intervals to ensure data security.

#### C. Core Description

- The core descriptions were typed in the formatted core description data sheet directly into a laptop.

- The data types that were captured in the core description are:
  - Rock Type
    - The major non-coal rock types encountered were: carbonaceous mudstone, mudstone, siltstone, sandstone, and/or conglomerate.
  - Color
    - Most rock types were shades of gray and black. A standard color chart may be used to keep colors consistent, especially if different people were describing the core.
  - Grain Size
    - Rocks/sediments may be fine grained, medium grained or coarse grained.
    - See Figure 10 for grain size scale.
  - Roundness
    - Grains may be angular, subangular, or round.
  - Sorting
    - Sediments may be poorly sorted, moderately sorted or well sorted.
    - See Figure 10 for sorting illustration.
  - Cementation/Mineralization
    - The majority of cementation in this area was likely to be siliceous, with some calcareous and ferriferous cementation very possible.

- Observed and recorded the presence of calcite veins or fracture fill and any signs of ground water movement such as iron staining.
- Hardness and rock structure
  - Hardness scale and rock structure description guidelines can be found in Figure 11.
- Constituents
  - Observed and made note of constituents such as fossils and plant matter, coal or mud stringers, calcite grains, cherty fragments, pebbles, breccia or other clasts and any other rock constituents important for facies or formation identification.
- Core Condition
  - The core itself may be weathered, dense, carbonaceous, laminated, massive or rubbly.
  - Made note of the core surface condition. It may be glassy, badly broken, slickensided, fissile, smooth, rough, sheared, powdered.
- Basal Contact
  - Include the type of basal contact with each change in lithology. The basal contact may be sharp, gradational, distinct or unconformable/erosional.
- Fractures and bedding planes
  - After logging the major lithologies, all fractures/discontinuities were measured and described before breaking core to look at the lithologies in detail.



- The dips of fractures and bedding planes were measured relative to the core normal (BCN, perpendicular to the core axis). This means the angle measured is the dip of the fracture or bedding when it is underground. The roughness, weathering, mineralization, width and other characteristics of the fractures were described and recorded in the core description data sheet.
- Other Comments
  - Any other pertinent comments.

#### D. Coal Type

- In visual core description, a simpler description was used for each coal unit, i.e., its degree of brightness relative to the surrounding coal sections.
  - The degree of brightness is usually judged by the percentage of the brightest of the lithotypes which is referred to as vitrain.
- The short forms of the coal brightness classifications are: C1, C2, C3, C4, C5
  - C1: Bright coal - over 80% bright bands.
  - C2: Bright banded coal - 60-80% bright bands.
  - C3: Bright and dull banded - 40-60% bright bands.
  - C4: Dull banded - 20-40% bright bands.
  - C5: Dull coal - less than 20% bright bands.

Table 7 Summary of drillholes were geologically logged in NW and SE Block. The details of core logging data for each of core holes are prepared with electronic version in Appendix A.

Size	Wentworth Size Class	Sediment/Rock Name
256 mm	Boulders	Sediment: GRAVEL  Rock RUDITES: (conglomerates, breccias)
64 mm	Cobbles	
4 mm	Pebbles	
2 mm	Granules	
1 mm	Very Coarse Sand	Sediment: SAND  Rocks: SANDSTONES (arenites, wackes)
1/2 mm	Coarse Sand	
1/4 mm	Medium Sand	
1/8 mm	Fine Sand	
1/16 mm	Very Fine Sand	
1/256 mm	Silt	Sediment: MUD  Rocks: LUTITES (mudrocks)
	Clay	

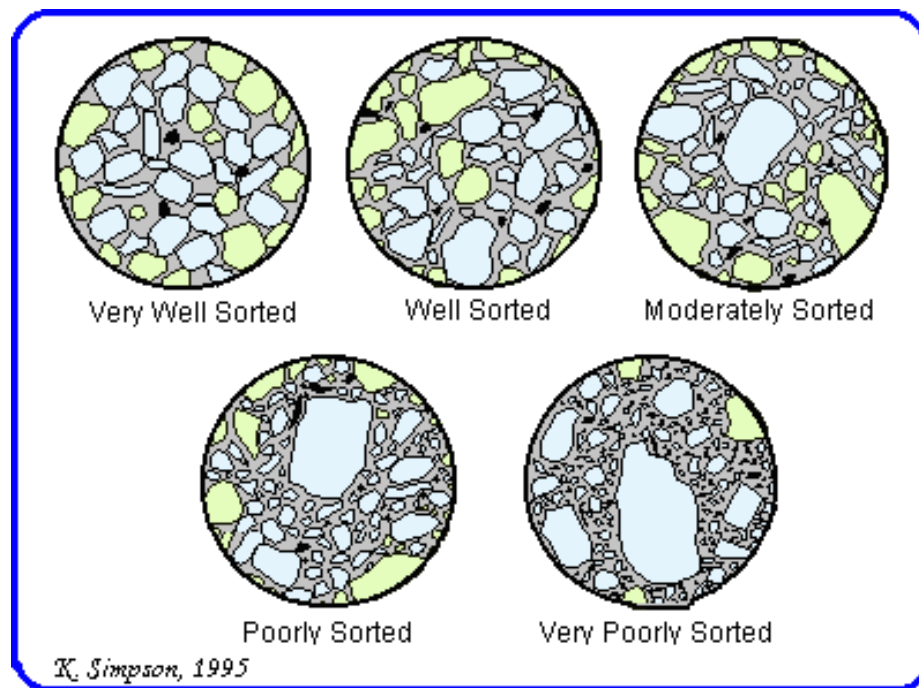


Figure 10 Grain size and sorting scales

## ROCK DESCRIPTIVE TERMS

Term		Defining Characteristics
Hardness	Soft Moderately Hard Hard Very Hard	Scratched by fingernail Scratched easily by penknife Difficult to scratch with a penknife Cannot be scratched by penknife
Weathering	Unweathered  Slighty  Moderate  High  Severe	Rock is unstained. May be fractured, but discontinuities are not stained.  Rock is unstained. Discontinuities show some staining on the surfaces of rocks, but discoloration does not penetrate rock mass.  Discontinuity surfaces are stained. Discoloration may extend into rock along discontinuity surfaces.  Individual rock fragments are thoroughly stained and may be crumbly.  Rock appears to consist of gravel-sized fragments in a "soil" matrix. Individual fragments are thoroughly discolored and can be broken with fingers.
Bedding Planes	Laminated Parting Banded Thin Medium Thick Massive	< .04 in.                      < 1 mm .04 in. - .24 in.            1mm - 6mm .24 in. - 1 in.              6 mm - 3 cm 1 in. - 4 in.                3 cm - 9.1 cm 4 in. - 12 in.              9.1 cm - 30.5 cm 12 in. - 36 in.            30.5 cm - 1 m > 36 in.                    > 1 m
Joints and Fracture Spacing	Very tight Tight Moderately tight Wide Very wide	< 2 in.                      < 5.1 cm 2 in. - 1 ft.                5.1 - 30.5 cm 1 ft. - 3 ft.                30.5 cm - 91.4 cm 3 ft. - 10 ft.               91.4 cm - 3 M > 10 ft.                    > 3 M
Voids	Porous  Pitted  Vug  Cavity	Smaller than a pinhead. Their presence is indicated by the degree of absorbcency.  Pinhead size to a 1/4 inch. If only thin walls separate the individual pits, the core may be described as honeycombed.  1/4 inch to the diameter of the core. The upper limit will vary with core size.  Larger than the diameter of the core.

### Rock Particle Percent Composition Estimation

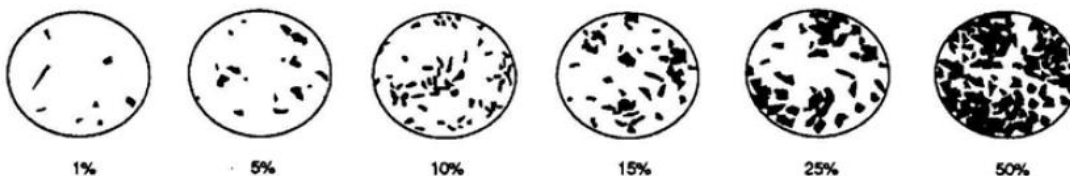


Figure 11 Rock Hardness and Structure Description

Table 7 Summary of Drillhole Core Logged in NW and SE Block

Drillhole ID	Drillhole Depth	Casing Depth	Core Size	Core Logged	
				From	To
	m	m		m	m
NW-002	173	1.5	HQ	1.7	173
NW-003	196	3	HQ	3	196
NW-004	210	3	HQ	3	210
NW-005-2	133.6	6	HQ	4.85	133.6
NW-007	199.75	3	HQ	3	199.75
NW-011	249	7.5	PQ	6	249
NW-014	182	6	HQ	6	182
NW-017	142	3	HQ	3	142
NW-022	165	15.5	HQ	15.5	165
NW-023	152	6	HQ	6	152
NW-029	203.8	3	HQ	3	203.8
NW-030	160.8	6	HQ	5.8	160.8
NW-031	236	3.5	HQ	3.5	236
NW-036	140.75	6	HQ	6.6	140.75
NW-037	200	6	HQ	0	200
NW-037-2	71.2	3	HQ	3	71.2
NW-042	173.9	5	HQ	3.65	173.9
NW-045	120	6	HQ	4.2	120
NW-053	200	10.5	HQ	4.5	200
NW-054	163.7	6	HQ	3	163.7
NW-055	176	3	HQ	3	176
NW-056	120	1.5	HQ	0	120
NW-057	180	1.5	HQ	0	180
NW-061	149	3	HQ	2	149
NW-062	43.7	10.5	HQ	5	43.7

Drillhole ID	Drillhole Depth	Casing Depth	Core Size	Core Logged	
				From	To
	(m)	(m)		(m)	(m)
SE-001	162.1	3.5	HQ	2.6	162.5
SE-005	200	3	HQ	3	200
SE-008	200	4.5	HQ	4.5	200
SE-009	200	3	HQ	0.8	200
SE-010	200	9	HQ	9	200
SE-011	150	3	HQ	1.5	150
SE-012	182	3	HQ	2	182
SE-013	149	3	HQ	3	149
SE-015	128	3	HQ	3	124.2
SE-017	119.8	10.5	HQ	2.1	119.8
SE-018	155	3	HQ	3.9	155
SE-019	71	1.5	HQ	1.35	71
SE-026	119	5	HQ	2	119
SE-029	125	1.5	HQ	1.8	125
SE-030	125	1.5	HQ	1.5	125
SE-031	198.64	4.5	HQ	3.4	198.64
SE-032	149	6	HQ	2.8	149
SE-040	125	2.1	HQ	1.55	125
SE-041	200	10	HQ	2	200
SE-045	105.9	10	HQ	5.3	105.9
SE-050	200	1.3	HQ	1.3	200
SE-051	200.1	1.1	HQ	1.1	200.1
SE-052	104	1.5	HQ	1.5	104
SE-056	150	3	HQ	2.1	150
SE-069	150.3	6	HQ	5.7	150.3

### **3.7 Coal Sampling and Samples**

Coal quality test is an important part of 2020 drilling program. Two types of samples were taken, coal cutting samples from the rotary drilling and coal core samples from HQ and PQ coring drilling.

#### **3.7.1 Coal Sampling Criteria and Samples**

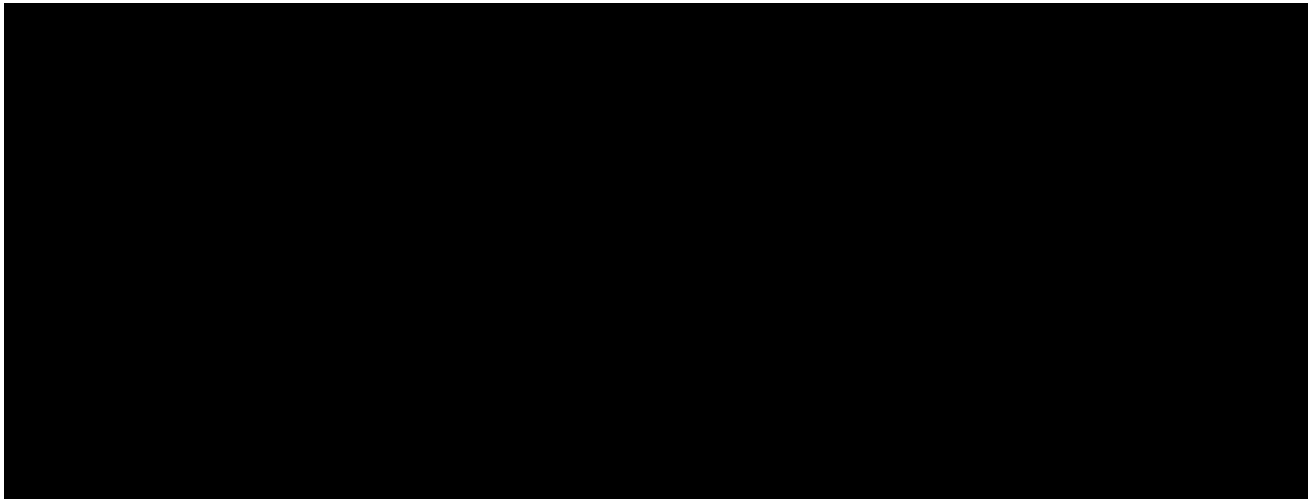
##### **3.7.1.1 Coal Cuttings**

For the purpose to understand the depth of coal oxidization by testing Light Transmittance, the coal cutting samples were collected only if the coal seam was intercepted less than 30 m in depth from the rotary drilling. The procedure for sampling conducted by wellsite geologist is summarized as below:

- Closely monitor the cuttings and drilling performance, when coal seam is intercepted, stop drilling immediately and keep circulation of the hole.
- Drill 0.5 m and stop drilling, collect, and bag coal cutting sample.
- Drill another 0.5 m and stop drilling, collect, and bag another cutting sample.
- Keep drilling and sampling as above, until the coal seam is completely drilled through.
- Resume drilling continuously as usual until intercept another coal seam less than 30m depth, and repeat the procedure above.

The cutting samples that were collected from the rotary drilling were sent to and tested in Birtley Coal & Minerals Testing (Birtley) in Calgary in November 2020. Analytical results are summarized in Table 8. The Birtley Certificate of Analysis is provided in Appendix G.

Table 8 Summary of Coal Cutting Samples and Analysis Results



#### 3.7.1.2 Coal Cores

The coal core sampling in the drilling program is done to understand the coal quality of any seam in an individual drillhole or a seam combination of multiple drillholes from different locations through lab testing. The coal sampling and testing is intended to represent, on a small scale, the characteristics of the coal in a full-scale mining operation. Therefore, all possibilities of mining and coal processing were taken into consideration and all relevant material were sampled regardless of the depth of coal seams. All cores were cleaned of all secondary and drilling contaminants before being sampled.

The sampling procedure is as below:

- Identify all the sample intervals on the core, before sample collection begins.
- Avoid mixing coal and non-coal intervals in one sample.
- All individual coal beds  $\geq 0.15$  m thick was sampled and bagged. If coal bed is  $\geq 0.30$  m, then 0.15m – 0.20 m of roof and floor material was collected.

- Coal seams that are less than 0.15 m thick and bounded by thick ( $> 0.50$  m) non-coal intervals may NOT be sampled. Collect sample of these thin coal plies (0.10 m - 0.15 m) only if the coal is classified as C1 or C2.
- For thick coal seams, the length of the coal core per sample is no more than 1.0 m or less depending on the bag sizes. Do not use two or more bags for one sample ID. Each bag of coal must have a unique sample ID.
- Collect one sample for partings with thickness between 0.15 m and 0.50 m.
- Collect floor samples of 0.15 - 0.20 m immediately below the coal seam.
- Collect roof samples of 0.15 - 0.20 m immediately above the coal seam.
- Any lost core creates a break between samples. In the other words, do not sample through core loss.
- Note on the sample label if any partings are included in the coal samples.

Table 9 and 10 summarize the coal core sample information in NW and SE block.

Table 9 Summary of Coal Core Samples In NW Block

Drillhole ID	Seam Name	Field Sample ID	Lab ID	Seam Depth, m		Sample Depth, m		Sample Type	
				From	To	From	To		
NW-002	Unknown	33896	208754	7.9	8.05	7.9	8.05	COAL	
	Unknown	33897	208755	13.8	14.05	13.8	14.05	COAL	
	Upper Pump	33899	208756	25.25	27.8	25.25	25.85	COAL	
		33900				25.85	26.8	COAL	
		33901				26.8	27.8	COAL	
	Upper Grizzly	33904	208757	59.65	61.8	59.65	60.2	COAL	
		33905				60.2	60.4	PARTING	
						60.4	61	COAL	
		33906		61	61.8	COAL			
		Lower Grizzly	33910	208758	63.9	65	63.9	64.1	COAL
			33911				64.1	64.4	COAL
	64.4						65	COAL	
	Lower Meadow	33913	208759	114.55	114.7	114.55	114.7	COAL	
Upper Bumpy	33915	208760	146.3	146.7	146.3	146.7	COAL		
Lower Bumpy 1	33917	208761	148.65	148.85	148.65	148.85	COAL		
NW-003	Unknown	32252	208762	3	3.3	3	3.3	COAL	
	Unknown	32254	208763	6.75	6.9	6.75	6.9	COAL	
	Lower Pump 1	32256	208764	7.2	7.6	7.55	7.8	COAL	
	Lower Pump 2	32258	208765	27.9	28.8	27.9	28.8	COAL	
	Upper Grizzly	32261	208766	36.5	40.5	36.5	36.7	COAL	
		32262				36.7	38	COAL	
		32263				38	40.5	COAL	
	Lower Grizzly	32265		44.6	44.9	44.6	44.9	COAL	
	Lower Grizzly 1	32266	208767	47.7	47.9	47.7	47.9	COAL	
	Lower Grizzly 2	32268	208768	48.5	49.1	48.5	49.1	COAL	
	Unknown	32270	208769	51.1	51.4	51.1	51.4	COAL	
	Upper Meadow	32271	208770	74.8	75.2	74.8	75.2	COAL	
	Upper Bumpy	32273	208771	125.7	126.3	125.7	126.3	COAL	
Upper Bumpy 1	32276	208772	128	128.4	128	128.4	COAL		
NW-004	Upper Grizzly	33938	208773	15.25	17.25	15.25	15.8	COAL	
		33939				15.8	16	PARTING	
						16	16.9	COAL	
						33940	16.9	17.25	COAL
	Lower Grizzly	33942	208774	19.8	20.8	20	20.8	COAL	
	Upper Bumpy	33945	208775	101.5	101.9	101.5	101.9	COAL	
	Unknown	33947	208776	109.1	109.25	109.1	109.25	COAL	
	Lower Bumpy 2	33948	208777	110.85	111.1	110.85	111.1	COAL	



	Upper Lake	33950	208778	173.65	174.8	173.65	174.3	COAL
	Upper Lake	32001				174.3	174.8	COAL
NW-005-2	Unknown	32563	208779	7.8	8	7.8	8	COAL
	Upper Grizzly	32565	208780	14.2	14.9	14.2	14.9	COAL
		32566		14.9	15.8	14.9	15.45	COAL
	Lower Bumpy 2	32567	208781	103	103.2	103	103.2	COAL
NW-007	Upper Grizzly	33873	208782	36.85	38.85	38	38.85	COAL
	Lower Grizzly	33876	208783	41.1	42.05	41.1	42.05	COAL
	Lower Meadow	33879	208784	87.9	88.4	87.9	88.4	COAL
	Upper Bumpy	33882	208785	119.7	120.2	119.7	120.2	COAL
	Lower Bumpy 1	33885	208786	124.8	125.2	125.1	125.2	COAL
	Lower Bumpy 3	33887	208787	141.65	141.85	141.65	141.85	COAL
	Upper Lake	33889	208788	192.05	193.25	192.05	192.65	COAL
	Upper Lake	33890				192.65	193.25	COAL
	Lower Lake	33893	208789	196.7	197	196.7	197	COAL
		33894		197	197.25	197	197.25	COAL
NW-011	Upper Grizzly	32469	208790	29.5	31.8	29.5	30	COAL
		32470				30	30.6	COAL
		32471				30.6	31.2	COAL
		32472				31.2	31.8	COAL
	Lower Grizzly	32475	208791	33.5	34.2	33.5	34.2	COAL
	Lower Grizzly 1	32477	208792	34.8	35.1	34.8	35.1	COAL
	Upper Bumpy	32479	208793	116.4	116.9	116.4	116.9	COAL
	Lower Bumpy 1	32482	208794	120.6	121	120.6	121	COAL
	Lower Bumpy 2	32484	208795	123.8	124	123.8	124	COAL
	Upper Lake	32486	208796	183.8	185	183.8	184.5	COAL
		32487				184.5	185	COAL
	Lower Lake	32490	208797	188.6	189.2	188.6	189.2	COAL
NW-014	Upper Bumpy 1	32090	208917	47.9	48.1	47.9	48.1	COAL
	Lower Bumpy 3	32091	208918	56.9	57.2	56.9	57.2	COAL
	Upper Lake	32093	208919	112.2	112.6	112.2	112.6	COAL
NW-017	Upper Meadow	32751	208798	12.6	12.75	12.6	12.75	COAL
	Upper Bumpy	32753	208799	63.95	64.35	63.95	64.35	COAL
	Upper Lake	32756	208800	135.5	136.5	135.65	136.5	COAL
	Lower Lake	32759	208801	140.8	141.2	140.8	141.05	COAL
NW-022	Lower Bumpy 2	32005	208805	34.2	34.6	34.2	34.6	COAL
	Lower Bumpy 3	32007	208806	44.6	44.85	44.6	44.85	COAL
	Upper Lake	32009	208807	99.05	100.25	99.05	99.75	COAL
		32010				99.75	100.25	COAL
	Lower Lake	32013	208808	103.8	104.6	104.15	104.55	COAL
NW-023	Unknown	32015	208802	20	20.25	20	20.25	COAL

	Unknown	32016	208803	24.2	24.65	24.2	24.65	COAL
	A 1	32776	208920	26	26.2	26	26.2	COAL
	Upper Pump	32778	208921	65.9	66.5	65.9	66.5	COAL
	Lower Pump	32780	208922	72.2	72.5	72.2	72.5	COAL
	Upper Grizzly	32782	208923	85.5	87.2	85.5	86	COAL
		32783				86	87.2	COAL
	Lower Grizzly	32785	208924	88.4	88.6	88.4	88.6	COAL
NW-029	Upper Meadow	32787	208818	32.4	32.6	32.4	32.6	COAL
	Upper Bumpy	32789	208819	72	72.6	72	72.35	COAL
	Upper Lake	32792	208820	145.7	146.5	145.7	146.3	COAL
	Lower Lake	32794	208821	151.7	152	151.7	151.9	COAL
NW-030	Unknown	32552	208822	8.8	9.2	8.8	9.2	COAL
	Upper Grizzly	32555	208823	13.4	14.9	13.4	14	COAL
		32556				14	14.9	COAL
	Lower Meadow	32558	208824	49	49.25	49	49.25	COAL
	Upper Bumpy	32560	208825	97.05	97.5	96.05	96.5	COAL
	Lower Bumpy 3	32562	208826	103.55	103.9	103.7	103.9	COAL
NW-031	Upper Grizzly	33852	208827	26.8	28	26.8	28	COAL
	Lower Grizzly	33855	208828	30	30.6	30	30.6	COAL
	Upper Meadow	33858	208829	65	65.3	65	65.3	COAL
	Unknown	33860	208830	80	80.2	80	80.2	COAL
	Lower Meadow	33861	208831	80.8	81	80.8	81	COAL
	Upper Bumpy	33863	208832	105.8	106.3	105.8	106.3	COAL
	Lower Bumpy 3	33865	208833	116.3	116.5	116.3	116.5	COAL
	Upper Lake	33867	208834	181.2	182.2	181.2	182.2	COAL
	Lower Lake	33870	208835	185.6	185.9	185.6	185.9	COAL
NW-036	Unknown	32017	208836	8.1	8.55	8.1	8.55	COAL
	Unknown	32018	208837	9.55	9.7	9.55	9.7	COAL
	Unknown	32019	208838	15.75	16	15.75	16	COAL
	Upper Grizzly	32023	208839	23.8	25.15	23.8	24.55	COAL
		32024				24.55	25.15	COAL
	Lower Grizzly	32027	208840	26.5	26.6	26.5	26.8	COAL
	Lower Grizzly 1	32029	208841	27.2	27.3	27.2	27.3	COAL
	Lower Meadow	32031	208842	76.25	77	76.25	77	COAL
NW-037	C	32502		33.35	35.2	33.35	35.2	COAL
	Upper B	32505	208925	44.7	45.4	44.7	45.4	COAL
	Lower B	32508	208926	46.1	47.6	46.1	47	COAL
		32509				47	47.6	COAL
	Lower B 1	32512	208927	48.2	48.8	48.2	48.8	COAL
	Lower Pump	32514	208928	123.6	123.8	123.6	123.8	COAL

	Upper Grizzly	32516	208929	143.7	144.5	143.7	144.5	COAL
		32517		144.5	145.2	144.5	145.2	COAL
NW-037-2	C	32606	208930	56.2	58	56.2	57.2	COAL
		32607				57.2	58	COAL
	Unknown	32609	208931	60.3	60.55	60.3	60.55	COAL
	Upper B 1	32611	208932	70	70.5	70	70.5	COAL
NW-042	Upper Meadow	32034	208843	24	24.3	24	24.3	COAL
	Unknown	32036	208844	36.9	37.05	36.9	37.05	COAL
	Lower Meadow	32037	208845	38.6	38.9	38.6	38.8	COAL
	Upper Bumpy	32039	208846	59	59.7	59.35	59.7	COAL
	Upper Lake	32042	208847	131.8	133	131.7	132.35	COAL
		32043				132.35	133	COAL
	Lower Lake	32046	208848	137.1	137.7	137.2	137.7	COAL
NW-045	Upper Lake	33919	208096	54.1	55.6	54.1	54.9	COAL
		33920				54.9	55.6	COAL
	Lower Lake	33923	208097	60.4	61	60.4	61	COAL
NW-053	Lower Pump	32532	208933	39.4	39.7	39.4	39.7	COAL
	Upper Grizzly	32535	208934	55.1	55.6	55	55.6	COAL
		32536		55.6	55.8	55.6	55.8	PARTING
		32537	208935	55.8	56.5	55.8	56	COAL
		32538				56	56.5	COAL
	Lower Grizzly	32540	208936	58	58.2	58	58.2	COAL
	Upper Bumpy 1	32541	208937	130.4	130.7	130.4	130.7	COAL
NW-054	Upper Meadow	33925	208849	21.7	21.9	21.7	21.9	COAL
	Lower Meadow	33926	208850	37.45	37.6	37.45	37.6	COAL
	Upper Bumpy	33928	208851	59.5	60	59.5	60	COAL
	Upper Lake	33931	208852	130.5	131.5	130.5	131	COAL
		33932				131	131.5	COAL
	Lower Lake	33935	208853	134.8	135.3	134.8	135.3	COAL
NW-055	Upper Meadow	32763	208854	14.5	14.9	14.5	14.9	COAL
	Lower Meadow	32766	208855	28.6	28.9	28.6	28.9	COAL
	Upper Bumpy	32769		54.6	55	54.6	55	COAL
	Lower Bumpy 2	32771	208856	63.6	63.8	63.6	63.8	COAL
	Upper Lake	32772		118.2	118.5	118.2	118.5	COAL
NW-056	Upper Grizzly	32520	208100	2.1	3.5	2.1	3.5	COAL
	Upper Bumpy	32523		81.5	81.9	81	81.9	COAL
	Unknown	32529	207426	82.7	82.9	82.7	82.9	COAL
	Lower Bumpy 1	32526	207427	84.1	84.3	83.7	84.15	COAL
	Lower Bumpy 3	32528	207428	99.75	99.9	99.75	99.9	COAL

NW-057	Upper Pump	32289	207433	16.5	19.1	16.5	17	COAL
		32280				17	17.55	COAL
		32290				17.55	18.5	COAL
		32281				18.5	18.65	COAL
		32282				18.65	19.1	COAL
	Upper Grizzly	32285	207434	49.2	51.6	49.2	50	COAL
		32286				50	50.35	COAL
		32287				50.35	51.6	COAL
	Lower Grizzly	32292	207435	53.4	54.5	53.4	54.5	COAL
	Upper Bumpy	32295	207436	134.7	135.2	134.7	135.2	COAL
NW-061	Upper Bumpy 1	32298	207437	137.1	137.5	137.1	137.5	COAL
	Apex A	82303	208938	2.6	3	2.6	3	COAL
	Unknown	82305	208939	18.05	18.25	18.05	18.25	COAL
	Unknown	82306	208940	51.75	52	51.75	52	COAL
	Apex B 1	82308	208941	71.9	72.45	71.9	72.45	COAL
	Apex B 2	82327	208942	73.6	74.2	73.6	73.7	COAL
		82310	208943			74	74.2	COAL
	Apex C 1	82312	208944	90.6	90.9	90.6	90.9	COAL
	Apex C 2	82315	208945	98.3	99.3	98.3	99.3	COAL
	Unknown	82317	208946	107.6	107.75	107.6	107.75	COAL
	Apex C 3	82319	208947	111.8	112.5	111.8	112.5	COAL
	Apex D 2	82321	208948	144.95	145.2	144.95	145.2	COAL
	Apex D 3	82323	208949	148.15	148.62	148.15	148.45	COAL
		82324				148.45	148.52	PARTING
		82325				148.52	148.62	COAL

Table 10 Summary of Coal Core Samples In SE Block

Drillhole ID	Seam ID	Field Sample ID	Lab ID	Seam Depth, m		Sample Depth, m		Sample Type
				From	To	From	To	
SE-001	Lower Bickford 2	32701		101.6	101.8	101.6	101.8	COAL
	Lower Bickford 3	32703	209403	104.6	104.8	104.6	104.8	COAL
SE-005	Unknown	32493	209404	27.2	27.4	27.2	27.4	COAL
	A6	32494	209405	28.7	28.9	28.7	28.9	COAL
	A8	32496	209406	68.8	69.3	68.8	69.3	COAL
SE-008	B Lower Upper	33252	209339	18.7	19.7	18.7	19.7	COAL
	B Lower	33255	209340	20.3	56.1	20.3	21	COAL
		33256				21	21.8	COAL
		33257				26	27	COAL
		33258				27.4	28.1	COAL
		33259				29	29.7	COAL
		33260				29.8	30.2	COAL
		33261				31.8	32	PARTING
		33262				32	33	COAL
		33263				33	33.7	COAL
		33264				33.7	34.4	COAL
		33265				34.4	35.1	COAL
		33266				35.1	36	COAL
		33267				36	37	COAL
		33268				37	38	COAL
		33269				38	39	COAL
		33270				39	40	COAL
		33271				40	41	COAL
		33272				41	41.6	COAL
		33273				41.6	42.4	COAL
		33274				42.4	43.4	COAL
		33275				43.4	44	COAL
		33276				44	45	COAL
		33277				45	45.7	COAL
		33278				45.7	46.4	COAL
		33279				46.4	47.2	COAL
		33280				47.2	48	COAL
		33281				48	48.8	COAL
		33282				48.8	49.4	COAL
		33283				49.4	49.55	PARTING
		33284				49.55	50.3	COAL

		33285				50.3	51.3	COAL
		33286				51.3	52.2	COAL
		33287				52.2	53	COAL
		33288				53	54.05	COAL
		33289				54.05	55.1	COAL
		33290				55.1	56	COAL
		33291				56	56.1	COAL
	B Lower Lower	33293	209341	56.5	57.6	56.5	57.3	COAL
	Unknown	33295	209429	108.75	108.95	108.75	108.95	COAL
SE-009	A6	82445	209407	71.5	71.7	71.5	71.7	COAL
	A9	82448	209408	133.05	133.6	133.05	133.6	COAL
	Upper Lake	82450	209409	181.45	181.7	181.45	181.7	COAL
SE-010	B Upper	32452	209336	29.5	32.1	29.5	29.8	COAL
		32453				29.8	30.55	COAL
		32454				30.55	31.3	COAL
		32455				31.3	32.1	COAL
	B Lower	32457	209337	32.6	35.7	32.6	32.95	COAL
		32459				33.1	33.85	COAL
		32460				33.85	34.6	COAL
		32461				34.6	35.4	COAL
		32462				35.4	35.5	PARTING
		32463				35.5	35.7	COAL
	B Lower Lower	32465	209338	36.2	36.4	36.2	36.4	COAL
SE-011	Unknown	32095	209410	54.3	54.55	54.3	54.55	COAL
	A9	82301	209411	91.7	91.95	91.7	91.95	COAL
SE-012	B Lower	32728	209412	2.8	10.3	5	5.5	COAL
		32729				8	8.3	COAL
	B Lower	32730	209413	11.35	31.6	14	14.1	COAL
		32731				17	17.85	COAL
		32732				20	22.9	COAL
		32733				23	23.85	COAL
	A4	32735	209414	121.1	121.3	121.1	121.3	COAL
	A5	32737	209415	131.6	131.9	131.6	131.9	COAL
	Unknown	32739	209416	145.1	145.4	145.1	145.4	COAL
SE-013	C Upper Upper	82402	209380	12.4	12.8	12.4	12.8	COAL
	C Upper	82405	209342	14.1	15.9	14.1	15	COAL
		82406				15	15.9	COAL
	Unknown	82409	209381	17	17.5	17	17.5	COAL
	C Upper Lower	82412	209382	27	27.6	27	27.6	COAL
	C Lower	82414	209383	35.8	38.3	35.8	36	COAL
	B Upper	82416	209343	67.3	70.5	67.3	68.2	COAL

		82417				68.2	69.2	COAL
		82418				69.2	70	COAL
		82419				70	70.5	COAL
	B Lower	82422	209344	71.4	75.2	71.4	72.4	COAL
		82423				72.4	73.4	COAL
		82424				73.4	74.4	COAL
		82425				74.4	74.6	COAL
		82426				74.6	74.75	PARTING
		82427				74.75	75.2	COAL
		82428		75.2	75.6	75.2	75.6	PARTING
	B Lower Lower	82429	209345	75.6	76	75.6	76	COAL
SE-015	Lower Bickford 1	32497	209417	73.9	74.1	73.9	74.1	COAL
	Lower Bickford 2	32498	209418	79	79.2	79	79.2	COAL
	Lower Bickford 3	32499	209419	82.2	82.7	82.45	82.7	COAL
SE-017	A3	82435	209422	39.35	39.95	39.35	39.95	COAL
	A4	82438	209423	67.9	68.2	67.9	68.2	COAL
	A5	82441	209424	77.9	78.3	77.9	78.3	COAL
	Unknown	82443	209425	106.3	106.5	106.3	106.5	COAL
SE-018	Unknown	82451	209386	3.9	4.05	3.9	4.05	COAL
	C Upper Lower	82453	209387	6.4	7.1	6.4	6.7	COAL
		82454				6.7	7.1	COAL
	Unknown	82457	209388	14	14.3	14	14.3	COAL
	C Lower Upper	82459	209389	17.1	17.25	17.1	17.25	COAL
	C Lower	82461	209369	18	18.95	18	18.2	COAL
		82462				18.2	18.3	PARTING
		82463				18.3	18.95	COAL
	B Upper	82466	209370	42.3	45	42.3	43.2	COAL
		82467				43.2	44	COAL
		82468				44	44.75	COAL
	B Lower Upper	82471	209371	46	46.2	46	46.2	COAL
		82472				46.2	46.6	PARTING
	B Lower	82473	209372	46.6	49.5	46.6	47.6	COAL
		82474				47.6	48.6	COAL
		82475				48.6	49.1	COAL
		82476				49.1	49.2	PARTING
		82477				49.2	49.5	COAL
		82478				49.5	50	PARTING
	B Lower Lower	82479	209390	50	50.3	50	50.1	COAL
	Unknown	82481	209373	96.5	96.75	96.5	96.75	COAL

	A4	82482	209374	115.1	115.35	115.1	115.15	COAL
		82483				115.15	115.25	PARTING
		82484				115.25	115.35	COAL
SE-019	B Upper	33081	209308	18.7	20.5	19.1	19.6	COAL
		33082				19.6	20.5	COAL
	B Upper	33083		20.5	21.4	20.5	21.4	COAL
		33084				21.4	22	PARTING
	B Lower Upper	33085	209378	22	22.3	22	22.3	COAL
		33086				22.3	22.5	PARTING
	B Lower	33087	209309	22.5	25.2	22.5	22.75	COAL
		33088				23	24.1	COAL
		33089				24.1	25.2	COAL
		33090				25.2	25.7	PARTING
	B Lower Lower	33091	209310	25.7	26.1	25.7	26.1	COAL
	A4	33093	209379	57.7	57.8	57.6	57.7	COAL
SE-029	C Upper	32706	209311	1	2.4	1.8	2.4	COAL
		32726				2.4	2.8	PARTING
	C Upper Lower	32707	209312	2.8	3.2	2.8	3.2	COAL
	C Lower Upper	32709	209313	12.1	12.5	12.1	12.5	COAL
	C Lower	32712	209314	13.4	14.2	13.4	14	COAL
		32713				14	14.2	COAL
	B Upper	32716	209315	29.4	31.8	29.4	30.6	COAL
		32717				30.6	31.8	COAL
	B Lower	32720	209316	33.5	35.5	33.5	34.4	COAL
		32721				34.4	35	COAL
		32722				35	35.5	COAL
	B Lower Lower	32724	209377	36.2	36.5	36.2	36.5	COAL
SE-030	C Upper Upper 1	32392	209325	21.6	21.8	21.6	21.8	COAL
	C Upper Upper	32393	209326	28.8	29	28.8	29	COAL
	C Upper	32395	209327	30.2	32.15	30.2	31.15	COAL
		32396				31.15	32.15	COAL
		32397				32.15	32.6	PARTING
	C Upper Lower	32398	209328	32.6	33	32.6	33	COAL
	C Lower Upper	32401	209329	42.8	43.3	42.8	43.3	COAL
		32402				43.3	43.8	PARTING
	C Lower	32403	209330	43.8	44.8	43.8	44.8	COAL
	B Upper	32406	209331	58.15	60.9	58.15	59	COAL
		32407				59	60	COAL
		32408				60	60.9	COAL
	Unknown	32411	209332	62.6	64.3	62.6	63.3	COAL
		32412				63.3	64.3	COAL



	B Lower Upper	32415	209333	65.5	66.15	65.5	66.15	COAL
	B Lower	32418	209334	67	69.8	67	67.8	COAL
		32419				67.8	68.6	COAL
		32420				68.6	69.4	COAL
		32421				69.4	69.5	PARTING
		32422				69.5	69.8	COAL
		32423				69.8	70.3	PARTING
	B Lower Lower	32424	---	70.3	71	70.3	71	COAL
SE-031	A5	32427	209335	120.5	120.8	120.5	120.8	COAL
	B Upper	32052	208101	16.6	19	16.6	18.4	COAL
		32053				18.4	19	COAL
	B Lower Upper	32056	---	20	20.4	20	21.4	COAL
	B Lower	32057	208102	21	23	21.4	22.4	COAL
		32058				22.4	23	COAL
	B Lower Lower	32060	208103	23.9	24.2	23.9	24.2	COAL
	A9	32061	208104	148.5	148.7	23.9	148.7	COAL
SE-040	A10	32062	208105	187.6	188	187.6	188	COAL
	A11	32063	208106	190.8	191.1	190.8	191.1	COAL
	C Upper Upper 1	32366	209317	21.2	21.5	21.2	21.5	COAL
	C Upper Upper	32369	209318	25.9	26.2	25.9	26.2	COAL
	C Upper	32372	209319	27.5	29	27.5	28	COAL
		32373				28	29	COAL
	C Upper Lower	32375	209320	29.6	29.8	29.6	29.8	COAL
	C Lower	32377	209321	40.3	41.15	40.3	41.15	COAL
	B Upper	32380	209322	51.95	54.2	51.95	52.8	COAL
		32381				52.8	53.5	COAL
		32382				53.5	54.2	COAL
	B Lower	32385	209323	56.7	58.65	56.7	57.5	COAL
		32386				57.5	58.35	COAL
		32387				58.35	58.45	PARTING
		32388				58.45	58.65	COAL
		32389				58.65	59.2	PARTING
	B Lower Lower	32390	209324	59.2	59.6	59.2	59.6	COAL
SE-041	C Upper Upper 1	32569	209346	17.3	18	17.3	18	COAL
	C Upper Upper	32572	---	26.25	27	26.25	27	COAL
	C Upper	32575	209348	28.75	30.65	28.75	29.3	COAL
		32576				29.3	30	COAL
		32577				30	30.65	COAL
	C Upper Lower	32579	209349	31	31.55	31	31.55	COAL
	C Lower	32581	209350	44.05	45.4	44.05	44.75	COAL

	C Lower	32582				44.75	45.4	COAL
	B Upper	32585	209351	53.3	56.7	53.3	54	COAL
		32586				54	54.8	COAL
		32587				54.8	55.35	COAL
		32588				55.35	56.2	COAL
	B Lower	32590	209352	59.4	61.15	59.4	60	COAL
		32591				60	60.6	COAL
		32592				60.6	61.15	COAL
	B Lower Lower	32595	209353	61.7	62.2	61.7	62.2	COAL
	A1	32598	209384	84.2	85.1	84.2	84.4	COAL
	A2	32600	209385	86.25	87	86.25	86.6	COAL
	A3	32601	209354	89	90	89	89.85	COAL
	A4	32603	209355	91	91.4	91	91.4	COAL
SE-045	C Lower	32352	209356	14.5	15.3	14.5	15.3	COAL
	B Upper	32355	209357	25.8	28.8	25.8	26.8	COAL
		32356				26.8	27.8	COAL
		32357				27.8	28.8	COAL
	B Lower	32360	209358	32	33.6	32	33	COAL
		32361				33	33.6	COAL
		32362				33.6	34.1	PARTING
	B Lower Lower	32363	209359	34.1	34.5	34.1	34.5	COAL
SE-050	C Upper Upper	33052	209360	39	39.3	39	39.3	COAL
	C Upper	33055	209361	41.35	42.8	41.35	42.05	COAL
		33056				42.05	42.8	COAL
		33057				42.8	43.3	PARTING
	C Upper Lower	33058	209362	43.3	43.7	43.3	43.7	COAL
	C Lower	33061	209363	54.3	55.2	54.3	55.2	COAL
	B Upper	33064	209364	64	66	64	65	COAL
		33065				65	66	COAL
	B Lower	33068	209365	68.2	69.7	68.2	69	COAL
		33069				69	69.7	COAL
	B Lower Lower	33072	209366	70.6	71.1	70.6	71.1	COAL
SE-051	A9	33075	209367	172.3	172.7	172.3	172.7	COAL
	A10	33078	209368	180.8	180.9	180.6	181	COAL
	C Upper Upper 1	32064	209300	23.6	23.8	23.6	23.8	COAL
	C Upper Upper	32066	209301	27.1	27.55	27.1	27.55	COAL
	C Upper	32069	210089	29.7	31.35	29.7	30.7	COAL
		32070				30.7	31.35	COAL
		32071				31.35	31.7	PARTING
	C Upper Lower	32072	209303	31.7	32.1	31.7	32.4	COAL
	C Lower	32075	209304	42.9	44.2	42.9	44.1	COAL

		32076				44.1	44.2	COAL
	B Upper	32079	209305	51.7	54.2	51.7	52.7	COAL
		32080				52.7	53.7	COAL
		32081				53.7	54.2	COAL
	B Lower	32084	209306	56.3	58	56.3	57.3	COAL
		32085				57.3	58.3	COAL
		32086				58.3	58.7	PARTING
SE-052	B Lower Lower	32087	209307	58.7	59.4	58.7	59.4	COAL
SE-052	A4	33095	209420	4.4	4.8	4.4	4.8	COAL
	A10	33097	209421	72.4	72.6	72.4	72.6	COAL
SE-056	A1	32774	209391	10	10.2	10	10.2	COAL
	Unknown	32775	209392	48.4	48.6	48.4	48.6	COAL
SE-069	Unknown	32430	209393	61.6	61.95	61.6	61.95	COAL
	Unknown	32432	209394	75.45	75.55	75.45	75.55	COAL
	Upper Bickford	32434	209395	78.55	79.15	78.55	79.15	COAL
		32435	209396			79.15	79.75	PARTING
	Unknown	32436	209397	79.75	79.9	79.75	79.9	COAL
	Lower Bickford	32439	209398	83.8	84.3	83.8	84.3	COAL
		32440		84.3	85	84.7	85	COAL
		32441	209428			85	85.3	PARTING
	Unknown	32442	209399	85.3	85.8	85.3	85.8	COAL
	Lower Bickford 1	32445	209400	106.25	106.4	106.25	106.4	COAL
		32446		106.4	106.8	106.55	106.8	COAL
	Lower Bickford 2	32449	209401	109.4	109.7	109.4	109.7	COAL

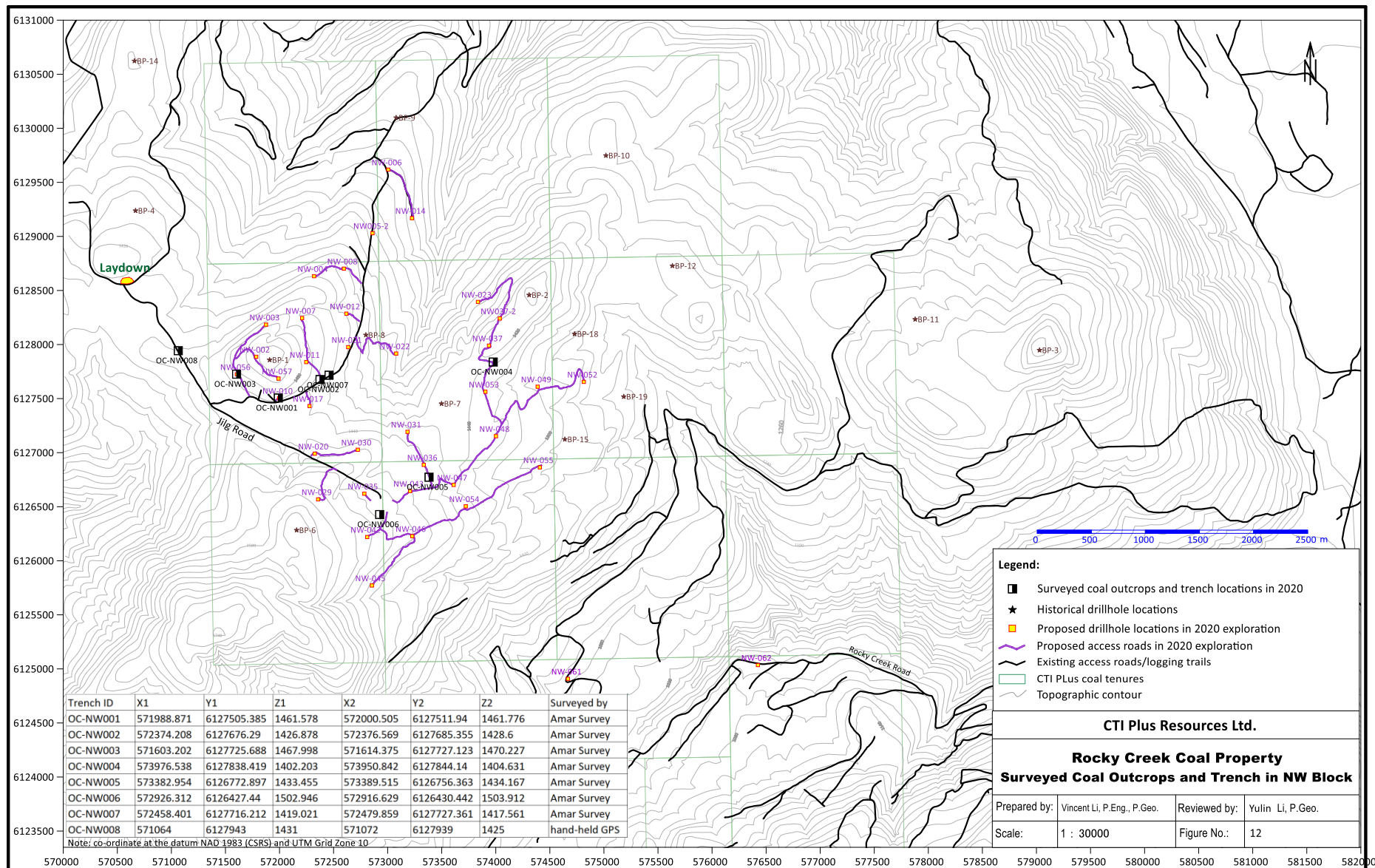
### 3.7.1.3 Coal Outcrop and Trench Sampling and Samples

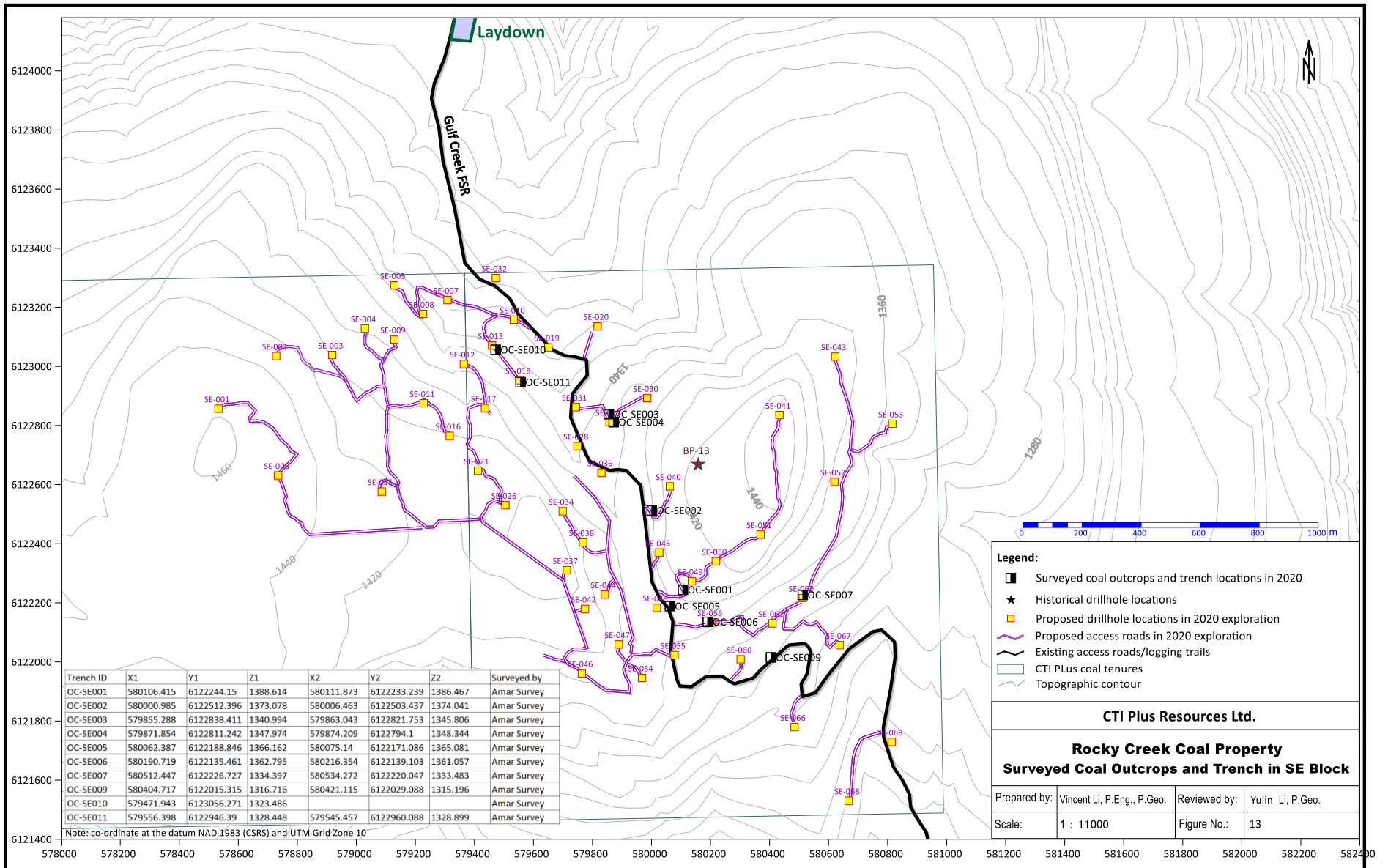
There were few coal outcrops along the existing roadsides in both of NW and SE blocks. During the access road and drillhole pad construction, there were more fresh cut coal seams exposed. To understand more of the coal geology and coal quality, some trenches were dug, and coal samples were taken from the trench. The trenches were mechanically dug by an excavator to fully expose the coal seam top and bottom. Geologists described the exposed coal section and then took one channel sample from the exposed coal seam (Appendix H). The small trench sample was taken by cutting a small trench which is 0.1 – 0.15 m wide and 0.5 – 0.1 m deep perpendicular to the coal seam from the top to bottom. In two outcrops with thicker coal seams exposed, about 500 kg bulk sample were also

taken. Table 11 shows a summary of coal outcrops and trench sample information. Figure 12 and 13 show the coal outcrops locations in the NW and SE Block respectively.

Table 11 Summary of Coal Outcrop and Trench Samples

NW Block								
No.	Thickness (m)	Coal Seam ID	Slope (Deg)	Section Direction (Deg)	Length (m)	Strike (Deg)	Dip (Deg)	Sample ID
1	2.7	Upper Grizzly	75/45	250 SW	17.6	260 SW	05 NW	33811 Channel
								33812 Bulk
2	3	Upper Grizzly, Lower Grizzly	55	340 NW	9.7	185 SE	05 NW	33802
3	4	Upper Grizzly, Lower Grizzly	NA	295 NW	14.7	358 NW	03 NE	33801
4	3.1	Upper B1, Upper B	60	260 SW	27	235 SW	21 NW	33814
5	0.5/0.75	Undefined	65/80	300 NW	18	310 NW	10 NE	33814
6	2.5	Upper Grizzly	60	NA	20	216 SW	15 NW	33804
7	1.82	Upper Grizzly	55	220 SW	24	055 NE	07 SE	33813
8	---	No coal	90	307 NW	14.8	300 NW	12 NE	33803
SE Block								
1	2.1	C Upper	85	320 NW	8	295 NW	04-10 NE	33805
2	1.5	C Upper	80	320 NW	10.6	300 NW	10 NE	33806
3	Same as #4							
4	> 3.5	C Upper Upper, C Upper	70-80	300 NW	20	130 SE	10 SW	33817
5	> 2.9	B Upper	55	255 SW	24	275 NW	10 NE	33809
6	3.7	Undefined	45	320 NW	10.6	060 NE	15 SE	33808 Channel
								33807 Bulk
7	---	No coal	80	245 SW	8.5	080 NE	05 SW	---
9	0.5/0.7	A08	50/60	015 NE	20.7	355 NW	05 NE	33810
10	No coal							
11	> 4	C Upper	60	280 NW	18	285 NW	35 NE	33816





### **3.7.2 Sample Management**

CTI Plus rented a large warehouse in the town of Chetwynd for storage of coal samples as well as to conduct core logging. Coal cutting samples were collected on the wellsite, properly labeled and bagged. At the end of shift, wellsite geologist or the geologist in charge brought the samples back to the warehouse with a sample information sheet. The coal core samples were collected after the detailed geological core logging completed. Core samples along with the sample information sheet were stored in the warehouse. When certain amount of samples were accumulated during the program, the geologist in charge reorganized the samples, packed in plastic bins properly, completed the Chain of Custody (COC) sheet, signed on the COC sheet when all the sample ID match the COC data sheet, and then contacted a local commercial delivery company to ship to Birtley Lab in Calgary, AB. After the samples in plastic bins were picked up by the shipping company, the geologist in charge sent an email to Birtley Lab to notice the lab with the attachment of sample information sheet and signed COC form. When Birtley Lab received the samples from the delivery company, lab employees checked the sample ID and COC form to make sure all match, if there was no issue found, the receiver of lab employee signed the COC form and email back to the geologist in charge to confirm receiving of the samples. The process was repeat until all samples were safely sent to Birtley Lab. Two bulk trench samples with approximately over 500 kg weight were transported by a pick-up truck directly by CTI Plus contractor or employee from Chetwynd to Birley Lab in Calgary.

### **3.8 Geotechnical Core Logging and Testing**

As a part of the drilling program, some of cored drillholes were selected to do geotechnical core logging and rock core sampling, as well to conduct the geotechnical testing for future mine design and mining support. In total, 18 cored drillholes were selected for geotechnical logging and testing in both NW Block and SE Block.

Stantec was contracted to the Geotech core logging and testing services supported by drill site geologists from CTI Plus. Coring was completed using HQ and PQ diamond coring rigs. The core was extruded from the core barrel directly into core boxes on the rig



site using standard wireline coring process. The core was transported by truck to a storage warehouse yard in the Town of Chetwynd, BC where it was photographed, geologically logged, sampled and then stored in an outdoor yard until it was moved into a heated indoor location for geotechnically logging.

Two Stantec engineers/geologists traveled to the core storage facility in Chetwynd BC on October 28<sup>th</sup>, 2020 to provide geotechnical core logging training to CTI Plus staff for a period of 5 days. The CTI Staff present at site were comprised of Professional Engineers, Geologists, Engineer-in-Training and support staff. The logging was completed until December 3<sup>rd</sup>, 2020. Stantec's engineers performed QA/QC of the logging results and supervised/instructed the CTI Plus staff during the logging process.

The geotechnical core logging used Stantec's Geotechnical Rock Logging Guidelines and RMR76 System Standard. The logging procedure is summarized as blow:

- Lay the core boxes on the core logging table and core was exposed by removing the lid off core box.
- Use a wet soft brush to clean the core if core is covered by drilling mud.
- Describe the core to capture the following.
  - Rock type identification (lithology)
  - Grain size
  - Core recovery
  - Rock quality designation (RQD)
  - Hammer hardness
  - Discontinuity characteristics
  - Secondary mineralization

- Sedimentary structure
  - Weathering
  - Colour
- Select point load testing (PLT) samples for approximately every 1.5 m of rock core and test one axial and one diametral on the sample.
- Select sample and properly bagging the sample for unconfined strength (UCS) testing.
- Photograph the core when core is dry.
- Photograph the core again when core is wet.

The amount of samples tested by UCS and PLT as shown in Table 12.

The preliminary data interpretation indicates that the rocks in the NW block in typical ranges in terms of RMR76 Values. A summary of RMR76 ranges by lithology are presented in Table 13.

The geotechnical core logging details and tested data are provided with the electronic version in Appendix I.

Table 12 Summary of Samples Collected for Geotechnical Testing

Drillhole ID	Test Type and Number of Tests				
	UCS	Dry Bulk Density	Moisture Content	Point Load Test	Total
NW-002	5	5	5	218	233
NW-004	5	5	5	240	255
NW-011	3	3	3	178	187
NW-029	5	5	5	268	283
NW-030	4	4	4	136	148
NW-031	4	4	4	148	160
NW-037	4	4	4	245	257
NW-042	2	2	2	102	108
NW-045	4	4	4	146	158
NW-054	5	5	5	207	222
NW-055	3	3	3	94	103
SE-009	5	5	5	230	245
SE-010	3	3	3	122	131
SE-026	5	5	5	151	166
SE-030	4	4	4	148	160
SE-040	4	4	4	137	149
SE-041	4	4	4	185	197
SE-056	6	6	6	197	215
Total	75	75	75	3152	3377

Table 13 RMR76 Results by Lithology

Lithology	Geotechnical	Length of Core Logged (m)	RMR <sub>76</sub>		
	Intervals		Minimum	Maximum	Average
Conglomerate	44	82.93	37	83	60
Sandstone	373	724.48	31	82	61
Siltstone	368	673.26	29	79	60
Claystone	381	660.24	26	79	51
Carbonaceous Claystone	199	276.38	24	66	44
Carbonaceous Siltstone	7	8.16	32	66	41

### **3.9 Hydrogeology**

The field hydrogeology survey and mapping were not conducted from the 2020 exploration program. Standing water level in each open-hole was recorded by the geophysical loggers of DMT during the borehole televiewer logging between October 11 and October 16, 2020 and environment consultant of ERM during the site visit on October 18 and 19, 2020.

The initial drillhole SE069-1 encountered the artesian water while drilling at 46.59m, then it was immediately cemented and abandoned. The second drillhole SE069 was drilled with a normal condition of hydrogeology at the same pad.

Table 14 summarizes the static water level below ground surface in drillholes. The standing water level in holes varied from 31.75 m to over 100.00 m below ground.

There are nine (9) open-holes of NW004, NW011, NW037, NW045 and NW048 in NW Block, and SE020, SE026, SE062 and SE066 in SE Block that were remained and proposed to run the hydrophysical logging and groundwater monitoring well installation in 2021. These open-hole heads were maintained with the capped casing tick-up of ground and fenced to protect from damage.

Table 14 Summary of Static Water Level in Drillhole

Drillhole ID	Measured Drillhole Depth m	Casing Size	Water Table (depth to water, bgs)			
			DMT Measurement		ERM Measurement	
			m	Date	m	Date
NW004	206.01	HQ	58.39	2020-10-16		
NW011	245.17	PQ	30.96	2020-10-16	31.75	2020-10-18
NW030	159.81	HQ	42.41	2020-10-11		
NW037	196.93	HQ	97.7	2020-10-13	97.67	2020-10-18
NW045	119.29	HQ	26.87	2020-10-13		
NW048	244.28	PQ	52.29	2020-10-12	51.54	2020-10-18
SE020	195.5	PQ	67.65	2020-10-14	66.55	2020-10-19
SE056	149.76	HQ	24.36	2020-10-15		
SE062	199	PQ	77.67	2020-10-15		
SE066	174.05	PQ			>100	2020-10-19

Note: bgs – below ground surface

### 3.10 Geochemical Sampling

Geochemical sampling program was conducted in the 2020 exploration, that intended to characterize the geochemistry of the samples collected from the seam roof, floor, parting, overburden and interburden, and understand the metal leaching (ML) and/or acid rock drainage (ARD) potential of the non-coal material to be potentially exposed during mining activities in the future.

A detailed geochemical sampling method with the QA/QC procedure and sample management was prepared prior to the field performance by Mr. Gareth Wolff, P.Geo. of ERM after he reviewed the core logs and planed the drillholes and core sections for geochemical sampling. Mr. Wolff supervised and trained CTI Plus' site geologist at the core logging site from October 28<sup>th</sup> to 31<sup>st</sup>, 2020. CTI Plus' site geologist continued to complete the geochemical sampling program afterwards.

Geochemical samples were collected indoor from 45 of selected drillholes after the geological and geotechnical core logging, and coal sampling. The sample intervals were defined upon visual inspection of the drill cores. Some specific intervals were chosen that

were adjacent to or between coal seams or targeted a specific grain size or lithological unit.

A total of 436 samples were collected. Each sample was weighted at a minimum of 2 kg. The samples were categorized based on the lithology, 234 from mudstone or clay, 132 from sandstone, 56 from siltstone, and 14 from conglomerate. Appendix J provides the details of these geochemical samples collected from the selected drill cores.

Table 15 summarizes the characteristics of these samples, e.g., 4 samples contain about 1% abundance of the disseminate pyrite, 50 samples with varying percent abundance from <1% to 5% calcite that are occurred in the style of stringers, veins and lamina, 14 samples with quartz, and 39 samples with the iron oxidation on fractures.

All geochemical samples were shipped to and stored in Bureau Veritas Lab (BV Lab), located at 4606 Canada Way, Burnaby BC. Test works will be undertaken in accordance with the Metal Leaching and Acid Rock Drainage (ML/ARD) Policy and Guidelines for Mines in British Columbia. The sample analysis is planned for 2021.

### **3.11 Coal Quality and Washability Testing**

Coal Samples collected from 2020 drilling have been planned in 2021 analysis and testing program.

Samples were sent to Birtley Lab in Calgary of Alberta. Samples testing and data analysis are in progress, and the final test data are not available when this report is submitted.

Table 15 Summary of Geochemical Characteristics from Field Samples

Number of Sampled Drillholes	Total Samples	Sulphide			Carbonate				Alteration		
		% abundance	Number of Samples	Description	% abundance	Number of Samples	Description	Location	Quartz	Fe-Oxidation	
										Samples	Location
45	436	1%	4	Disseminated Pyrite; Depth between 95m-154m, usually much deeper than the last coal seam in the hole.	<1%	32	Possible calcite veins, stringers, or lamina	Varying with depth and location	14	39	Most occurred in the fractures of the overburden and roof of coal seams.
					1%	13	Most calcite stringers	Varying with depth			
					2%	2	Possible calcite veins	Overburden in SE Block			
					3%	2	Calcite veins and fracture fill	SE Block			
					5%	1	Calcite veins and fracture fill	SE Block			

### 3.12 Drillhole Televier Logging

DMT Geosciences Ltd. of Calgary, AB was retained to perform the drillhole geophysical logging via the instruments of the Acoustic Televier and Optical Televier in the selected open holes (Table 16) from October 10<sup>th</sup> to 19<sup>th</sup> of 2020.

Table 16 Summary of Drillholes Selected for Televier Logging

NW Block		SE Block	
Drillhole ID	Logged Depth	Drillhole ID	Logged Depth
NW004	205.8	SE020	195.3
NW011	245.2	SE026	118.3
NW030	159.4	SE056	149.5
NW037	196.9	SE062	199
NW045	119.2	SE066	174.2
NW048	244.1		

The Acoustic Televier was used to examine structure and/or fractures in drillholes and used in correlation with existing core logs to delineate naturally occurring fractures versus induced fractures from drilling. Similarly, the Optical Televier was used to examine structure and/or fractures in the drillholes above the water table where the Acoustic Televier could not be used, such as drillholes that were not filled with water. With the results of loggings, the structural and lithographic interpretation, including coal seams, were completed, and reported in detail from Appendix K.



## 4 GEOLOGY

### 4.1 Regional Geology

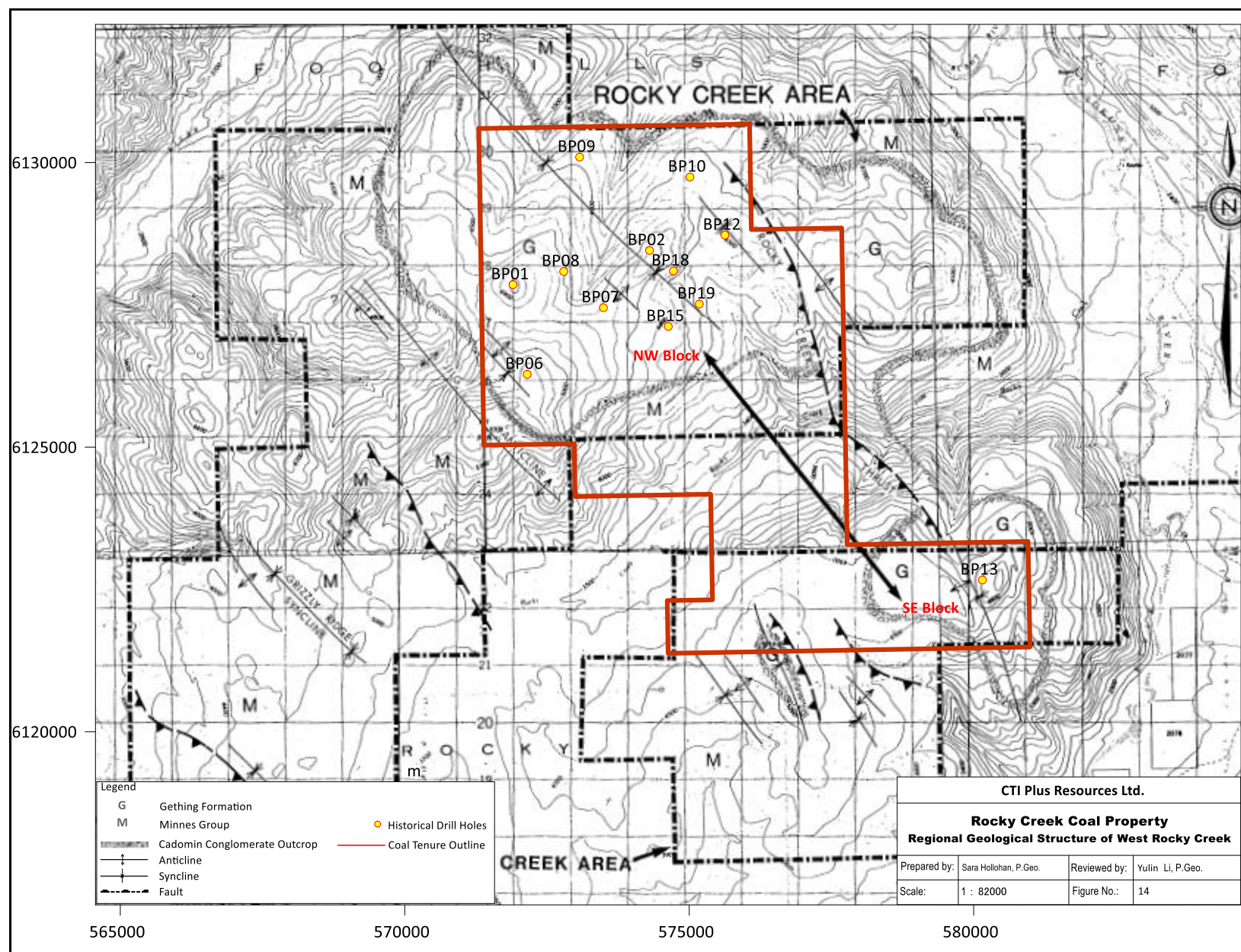
The West Rocky Creek coal property is situated on the west side of Sukunka River within Rocky Mountain Foothills in northeastern British Columbia.

Regional stratigraphic studies had been carried out by the Geological Survey of Canada and by the British Columbia Department of Energy and Petroleum Resources, in addition to coal exploration programs carried out by BP Exploration Canada Ltd. in late 1970's and early 1980's. The regional geology is summarized up in various historical coal assessment reports.

The stratigraphy of the Upper Jurassic and Lower Cretaceous in the general Rocky Creek area is well documented in 1981 Rocky Creek report and other reports in BP files. The stratigraphy includes Minnes Group and Bullhead Group, the formations thickness and lithology are listed in Table 17 from the BP report. The regional geology and structure are shown in Figure 14.

Table 17 Table of Formations in West Rocky Creek

Group	Formation		Lithology	Thickness (m)
Bullhead Group	Gething Formation	Upper	Sandstone	>10
		Middle	Sandstone, mudstone, siltstone	104
		Lower	Sandstone, mudstone, siltstone, coal, minor conglomerate	320 to 354
	Cadomin Formation		Conglomerate, sandstone, minor fine sediments	25 to 35
Minnes Group	Bickford Formation		Sandstone, mudstone, coal, conglomerate	>285
	Monach Formation		Quartzite, finer sediments as above/below	>50
	Beattie Peaks Formation		Sandstone, mudstone, thin coals, conglomerate	>300
	Monteith Formation		Quartzite, sandstone	>600



### **4.1.1 Stratigraphy**

#### **Minnes Group**

Minnes group in age ranges from Upper Jurassic to Lower Cretaceous. Four formations are encompassed, from bottom up these are the Monteith, Beattie Peaks, Monach and Bickford Formations.

The Monteith Formation in the West Rocky Creek area consists of quartzites and coarse sandstones, estimated thickness is over 600 m. This formation has not been extensively investigated, but generally is known to be non-coal bearing.

Beattie Peaks Formation composed of fine sandstones, shales and generally thin coals. At least 300 m of Beattie Peaks sediments are exposed in the high ground northeast of Mount Merrick. Several hand dug trenches in historical exploration show a number of coal seams, locally as thick as 2.5 m which is thought to be in Beattie Peaks formation.

Monach Formation consists of two separate bands of orthoquartzite, each about 5 to 6 m thick, separated by beds similar to those above and below it. The total thickness of Monach Formation is about 50 m. no significant coal is known in this unit.

Bickford Formation consists of medium to coarse grained sandstones, mudstones, coal seams and conglomerate. Several thin seams up to 1 m thick are known from the outcrops and drillholes; near Mount Merrick, two seams each about 2m thick occur 30 – 35 m below the top of Bickford formation. The contact of Bickford formation with the overlying Cadomin Formation is abrupt. The contact is considered a regional unconformity.

#### **Bullhead Group**

Cadomin Formation consists principally of thick-bedded to massive, pebble to boulder, conglomerate and associated medium to coarse sandstones. Within the West Rocky Creek area, the Cadomin commonly consists of two distinct, resistant conglomerate and sandstone zones, separated by an interval of finer, more argillaceous beds. The Cadomin forms an excellent mapping unit, as it commonly crops out as two lines of bluffs, separated by a recessive interval. The total thickness of Cadomin ranges from 25 to 35 m. The

contact of the Cadomin with overlying Gething Formation is interfingering on a regional basis, however, in the West Rocky Creek area it appears to be abrupt although some lateral transgression may have occurred.

Gething Formation has been established in three informal subdivisions, the Lower, Middle and Upper Gething. These units have been recognized on the surface and in drillholes on both sides of the Sukunka River, West Rocky Creek and East Rocky Creek.

The Lower Gething consists of sandstones, siltstones, mudstones, coal seams and minor conglomerate. Sandstones predominate near the top and base of this unit; the basal part locally contains abundant conglomerate and siliceous, coarse sandstone. Coal seams are present throughout the Lower Gething unit, however, are most abundant in the middle of the unit.

#### **4.1.2 Structure**

The West Rocky Creek coal property lies within the Inner Foothills structural province, and as such exhibits the complex structural geology in regional scale (Figure 14).

In the southwestern area near Mount Merrick, are severely deformed, with Paleozoic carbonates being thrust over Minnes and Bullhead strata. Immediately northeast of Mount Merrick, under the major thrust, the Gething and Cadomin are folded into the tight, near isoclinal Merrick Syncline, overturned to the northeast. To the northeast of this structure, steep southwest dips prevail in the Minnes Group exposures until a second major thrust is encountered, southwest of BP06. From here northeast to where over a distance of 4 km, gently dipping beds of the Minnes are exposed in the broad Grizzly Ridge Syncline. Further to the northeast, Minnes beds again dip steeply to the southwest, up to the north in the ridge southwest of Mount Jilg where a major thrust is thought to be present.

Mount Jilg is marked by the chevron-form, Jilg Anticline involving Minnes and some Bullhead strata. To the northwest, the Jilg Anticline passes to a flat-topped box-form. On north peaks, the west limb is marked by a tight, subsidiary syncline, and the east limb passes into the Rocky Creek Synclinorium.

The Rocky Creek Synclinorium is characterised by gentle to moderate limb dips, common subsidiary open folds and one major internal fault. The synclinorium covers the greater part of Rocky Creek property coal licenses and it is here that the majority of the historical explorations and CTI Plus 2020 drilling program have been done, in appreciation of its less intense deformation.

In the south of West Rocky Creek, the fault may pass into a monocline in a region of steep to near vertical eastward dips, along the deep valley immediately west of BP13. This structure apparently cuts off the westward extension of the thick coal seams in BP13.

## **4.2 Local Geology**

### **4.2.1 Stratigraphy and Coal Seams**

CTI Plus coal licenses in the West Rocky Creek area is subdivided into two blocks, NW Block and SE Block. The stratigraphy and coal sequences are shown in Table 18.

In both NW and SE blocks, the Upper Gething and Middle Gething units are eroded, but Lower Gething unit is widely distributed where the major coal seams are bearing.

#### **Coal Seams in NW Block Intercepted by Drillholes**

Coal seams in NW Block are C, B, Pump, Grizzly, Meadow, Bumpy and Lake seams in Lower Gething unit. Each of seams in Lower Gething unit has Upper and Lower or more sub-seams depending on the number of coal splits. Coal seams intercepted by drillholes are summarized in Table 19.

Seams of C, B and A are only intercepted in drillhole NW037, NW037-2 and NW023 in NW Block. C seam ranges from 0.3 to 1.85 m, thickness changes in short distance, average 1.32 m. B seam has four splits, each split average thickness is over 0.45 m which are all potentially minable by open pit. Total average thickness of all four splits is 3.15 m. A seam is minor and only two drillholes intercepted it. Figure 15 illustrates the major seam outcrops and sub-crops in NW Block.

Table 18 Stratigraphic and Coal Sequences

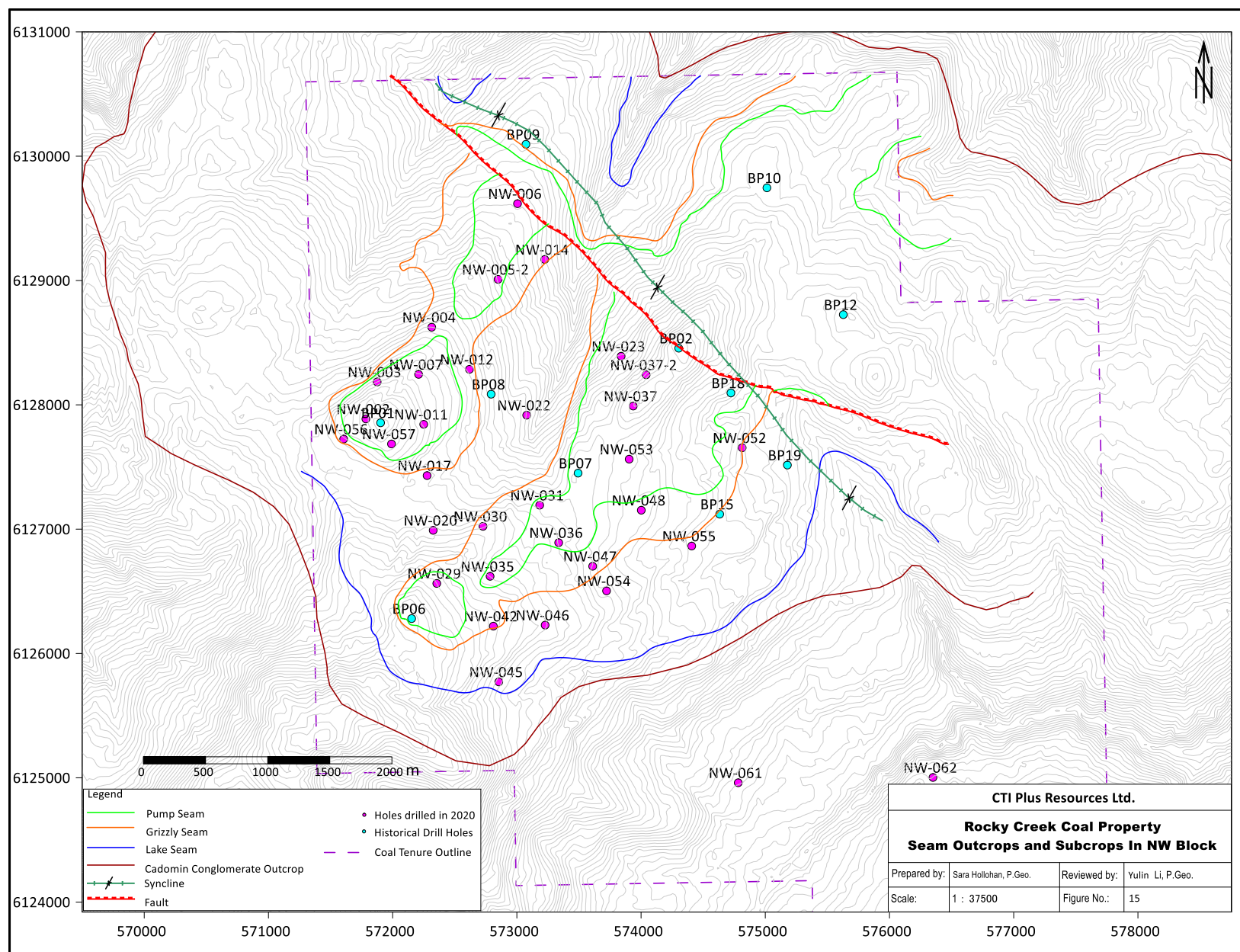
Series	Group	Formation		Lithology	Thickness(m)	Stratigraphic Distance above Cadomin (m)	SeamID
Lower Cretaceous	Bullhead Group	Gething Formation	Upper Gething	Eroded, not exist;	0	N/A	NA
			Middle Gething	Calcareous mudstone, one or more thin glauconitic sandstone (30cm);	105m	N/A	No Coal
			Lower Gething	sandstone, siltstone, mudstone, carbonaceous mudstone and multriple coal seams;	320-350	220-230	C
						200-210	B
						190	A
						150-175	Pump
						135-165	Grizzly
						75-115	Meadow
						60-95	Bumpy
		5-15	Lake				
		Cadomin Formation	Conglomerate with colorful pebbles, cobbles and boulders such as white, black, green and red chert, quartzite/granite, because if its resistant nature, it can be readily recognized in the field.	25-40	N/A	N/A	
	Minnes Group	Bickford Formation	medium to coarse grained sandstones, mudstone and coal seams;	285	-20	Bickford	

Pump seam concentrates in two areas, one is in the area of drillhole NW002, NW057, NW003 and NW007, the other is in the area of drillhole NW030, NW036, NW053, NW037 and NW023. Pump seam has four splits but Upper Pump and Lower Pump are more commonly distributed. Pump seam is thicker in NW002 area and thinner in NW030 area. All four splits are open pit minable in terms of thickness. Upper Pump is the major split with thickness ranges from 0.3 to 2.65 m, average 1.07 m. Total thickness of all four splits is 2.52 m in average.

Table 19 Coal Seam Intercepted in Drillholes of NW Block

Coal Seam Name	Coal Seam Sub-Name	Apparent Thickness, m			Count
		Minimum	Maximum	Average	
C Seam	C	0.3	1.85	1.32	3
B Seam	Upper B 1	0.4	0.5	0.45	2
	Upper B	0.6	1.1	0.8	3
	Lower B	0.5	2	1.3	3
	Lower B 1	0.6	0.6	0.6	1
A Seam	A 1	0.2	0.3	0.23	2
Pump Seam	Upper Pump	0.3	2.65	1.07	12
	Lower Pump	0.2	0.67	0.39	12
	Lower Pump 1	0.25	0.6	0.45	3
	Lower Pump 2	0.44	0.9	0.61	3
Grizzly Seam	Upper Grizzly	0.3	4	1.73	25
	Lower Grizzly	0.2	1.1	0.5	23
	Lower Grizzly 1	0.2	0.5	0.27	13
	Lower Grizzly 2	0.4	0.6	0.5	2
Meadow Seam	Upper Meadow	0.2	0.8	0.38	33
	Lower Meadow	0.2	1	0.36	34
	Lower Meadow 1	0.2	0.4	0.28	7
Bumpy Seam	Upper Bumpy	0.2	1.78	0.51	32
	Upper Bumpy 1	0.3	0.4	0.34	5
	Lower Bumpy 1	0.2	0.65	0.36	21
	Lower Bumpy 2	0.2	0.8	0.34	22
	Lower Bumpy 3	0.2	0.5	0.32	16
Lake Seam	Upper Lake	0.2	1.8	0.92	24
	Lower Lake	0.2	0.8	0.45	21
Apex Seam	Apex A	0.4	0.4	0.4	1
	Apex B 1	0.55	0.55	0.55	1
	Apex B 2	0.5	0.5	0.5	1
	Apex C 1	0.3	0.3	0.3	1
	Apex C 2	1	1	1	1
	Apex C 3	0.7	0.7	0.7	1
	Apex D 2	0.25	0.25	0.25	1
	Apex D 3	0.3	0.3	0.3	1







Grizzly seam widely distributes in NW Block and is the most significant seam in terms of coal resource in NW Block. Similarly, Grizzly seam has four splits. Upper Grizzly and Lower Grizzly are major splits in terms of thickness and distribution area. Upper Grizzly ranges from 0.3 to 4 m with average 1.73 m. Lower Grizzly ranges from 0.2 to 1.1 m and averages 0.5 m. Lower Grizzly 1 averages 0.27 m thickness and has less mining potential. Lower Grizzly 2 thickness ranges from 0.4 to 0.6 m with average 0.5 m. it is potentially minable but only occurs locally.

Meadow seam and Bumpy seam have three or five splits and widely distribute in NW Block, average thickness of the splits ranges from 0.3 to 0.5 m. However, the thickness of each of the splits can be up to 1 m or 1.78 m. Therefore, Meadow seam and Bumpy seam still have good mining potential where thick coal seam splits occur.

Lake seam has two splits, Upper Lake and Lower Lake and both splits are widely distributed in NW Block. Upper Lake is the major split, and thickness ranges from 0.2 to 1.8 m with average 0.92 m. Upper Lake split is characterized by low raw coal ash less than 10 % usually. Lower Lake split is thinner and thickness ranges from 0.2 to 0.8 m with average 0.45 m.

Two drillholes of NW061 and NW062 were drilled in the southern part of NW Block where Minnes Group is exposed (Figure 15). The purpose of drilling these two holes is to explore the coal potential in Minnes Group of the coal license areas. NW062 drillhole was abandoned at 43.7 m without intercepting coal seam due to continuing drilling through broken zone and difficult to set the surface casing. NW061 was successfully drilled and number of coal seams were found. There is no coal seam ID was given in historical exploration. The temporary seam names are given from the top down as Apex A, Apex B, Apex C and Apex D for the coal seam exposed from drillhole NW061 (Table 19). Apex coal seams are usually thin, ranges from 0.3 to 1.0 m, but has good coal quality with low ash, mostly less than 10% raw coal ash.

### **Coal Seams in SE Block Intercepted by Drillholes**

Coal seams from top down in SE Block are C, B, A and Lake seams in Lower Gething unit, as well as Bickford seam in Minnes Group. Each of seams in Lower Gething unit has Upper and Lower or more sub-seam IDs depending on the number of coal splits. Coal seams intercepted by drillholes are summarized in Table 20.

Table 20 Coal Seam Intercepted in Drillholes of SE Block

Coal Seam	Coal Seam	Apparent Thickness, m			Count
Name	Sub-Name	Minimum	Maximum	Average	
C Seam	C Upper Upper 1	0.2	0.7	0.4	6
	C Upper Upper	0.2	0.75	0.42	9
	C Upper	0.6	2.3	1.62	12
	C Upper Lower	0.2	0.7	0.41	11
	C Lower Upper	0.25	0.5	0.38	7
	C Lower	0.25	2.5	1.01	13
B Seam	B Upper	2	3.4	2.69	17
	B Lower Upper	0.2	1.2	0.48	9
	B Lower	1.5	35.8	5.49	20
	B Lower Lower	0.2	1.2	0.46	18
A Seam	A 1	0.2	0.9	0.43	6
	A 2	0.2	0.75	0.41	6
	A 3	0.2	1	0.48	8
	A 4	0.2	0.8	0.31	24
	A 5	0.2	0.7	0.38	23
	A 6	0.2	0.6	0.33	12
	A 7	0.2	0.75	0.49	4
	A 8	0.2	0.6	0.37	12
	A 9	0.2	0.65	0.33	10
	A 10	0.2	0.9	0.34	12
	A 11	0.3	0.4	0.34	5
Lake Seam	Upper Lake	0.25	0.7	0.41	7
	Lower Lake	0.4	1.5	0.89	4
Bickford Seam	Upper Bickford	0.6	1.23	0.88	3
	Lower Bickford	0.4	1.2	0.8	3
	Lower Bickford 1	0.2	0.55	0.38	2
	Lower Bickford 2	0.2	0.5	0.3	4
	Lower Bickford 3	0.2	0.5	0.35	2
	Lower Bickford 4	0.3	0.3	0.3	1

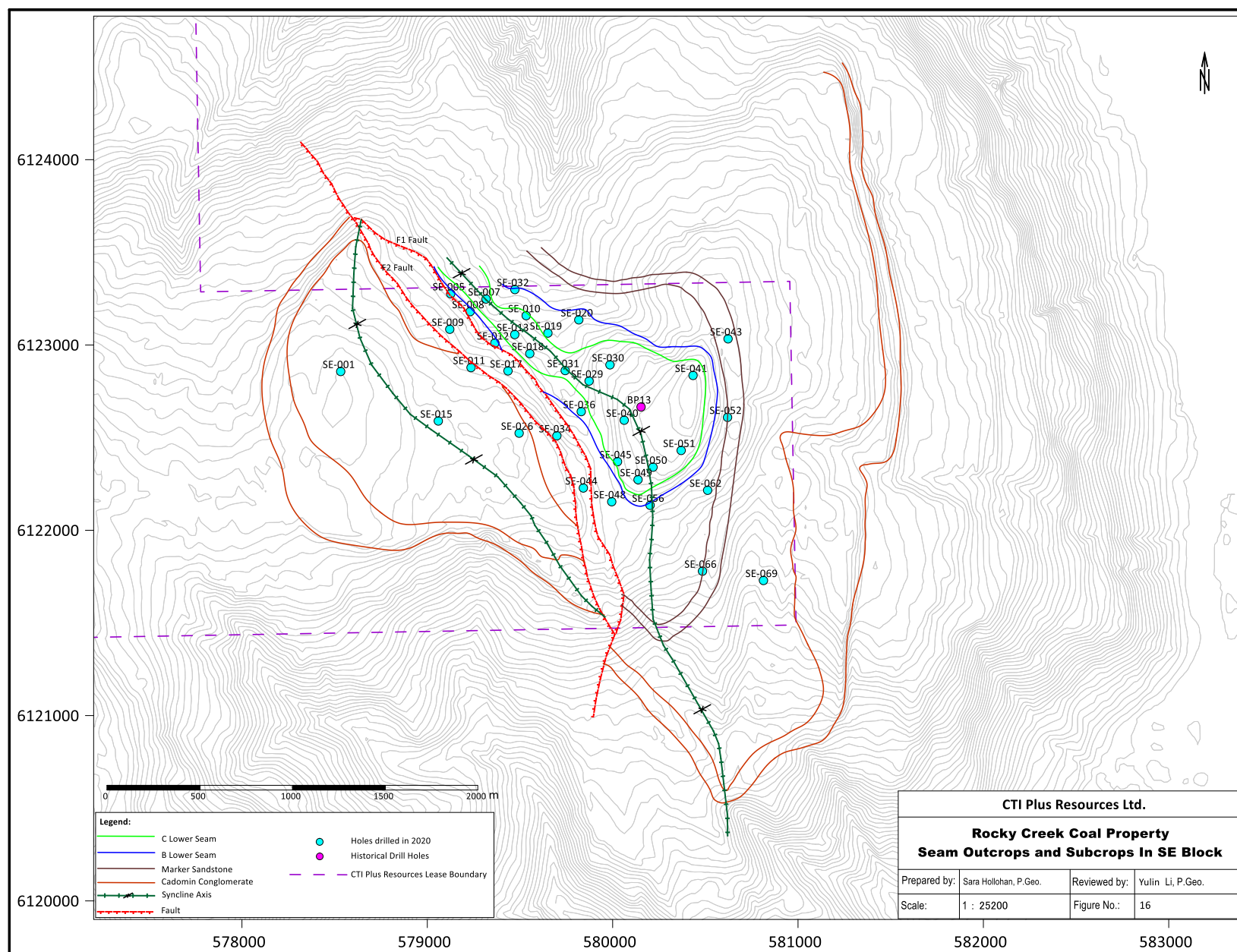
C seam has two main splits, C Upper and C Lower, each of the main split has minor splits. C Upper ranges from 0.6 to 2.3 m with average 1.62m; C Lower ranges from 0.25 to 2.5 m with average 1.01 m; Four minor splits are average about 0.4 m which are potentially minable by open pit. Total C seam average thickness is 4.24 m.

B seam has two main splits, B Upper and B Lower as well as minor splits of B Lower Upper and B Lower Lower. B Upper ranges from 2 to 3.4 m with average 2.69 m; thickness is stable. B Lower ranges from 1.5 to 35.8 m, average 5.49 m in apparent thickness. There are only two drillholes SE008 and SE012 intercepted B Lower seam where near vertical coal bed is developed close to a thrust fault (Figure 14). The maximum thickness of B Lower 4.3 m not including the coal seam in SE008 and SE012. B Lower seam is also considered as stable. Two minor splits are all about 0.5m thickness which are minable by open pit.

“A” series of seams range from 0.2 to 1.0 m at the maximum, average thickness ranges from 0.31 to 0.47 m. “A” series of seams are usually deeper, often deeper than potentially minable depth. They are not significant minable coal resources, however, where an “A” seam is thicker and shallower, it still can be locally minable coal resources.

Lake seam includes Upper Lake and Lower Lake. Lower Lake is thicker, ranges from 0.4 to 1.5 m with average 0.89 m, Upper Lake is thinner, ranges from 0.25 to 0.7 m with average 0.41 m.

Some of drillholes in SE Block were drilled in Minnes Group to explore coal potential in the unit such as SE001, SE015, SE026, SE066 and SE069 (Figure 16). It is thought Bickford Formation was penetrated and coal seams found in that unit named by the historical seam ID such as Upper Bickford, Lower Bickford. Upper Bickford thickness ranges from 0.6 to 1.23 m with average 0.88 m; Lower Bickford thickness ranges from 0.4 to 1.2 m. However, due to the coal seams are relatively deeper, they don't have significant potential open pit minable resources.



## 4.2.2 Coal Seam Correlation

Coal seam correlation is important to understand the coal geology and resources. Major coal seams in Rocky Creek property are identical in geophysical log features and are relatively easy to do the correlations. Figure 17 and Figure 18 are examples of major coal seam correlation in NW and SE Block, respectively. The coal seam correlation from all drillholes is prepared and provided in Appendix L.

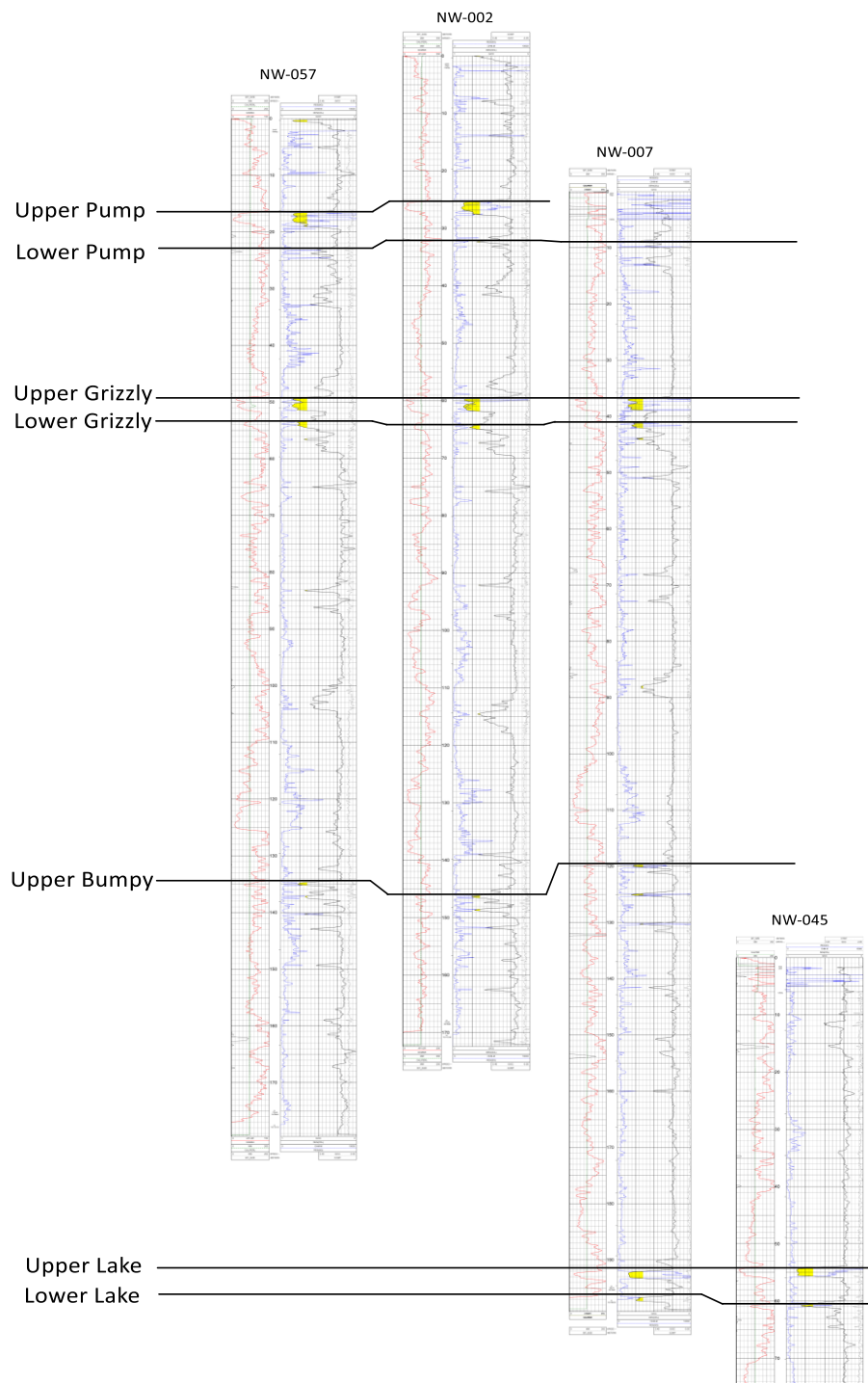
### 4.2.2.1 Coal Seam correlation in NW Block

Upper Pump: Upper Pump seam is characterized by low gamma, low density and high resistivity of geophysical logs. Gamma and density log traces are blocky and sharp contact with mudstone above and below the coal seam. Below Upper Pump seam 5 - 10 m, often see two 2 - 3 m thick coaly zones with less than 1.0 m coal seam which is identified as Lower Pump.

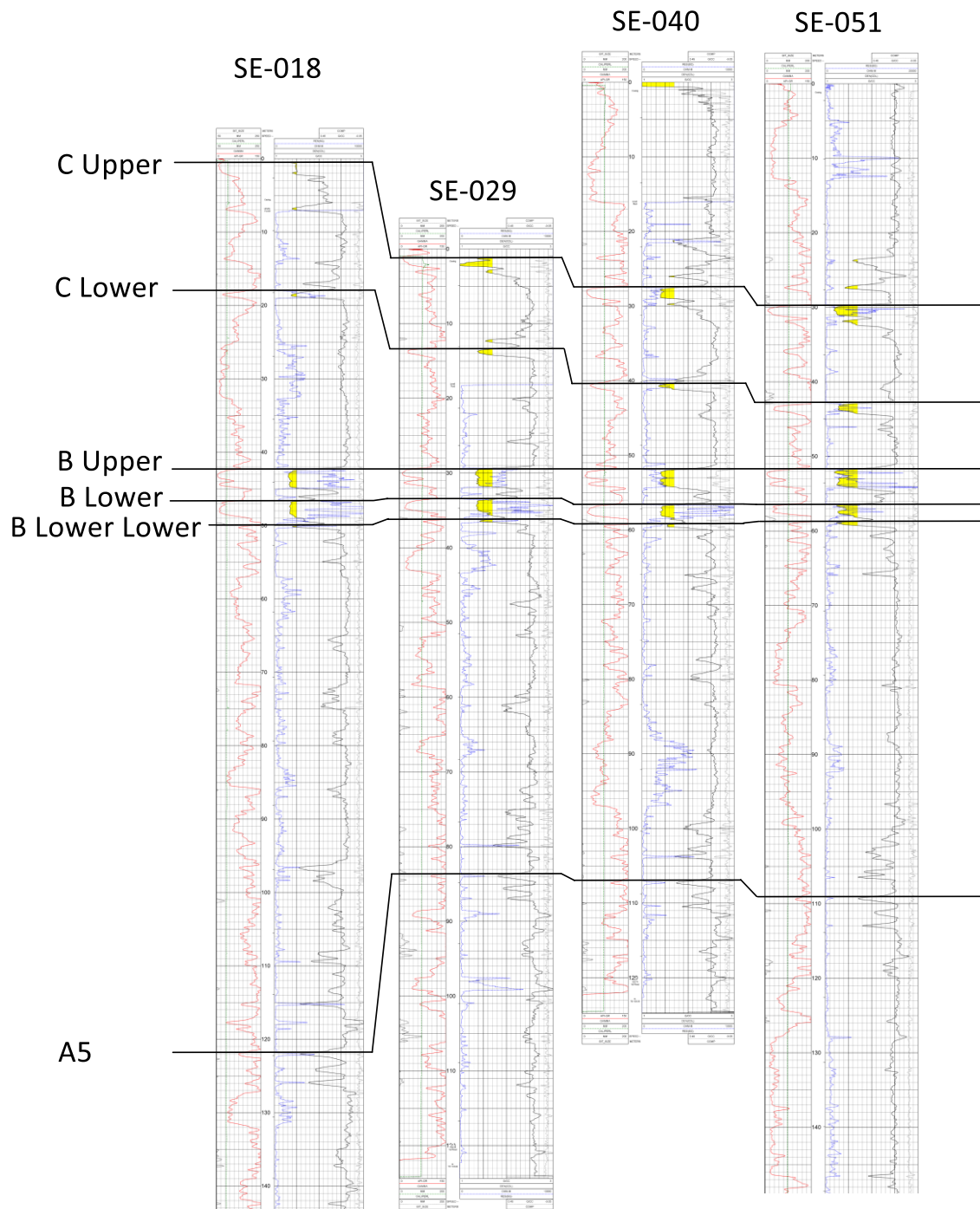
Upper Grizzly: Upper Grizzly is overall still characterized as blocky gamma and density traces, but gamma and density are slightly higher than Upper Pump, also often see a thin parting in the upper part of the coal seam by gamma and density logs. Below 2 - 3 m of Upper Grizzly, consistently see 1 - 1.5 m thick coal seam with higher gamma and density than Upper Grizzly which is identified as Lower Grizzly.

Upper Lake: Upper Lake is even more typical of blocky density curve with very low bulk density reading, very sharp contact with mudstone above and below the coal seam. Upper Lake seam thickness is about 1 - 1.5 m. Below Upper Lake seam 3 - 5.0 m, often see 0.5 - 1.0 m thick higher gamma and higher density thinner coal seam which is identified as Lower Lake. Upper Lake seam is usually 20 - 30 m above the Cadomin conglomerate thick beds.

Upper Bumpy: In the middle of sediment unit between Upper Grizzly and Upper Lake, there is a cluster of three thin seams less than 1 m thick which is named as Bumpy seams. Figure 17 shows the correlation of Upper Bumpy seam.



CTI Plus Resources Ltd.			
Rocky Creek Coal Property			
Seam Correlation In NW Block			
Prepared by:	Sara Hollohan, P.Geo.	Reviewed by:	Yulin Li, P.Geo.
Scale:	NTS	Figure No.:	17



CTI Plus Resources Ltd.			
Rocky Creek Coal Property Seam Correlation In SE Block			
Prepared by:	Sara Hollohan, P.Geo.	Reviewed by:	Yulin Li, P.Geo.
Scale:	NTS	Figure No.:	18

#### 4.2.2.2 Coal Seam correlation in SE Block

B Upper and B Lower seams are identical log responses in SE Block. These two seams occur in pairs, often see as two blocky gamma/density curve pairs in 1 - 2 m spacing. These two seams are approximately equal thickness at about 2 - 2.5 m. Less than 1 m below B Lower seam, often see a thin coal seam usually less than 0.5 m thick which is identified as B Lower Lower (BLL) seam.

C Lower and C Upper: about 5 - 10 m above B Upper seam, often see a thin coal seam less than 1 m with higher gamma and higher density comparing to B Upper and B Lower seams. This seam is C Lower seam. At about 10 m above C Lower seam, it is C Upper seam with 1.5 - 2 m thickness and characterized by lower gamma and lower density comparing to C Lower seam.

A number of thin coal seams occur below B Lower seam, Figure 18 shows an example of A5 seam correlation.

#### 4.2.3 Structure

NW Block is located in the core area of broadly Rocky Creek syncline. The syncline axis is NW and SE direction. Cadomin conglomerate outcrop and sub-crops of Lake seam, Grizzly seam and Pump seams all indicate the synclinal structure (Figure 15).

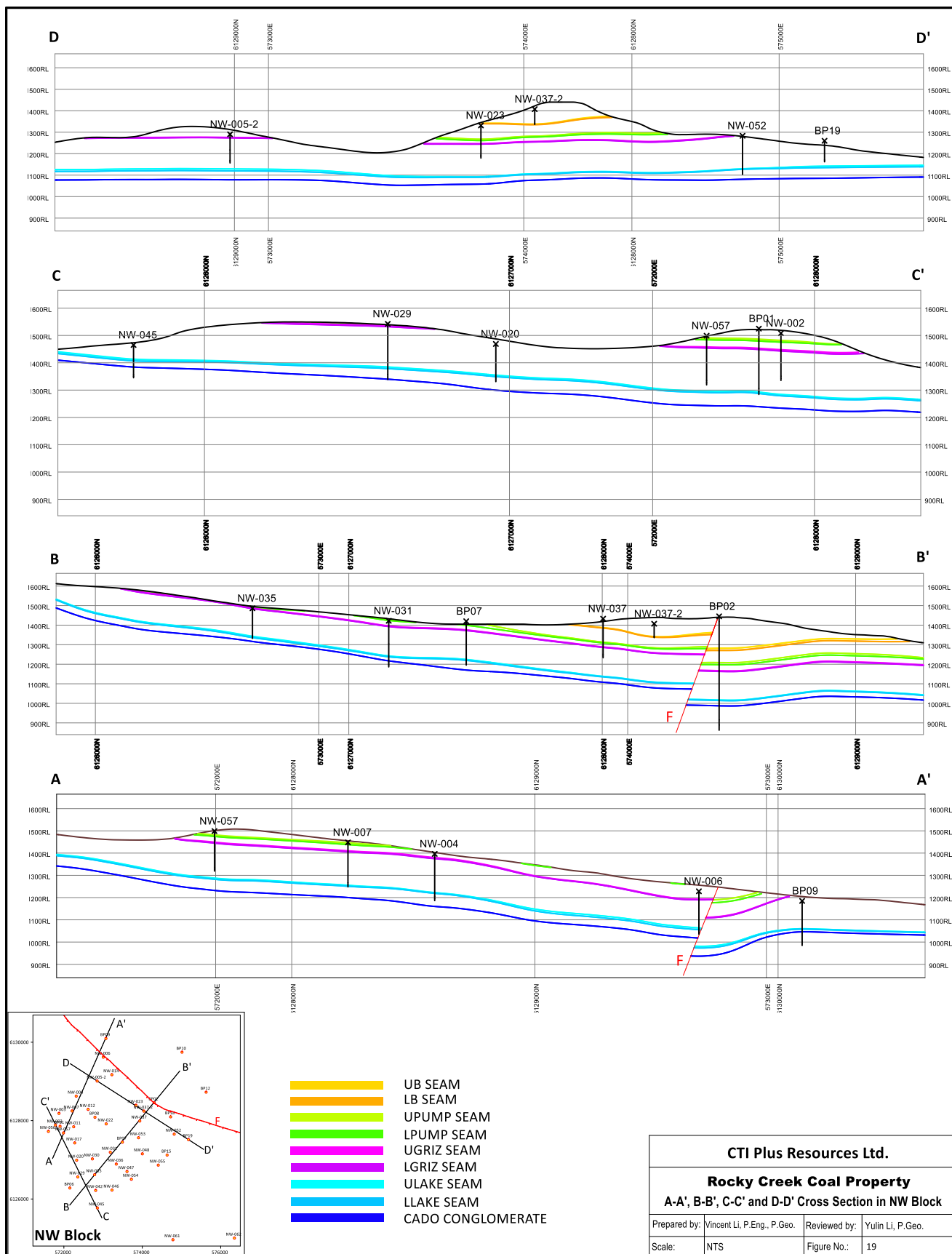
Figure 19 shows four geological sections of the structure. Sections A-A' and B-B' are in SW-NE direction, C-C' and D-D' are in NW-SE direction. Sections A-A' and B-B' indicate that the SW limb is gently dip to northeast, dip angle is about 10 degrees, the NE limb is even more gently dip, dip angle is less than 10 degrees toward southwest. Near to and parallel to the syncline axis, a reverse fault develops pass drillhole BP02 and NW006 with displacement up to 100m. In the NW-SE direction of section C-C', up dip of the syncline in the SW limb, coal seams dip to SE at about 10 degrees; In section D-D', near the syncline axis in the SW limb, coal seams are virtually flat.

SE Block is structurally more complex. Cadomin conglomerate outcrop indicates the syncline. The major syncline axis up dip to south, down dip to north. There is no geological mapping data of the syncline in the northern part of CTI Plus' licenses. A reverse fault



develops in the middle of the major syncline and is located at the west of major syncline axis. The fault branches in two sub-faults F1 and F2 largely in the license area. The displacement of F1 is up to 135 m. F2 is the primary fault with displacement up to 200m. On west of the faults, a secondary syncline is developed mainly comprised of Cadomin Formation. The Gething Formation is largely eroded and no coal seam in Gething Formation is found, but drillholes in this area intercepted number of coal seams in Minnes group. However, coal seams of this area in Minnes Group are thinner and buried deeper, there is less potential of open pit mining. The major syncline is located at the east of the faults. The marker sandstone, B Upper and C Lower seams all indicate the syncline. The syncline becomes narrower and tighter towards north and apparently opens to the NW direction.

Figure 20 shows three geological sections of the structure. Sections A-A' is in NW-SE direction, approximately parallel to the major syncline axis. Sections B-B' and C-C' are in SW-NE direction, approximately perpendicular to the major syncline axis. Section A-A' shows that from south to north, coal seams dip gently to north at about 10 degrees. Section C-C' shows that in the southern part of the major syncline, coal seams dip gently towards the syncline axis at about 10 degrees. Further towards north, indicated by Section B-B', the major syncline is tighter. Although the east limb of the syncline dips still at about 10 degree, the west limb dip angle increases dramatically to near vertical. Drillhole SE008 and SE012 intercepted the near vertical B Lower seams with apparent thickness 35.8 m and 28.8 m, respectively.





## 5 GEO-MODELING

Author of CTI Plus applied the GEOVIA Minex™ (version 6.5.6) and developed the 3D reverse fault geological models for NW and SE Block separately. Stantec of Calgary, Alberta as a third party of technical consulting and service used HxGN MinePlan 3D to validate the CTI Plus' 3D fault model.

GEOVIA Minex™ is the recognized world leader of integrated geology and mine planning solutions for coal and other stratified deposits, as well GEOVIA Minex™ provides a 3D Fault Module with an expansive tool set of functions to dedicated to making 3D fault modeling quick and easy with the less of manual, time consuming and costly.

HxGN MinePlan 3D is also widely used throughout the mining industry for digital resource block model development, with the interpretive, mine design and reserve calculation tools that are also well-suited to meet and improve the geological modeling and mining study.

In NW Block, a steep reverse fault (F) is interpreted with the NW-SE strike, dip at 70° to southwest, and throw varied from 82 m to 100 m cross the drillhole NW006 and west side BP02. Two steep reverse faults of F1 and F2 are interpreted in SE Block. The strike of F1 and F2 is NW-SE, dip at 70° to southwest, and throw of 135 m for fault F1 and 200 m for fault F2. Cadomin Conglomerate is the regional marker of the major seams in the Lower Gething coal-bearing series.

Topographic contour shapefile/data and coal license boundaries were downloaded from the government public database. The extents of the 3D Minex Fault Model are shown in Figure 21. GEOVIA Minex™ grid size was set at 15 m x 15 m for NW Block and 10 m x 10 m for SE Block after the grid size sensitive assessment.

Seam sequence in GEOVIA Minex™ model is summarized for NW Block in Table 21 and SE Block in Table 22. There are 25 layers modeled from a total of 34 layers in NW Block (Figure 22), and 24 layers are modeled from a total of 31 layers in SE Block (Figure 23). 3D faulted seam layers were coded on fault blocks along with drillhole data.

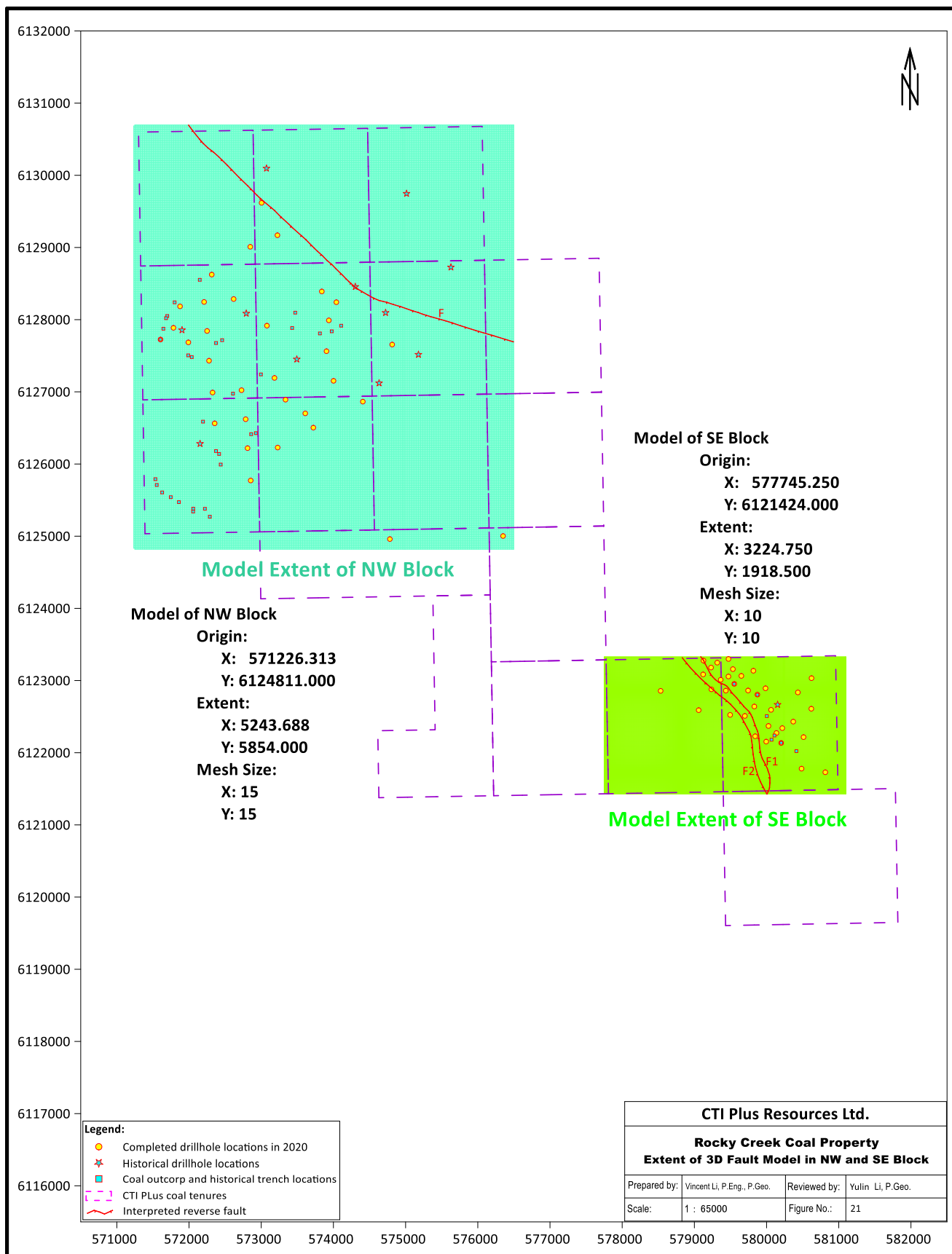


Table 21 Seam Sequence in the Geo-Model of NW Block

Modeling	Seam code	Father code	Material	Density	Color	Priority	Expansion	Enabled
Yes	C	C	COAL	1.4			1 C SEAM	<input checked="" type="checkbox"/>
	UB1	B	COAL	1.4			1 B SEAM	<input checked="" type="checkbox"/>
	UB	B	COAL	1.4			1 B SEAM	<input checked="" type="checkbox"/>
	LB	B	COAL	1.4			1 B SEAM	<input checked="" type="checkbox"/>
	LB1	B	COAL	1.4			1 B SEAM	<input checked="" type="checkbox"/>
	A1	A	COAL	1.4			1 A SEAM	<input checked="" type="checkbox"/>
	UPUMP	UPUMP	COAL	1.4			1 UPPER PUMP SEAM	<input checked="" type="checkbox"/>
	LPUMP	LPUMP	COAL	1.4			1 LOWER PUMP SEAM	<input checked="" type="checkbox"/>
	LPUM1	LPUMP	COAL	1.4			1 LOWER PUMP SEAM	<input checked="" type="checkbox"/>
	LPUM2	LPUMP	COAL	1.4			1 LOWER PUMP SEAM	<input checked="" type="checkbox"/>
	UGRIZ	UGRIZ	COAL	1.4			1 UPPER GRIZZLY SEAM	<input checked="" type="checkbox"/>
	LGRIZ	LGRIZ	COAL	1.4			1 LOWER GRIZZLY SEAM	<input checked="" type="checkbox"/>
	LGRZ1	LGRIZ	COAL	1.4			1 LOWER GRIZZLY SEAM	<input checked="" type="checkbox"/>
	LGRZ2	LGRIZ	COAL	1.4			1 LOWER GRIZZLY SEAM	<input checked="" type="checkbox"/>
	UMEAD	UMEAD	COAL	1.4			1 UPPER MEADOW SEAM	<input checked="" type="checkbox"/>
	LMEAD	LMEAD	COAL	1.4			1 LOWER MEADOW SEAM	<input checked="" type="checkbox"/>
	LMED1	LMEAD	COAL	1.4			1 LOWER MEADOW SEAM	<input checked="" type="checkbox"/>
	UBUMP	UBUMP	COAL	1.4			1 UPPER BUMPY SEAM	<input checked="" type="checkbox"/>
	UBMP1	UBUMP	COAL	1.4			1 UPPER BUMPY SEAM	<input checked="" type="checkbox"/>
	LBMP1	LBUMP	COAL	1.4			1 LOWER BUMPY SEAM	<input checked="" type="checkbox"/>
	LBMP2	LBUMP	COAL	1.4			1 LOWER BUMPY SEAM	<input checked="" type="checkbox"/>
	LBMP3	LBUMP	COAL	1.4			1 LOWER BUMPY SEAM	<input checked="" type="checkbox"/>
	ULAKE	ULAKE	COAL	1.4			1 UPPER LAKE SEAM	<input checked="" type="checkbox"/>
	LLAKE	LLAKE	COAL	1.4			1 LOWER LAKE SEAM	<input checked="" type="checkbox"/>
	CADO	CADO	WAST	2.6			1 CADOMIN CONGLOMERATE	<input checked="" type="checkbox"/>
No	APXA	APXA	COAL	1.4			1 MINNES SEAM	<input checked="" type="checkbox"/>
	APXB1	APXB	COAL	1.4			1 MINNES SEAM	<input checked="" type="checkbox"/>
	APXB2	APXB	COAL	1.4			1 MINNES SEAM	<input checked="" type="checkbox"/>
	APXC1	APXC	COAL	1.4			1 MINNES SEAM	<input checked="" type="checkbox"/>
	APXC2	APXC	COAL	1.4			1 MINNES SEAM	<input checked="" type="checkbox"/>
	APXC3	APXC	COAL	1.4			1 MINNES SEAM	<input checked="" type="checkbox"/>
	APXD1	APXD	COAL	1.4			1 MINNES SEAM	<input checked="" type="checkbox"/>
	APXD2	APXD	COAL	1.4			1 MINNES SEAM	<input checked="" type="checkbox"/>
	APXD3	APXD	COAL	1.4			1 MINNES SEAM	<input checked="" type="checkbox"/>

Table 22 Seam Sequence in the Geo-Model of SE Block

Modeling	Seam code	Father code	Material	Density	Color	Priority	Expansion	Enabled
Yes	CUU1	CU	COAL	1.4		1	UPPER C SEAM	<input checked="" type="checkbox"/>
	CUU	CU	COAL	1.4		1	UPPER C SEAM	<input checked="" type="checkbox"/>
	CU	CU	COAL	1.4		1	UPPER C SEAM	<input checked="" type="checkbox"/>
	CUL	CU	COAL	1.4		1	UPPER C SEAM	<input checked="" type="checkbox"/>
	CLU	CL	COAL	1.4		1	LOWER C SEAM	<input checked="" type="checkbox"/>
	CL	CL	COAL	1.4		1	LOWER C SEAM	<input checked="" type="checkbox"/>
	BU	BU	COAL	1.4		1	UPPER B SEAM	<input checked="" type="checkbox"/>
	BLU	BU	COAL	1.4		1	LOWER B SEAM	<input checked="" type="checkbox"/>
	BL	BL	COAL	1.4		1	LOWER B SEAM	<input checked="" type="checkbox"/>
	BLL	BL	COAL	1.4		1	LOWER B SEAM	<input checked="" type="checkbox"/>
	A1	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	A2	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	A3	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	A4	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	A5	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	A6	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	A7	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	A8	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	A9	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	A10	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	A11	A	COAL	1.4		1	A SEAM	<input checked="" type="checkbox"/>
	ULAKE	ULAKE	COAL	1.4		1	UPPER LAKE SEAM	<input checked="" type="checkbox"/>
	LLAKE	LLAKE	COAL	1.4		1	LOWER LAKE SEAM	<input checked="" type="checkbox"/>
	CADO	CADO	WAST	2.6		1	CADOMIN CONGLOMERATE	<input checked="" type="checkbox"/>
No	M1	MINNE	COAL	1.4		1	MINNES GROUP COAL	<input checked="" type="checkbox"/>
	UBICK	UBICK	COAL	1.4		1	UPPER BICKFORD COAL	<input checked="" type="checkbox"/>
	LBICK	LBICK	COAL	1.4		1	LOWER BICKFORD COAL	<input checked="" type="checkbox"/>
	LBCK1	LBICK	COAL	1.4		1	LOWER BICKFORD COAL	<input checked="" type="checkbox"/>
	LBCK2	LBICK	COAL	1.4		1	LOWER BICKFORD COAL	<input checked="" type="checkbox"/>
	LBCK3	LBICK	COAL	1.4		1	LOWER BICKFORD COAL	<input checked="" type="checkbox"/>
	LBCK4	LBICK	COAL	1.4		1	LOWER BICKFORD COAL	<input checked="" type="checkbox"/>

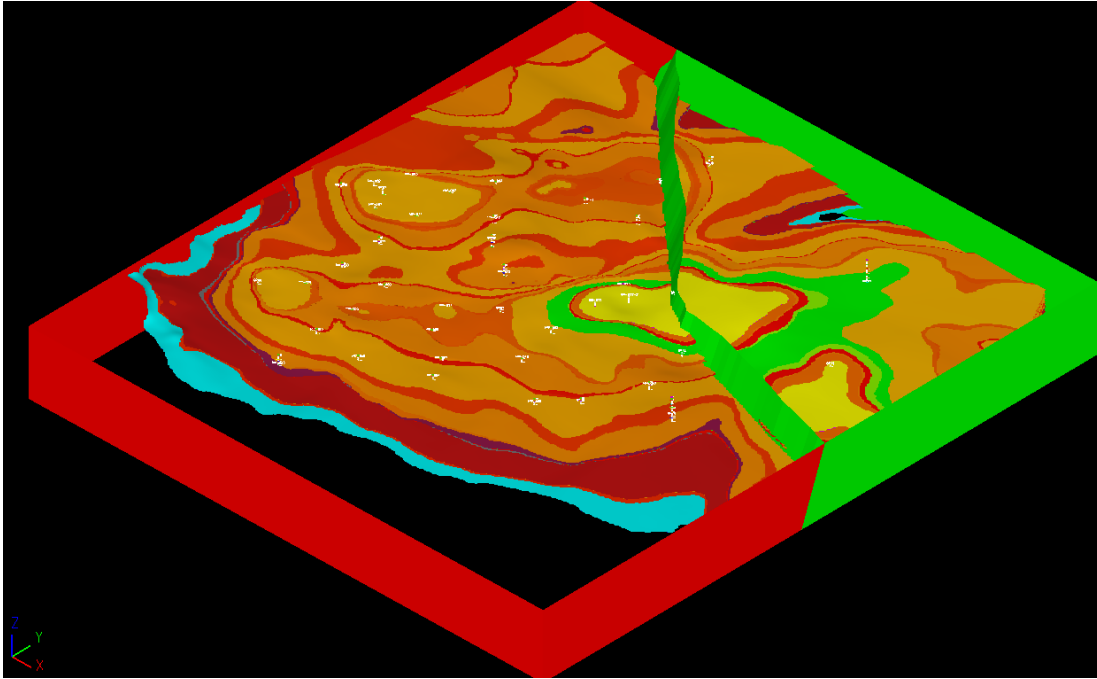


Figure 22 Minex 3D Faulted Seam Model of NW Block

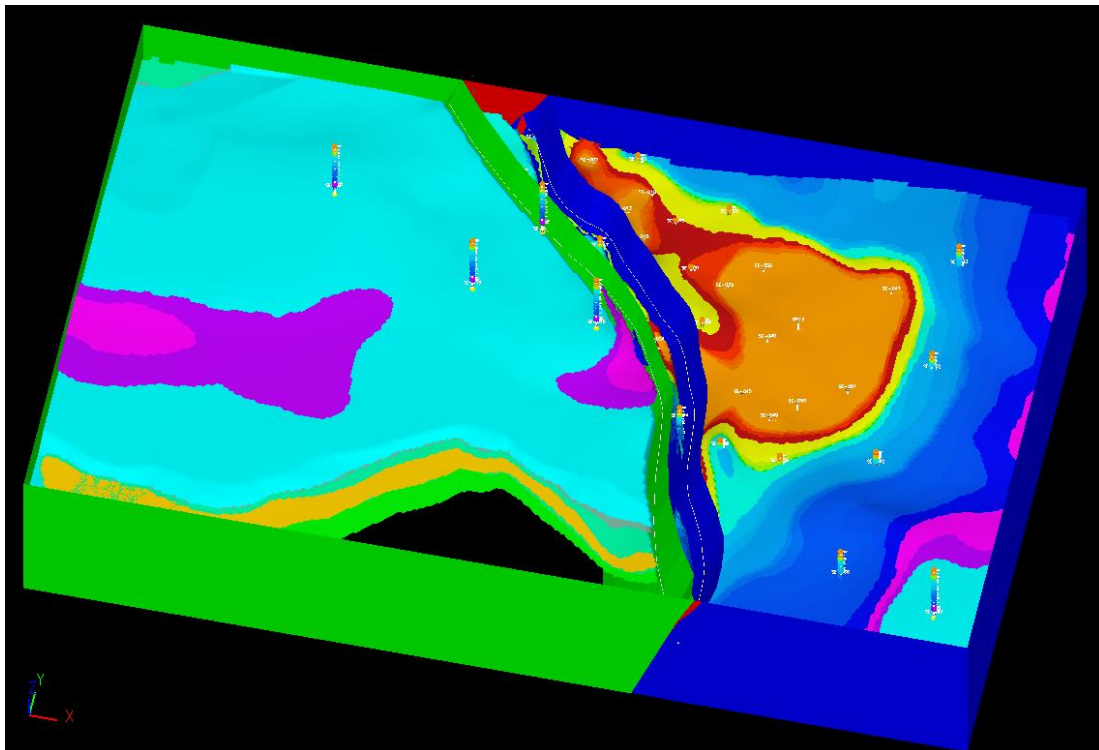


Figure 23 Minex 3D Faulted Seam Model of SE Block



## 6 DRILL SITE RECLAMATION

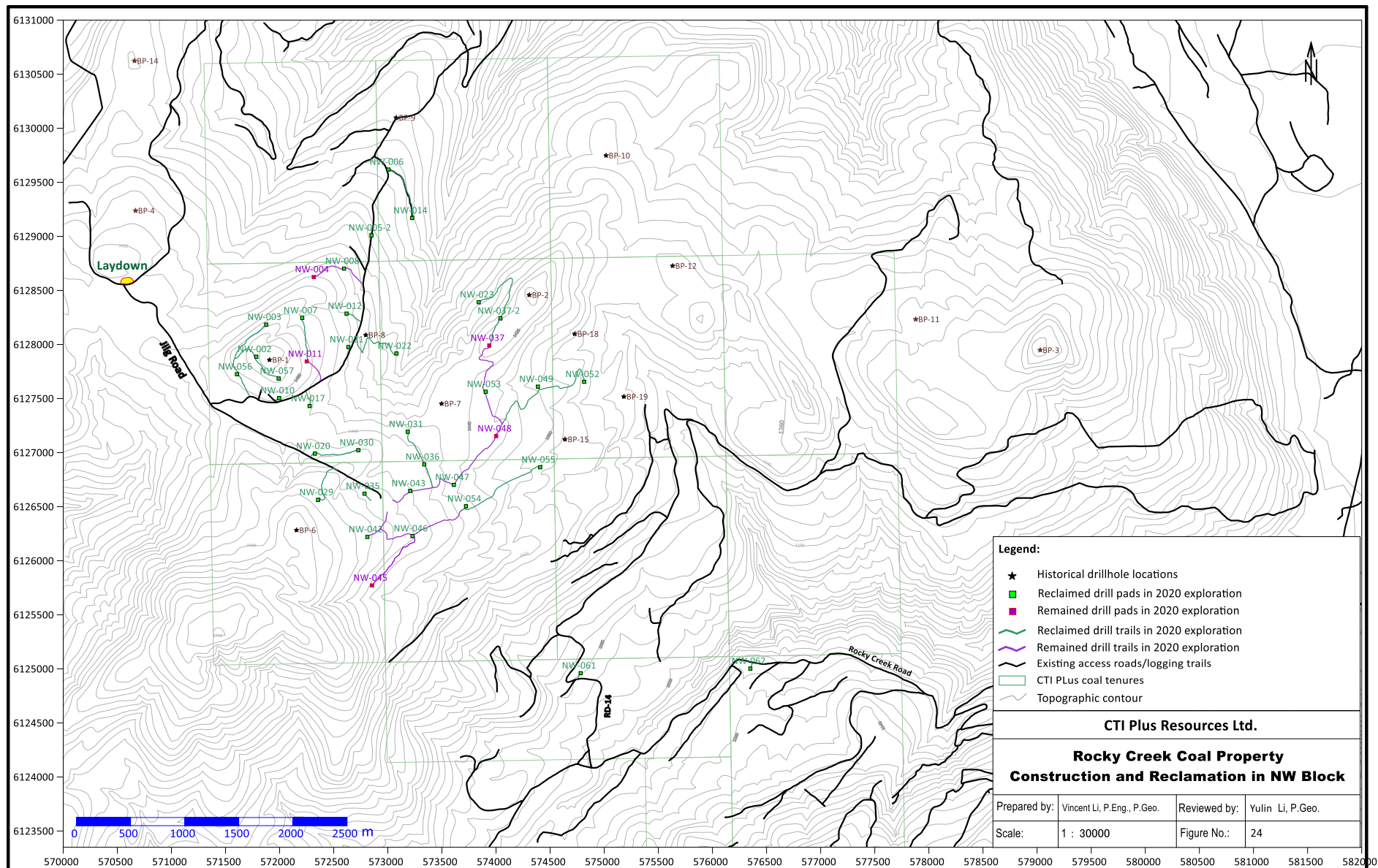
Construction throughout the exploration program in 2020 included the surface clearing, and development of new trails, drill pads, pipeline crossings and stream crossings (culvert installations) to allow access for drilling and support equipment. CTI Plus was to keep exploration disturbance to the safe, environmental, and practical small area.

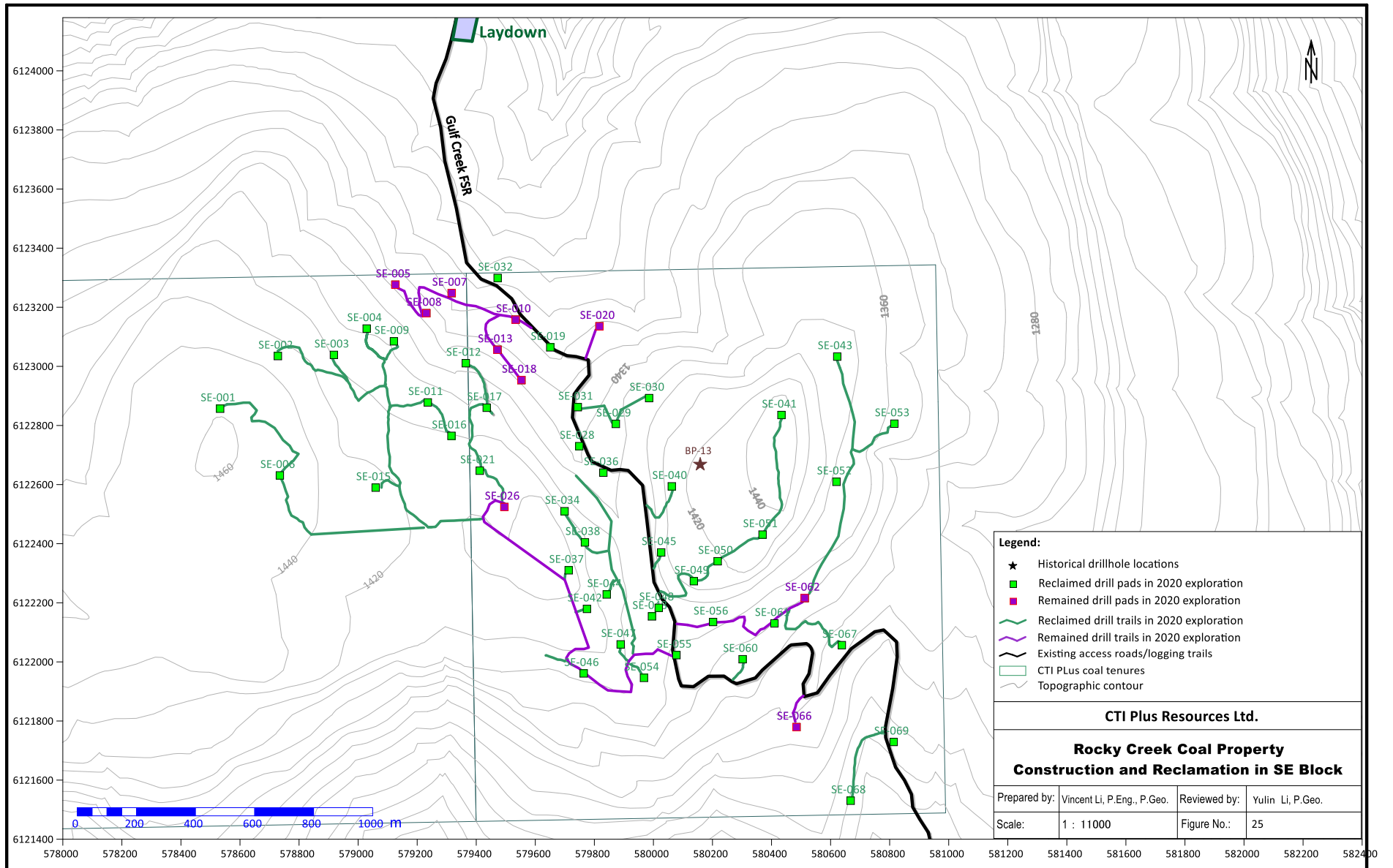
Progressive reclamation was conducted as soon as the drillhole drilling was completed with the exception of the trails and pads that are remained for the field works in 2021 or late (Table 23). Natural soil profiles were maintained whenever possible to enhance natural regeneration and to control erosion-causing runoff. Drilling fluids used during the program mainly consisted of air, water and bentonite that were allowed to infiltrate. Cuttings were left in the sumps and sumps filled in with the material excavated from the site during site construction. Drillhole casing was removed, and drillhole was cemented from bottom to surface. Temporary culverts and pipeline crossings were removed when the trails were reclaimed. Woody debris piled up during construction was spread evenly across the site. Any pre-existing roadways were re-established. All exploration areas were left in a clean, safe and stable condition.

Figure 24 and 25 show drill pads and trails that were constructed, reclaimed, and remained during 2020 exploration in NW Block and SE Block.

Table 23 Summary of Drill Site Construction and Reclamation in 2020

Type	NW Block			SE Block		
	Drill Pads	Trails	Pipeline Crossings	Drill Pads	Trails	Pipeline Crossings
	No.	m	No.	No.	m	No.
Constructed	38	13936	1	52	11789	6
Reclaimed	28	8490	1	39	8793	6
Remained	10	5446	0	13	2996	0





## 7 STATEMENT OF COST

Actual expenditure in the 2020 exploration of the West Rocky Creek coal property was \$10,487,914.71, including operation management, site layout, construction, exploration drilling, drillhole logging, sampling, geological support, survey, safety, material and supplies, reclamation, transportation, accommodation, and geological modeling. A summary of annual expenditure is provided in Table 24 with a detailed spreadsheet in Appendix M.

Table 24 Summary of 2020 Exploration Expenditure

Item		Cost
Drillhole Geophysical Logging		\$461,603.91
Drilling	Coring	\$3,161,021.57
	Non-Coring	\$1,230,677.80
Geological and Technical Support		\$1,396,321.36
Drillhole Collar Survey		\$20,957.78
Drilling Site Layout and Site Construction		\$1,611,671.40
Site Operation and Management		\$662,940.50
Equipment Rental		\$366,868.09
Accommodation		\$651,139.33
Communication, Transportation and Materials		\$681,826.93
Reclamation		\$242,886.05
Total		\$10,487,914.71

## **8 CONCLUSION**

Results from 2020 CTI Plus exploration program indicate that the West Rocky Creek property contains rich coal seams of Lower Gething Formation and Minnes Group, Late Jurassic to Early Cretaceous age. The potentially mineable coal seams of overall Lower Gething Formation may be suitable for surface mining and underground development. The regional geological structure in the property is characterized as a simple, gentle, and wide syncline and high angle thrust faults, NW-SE of strike.

3D geological models of NW Block and SE Block are generated from the results of 2020 drilling.

All samples collected from 2020 exploration program, including coal core samples and rock core samples, are in the process of analysis and testing in 2021.

Further to generating the coal quality model and classifying the resource and reserve categories if the related data are available and the related studies are conducted, it would be beneficial to the consideration of the coal development in the West Rocky Creek property.

In addition, it is recommended to plan the drilling program that can indicate coal occurrence and identify the coal resource in the East Rocky Creek coal property.

## 9 STATEMENT OF QUALIFICATION

As the co-author of this report entitled "2020 Rocky Creek Coal Assessment Report, Peace River Land District and Liard Mining Division, Northeast BC, Canada" dated May 25, 2021 ("the Report"), I, Vincent Li, do hereby certify that:

1. I am employed as Vice President and Chief Engineer by CTI Plus Resources Ltd., 555 Burrard Street, 2<sup>nd</sup> Floor, Vancouver, BC V7X 1M8.
2. I am the co-author of the Report prepared for Mineral Titles Branch, Province of British Columbia.
3. I graduated with a B.Eng. in Coal Geology and Exploration from Xi'an University of Science and Technology in 1984, and post-graduated in Civil Engineering from Xi'an University of Architecture & Technology in 1997, and graduated with a B.A.T. in Petroleum Engineering from the Southern Alberta Institute of Technology in 2004.
4. I am a registered Professional Engineer and Geologist of the:
  - Association of Professional Engineers and Geoscientists of Alberta (APEGA No. 75174).
  - Association of Professional Engineers and Geoscientists of British Columbia (APEGBC No. 35153).
5. I have worked as an engineer and/or geologist over 35 years since my undergraduate degree from university. I have experienced in greenfield to advanced stage mining projects with full cycle end to end encompassed aspects in project planning to mine development, including mineral right acquisition, mineral property evaluation, mineral exploration, 3D geology and resource modelling, mine plan with reserve estimate, detailed feasibility study, as well, the mine permitting aspects from the environmental baseline study and impact assessment, and mine development plan.
6. I have particular and past relevant experience in work with the coal exploration and coal mine development in the Peace River Coalfield of NE BC, Groundhog-Klappan Coalfield of NW BC, and Foothills of SW AB, Canada, and Mongolia, and China:
  - Mine Manager for CTI Plus on the 2020 Rocky Creek coal exploration, responsibility from project plan, permitting, construction preparation, field operation to exploration data analysis and 3D geo-modeling, etc., NE BC (2020).
  - Independent Consultant for Elan Coal on the environmental project execution management plan and conceptual surface facility plan of the Elan coking coal mine development, SW AB (2019).



- Independent Consultant for Atrum Coal Groundhog Inc. on the Gap Analysis based on the technical review of PFS for the Groundhog underground anthracite coal mine development, NW BC (2019).
- Independent Consultant for Atrum Coal Panorama Inc. on the technical review of the Desktop Mining Study for the Panorama North Anthracite open cut and underground mine plan, NW BC (2019).
- QP set out in NI43-101, as co-author on the NI43-101 Technical Report of the mine reserve update and long term mine plan for Ovoot Tolgoi Open Cut Coal Mines of SouthGobi Resources Ltd., Hong Kong (2017), and overall review of the Competent Persons Report for Xiejiahegou Underground Coal Mine of Perennial Energy Holdings Limited, Hong Kong (2019).
- Engineering and geology lead for Guo Ao Lithium Ltd. on the detailed feasibility study and environmental impact assessment of the Moblan Lithium open cut mine development, Quebec (2018 – 2019).
- Engineering and geology lead for Canadian Dehua International Mines Group Inc. on the coal exploration, development plan and feasibility study, environmental assessment, bulk sample mine permitting, etc. of the Gething, Murray River, Bullmoose Creek and Wapiti River underground longwall coking coal mine development, NE BC (2009 – 2018).
- From 1984 to 2000 I was employed by CCTEG Xi'an Research Institute Co. Ltd., China as an engineer and senior engineer working in the coal geology and mine engineering aspects from the resource exploration, development plan, mining geology to mine environmental management.

Dated at Vancouver, BC. this 20<sup>th</sup> Day of May, 2021.



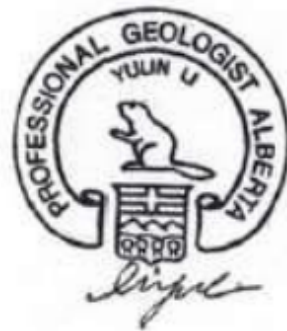
Vincent Li, P.Eng., P. Geo.  
Vice President and Chief Engineer  
CTI Plus Resources Ltd.

## STATEMENT OF QUALIFICATIONS

As the co-author of this report entitled "2020 Rocky Creek Coal Assessment Report, Peace River Land District and Liard Mining Division, Northeast BC, Canada" dated May 25, 2021 ("the Report"), I, Yulin Li, of Calgary, Alberta, do hereby certify that:

1. I graduated from China University of Mining and Technology & China Coal Research Institute with a PhD of Geology in 1997.
2. I am a Registered member of the Association of Professional Engineers and Geoscientists of Alberta (Member #97939) and have been practicing since April 20, 2009.
3. I have worked as a geologist for 33 years internationally of which 18 years in Canada since 2003.
4. I had worked as a senior geologist, project manager and project director in Norwest Corporation from 2003 to 2015. I have extensive experience of exploration design, field operation, data acquisition & analysis and reporting of coal, coal bed methane, oil & gas and other mineral commodities.
5. I have worked as a chief geologist of junior oil and gas companies for exploration and production of oil and gas from 2016 to 2019.
6. I am currently employed as COO & Chief Geologist with CTI Plus Resources Ltd. Suite 970, 717 7th Ave. SW, Calgary, Alberta, T2P 0Z3.
7. I designed the 2020 exploration program and worked in the field as a key member of operation team which is covered by this assessment report. I analyzed all geological and coal quality related data in the exploration program.
8. I am responsible for the preparation of Section 2; 3.4, 3.6, 3.7, 3.8, 3.11, 3.12 of Section 3 and Section 4.

Dated this 20<sup>th</sup> day of May, 2021.



**Yulin Li, PhD, P. Geol.**



## 10 REFERENCE

- [1] Ministry of Energy and Mines: Guidelines For Metal Leaching and Acid Rock Drainage at Minesites British Columbia; August, 1998
- [2] Ministry of Energy and Mines, and Ministry of Environment, Land and Parks: Policy for Metal Leaching and Acid Rock Draining at Minesites in British Columbia; July, 1998
- [3] BP Exploration Canada Ltd. Coal Division, B.C. Government Report to the Rocky Creek 1980 Exploration Program, NE B.C.; December 31, 1980
- [4] BP Exploration Canada Ltd. Coal Division, B.C. Government Report to the Rocky Creek 1981 Exploration Program, NE B.C.; December 31, 1981
- [5] BP Resources Canada Ltd. Selco Division, Rocky Creek Coal Property Terrace Hill Block, 1984 Exploration Report; November 8, 1984
- [6] BP Resources Canada Ltd. Selco Division, Rocky Creek Coal Property Terrace Hill and Sukunka North Blocks, 1985 Exploration Report; November 26, 1985
- [7] Simpson, K. Siliciclastics: Grain Size 1995 (Page viewed in June 2006), <http://www.eos.ubc.ca/courses/eosc221/sed/sili/siligsaw.html>.
- [8] US EPA ARCHIVE DOCUMENT: Geologic Logging Standard Operating Procedure; March 1998

## **11 APPENDIX**

Appendix A to I in this report are provided as the electronic files.

Appendix A Archaeological Overview and Impact Assessment Report

Appendix B Preliminary Environmental Report Pre-Clearing

Appendix C Stream Classification and Crossings Assessment Report

Appendix D Drillhole Core Logs of 2020 Drilling

Appendix E Drillhole Geophysical Logs of 2020 Drilling

Appendix F Drillhole Collar Survey Report of 2020 Drilling

Appendix G Birtley Analysis Certificate of Coal Cuttings

Appendix H Coal Seam Outcrop Survey and Sampling Report

Appendix I Geotechnical Core Logs and Sample Testing Data Reports

Appendix J Summary of Geochemical Core Samples

Appendix K Drillhole Geophysical Televiewer Logging Report

Appendix L Drillhole Coal Seam Correlation

Appendix M 2020 Exploration Expenditure in West Rocky Creek property