Report on 2014 Exploration Program

Quinsam Coal Mine

Campbell River

British Columbia

Quinsam Coal Fee Simple Holdings

Mine Permit # C-172

Exploration Approval # 14675-30-0800001

Prepared by:

Nick Bazowski, P.Geo (BC)

Mine Geologist

Campbell River, BC

March, 2015

Table 5, table 6, table 7, table 10, table 11, Appendix 3, and Appendix 4 remain confidential under the terms of the Coal Act Regulation, and have been removed from the public version.

http://www.bclaws.ca/civix/document/id/complete/statreg/251_2004

Table Of Contents

List of Figures

List of Tables

List of Appendices

1. Summary

In 2014 a total of 14 vertical holes were drilled and 5 trenches excavated on the Quinsam Coal Mine site. Of these 14 holes, 9 holes were developmental drillholes in advance of mining, 1 was drilled as a future water monitoring site in the 7-South mine, and the other 4 were exploration holes. The trenches were exploration related.

There was 377.42m of development drilling, 215.67m of exploration drilling, and 128m of trenching completed. Total drilling consisted of 228.9m of cased till overburden, 31.92m of cored coal zones, and 332.27m of open-hole drilling.

The 9 development drillholes were cemented upon completion, and the access roads and pads were re-contoured and scarified to restore pre-disturbance conditions. The remaining drillholes were left open in anticipation of possibly deepening the hole, or for use as a water monitoring site, or to be geophysically logged at a later date. One of the trenches was reclaimed; the other 4 were left open for further access.

All of the drillholes were surveyed by Quinsam Coal surveyors, and tied into the 'mine grid' co-ordinate system that is used on the Quinsam Coal Mine site. To note, within this report, both UTM and Mine Grid co-ordinates will be provided although the maps will be in UTM coordinate system.

The core that was recovered has been logged for geological and geotechnical data. The coal seams, as well as representative roof and floor samples, were sampled and shipped to either ALS Coal Lab (Richmond), or SGS Canada Inc. (Burnaby BC), based on the analytical work required.

The trenches that were excavated were mapped and sampled, with samples being analysed 'in-house' at the Quinsam Coal lab.

The overall costs of the drilling, including all of the analytical, pad preparation and reclamation work described above, was $129,712.85, at an overall cost per metre of $218.71. The cost of the trenching program was $1984.51. The cost of the development drilling combined with the exploration program came to $131,697.36.

2. Disclaimer

The following sections will not be included in this report as none of this information has changed or needs updating since previous reports;

> *Local Resources, and Infrastructure, Climate and Physiography, Geologic Setting, Deposit Type, Mineralisation*

For this information, please refer to the 2001 report; **Report on 2001 Exploration and Development Drilling Program**, Stephen Gardner (2001).

3. Property Description, Location, and Accessibility

The Quinsam Coal Mine Site is located roughly 20km west of the City of Campbell River on Vancouver Island, British Columbia, at Latitude 49 degrees, 55 minutes North, Longitude 125 degrees, 27 minutes West. Access to the Quinsam Mine from Campbell River is via Highway 28 (Gold River Highway) for 18km, and then 7.5km along the Argonaut Main, which is paved for the first 0.2km. At 7.5km on the Argonaut Main, there is an access gate to the mine site, and a 0.5km paved road into the Quinsam Coal Mine Site.

The Quinsam Mine Property consists of fee simple coal lands and 2 coal licenses with the corresponding boundaries of these shown in Figure 1. Details of the Fee-Simple holdings are shown in Table 1 and the details of the two coal licenses are shown in Table 2. The total Fee simple coal boundary encompasses 13,400 hectares.

Table 1: Fee Simple Coal Lands at the Quinsam Mine

Legal Land Description	Comments
Block 26, Comox Land District	Entire
Block 41, Comox Land District	Parts of the southern portion, north and south of eastern portion of Block 120 (a)
Block 98, Comox Land District	Portion lying north of southern boundary of District Lot 242
Block 120 (a), Comoz Land District	Only portion lying east of east boundary of Block 148
Block 148, Comox Land District	Entire
Bloc 149 (a), Comox Land District	Portion lying north of southern boudnary of District Lot 242
Block 149 (b), Comox Land District	Portion lying north of southern boundary of District Lot 242
District Lot 242 E&N, Comox Land District	Entire

Table 2: Coal Licenses at Quinsam Mine

Tenure No.	Former Coal License No.	Hectares	Anniversary Date	Cost Per Heactare	Annual Rental Fee	Lands Covered
327676	CL 3670	259	Jan-31	$30	$7,770	Parts of Blk 98, 149, 149(a)
327690	CL 6874	102	Jan-31	$30	$3,060	Parts of Blk 98, 149(b)

The coal licenses are in good standing until January 31, 2016.

Outline of Fee-Simple Coal Lands

2-North Mine

CPP

Office

Middle Quinsam Lake

2-South

Long Lake

Coal Licence
327676/327690

4-South

5-South Mine

Quinsam River

7-South Mine

E 319,000
N 5,529,000
N 5,530,000
N 5,531,000
N 5,532,000
N 5,533,000
N 5,534,000
N 5,535,000
N 5,536,000
N 5,537,000
N 5,538,000
N 5,539,000
E 320,000
E 321,000
E 322,000
E 323,000
E 324,000
E 325,000

METRES
0 250 500 750 1000

QUINSAM COAL	Updated – FEB 2015 – COAL LICENCE	02/23/15	SCALE:	1:25,000
	Updated – FEB 2015 – FEE SAMPLE BNDRY	02/23/15	DESIGNED:	
	Updated – FEB 2015 – UG WORKINGS	02/23/15	DRAWN: MF	02/23/15
	Updated – FEB 2015 – GRID	02/23/15	CHECKED:	
	Updated – FEB 2015 – TITLE BLOCK	02/23/15	APPROVED:	

QUINSAM COAL CORPORATION HOLDINGS

FIGURE 1

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Assessment Reporting\2014 Assessment Reporting\Figures\Quinsam Coal Corporation – Holdings.DWG

4. History

Please refer to Stephen Gardner's 2001 report for the early history of the Quinsam Coal Property and mines.

Mining has continued in the 2-North/5-South mine to the #1 seam mineable limits, which were reached in 2012. Since that time, retreat mining has taken place in the form of depillaring all of the Mains, with an anticipated closure in 2017.

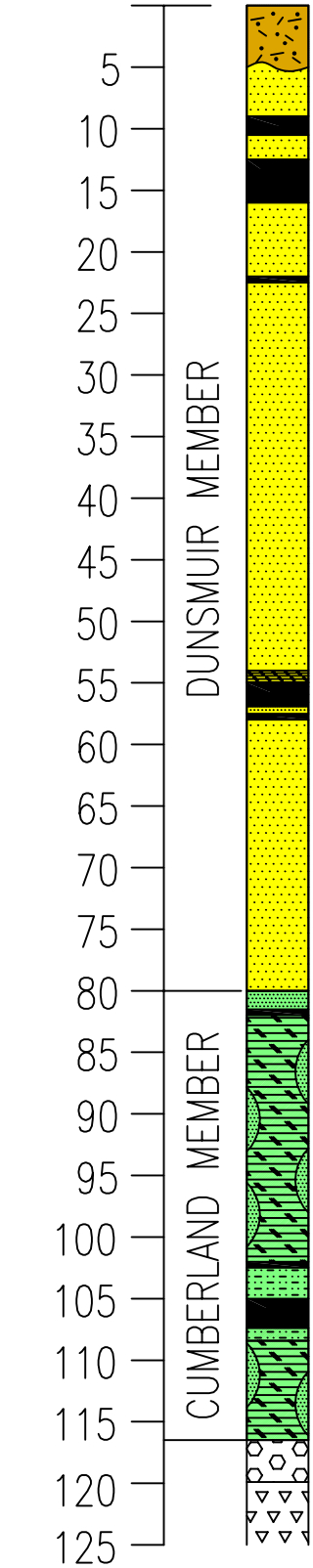
In 2012, a portal pit was constructed in the 7-South Mine Area. Underground mining of the #4 Coal Seam commenced immediately, and continues today in the 7-South Mine Areas 2, 3, and 4. Development in Area 2 has reached the mining limits, and secondary mining has commenced. Secondary mining in the 7-South Mine includes splitting of the pillar blocks, and mining the floor (brushing) to the base of the #4 Coal zone. Area 2 of the 7-South mine is to be used as a Subaqueous Potentially Acid Generating (PAG) Coarse Coal Reject (CCR) Disposal site. This PAG CCR Disposal site will be in use by the end of Quarter 1 (Q1) 2015.

The historic 242 test mine, which targeted the Quinsam #4 Coal seam, has recently been permitted as an extension to the 7-South mine, named Area 5. 7-South Area 4 and Area 5 are bisected by a regional fault zone known as the Long Lake Fault zone which locally has an offset of 12.5m. Area 5 will be accessed by underground ramps from the current 7-South Mine Area 4, and mining is scheduled to commence in Q3 2015.

5. Local Geology

The coal measures found on the Quinsam Coal Mine Site are found in the Cumberland and Dunsmuir Members of the Comox Formation which is part of the Lower Nanaimo Group sedimentary package. The local generalised stratigraphic sequence is shown in Figure 2. For the purpose of this report, attention to the depicted coal zones and seams are important, but for a more detailed geologic description, refer to the **Geological Report on Quinsam Mine**, Cathyl-Bickford (2007).

GENERALIZED STRATIGRAPHIC SECTION – QUINSAM MINE



UNIT	THICKNESS	LITHOLOGY
Glacial Till	0–5m	Sandy clay w/boulders
Sandstone	5–40+m.	Med–Coarse Grained Lithic SS
No.5 Seam	0–1.5m	COAL
	variable split	
No. 4 COAL ZONE	0–5.0m.	COAL (7 SOUTH MINE)
Sandstone	1–6.0m	Med–Coarse Grained Lithic SS
No. 4b Seam	0–0.7m.	COAL
Sandstone	18–51m.	Med–Coarse Grained Lithic Sandstone
Minor Siltstone		Muddy Siltstones (Localized)
No. 3 COAL ZONE	1.6–4.0m	COAL (4 SOUTH MINE)
No.3 Lower	0–.6m.	
Sandstone	25–35m.	Fine to Med Grained Lithic Sandstone
BASE of DUNSMUIR MEMBER		
		Fine Sandstone to Siltstone
No. 2 Seam	0–1m.	COAL
Siltstone	5–26m	Fine Sandstone to Siltstone
No. 1 Rider Seam	0–0.6m	COAL
Mudstone Siltstone	0.3–6.0m	Siltstone/Mudstone (varies)
No. 1 COAL ZONE	1.0–3.4m	COAL (2N/5 SOUTH MINE)
Siltstone	3–10m	Siltstone (some redbeds)
BASE of CUMBERLAND MEMBER		
Conglomerate	0–10m	Coarse Boulder Conglomerate
Late Cretaceous Unconformity		
Triassic–Jurassic Vancouver Group		Volcanics

QUINSAM COAL

SCALE:	NTS
DESIGNED:	
DRAWN: MF	12/01/01
CHECKED:	
APPROVED:	

GENERALIZED STRATIGRAPHIC SECTION
COMOX FORMATION
MIDDLE QUINSAM MINING BLOCK

FIGURE 2

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Assessment Reporting\2014 Assessment Reporting\Figures\Generalized Stratigraphic Section.DWG

6. Exploration

Since 1975, over 750 holes (including 2014) have been drilled in and around the Quinsam Coal Property, as shown in Figure 3. The 14 holes that were drilled within the 2014 calendar year were located within the 3-North, 4-South, 5/6-South and 7-South areas as shown in Figures 4 and 5. There were also 5 trenches dug by excavator that preceded a number of these drillholes, in the 4-South, 5-South, and 6-South areas, also shown in Figure 4. There were brief trench summary reports put together for each trench and they can be viewed in Appendix 5. Of the 14 holes, 9 of the drillholes were drilled in advance of mining for development planning for the 7-South Mine and 1 of the holes was drilled to be used as a water monitoring well. The final 4 holes of the year were for exploration purposes.

TRUE NORTH

N

W E

S

NO NAME LAKE

2-SOUTH

LONG LAKE

MIDDLE QUINSAM LAKE

2-North, 2-NORTH

ARGONAUGHT MAIN

ARGONAUGHT MAIN

HWY 28

3-South

4-SOUTH

7-SOUTH

7-SOUTH AREA 5

IRON RIVER

QUINSAM NORTH

ARGONAUGHT MAIN

HWY 28

ARGONAUGHT MAIN

HWY 28

ARGONAUGHT MAIN

HWY

METRES

0 150 300 450 600 750

QUINSAM COAL	Updated – FEB 2015 – SURFACE DRILLHOLES	02/23/15	SCALE:	1:7,500
	Updated – FEB 2015 – MINE PLANS	02/23/15	DESIGNED:	
	Updated – FEB 2015 – SURVEY UG	02/23/15	DRAWN: MF	09/21/12
			CHECKED:	
			APPROVED:	

QUINSAM COAL MINE SURFACE DRILLHOLES

FIGURE 3

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Assessment Reporting\2014 Assessment Reporting\Figures\Surface Drillholes with Blocks.dwg

MINE GRID NORTH

TRUE NORTH

55°

W E S

7-South

5-South / 6-South

7-South LL Fault Zone

4-South

METRES

0 100 200 300 400

Updated – JAN 2015 – Map	01/20/14	SCALE:	1:10,000	
Updated – JAN 2015 – Title Block	01/20/14	DESIGNED:		
Updated – JAN 2015 – Surveying	01/20/14	DRAWN: CP	01/20/14	
		CHECKED:		
		APPROVED:		

QUINSAM COAL

QUINSAM MINE
DISTURBED GROUND
2014

FIGURE 4

\\OCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Annual Summ. of Explor. Activities\2014 Ann. Summ. of Explor Activities\2014 – Mine Grid – Disturbed Ground.dwg

MINE GRID NORTH

TRUE NORTH

55°

W E S

3-North

Q14-12

Q14-11

DS-9

METRES

0 50 100 150 200

QUINSAM COAL	Updated – JAN 2015 – Map	01/20/14	SCALE:	1:5,000
	Updated – JAN 2015 – Title Block	01/20/14	DESIGNED:	
	Updated – JAN 2015 – Surveying	01/20/14	DRAWN: CP	01/20/14
			CHECKED:	
			APPROVED:	

QUINSAM MINE
DISTURBED GROUND
2014

FIGURE 5

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Annual Summ. of Explor. Activities\2014 Ann. Summ. of Explor Activities\2014 – Mine Grid – Disturbed Ground.dwg

There were two agendas for the 2014 exploration program; to find low sulphur coal, and near surface coal. Each mining area that was explored will be described independently, including some back ground information, results, and recommendations. Tables 3 and 4 provide the coordinates of the drillholes and trenches in both UTM and Mine Grid coordinates.

Table 3: 2014 Drillholes

		UTM		Minegrid			
Area	Drillhole ID	Easting (m)	Northing (m)	Easting (m)	Northing (m)	Elevation (m)	Total Depth (m)
7-South	Q14-01	324372.74	5533756.74	100777.69	101161.18	293.33	20.42
7-South	Q14-02	324373.57	5533751.75	100774.20	101157.53	293.17	34.44
7-South	Q14-03	324374.38	5533746.82	100770.73	101153.93	293.01	33.53
7-South	Q14-04	324377.30	5533728.48	100757.79	101140.61	292.14	35.97
7-South	Q14-05	324318.73	5533713.97	100711.10	101178.83	295.33	22.25
7-South	Q14-06	324321.51	5533697.73	100699.75	101166.88	295.40	47.55
7-South	Q14-07	324321.03	5533683.26	100687.88	101158.60	295.48	35.05
7-South	Q14-08	324272.03	5533909.32	100839.60	101333.20	306.23	38.71
7-South	Q14-09	324347.78	5533638.16	100667.77	101110.17	297.25	38.10
7-South	Q14-10	323918.76	5534990.71	101494.21	102263.63	240.83	31.40
3-North	Q14-11	321464.71	5534458.17	99598.30	103910.30	312.00	44.63
3-North	Q14-12	321399.02	5534598.23	99671.14	104046.78	318.46	53.95
5/6-South	Q14-13	323535.61	5533298.13	99909.15	101557.07	320.80	103.17
4-South	Q14-14	323028.24	5531832.26	98431.28	101085.75	343.78	13.92

Table 4: 2014 Trenches

		UTM-From		UTM-To		Mine Grid-From		Mine Grid-To		
Mine Area	ID	Easting (mE)	Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	Northing (mN)	Total Length (m)
4S	TR-4S-1	323018	5531835	322975	5531868	98427	101095	98428	101150	54
4S	TR-4S-2	323345	5531544	323369	5531584	98390	100659	98436	100665	49
5S	TR-5S-1	323173	5532764	323166	5532754	99264	101528	99252	101528	12
5S	TR-5S-2	323198	5532709	323195	5532707	99235	101474	99231	101476	4
6S	TR-6S-1	323183	5533271	323178	5533268	99676	101823	99670	101825	6

a. 3-North Drilling

The 3 North drilling was targeting the #1 Coal Zone, as shown in Figure 6. The #1 Coal Zone has historically been the primary mining target for Quinsam Coal due to its favourable thermal coal qualities. This seam has been mined in the past in the historic 2-South mine as well as in the current 2-North/5-

South mine. 3-North refers to an area of the 2-North mine which has long since been mined out and considered completed as an underground target. Figure 6 shows the underground workings (red) and the proposed workings (green) overlain by the surface topography. Based on historic drilling, there is a strip of potentially mineable coal that extends from the proposed workings in 2-North to an area of 3-North (also displayed in Figure 6) that was never mined due to a fault encountered underground with a significant offset. Two drillholes, shown on Figure 6, were planned and completed to test if the unmined 3-North area included mineable coal. Q14-11 and Q14-12 were drilled to depths well below the projected coal, only to find that there was till far deeper than expected, suggesting that the coal seam had been eroded away.

i. Recommendations

The drillholes from 2014 have limited the North and Northwestern (mine grid) extents of this targeted resource area as shown in Figure 7. Given this information, the potential resource for this area is significantly diminished, and therefore no further drilling is proposed.

TRUE NORTH

2014 3-North Coal Target

METRES
0 50 100 150 200

100 FOOT BARRIER PILLAR

Updated – FEB 2015 – COAL TARGET LINE	02/23/15	SCALE:	1:5000
Updated – FEB 2015 – DRILL HOLES	02/23/15	DESIGNED:	
Updated – FEB 2015 – GRID LINES	02/23/15	DRAWN: MF	02/23/15
Updated – FEB 2015 – TITLE BLOCK	02/23/15	CHECKED:	
		APPROVED:	

QUINSAM COAL

QUINSAM MINE
2014 3-NORTH
COAL TARGET

FIGURE 6

\\qsc-comdir\Technical Services\Quinsam Coal\Geology\Assessment Reporting\
2014 Assessment Reporting\Figures\Figure 6 - Mine Grid - Surface Drillholes with Underground Workings.dwg

3-North Coal Target - Tilled Out Area

TRUE NORTH

N 5,535,500

E 321,000

METRES

0 50 100 150 200

Updated – FEB 2015 – COAL TARGET LINE	02/23/15	SCALE:	1:5000
Updated – FEB 2015 – DRILL HOLES	02/23/15	DESIGNED:	
Updated – FEB 2015 – GRID LINES	02/23/15	DRAWN: MF	02/23/15
Updated – FEB 2015 – TITLE BLOCK	02/23/15	CHECKED:	
		APPROVED:	

QUINSAM COAL

QUINSAM MINE
3-NORTH COAL TARGET
TILLED OUT AREA

FIGURE 7

\\qcc-comdc1\Technical Services\Quinsam Coal\Geology\Assessment Reporting\
2014 Assessment Reporting\Figures\Figure 7 - UTM - 3 North - Tilled Out of Area.dwg

b. 4-South Trenching and Drilling

The #3 coal zone underlies the #4 Coal zone throughout the 7-South and Quinsam North areas, and overlies the #1 Coal zone throughout the 5-South area, and a portion of the 2-North area. It has been the target of historic and current exploration programs in the 4-South, 6-South and Quinsam North Areas, including drilling, trenching and a bulk sample test pit. This seam has also been mined in the 4-South underground mine. The current remaining coal resource for this zone is broken up into the 4-S Underground Resource, 6-S Underground Resource and the 4-S Surface Resource (Quinsam North #3 coal zone will not be included in this report). The current resources are shown in Tables 5,6, and 7. This is an unofficial resource estimate, provided only to identify the attractiveness of the target. The 4 South trenching and drilling program concentrated on the near surface resource area.

Table 5: [redacted]

[redacted]				
[redacted]				
[redacted]				
[redacted]				
[redacted]				
[redacted]				
[redacted]				

Table 6: [redacted]

[redacted]				
[redacted]				
[redacted]				
[redacted]				
[redacted]				
[redacted]				
[redacted]				

Table 7: [redacted]

[redacted]				
[redacted]				
[redacted]				
[redacted]				
[redacted]				
[redacted]				
[redacted]				

The area shown in Figure 8 is the surface resource, concentrating on the portion that is less than 10m from surface. Based on historic drilling and subsequent seam modelling, it appeared that this area, while structurally complex, is where the stratigraphy dips up and outcrops the coal at surface. Figure 8 also shows the portals for the 4-South Mine, as well as the location of a 1977 bulk sample test pit, as two locations where the coal has been identified at surface. Local to this area, the historic drill information contains very little coal quality data, but the small amount of data that there is, is favourable to Quinsam Coal's current requirements of low sulphur product. For this reason, this area was the target of preliminary trenching as well as follow-up drilling.

The first trench, TR-4S-1, was dug down to bedrock with the anticipation of the 3 seam coming to surface. Bedding measurements within the trench were found to be flatter than expected (and flatter than seen in the 4-South Mine portals), so the dip of the bedding, coupled with topography allowed for very little stratigraphy to be exposed. Near one end of the trench, bedrock dove rapidly, exposing a 3.5m cross-section of massive sandstone. This sandstone had characteristics similar to that of the #3 coal zone roof rocks, although the top of the coal was not reached. This trench was followed up with drillhole Q14-14, which intersected the #3 coal zone at a depth of 10.05m, which was deeper than modelling predicted, but corresponded with the dip of bedding exposed in the trench. The Q14-14 coal intersect coupled with where the coal was expected to subcrop in the trench lead to the belief that locally the near surface coal is sub-horizontally dipping and up thrown in faults, rather than dipping steeply up to subcrop.

As this area has the potential to be mined using open pit mining methods, this drillhole was cored from surface, as all of the roof rock material and the rock partings between the coal plies would need to be sampled for Acid Based Accounting (ABA) and full metals analysis. The coal plies were analysed individually and then composited for washability studies. The results can be found in appendices 3 and 4.

The shallow target resource area is shown Figure 8. The second trench in the 4-South area was located at the southern end of the targeted shallow coal. Trench TR-4S-2, was 49m long, and exposed the top of the #3 coal zone between 0.5-1m below surface along the whole length except for ~2.5m on either end. On both ends of the trench, the coal was bounded and downthrown by what appeared to be sub-parallel downthrow faults, making this block of ground containing this strip of coal, a horst feature of a 'horst and graben' type fault zone. The sub-parallel normal faults dipping in opposite directions support the theory that the relatively sub-horizontal coal seam is being up thrown and thrust down throughout this localised area. Based on this information coupled with the information from the TR-4S-1 and Q14-14, coal bounded by offsets should be expected between these two locations as well.

The trench exposed coal and the drillhole core was analysed, and the results of both are reported in Appendices 3 and 5. The results are encouraging and warrant further work in this area.

MINE GRID NORTH

TRUE NORTH

4 SOUTH PORTAL

TR-4S-1

TR-4S-2

Q14-14

PROJECTED SUBCROP

E 323,500

E 324,000

N 5,531,500

N 5,531,000

METRES

0 50 100 150 200

QUINSAM COAL	Updated – FEB 2015 – 3 SEAM SUR <10m	02/24/15	SCALE:	1:5,000	
	Updated – FEB 2015 – 3 SEAM RESOURCE	02/24/15	DESIGNED:		
	Updated – FEB 2015 – TRENCH & DH	02/24/15	DRAWN: MF	02/24/15	
	Updated – FEB 2015 – TITLE BLOCK	02/24/15	CHECKED:		
			APPROVED:		

LEGEND

3 SEAM SURFACE RESOURCE AREA

3 SEAM SURFACE AREA <10m DEPTH

1977 BULK SAMPLE TEST PIT

PROJECTED SUBCROP

4–SOUTH PROPOSED UG MINE PLAN

4–SOUTH EXISTING UG MINE WORKINGS

QUINSAM MINE
4–SOUTH 3 SEAM
NEAR SURFACE COAL TARGET

FIGURE 8

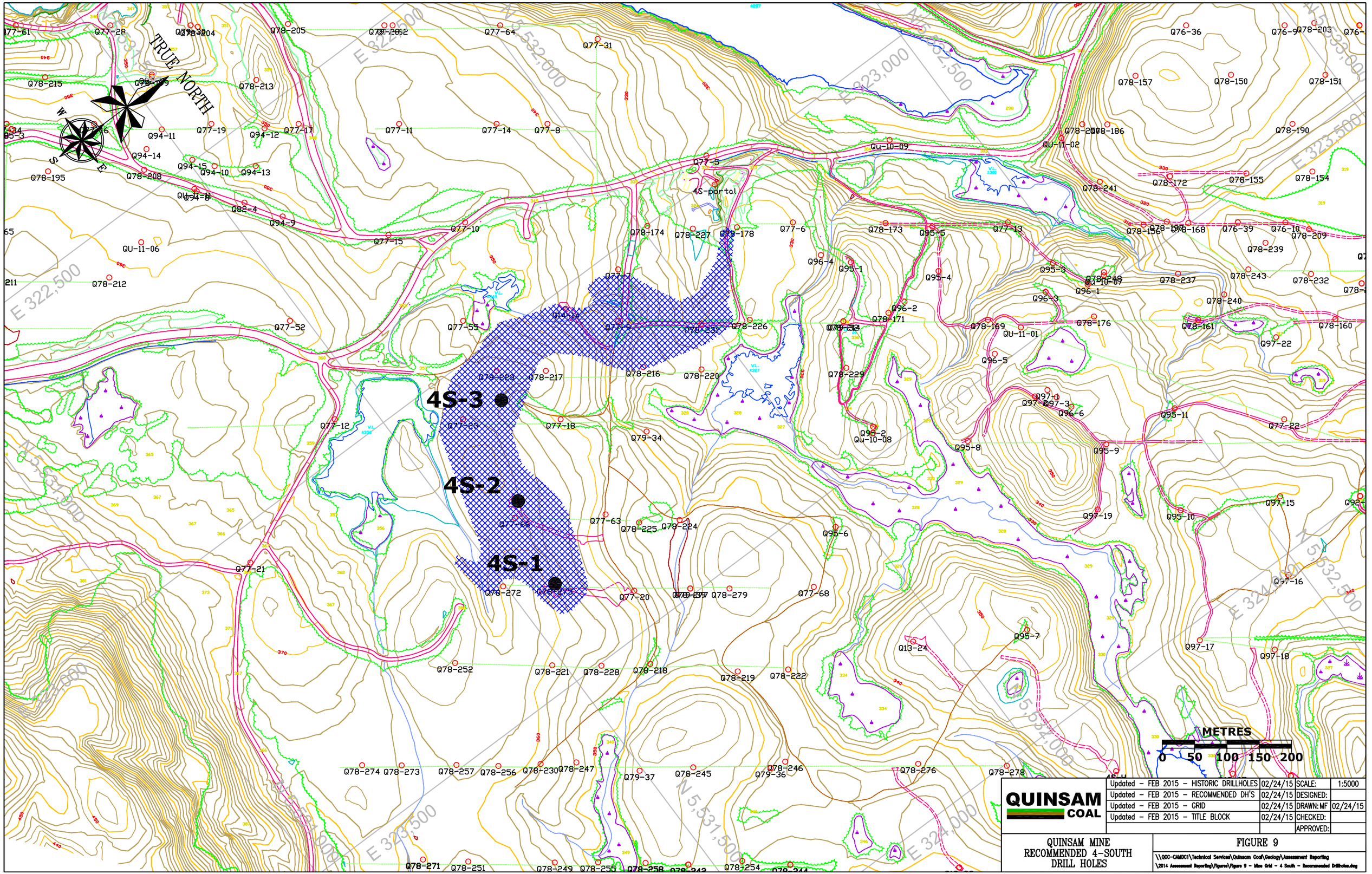
\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Annual Summ. of Explor. Activities\2014 Ann. Summ. of Explor Activities\2014 – Mine Grid – Disturbed Ground.dwg

i. Recommendations

Proposed are 3 large diameter (6”) core holes. Two of the holes should be located evenly between the two trenches so as to provide confidence in seam continuity, and provide knowledge of any more fault offsets. The third hole should be located beside TR-4S-2. These holes should be cored from surface to provide geotechnical and ABA data on all of the potential roof rock, and should be a minimum of 6” diameter core so as to provide enough coal for washability and oxidation tests. If this drilling provides positive results, it could be followed up with a 500 tonne bulk sample around the location of TR-4S-2 to run through the Quinsam Coal Preparation Plant. This location would provide the least disturbance and waste material. The locations and projected depths of the drillholes can be found in Table 8 and are shown in Figure 9. If this program is successful, thought should be given to grid-drilling the area to identify the top intersect of the coal zone to further predict fault offsets.

Table 8: All Recommended Drillholes

		UTM		Mine Grid				
Area	**Drillhole ID**	**Easting (m)**	**Northing (m)**	**Easting (m)**	**Northing (m)**	**Elevation (m)**	**TD (m)**	**Notes**
4-S	4S-1	323358	5531563	98414	100660	358	3	6" core from surface
	4S-2	323222	5531594	98357	100788	358	8	6" core from surface
	4S-3	323081	5531667	98331	100944	356	12	6" core from surface
6-S	6S-1	323260	5533254	99709	101751	321.21	16	6" core from surface
5-S	5S-1	323312	5532809	99384	101443	339.66	45	3" core hole, core from Dunsmuir/Cumberland contact
	5S-2	323292	5532913	99455	101521	335.46	35	6" core from Dunsmuir/ Cumberland Contact
	5S-3	323209	5532806	99319	101524	333.11	25	6" core from surface
	5S-4	323525	5533023	99682	101401	322.13	70	3" core from dunsmuir/ cumberland contact



QUINSAM COAL	Updated – FEB 2015 – HISTORIC DRILLHOLES	02/24/15	SCALE:	1:5000
	Updated – FEB 2015 – RECOMMENDED DH'S	02/24/15	DESIGNED:	
	Updated – FEB 2015 – GRID	02/24/15	DRAWN: MF	02/24/15
	Updated – FEB 2015 – TITLE BLOCK	02/24/15	CHECKED:	
			APPROVED:	

QUINSAM MINE
RECOMMENDED 4-SOUTH
DRILL HOLES

FIGURE 9

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Assessment Reporting
\2014 Assessment Reporting\Figures\Figure 9 – Mine Grid – 4 South – Recommended Drillholes.dwg

c. 6-South Trenching and Drilling

The 4-South and 6-South areas both contain the #3 coal zone, but are bisected and offset by the regional Long Lake Fault Zone. Due to the potential complexities of mining through a fault zone with offsets up to 20m, other mine plan options are being explored. One of the options to access this part of the #3 coal zone is through a new set of portals where the coal seam subcrops in the 6-South area, located just to the south of the 7S access road as shown in Figure 10. This is the location for TR-6S-1.

This trench was dug directly into the coal seam, and fully exposed the seam for a total coal zone thickness of 3.29m. Each ply of coal and the partings within were sampled in-house, and the results can be seen in Appendix 5.

i. Recommendations

Four more trenches or small pits should be excavated, and the exposed coal seams sampled. The locations of the proposed trenches are listed in Table 9. The purpose of these trenches would be to confirm the continuity of the coal seam near surface for a potential small open pit that could then be used as a portal pit, as well as to provide coal quality data. The proposed locations for the trenches are shown in Figure 11 and listed in Table 9. One drillhole, as listed in Table 8, should be drilled and cored from surface to provide ABA work as well as sub-surface coal quality data. To provide adequate weights for washability testing, coring should be a minimum of 6" diameter.

Table 9: All Proposed Trenches

Area	Trench ID	UTM		Mine Grid		Proposed Length
		Easting (m)	Northing (m)	Easting (m)	Northing (m)	
6-S	6S-A	323280	5533175	99658	101688	10
	6S-B	323181	5533402	99781	101903	10
	6S-C	323221	5533218	99657	101761	10
	6S-D	323396	5533058	99634	101525	10
5-S	5S-A	323173	5532764	99264	101528	10

TRUE NORTH

W S E

TR-6S-1

Potential Portal Location

Q78-32
Q78-33
Q81-P1-1
Q81-P1-5
Q81-P1-3
Q81-P1-2
Q81-P1-4
QU-12-15
MW12-19
MW12-20
QU-12-14b
QU-12-16
Q78-170
Q78-143
Q78-144
Q06-1W
Q78-148
Q76-32
Q76-34
Q78-153
Q78-146
Q78-163
Q78-149
Q14-13
Q76-9
Q78-203
Q76-37
Q76-38
Q78-150
Q78-151
Q78-158c
Q78-152
Q78-190
Q78-175

278 280 290 300 310 320 325 321 318

N 5,523,500 E 323,000
N 5,523,000 E 323,500

METRES
0 20 40 60 80

QUINSAM COAL	Updated – FEB 2015 – HISTORIC DRILLHOLES	02/24/15	SCALE:	1:2000
	Updated – FEB 2015 – RECOMMENDED DH'S	02/24/15	DESIGNED:	
	Updated – FEB 2015 – GRID	02/24/15	DRAWN: MF	02/24/15
	Updated – FEB 2015 – TITLE BLOCK	02/24/15	CHECKED:	
			APPROVED:	

QUINSAM MINE
2014 – 6 SOUTH
TRENCH

FIGURE 10

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Assessment Reporting\2014 Assessment Reporting\Figures\Figure 10 – UTM – 2014 – 6 South – Trench.dwg

TRUE NORTH

N 5,533,500

E 323,000

N 5,533,000

E 323,500

Q78-32

Q78-33

Q81-P1-1

Q81-P1-5

Q81-P1-3

Q81-P1-2

Q81-P1-4

QU-12-15

MW12-19

MW12-20

QU-12-14b

QU-12-16

TR-6S-B

Q78-143

Q78-144

Q06-1W

Q78-148

Q78-170

Q76-32

Q76-7

Q76-33

Q76-34

TR-6S-C

6S-1

TR-6S-A

Q78-153

Q78-146

Q78-163

Q78-149

TR-6S-D

Q14-13

Q76-9

Q78-203

Q76-37

Q76-38

Q78-150

Q78-151

Q78-158c

Q78-152

Q78-190

Q78-175

METRES

0 20 40 60 80

QUINSAM COAL	Updated – FEB 2015 – HISTORIC DRILLHOLES	02/24/15	SCALE:	1:2000
	Updated – FEB 2015 – RECOMMENDED DH'S	02/24/15	DESIGNED:	
	Updated – FEB 2015 – GRID	02/24/15	DRAWN: MF	02/24/15
	Updated – FEB 2015 – TITLE BLOCK	02/24/15	CHECKED:	
			APPROVED:	

QUINSAM MINE
RECOMMENDED 6-SOUTH
EXPLORATION

FIGURE 11

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Assessment Reporting\2014 Assessment Reporting\Figures\Figure 11 – UTM – 6 South – Recommended Exploration.dwg

d. 5-South Trenching and Drilling

In 2012, the mining limits in the 5-South mine were reached as shown in Figure 12, outlined in black. The local limit of the mineable coal was determined based on the increasing dip of the coal seam exceeding the capabilities of the underground machinery. Based on historic drilling, the coal appears to get very steep, and then plateau towards a potential subcrop. Trenching was planned to determine if the coal retained the plateau and possibly came to surface to the south of the 5-South portal pit. A series of 3 trenches (TR-5S-1, -2, and a pit) indicated that the coal did come to surface, and was of mineable thickness using Quinsam's current underground mining methods. Sampling of the coal exposed in the trenches returned favourable coal quality results. Another area in Figure 12, outlined in green, is an area within the original reserve limits and mine plan, which was not reached due to underground roof conditions. Given this new information, the coal seam was re-modelled for this 'plateau' area, and included the previously unmined area from the original reserves. A new resource estimate was completed for the 5-South area; the results are tabulated in Table 10. Figure 13 depicts the current area of interest, including the 2014 trenches. The resource estimate was calculated using the standards and rules outlined in Paper 88-21; A Standardised Coal Resource/Reserve Reporting System for Canada.

5 South Portal Pit

TRUE NORTH

5S trench

Q05-14W

Q78-149

Q78-153

Q78-146

Q78-163

Q76-36

Q78-203

Q76-37

Q76-38

Q78-157

Q78-150

Q78-151

Q78-158c

Q78-152

Q78-186

Q78-190

Q78-175

Q78-177

Q78-172

Q78-155

Q78-154

Q78-235

Q78-165

Q78-241

N 5,533,000

E 323,500

METRES

0 20 40 60 80

Updated – FEB 2015 – HISTORIC DRILLHOLES	02/24/15	SCALE:	1:2000
Updated – FEB 2015 – RECOMMENDED DH'S	02/24/15	DESIGNED:	
Updated – FEB 2015 – GRID	02/24/15	DRAWN: MF	02/24/15
Updated – FEB 2015 – TITLE BLOCK	02/24/15	CHECKED:	
		APPROVED:	

QUINSAM COAL

HISTORIC MINE WORKINGS IN 5-SOUTH OF THE 2-NORTH/5-SOUTH MINE

FIGURE 12

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Assessment Reporting\2014 Assessment Reporting\Figures\Figure 12 - UTM - 5 South - Historic Mine Workings.dwg

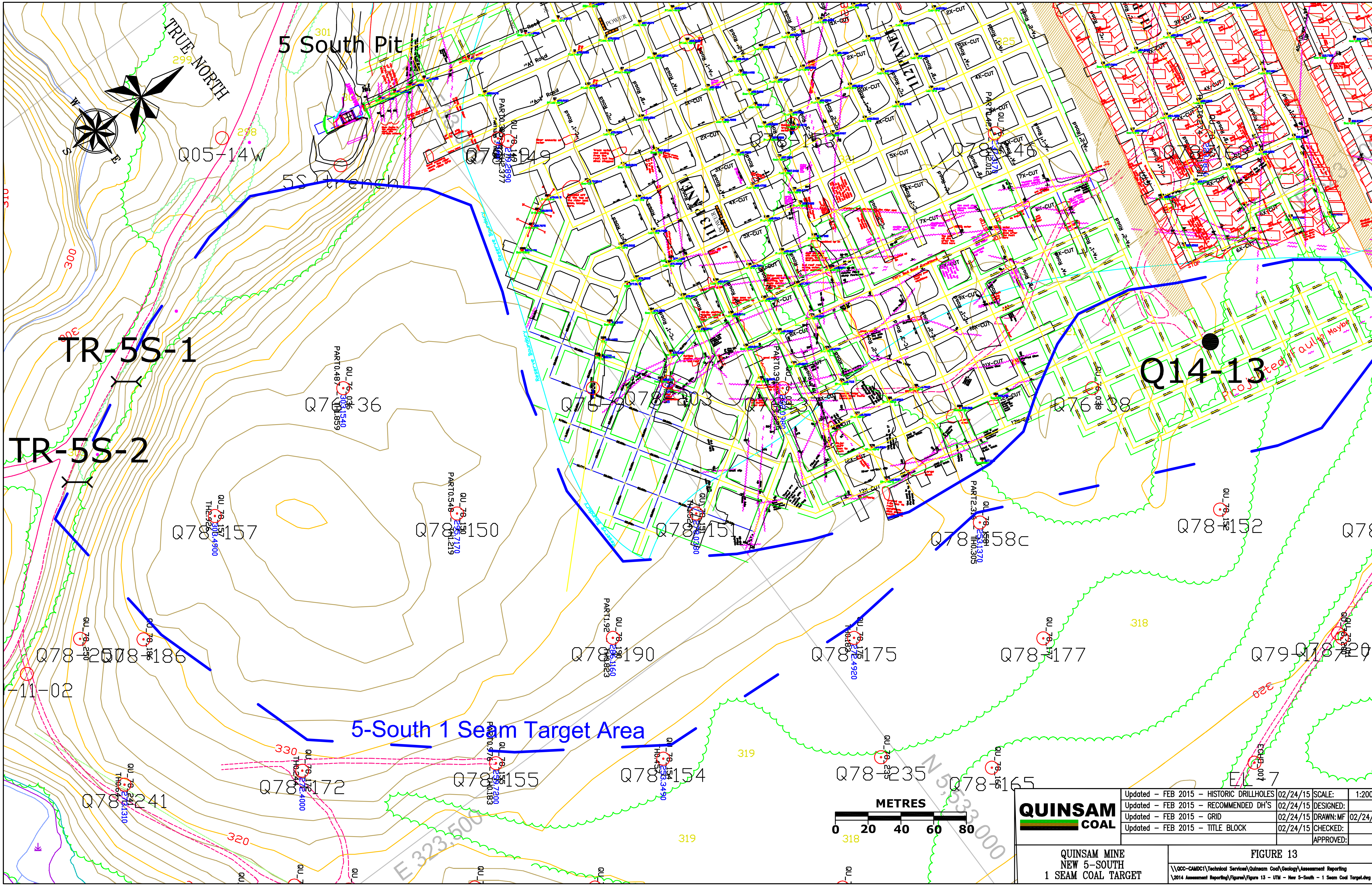

5 South Pit
TRUE NORTH
Q05-14W
5S Trench
TR-5S-1
TR-5S-2
Q76-36
Q78-149
Q78-153
Q78-146
Q78-168
Q78-203
Q76-38
Q14-13
Projected Fault? Maybe
Q78-157
Q78-150
Q78-151
Q78-158c
Q78-152
Q78-186
Q78-190
Q78-175
Q78-177
5-South 1 Seam Target Area
Q78-172
Q78-155
Q78-154
Q78-235
Q78-165
Q78-241
EL 7
METRES
0 20 40 60 80
E 323 500
N 5 533 000
Updated – FEB 2015 – HISTORIC DRILLHOLES 02/24/15
Updated – FEB 2015 – RECOMMENDED DH'S 02/24/15
Updated – FEB 2015 – GRID 02/24/15
Updated – FEB 2015 – TITLE BLOCK 02/24/15
SCALE: 1:2000
DESIGNED:
DRAWN: MF 02/24/15
CHECKED:
APPROVED:
QUINSAM COAL
QUINSAM MINE
NEW 5-SOUTH
1 SEAM COAL TARGET
FIGURE 13
\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Assessment Reporting
\2014 Assessment Reporting\Figures\Figure 13 – UTM – New 5-South – 1 Seam Coal Target.dwg

Table 10: [redacted]

[redacted]			
	[redacted]		
[redacted]			
	[redacted]		
[redacted]			
[redacted]			
[redacted]			

Once the seam was re-modelled, 2 drillholes were planned to determine if the coal projected past the mined out limits as shown in Figure 13. Only one of the drillholes was completed, Q14-13, and it intersected a significant #1 coal zone, as shown in Table 11. The raw ALS analytical reports can be found in Appendix 3. The second 2014 proposed drillhole was not completed due to logistical issues, and will be included in the recommendations for 2015.

Table 11: [redacted]

[redacted]			
	[redacted]		
[redacted]			
	[redacted]		
[redacted]			

i. Recommendations

This is an area of great interest, as the #1 coal zone is currently the most favourable coal seam on the Quinsam Mine Site, and is found to subcrop adjacent to one of our current haul roads. Four additional drillholes are recommended, 3 in the 'plateau' area of the seam with intentions of attaining 6" diameter coal for detailed coal quality analysis, as well as another drillhole on the periphery of the former mine workings to acquire geotechnical data from the roof rocks as well as coal quality. It is also recommended that TR-5S-1 get widened so that the coal sequence could be mapped in more detail, and another surface section could be sampled. In addition to the suite of coal quality data commonly attained, it is recommended that the exposed surface coal be tested for oxidation as well, using Light Transmittance tests. The locations for the drillholes are shown in Table 8 and Figure 14.

5 South Pit

TRUE NORTH

5S trench

TR-5S-A

5S-1

5S-2

5S-3

5S-4

Q05-14w

Q78-149

Q78-153

Q78-46

Q78-160

Q14-13

Q76-36

Q76-9

Q78-203

Q76-37

Q76-38

Q78-157

Q78-150

Q78-151

Q78-158c

Q78-152

Q78-25

Q78-186

Q78-190

Q78-175

Q78-177

Q79-11

Q78-200

-11-02

Q78-241

Q78-172

Q78-155

Q78-154

Q78-235

Q78-165

E-7

E 323,500

N 5,533,000

METRES

0 20 40 60 80

Updated – FEB 2015 – HISTORIC DRILLHOLES	02/24/15	SCALE:	1:2000
Updated – FEB 2015 – RECOMMENDED DH'S	02/24/15	DESIGNED:	
Updated – FEB 2015 – GRID	02/24/15	DRAWN: MF	02/24/15
Updated – FEB 2015 – TITLE BLOCK	02/24/15	CHECKED:	
		APPROVED:	

QUINSAM COAL

QUINSAM MINE
RECOMMENDED 5-SOUTH
EXPLORATION

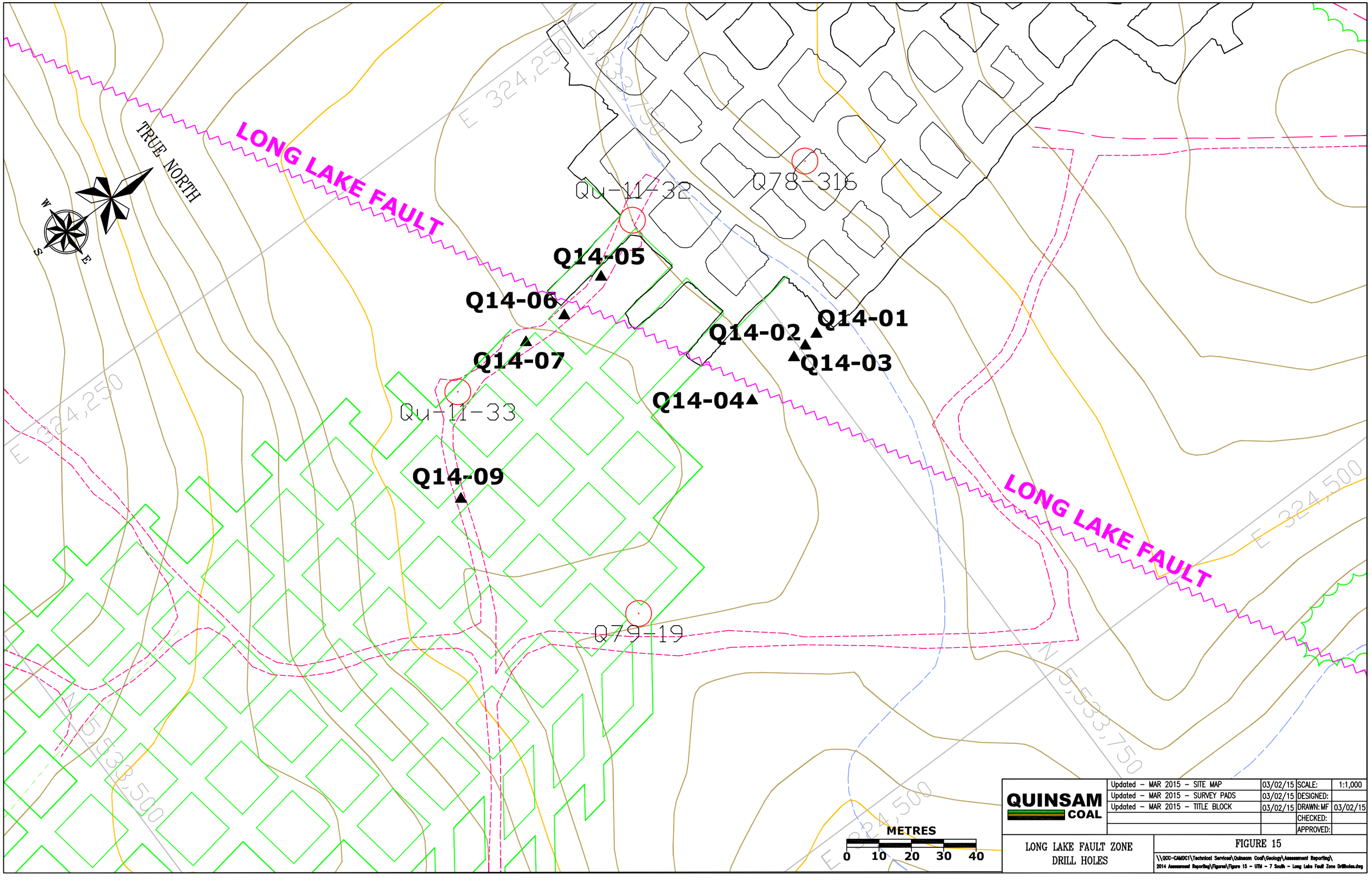
FIGURE 14

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Assessment Reporting
\2014 Assessment Reporting\Figures\Figure 14 - UTM - 5 South - Recommended Exploration.dwg

e. 7-South Long Lake Fault Drilling

The recently permitted 7-South Area 5 is physically separated from 7-South Area 4 by the Long Lake fault zone. This regional structure represents a structurally disturbed zone of en-echelon strike-slip faults approximately 60 metres wide. Displacements across the zone are variable, from more than 20 metres to as little as 6 metres in the vertical sense. The fault zone, as evidenced by surface topography, is more severe in the south-westerly direction of the Quinsam Minesite, diminishing in intensity to the north-east. In some areas, folding and buckling is more prominent than actual fault slippage.

Where the mine workings are proposed to cross the Long Lake fault, tightly spaced drilling shows that the fault offsets the coal zone sub-vertically by approximately 13m in one singular down-throw. Three underground roadways have been advanced to the face of the fault and the average dip of the fault is measured at 59^{o}. The locations of the 2014 Long Lake Fault Zone drillholes are shown in Figure 16. These drillholes were open-hole hammer drilled to identify the elevation of either the top of the coal zone or the 4b marker seam below. Figure 17 displays a cross-section of the Long Lake Fault in relation to the active and proposed workings in the 7-South mine.

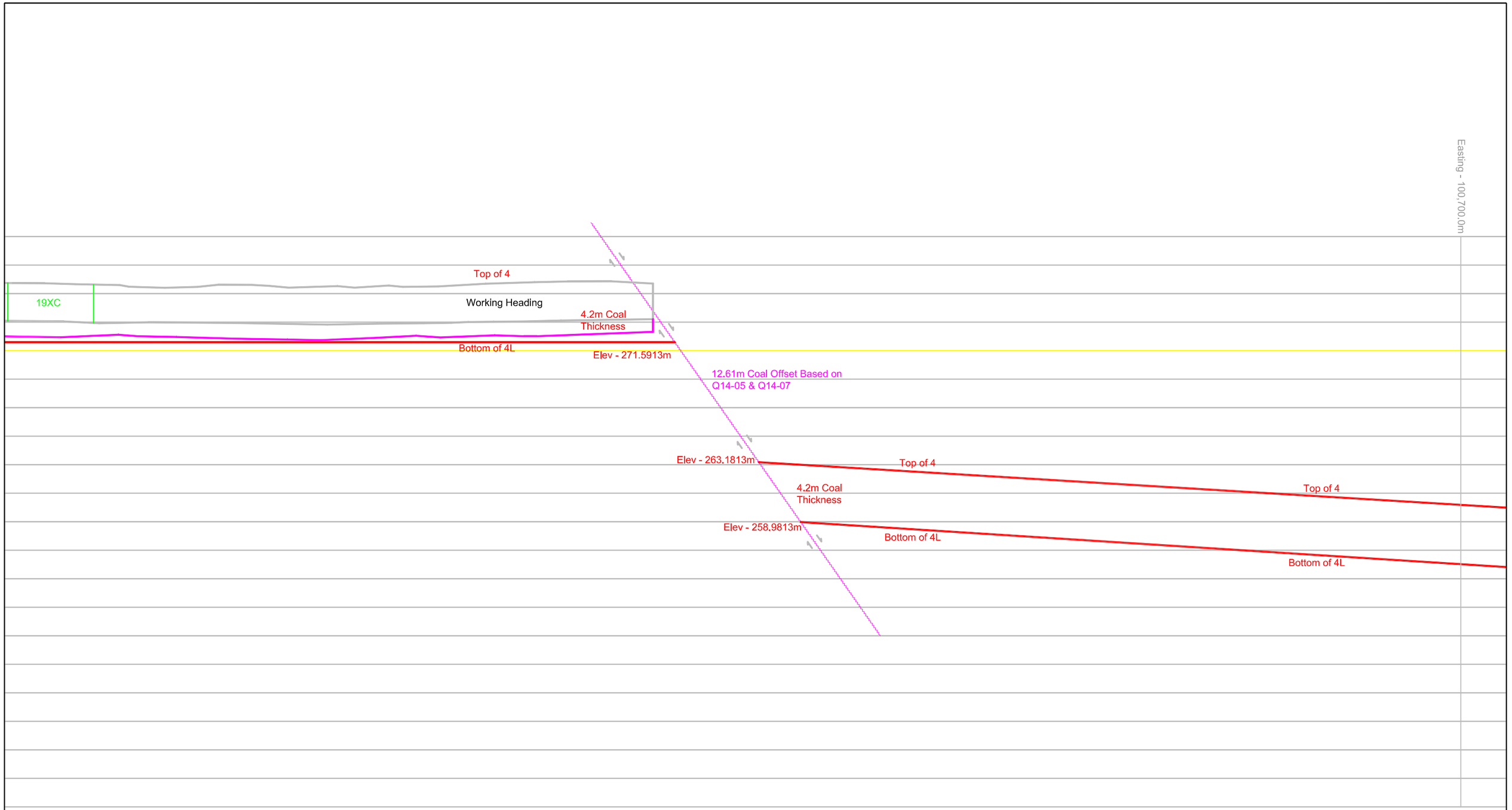


QUINSAM COAL	Updated – MAR 2015 – SITE MAP	03/02/15	SCALE:	1:1,000
	Updated – MAR 2015 – SURVEY PADS	03/02/15	DESIGNED:	
	Updated – MAR 2015 – TITLE BLOCK	03/02/15	DRAWN: MF	03/02/15
			CHECKED:	
			APPROVED:	

LONG LAKE FAULT ZONE
DRILL HOLES

FIGURE 15

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Geology\Assessment Reporting\
2014 Assessment Reporting\Figures\Figure 15 – UTM – 7 South – Long Lake Fault Zone Drillholes.dwg



QUINSAM COAL	Updated – MAR 2015 – X SECTION	03/02/15	SCALE:	1:250
			DESIGNED:	
			DRAWN: MF	03/02/15
			CHECKED:	
			APPROVED:	

GENERALIZED X-SECTION THROUGH THE LONG LAKE FAULT IN 7-SOUTH

FIGURE 16

\\QCC-CAMDC1\Technical Services\Quinsam Coal\Engineering\Underground\Mine Plans\Master Drawing\7 South\Projects\Long Lake Fault Zone\7 South - 4 Mains - Long Lake Fault Zone.dwg

7. Drilling

a. Equipment and Methods

The majority of the drillholes were drilled off of currently constructed roads to minimize disturbance, although a number of holes fell in currently unlogged or re-gen areas. Following consultation with the companies that held the timber rights, roads and pads were constructed using a method to minimize any damage to salvageable timber, which was confirmed to be negligible.

Ben VanDyk Trucking Ltd. was used to construct the access roads, drill pads, trenches, and sumps. The work was done using a 320C Cat Excavator. The total disturbed ground was 0.83 hectares, and is described in Table 12, and shown in Figures 4 and 5.

Table 12: Summary of 2014 surface disturbance per drillhole, trench or access road

Mine Area	Desription	Area (m^2)
4-South	Trench TR-4S-1	165.00
4-South	Q14-14 Drill pad	284.25
4-South	Q14-14 access road	323.26
4-South	Trench TR-4S-2	146.00
4-South	TR-4S-2 access road	1674.79
4-South	Proposed DH access road	1200.53
5-South	Trench TR-5S-1	36.00
5-South	Trench TR-5S-2	11.63
6-South	Trench TR-6S-1	16.58
5/6-South	Q14-13 Drill pad	176.86
5/6-South	Q14-13 and proposed DH access road	2514.95
7-South	7S-LL Fault Zone dh pads	180.38
7-South	7S-LL Fault Zone access road	1044.65
3-North	Q14-12 drill pad	236.45
3-North	Q14-12 access road	289.52
	Total	**8300.85**

Drillwell Enterprises Ltd. provided all of the drilling services using a DR12 Dual Rotary Drill for both the 3” and 6” coring projects.

The process of core recovery starts with installing casing to the top of bedrock to keep overburden from caving into the hole, followed by open hole hammer drilling to a predetermined ‘core point’. Coring takes place through the roof rock of the prospective coal seam, the seam, and the floor rock. Where deemed necessary holes were left open for further investigation.

Any drillhole that intersected the proposed mine workings of the 7-South Mine, or any holes deemed unnecessary for water monitoring study, were cemented using a neat-cement slurry provided by

Drillwell Enterprises Ltd. The reclaimed drillholes are listed in Table 13. Cement is introduced into the drillhole in a way that any collected groundwater within the hole is pumped out at the same time as the cement slurry goes in, ensuring a full column of cement from the base of the hole into the surface casing. All of the surface casing was pulled from the holes that were cemented this year.

The access roads and pads for nine 2014 drillholes and two 2011 drillholes were reclaimed, as was one trench. Reclamation included re-contouring and scarifying the disturbed areas.

Table 13: 2014 Reclamation of Drill pads, trenches, and access roads

Mine Area	Description	Area (m^2)
4-South	Trench TR-4S-1	165
7-South	LL Fault Zone dh's, Q11-32, Q11-33, access roads and drill pads	2001.17
	Total	**2166.17**

b. Scope of Work

A total of 14 holes were drilled in 2014. 10 of these holes were located in 7-South, 2 in 3-North, 1 in 5-South/6-South, and 1 in 4-South. A total of 553.09m were drilled, and 228.9m of that was overburden. Five trenches were excavated for a total length of 127.91m. Table 3 shows the drill hole ID's, locations, and total depths. Table 4 displays the trench locations, and lengths.

c. Costs

The cost of the 2014 Trenching and drilling program was $131,697.36. The costs of the pad prep, drilling, geochemical work and reclamation brought the overall cost per metre to $218.71.

Table 14 summarises the costs of the 2014 drill program from the site prep to the receipt of results.

Table 14: 2014 Exploration and Development Drill Program costs

Service	Cost
Pad and road building	$12,831.01
Drilling	$103,650.82
Trenching	$1,984.51
Coal Analysis	$10,404.14
Rock Analysis	$2,000.00
Reclamation	$826.88
TOTAL	**$131,697.36**

8. Sampling Method and Approach

Each drillhole provided an opportunity to gather an abundance of geologic and geochemical information on the coal and the surrounding rocks in anticipation of mining the coal seam. As the core is recovered, basic geotechnical information is gathered on the geologic section, starting in the roof material, the coal zone (coal seams and partings), as well as the coal zone floor rocks. The lithology's are mapped and described, and anything anomalous is recorded in a Core Log (Appendix 1). Based on the geologic contacts, a common set of sampling steps is generally followed to create consistency with our results. The basic roof and floor sampling steps were as follows:

2 samples from the roof rock: 0.1-0.3m in the immediate roof, and 0.3-1.0m above the coal roof.

1 sample from the floor rock: 0-0.3m in the immediate floor of the coal zone or the parting that could end up as a mineable floor.

The purpose of the roof and floor samples is to represent possible mining dilution, or rock that would be exposed if the coal was mined out, and to get ABA information.

On occasion, a full column of roof rock, or interburden between seams would be sampled, as was the case for drillhole Q14-14. The reason for this is either to represent potential waste rock material in an open pit situation, or to assist with potential ground water quality modelling plans in anticipation of underground mining with potential water inflow.

These samples were sent to SGS Canada for Acid Based Accounting (ABA) testing as well as metals analysis. The results are provided in Appendix 4.

The basic strategy for sampling the coal was to sample the independent ply's (coal seams and rock partings). When sampling coal seams, we assume a reasonable first pass underground mining height and compare that to the thickness of the coal seam, and then we either split up a seam into two samples, or use a composite of multiple plies, for detailed washability and clean coal analysis to provide the most representative product for our wash plant and potential customers. These samples were sent to the ALS Coal Lab. The procedure for coal analysis is attached in Appendix 6. As noted in the Analysis Procedure in Appendix 6, as the ALS Coal Lab completes certain steps of their analysis, they are to forward certain samples to SGS Canada for ABA analysis and full metals analysis (more detail about the process is noted below). These samples represent the Quinsam Coal Prep Plant's waste products: Coarse Coal Reject (CCR) and tailings.

The sample inventory's for both the roof/floor rock and the coal samples can be found in Appendix 2.

Coal analysis varies depending on the diameter of the core recovered (15 or 7cm diameter), and coal analysis from each hole can be found in Appendix 3. Once the requested coal analysis was completed, certain samples that represented a mining height were sieved to provide a 'fines sample, and then washed at a pre-determined specific gravity (SG) so as to provide a 'float' and a 'sink' sample that would represent a 'product' and 'coarse coal reject' sample. These representative samples were then forwarded to the SGS Canada lab for analysis similar to the floor and roof rock samples.

9. Summary

All of the exploration drillholes were planned to target certain coal zones. The two drillholes in the 3-North area were not successful in hitting the coal target, it having been eroded away. These drillholes however, were useful as condemnation holes, and provided a reasonable reserve boundary for the 2-North mine plan. The drill hole in the 5S/6S area was successful in that the #3 coal zone as well as the #1 coal zone were intersected and cored, providing valuable geotechnical and geochemical data for each zone. The #1 coal intersect accompanied with the trenching results provided the confidence to do a resource estimate for the area, as it showed that there is mineable good quality low sulphur thermal coal in an area that was thought to be mined to its limits. The 4 south drillhole and trenches assisted in putting together a geologic model that can be used to target a near surface resource of the #3 coal zone.

From each drillhole that intersected coal, coal quality information was acquired from the coal zone, and ABA analysis was performed on the roof and floor rock. In addition to the quality information, structural data was collected from the recovered core, and interpreted using historic drillhole data. Compilation of the data, and utilising the data for resource estimating, is ongoing and the results are very positive. A follow up drill program has been planned for 2015 as outlined in the exploration section above.

I, Nick Bazowski, declare that

- I am a geologist and have been employed in the fields of mineral exploration and mining since 2007.

- I graduated from the University of Victoria, in Victoria, British Columbia, with a Bachelor's of Science degree in Earth Sciences in 2007.

- I am a Member of the Association of Professional Engineers and Geoscientists of BC, currently as a Professional Geoscientist (#160214).

- I am currently the Mine Geologist at the Quinsam Coal Mine, working for Quinsam Coal Corporation.

- I supervised and took part in all aspects of the 2014 Quinsam Coal exploration and development program.

March, 2015
Nick Bazowski, PGeo.

12/03/15

11. References

1. GARDNER, S.; “Report on 2001 Exploration and Development Drilling Program”, 2001, Gardner Exploration Consultants Ltd.; for Quinsam Coal Corporation.
2. Cathyl-Bickford; “Geologic Report on Quinsam Mine”, 2007, Dunsmuir Geoscience; for Hillsborough Resources Limited.
3. Hughes, J.D et al.; “Paper 88-21 A Standardised Coal Resource/Reserve Reporting System For Canada”, 1989, Geological Survey of Canada.

QU-14-11	Nov, 2014			Logged by: Nick Bazowski				
UTM: mE mN m Elev.				Mine Grid: mE mN m Elev.	Total Depth:	44.63m		
Depth (based on drillers footage)	**Depth (based on E-log)**	**Sample #**	**Seam Designation**	**Core Description: (Lithology; grain size, colour, modifiers, minor constituents, sedimentology, palaeontology, tectonic features, physical condition, basal contact, as well as formation changes)**	**Lost Core determined by Drillers footage and E-Log combined**	**Thickness (m): Drillers / E-Log**	**Depth to Top (m): Drillers / E-log**	**Structure (dip to horizontal)**
				Core Geolog				
0-40.23m			**Overburden**	**Overburden;** Bedrock at 132' (40.23m). Trace water noted at the till/bedrock contact.				
40.23-41.91m				**Hammer Drilled**				
41.91-42.54m				**Sandstone;** Dark green, fine to medium grained, massive, with hairline carbonaceous wisps. 100% RQD.		0.63	41.91	
42.54-42.89m			**Base of Cumberland Member**	**Coarse Grained Sandstone/Gritstone;** Medium to dark green, abundant carbonaceous wavy wisps, with 1 pinch and swell coaly band 1-2cm thick. Transitional contact unit.		0.35	42.54	
42.89-44.63m			**Top of Benson Conglomerate**	**Conglomerate;** Dominantly clast supported. Dark grey matrix, rounded green volcanics fragments, up to 6cm.		1.74	42.89	
				EOH @44.63m				

QU-14-13	Dec, 2014			Logged by: Nick Bazowski				
UTM: mE mN	m Elev.			Mine Grid: mE mN m Elev.	Total Depth:	103.17m		
Depth (based on drillers footage)	**Depth (based on E-log)**	**Sample #**	**Seam Designation**	**Core Description: (Lithology; grain size, colour, modifiers, minor constituents, sedimentology, palaeontology, tectonic features, physical condition, basal contact, as well as formation changes)**	**Lost Core determined by Drillers footage and E-Log combined**	**Thickness (m): Drillers / E-Log**	**Depth to Top (m): Drillers / E-log**	**Structure (dip to horizontal)**
				Core Geolog				
0-14.94m			**Overburden**	**Overburden;** Bedrock at 49' (14.94m), cased to 54' (16.46m)				
14.94-38.10m				**Hammer Drilled**				
38.10-41.75m				**Sandstone;** Tight, hard, fine grained, medium to dark grey. There are sub-vertical calcite filled fractures that contain sporadic realgar, that run through the core to 40m. At 39.6m, a planar trace gouge filled structure is filled at 60 degrees to core axis (tca). Bedding is at 80 degrees tca. Massive unfractured rock in the bottom 1.5m, darkening with interstitial silts and pyrite. Intact, tight basal contact.		3.65	38.1	85-90, flt cracks 60-flt 10-bedding
41.75-43.36m		K813704	**3R**	**3R Coal;** 0.18m Coal, dirty with bands of dark brown sandstone near the top, broken basal contact. 0.14m Siltstone, dark brown, with coal laminations at 4 degrees bedding. Intact contact. 0.31m Coal, partially broken, dirty and bright banded, with 2 crumbled zones. 1cm of semi massive pyrite, and trace calcite on cleats. 0.04m Sandstone, highly pyritic, dirty. 0.35m Coal, clean coal with one strong cleat at 45degrees, possible fault. 0.41m Coal, competent, with 3 ~1cm permineralised calcite bands. Minor cleating noted. 0.18m rubble zone, mostly coal, some siltstone. Potential lost core.		1.61	41.75	4-bedding
43.36-43.81m			**3R-3 Ptg**	**3R-3 Parting;** Lost core. It is quite likely that a portion of the lost core is from the above rubble zone, and also possible that the rubble zone is in fact the parting. For the purpose of sampling (and until the hole has been density logged), the missing coal was considered to be parting, and the rock and coal rubble was included in the coal seam above.	0.45	0.45	43.36	
43.81-44.78m		K813705	**3**	**3 Seam Coal;** 0.48m Coal, dull and bright banded coal with semi massive pyrite bands sporadically throughout. 0.27m Mudstone, Coaly mudstone, with massive pyrite blebs mid section. 0.22m Coal, dull and bright banded coal with minor silts near the top of the interval. Competent, but with a wavy basal sub horizontal contact.		0.97	43.81	
44.78-45.15m		K813706	**3-3L Ptg**	**3-3L Parting;** 0.12m Sandstone, very dirty, with wavy bedding, very pyritic, fine grained. 0.25m Sandstone, dominantly fine grained light to medium grey, with rooty coal at the base.		0.37	44.78	
45.15-45.72m		K813707	**3L**	**3L Coal;** 0.16m Coal, clean bright coal with permineralised calcite 0.41m Mudstone, coaly mudstone, with bedding at 5 degrees, 5% of interval is coal bands.		0.57	45.15	5-bedding

Depth (based on drillers footage)	Depth (based on E-log)	Sample #	Seam Designation	Core Description: (Lithology; grain size, colour, modifiers, minor constituents, sedimentology, palaeontology, tectonic features, physical condition, basal contact, as well as formation changes)	Lost Core determined by Drillers footage and E-Log combined	Thickness (m): Drillers / E-Log	Depth to Top (m): Drillers / E-log	Structure (dip to horizontal)
45.72-45.85m				**Siltstone;** Brown, competent.		0.13	45.72	
45.85-45.95m				**Coal and Mudstone Bands;** with permineralised calcite through the interval.		0.1	45.85	
45.95-46.22m				**Siltstone;** Hard, brown.		0.27	45.95	
46.22-46.34m				**Coal;** Thin bed of coal, typical in the zone included within or below the 3L seam. Bedding is at 4 degrees.		0.12	46.22	4-bedding
46.34-48.16m				**Mudstone;** Competent hard silty mudstone, dark brown with some beige mud bands.		1.82	46.34	
				Stopped to hammer drill to 320' (97.54m)				
97.54-97.95m		K813708	**1R**	**1R Seam Coal;** Dominantly intact coal with a minor ~1mm pyrite band near the top and trace platy pyrite on cleats. There are 7 breaks on bedding at 5 degrees. Sharp basal contact.		0.41	97.54	5-bedding
97.95-98.35m		K813709	**Rider Parting**	**1R-1 Parting (Rider Parting);** Medium brown mudstone with a 3cm beige brown bed at the base. Rare coal laminae throughout <5mm thick. There are 4 breaks on bedding at 5 degrees. Intact basal contact.		0.40	97.95	5-bedding
98.35-99.48m		K813710	**1 Seam**	**1 Seam Upper Coal;** Intact coal. Moderate amounts of platy pyrite noted, as well as minor amounts of sub-vertical calcite filled cleats. Sharp but open basal contact at 3 degrees.		1.13	98.35	3-bedding
99.48-99.52m			**Middle Parting**	**1-1 Seam Middle Parting;** Beige brown mudstone band between the 1 seam upper and middle ply.		0.04	99.48	
99.52-100.81m			**1 Seam Middle**	**1 Seam Middle;** Intact clean coal, bedding at 2 degrees. A 2cm mud band noted mid seam. Open planar basal contact at 0 degrees.		1.29	99.52	2-bedding 0-bedding
100.81-101.85m		K813711	**Lower Parting**	**1-1L Mudstone Partings;** Mudstone, with abundant carbonaceous bands, with 1 coal band 7cm thick. Broken often in the top 50cm, with an 8cm rubble zone, and then the bottom half of the interval is dominantly competent with bedding at 2 degrees. Sharp intact basal contact.		1.04	100.81	2-bedding
101.85-102.16m		K813712	**1L Seam**	**1L Coal Seam;** Dirty coal, dull and brightly banded. Intact competent unit, with an intact basal contact.		0.31	101.85	
102.16-102.61m				**Mudstone;** Coaly mudstone. Coal zone floor. Dark brown.		0.45	102.16	
102.61-103.17m				**Siltstone;** Sandy siltstone. Medium grey.		0.56	102.61	
				EOH @ 103.17m				

QU-14-14	Dec, 2014		Logged by: Nick Bazowski				
UTM: mE mN m Elev.			Mine Grid: mE mN m Elev.	Total Depth:	13.92m		
Depth (based on drillers footage)	**Depth (based on E-log)**	**Sample #**	**Seam Designation**	**Core Description: (Lithology; grain size, colour, modifiers, minor constituents, sedimentology, palaeontology, tectonic features, physical condition, basal contact, as well as formation changes)**	**Lost Core determined by Drillers footage and E-Log combined**	**Thickness (m): Drillers / E-Log**	**Depth to Top (m): Drillers / E-log**	**Structure (dip to horizontal)**
				Core Geolog				
0.00-0.30m			**Overburden**	**Overburden;** Top soil on top of fractured oxidised bedrock.				
0.30-1.52m				**Cased Bedrock;** Bedrock was fractured and oxidised, so casing was hammered into the ground to 5'.		1.32		
1.52-10.05m				**Sandstone;** Medium greenish grey, competent, intact. Medium grained. At 1.52m, there is 3cm of oxidised weathered orange sandstone, and at 3.05m there is a 1mm gouge filled fracture at 70 degrees with a weathered envelope. Between 3.45-4.0m, there are pebbles scattered throughout, and a 12cm pebbly conglomerate zone mid interval. Between 4.4-4.8m, there is a slightly wavy sub-vertical rough faced fracture. At 5.9m, there is a rough surfaced open fracture at 45 degrees. Between 6.45-6.6m, there is an influx of rooty coal or carbonaceous siltstone spars. Between 7.16-8.53m, the core is broken open on a sub-vertical fracture that runs in and out of the zone. Between 8.2-8.53m, the unit becomes slightly darker due to interstitial material, possibly pyrite. Between 8.53-9.91m, the sandstone is dominantly tight, but broken often. At 9.75m, there is a 3cm coaly band with open contacts at 2 degrees. Between 1.52-4.42m, 100% RQD Between 4.42-5.80m, 20% RQD Between 5.8-7.16m, 100% RQD Between 7.16-8.53m, 20% RQD Between 8.53-10.05m, 50% RQD		8.53	1.52	70-flt 2-bedding
10.05-10.12m		K813713	**3R**	**Coal and Mudstone;** Rubble, 2-4cm pieces of coal and mudstone.		0.07	10.05	
10.12-10.33m			**3R**	**Coal;** Intact, competent coal, dull and brightly banded, dirty, with trace pyrite noted.		0.21	10.12	
10.33-10.71m			**3R**	**Siltstone;** Siltstone and muds with trace coal laminae. The top 16cm s intact, solid, the rest is broken up. The basal contact is at 0 degrees.	0.15	0.38	10.33	0-bedding
10.71-10.91m			**3R**	**Coal;** Intact coal, dirty, pyritic, bedding is at 0 degrees. Banded with hairline wisps of pyrite, calcite and silts. Sharp basal contact.		0.2	10.71	0-bedding
10.91-11.18m			**3R-3 Ptg**	**Sandstone;** The top 2cm is brown, fine grained, due to interstitial muds and silts. The next 8cm is light grey, and the rest is dark brown due to interstitial muds and trace coaly laminae. Intact unit except for one open wavy bedding plane.		0.27	10.91	
11.18-12.10m			**3R-3 Ptg**	**Sandstone;** Intact and competent except for an 8cm broken zone mid interval. Medium grained, light to medium grey with mud and coal wisps surrounding the broken zone, and rip up coal fragments and rooty coal in the bottom 15cm. Sharp basal contact.		0.92	11.18	

Depth (based on drillers footage)	Depth (based on E-log)	Sample #	Seam Designation	Core Description: (Lithology; grain size, colour, modifiers, minor constituents, sedimentology, palaeontology, tectonic features, physical condition, basal contact, as well as formation changes)	Lost Core determined by Drillers footage and E-Log combined	Thickness (m): Drillers / E-Log	Depth to Top (m): Drillers / E-log	Structure (dip to horizontal)
12.10-12.36m		K813715	**3**	**Coal;** Intact, bright, pyritic, with wisps of silt within.		0.26	12.1	
12.36-12.41m			**3**	**Sandstone;** Dirty, coaly, silty.		0.05	12.36	
12.41-12.53m			**3**	**Coal;** Clean, bright, broken up, but due to breakage during drilling.		0.12	12.47	
12.53-12.62m			**3**	**Sandstone;** Dirty with carbonaceous wispy silt bands <2mm thick throughout. Intact basal contact.		0.09	12.53	
12.62-12.76m			**3**	**Coal;** Clean, dull and bright banded, intact. Planar basal contact at 0 degrees.		0.14	12.62	0-bedding
12.76-13.35m			**3-3L Ptg**	**Sandstone;** Medium to dark grey, medium grained, dense with wisps of carbonaceous material.		0.59	12.76	
13.35-13.52m		K813717	**3L**	**Coal;** Clean, bright, open top and bottom contact.		0.17	13.35	
13.52-13.92m				**Sandstone;** Top 6cm is dirty brown due to interstitial silts, the rest is medium grey, fine to medium grained.		0.4	13.52	
				EOH @ 13.92m				

SAMPLE INVENTORY - 5/6 SOUTH EXPLORATION PROJECT
HILLSBOROUGH RESOURCES LTD.

Seam Designation	Sample No.	Lab ID	Sample Interval (From) E-Log Corrected	(To) E-Log Corrected	Sample Thick. m.	Missing Core m.	Total Thick. m.	
Drillhole Q14-13								
3R Seam Coal	K813704		41.75	43.36	1.61	0.00	1.61	Sample is in 2 bags
3 Seam Coal	K813705		43.81	44.78	0.97	0.00	0.97	Sample is in 2 bags
3-3L Parting	K813706		44.78	45.15	0.37	0.00	0.37	
3L Seam Coal	K813707		45.15	45.72	0.57	0.00	0.57	
1R Coal Seam	K813708		97.54	97.95	0.41	0.00	0.41	
1R-1 Parting	K813709		97.95	98.35	0.40	0.00	0.40	
1 Coal Seam	K813710		98.35	100.81	2.46	0.00	2.46	
1-1L Parting	K813711		100.81	101.85	1.04	0.00	1.04	
1L Coal Seam	K813712		101.85	102.16	0.31	0.00	0.31	

***Special Instructions: Please follow the 3" core sampling procedure as laid out in the document. When it comes to the point of compositing for washability, please composite:
1) K813704, K813705 (to be washed at 1.75 SG)
2) K813706, K813707 (to be washed at 1.75 SG)
3) K813708, 709, 710 (to be washed at 1.55 SG)

ROCK SAMPLE INVENTORY FOR ABA ANALYSIS - 6 SOUTH EXPLORATION PROJECT

Drillhole Q14-13	Sample No.	Sample Interval (From)	(To)	Sample Thick. m.	Comments
	Sample #	From (m)	To (m)	Total (m)	
	141301	40.45	41.45	1	Sandstone
	141302	41.45	41.75	0.3	3R Roof rock (SS)

Special Notes: There are 6 samples that are going to be forwarded from ALS, they will be labeled with the Drillhole ID, sample number, and either CCR Sinks or Tailings Sinks. When distributing reports, please include all of these samples together, with the samples listed above.

SAMPLE INVENTORY - 4 SOUTH EXPLORATION PROJECT
HILLSBOROUGH RESOURCES LTD.

Seam Designation	Sample No.	Lab ID	Sample Interval (From) E-Log Corrected	(To) E-Log Corrected	Sample Thick. m.	Missing Core m.	Total Thick. m.	
Drillhole Q14-14								
3R Seam Coal and rock	K813713		10.05	10.91	0.86	0.00	0.86	Sample is in 2 bags
3 Seam Coal and rock	K813715		12.1	12.76	0.66	0.00	0.66	
3L Seam Coal	K813717		13.35	13.52	0.17	0.00	0.17	

***Special Instructions: Please follow the 6" core sampling procedure as laid out in the document. When it comes to the point of compositing for washability, please composite:
1) K813713, K813715

***This core is to be floated at 1.75SG

ROCK SAMPLE INVENTORY FOR ABA ANALYSIS - 4 SOUTH EXPLORATION PROJECT

Drillhole Q14-14	Sample No.	Sample Interval (From)	(To)	Sample Thick. m.	Comments
	Sample #	From (m)	To (m)	Total (m)	
	141401	1.52	3.05	1.53	Sandstone
	141402	3.05	4.42	1.37	Sandstone
	141403	4.42	5.79	1.37	Sandstone
	141404	5.79	7.16	1.37	Sandstone
	141405	7.16	8.53	1.37	Sandstone
	141406	8.53	9.91	1.38	Sandstone
	141407	9.91	10.05	0.14	3R Roof rock
	141408	10.91	12.1	1.19	3R-3 Parting
	141409	12.79	13.35	0.56	3-3L Parting
	141410	13.52	13.92	0.4	3L Floor Rock

Special Notes: There are 2 samples (*Q14-14 CCR Sinks* and *Q14-14 Tailings Sinks*) that are going to be forwarded from ALS. When distributing reports, please include all of these samples together.

TR-4S-1

September 16, 2014
Nick Bazowski

Start of trench: 98432mE, 101081.5mN, 345.03m Elev.

End of trench: 98425mE, 101129mN, 343.48m Elev.

Total Length: 48.5m

Pit 1 to test for bedrock: 98428mE, 101149mN, 344.59m Elev.

Pit 2 to test for bedrock: 98427mE, 101146mN, 345.12m Elev.

**All survey points are from within the trench, so elevations are of actual bedrock, after till removed.

Survey:

Location (m)	Till thickness to top of bedrock (m)
0	0.4
14	0.3
22	1
34	0.75
46	1.3
48	3.5

Location (m)	Feature	Strike/dip (to True North)
1	Joint	140/82
15.4	Fault	105/62
18	Joint	170/48
31	Joint	101/75
32	Bedding	315/14
38.5	Bedding	Horizontal

This trench was dug down to bedrock with the anticipation of the 3 seam coming to surface. What was found was that due to the bedding (noted below), the topography didn't allow for much of the stratigraphy to be exposed. In the last 3-4m, the bedrock dropped smoothly but rapidly, to a depth that couldn't be reached (in excess of 3.5m). The bedrock that was mapped in that 3.5m was all sandstone, dominantly massive, with a few bedding planes noted due to oxidised layering. The sandstone surfaces were weathered brown, but once broken, was fresh medium grained massive grey sandstone. The weathering only penetrated the rocks 2-3cm's.

Two pits were dug down to bedrock, and sandstone was exposed in both of those pits as well.

A drillhole (4S-1Sm-A) is proposed between 0-14m of this trench, and will provide data on the expected depth to the coal seam. If follow-up on TR-4S-2 warrants further work on this seam in the area, and this drillhole is completed, it will provide the information necessary to determine if this trench should be continued or not.

TR-4S-2

October 2, 2014
Nick Bazowski

Survey: As noted in pictures below, a thin layer of till, the 3R seam, and the 3R-3 Parting were stripped within the trench, down to the top of the 3 Seam. Survey points were taken within the trench at the top of the 3 seam, and a list of the survey points are shown below.

Easting (m)	Northing (m)	Elevation (m)	Identifier
98389.78	100659.4	354.5343	3TOP
98393.06	100658.6	354.3883	3TOP
98397.33	100658.1	353.934	3TOP
98400.61	100657.9	353.6067	3TOP
98403.19	100657.9	353.0866	3TOP
98407.57	100657.7	352.7209	3TOP
98411.7	100657.5	352.1746	3TOP
98413.25	100657.3	352.0784	3TOP
98415.94	100656.5	352.0293	3TOP
98420.42	100656.6	351.607	3TOP
98424.32	100657.6	351.0949	3TOP
98427.81	100659.2	350.7281	3TOP
98429.51	100660.2	350.5021	3TOP
98431.33	100661.4	350.4723	3TOP
98436.15	100664.5	348.0426	3BOT

This trench was located near drillhole Q78-275, that intersected the top of the 3R seam at 0.74m, directly at the till-bedrock contact. The trench revealed that the top of the coal zone was in contact with soft sandy till for the entire length of the trench, save for the last 1-2m on either end. Both ends of the trench were terminated due to what appeared to be sub-parallel down-throw faults, although dipping in opposite directions. These faults are both 'down-throw' faults, and the coal has been replaced by hardpacked clay rich till. The offset was not discovered or explored on the Northeast end of the trench as topography coupled with historic drilling suggested that it could be in excess of 10m. The offset was explored in the fault in the Southwest end of the trench and could possibly be as little as 1.5m, although that would need to be confirmed with more excavation. Within the bulk of the trench, a layer of sandy till underneath the O Horizon (loose and partly decayed organic matter), was between 1.25-1.8m thick, and was sampled to determine sulphur which was found to be 0.05% sulphur. The 3R coal seam was exposed in most of the trench (Figure 1), exhibiting thicknesses of 0-0.8m, but was a highly weather unit, partially decayed, and very soft. All of this material was excavated with the overburden, but 2 samples were taken of this material from the trench wall at different locations. Between the 3R and the 3 seam, there is a very distinct light grey to white sandstone parting as shown in Figures 1 and 2, and alike the 3R seam above it, was highly weathered, dominantly decomposed to just sand. This material

was also sampled from the rib in two separate locations, as it was also excavated from the trench with the overburden material. The top of the #3 coal seam was exposed in the floor of the trench as a relatively unaltered fresh rock as shown in Figure 3. In the northeastern portion of the trench, the excavator was able to expose a sectional view of this seam, and a composite sample of the coal and many internal partings was taken. The siltstone floor of the #3 seam was also exposed, and was very fresh and hard. The thickness of the #3 seam may vary, as it was evident that the partings and the 3R seam pinched and swelled locally, but was measured to be 1.83m, 0.34m of which was parting material (sandstone and siltstone). A bedding measurement within the coal was taken to be 308/07. The fault in the NE end of the trench seems to be at 221/43, and the fault in the SW end of the trench is at 063/40.

The sample results are shown below, and are considered to be low sulphur coal. The 3R seam and the 3R-3 Parting, which were both sampled twice, as these seams were exposed throughout the length of the trench, had similar ash and sulphur results indicating consistent qualities. The 3 seam which was only sampled once, resulted in 38.43% ash and 0.89% sulphur. The ash result was to be expected based on the partings mapped within the seam (1.48/1.83m coal), but the sulphur result was an appealing surprise. Regionally, the 3 seam sulphur results are always in excess of 1.5%, but it can be expected that we would attain lower results in an area that is slightly weathered due to the proximity to surface. Further work should be done to bulk sample this area so as to get a better representative sample that can be tested for washabilities, as well as clean coal qualities such as sulphur ash and BTU.

The trenching in the 4 South area was planned in anticipation of a large block of coal at depths less than 15m, which could be open pit mined. Given the two faults that bound this trench, it is reasonable to assume that this coal at surface is an 'up-thrown' block of ground, and could be stripped and sampled to retain a representative bulk sample that could be used to provide coal quality data for near surface coal mining in this general area. Further modelling of the coal seam and coal qualities are necessary, but this is a very encouraging start.

Q78-275	
Seam	**Thickness**
3R	0.606
3R-3 Parting	0.4
3	1.59
3-3L Parting	2.07
3L	0.67

TR4S-2		**Sample 1**		**Sample 1**	
Seam	**Thickness**	**Ash**	**Sulphur**	**Ash**	**Sulphur**
3R	0.67	16.20	1.40	18.02	1.47
3R-3 Parting	0.17	93.43	0.07	93.93	0.05
3	1.83	38.43	0.89		

Figure 1: 3R Seam exposed in the rib of the trench, in direct contact with the overlying till

Figure 2: The sandstone (sometimes just sand) parting between the 3R and 3 seam. In this location, there is no 3R present likely due to glacial erosion

Figure 3: The rock hammer is lying on the top of the #3 coal seam, but also shown in this picture is the top sandstone parting within this seam

TR-5S-1

September 24, 2014
Nick Bazowski

Survey Points

Pit 1: 99261.1775mE, 101530.5561mN, 307.2426m Elev.

Pit 2 Top: 99258.7130mE, 101495.3388mN, 307.9318m Elev.

Pit 2 Bottom: 99251.4399mE, 101499.4026mN, 305.8492m Elev.

The original trench that was located on the side of the 2S access road near the turnoff for the Rock Quarry, was excavated ~4 vertical metres, and was found to only expose the base of the #1 coal zone. This point was surveyed for the purpose of modelling, as the seam can be projected up, and the exposure can be seen in figure 1.

Figure 1: First Pit, displays the exposed bottom of the #1 Coal zone

The first pit was used to project where the #1 seam would be better exposed, and the second trench was dug, exposing the entire #2 coal zone, sitting on top of the entire #1 coal zone. The #2 coal zone can be seen in Figure 2.

Below the #2 Coal zone, the #1 coal zone was exposed, and appears to have a fault offsetting the seam locally by up to 3.0m along the fault plane (1.5m vertically), and this fault can best be seen in Figure 3. No strike was measured, but the apparent dip was ~45 degrees. Above the fault, the dip of the coal seam was 002/12, and then below the fault, the apparent dip steepened to 24 degrees, but then by the base of the coal seam, the orientation of the 1L seemed to be at 339/12. It is common in the 2N/5S mine to have a 'rolling' coal seam prior to a fault, suggesting a listric fault (curved normal fault, concave upwards, dip decreases with depth, common in extensional regimes, often preceded by rollover anticlines).

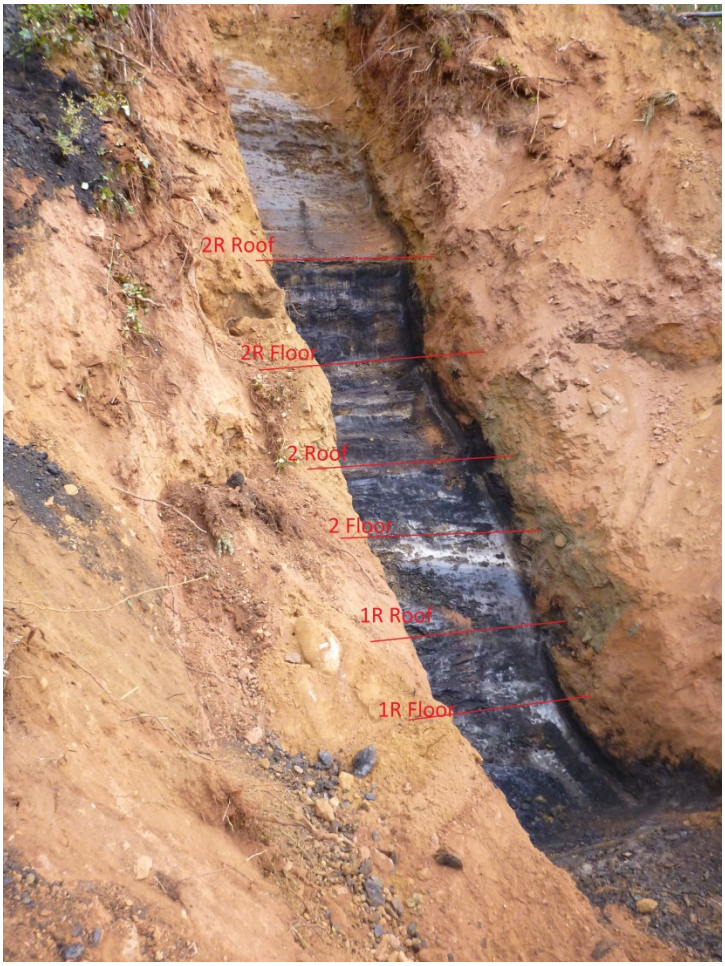


Figure 2: Exposure of the #2 coal zone, overiding the #1 coal zone

Figures 4-8 depict the #1 coal zone on the right hand rib of the trench, facing the hillside. The base of the coal zone is likely where the 'floor line' is labelled in Figures 7 and 8, although there was a carbonaceous zone 40cm below that line that was 25cm thick that may develop into the 1L coal ply laterally further into the coal seam. This seam (ply) was sampled in this location as well as TR-5S-2.

The trench was in the proximity of both drillholes Q76-36 and Q78-157. Table 1 is provided to display any differences between the trench and the drillholes, as well as the coal quality of the trench samples.

Figure 3: Fault offest through the coal zone, noted mostly through the 1R seam and the 1R-1 Parting

Figure 4: 1R seam overlying the 1R-1 parting

Figure 5: 1R-1 Parting overlying the 1 Seam

Figure 6: The top part of the 1 Seam, labelled 1 Seam A only for sampling purposes.

Figure 7: The bottom part of the 1 Seam, labelled 1 Seam B only for sampling purposes.

Figure 8: The contact between the coal zone and the underlying siltstone unit

Q76-36	Thickness (m)
2R	0.37m
2R-2 ptg	0.79m
2	0.55m
2-1R ptg	1.15m
1R	0.49m
1R-1 ptg	0.58m
1	1.8m

Q78-157	Thickness (m)	Sulphur
2R	0.88m	
2R-2 ptg	0.46m	
2	0.64m	
2-1R ptg	1.04m	
1R	0.85m	
1R-1 ptg	1.41m	
1	1.52m	2.07
1-1L ptg	0.24m	
1L	0.49m	

TR-5S-1	Thickness (m)	Ash	Sulphur
2R	~1m		
2R-2 ptg	~1m		
2	~0.8m		
2-1R ptg	1.0m		
1R	1.0m	27.63	1.38
1R-1 ptg	1.05m	77.27	4.92
1	2.26m	26.96	0.20
1-1L ptg	0.40m	72.38	0.05
1L	0.25m	54.27	0.14

TR-5S-2

October 2, 2014
Nick Bazowski

Survey: Surveyed from the top of the #2 seam to the bottom of the 1L seam.

From: 99235.391mE, 101474.408mN, 306.133m Elev.

To: 99231.749mE, 101475.734mN, 303.131m Elev.

Following up on the positive results found in TR-5S-1, the seam was projected ~30m along the existing road and excavated to see if the seam stayed on strike. As shown in Figure 1, the coal seam was again exposed, albeit an overall thinner coal zone, but with comparable results.

Figure 1: The entire coal zone

As shown in Figure 1, the exposure is interpreted as a thinned #1 coal zone in close proximity of the #2 coal zone, however, due to the variable thicknesses, and the eroded exposure above the labeled #2 zone, I am unsure if the zone interpreted as the #2 coal zone is in fact the #2 seam, rather than the 1R seam, and the displayed 1R, 1R-1 parting and 1 seam, could in fact all be part of the #1 seam. Either way, the coal zone was sampled based on the variable unit breaks displayed in Figure 1, and the results are shown below. Taking into account quality data rather than thicknesses, it is observed that as the seams are labeled, 1R through to the 1L seam, the only two seams that don't compare well are the 1R and the 1R-1 parting.

Seam	Thickness	Ash%	Sulphur%
2 Seam	0.49	37.35	0.28
2-1R Parting	0.67	63.88	0.15
1R Seam	0.34	45.76	0.18
1R-1 Parting	0.2	63.21	0.06
1 Seam	0.6	21.00	0.24
1-1L Parting	0.41	78.65	0.04
1L Seam	0.15	41.05	0.19

TR-6S-1

September 17, 2014
Nick Bazowski

Trench Location: 99676.19mE, 101823.61mN, 312.2581m Elev. (top of coal)

(323182.65mE, 5533271.4mN, 312.2581m Elev.)

DH Q76-7 Location: 99692.7mE, 101833.02mN, 316.468m Elev. (collar)

Q76-7	Thickness (m)
3R	0.76
3R-3	1.07
3	0.91
3-3L	0.62
3L	0.61

TR-6S-1	Rock Type	Thickness (m)	Ash %	S %
3R	Coal	0.91	27.32	1.28
3R-3	Siltstone/mud?	0.66	60.08	1.4
3R-3	Soft Coal	0.27	26.52	2.37
3R-3	Coaly Siltstone	0.55	59.46	9.41
3	Coal	0.9	22.39	2.96
3-3L	Hard Siltstone	0.3+		

This trench was located to find the subcrop of the #3 coal zone at surface, and the location was chosen based on the proximity of the coal to the surface found in the drillhole Q76-7. The trench ended up being a 5 metre long pit, dug to a total depth of 3.8m, 3.29m of which was the targeted coal zone. The entire coal sequence was not exposed based on the difficulty the excavator had ripping through the 3-3L siltstone parting, but the majority of the coal seam was exposed, mapped and sampled. The coal seam thicknesses are slightly comparable to that found in Q76-7, but the variability is surprising between the 3R and the 3R-3 Parting thicknesses. The individual plies of the 3R-3 parting were sampled so as to get a weight percent of coal, and it can be estimated that the **recoverable raw coal product from this coal zone would be 2.07m of 2.153% Sulphur**.

The top contact of the coal was measured at 358/11. Although this bedding does fit the general regional trend, it is a near surface measurement and could be inaccurate due to surface creep.

6" Core

1) Crush Samples to 2" minus
2) Split out small portion for head raw analysis
    -Moistures, ash%, %S, SG, reported at all basis (adb, arb, db)
    -LT% on the 4S surface coal samples only
3) Refer to Coal Inventory spreadsheet provided with the samples to determine if any samples are to be composited.
4) Screen and report weights at
    1) 2" to +1mm
    2) -1mm to +0.15mm
    3) -0.15mm
5) -Do float/sink of screen 1 at 1.75 SG (for 4S holes, at 1.55SG for 5S hole)
   -Do float sink of screen 2 at 1.75 SG (for 4S holes, at 1.55 SG for 5S hole),
    -On floats and sinks: report weight %'s, moistures, ash%, S%, at all basis (db, adb, arb)
6) Ensure that cumulative float and sink results reflect head raw analysis
7) Take screen 3 (-0.15mm);
    -moisture, ash and sulphur
8) Combine the 2 floats for clean coal analysis
    -Proximate and Ultimate analysis (including sulphur and phosphorus)
    -Heating Value
    -Sulphur Forms
    -Percent Fines
    -Trace Elements (arsenic, fluorite, mercury, selenium, antimony, boron, lead, cadmium, copper, molybdenum, nickel, uranium, thorium, vanadium, zinc
    -Ash Fusion temps: reducing and oxidising
    -Ash composition analysis
    -HGI
9) -Take the sinks from f/s screen 1 (*2" to +1mm*), label the sample as **CCR Sinks** (with the drillhole number and sample ID appended).

-Label the sink from f/s screen 2 (*1mm+0.15mm*) as **Tailings Sinks** (with the drillhole number and sample ID appended).

-Ship these samples to:

SGS Canada Inc.
3260 Production Way, Suite F
Burnaby,BC
V5A 4W4

3" Core

1) Crush Samples to 1/2" minus
2) Split out small portion (1/8th) for head raw analysis and do:
    -Moistures, ash%, %S, SG, reported at all basis (adb, arb, db)
3) Refer to Coal Inventory spreadsheet provided with the samples to determine if any samples are to be composited.
4) Screen and report weights at
    1) ½" to 1mm
    2) -1mm to 0.15mm
    3) -0.15mm
5) Analyse *-0.15mm* for moistures, ash%, S%.
6) Do float/sink at 1.55 SG for screen 1 (1/2" to 1mm)
  -Do Float/sink at 1.55 SG for screen 2 (-1mm to 0.15mm)
    Report weight %'s, moistures, ash%, %S at all basis (adb,db,arb), for both of the floats and both of the sinks.
7) Combine the floats from the 2 float/sinks for clean coal analysis;
    -Proximate and Ultimate analysis (including sulphur and phosphorus)
    -Heating Value
    -Sulphur Forms
    -Percent Fines
    -Trace Elements (arsenic, fluorite, mercury, selenium, antimony, boron, lead, cadmium, copper, molybdenum, nickel, uranium, thorium, vanadium, zinc
    -Ash Fusion temps: reducing and oxidising
    -Ash composition analysis
    -HGI
8) -Take sinks from the ½" to 1mm float/sink analysis, label this sample as *CCR Sink (with the drillhole and sample ID appended)* and ship to SGS.
-Take the sinks from the -1mm to 0.15mm float sink analysis, label this sample as *Tailings Sinks (with the drillhole and sample ID appended)*

-Ship these samples to:
    SGS Canada Inc.
    3260 Production Way, Suite F
    Burnaby,BC
    V5A 4W4