

MANALTA COAL LTD.

SHEET # 1 OF 22

PROJECT: TELKWA HOLE # 7982-22C CONTRACTOR: McAuley CASING: COMMENTS:

BOX MARK	BCA	CORE STATE	RQD	DEPTH			UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	KEY BED
				INTERVAL THK	FROM	TO												
Box 1 15.34/ 20.50	90°	broken		0.35	15.34	15.79		A001	SASN		med/ fgr		gy/ grn	med/ lt	thin/ lam		- mdsn lams, no vis pyrite.	
		-		0.06	15.79	15.85			LOST									
		broken		0.45	15.85	16.30		A001	SASN		med/ fgr		gy/ grn	med/ lt	thin/ lam		mdsn lams no vis pyrite.	
		-		2.10	16.30	18.40			LOST									
	75°	broken		0.13	18.40	18.53		A001	SASN		med/ fgr		gy/ grn	med/ lt	thin/ lam	n	mdsn lams no vis py	
		blocky		0.88	18.53	19.41		A002	MDSN				gy	dk	thick		scatt'd irreg urttrin up to 0.05cm. 2cm py bleb @ 52cm	
		broken/ ground		0.09	19.41	19.50		1	COAL								dull, dirty - visible alkss. py.	
		-		0.77	19.50	20.27			LOST									
		blocky		0.04	20.27	20.31		1	COAL								dull, dirty - no visible py.	
		blocky		0.09	20.31	20.40		A003	MDSN				gy	dk	thick		no visible py.	
Box 2 20.50/ 23.67		blocky		0.16	20.40	20.56		A003	MDSN	carb.			gy	dk	thick		no visible py	

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SHEET # 2 OF 22

PROJECT: TELKWA

HOLE # T98R-22C

CONTRACTOR: McAulay

CASING:

COMMENTS:

BOX MARK	BCA	CORE STATE	RQD	DEPTH				DESCRIPTION										KEY BED	
				INTERVAL THK	FROM	TO	UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES		
		broken		0.12	20.56	20.68		2	COAL									dull, dirty; no visible pyrite	
		-		0.17	20.68	20.85		-	LOST										
	77°	blocky		0.57	20.85	21.42		2	COAL									dull, banded 43-45 cm - mdsn / tuft, dk, carb; end of core core ground no visible pyrite,	
		-		0.26	21.42	21.68		-	LOST										
		broken		0.06	21.62	21.68		A004	MDSN	carb			gy	dk	thick			soft, broken no visible pyrite	
		blocky		0.42	21.68	22.10		A004	SLSN	sandy			gy	med	thin/ faint			gradational into sasn below no visible py	
		blocky		0.40	22.10	22.50		A004	SLSN	sandy			gy	med	thin/ faint			a/a no visible py	
		blocky		1.06	22.50	23.58		A005	SASN		med		gy/ grm	H	thin w/ mdsn lams			-scatt'd mdsn lams; some Fe sta. thin beds no vis py, slightly calc.	
Box 23.67 26.59		blocky		1.61	23.58	25.19		A005	SASN		med		gy/ grm	H	thin w/ mdsn lams			a/a no vis py,	
	78°	blocky		1.18	25.19	26.37		A005	SASN		med							a/a no vis py,	
		blocky		0.15	26.37	26.52		A005	SASN		med							a/a no vis py,	
Box 26.59	74°	blocky		0.30	26.52	26.82		A005	SASN		med							a/a no vis py	

MANALTA COAL LTD.

SHEET # 5 OF 22

PROJECT: TELKWA HOLE # T98R-220 CONTRACTOR: Mc Auley CASING: COMMENTS:

BOX MARK	BCA	CORE STATE	RQD	DEPTH				SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	KEY BED
				INTERVAL THK	FROM	TO	UNIT THK											
		blocky/ broken		0.63	39.68	40.31	A012	SLSN	mdsn			gy	med/ dk	thick		soft no vis pyrite ground bone @ block non calc		
		-			40.31	41.62		LDS										
	75°	blocky		1.01	41.62	42.63	A013	SASN	slsn	med		gy/ grn	H.	thin/ lam.		scatt'd slsn lams no visible pyrite		
Box 9 42.65 45.72		blocky		2.03	42.63	44.66	A013	SASN	slsn	med		gy/ grn	H.	thin/ lam		scatt'd slsn lams no vis pyrite, non calc		
		blocky		0.50	44.66	45.16	A013	SASN	slsn	med						a/a		
		blocky/ broken		0.03	45.16	45.19	6	MDSN	carb.			gy	dk.	v thin		v thin early pgs		
		solid		0.15	45.19	45.34	6	COAL								bright banded, v-hands to 0.5 cm 2-2.5 cm - brn Festel mdsn/tuff -sharp contact @ base		
		blocky		0.12	45.34	45.46	A014	MDSN	carb/ silty			gy	dk	thick		11-12 cm - vitrain band. no visible py		
		blocky		0.20	45.46	45.66	A014	SASN	silty			gy/ grn	med	thin/ faint		no vis py		
Box 10 45.72 48.76	75°	blocky		1.25	45.66	46.91	A014	SASN								a/a no vis py		

MANALTA COAL LTD.

SHEET # 6 OF 22

PROJECT: TELKWA HOLE # T9BR-22C CONTRACTOR: McAuley CASING: COMMENTS:

BOX MARK	BCA	CORE STATE	RQD	DEPTH			UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	KEY BED
				INTERVAL THK	FROM	TO												
		broken/ ground		0.30				A015	MPSN	silty			gy	med/ dk	thick.		soft	
		-		0.33					LOST									
		blocky		0.16	47.54	47.70		A016	SASN		med/ fin		gy/ grn	med	thin/ lam		faint bedding no visible py.	
		blocky		0.86	47.70	48.56		A016	SASN								a/a no visible py	
									LOST									
Box 11		broken/ ground.		0.40	48.56			A016	SASN								a/a	
48.76				1.33					LOST								-	
53.37	75°	blocky.		0.20	50.29	50.49		A016	SASN								a/a.	
		broken		0.09	50.49	50.58		A016	MPSN	carb.			gy	dk			no visible py.	
		blocky		0.13	50.58	50.76		7	COAL								-handed, dull. -no vis. part. -possible core loss @ block?	
									LOST									
		broken/ ground		0.13				7	COAL								3 cm melsn included in ground core at contact (0-6 cm) 6-13 cm. - solid	
		broken/ blocky		0.20	51.93	52.13		A017	MPSN	carb.			gy	dk			some slickensides, polished carb. material. -some calcite on fractures. -no visible py	
	72°	blocky/ ground.		0.77	52.13	52.90		A016	SASN	silty.	fin/ med.		gy/ grn	med	thin/ lam		- more silty at upper contact - no vis py, calcite on fract. & slickensides	

MANALTA COAL LTD.

SHEET # 8 OF 22

PROJECT: TELKWA HOLE # T96R-22C CONTRACTOR: McAnleg CASING: COMMENTS:

BOX MARK	BCA	CORE STATE	RQD	DEPTH			UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	KEY BED
				INTERVAL THK	FROM	TO												
		broken/ grnd.		0.65	59.91	60.56		A020	MDSN	silty/ carb.			gy	dk	vth/ lam		slsn & vfar sasn lam's up to 25% no vis py, slickensided fractures w/ calcite.	
		—		0.57	60.56	61.13		—	LOST									
		broken/ blocky		0.50	61.13	61.63		A020	MDSN	silty/ carb.			gy	dk	vth/ lam		a/a no vis py, calcite in fract's	
Box 14 61.82 65.20		blocky/ broken		0.43	61.63	62.06		A020	MDSN	silty/ carb.			gy	dk	vth/ lam		a/a no vis py, no calcite.	
		—		0.90	62.06	62.96		—	LOST									
		solid.		0.20	62.96	63.16		A020	MDSN	silty/ carb.			gy	dk	vth/ lam		lams up to 10% slsn/vfar sasn.	
		broken.		0.49	63.16	63.65		A020	MDSN	silty/ carb.			gy	dk	thin		py blebs to 1cm. vth slickensides no visible py, calcite on fractures	
		blocky		0.19	63.65	63.84		A020	MDSN	silty/ carb.			gy	dk	thin		minor calcite. no visible pyrite.	
		solid.		0.08	63.84	63.92		A020	MDSN	silty/ carb.			gy	dk	vthin		no vis pyrite, non calc	
	81°	solid.		0.03	63.92	63.95		A021	SASN	silty/ carb.	fin/ med.		gy	med.	vthb/ lam		30% slsn/mdsn lams	
		blocky		0.99	63.95	64.94		A021	SASN								a/a no visible py, some calcite on fractures	

MANALTA COAL LTD.

SHEET # 9 OF 22

PROJECT: TELKWA HOLE # T38R-22C CONTRACTOR: Mc Auley CASING: COMMENTS:

BOX MARK	BCA	CORE STATE	RQD	DEPTH			UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	KEY BED
				INTERVAL THK	FROM	TO												
		blocky		0.21	64.94	65.15		A021	SASN	med/fg			gy	med	thin		no vis py, minor calcite.	
Box 15 65.20 68.38	85°	blocky		0.77	65.15	65.92		A021	SASN	fg/med			gy	med	thh/lam		30% slsn/mdsn lams 2-7 cm - calcite filled tension gashes. no vis py.	
	87°	blocky		0.41	65.92	66.33		A021	SASN								a/a. no vis py, minor calcite on fractures	
		blocky		0.47	66.33	66.80		A022	SLSN	mdsn/carb			gy	med/dk	thin			
		broken		0.04	66.80	66.84		9	COAL									
		-		0.16	66.84	67.00			LOST									
		blocky		0.06	67.00	67.06		A023	MDSN						Thick			
		-							LOST									
		ground/broken		0.10				A023	MDSN	carb/coaly			gy	dk	Thick			
		blocky		0.21				A023	SLSN	medfy			gy	med/dk	Thick		slickensides, some calcite on fractures	

MANALTA COAL LTD.

SHEET # 13 OF 22

PROJECT: TELKWA HOLE # T98R-22C CONTRACTOR: McAuley CASING: COMMENTS:

BOX MARK	BCA	CORE STATE	RQD	DEPTH				DESCRIPTION										KEY BED
				INTERVAL THK	FROM	TO	UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	
		broken		0.20	78.58	78.78		A028	MDSN				gy	dk			no vis pyrite slicken sides	
		-		0.44	78.78	79.22			LOST									
Box 19 76.97 81.97		broken/ blocky		0.50	79.22	79.72		A028	MDSN				gy	dk			no vis. py slicken sides, calcite. fault contact w/sasn @ 29°	
		blocky		0.25	79.72	79.97		A029	SASN		far/ med		gy/ grm	med.	thin		scattered sls/mdsn lam no vis py.	
	65°	blocky/ broken		0.43	79.97	80.40		A029	SASN								a/a no vis py.	
		-		0.75	80.40	81.15			LOST									
	48°	blocky		0.66	81.15	81.81		A029	SASN								a/a no vis py.	
Box 20 81.57 84.82	65°	blocky		1.10	81.81	82.91		A029	SASN								a/a no vis py 0-20cm scale, brown color	
		-		0.24	82.91	83.15			LOST									
	44°	broken/ blocky		0.35	83.15	83.50		A029	SASN								a/a. no vis py fault zone at base	
		broken		0.23	83.50	83.73		A030	SASN								fault zone @ 30° ground core @ base of fault zone	

MANALTA COAL LTD.

SHEET # 21 OF 22

1.49

PROJECT: TELKWA HOLE # TDBR-22C CONTRACTOR: Mc Auley CASING: COMMENTS: 113.93
115.42

BOX MARK	BCA	CORE STATE	RQD	DEPTH				DESCRIPTION										KEY BED
				INTERVAL THK	FROM	TO	UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	
		blacky/ broken		0.25	114.35	114.60		20	COAL									dull, flakey in part, soft no vis py.
B0X29		blacky		0.10	114.60	114.70		20	COAL									a/a no vis py.
		—		0.15	114.70	114.85		—	LOST									
		—		0.51	114.85	115.36		—	LOST									
		very broken		0.06	115.36	115.42		20	COAL									
		broken/ blacky		0.35	115.42	115.77		A041	MDSN	carb.			gy	med/ dk	Thick			27-35 cm - blacky no vis pyrite.
		—		0.59	115.77	116.36		—	LOST									
78°		blacky/ broken		0.52	116.36	116.88		A041	MDSN	carb			gy	med.	thin/ lens.			no vis py.
71°		blacky		0.13	116.88	117.01		A042	SASN	silty	fg/ vfg		gy	med/ H.				no vis py
		—		0.52	117.01	117.53		—	LOST									
71°		blacky/ broken		0.98	117.53	118.51		A049	SASN	silty	fg/ vfg		gy	med/ H.	thin			faint bedding, scatt'd slickensides 23-27 cm - calcite on fractures no vis py

MANALTA COAL LTD.

SHEET # 22 OF 22

PROJECT: TELKWA HOLE # T98R-22C CONTRACTOR: McAuley CASING: COMMENTS:

BOX MARK	BCA	CORE STATE	RQD	DEPTH				DESCRIPTION										KEY BED
				INTERVAL THK	FROM	TO	UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	
Box 30		broken / blocky		0.20	118.51	118.71		A042	SASN	silty	fg / vfg		gy	med	thick		no vis py	
		-		0.05	118.71	118.76		-	LOST									
		broken / blocky		1.40	118.76	120.16		A042	SASN	silty	fg / vfg		gy	med	thick		40 - 53 cm - a few calcite on fractures - tan colored rock	
		-		1.0.30	120.16	120.46		-	LOST									
								END	OF	HOLE								

T98R-23	0.00	1.60 OB
T98R-23	1.60	2.87 COAL
T98R-23	2.87	4.76 MDSN
T98R-23	4.76	5.80 COAL
T98R-23	5.80	7.00 MDSN
T98R-23	7.00	7.55 SLSN
T98R-23	7.55	7.85 COAL
T98R-23	7.85	8.31 MDSN
T98R-23	8.31	8.88 COAL
T98R-23	8.88	15.00 SLSN
T98R-23	15.00	16.50 MDSN
T98R-23	16.50	24.75 SLSN

T98R-24	0.00	1.80 OB
T98R-24	1.80	2.53 ROCK
T98R-24	2.53	3.30 COAL
T98R-24	3.30	4.70 MDSN
T98R-24	4.70	6.30 COAL
T98R-24	6.30	9.16 MDSN
T98R-24	9.16	9.33 COAL
T98R-24	9.33	10.63 MDSN
T98R-24	10.63	12.63 COAL
T98R-24	12.63	15.04 SLSN
T98R-24	15.04	17.71 COAL
T98R-24	17.71	18.14 MDSN
T98R-24	18.14	18.34 COAL
T98R-24	18.34	18.66 MDSN
T98R-24	18.66	18.74 COAL
T98R-24	18.74	19.80 MDSN
T98R-24	19.80	20.28 COAL
T98R-24	20.28	20.43 MDSN
T98R-24	20.43	21.51 COAL
T98R-24	21.51	30.50 MDSN

T98R-25	0.00	4.34 OB
T98R-25	4.34	5.51 COAL
T98R-25	5.51	6.53 MDSN
T98R-25	6.53	9.92 COAL
T98R-25	9.92	10.41 MDSN
T98R-25	10.41	11.05 COAL
T98R-25	11.05	11.17 MDSN
T98R-25	11.17	11.63 COAL
T98R-25	11.63	18.50 MDSN

T98R26	0.00	1.00 OB
T98R26	1.00	6.99 GRAVEL
T98R26	6.99	8.00 GRAVEL
T98R26	8.00	9.01 COBBLE
T98R26	9.01	26.00 GRAVEL
T98R26	26.00	47.30 SAND

T98R-27	0.01	5.50 OB
T98R-27	5.50	13.10 ROCK
T98R-27	13.10	15.75 COAL
T98R-27	15.75	32.31 ROCK
T98R-27	32.31	34.52 COAL
T98R-27	34.52	35.27 ROCK
T98R-27	35.27	35.98 COAL
T98R-27	35.98	36.33 ROCK
T98R-27	36.33	38.83 COAL
T98R-27	38.83	42.29 ROCK
T98R-27	42.29	42.42 COAL
T98R-27	42.42	42.79 ROCK
T98R-27	42.79	44.40 COAL
T98R-27	44.41	50.99 ROCK
T98R-27	50.99	51.22 COAL
T98R-27	51.22	53.07 ROCK
T98R-27	53.07	54.30 COAL
T98R-27	54.31	67.84 ROCK
T98R-27	67.85	68.30 COAL
T98R-27	68.30	101.30 ROCK
T98R-27	101.30	104.10 COAL
T98R-27	104.10	104.23 ROCK
T98R-27	104.23	104.40 COAL
T98R-27	104.40	104.58 ROCK
T98R-27	104.58	104.99 COAL
T98R-27	104.99	105.78 ROCK
T98R-27	105.78	106.14 COAL
T98R-27	106.14	107.28 ROCK
T98R-27	107.28	110.26 COAL
T98R-27	110.26	122.68 ROCK
T98R-27	122.68	122.95 COAL
T98R-27	122.95	123.56 ROCK
T98R-27	123.56	124.00 COAL
T98R-27	124.00	180.00 ROCK

T98R28

0.00

47.30 OB



T98R-29	0.00	6.00 OB
T98R-29	6.00	96.19 ROCK
T98R-29	96.19	97.22 COAL
T98R-29	97.22	100.05 ROCK
T98R-29	100.05	100.21 COAL
T98R-29	100.21	105.38 ROCK
T98R-29	105.38	106.07 COAL
T98R-29	106.07	107.90 ROCK
T98R-29	107.90	108.03 COAL
T98R-29	108.03	108.45 ROCK
T98R-29	108.45	108.76 COAL
T98R-29	108.76	109.76 ROCK
T98R-29	109.76	110.03 COAL
T98R-29	110.03	110.47 ROCK
T98R-29	110.47	110.58 COAL
T98R-29	-110.58	119.00 ROCK
T98R-29	119.00	119.14 COAL
T98R-29	119.14	119.23 ROCK
T98R-29	119.23	120.64 COAL
T98R-29	120.64	163.00 ROCK

T98R-30	0.00	9.50 OB
T98R-30	9.50	61.98 ROCK
T98R-30	61.98	62.15 COAL
T98R-30	62.15	62.49 ROCK
T98R-30	62.49	64.99 COAL
T98R-30	64.99	65.22 ROCK
T98R-30	65.22	65.89 COAL
T98R-30	65.89	66.07 ROCK
T98R-30	66.07	67.04 COAL
T98R-30	67.04	67.46 ROCK
T98R-30	67.46	72.16 COAL
T98R-30	72.16	79.46 ROCK
T98R-30	79.46	79.62 COAL
T98R-30	79.62	80.62 ROCK
T98R-30	80.62	81.19 COAL
T98R-30	81.19	81.25 ROCK
T98R-30	81.25	82.85 COAL
T98R-30	82.85	91.24 ROCK
T98R-30	91.24	92.77 COAL
T98R-30	92.77	93.32 ROCK
T98R-30	93.32	94.39 COAL
T98R-30	94.39	171.00 ROCK

MANALTA COAL LTD.

SHEET # 1 OF 6

PROJECT: TELKWA HOLE # T98R-31C CONTRACTOR: McAuley CASING: COMMENTS: Run 1 from 24.39 to 26.36, Rec'd length 1.95 (00.0) (06.5)

BOX MARK	BCA	CORE STATE	RQD	INTERVAL THK	DEPTH			SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	KEY BED
					FROM	TO	UNIT THK											
	86°						1.65	SLSN	Sandy			gy	med	thded to lam			tube 1-04 shoe 0-11 some med gr. sasn beds w/ laminations - lenses in some areas some tan colored mdsn sharp contact w/ coal	
							0.10	1	MDSN	silty		gy	dk					
							0.20	2	COAL									handd coal w/ vitrain bands to 1.5 cm 10 to 20 cm - broken (core catcher)

MANALTA COAL LTD.

SHEET # 2 OF 6

PROJECT: TELKWA HOLE # T98R-31C CONTRACTOR: McAuley CASING: COMMENTS: Run 2 from 26.37 to 27.52 (86.5) (90.25), Rec'd length=1.4

BOX MARK	BCA	CORE STATE	RQD	INTERVAL THK	DEPTH			SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	KEY BED
					FROM	TO	UNIT THK											
							0.10	3	COAL								tube 1.03 shoe 0.1B dull, hard, broken core -bone	
							0.60	4	COAL								banded coal, v bands to 1 cm in top 20cm 55-60cm - dull hard coal at contact. aby pyrite on vit. fractures	
							0.06	5	MDSN carb.				gy	dk			v-bark to 3mm	
	86°						0.45		SLSN				gy	med			some thin carb mdsn lam's scattered v-bark to 1cm thickness	

2.82
MANALTA COAL LTD.

SHEET # 3 OF 6

PROJECT: TELKWA HOLE # T98R-31C CONTRACTOR: McAuley CASING: COMMENTS: Run 3 from 36.89 to 39.33. Rec'd length - 2.79 (121.0) (129.0.) - HW 11/9cm

BOX MARK	BCA	CORE STATE	RQD	DEPTH				DESCRIPTION										KEY BED
				INTERVAL THK	FROM	TO	UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	
	85°						1.28	5	SLSN	sandy			gy	med.	thick bedded		tube 2.38 shoe 0.11 - faint bedding, lam w/ vfg sasn 1mm calcite along fracture @ 42cm - 65° 123.0 - 124cm broken zone along bedding.	
							0.05	6	MDSN	carb			gy	dk.			1cm pyrite band 0.04 to 0.05m	
							0.38	7	COAL								- dull banded coal, scall'd v-hands to 0.5cm 0.5cm mdsn / tilt @ 15cm 35 to 38cm - buff - tan w/ minor pyrite	
							0.40	8	COAL								banded coal w/ v-hands to 1.5cm - 2mm pyrite along bed @ 17cm 7x3cm pyrite block @ 25cm.	
							0.38	9	COAL								a/a. - 5mm py along bedding @ 11cm.	

MANALTA COAL LTD.

SHEET # 4 OF 6

PROJECT: TELKWA HOLE # TDBR-31C CONTRACTOR: McAuley CASING: COMMENTS: Run 4 from 39.33 to 42.38 Rec'd length = 3.03
(129.0) (139.0)

BOX MARK	BCA	CORE STATE	RQD	DEPTH				DESCRIPTION										KEY BED
				INTERVAL THK	FROM	TO	UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	
							0.42	10	coal								take 2.93 shoe 0.10	
																	banded, dull coal, scattered v-bands, 0-1cm v-band w pyrite in fractures	
							0.41	11	coal								banded coal w v-bands up to 2cm, 36-.41 dull, muddy, hard coal, scattered pyrite blebs	
							0.04	12	MDSN	carb.			grey	dark			v-bands scattered pyrite blebs	
							0.34	12	MDSN	silty			grey	med/dark			vitronite bank, scattered pyrite blebs	
							0.37	13	SLSN	muddy			tan/grey	med.			vitronite bank w pyrite	
							0.42	14	SLSN	muddy			tan/grey	med			A/A, broken from .38-.41	
							0.10	15	tuff				v. li. grey				0-0.04 med grey muddy	
							0.21	16	coal								dull, banded dirty, 0.08-0.10 carb MDSN	
							0.42	17	coal								bright, v-banded coal	
							0.30	18	coal								A/A w pyrite veins @ 0.23-0.27	

MANALTA COAL LTD.

SHEET # 5 OF 6

PROJECT: TELKWA HOLE # T98R-31C CONTRACTOR: McArthur CASING: COMMENTS: Run 5 from 42.38 to 45.43, Rec'd length = 3.12 (139.0) (149.0)

BOX MARK	BCA	CORE STATE	RQD	DEPTH				DESCRIPTION										KEY BED
				INTERVAL THK	FROM	TO	UNIT THK	SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	
							0.50	19	COAL								tube 2-77 shoe - 0-35	
																	banded coal, v-bands to 1.5 cm, some dull bands to 2 cm - no visible py	
							0.50	20	COAL								a/a	
	85°						0.45	21	COAL								a/a, 12 to 13.5 cm ash band	
							0.55	22	COAL								0-6 cm - broken - soft coal 6-12 cm - dull band - bone 12-24 cm - banded, v to 1.5 cm 25-27 cm - v-band - ash part 27-40 cm - broken, soft coal 40-45 cm - dull band, bone 45-53 cm - banded coal 53-55 cm - ash band	
	76° (full)						0.50	23	COAL								banded coal - v-bands to 1 cm	
							0.26	24	COAL								a/a	
							0.04	25	MDSN	carb			gy	dark			- vitrain inclusions	
	82°						0.32	26	SLSN				gy	med	thick		irreg v-striae py blebs to 1 cm	

MANALTA COAL LTD.

SHEET # 6 OF 6

PROJECT: TELKWA HOLE # T98R-31C CONTRACTOR: McAuley CASING: COMMENTS: Run 6 from 45.43 to 47.10, Recd length = 4.67 (149.0) (154.5) - ILA seam

BOX MARK	BCA	CORE STATE	RQD	INTERVAL THK	DEPTH			SAMPLE #	ROCK TYPE	MODIFIER	GRAIN SIZE	SORTING	COLOUR	MODIFIER	BEDDING	SED. STRUCT	NOTES	KEY BED
					FROM	TO	UNIT THK											
							0.29	27	SLSN				gy	med.	thick.		tube = 1.40 shoc = 0.27 0-3cm - v-strips w/pyrite	
							0.07	28	MDSN	carb.			gy	dk			1mm pyrite streaks FW ILA SEAM	
							0.27	29	COAL								bright banded, v-bands to 1.5cm. - ILA SEAM	
							0.06		COAL								dull, bone	
							0.24		COAL								bright banded, v-bands to 1cm 6 to 15cm - pyritic 22 to 24cm - bone	
	82°						0.10	30	TDFE				gy/tan	H				
							0.27	31	COAL								banded bright - fault contact @ 36° at base	
							0.12	32	SLSN				gy	med.	contacted		0.5cm calcite @ 55° at base FW ILA SEAM	
							0.25		SLSN				gy	med.	thick.		calcite strings 0.5mm @ 67° vitrinite fragments throughout	

T98R-31C	0.00	6.70 OB
T98R-31C	6.70	16.82 ROCK
T98R-31C	16.82	17.22 COAL
T98R-31C	17.22	19.62 ROCK
T98R-31C	19.62	20.20 COAL
T98R-31C	20.20	24.55 ROCK
T98R-31C	24.55	26.20 SLSN
T98R-31C	26.20	26.30 MDSN
T98R-31C	26.30	26.50 COAL
T98R-31C	26.50	26.60 COAL
T98R-31C	26.60	27.20 COAL
T98R-31C	27.20	27.26 MDSN
T98R-31C	27.26	27.71 SLSN
T98R-31C	27.71	36.77 ROCK
T98R-31C	36.77	38.05 SLSN
T98R-31C	38.05	38.10 MDSN
T98R-31C	38.10	38.48 COAL
T98R-31C	38.48	38.88 COAL
T98R-31C	38.88	39.26 COAL
T98R-31C	39.26	39.68 COAL
T98R-31C	39.68	40.09 COAL
T98R-31C	40.09	40.13 MDSN
T98R-31C	40.13	40.47 MDSN
T98R-31C	40.47	40.84 SLSN
T98R-31C	40.84	41.26 SLSN
T98R-31C	41.26	41.36 TUFF
T98R-31C	41.36	41.57 COAL
T98R-31C	41.57	41.99 COAL
T98R-31C	41.99	42.29 COAL
T98R-31C	42.29	42.79 COAL
T98R-31C	42.79	43.29 COAL
T98R-31C	43.29	43.74 COAL
T98R-31C	43.74	44.29 COAL
T98R-31C	44.29	44.79 COAL
T98R-31C	44.79	45.05 COAL
T98R-31C	45.05	45.09 MDSN
T98R-31C	45.09	45.41 SLSN
T98R-31C	45.41	45.70 SLSN
T98R-31C	45.70	45.77 MDSN
T98R-31C	45.77	46.04 COAL
T98R-31C	46.04	46.10 COAL
T98R-31C	46.10	46.34 COAL
T98R-31C	46.34	46.44 TUFF
T98R-31C	46.44	46.71 COAL
T98R-31C	46.71	46.83 SLSN
T98R-31C	46.83	47.08 SLSN
T98R-31C	47.09	51.20 ROCK

T98R-32	0.00	1.00 OB
T98R-32	1.00	4.00 GRAVEL
T98R-32	4.00	6.50 GRAVEL
T98R-32	6.50	23.50 MDSN
T98R-32	23.50	24.00 SASN
T98R-32	24.00	32.50 MDSN
T98R-32	32.50	37.00 SASN
T98R-32	37.00	38.50 MDSN
T98R-32	38.50	39.00 SASN
T98R-32	39.00	51.74 MDSN
T98R-32	51.74	52.31 COAL
T98R-32	52.31	78.50 MDSN

T98R-33	0.00	9.00	OB
T98R-33	9.00	124.48	ROCK
T98R-33	124.48	127.00	COAL
T98R-33	127.00	171.00	ROCK

T98R-34	0.00	2.00 OB
T98R-34	2.00	24.00 GRAVEL
T98R-34	24.00	24.51 MDSN
T98R-34	24.51	25.69 COAL
T98R-34	25.69	26.39 MDSN
T98R-34	26.39	26.82 COAL
T98R-34	26.82	27.66 MDSN
T98R-34	27.66	30.78 COAL
T98R-34	30.78	31.17 MDSN
T98R-34	31.17	33.59 ROCK
T98R-34	33.59	34.48 COAL
T98R-34	34.48	46.09 MDSN
T98R-34	46.09	47.11 COAL
T98R-34	47.11	60.00 MDSN

manalta Cuttings Description

Project TELKWA Contractor LOREALYNN Driller BRYAN B Lith. by _____ HOLE T-982-34 pg 1 of 1

Remarks _____ Start _____ Geo-log _____ Depth 60 m

13		16
4		1

Finish _____ Date AUG 7 / 98 Isd S T R

Depth () from to	Lithology					Indurate			Coal				Other	Colour										Comments														
	Mdsn	S/Md	S/	S/SS	S S	F	M	C	Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow					
0 2																																						
2 24																																						
24 26	✓									✓																												
26 32													✓																									
32 60	✓									✓																												

coal in sand mixture in mixed rock stringers of sandstone

T98R-35	0.00	8.50 OB
T98R-35	8.50	14.45 ROCK
T98R-35	14.45	15.43 COAL
T98R-35	15.43	22.73 ROCK
T98R-35	22.73	23.20 COAL
T98R-35	23.20	23.59 ROCK
T98R-35	23.59	25.39 COAL
T98R-35	25.39	37.68 ROCK
T98R-35	37.68	37.92 COAL
T98R-35	37.92	42.69 ROCK
T98R-35	42.69	44.15 COAL
T98R-35	44.15	54.25 ROCK
T98R-35	54.25	57.27 COAL
T98R-35	57.27	79.69 ROCK
T98R-35	79.69	86.62 COAL
T98R-35	86.62	89.04 ROCK
T98R-35	89.04	89.33 COAL
T98R-35	89.33	93.17 ROCK
T98R-35	93.17	93.34 COAL
T98R-35	93.34	93.91 ROCK
T98R-35	93.91	94.87 COAL
T98R-35	94.87	104.02 ROCK
T98R-35	104.02	104.61 COAL
T98R-35	104.61	106.00 ROCK
T98R-35	106.00	108.59 COAL
T98R-35	108.59	120.72 ROCK
T98R-35	120.72	121.18 COAL
T98R-35	121.18	126.38 ROCK
T98R-35	126.38	128.26 COAL
T98R-35	128.26	139.77 ROCK
T98R-35	139.77	142.22 COAL
T98R-35	142.22	146.23 ROCK
T98R-35	146.23	146.59 COAL
T98R-35	146.59	153.00 ROCK

T98R-36	0.00	3.00 OB
T98R-36	3.00	5.00 GRAVEL
T98R-36	5.00	5.50 OB
T98R-36	5.50	57.07 MDSN
T98R-36	57.07	57.48 COAL
T98R-36	57.48	59.38 MDSN
T98R-36	59.38	59.75 COAL
T98R-36	59.75	105.60 MDSN
T98R-36	105.60	110.60 SASN
T98R-36	110.60	114.60 VOLC

manalta Cuttings Description

Project TELWA Contractor GRA LYNN Driller BRYAN B Lith. by CLINT H. HOLET-98R-36 pg 1 of 1

Remarks SITE B Start _____ Geo-log _____ Depth 114.6 m
 Finish _____ Date AUG 8/98 lsd S T R

13		16
4		1

Depth () from to	Lithology				Indurate			Coal				Other	Colour								Comments											
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Gray	Till		Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow
					F	M	C																									
0 3																																
3 5																		✓	✓													
5 5.5																			✓													
5.5 12.6	✓							✓												✓			✓									
12.6 18.6	✓									✓											✓		✓									
18.6 24.6	✓							✓												✓			✓									
24.6 37.6	✓								✓												✓		✓									
37.6 48.6		✓						✓												✓			✓									
48.6 57.6	✓							✓												✓			✓									
57.6 57.6	✓								✓													✓	✓									
57.6 58.6														✓																		
58.6 66.6		✓						✓												✓			✓									
66.6 78.6	✓									✓											✓		✓									
78.6 80.6		✓						✓												✓			✓									
80.6 105.6	✓								✓												✓		✓									
105.6 110.6						✓				✓										✓			✓									
110.6 114.6																					✓			✓				✓			VOLCANIC	

T98R-37	0.00	11.50 OB
T98R-37	11.50	14.03 ROCK
T98R-37	14.03	14.50 COAL
T98R-37	14.50	19.42 ROCK
T98R-37	19.42	20.70 COAL
T98R-37	20.70	25.36 ROCK
T98R-37	25.36	26.25 COAL
T98R-37	26.25	31.35 ROCK
T98R-37	31.35	32.73 COAL
T98R-37	32.73	35.06 ROCK
T98R-37	35.06	35.51 COAL
T98R-37	35.51	36.02 ROCK
T98R-37	36.02	37.01 COAL
T98R-37	37.01	37.54 ROCK
T98R-37	37.54	37.66 COAL
T98R-37	37.66	43.43 ROCK
T98R-37	43.43	43.77 COAL
T98R-37	43.77	44.57 ROCK
T98R-37	44.57	45.07 COAL
T98R-37	45.07	45.70 ROCK
T98R-37	45.70	46.20 COAL
T98R-37	46.20	52.64 ROCK
T98R-37	52.64	53.13 COAL
T98R-37	53.13	64.17 ROCK
T98R-37	64.17	64.65 COAL
T98R-37	64.65	65.38 ROCK
T98R-37	65.38	66.14 COAL
T98R-37	66.14	68.98 ROCK
T98R-37	68.98	69.98 COAL
T98R-37	69.98	70.05 ROCK
T98R-37	70.05	70.95 COAL
T98R-37	70.95	85.53 ROCK
T98R-37	85.53	85.98 COAL
T98R-37	85.98	90.02 ROCK
T98R-37	90.02	90.35 COAL
T98R-37	90.35	90.85 ROCK
T98R-37	90.85	93.85 COAL
T98R-37	93.85	94.16 ROCK
T98R-37	94.16	94.66 COAL
T98R-37	94.66	96.59 ROCK
T98R-37	96.59	96.76 COAL
T98R-37	96.76	97.75 ROCK
T98R-37	97.75	98.23 COAL
T98R-37	98.23	98.40 ROCK
T98R-37	98.40	98.84 COAL
T98R-37	98.84	100.78 ROCK
T98R-37	100.78	101.50 COAL
T98R-37	101.50	102.59 ROCK
T98R-37	102.59	103.09 COAL
T98R-37	103.09	104.09 ROCK
T98R-37	104.09	104.66 COAL
T98R-37	104.66	105.66 ROCK
T98R-37	105.66	106.48 COAL
T98R-37	106.48	163.00 ROCK

T98R-38	0.00	4.00 OB
T98R-38	4.00	5.43 GRAVEL
T98R-38	5.43	6.13 COAL
T98R-38	6.13	17.93 MDSN
T98R-38	17.93	18.86 COAL
T98R-38	18.86	21.60 SASN
T98R-38	21.60	25.60 MDSN
T98R-38	25.60	27.60 SASN
T98R-38	27.60	72.60 MDSN
T98R-38	72.60	78.60 SASN
T98R-38	78.60	90.60 MDSN

T98R-39	0.00	15.90 OB
T98R-39	15.90	103.00 ROCK

T98R-40	0.00	2.00 OB
T98R-40	2.00	6.00 COBBLE
T98R-40	6.00	17.00 GRAVEL
T98R-40	17.00	20.00 GRAVEL
T98R-40	20.00	23.00 GRAVEL
T98R-40	23.00	26.00 GRAVEL
T98R-40	26.00	29.00 COBBLE
T98R-40	29.00	35.00 GRAVEL
T98R-40	35.00	36.00 SAND
T98R-40	36.00	38.80 GRAVEL
T98R-40	38.80	44.75 MDSN
T98R-40	44.75	45.77 COAL
T98R-40	45.77	46.15 MDSN
T98R-40	46.15	47.34 COAL
T98R-40	47.34	52.12 MDSN
T98R-40	52.12	54.82 COAL
T98R-40	54.82	55.38 MDSN
T98R-40	55.38	57.00 COAL
T98R-40	57.00	74.23 MDSN
T98R-40	74.23	74.57 COAL
T98R-40	74.57	75.28 MDSN
T98R-40	75.28	76.56 COAL
T98R-40	76.56	77.08 MDSN
T98R-40	77.08	77.55 COAL
T98R-40	77.55	78.24 MDSN
T98R-40	78.24	78.66 COAL
T98R-40	78.66	82.63 MDSN
T98R-40	82.63	82.91 COAL
T98R-40	82.91	84.53 MDSN
T98R-40	84.53	85.07 COAL
T98R-40	85.07	86.64 MDSN
T98R-40	86.64	87.18 COAL
T98R-40	87.18	87.32 MDSN
T98R-40	87.32	88.03 COAL
T98R-40	88.03	88.59 MDSN
T98R-40	88.59	89.19 COAL
T98R-40	89.19	90.54 MDSN
T98R-40	90.54	90.84 COAL
T98R-40	90.84	91.51 MDSN
T98R-40	91.51	92.10 COAL
T98R-40	92.10	192.50 MDSN

manalta Cuttings Description

Project TELKWA Contractor COALYNN Driller BRYAN B Lith. by CLINT H Site 48 HOLET-98R40 pg 1 of 1

Remarks _____ Start _____ Geo-log _____ Depth _____

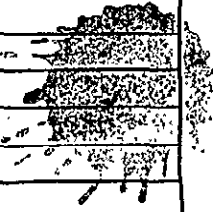
Finish _____ Date AUG 11/98 lsd S T R

13		16
4		1

Depth () from to		Lithology					Indurate				Coal				Carb	Clay	Sand	Grav	Till	Other	Colour										Comments					
		Mdsn	S/Md	S/	S/SS	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Clay							Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green	Black		White	Red	Orange	Yellow	
0	1																		SOIL																	
1	2																																			
2	6																		Boulder																	
6	17																																			
17	20																																			
20	23																																			
23	26																																			
26	29																		Boulder																	
29	35																																			
35	36																																			
36	38.5																																			
38.5	48.5		✓					✓																												
48.5	51.5		✓						✓																											
51.5	57.5													✓																						
57.5	70.5		✓					✓												✓																
70.5	75.5		✓							✓																										
75.5	77.5										✓				✓																					
77.5	81.5		✓																																	
81.5	84.5																																			
84.5	89.5		✓					✓																												
89.5	90.5																																			
90.5	108.5		✓					✓												✓																
108.5	192.5		✓							✓																										

68.5

stringer of coal



T98R-41	0.00	13.50 OB
T98R-41	13.50	20.53 ROCK
T98R-41	20.53	21.32 COAL
T98R-41	21.32	21.85 ROCK
T98R-41	21.85	24.91 COAL
T98R-41	24.91	32.51 ROCK
T98R-41	32.51	35.32 COAL
T98R-41	35.32	55.46 ROCK
T98R-41	55.46	57.32 COAL
T98R-41	57.32	57.90 ROCK
T98R-41	57.90	58.08 COAL
T98R-41	58.08	59.01 ROCK
T98R-41	59.01	59.58 COAL
T98R-41	59.58	59.72 ROCK
T98R-41	59.72	60.78 COAL
T98R-41	60.78	75.14 ROCK
T98R-41	75.14	75.38 COAL
T98R-41	75.38	80.32 ROCK
T98R-41	80.32	80.73 COAL
T98R-41	80.73	80.85 ROCK
T98R-41	80.85	84.16 COAL
T98R-41	84.16	90.63 ROCK
T98R-41	90.63	93.17 COAL
T98R-41	93.17	93.59 ROCK
T98R-41	93.59	94.65 COAL
T98R-41	94.65	95.82 ROCK
T98R-41	95.82	96.53 COAL
T98R-41	96.53	114.09 ROCK
T98R-41	114.09	114.38 COAL
T98R-41	114.38	118.99 ROCK
T98R-41	118.99	119.29 COAL
T98R-41	119.29	119.39 ROCK
T98R-41	119.39	120.45 COAL
T98R-41	120.45	120.67 ROCK
T98R-41	120.67	121.85 COAL
T98R-41	121.85	122.84 ROCK
T98R-41	122.84	122.94 COAL
T98R-41	122.94	123.71 ROCK
T98R-41	123.71	123.85 COAL
T98R-41	123.85	126.44 ROCK
T98R-41	126.44	126.76 COAL
T98R-41	126.76	127.27 ROCK
T98R-41	127.27	127.82 COAL
T98R-41	127.82	153.00 ROCK

T98R-42	0.00	9.00 OB
T98R-42	9.00	9.11 ROCK
T98R-42	9.11	10.79 COAL
T98R-42	10.79	10.98 ROCK
T98R-42	10.98	14.38 COAL
T98R-42	14.38	49.00 ROCK

manalta Cuttings Description

Project _____ Contractor SOS Driller Janth Lith. by _____ HOLE T98R-42 pg 5 of 5
Remarks _____ Start _____ Geo-log _____ Depth 15
Finish _____ Date 08-12-94 lsd S T R _____

13		16
4		1

Depth ()	Lithology							Coal		Other	Colour											Indurate			Comments			
	Till	Grav	Sand	Sasn			Slsn	Mdsn	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.		Hard		
				C	M	F																						
0-9 X																												
9-10																					X							<i>Water table</i>
10-12																			X									
12-21																					X							<i>Set 13m S</i>
21-49																			X									<i>Coal Behind Csg</i>

Bad possible 8m?

T98R-43	0.00	14.00 OB
T98R-43	14.00	38.63 ROCK
T98R-43	38.63	39.06 COAL
T98R-43	39.06	39.80 ROCK
T98R-43	39.80	40.42 COAL
T98R-43	40.42	46.11 ROCK
T98R-43	46.11	46.38 COAL
T98R-43	46.38	47.30 ROCK
T98R-43	47.30	48.23 COAL
T98R-43	48.23	49.76 ROCK
T98R-43	49.76	50.10 COAL
T98R-43	50.10	50.22 ROCK
T98R-43	50.22	51.84 COAL
T98R-43	51.84	62.80 ROCK
T98R-43	62.80	63.62 COAL
T98R-43	63.62	68.43 ROCK
T98R-43	68.43	68.78 COAL
T98R-43	68.78	69.59 ROCK
T98R-43	69.59	71.69 COAL
T98R-43	71.69	78.39 ROCK
T98R-43	78.39	82.47 COAL
T98R-43	82.47	83.10 ROCK
T98R-43	83.10	83.70 COAL
T98R-43	83.70	86.12 ROCK
T98R-43	86.12	86.49 COAL
T98R-43	86.49	86.77 ROCK
T98R-43	86.77	87.07 COAL
T98R-43	87.07	87.29 ROCK
T98R-43	87.29	87.46 COAL
T98R-43	87.46	87.64 ROCK
T98R-43	87.64	88.25 COAL
T98R-43	88.25	89.25 ROCK
T98R-43	89.25	90.09 COAL
T98R-43	90.09	94.47 ROCK
T98R-43	94.47	94.95 COAL
T98R-43	94.95	95.84 ROCK
T98R-43	95.84	98.49 COAL
T98R-43	98.49	98.68 ROCK
T98R-43	98.68	99.07 COAL
T98R-43	99.07	99.60 ROCK
T98R-43	99.60	99.99 COAL
T98R-43	99.99	107.46 ROCK
T98R-43	107.46	107.73 COAL
T98R-43	107.73	108.47 ROCK
T98R-43	108.47	109.27 COAL
T98R-43	109.27	109.61 ROCK
T98R-43	109.61	110.62 COAL
T98R-43	110.62	111.14 ROCK
T98R-43	111.14	113.53 COAL
T98R-43	113.53	114.15 ROCK
T98R-43	114.15	114.33 COAL
T98R-43	114.33	115.35 ROCK
T98R-43	115.35	115.60 COAL
T98R-43	115.60	134.00 ROCK

manalta Cuttings Description

Project _____ Contractor SDS Driller Scott Lith. by _____ HOLE T99R-43 pg 15 of _____
 Remarks _____ Start 08/12/96 Geo-log _____ Depth _____
 Finish 08/13/ Date _____ lsd S T R

13		16
4		1

Depth ()	Lithology							Coal	Other	Colour										Indurate			Comments				
	Till	Grav	Sand	Sasn			Sltn			Mdsn	Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown		Black	Soft	Med.	Hard
				C	M	F																					
0-14	✓																		X								16m C88
14-40																			X								
40-40.5																					X						
40.5-47																			X								
47-48																					X						
48-50																			X								
50-52																					X						
52-64																			X								
64-65																					X						
65-70																			X								
70-72																					X						
72-74																			X								
74-84																					X						
84-90																			X								
90-91																					X						
91-96																			X								
96-100																					X						
100-110																			X								
110-115																					X						
115-137																			X								

H₂O @ 115-120m

T98R-44	0.00	5.00 COBBLE
T98R-44	5.00	12.00 OB
T98R-44	12.00	36.87 MDSN
T98R-44	36.87	37.25 COAL
T98R-44	37.25	47.79 MDSN
T98R-44	47.79	49.52 COAL
T98R-44	49.52	57.29 MDSN
T98R-44	57.29	59.35 COAL
T98R-44	59.35	59.73 MDSN
T98R-44	59.73	60.39 COAL
T98R-44	60.39	61.47 MDSN
T98R-44	61.47	62.12 COAL
T98R-44	62.12	74.89 MDSN
T98R-44	74.89	75.30 COAL
T98R-44	75.30	76.87 MDSN
T98R-44	76.87	77.15 COAL
T98R-44	77.15	77.32 MDSN
T98R-44	77.32	78.89 COAL
T98R-44	78.89	79.18 MDSN
T98R-44	79.18	80.04 COAL
T98R-44	80.04	81.17 MDSN
T98R-44	81.17	82.20 COAL
T98R-44	82.20	96.50 MDSN

T98R-45	0.00	2.00 OB
T98R-45	2.00	3.00 GRAVEL
T98R-45	3.00	8.00 OB
T98R-45	8.00	9.00 GRAVEL
T98R-45	9.00	12.00 OB
T98R-45	12.00	37.63 ROCK
T98R-45	37.63	40.41 COAL
T98R-45	40.41	40.93 ROCK
T98R-45	40.93	41.08 COAL
T98R-45	41.08	41.75 ROCK
T98R-45	41.75	43.41 COAL
T98R-45	43.41	47.26 ROCK
T98R-45	47.26	47.70 COAL
T98R-45	47.70	47.95 ROCK
T98R-45	47.95	48.58 COAL
T98R-45	48.58	49.79 ROCK
T98R-45	49.79	50.72 COAL
T98R-45	50.72	51.30 ROCK
T98R-45	51.30	51.70 COAL
T98R-45	51.70	79.50 ROCK

manalta Cuttings Description

Project _____ Contractor SBS Driller Gantz Lith. by _____ HOLE T98R-45 pg of

Remarks _____ Start 08-13 Geo-log _____ Depth 5

Finish 08-14 Date _____ lsd S T R

13	/	16
4		1

Depth ()	Lithology									Coal Dirty Clean	Other	Colour											Indurate Soft Med. Hard	Comments							
	Till	Grav	Sand	Sasn			Slan	Mden	Sasn			Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black									
				C	M	F																									
0-2	✓																														
2-3		✓																													
3-8	✓																														
8-9		✓																													
9-12	✓												*																		
12-93													*																		
37-43											X																				
43-71.5																															

1300

13m Csg

TELKWA 1995 DRILL - HOLE SUMMARY

Drill-hole #	Site #	Total Depth Geophylog (m)	Log Run Types	Casing Depth Geophylog (m)	Overburden thkness (m)	Geographical Resource Area	# of coal Samples	# roof & floor Samples	# Geotech Samples	# A.R.D. Hole Samples	# Barry Ryan Samples	Date Drilled	Driller	Comments
T95D-01	36	127.50	G	6.10	38.23	Cabinet Creek	2	---	---	---	2	18-Jun	J. T. THOMAS	OVB boulders of igneous & volcanics * COAL SAMPLES for Barry Ryan
T95D-02	37	49.38		13.10	49.38	Cabinet Creek	---	---	---	---	---	21-Jun	J. T. THOMAS	ABANDONED (hole TD @39.48 m, 2nd hole branched from 135' to 162' = 180' of core)
T95D-03	38	140.20	G	34.44	45.72	Cabinet Creek	---	---	---	---	1	24-Jun	J. T. THOMAS	possible fault repeat @ base of hole
T95R-04a	58	113.08			113.08	Texas Ck.	---	---	---	---	---	08-Jul	Cora Lynn (Mike)	ABANDONED HOLE July 8 - site 58 due to ovb. & moved to site 56
T95R-04	56	110.00	GDC	51.50	49.68	Texas Ck.	---	---	---	---	---	11-Jul	Cora Lynn (Mike)	compressor failure
T95R-05	49	118.50	GN	N/A	>118.50	Texas East	---	---	---	---	---	11-Jul	Cora Lynn (Dean)	difficult OVB drilling, logged through drill stem
T95R-06	61	116.00	GDC	30.50	26.82	Texas Ck.	---	---	---	---	---	10-Jul	McAuley (Terry)	NO COAL, TD into the volcanic basement rock
T95R-07C	77	56.00	GDC	6.50	6.41	Texas Ck.	22	20	---	---	---	11-Jul	McAuley (Terry)	10.96 m of stratigraphic combined coal samples
T95R-08	58	133.23	GN	N/A	>133.23	Texas North	---	---	---	---	---	13-Jul	Cora Lynn (Mike)	NO COAL, only clay, rocks, till, and cemented gravel
T95R-09	60	153.80	GN	N/A	>149.00	Texas Ck.	---	---	---	---	---	16-Jul	McAuley (Terry)	NO COAL possible volc. Bsmt @ 149m
T95R-10	1	138.00	GDCVDP	23.80	22.36	Texas Ck.	---	---	---	---	---	13-Jul	Cora Lynn (Dean)	Main coal sequence inter.
T95R-11	75	55.50	GDCVDP	5.50	4.51	Texas Ck.	---	---	---	---	---	14-Jul	Cora Lynn (Dean)	scam 1 very thin piezo not installed
T95R-12	55	158.30	GN	N/A	158.30	Texas North	---	---	---	---	---	16-Jul	Cora Lynn (Mike)	NO COAL
T95R-13	2	105.30	GDCVDP	5.70	6.01	Texas Ck.	---	---	---	---	---	15-Jul	Cora Lynn (Dean)	Main coal sequence inter
T95R-14	7	178.00	GDCVDP	11.00	9.01	Texas Ck.	---	---	---	---	---	18-Jul	Cora Lynn (Dean)	possible channel area coals deep
T95R-15	3	100.00	GDC	12.20	5.40	Texas Ck.	---	---	---	---	---	17-Jul	McAuley (Terry)	pilot hole
T95R-15C	3	66.00	GDC	3.60	6.51	Texas Ck.	15	---	---	48	---	19-Jul	McAuley (Terry)	ARD, and PIEZO hole
T95R-16	54	149.40	GN	N/A	149.40	Texas North	---	---	---	---	---	18-Jul	Cora Lynn (Mike)	NO COAL
T95R-17	9	178.00	GDC	5.50	5.51	Texas Ck.	---	---	---	---	---	20-Jul	Cora Lynn (Dean)	channel area deep thin coals
T95R-18	57	177.00	GN	N/A	166.00	Texas North	---	---	---	---	---	22-Jul	Cora Lynn (Mike)	NO COAL volcs.
T95R-19C	11	85.90	GDC	7.00	7.01	Texas Ck.	25	13	7	---	---	21-Jul	McAuley (Terry)	core hole Main coal sequence intr.
T95R-20	53	164.80	GN	N/A	>164.80	Texas East	---	---	---	---	---	23-Jul	Cora Lynn (Dean)	all ovb
T95R-21	76	73.00	GDC	6.00	6.00	Texas Ck.	---	---	---	---	---	22-Jul	McAuley (Terry)	Main coal sequence inter
T95R-22C	20	114.90	GDC	12.00	12.51	Texas Ck.	14	12	---	---	---	24-Jul	McAuley (Terry)	in main coal seq. dips up to 45'
T95R-23	50	133.90	GN	N/A	123.44	Gothorn West	---	---	---	---	---	25-Jul	Cora Lynn (Mike)	in ovb @ 130m
T95R-24	4	67.90	GDC	5.30	5.30	Texas Ck.	---	---	---	---	---	24-Jul	Cora Lynn (Dean)	in main coal seq.
T95R-25	18	43.00	GDC	5.20	5.21	Texas Ck.	---	---	---	---	---	24-Jul	Cora Lynn (Dean)	coal seq. below seam 1
T95R-26	64	80.00	GDC	11.50	7.00	Texas Ck.	---	---	---	---	---	26-Jul	Cora Lynn (Dean)	ovb - volcs.
T95R-27	52	127.90	GN	N/A	127.90	Texas North	---	---	---	---	---	26-Jul	Cora Lynn (Mike)	ovb - volc congl
T95R-28	16	115.90	GDC	12.50	12.50	Texas Ck.	---	---	---	---	---	26-Jul	McAuley (Terry)	in main coal seq. Pilot hole
T95R-28C	16	96.80	GDCVDP	12.20	5.81	Texas Ck.	29	---	---	63	---	10-Aug	McAuley (Don)	ARD CORE HOLE
T95R-29	47	158.40	GN	N/A	>158.40	Texas North	---	---	---	---	---	07-Aug	Cora Lynn (Mike)	ovb
T95R-30	17	53.30	GDCVDP	12.60	12.00	Texas Ck.	---	---	---	---	---	06-Aug	Cora Lynn (Dean)	Volcs subcrop
T95R-31	15	146.00	GDCVDP	12.20	9.00	Texas Ck.	---	---	---	---	---	10-Aug	Cora Lynn (Dean)	in main coal seq.
T95R-32	78	147.00	GDCVDP	6.10	6.00	Texas Ck.	---	---	---	---	---	09-Aug	Cora Lynn (Dean)	MAIN COAL SEQ MISSING
T95R-33	46	136.00	GN	N/A	136.00	Texas North	---	---	---	---	---	09-Aug	Cora Lynn (Mike)	ovb
T95R-34	14	116.00	GDCVDP	12.20	5.00	Texas Ck.	---	---	---	---	---	09-Aug	McAuley (Don)	in main coal seq
T95R-35C	13	130.00	GDCVDP	12.20	10.60	Texas Ck.	4	4	1	---	---	11-Aug	McAuley (Don)	MAIN SEQUENCE MISSING
T95R-36	19	55.00	GDC	6.10	4.00	Texas Ck.	---	---	---	---	---	11-Aug	Cora Lynn (Dean)	above #1 subcrop
T95R-37	48	160.50	GN	N/A	>160.50	Gothorn West	---	---	---	---	---	12-Aug	Cora Lynn (Mike)	did not reach bedrock.
T95R-38	12	104.70	GDCVDP	7.00	7.00	Texas Ck.	---	---	---	---	---	12-Aug	Cora Lynn (Dean)	main seq thickened by dip angle
T95R-38C	12	66.44	GDC	12.20	7.01	Texas Ck.	27	14	---	---	---	20-Aug	McAuley (Don)	main seq.
T95R-39C	10	80.00	GDCVDP	6.10	3.00	Texas Ck.	16	---	---	48	---	14-Aug	McAuley (Don)	main seq, ARD hole, PIEZO
T95R-40	8	80.00	GDCVDP	40.00	38.00	Texas Ck.	---	---	---	---	---	14-Aug	Cora Lynn (Dean)	main seq thickened by dip angle. PIEZO.
T95R-41	39	57.30	GN	N/A	41.15	Texas West	---	---	---	---	---	14-Aug	Cora Lynn (Mike)	Hydro Hill, volcs @ 41m
T95R-42	40	146.70	GN	N/A	122.53	Texas West	---	---	---	---	---	16-Aug	Cora Lynn (Mike)	Hydro Hill
T95R-43	59	98.50	GDC	18.9	22.50	Texas Ck.	---	---	---	---	---	15-Aug	Cora Lynn (Dean)	scam east of Texas normal fault
T95R-44	51	137.80	GN	N/A	136.00	Texas Ck.	---	---	---	---	---	16-Aug	McAuley (Don)	ovb, volcs
T95R-45	65	48.60	GDCN	N/A	1.00	Texas East	---	---	---	---	---	16-Aug	Cora Lynn (Dean)	volcs at surface
T95R-46	6	97.50	GDCVDP	6.1	3.00	Texas Ck.	---	---	---	---	---	17-Aug	McAuley (Don)	Main coal seq.
T95R-47	73	54.70	GDC	5.8	4.00	Texas East	---	---	---	---	---	17-Aug	Cora Lynn (Dean)	volcs at surface
T95R-48	43	134.10	GN	N/A	>134.11	Texas West	---	---	---	---	---	20-Aug	Cora Lynn (Mike)	Hydro Hill
T95R-49	63	72.90	GDCVDP	23.5	23.50	Cabinet Ck.	---	---	---	---	---	18-Aug	Cora Lynn (Dean)	~3m MUDDY COAL AT 40m
T95R-50	5	91.90	GDC	6.1	6.00	Texas Ck.	---	---	---	---	---	18-Aug	McAuley (Don)	No coal below seam #1
T95R-50C	5	37.80	GDCVDP	5.5	6.15	Texas Ck.	---	---	---	---	---	19-Aug	McAuley (Don)	No coal below seam #1
T95R-51	21	141.00	GDCVDP	6.1	5.01	Cabinet Ck.	---	---	---	---	---	20-Aug	Cora Lynn (Dean)	2m muddy coal @ 17m 45' dip to NE
T95R-52	22	171.5	GN	N/A	0.00	Cabinet Ck.	---	---	---	---	---	21-Aug	Cora Lynn (Dean)	Sloughing hole, some coal at 16m & 120
T95R-53	74	171.10	GN	N/A	85.34	Texas West	---	---	---	---	---	24-Aug	Cora Lynn (Mike)	Hydro Hill, coal at 148 & 155m
T95R-54	79	50.00	GDC	6.1	3.00	Cabinet Ck.	---	---	---	---	---	21-Aug	McAuley (Don)	Hole location moved sw Volcs at surface
T95R-55	23	96.90	GDCVDP	29.0	34.00	Cabinet Ck.	---	---	---	---	---	23-Aug	McAuley (Don)	No coal, Volcs @ 67.5m
T95R-56	27	202.00	GDCVDP	24.8	24.00	Cabinet Ck.	---	---	---	---	---	24-Aug	Cora Lynn (Dean)	thin coals
T95R-57	25	144.20	GN	N/A	37.00	Cabinet Ck.	---	---	---	---	---	05-Sep	McAuley (Don)	No coal

Drill-hole #	Site #	Total Depth Geophylog (m)	Log Run Types	Casing Depth Geophylog (m)	Overburden thickness (m)	Geographical Resource Area	# of coal Samples	# roof & floor Samples	# Geotech Samples	# A.R.D. Hole Samples	# Barry Rysn Samples	Date Drilled	Driller	Comments
T95R-58	32	175.30	GDCVDP	12.2	6.50	Cabinet Ck.	---	---	---	---	1	06-Sep	Cora Lynn (Dean)	3m coal seam @ 25m
T95R-59	31	181.80	GDCVDP	29.0	28.00	Cabinet Ck.	---	---	---	---	1	10-Sep	Cora Lynn (Mike)	very difficult ovb. thin coal at depth
T95R-60	15a	115.70	GDCVDP	7.6	7.00	Texas Ck.	---	---	---	---	---	06-Sep	McAuley (Don)	Main coal seq. shallower than expected
T95R-61	10a	104.70	GDC	17.5	13.41	Texas Ck.	---	---	---	---	---	07-Sep	Cora Lynn (Dean)	Main coal seq. at expected depth & thickness
T95R-62	22a	90.70	GDC	6.2	5.00	Texas Ck.	---	---	---	---	---	07-Sep	McAuley (Don)	Main coal seq. deeper & thinner than normal
T95R-63	7a	78.70	GDC	19.8	19.00	Texas Ck.	---	---	---	---	---	08-Sep	McAuley (Don)	Main coal seq. at expected depth & thickness
T95R-64	5a	128.90	GDCVDP	12.2	10.00	Texas Ck.	---	---	---	---	---	08-Sep	Cora Lynn (Mike)	Main coal seq. deeper than expected, PIEZO
T95R-65	18a	159.20	GDCVDP	18.2	14.00	Texas Ck.	---	---	---	---	---	09-Sep	McAuley (Don)	Main coal seq.
T95R-66	21a	151.00	GDCVDP	18.1	15.00	Texas Ck.	---	---	---	---	---	10-Sep	Cora Lynn (Mike)	Possible main coal seq. thin
T95R-67	13a	55.00	GDC	6.1	2.00	Texas Ck.	---	---	---	---	---	10-Sep	McAuley (Don)	Main coal seq.
T95R-68	6a	120.00	GDC	6.1	4.51	Texas Ck.	---	---	---	---	---	10-Sep	Cora Lynn (Dean)	Main coal seq.
T95R-69	11a	80.00	GDC	7.6	6.30	Texas Ck.	---	---	---	---	---	11-Sep	McAuley (Don)	Main coal seq.
T95R-70	20a	105.00	GDC	12.3	9.00	Texas Ck.	---	---	---	---	---	11-Sep	Cora Lynn (Mike)	No coal, east of fault
T95R-71	9a	98.00	GDC	12.4	12.00	Texas Ck.	---	---	---	---	---	12-Sep	Cora Lynn (Dean)	Main coal seq.
T95R-72	17a	140.70	GDCVDP	5.0	4.31	Texas Ck.	---	---	---	---	---	12-Sep	McAuley (Don)	Possible thin #1 seam at top, east of fault
T95R-73	14a	134.00	GDC	6.1	6.00	Texas Ck.	---	---	---	---	---	12-Sep	Cora Lynn (Mike)	Possible thin main seq. east of fault Texas
T95R-74	8a	61.50	GDCVDP	4.8	4.00	Texas Ck.	---	---	---	---	---	12-Sep	Cora Lynn (Dean)	Main coal seq.
T95R-75	26	153.90	GDCVDP	34.5	30.00	Cabinet Ck.	---	---	---	---	1	15-Sep	Cora Lynn (Dean)	only one seam deep & carb.
T95R-76	12a	72.90	GDC	5.5	3.00	Texas Ck.	---	---	---	---	---	13-Sep	Cora Lynn (Mike)	Main coal seq.
T95R-77	16a	72.80	GDC	12.0	9.11	Texas Ck.	---	---	---	---	---	13-Sep	McAuley (Don)	No coal east of fault east side Texas
T95R-78	3a	74.00	GDCVDP	5.5	2.00	Texas Ck.	---	---	---	---	---	13-Sep	Cora Lynn (Mike)	No main coal seq.
T95R-79	4a	55.00	GDC	14.0	13.70	Texas Ck.	---	---	---	---	---	14-Sep	McAuley (Don)	# 1 Seam & lower thin
T95R-80	2a	61.90	GDC	5.5	5.00	Texas Ck.	---	---	---	---	---	14-Sep	Cora Lynn (Mike)	# 1 Seam & lower
T95R-81	1a	79.00	GDC	12.0	9.00	Texas Ck.	---	---	---	---	---	15-Sep	McAuley (Don)	Main coal seq # 1 seam thin
T95R-82	30	110.00	GN	N/A	30.00	Cabinet Ck.	---	---	---	---	---	16-Sep	Cora Lynn (Mike)	No coal TD in volcs
T95R-83	33	43.00	GDC	7.0	5.00	Cabinet Ck.	---	---	---	---	---	15-Sep	Cora Lynn (Dean)	Volcs from surface
Totals:		9617.73					154	63	8	159	10			
TRC95-01	12A	3.65	Nil	---	3.60	Texas Ck.				3		14-Sep		aka TILL95-01; site 12A (same location as for T95R-76)
TRC95-02		2.00	Nil	---	1.90	Texas Ck.				2		14-Sep		aka TILL95-02; (same location as for T94R-06)
TRC95-03		1.00	Nil	---	0.60	Texas Ck.				1		14-Sep		aka TILL95-03
TRC95-04	15A	4.70	Nil	---	>4.70	Texas Ck.				3		14-Sep		aka TILL95-04; site 15A (same location as for T95R-60)
OTC95-01			Nil	---		Texas Ck.								subcrop location, 1-seam?

	HOLE #	SITE #	NORTHING	EASTING	ELEVATION (Ht.) (ELIPSOID)
	T95R-01	36	6045529.414	621154.553	1110.667
	T95R-02	37	6045330.074	621476.755	1122.004
	T95R-03	38	6045069.239	621440.437	1138.228
	T95R-04	56	6052395.055	618656.189	836.912
	T95R-05	49	6053264.522	619526.275	801.190
	T95R-06	61	6052877.254	618110.152	830.589
	T95R-07C	77	6050295.754	617688.802	995.064
	T95R-08	58	6053605.294	618936.124	794.192
	T95R-09	60	6053293.772	617669.009	820.209
	T95R-10	1	6052275.082	617849.953	845.087
	T95R-11	75	6051773.642	616997.929	897.433
	T95R-12	55	6054257.835	618615.192	785.087
	T95R-13	2	6052011.031	617278.619	861.373
	T95R-14	7	6051701.363	617683.453	890.343
	T95R-15	3	6051799.662	617176.876	888.364
	T95R-15C	3	6051799.662	617176.876	888.364
	T95R-16	54	6054782.742	617906.433	772.952
	T95R-17	9	6051404.290	617905.753	926.600
	T95R-18	57	6054034.708	618013.624	796.173
	T95R-19C	11	6050731.736	618029.442	933.108
	T95R-20	53	6052459.217	619539.331	814.261
	T95R-21	76	6050712.573	617745.449	953.516
*	T95R-22C	20	6049638.180	619129.848	969.070
	T95R-23	50	6055029.467	619275.198	741.229
	T95R-24	4	6051401.901	617218.281	928.042
	T95R-25	18	6050089.118	617027.917	1038.185
	T95R-26	64	6051124.976	619300.295	865.581
	T95R-27	52	6055033.030	618572.949	754.700
	T95R-28	16	6049826.641	618821.416	965.174
	T95R-28C	16	6049826.641	618821.416	965.174
	T95R-29	47	6055533.422	618142.222	741.726
*	T95R-30	17	6049502.276	619074.245	998.368
	T95R-31	15	6049969.420	618602.468	964.786
*	T95R-32	78	6050296.185	618137.598	968.006
	T95R-33	46	6055762.830	618719.557	727.571
*	T95R-34	14	6050144.726	618776.440	942.421
*	T95R-35C	13	6050242.033	618406.664	950.442
	T95R-36	19	6050739.405	616854.720	992.945
	T95R-37	48	6055671.103	619517.887	714.527
	T95R-38	12	6050770.872	618470.290	920.387
	T95R-38C	12	6050770.872	618470.290	920.387
	T95R-39C	10	6050670.396	617450.652	981.027
	T95R-40	8	6051261.983	618303.384	900.183
	T95R-41	39	6054113.987	617085.541	793.864
	T95R-42	40	6055079.359	617165.932	758.005
*	T95R-43	59	6051795.969	619051.940	833.952

T95R-44	51		6052824.667		618883.187		810.203		
T95R-45	65		6050395.607		619753.511		930.104		
T95R-46	6		6051079.142		617399.834		962.944		
T95R-47	73		6049838.343		621321.193		952.057		
T95R-48	43		6056682.425		618222.865		724.681		
T95R-49	63		6049072.438		621066.453		951.907		
T95R-50	5		6051179.158		617164.083		950.993		
T95R-50C	5		6051179.158		617164.083		950.993		
T95R-51	21		6048851.867		619788.054		1018.024		
T95R-52	22		6048402.824		620321.006		1003.170		
T95R-53	74		6056350.211		619782.443		697.985		
T95R-54	79		6047708.334		621680.646		984.219		
T95R-55	23		6047807.213		621254.025		933.299		
T95R-56	27		6047206.370		620872.721		942.090		
T95R-57	25		6047522.309		621185.491		938.742		
T95R-58	32		6046419.095		621175.927		996.521		
T95R-59	33		6046481.201		620743.917		1009.067		
T95R-60	15A		6050534.625		618562.847		934.764		
T95R-61	10A		6050104.779		618516.797		967.324		
T95R-62	22A		6050569.974		617577.878		984.494		
T95R-63	7A		6050407.637		617925.649		976.879		
T95R-64	5A		6050398.353		618392.851		949.501		
T95R-65	18A		6050661.742		618413.461		934.298		
T95R-66	21A		6051384.170		618221.024		906.499		
T95R-67	13A		6051092.887		617177.242		963.688		
T95R-68	6A		6050475.735		618136.904		956.786		
T95R-69	11A		6051209.417		617306.465		944.544		
T95R-70	20A		6050974.643		618504.380		924.086		
T95R-71	9A		6050069.555		618246.729		996.776		
T95R-72	17A		6050340.319		618743.013		944.378		
T95R-73	14A		6050566.387		618692.846		930.820		
T95R-74	8A		6050234.863		618025.042		987.818		
T95R-75	26		6047127.785		620439.756		977.494		
T95R-76	12A		6051308.440		617056.185		938.882		
T95R-77	16A		6050289.016		618952.009		943.063		
T95R-78	3A		6051637.163		616953.425		913.379		
T95R-79	4A		6051906.725		616921.896		891.348		
T95R-80	2A		6051614.904		617125.894		911.282		
T95R-81	1A		6051890.877		617048.852		884.207		
T95R-82	30		6046668.642		621572.256		981.817		
T95R-83	33		6046384.399		621914.380		1032.263		
TR95-01	12A		6051308.440		617056.185		938.882		
TR95-02	T94R-06		*		SEE 94 GPS COORDINATES				
TR95-03	TR95-03		6050451.265		617471.735		1004.755		
TR95-04	15A		6050534.625		618562.847		934.764		

Manalta Cuttings Description

Project TELKWA Contractor CORA-Lyn Driller Rick Whitliff. by Dave HOLETZER-04 pg 01

Remarks _____ Start 07/10 Geo-log _____ Depth _____

_____ Date _____ Isd _____ S _____ T _____ R _____

13				18
4				1

Depth () from to	Lithology				Indurate				Coal				Other	Colour	Comments	
	S/M	S	S/SS	S	SS	CL	SS	CL	SS	CL	SS	CL				SS
0 47																
47 163																
163 197																
197 200 ✓																
200 210																
210 221 ✓																
221 232																
232 264 ✓																
264 282																
282 295 ✓																
295 314 ✓																
314 324 ✓																

Volcanics

170' CASING

manalta Cuttings Description

Project TEKWA Contractor COA LYNN Driller MIKE Lith. by MIKE HOLE TRER-04 pg 1 of 1

Remarks Site 58 Start 7:00 Geo-log July 10-11 Depth 371 Isd S T R

(HOLE ABANDONED)

13						16
4						1

Depth () from to	Lithology				Indurate			Coast			Other			Colour						Comments															
	S/Md	S/	S/SS	F	SS	S	M	C	Med	Soft	Hard	Clean	Dirty	Ox	Bone	Card	Clay	Sand	Grav		Till	Light	Dark	Gray	Brown	Blue	Green	Black	White	Red	Orange	Yellow			
0 347 347 371																																			Clay & COALS Volcanic??

manate Cuttings Description

Project TALKWA Contractor C.L.D. Driller DEAN COX by UNST. HOLE TEST-10 pg 01

Remarks _____ Start _____ Geo-log _____ Depth _____
 Finish _____ Date _____ Isd _____ S _____ T _____ R _____

13	18
4	1

Depth (ft)	Lithology							Indurate				Coast				Other			Colour															
	S/Md	S	S/SS	F	M	C		Soft	Med	Hard	Clean	Dirty	Ox	Bone	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow					
0-77																																		
77-83																																		
83-92																																		
92-120																																		
120-123																																		
123-141																																		
141-142																																		
142-137																																		
137-156																																		
150-151																																		
157-180																																		
171-185																																		
185-201																																		
201-217																																		
217-221																																		
221-319																																		
319-346																																		
346-382																																		
382-440																																		

Comments:
 H₂O 5 GPM @ 63'
 2nd stringer @ 76'
 H₂O 2 GPM
 H₂O 2 GPM
 Specific Conclusions

Manalta Cuttings Description

Project Contractor Driller COCKS Lith. by Wink HOLE T95B-11 pg of

Remarks Logs show in METERS Start Geo-log Depth

Finish Date Isd S T R

13					
10					
4					
1					

Depth (m) from 10	Lithology						Indurate			Coal				Other			Colour																			
	S/Md	4	4/SS	5	R	U	SOt	Med	Hard	Clean	Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow							
0 4/5	✓														✓					✓	✓															
4/5 3	✓																			✓	✓															
5 23																																				
23 29																																				
29 31.5																																				
31.5 32	✓																																			
32 4.5																																				
41.5 43																																				
43 55																																				

COAL STRIVERS

COAL STRINGER @ 36m

manalta Cuttings Description

Project TEKWA Contractor CLD #4 Driller Cock Lith. by VWCK HOLE 95R-13 pg of

Remarks _____ Start July 14 Geo-log _____ Depth _____
 Finish July 15 Date _____ Fed S T R

13		18
4		1

Depth ()	Lithology						Indurate				Coal				Other	Colour										Comments														
	from	to	Mdn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty		Ox	Bone	Carb	Clay	Sand	Gray	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow						
0	6																																							
6	8				✓													✓					✓																	
8	16																						✓																	
16	28.5				✓																		✓																	
28.5	35				✓																		✓																	
35	37.5	✓																					✓																	
37.5	40																						✓																	
40	48	✓																					✓																	
48	53																						✓																	
53	59	✓																					✓																	
59	63																						✓																	
63	69	✓																					✓																	
69	70	✓																					✓																	
70	73	✓																					✓																	
73	85	✓																					✓																	
85	89	✓																					✓																	
89	96																						✓																	
96	102																						✓																	
102	103	✓																					✓																	

MANALTA COAL LTD ID:4032656120 JUL 08 '95 11:31 AM 007 P.01

manalta Cuttings Description

Project TELKWA Contractor CLD Driller COCK Lith. by WACK HOLE T5R-14 pg of

Remarks _____ Start July 15 Geo-log _____ Depth _____
 Finish _____ Date _____ Isd

13		16
4		1

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments													
	Mdn	S/Md	S'	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Card	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow						
0	9																																					
9	13																																					
13	20																																					
20	25																																					
25	30																																					
30	35																																					
35	40																																					
40	45																																					
45	50																																					
50	55																																					
55	60																																					
60	65																																					
65	70																																					
70	75																																					
75	80																																					
80	85																																					
85	90																																					
90	95																																					
95	100																																					
100	105																																					
105	110																																					
110	115																																					
115	120																																					
120	125																																					
125	130																																					
130	135																																					
135	140																																					
140	145																																					
145	150																																					
150	155																																					
155	160																																					
160	165																																					
165	170																																					
170	175																																					
175	180																																					
180	185																																					
185	190																																					
190	195																																					
195	200																																					

DISTONITE STRIPING

P. LITE INTERBED

~~CONGLOMERATE~~ CONGLOMERATE ?

monalta Cuttings Description

Project TELKWA Contractor M^cAuley Driller L. Mullen Lith. by L. Mullen HOLE T-95 R-15 pg of
 Remarks _____ Start _____ Geo-log _____ Depth _____
 Finish _____ Date 16 July 95 lsd S T R

13		18
4		1

OVB <
56.2

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments								
	Mdsn	S/Md	S/	S/SS		SS		Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow	
				F	M	C																											
0 5.4															✓		✓				✓											@ 5.4m. 2gpm water Fract. + weath. to 9.5m.	
5.4 30.3				✓	✓		✓	✓													✓					✓							
30.3 31.6									✓																	✓							
31.6 36.2				✓	✓		✓	✓													✓					✓							
36.2 36.8									✓																	✓							
40 41.7																																	
36.6 40				✓	✓		✓	✓													✓												
40 41.7									✓			✓									✓					✓							
41.7 50.2				✓	✓		✓	✓													✓												@ approx. 48m. 10gpm.
50.2 53.4									✓												✓					✓							
53.4 57				✓	✓		✓	✓													✓					✓							
57 61.2									✓												✓					✓							
61.2 75.1				✓	✓		✓	✓													✓					✓							
75.1 76.2									✓		✓										✓					✓							
76.2 77.1				✓	✓		✓	✓													✓					✓							
77.1 77.4									✓			✓									✓					✓							
77.4 77.8				✓	✓		✓	✓													✓					✓							
77.8 80.6									✓		✓	✓									✓					✓							
80.6 81.9				✓	✓		✓	✓	✓												✓					✓							@ 82.0m. 0.3 coal + Carb. shale.
81.9 82.3									✓		✓	✓									✓					✓							
82.3 100				✓	✓		✓	✓	✓												✓					✓							

manalta Cuttings Description

Project _____ Contractor _____ Driller Locke Lith. by Vince HOLE TBR-17 pg 2 of 1

Remarks _____ Start _____ Geo-log _____ Depth _____

Finish _____ Date _____ Isd S T R _____

13		16
4		1

Depth ()	Lithology						Indurate			Coal					Other	Colour										Comments											
	From	To	Mdn	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard	Clean	Dirty		Ox	Bone	Carb	Clay	Sand	Grav	Thil	Light	Dark	Gray		Brown	Blue	Green	Black	White	Red	Orange	Yellow			
0	15																																				
15	4																																				
4	19																																				
19	23																																				
23	26																																				
26	31																																				
31	40																																			H ₂ O 56PM	
40	43																																				
43	47																																				
47	50																																				
50	55																																				
55	58																																				
58	70																																				
70	80																																				
80	92																																				
92	101																																				
101	108																																				
108	118																																				
118	121																																				
121	127																																				Coal STRINGERS 126-128
127	137																																				
137	143																																				Coal STRINGERS
143	147																																				
147	155																																				
155	161																																				Volcanic Congl?
161	174																																				

manalta Cuttings Description

Project _____ Contractor _____ Driller Coxe Lith. by Wreck HOLE T95A-70 pg. 1 of 1

Remarks _____ Start _____ Geo-log _____ Depth _____

Finish _____ Date _____ Isd S T R

13		16
4		1

Depth () from to	Lithology						Indurate				Coal				Other	Colour										Comments					
	Mdsn	S/Md	S/	S/SS	F	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Carb		Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green		Black	White	Red	Orange	Yellow
0-12																															
12-24																															
24-34																															
34-41																															
41-49																															
49-52																															
52-93																															
93-102																															
102-103																															
103-113																															
113-120																															
120-160																															

T95A COAL LTD ID: 4032656120 JUL 08 '95 11:31 No 007 P. 01

manalta Cuttings Description

Project _____ Contractor M^cFlaley Driller T. Mullen Lith. by T. Mullen HOLE T-95R 21 pg of
 Remarks _____ Start _____ Geo-log _____ Depth 73 m.
 Finish _____ Date 21 July 95 Isd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments												
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow					
a.o 5.9							✓									✓		✓																	cobbles		
5.9 21				✓			✓	✓													✓														@ 6.1m approx. 20 gpm Flowing @ 17.7m. 0.5m coal + Carb shd		
21 21.7								✓			✓															✓											
21.7 26.3				✓			✓	✓												✓																	
26.3 28.3								✓			✓															✓											
28.3 40.2				✓			✓	✓			✓															✓											
40.2 46.3								✓																		✓											
46.3 47.5				✓			✓	✓																		✓											
47.5 48.5								✓			✓	✓			✓											✓											
48.5 63.2				✓			✓	✓																		✓											
63.2 64.1											✓	✓			✓											✓											
64.1 66.7					✓			✓																		✓											
66.7 67.2											✓	✓															✓										
67.2 73				✓			✓	✓																		✓											

monalta Cutting Description

Project TELKWA Contractor CORA LYNN Driller MIKE Lith. by MIKE HOLE T95R23 pg of

Remarks _____ Start _____ Geo-log _____ Depth _____
 _____ Finish _____ Date July 23rd S _____ T _____ R _____

13		16
4		1

Depth () From to	Lithology						Indurate			Coal				Other	Colour											Comments															
	Mdsn	S/Md	S/	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Gray	Till	Light	Dark	Grey	Brown	Blue	Green		Black	White	Red	Orange	Yellow										
				F	M	C																																			
0 400																✓																							Clay & ROCKS		
400 405																		✓																					LOST CIRCULATION		
405 440																																							RED VOLCANICS?		


manalta Cuttings Description

 Project _____ Contractor Ch D H & L Driller DEAN Lith. by Ricky DEAN HOLE T95R-24 pg 2 of 1

 Remarks 18 ft casing Start _____ Geo-log _____ Depth 67m

 Finish _____ Date _____ lsd S T R

13		16
4		1

Depth (M)	Lithology					Indurate			Coal					Other	Colour										Comments												
	From	To	Mdn	S/Md	S/S	F	M	C	Soft	Med	Hard	Clean	Dirty		Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow				
0	0	5																																			
		7																																			
		10																																			
		13																																			
		15																																			
		16																																			
		17.5																																			
		21																			10 gpm H ₂ O														Small stringer 16m Coal stringer 12 - 19.5		
		25																																			
		35																																			
		35.5																																			
		37																																			
		36.5																																			
		38.5																																			
		40																																			
		43																																			
		44																																			
		47																																			
		48																																			
		50																																			
		52																																			
		52																																			
		56																																			
		61																																			
		61																																			

MANALTA COAL LTD ID:4032656120 JUL 08 '95 11:31 No. 007 P. 01

MANALTA Cuttings Description

Project

Contractor Coal Link Driller Dean Lith. by Ricci HOLE MTB/BL 295L01

Remarks

Start _____ Geo-log _____
Finish _____ Date _____
Depth 45M
Isd _____ S _____ T _____ R _____

13					
16					
4					1

Depth (m)	Lithology					Indurate				Coal			Other	Colour								Comments																	
	Mud	S/Md	S	S/SS	n	C	SS	Soft	Med	Hard	Clean	Dirty		Ox	Bone	Clay	Sand	Grav	Sill	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow								
0																																							
2																																							
4																																							
9/2																																							
12/15																																							
15/16																																							
16/19																																							
19/27																																							
27/29																																							
29/33																																							
33/37																																							
37/38																																							
38/40																																							
40/43																																							

Pos. Consolidate

Coal Layer

Consolidate

Consolidate

Manalta Cuttings Description

Project Contractor M. Hawley Driller J. Mulvaney Lith. by T. Mulvaney HOLE F 95 R-28 pg 2 of 2

Remarks D. Poppley Geo-log R Poppley Depth _____

Start _____ Finish _____ Date 25 July 95 1st S T R

13				10
4				1

Depth () from to	Lithology						Indurate				Coal			Other				Colour						Comments											
	S/Md	S/S	S/SS	F	M	C	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Card	Clay	Sand	Grav	Sill	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow					
90																																			
102.3	✓			✓			✓													✓															
103.5				✓			✓													✓															
103.5				✓			✓													✓															
104.5				✓																✓															
105.5				✓																✓															

Volcanics

manalta Cuttings Description

Project _____ Contractor CLD #A Driller COCKX Lith. by WICK HOLE T95R-31 pg of

Remarks WET Start _____ Geo-log _____ Depth 146M

Finish _____ Date _____ lsd S T R

13		16
4		1

Depth () From to	Lithology						Indurate			Coat				Other	Colour										Comments						
	Mdn	S/Md	S/	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow
				F	M	C																									
0 9																															
9 29																															H ₂ O @ 23M 20GPM
29 32																															
32 35																															
35 47																															
47 47.5																															
47.5 49																															
49 57																															
52 56																															
56 58																															
58 61																															
61 63																															
63 65																															
65 70																															
70 74																															
74 85																															
85 86																															
86 89																															
89 146																															

manate Cuttings Description

Project: Contractor CLD #4 Driller Cocks Lith. by lines HOLE T95R-32 pg of

Remarks: Start _____ Date _____ Depth _____

Finish _____ Date _____

13					16
4					1

Depth (m)	Lithology							Indurate			Coal			Other				Colour							Comments														
	S/Md	S/S	S	S/SS	F	M	C	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Card.	Clay	Sand	Gray	Till	Light	Dark	Gray	Brown	Blue		Green	Black	White	Red	Orange	Yellow								
0																																							
1.2																																							
3.1																																							
3.4																																							
4.4																																							
4.5																																							
4.9																																							
5.0																																							
5.7																																							
5.8																																							
5.8																																							
6.2																																							
6.7																																							
7.1																																							
7.6																																							
8.0																																							
8.9																																							
9.4																																							
9.7																																							
10.7																																							
11.1																																							
11.7																																							
12.7																																							
14.1																																							
14.4																																							
14.7																																							
15.7																																							
16.4																																							
16.7																																							

SOFT COAL BY MDS LAYERS

COAL STRINGERS

KEYS SWIRLING

Hd 65m layer

CONGLOMERATE

CONGLOMERATE

CONGLOMERATE

SHALLOW LAYERS (COAL ST.)

VULCANICS

McAULEY DRILLING CO. LTD.

SHOT HOLE DRILLING REPORT

Hole No. 195 R 34 Prospect _____

Sec. _____ Twp. _____ Range _____ W. _____ Left Base _____

Province BC Arrive Field _____

Date Aug 7 + 8 Left Field _____

Drill No. 96 Arrive Base _____

Water Truck No. _____ Total Hours _____

FEET		WASH OUT <input type="checkbox"/>	DRILLED <input type="checkbox"/>
From	To	TYPE OF CUTTINGS	
0	5		Fill
5	24		Md. St.
24	32		Siltstone
32	46.3		Md St.
46.3	47.2		Coal
47.2	52		Md. St.
52	55.5		Siltstone + some Md. St. stringers
55.5	55.8		Coal
55.8	59.5		Siltstone
59.5	62.5		Md. St.
62.5	65.8		Coal
65.8	66.4		Md St.
66.4	69.3		Coal - Thin Md. St. stringers
69.3	72.5		Md. St.
72.5	74		Carb Sh. Coal
74	75		Siltstone
		TOTAL DEPTH	

Mud Used: _____

Bran Used: _____

Bit _____

Casing _____

Field Repair Time _____ Hr.

Waiting on Water _____ Hr.

DRILLER Don McAuley

HELPER _____

HELPER _____

McAULEY DRILLING CO. LTD.

SHOT HOLE DRILLING REPORT

Hole No. T95 R 34 Prospect _____

Sec. _____ Twp. _____ Range _____ W _____ Left Base _____

Province Be Arrive Field _____

Date Aug 8/93 Left Field _____

Drill No. 96 Arrive Base _____

Water Truck No. _____ Total Hours _____

FEET		WASH OUT <input type="checkbox"/>	DRILLED <input type="checkbox"/>
From	To	TYPE OF CUTTINGS	
<u>75</u>	<u>75.3</u>	<u>Coal</u>	
<u>75.3</u>	<u>78.8</u>	<u>Siltstone</u>	
<u>78.8</u>	<u>79.1</u>	<u>Coal</u>	
<u>79.1</u>	<u>81</u>	<u>Siltstone - some coal & carb Sh @ 78</u> <u>0.3 Coal @ 81.</u>	
<u>81</u>	<u>83.5</u>	<u>S.S.</u>	
<u>83.5</u>	<u>84.1</u>	<u>Coal</u>	
<u>84.1</u>	<u>87</u>	<u>S.S. - Gr Br</u>	
<u>87</u>	<u>91</u>	<u>Siltstone + Md. St.</u>	
<u>91</u>	<u>91.4</u>	<u>Siltstone - Thin coal seams @ 91 + 91.4</u>	
<u>91.4</u>	<u>113</u>	<u>Siltstone + Md. St.</u>	
<u>113</u>	<u>116</u>	<u>Hard coarse Gr S.S.</u>	
		TOTAL DEPTH _____	
		DRILLER <u>[Signature]</u> HELPER _____ HELPER _____	
		Mud Used: _____ Bran Used: _____ Bit _____ Casing _____ Field Repair Time _____ Hr. Waiting on Water _____ Hr.	

manalta Cuttings Description

Project _____ Contractor CORA LIND #1 Driller DEAN Lith. by BEK HOLE #495R-36 pg 1 of 1
 Remarks 20FT casing 35gpm H₂O Start _____ Geo-log _____ Depth 55m
 Finish _____ Date Aug 11/95 Isd S T R

13		16
4		1

Depth (m)	Lithology									Indurate			Coal					Other	Colour									Comments									
	from	to	Mdn	S/Md	S	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Sone	Carb		Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow			
0	4																																				
4	5	✓								✓																											
5	6									✓					✓																						
6	9	✓								✓																											
9	11								✓																												
11	13	✓								✓																											
13	15								✓																												
15	17								✓																												
17	19				✓																																
19	24				✓																																
24	36				✓																																
36	40								✓																												
40	43	✓																																			
43	55	✓																																			

ANALTRA COAL LTD ID:4032656120 JUL 08 '95 11:31 No.007 P.04

monalta Cuttings Description

Project _____ Contractor C.D.H. 4 Driller COCKX Lith. by Wince HOLE 1962-38 pg 1 of 1
 Remarks 24' CASING Start _____ Geo-log _____ Depth _____
 Finish _____ Date Aug 11/95 Isd S T R

13		18
4		1

Depth ()	Lithology						Indurate			Coal					Other	Colour								Comments												
	from	to	Mdn	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard	Clean	Dirty		Ox	Bone	Carb	Clay	Sand	Grav	Till	Light		Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow		
0	2																																			
2	7																																			
7	16																																			
16	19																																			
19	20																																			
20	22																																			
22	25																																			
25	32																																			
32	39																																			
39	42																																			
42	45																																			
45	46																																			
46	47																																			
47	49																																			
49	51																																			
51	56																																			
56	64																																			
64	68																																			
68	77																																			
77	82																																			
82	86																																			
86	89																																			
89	105																																			

CARBON STRINGERS

COAL STRINGERS

CONGLOMERATE ? 85 COAL LAYER
 CONGLOMERATE VOLCANIC

manalta Cuttings Description

Project TELKWA Contractor SORA LYNX Driller MIKE Lith. by MIKE HOLE 795R 41 pg of

Remarks _____ Start _____ Geo-log _____ Depth _____

Finish _____ Date Aug 17/95 lsd S T R

13			10
4			1

Depth () from to	Lithology						Indurate			Coast					Other	Colour										Comments														
																Mdsn	S/Md	S	SS			Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green
	F	M	C																																					
0 135																																								
135 200																																			VOLCANIC ROCK					

monolo Cuttings Description

Project TELAWA Contractor CLD #4 Driller COCKE Lith. by AMEX HOLE TR5 R-43 pg 01
 Remarks CASING GD Start _____ Geo-log _____ Depth 103M

13	16
4	1

Finish Aug 14 1st S T R

Depth () from 10	Lithology					Indurate			Coal				Clay				Other	Colour									Comments							
	Mdn	S/M	S	S/SS	S	S	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Cap	Clay		Sand	GRAV	THI	Light	DARK	Grey	Brown	Blue	Green		Black	White	Red	Orange	Yellow		
0 13																																		
13 19																																		
19 21																																		
21 22																																		
22 25																																		
25 34																																		
34 36																																		
36 38																																		
38 39																																		
39 42																																		
42 48																																		
48 57																																		
52 55																																		
55 57																																		
57 59																																		
59 60																																		
60 70																																		
70 74																																		
74 80																																		
80 84																																		
84 85																																		
85 87																																		
87 90																																		
90 91																																		
91 92																																		
92 94																																		
94 95																																		
95 96																																		
96 97																																		
97 98																																		
98 99																																		
99 100																																		

POSSIBLE CONGLOM.

SPARRY STRANGERS

CONGLOMERATE

CONGLOMERATE

CONGLOMERATE

manalta Cuttings Description

Project _____ Contractor _____ Driller McAuley Lith. by _____ HOLE T95-49 pg of

Remarks _____ Start _____ Geo-log _____ Depth _____

Finish _____ Date Aug 14-15 Isd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coast					Other	Colour										Comments						
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow
0 3																																Br Till & Boulders
3 109																																Br Till - Boulder & Gravel
109 121																																Sandy Br Till - Gravel & rocks
121 130																																Sandy Gr Till
130 136																																Gr + redish - Br Till & sand & Gravel
136 138																																Hard volcanic - multi colored cemented gravel

MANALTA COAL LTD ID:4032656120 JUL 08 '95 11:31 No.007 P.01

manalta Cuttings Description

Project Talbea Contractor CLD #1 Driller COCKX Lith. by VINCK HOLE 795R-45 pg ___ of ___

Remarks CASING 15' Start _____ Geo-log _____ Depth 56 M

Finish _____ Date AUG 16 1975 ISD ___ S ___ T ___ R ___

13		18
4		1

Depth () from to	Lithology						Indurate			Coast				Card	Clay	Sand	Grav	Till	Other	Colour										Comments										
	Mdn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox							Bone	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red		Orange	Yellow								
					F	M	C																																	
0	1																																							
1	6																																						<u>VOLCANIC</u>	
6	32																																						<u>RED w/WHITE FELDSPARS</u>	
32	45																																					<u>CALOTTE QUARTZ FELSPAR</u>		
45	56																																					<u>SOME CLAY LAYERS (RED)</u>		

RNL TR CORP LTD ID:4032656120 JUL 08 '95 11:31 No.007 P.01

manalta Cuttings Description

Project _____ Contractor _____ Driller R. C. Hawley Lith. by _____ HOLE T95-46 pg. of

Remarks _____ Start _____ Geo-log _____ Depth _____

Finish _____ Date Aug 16 lsd S T R

13		18
4		1

Depth () from to	Lithology						Indurate			Coast				Other	Colour										Comments										
	Mden	S/Md	S	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow			
					F	M	C																												
0 3																																	Sandy Br Till		
3 6																																		Mud Stn	
6 25																																		Hard Dark Br Siltstone	
25 31																																		Hard Gr S.S. (trace Coal @ 28)	
31 35.5																																		Dark Gr Siltstone (3 Coal @ 32)	
35.5 37.5																																		Coal	
37.5 42																																			Mudstn.
42 44.2																																			Siltstone
44.2 44.8																																			Coal
44.8 48.3																																			Mudstone & Siltstone
48.3 53.9																																			Coal
53.9 54.2																																			Siltstone
54.2 56.1																																			Coal
56.1 64.3																																			Interbedded Mudstone & S.S.
64.3 66.2																																			Coal - Carbonyl
66.2 70.6																																			Siltstone
70.6 71.8																																			Siltstone Coal + mudstn
71.8 73.8																																			S.S.
73.8 74.7																																			Coal
74.7 76.5																																			S.S. & Siltstone
76.5 77.1																																			Coal
77.1 78.7																																			Siltstone
78.7 79.1																																			Coal
79.1 81.4																																			S.S. & Siltstone
81.4 81.7																																			Coal
81.7 98																																			S.S. & Siltstone

MANALTA CORP. LTD. ID: A032656120 JUL 08 '95 11:31 No. 007 P. 01

 **Cuttings Description**

Project TELWA Contractor CLD #4 Driller COCKY Lith. by Jim K HOLE 195R-47 pg of

Remarks 15ft casing Start Geo-log BPB Depth SS
 Finish Date Aug 17 Isd S T R

13		18
4		1

Depth () from to		Lithology				Indurate			Coal				Other	Colour									Comments										
		Mds	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light		Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow
0	4															✓																Volcanic	

FISH GUTS

Manalta Cuttings Description

Project Teltwa Contractor Case Well Driller Lith. by Alan HOLE F3K-49 pg of 4
 Remarks N6 Start Yes Geo-log PLB Depth DEEP NOT VERY

13						16
4						1

Finish Yes Date N/A 1st S T R

Depth (M) from to	Lithology						Indurate			Coal				Other				Colour							Comments											
	Mdn	S/Md	S/	S/SS	F	N	SS	C	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Card	Clay	Sand	Gray	Till	Other	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow			
0 17																																				
17 26																																				
26 28																																				
28 31																																				
31 38																																				
38 41/5																																				
41/5 44																																				
44 45																																				
45 46																																				
46 49																																				
49 61																																				
61 65																																				
65 72																																				

Volcanic B.
 Volcanics.
 Volcanics. Light Green Embossed

T95R-51

MANALTA Cuttings Description

Project TELKWA Contractor CORA LYON #4 Driller FRANCIS Lith. by RICK HOLE REWORK pg 9 of 1

Remarks LIGHT OVER CAST w/RAIN Start Morning Geo-log UP & DOWN Depth SHALLOW

Finish NIGHT Date Nov 1st S T R R

13								16
4								1

Depth () from to	Lithology						Indurrate				Coal				Clay	Sand	Till	Other	Colour										Comments												
	S/Md	S	S/SS	S	SS	C	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Card					Clay	Sand	Till	Light	Dark	Grey	Brown	Blue	Green	Black		White	Red	Orange	Yellow								
0																																									
5																																									
9																																									
10																																									
15																																									
16																																									
17																																									
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33																																									
35																																									
43																																									
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63																																									
84																																									
86																																									
90																																									
90																																									
93																																									
97																																									
97																																									
116																																									
116																																									

VERY SOFT @ 19 m
NEVER DRILLED THROUGH SANDSTONE SO FAR

COAL STIMBERS FC. 113-115
MOLCANIC CONGLOMERATE.

monalta MONALTA Cuttings Description

Project YELKWA Contractor CORA LYNN Driller VINCK Lith. by VINCK HOLE T95TR-52 pg of

Remarks 20 Ft casing Start Geo-log Depth 177 M
 Finish Date Aug 20/95 lsd S T R

13		16
4		1

Depth (m)	Lithology						Indurate			Coal				Other	Colour										Comments										
	from	to	Mdn	S/Md	S/	S/S	F	M	C	Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Gray	Till	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow	
0	9	✓							✓																										
9	13							✓			✓												✓												
13	15						✓																✓												
15	20							✓															✓												
20	35							✓															✓												
35	37	✓							✓																										
37	41							✓																											
41	48							✓																											
48	51	✓							✓																										
51	90							✓																											
90	114	✓							✓																										
114	119								✓																										
119	177							✓																											
177	178																																		
178	179	✓																																	
179	138	✓							✓																										
138	147								✓																										
147	166								✓																										
166	177								✓																										

w/ coal 5 ft
 w/ coal stringer

MANALTA CORP. LTD. ID: 4032656120 JUL 08 '95 11:31 NO

manalta Cuttings Description

Project _____ Contractor _____ Driller McRulley lith. by _____ HOLE 19554 pg of

Remarks _____ Start _____ Geo-log _____ Depth _____

Finish _____ Date Aug 21 Isd S T R

13		18
4		1

Depth (m)	Lithology								Indurate			Coal				Other	Colour										Comments									
	Mdsn	S/Md	S/	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone	Carb	Clay		Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green	Black		White	Red	Orange	Yellow					
				F	M	C																														
0	3																																	Till + rocks		
3	7																																	Multi-Colored Volcanics		
7	30																																	Gr-Green Sand (Coarse)		
20	33																																	Red Volcanics		
33	50																																	Multi-Colored Volcanics		

TD

manalta Cuttings Description

Project _____ Contractor _____ Driller McRulley Lith. by _____ HOLE 195-576 pg of

Remarks _____ Start _____ Geo-log _____ Depth _____

Finish _____ Date Aug 25th 26 S T R

13		16
4		1

Depth () from to	Lithology						Indurate				Coast					Other	Colour										Comments				
	Mdsn	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Carb		Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green		Black	White	Red	Orange
0 19.7																															Gr Till + Rocks
19.7 24																															Gravel
24 37																															Boulders
37 41																															Sh + Mdstr - Dark Gr.
41 58																															Light Gr Mdstr. = S.S.
58 78																															" " Sh + Mdstr.
78 82																															S.S.
82 88																															Mdstr.
88 107																															Light Green + Gr. S.S.
																															End of Shift

TD 144.2

MANALTA Cuttings Description

Project TRAWA Contractor CENTRUM #2 Driller DEAN HOLE TRBL-59 pg 1 of 1
 Lith. by DEAN Start Geo-log RFB Depth 185m
 Remarks 76 ft casing

13					10
4					1

Finish Date Ist S T R

Depth (m)	From to	Lithology						Indurate				Coal				Other			Colour	Comments													
		Mdn	S/Md	S	S/SS	F	M	C	SS	Got	Med	Hard	Clean	Dirty	Ox	Bone	Card	Clay			Sand	Grav	Fill										
0	28																																
28	60																																
60	71																																
71	88																																
88	90																																
90	100																																
100	107																																
107	127																																
127	141																																
141	146																																
146	152																																
152	160																																
160	175																																
175	185																																

Coal STEWARTS

MANALTA Cuttings Description

Project Contractor Driller MacAuley Lith. by Rapley HOLE 795-60 pg of

Remarks Start Geo-log Depth

Finish Date Sept 6 1984 S T R

Depth () From To	Lithology				Indurate			Coal			Other			Colour							Comments														
	Mdn	S/MD	S	S/SS	F	K	C	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Card	Clay	Sand	Grav	Till	Light		Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow				
0																																			Till & rocks
2																																		Mdstrn & S.S.	
13.1																																		Coal	
13.6																																		Siltstone	
15.9																																		Coal	
16.2																																		Interbedded Mdstrn & Siltstr	
18.9																																		Coal	
20.3																																		Siltstone	
20.8																																			Coal
23.5																																			Siltstone
26.4																																			Mdstrn & Siltstr
26.5																																			Coal
27.1																																			Mdstrn & Siltstr
27.9																																			Coal
29.9																																			Mdstrn
29.9																																			Coal
26.5																																			Mdstrn
22.7																																			Coal
28.9																																			Mdstrn
29.0																																			Coal
22.8																																			Mdstrn
22.7																																			Coal
22.7																																			Interbedded Carb Sh. coal - Mdstrn
22.7																																			Siltstone
22.7																																			Coal
22.7																																			Mdstrn

13				
16				
4				
1				

manalta Cuttings Description

Project TELKWA Contractor COALBANK #4 Driller DEAN Lith. by DEAN HOLE T952-61 pg 1 of 1

Remarks 60ft casing Start _____ Geo-log BBB Depth _____

Finish 1 Date Sept 27/85 Isd S AT R

13		16
4		1

Depth (m)	Lithology						Indurate			Coal					Other	Colour									Comments									
	Mdn	S/Md	S	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Gray	Till	Light	Dark	Gray	Brown		Blue	Green	Black	White	Red	Orange	Yellow		
0 13.4																																		
13.4 17																																		
17 30.5																																		
30.5 32.5																																		
32.5 36																																		
36 37.5																																		
37.5 42																																		
42 42.5																																		
42.5 46																																		
46 47																																		
47 50																																		
50 52																																		
52 52.5																																		
52.5 56																																		
56 57																																		
57 62																																		
62 65																																		
65 67																																		
67 69																																		
69 70.5																																		
70.5 80																																		
80 84.5																																		
84.5 86																																		
86 88																																		
88 91																																		
91																																		

SOFT MDSI LAYERS
 PARTIALLY INTERBEDDED

SHALLOO
 SILTY LAYERS
 COAL LAYER 58.5

COAL STRATIFICS
 COAL STRATIFICS
 87m 20gpm H₂O

MANALTA CORP LTD ID: 4032656120 JUL 08:95 11:31 No. 007 P

monalta Cuttings Description

Project _____ Contractor _____ Driller McAuley Lith. by Pepley HOLE 62 pg of

Remarks _____ Start _____ Geo-log _____ Depth _____

Finish _____ Date Sept 7 Isd S T R

13			16
4			1

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments							
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow
0 5																																Till
5 32.6																																Siltstone & Mudstone
32.6 32.8																																S.S.
32.8 34.3																																(Coal)
34.3 37.2																																S.S.
37.2 37.8																																(Coal)
37.8 41.9																																Siltstone
41.9 43.6																																(Coal)
43.6 50.3																																Siltstone
50.3 52.7																																S.S.
52.7 57																																Siltstone
57 58.2																																(Coal)
58.2 59.7																																Mudstone
59.7 60.3																																Siltstone
60.3 65.4																																(Coal)
65.4 66.4																																S.S.
66.4 87.1																																Volcanic Conglomerate
87.1 90																																S.S.

MANALTRA COAL LTD ID:4052656120 JUL 08'95 11:31 No.007 P.01

MANALTA Cuttings Description

Project _____ Contractor Driller McAlley Lith. by Repley HOLE 195-62 pg. 1 of _____

Remarks _____ Start _____ Geo-log _____ Depth 92m

Finish _____ Date Sept 7 Led S T R

13		16
4		1

Depth () from 10	Lithology						Indurate				Coal				Other				Colour								Comments					
	Mdn	S/MD	S/	S/SS	F	M	C	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green	Black	White		Red	Orange	Yellow		
0-5																																Till & rocks
5-22.6																																Siltstn & S.S.
22.6-33.8																																Md sty & S.S.
33.8-34.3																																Coal
34.3-37.2																																S.S.
37.2-37.6																																Coal
37.6-41.9																																Siltstn
41.9-42.6																																Coal
42.6-50.3																																Siltstn S.S.
50.3-57																																Siltstn
57-58.2																																Coal
58.2-59.7																																Md sty
59.7-60.3																																Carb Sh. & dirty coal
60.3-65.4																																Siltstn
65.4-66.1																																Coal
66.1-82																																S.S.
82-192																																Volcanic conglomerate Coarse S.S.

RP

W

monata Cuttings Description

Project TELKWA Contractor CORAN Driller DEAN Lith. by DEAN HOLE TDR-64 pg 1 of 1

Remarks 40 FT casing 12 m Start _____ Geo-log BPB Depth _____
 Finish _____ Date Sept 8/95 Isd S T R

13		18
4		1

Depth (m)	Lithology							Indurate			Coal				Other	Colour										Comments											
	From	to	Mdn	S/Md	S	S/SS	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone		Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green		Black	White	Red	Orange	Yellow						
0	10																																				
10	32						✓		✓																												
32	61								✓																												
61	65		✓						✓																												
65	74						✓		✓																												
74	76		✓						✓																											Coal streaks	
76	86						✓		✓																												
86	92								✓																												silt stone layers.
92	94						✓		✓																												Carby layers.
94	99						✓		✓																												
99	116						✓		✓																												
116	128						✓		✓																												Carby layers.

manalta Cuttings Description

Project TELKWA Contractor COAL LYNX 4 Driller MIKE Lith. by ROCK V HOLE T95R-66 pg of

Remarks _____ Start _____ Geo-log _____ Depth 152M
 Finish _____ Date _____ Isd S T R

13		16
4		1

Depth () From to	Lithology						Indurate				Coat					Other	Colour										Comments								
	Mdsn	S/Md	S	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone	Carb		Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green		Black	White	Red	Orange	Yellow			
0 15																																			
15 22	✓							✓																											
22 35								✓																											
35 40								✓																											
40 72								✓																											
72 77								✓																											
77 78								✓																											
78 79								✓																											
79 80								✓																											
80 80.5								✓																											
80.5 85								✓																											
85 86								✓																											
86 96								✓																											
96 96.5								✓																											
96.5 98								✓																											
98 99.5								✓																											
99.5 100								✓																											
100 101								✓																											
101 107								✓																											
107 108								✓																											
108 108.5								✓																											
108.5 171								✓																											
171 152								✓																											

Coal str @ 88m 89.5m

Manalta Cuttings Description

Project PERKWA Contractor CLD # 4 Driller [Signature] Lith. by [Signature] HOLE T95 R22 pg. 01

Remarks 38' Chasing Start _____ Date _____ Finish _____ 1st _____ S _____ T _____ R _____ Depth 102m

13							
9							1

Depth (from to)	Lithology								Indurite				Coal			Other			Colour									Comments																
	Mdn	S/Md	S	S/SS	S	SS	C		Sft	Med	Hard	Clean	Dirty	Ox	Bone	Card	Clay	Sand	Grav	Till				Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow									
0 to 9																																												
9 to 13																																												
13 to 14																																												
14 to 17																																												
17 to 20																																												
20 to 28																																												
28 to 32																																												
32 to 47																																												
47 to 68																																												
68 to 77																																												
77 to 79																																												
79 to 90																																												
90 to 92																																												
92 to 105																																												

Viscous Conglomerate
ALLuvial
White sandstone
Conglomerate

manalta Cuttings Description

Project _____ Contractor _____ Driller D. McAuley Lith. by D. Popley HOLE 195 72 pg of

Remarks _____ Start _____ Geo-log _____ Depth _____

Finish _____ Date Sept 12-95 1st S T R

13		18
4		1

Depth ()	Lithology							Indurate			Coal				Other	Colour										Comments								
	From	To	Mean	S/Md	S/	S/SS	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow		
0	4.3																																Till & Rocks	
4.3	4.6																															(Coal)		
4.6	7.9																															Siltstn.		
7.9	9.8																															(Coal)		
9.8	19.5																															Siltstn		
19.5	23.5																															S.S.		
23.5	25.7																															Silty Mdstn + Siltstone		
25.7	39																															S.S.		
39	48																															Siltstone		
48	81																															S.S., F.G. + Mdstn		
81	83																															Hard Coarse S.S.		
83	90																															Siltstone + F.G. S.S.		
90	100																															Coarse S.S.		
100	102																															Grn Grn Green S.S. Coarse		
102	102.5																															F.G. S.S. + Mdstn.		
102.5	113.5																															(Coal)		
113.5	114.6																																Silty Mdstn.	
114.6	116.7																															(Coal)		
116.7	118.3																																Interbedd coal + Mdstn.	
118.3	125																																Siltstn.	
125	126.4																																Mdstn Volcanic chips	
126.4	128.7																																Siltstn	
128.7	129.8																																Coal	
129.8	136																																Coal	
136	140																																Volcanic S.S.	
																																		Volcanics S.S. Green

MANALTA COAL LTD

ID:4032656120

JUL 08 '95

11:31 No.007 P.01

Manalta Cuttings Description

Project TELKOM (M) Contractor CORA LYNN Driller MIKE Lith. by MIKE HOLE TSR-2309-01

Remarks _____ Start _____ Geo-log _____ Depth 2

Finish _____ Date _____ Lat _____ S _____ T _____ R _____

13					
4					
					1

Depth () from to	Mdn	S/Md	S/	S/SS	SS			Mudrate			Coal			Other	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow	Comments	
					F	M	C	Soft	Med	Hard	Clean	Dirty	Ox														Bone
0																											
6																											
6.1																											
6.5																											
9.12																											
13																											
13.5																											
14																											
20																											
20.5																											
30																											
34																											
65																											
67																											
71																											
71																											
80																											
85																											
95																											
110																											
134																											

Comments

1 kg per
WATER AT 2 PM

Coal Stringers Badly fractured (200m apart)

Coal Stringers at 23 m to 24.5 m
0.5 m coal

Compensate - Water mixed
Coaly layers

Coaly layers

Compensate

7201590129

manalta Cuttings Description

76

Project TEKWA Contractor CLD #4 Driller Rick Lith. by Rick HOLE 195R(73) pg of

Remarks _____ Start _____ Geo-log _____ Depth 73m

13		18
4		1

Finish _____ Date _____ Isd S T R

Depth ()	Lithology							Indurate			Coal					Other	Colour										Comments										
	from	to	Mden	S/Md	S/	S/SS	SS	F	M	C	Soft	Med	Hard	Clean	Dirty		Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow		
0	3																																				
3	6		✓								✓		✓						✓																		Coal st @ 6m
6	8		✓								✓																										
8	10.5													✓																							
10.5	14													✓																							
14	15													✓																							
15	16													✓																							
16	22		✓								✓																										
22	25		✓								✓																										
25	26		✓								✓																										
26	28										✓																										
28	31		✓								✓																										
31	35										✓		✓																								
35	43										✓		✓																								
43	54		✓								✓		✓																								
54	61										✓		✓																								
61	68										✓		✓																								
68	73										✓		✓																								

MANALTA CORP LTD ID: 4032656120 JUL 08 '95 11:31 No.007 P.01

Manalta Cuttings Description

Project Palena Contractor Cost-Plan & Driller New Lith. by New Hole TBR-A pg 101
 Remarks 4.5m casing Start _____ Geo-log _____ Depth 6.0m

13				16
4				1

led S T R

Date

Depth (m) from to	Lithology						Indurate				Coal				Card	Other				Colour	Comments																	
	S/Md	S	S/SS	F	M	C	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Clay		Sand	Grav	Till	Light			Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow							
0																																						
2			✓																																			
4			✓																																			
21			✓																																			
24																																						
24.5																																						
25.2																																						
26																																						
26.7																																						
27.2																																						
30.3																																						
35																																						
35.3																																						
51																																						

Possible Unconformities

manalta Cuttings Description

Project BRKWA Contractor CLD #4 Driller Mike Lith. by Rick HOLE T95R78 pg of
 Remarks 19 CASING Start 3:30 Geo-log Depth 74
 Finish 6:30 Date Isd S T R

13	16
4	1

Depth () From To	Lithology				Indurate			Coast				Other	Colour										Comments											
	Mdn	S/Md	S'	S/SS	SS			Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Gray	Brown	Blue	Green	Black	White	Red	Orange	Yellow		
0 2																																		
2 4	✓							✓							✓							✓												H ₂ O @ 3m
4 8	✓							✓																										
8 12								✓																										
12 13																																		
13 14	✓							✓														✓												
14 16	✓							✓														✓												
16 19								✓														✓												
19 22	✓							✓														✓												
22 29								✓														✓												
29 32								✓														✓												
32 44								✓														✓												
44 55								✓														✓												
55 57								✓														✓												
57 74								✓														✓												

MANALTA COAL LTD ID: A032656120 JUL 08 '95 11:31 No. 007 P:01

MANALTA Cuttings Description

Project TELKWA Contractor CORA LYNN Driller MIKE Lith. by Buck HOLE 195K 82 pg of

Remarks Drilling Hole with no casing start Geo-log Depth 46m

4 Rock Bit, 5 1/2" Finish Date Isd S T R

13						16
4						1

Depth (m)	Lithology				Indurate			Coal			Other			Colour															
	S/Md	S	S/SS	SS	S	M	C	Soft	Med	Hard	Clean	Dirty	Bone	Clay	Sand	Grav	Thin	Light	Dark	Gray	Brown	Blue	Green	Black	White	Red	Orange	Yellow	
0-30																													
30-55																													
55-62																													
62-64																													
64-67																													
67-70																													
70-78																													
78-79																													
79-85																													
85-90																													
90-101																													
101-109																													
109-110																													

Volcanic Conglomerate
 Very soft volcanic coal or energy
 Gold Pk @ 80-81m
 Volcanic conglomerate
 Volcanic

TELKWA 1996 DRILL - HOLE SUMMARY

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. Hole Samples	Date Drilled	Driller	Comments
T96R-01	32	195.00	GDCRDp	8.70	6.27	Tenas Creek	---	---	12-Jul-96	CoraLynn; Mike	
T96R-02	40	90.65	GDCR	6.40	6.00	Tenas Creek	---	---	11-Jul-96	CoraLynn; Dean	Only coals = x & y seams above the Hazelton Vo
T96R-03	31	135.10	GDCR	15.90	13.71	Tenas Creek	---	---	12-Jul-96	CoraLynn; Rick	
T96R-04C	22	38.50	GDCR	6.70	3.05	Tenas Creek	12	17	12-Jul-96	Don McAuley	TC ARD #1 d-hole (above c & c-1U seam cored)
T96R-05	38	128.20	GDCRDp	11.60	9.01	Tenas Creek	---	---	13-Jul-96	CoraLynn; Dean	
T96R-05C	38	105.35	GDCRDp	12.00	9.01	Tenas Creek	16	34	26-Jul-96	Don	Geotech #1 East fault. TC ARD #2 core-hole.
T96R-06	35	110.20	GDCRDp	18.00	17.00	Tenas Creek	---	---	13-Jul-96	CoraLynn; Rick	
T96R-07C	74	25.60	GDCR	2.60	1.52	T.Ck. Test-pit	19	0	13-Jul-96	Don McAuley	Test-pit core.
T96R-08	45	67.70	GDCRDp	5.30	3.50	Tns.Ck. West Pit	---	---	13-Jul-96	CoraLynn; Mike	
T96R-09	39	128.70	GDCRDp	11.30	8.50	Tenas Creek	---	---	14-Jul-96	Dean	
T96R-10	30	67.10	GDCR	6.00	5.00	Tenas Creek	---	---	13-Jul-96	Rick	
T96R-11	46	125.70	GDCRDp	5.30	2.00	Tns.Ck. West Pit	---	---	14-Jul-96	Mike	
T96R-12C	73	22.80	GDCR	1.00	0.76	T.Ck. Test-pit	13	0	14-Jul-96	Don	Test-pit core.
T96R-13C	72	20.00	GDCR	1.98	0.80	T.Ck. Test-pit	9	0	15-Jul-96	Don	Test-pit core.
T96R-14	36	123.00	GDCRDp	11.80	9.00	Tenas Creek	---	---	15-Jul-96	Mike	
T96R-15	37	128.20	GDCRDp	12.90	11.50	Tenas Creek	---	---	16-Jul-96	Dean	
T96R-16	57	78.80	GDCRDp	6.30	0.25	Tns.Ck. West Pit	---	---	15-Jul-96	Mike	Piezometre w/in West pit #1 Seam. 2 piezos.
T96R-17C	71	17.00	GDCR	2.00	0.91	T.Ck. Test-pit	10	0	15-Jul-96	Don	Test-pit core.
T96R-18C	70	13.50	GDCR	2.10	0.91	T.Ck. Test-pit	9	0	15-Jul-96	Don	Test-pit core.
T96R-19	21	79.60	GDCRDp	3.00	2.30	Tenas Creek	---	---	16-Jul-96	Mike	
T96R-20C	74a	13.90	GDCR	4.20	3.04	T.Ck. Test-pit	3	0	16-Jul-96	Don	Test-pit core.
T96R-21	65	85.60	GDCRDp	11.60	11.00	Tenas Creek	---	---	16-Jul-96	Rick	
T96R-22	41	128.50	GDCRDp	12.60	9.50	Tenas Creek	---	---	16-Jul-96	Dean	
T96R-23C	59	116.32	GDCR	12.17	11.30	Tenas Creek	13	44	18-Jul-96	Don	TC ARD #3 drill-hole.
T96R-24	28	128.47	GDCRDp	6.90	2.80	Tenas Creek	---	---	17-Jul-96	Mike	
T96R-25	29	78.45	GDCR	9.00	7.00	Tenas Creek	---	---	17-Jul-96	Rick	
T96R-26	42	106.17	GDCRDp	17.40	13.90	Tenas Creek	---	---	21-Jul-96	Dean	No caliper log.
T96R-27	47	73.47	GDCRDp	3.10	1.23	Tns.Ck. West Pit	---	---	22-Jul-96	Rick	
T96R-28C	76	120.24	GDCRDp	11.75	10.68	Tenas Creek	16	34	24-Jul-96	Don	Geotech #2 West fault. TC ARD #4 core-hole.
T96R-29	68	98.56	GDCRDp	7.00	4.50	Tenas Creek	---	---	22-Jul-96	Mike	
T96R-30	33	128.22	GDCRDp	6.10	6.00	Tenas Creek	---	---	22-Jul-96	Dean	
T96R-31	48	66.00	GDCR	5.35	0.96	Tns.Ck. West Pit	---	---	22-Jul-96	Rick	
T96R-32	64	67.62	GDCR	17.85	16.20	Tenas Creek	---	---	23-Jul-96	Mike	
T96R-33	49	48.77	GDCRDp	3.25	0.31	Tns.Ck. West Pit	---	---	22-Jul-96	Rick	
T96R-34	19	97.57	GDCRDp	16.06	12.00	Tenas Creek	---	---	24-Jul-96	Dean	TC piezometre site; installed w/in the #1 Seam.
T96R-35	56	73.57	GDCRDp	3.40	1.60	Tns.Ck. West Pit	---	---	23-Jul-96	Rick	
T96R-36	208	160.27	GDCRDp	6.00	5.00	Pit #3	---	---	24-Jul-96	Rick	
T96R-37	23	61.63	GDCR	3.64	2.50	Tenas Creek	---	---	23-Jul-96	Mike	
T96R-38	63	76.06	GDCR	6.67	5.10	Tenas Creek	---	---	24-Jul-96	Mike	
T96R-39	53	61.51	GDCRDp	6.30	2.83	Tenas Creek	---	---	25-Jul-96	Mike	
T96R-40	213	156.22	GDCRDp	6.00	3.00	Pit #3	---	---	26-Jul-96	Rick	Pit 3 piezo site; instl'd w/in #2 & 4/5 Seam. True
T96R-40C	213	123.10	GDCRDp	6.00	6.28	Pit #3	20	30		Don	Pit #3 ARD #1.

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. Hole Samples	Date Drilled	Driller	Comments
T96R-41	26	122.00	GDCRDp	25.00	23.00	Tenas Creek	---	---	26-Jul-96	Mike	
T96R-42C	54	150.11	GDCRDp	12.12	6.40	Tenas Creek	3	51	29-Jul-96	Don	Pry dev'd #1 Seam. Geotech #3 W. pit hole. TC
T96R-43	18	92.00	GDCRDp	18.00	15.50	Tenas Creek	---	---	28-Jul-96	Mike	
T96R-44	202	85.97	GDCRDp	5.50	3.00	Pit #3	---	---	28-Jul-96	Rick	Pit 3 piezometre site; installed w/in the #2 Seam.
T96R-45	406	79.64	GDCRDp	23.38	22.90	Tns Ck Wastedump	---	---	28-Jul-96	Dean	See Komex log for surficial liths.
T96R-46	15	140.41	GDCRDp	5.80	3.80	Tenas Creek	---	---	29-Jul-96	Mike	
T96R-47	61	150.50	GDCRDp	12.00	10.5/11.5	Tenas Creek	---	---	30-Jul-96	Mike	
T96R-48	215	140.45	GDCRDp	6.00	3.50	Pit #3	---	---	30-Jul-96	Rick	
T96R-49	67	109.63	GDCRDp	12.00	10.97	Tenas Creek	---	---	30-Jul-96	Don	
T96R-50	43	73.47	GDCRDp	11.00	7.80	Tenas Creek	---	---	08-Aug-96	Mike	
T96R-51	34	127.88	GDCRDp	12.00	5.18/7.00	Tenas Creek	---	---	09-Aug-96	Don	
T96R-52	25	127.20	GDCRDp	22.00	22.20	Tenas Creek	---	---	09-Aug-96	Dean	
T96R-53	209	73.35	GDCRDp	6.00	3.00	Pit #3	---	---	08-Aug-96	Rick	
T96R-54	62	103.54	GDCRDp	6.50	4.80	Tenas Creek	---	---	09-Aug-96	Mike	
T96R-54C	62	90.07	GDCR	6.10	5.20	Tenas Creek	14	22	18-Aug-96	Don	TC ARD #6 core-hole.
T96R-55	210	103.64	GDCRDp	4.70	3.50	Pit #3	---	---	09-Aug-96	Rick	
T96R-56C	69	93.11	GDCRDp	12.50	11.30	Tenas Creek	16	34	11-Aug-96	Don	TC ARD #7 hole and Piezo site. Piezo w/in the #
T96R-57	212	119.40	GDCRDp	4.70	2.00	Pit #3	---	---	11-Aug-96	Rick	
T96R-58	75	79.88	GDCRDp	6.30	2.00	Tenas Creek	---	---	10-Aug-96	Mike	
T96R-59	27	73.55	GDCRDp	23.30	21.00	Tenas Creek	---	---	10-Aug-96	Dean	
T96R-60	55	49.21	GDCRDp	6.20	0.90	Tenas Creek	---	---	11-Aug-96	Mike	
T96R-61	24	109.71	GDCRDp	11.40	6.50	Tenas Creek	---	---	11-Aug-96	Dean	
T96R-62	205	66.39	GDCRDp	5.70	5.00	Pit #3	---	---	11-Aug-96	Rick	
T96R-63	20	79.56	GDCRDp	5.80	3.00	Tenas Creek	---	---	12-Aug-96	Mike	
T96R-64	17	140.43	GDCRDp	17.20	22.43	Tenas Creek	---	---	12-Aug-96	Dean	
T96R-65C	25/26	101.50	GDCRDp	18.00	18.30	Tenas Creek	16	33	13-Aug-96	Don	Geotech #4 East fault. TC ARD #8 hole.
T96R-66	206	85.45	GDCRDp	7.10	6.00	Pit #3	---	---	12-Aug-96	Rick	
T96R-67	16	134.50	GDCRDp	6.10	1.20	Tenas Creek	---	---	12-Aug-96	Mike	
T96R-68	207	102.68	GDCRDp	6.40	4.00	Pit #3	---	---	13-Aug-96	Rick	
T96R-69	50	115.62	GDCRDp	5.30	2.50	Tenas Creek	---	---	13-Aug-96	Mike	
T96R-70	58	146.58	GDCRDp	17.20	15.00	Tenas Creek	---	---	13-Aug-96	Dean	
T96R-71	204	151.00	GDCRDp	6.00	5.00	Pit #3	---	---	13-Aug-96	Rick	
T96R-72	7	182.78	GDCRDp	11.40	7.00	Tenas Creek	---	---	14-Aug-96	Dean	
T96R-73	10	134.48	GDCRDp	11.40	7.80	Tenas Creek	---	---	14-Aug-96	Mike	
T96R-74	201	104.91	GDCRDp	7.00	3.00	Pit #3	---	---	15-Aug-96	Rick	
T96R-74C	201	90.14	GDCRDp	4.10	3.00	Pit #3	31	28	11-Sep-96	Don	Pit #3 ARD #2.
T96R-75	11	67.60	GDCRDp	17.70	14.50	Tenas Creek	---	---	15-Aug-96	Mike	
T96R-76	74b	17.87	GDCR	0.00	0.02	Test-pit	---	---	16-Aug-96	Don	
T96R-77	6	164.67	GDCRDp	11.40	7.00	Tenas Creek	---	---	16-Aug-96	Dean	
T96R-78	66	103.90	GDCRDp	6.10	3.00	Tenas Creek	---	---	16-Aug-96	Dave	
T96R-79	12	73.47	GDCRDp	23.00	15.00	Tenas Creek	---	---	16-Aug-96	Mike	
T96R-80	200	97.29	GDCRDp	6.80	4.00	Pit #3	---	---	16-Aug-96	Rick	
T96R-81	214	97.99	GDCRDp	5.40	5.00	Pit #3	---	---	12-Aug-96	Rick	
T96R-82	5	104.18	GDCRDp	11.80	10.00	Tenas Creek	---	---	16-Aug-96	Dean	

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. Hole Samples	Date Drilled	Driller	Comments
T96R-83	9	79.62	GDCRDp	17.40	13.50	Tenas Creek	---	---	18-Aug-96	Rick	
T96R-84	60	52.18	GN	0.00	26.50	Tenas Creek	---	---	18-Aug-96	Don	
T96R-85	216	83.62	GDCRDp	6.00	6.00	Pit #3	---	---	18-Aug-96	Rick	
T96R-86	1	60.85	GDCRDp	18.00	17.00	Tenas Creek	---	---	19-Aug-96	Don	
T96R-87	3	71.84	GN	0.00	18.00	Tenas Creek	---	---	19-Aug-96	Dean	
T96R-88	217	78.80	GDCRDp	6.80	4.00	Pit #3	---	---	19-Aug-96	Rick	
T96R-89	501	108.87	GDCRDp	23.30	20.70	Cabinet Creek	---	---	22-Aug-96	Don	
T96R-90	311	96.65	GDCRDp	6.00	36.50	Plantsite	---	---	23-Aug-96	Rick/Dean	
T96R-91	14	76.08	GDCRDp	6.00	1.80	Tenas Creek	---	---	20-Aug-96	Don	
T96R-92	4	79.74	GDCRDp	23.80	23.80	Tenas Creek	---	---	20-Aug-96	Dean	
T96R-93	308	114.96	GDCRDp	17.30	16.00	Pit #1/2	---	---	20-Aug-96	Mike	
T96R-94	307	73.45	GDCRDp	10.00	6.00	Pit #1/2	---	---	21-Aug-96	Rick	
T96R-95	309	79.58	GDCRDp	6.10	4.50	Pit #1/2	---	---	21-Aug-96	Mike	
T96R-96	8	79.50	GDCRDp	17.40	17.00	Tenas Creek	---	---	21-Aug-96	Dean	
T96R-96C	8	49.44	GDCRDp	18.60	17.00	Tenas Creek	13	13	27-Aug-96	Don	TC ARD #9.
T96R-97	310	97.79	GDCRDp	4.80	4.00	Pit #1/2	---	---	21-Aug-96	Rick	
T96R-98	312	79.50	GDCRDp	17.90	14.00	Pit #1/2	---	---	22-Aug-96	Mike	
T96R-99	52	79.56	GDCRDp	32.30	32.92	Tenas Creek	---	---	22-Aug-96	Dean	
T96R-100	313	128.71	GDCRDp	6.00	3.00	Pit #1/2	---	---	22-Aug-96	Mike	
T96R-101	306	109.97	GDCRDp	5.10	3.00	Pit #1/2	---	---	22-Aug-96	Rick	
T96R-102	500	54.43	GDCRDp	17.00	17.00	Cabinet Creek	---	---	26-Aug-96	Don	
T96R-103	363	184.19	GDCRDp	6.20	4.00	Pit #1/2	---	---	23-Aug-96	Mike	
T96R-104	305	121.17	GDCRDp	5.30	5.00	Pit #1/2	---	---	24-Aug-96	Rick	
T96R-105	51	102.68	GN	0.00	53.00	Tenas Creek	---	---	25-Aug-96	Dean	
T96R-106	304	135.44	GDCRDp	5.70	5.00	Pit #1/2	---	---	25-Aug-96	Rick	
T96R-107	303	116.06	GDCRDp	5.70	4.00	Pit #1/2	---	---	25-Aug-96	Mike	
T96R-108	302	120.15	GDCRDp	9.40	8.00	Pit #1/2	---	---	26-Aug-96	Mike	
T96R-109	301	96.30	GN	0.00	37.50	Pit #1/2	---	---	07-Sep-96	Mike	
T96R-110	2	66.32	GN	0.00	37.50	Tenas Creek	---	---	28-Aug-96	Dean	
T96R-111	327	160.61	GDCRDp	12.20	12.00	Powerline South	---	---	28-Aug-96	Rick	
T96R-112	351	129.05	GN	0.00	28.00	Tailings pond	---	---	06-Sep-96	Dean	
T96R-113	203	94.01	GDCRDp	5.40	4.00	Pit #3	---	---	07-Sep-96	Rick	Pit 3 piezo installation into #2 Seam
T96R-114	354	109.47	GDCRDp	22.10	21.30	Prop. gas pipeline	---	---	07-Sep-96	Don	
T96R-115	358	121.17	GDCRDp	30.20	26.50	Obe's yard	---	---	09-Sep-96	Dean	
T96R-116	352	102.00	GN	27.00	102.00	Bruce's yard	---	---	30-Sep-96	Rick	Drilled to 14.5 m on Sept. 8. Completed Sept. 30.
T96R-117	319	155.90	GDCRDp	10.60	6.70	Powerline	---	---	09-Sep-96	Don	
T96R-118	331	124.89	GDCRDp	16.80	17.00	Powerline South	---	---	09-Sep-96	Rick	Logs did not go to TD. True T.D. = 170.0 m.
T96R-119	D	96.95	GDCRDp	5.70	4.00	Tenas Creek	---	---	12-Sep-96	Rick	
T96R-120	E	73.67	GDCRDp	10.90	7.00	Tenas Creek	---	---	12-Sep-96	Rick	
T96R-121	C	109.38	GDCRDp	8.40	7.30	Tenas Creek	---	---	14-Sep-96	Dean	
T96R-122	410	37.00	GDCRDp	3.50	3.86	Tenas Creek	---	---	14-Sep-96	Mike	See Komex log for surficial liths.
T96R-123C	O	86.58	GDCRDp	6.10	3.60	Pit #3	25	28	16-Sep-96	Don	
T96R-124	B	91.72	GDCRDp	21.90	21.47	Tenas Creek	---	---	15-Sep-96	Dean	
T96R-125	J	49.27	GDCRDp	11.60	6.35	Tenas Creek	---	---	14-Sep-96	Rick	

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. Hole Samples	Date Drilled	Driller	Comments
T96R-126	I	55.25	GDCRDp	22.91	18.55	Tenas Creek	---	---	15-Sep-96	Rick	
T96R-127	A	72.60	GDCRDp	29.00	26.50	Tenas Creek	---	---	16-Sep-96	Dean	
T96R-128	H	53.53	GDCRDp	5.50	3.60	Tenas Creek	---	---	16-Sep-96	Don	
T96R-129	K	65.54	GDCRDp	10.30	7.20	Tenas Creek	---	---	15-Sep-96	Rick	
T96R-130	44	139.10	GDCRDp	15.50	15.00	Tenas Creek	---	---	17-Sep-96	Dean	
T96R-131	L	103.80	GDCRDp	10.10	8.81	Tenas Creek	---	---	17-Sep-96	Rick	
T96R-132	G	77.69	GDCRDp	1.90	2.30	Tenas Creek	---	---	17-Sep-96	Dave	
T96R-132C	G	26.49	GDCRDp	2.13	2.40	Tenas Creek	5	12	18-Sep-96	Dave	TC ARD #10.
T96R-133	211	148.43	GDCRDp	6.30	4.00	Pit #3	---	---	18-Sep-96	Mike	
T96R-134	W	206.68	GDCRDp	5.10	3.00	Pit #3	---	---	21-Sep-96	Rick	
T96R-135	S	122.31	GDCRDp	5.70	0.70	Pit #3	---	---	20-Sep-96	Mike	
T96R-136	T	115.78	GDCRDp	2.30	2.50	Pit #3	---	---	20-Sep-96	Dean	
T96R-137	F	42.73	GDCRDp	3.90	2.10	Tenas Creek	---	---	20-Sep-96	Don	
T96R-138	Q	103.22	GDCRDp	5.50	5.00	Pit #3	---	---	20-Sep-96	Mike	
T96R-139	V	152.80	GDCRDp	3.00	2.50	Pit #3	---	---	21-Sep-96	Dean	
T96R-140	M	97.70	GDCRDp	4.30	4.20	Pit #3	---	---	21-Sep-96	Don	
T96R-141	R	107.60	GDCRDp	5.00	4.70	Pit #3	---	---	21-Sep-96	Mike	
T96R-142	N	127.00	GDCRDp	4.10	2.10	Pit #3	---	---	22-Sep-96	Don	
T96R-143	W	206.00	GDCRDp	5.00	3.00	Pit #3	---	---	22-Sep-96	Rick	
T96R-144	P	61.37	GDCRDp	5.80	3.00	Pit #3	---	---	22-Sep-96	Mike	
T96R-145	355	91.08	GDCRDp	14.20	16.80	Tailings pond	---	---	23-Sep-96	Don	
T96R-146	300	104.22	GDCRDp	19.10	18.50	Tailings pond	---	---	23-Sep-96	Mike	
T96R-147	318	181.85	GDCRDp	31.00	15.30	Prop. gas pipeline	---	---	28-Sep-96	Don	
T96R-148	326	196.55	GDCRDp	17.20	16.00	Powerline South	---	---	23-Sep-96	Rick	
T96R-149	357	133.45	GDCRDp	41.90	41.00	Prop. gas pipeline	---	---	25-Sep-96	Mike	
T96R-150	353	65.79	GDCRDp	29.30	32.00	Tailings pond	---	---	24-Sep-96	Don	
T96R-151	350	59.54	GN	30.00	59.54	Tailings pond north	---	---	25-Sep-96	Don	Did not reach bedrock. Real TD = ~70 metres.
T96R-152	330	199.02	GDCRDp	11.60	9.00	Powerline South	---	---	26-Sep-96	Rick	
T96R-153	314	201.51	GDCRDp	20.20	18.70	Prop. gas pipeline	---	---	26-Sep-96	Mike	
T96R-154	325	199.65	GDCRDp	23.40	23.00	Powerline South	---	---	29-Sep-96	Rick	
T96R-155	316	173.17	GDCRDp	16.50	16.50	Powerline/gasline	---	---	30-Sep-96	Don	
Totals:		16,339.20	metres				263	380			

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. Hole Samples	Date Drilled	Driller	Comments
TOB96-01	401	10.50	Nil	Nil	4.60	Tns Ck Wastedump	---	---	27-Jul-96	Dean	Piezo installation.
TOB96-02	404	33.50	Nil	Nil	32.50	Tns Ck Wastedump	---	---	27-Jul-96	Dean	Piezo installation.
TOB96-03	406	24.00	GDCRDp	Nil	22.90	Tns Ck Wastedump	---	---	28-Jul-96	Dean	Con't. drilling into bedrock (T96R-45).
TOB96-04	409 moved	123.00	Nil	Nil	117.00	Tns Ck Wastedump	---	---	29-Jul-96	Dean	
TOB96-05	422	20.00	Nil	Nil	TD not to bdrk	Tailings Pond	---	---	8-Sep-96	Mike	moved ~ 150 m west to road / dam location
TOB96-06	421	10.00	Nil	Nil	TD not to bdrk	Tailings Pond	---	---	9-Sep-96	Mike	
TOB96-07	425	19.60	Nil	Nil	17.60	Tailings Pond	---	---	10-Sep-96	Mike	Piezo installation.
TOB96-08	428	19.00	Nil	Nil	17.00	Tailings Pond	---	---	12-Sep-96	Mike	
TOB96-09	429	20.00	Nil	Nil	TD not to bdrk	Tailings Pond	---	---	11-Sep-96	Mike	
TOB96-10	420	81.00	Nil	Nil	TD not to bdrk	Tailings Pond	---	---	11-Sep-96	Mike	Piezo installation.
TOB96-11	407	20.20	Nil	Nil	TD not to bdrk	Tns Ck Wastedump	---	---	13-Sep-96	Mike	Piezo installation.
TOB96-12	410	37.00	GDCRDp	Nil	3.75	Tns Ck Wastedump	---	---	14-Sep-96	Mike	Con't. drilling into bedrock (T96R-122). Piezo.
TOB96-13	411	20.00	Nil	Nil	10.90	Tns Ck Wastedump	---	---	14-Sep-96	Mike	
TOB96-14	426	42.50	Nil	Nil	TD not to bdrk	Tailings Pond	---	---	15-Sep-96	Mike	Piezo installation.
TOB96-15	419	17.50	Nil	Nil	16.50	Tailings Pond	---	---	16-Sep-96	Mike	
TOB96-16	423	13.50	Nil	Nil	12.00	Tailings Pond	---	---	16-Sep-96	Mike	
TOB96-17	403	14.00	Nil	Nil	11.50	Tns Ck Wastedump	---	---	17-Sep-96	Mike	
TOB96-18	402	17.00	Nil	Nil	15.00	Tns Ck Wastedump	---	---	17-Sep-96	Mike	
		<u>542.30</u>									
	Total:	<u>16,881.50</u>									metres
	Core total:	1,303.75									
	Rotary total:	15,035.45									
	Ovbn geotech holes total:	<u>542.30</u>									
		<u>16,881.50</u>									metres
TRC96-01	47	2.60	---	---	1.23	Tenas	5	---	25-Jun-96		T96R-27
TRC96-02	---	1.81	---	---	---	Tenas test-pit	5	---	14-Aug-96		Test-pit channel ply samples; c-seam
TRC96-03	---	1.86	---	---	---	Tenas test-pit	6	---	15-Aug-96		Test-pit channel ply samples; IU-seam
TRC96-04	---	1.81	---	---	---	Tenas test-pit	4	---	13-Aug-96		Test-pit channel composite samples; c-seam
TRC96-05	---	3.69	---	---	---	Tenas test-pit	14	---	15-Aug-96		Test-pit channel ply samples; 1-seam
TRC96-06	---	3.69	---	---	---	Tenas test-pit	5	---	15-Aug-96		Test-pit channel composite samples; 1-seam
TRC96-07	---	4.75	---	---	4.75+	Tenas	---	3	18-Sep-96		ARD till sample
TRC96-08	---	5.00	---	---	5.00+	Tenas	---	3	19-Sep-96		ARD till sample
TRC96-09	---	5.00	---	---	5.00+	Tenas	---	3	19-Sep-96		ARD till/outwash gravel sample
TRC96-10	---	0.48	---	---	---	Tenas test-pit	---	3	25-Sep-96		IU/1-seam parting sample

manalta Cuttings Description

Project TERRIS Creek Contractor CORA LYNW #5 Driller RICK Lith. by RICK HOLE T96 R04 pg of

Remarks SITE # 35 Start July 12 Geo-log Depth 110M

Finish July 13 Date Isd S T R

13		16
4		1

Depth () from to	Lithology				Indurate			Coal				Other	Colour										Comments												
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow			
					F	M	C																												
0-11.6																✓																			
11.6-12.5																		✓																	
12.5-17																																			
17-22																																			
22-39																																			
39-43																																			
43-61.5																																			
61.5-52.5																																			
52.5-53.5																																			
53.5-55.5																																			
55.5-105																																			
105-63																																			
63-67																																			
67-70																																			
70-77.5																																			
77.5-85																																			
85-90																																			
90-96																																			
96-110																																			

H₂O 10GPM.

COAL ST @ 62.5
" @ 67

ENTY OUT OF COAL RAPIDLY

manalta Cuttings Description

Project TELKWA Contractor COXA LOWN Driller DEAN Lith. by _____ HOLE T96 & K09 pg 1 of _____

Remarks SITE # 39 Start _____ Geo-log _____ Depth _____
 _____ Finish _____ Date _____ Isd S T R

13		16
4		1

Depth (m)	Lithology								Coal		Other	Colour											Indurate			Comments		
	Till	Gray	Sand	Sasn			Slsn	Mdsn	Dirty	Clean		Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.	Hard			
				C	M	F																						
3.5	✓																											
4.5		✓																										
8.5	✓																											CLAY
10.5									✓			✓									✓	✓						
27									✓			✓									✓	✓						
28									✓			✓									✓	✓						
36.5						✓						✓									✓	✓						
28.									✓			✓									✓	✓						CAKES
85						✓						✓									✓	✓						
87									✓			✓									✓	✓						
89.5									✓			✓									✓	✓						
97									✓			✓									✓	✓						BENTONITE LAYERS
108									✓			✓									✓	✓						
112			✓									✓									✓	✓						CONGLOMERATE
			✓									✓									✓	✓						

manalta Cuttings Description

Project TELKWA Contractor GLD #5 Driller RICK Lith. by RICK HOLE T96R10 pg of

Remarks Site # 30 Start July 14 Geo-log Depth 66m
 Finish July 14 Date Isd S T R

13		16
4		1

Depth () from to	Lithology					Indurate			Coal				Other	Colour										Comments															
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty		Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow							
					F	M	C																																
0 5																																							
5 7		✓						✓														✓																	
7 12							✓	✓														✓																	
12 16	✓							✓																			✓												
16 19								✓							✓																								
19 23	✓							✓														✓																	
23 26		✓						✓														✓																	
26 28								✓																															
28 30	✓							✓														✓																	
30 35.2							✓	✓															✓																
35 37								✓															✓																
37 41								✓																															
41 59								✓																															
59 62								✓																															
62 66								✓																															

VOLCANIC CONGLOMERATE
 VOLCANIC CONGLOMERATE

H₂O 8 GPM

Carby st @ 46m (H₂O) @ 48m 15 GPM

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-11 pg of

Remarks SITE # 46 Start 7:00 Geo-log Depth 125m
 Finish 3:00 Date July 14/96 lsd S T R

13		16
4		1

Depth (m)	Lithology						Coal		Other	Colour											Indurate	Comments					
	Till	Grav	Sand	Sasn			Slsn	Mdsn		Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray			Brown	Black	Soft	Med.	Hard
				C	M	F																					
0-2	✓											✓									✓						
2.2								✓				✓								✓							
3.2-4									✓												✓						
4-11								✓				✓								✓							
11-112									✓												✓						
11.2								✓				✓								✓							
14.2									✓			✓								✓							
14.6								✓				✓								✓							
16.1									✓			✓								✓							
16.6								✓				✓								✓					20.6 LOW STRINGER		
23									✓			✓								✓							
24								✓				✓								✓							
24.1									✓			✓								✓							
24.4								✓				✓								✓							
25									✓			✓								✓							
26								✓				✓								✓							
26.2									✓			✓								✓							
26.3								✓				✓								✓					31.2 stringer		
34.1								✓				✓								✓					33.1 " 33.8 stringer 3#		
34.5								✓				✓								✓							
42								✓				✓								✓							
45									Conglomerate			✓		✓	✓	✓				✓							
58.5								✓				✓								✓							
97									✓			✓								✓							
98								✓				✓								✓							
100								✓				✓		✓						✓					Volcanic Rock		
103								✓				✓								✓					" "		
107								✓				✓		✓						✓					" "		

manalta Cuttings Description

Project LEKKA Contractor CORA ^{#5} Driller Pick Lith. by Pick HOLE TAG # 14 pg 9 of 16

Remarks _____ Start July 14 Geo-log _____ Date _____ Depth 121.5'

Finish _____ Date _____ Lsd S T R

13	16
4	1

Depth (ft) from to	Lithology					Indurate			Coal			Other	Colour							Comments																				
	Mdsn	S/Md	S/	S/SS	F	SS	M	C	Soft	Med	Hard		Clean	Dirty	Ox	Bone	Carb	Clay	Sand		Grav	Till	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow							
0																																								
3																																								
9																																								
24																																								
29																																								
45.5																																								
56.9																																								
59.9																																								
59.5																																								
62																																								
72																																								
78.5																																								
85																																								
91																																								
96																																								
100																																								
103																																								
121.5																																								

Coal STRUCTION BS.S
Also LAYERS Pyro HCO

manalta Cuttings Description

Project TELKWA Contractor COCA LYNN Driller DEAN Lith. by DEAN ^{Rock} HOLE T96-GR15 pg 1 of 1

Remarks 13m CASING SITE 37 Start _____ Geo-log CENTURAY Depth 128m

Finish _____ Date 7/15/96 lsd S T R

13		16
4		1

Depth (m)	Lithology							Coal		Other	Colour											Indurate	Comments			
	Till	Gray	Sand	Sasn			Slsn	Mdsn	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown			Black	Soft	Med.
	C	M	F																							
0																										
2	✓																									
2.5		✓																								
11	✓									clay																
11.5		✓																								
29																		✓			✓					DENTURE LAYERS SOFT
31		✓	0															✓			✓					FINE
36		✓								clay								✓			✓					Silt stone mixed with clay 10gpm H ₂ O
51.5																		✓			✓					FINE sandstone
52.5										carby										✓		✓				carby
60.5										sandstone								✓	✓		✓					sandstone
61																				✓		✓				carby
65										sandstone										✓	✓					
67																				✓	✓					carby coal
68												✓						✓								siltstone with coal layers
72.5												✓								✓						" "
85					✓							✓						✓				✓				SILTSTONE
87												✓						✓	✓							
95												✓						✓				✓				
110										?		✓						✓				✓				10gpm H ₂ O
112.5												✓						✓				✓				
119.5					✓					CONGLOMERATE		✓	✓	✓	✓		✓	✓		✓		✓				
128						✓						✓						✓				✓				

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-16 pg of

Remarks SITE 57 Start Geo-log Depth 79 m

Finish Date July 14/96 Isd S T R

13		16
4		1

Depth ()	Lithology							Coal		Other	Colour											Indurate	Comments				
	Till	Grav	Sand	Sasn			Sltn	Mden	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown			Black	Soft	Med.	Hard
				C	M	F																					
0.0	✓											✓										✓					
0.25									✓													✓					
1.2							✓				✓											✓					
1.5									✓													✓					
2.5								✓														✓					
4							✓				✓											✓					
6								✓														✓					
7.5							✓	✓			✓								✓			✓					
7.7							✓	✓			✓								✓			✓					
9.5									✓			✓										✓					
11.6							✓				✓											✓					
14.2									✓			✓										✓					
18.2									✓			✓										✓				16.5 mdsn parting. 18m mdsn parting PYRITE LAYERS	
20							✓				✓											✓				21.8 COAL STRINGER - H2O	
23.5							✓				✓											✓				24-29 COAL STRINGERS - 20gph H2O	
30							✓		mdsn layers		✓											✓					
33			✓						Conglomerate		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
35.3								✓														✓					
36.1							✓				✓											✓				39.8 CALCITE FRACTURE	
44							✓				✓											✓				GREEN SPECKS IN Sasn	
45			✓						Conglomerate		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
59							✓				✓											✓					
72			✓						Conglomerate		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					

manalta Cuttings Description

Pro: _____ Driller MIKE Lith. by MIKE HOLE T96R-24 pg 01

Start _____ Geo-log _____ Depth _____

Finish _____ Date JULY 16 Isd S T R

13		16
4		1

Other	Colour											Indurate			Comments		
	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.	Hard			
		✓	✓							✓		✓					
		✓								✓		✓					H ₂ O In Gravel
		✓								✓		✓					Sandy Clay
		✓								✓		✓					Coaly layers throughout
		✓								✓		✓					27m Coal stringers
		✓								✓		✓					49m ^{H₂O} AT 30m
		✓								✓		✓					
		✓								✓		✓					48m Coal stringers
		✓								✓		✓					
		✓								✓		✓					Coal stringers 69.1 & 69.9 & 72.1
		✓								✓		✓					Calcrete fracture 73m 15gpm H ₂ O
		✓								✓		✓					74m Coal layers with Pyrite
		✓								✓		✓					Mdsm Parting throughout
		✓								✓		✓					

manalta Cuttings Description

Project TELWA Contractor CLD #5 Driller Rok Lith. by Rok HOLE T96 R25 pg of

Remarks SITE #29 Start July 16 Geo-log Depth 78m
 Finish Date lsd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coal			Carb	Clay	Sand	Grav	Till	Other	Colour										Comments
	Mdsn	S/Md	S/	S/SS	F	SS	Soft	Med	Hard	Clean	Dirty	Ox							Bone	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	
0 7																													
7 25	✓						✓																						
25 35	✓						✓																						
35 36							✓																						
36 36.5										✓																			
36.5 39.5							✓																						
39.5 40.5										✓																			
40.5 46	✓						✓																						
46 54	✓						✓																						
54 57																													
57 60																													
60 67	✓						✓																						
67 78							✓																						Coal str @ 65

manalta Cuttings Description

Project TELKWA Contractor CLD #5 Driller Red Lith. by Rick HOLE T96R27 pg of

Remarks SITE #47 Start July 21 Geo-log Depth 74m
 Finish July 21 Date Isd S T R

13	16
4	1

Depth () from to	Lithology						Indurate				Coal				Other	Colour										Comments					
	Mdsn	S/Md	S/	S/SS	F	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Carb		Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green		Black	White	Red	Orange	Yellow
0 3																															
3 3.5																															
3.5 6																															
6 7.5																															
7.5 10																															
10 10.5																															
10.5 11																															
11 11.5																															
11.5 13																															
13 19																															
19 23																															
23 25																															COAL STRINGS
25 27																															
27 42																															
42 58																															VOLCANIC CONGLOMERATE
58 62																															
62 71																															
71 74																															VOLCANIC CONGLOMERATE

manalta Cuttings Description

Project TELKWA Contractor CORA LYNN Driller DEAN Lith. by DEAN HOLE T96-R30 pg 1 of 1

Remarks SITE 33 6m CASINGS Start 17:30 ^{96/7/22} Geo-log _____ Depth 129

13		16
X		
4		1

Finish 13:00 Date 96/7/22 Isd S T R

Depth (m)	Lithology								Coal	Other	Colour										Indurate	Comments						
	Till	Grav	Sand	Sasn			Sltn	Mdsn			Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White			Gray	Brown	Black	Soft	Med.	Hard
				C	M	F																						
6	✓																											
19						✓					✓									✓				✓				
31										✓										✓				✓				
34					✓							✓								✓				✓				
35.5									✓			✓								✓		✓		✓				
42									✓			✓								✓		✓		✓				
42.5									✓													✓		✓				
48									✓			✓								✓			✓		✓			
52						✓						✓								✓				✓				
54.5									✓													✓		✓				
79?						✓					✓									✓				✓				
86									✓													✓		✓				
90									✓			✓								✓				✓				
91.5						✓														✓				✓				
95.5									✓			✓								✓		✓		✓				
96									✓													✓		✓				
98.5									✓			✓								✓		✓		✓				
100									✓			✓								✓				✓				
104.5									✓			✓								✓			✓		✓			
105.5					✓							✓								✓				✓				
106.5									✓			✓								✓				✓				
109									✓			✓								✓			✓		✓			
128						✓					✓									✓				✓				

manalta Cuttings Description

Project TALKWA Contractor CORA LYNN #5 Driller RICK Lith. by RICK HOLE T96R31 pg of

Remarks _____ Start July 22 Geo-log _____ Depth _____
 Finish _____ Date _____ lsd S T R

13		16
4		1

Depth () from to	Lithology				Indurate			Coal				Carb	Clay	Sand	Grav	Till	Other	Colour									Comments					
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean							Dirty	Ox	Bone	Light	Dark	Grey	Brown	Blue	Green		Black	White	Red	Orange	Yellow
					F	M	C																									
0 1																																
1 5	✓																															
5 5.5																																
5.5 10	✓																															
10 10.5																																
10.5 11																																
11 13																																
13 17.5																																
17.5 20																																
20 22	✓																															
22 22.5																																
22.5 27	✓																															
27 30.5																																
30.5 32																																
32 33	✓																															
33 36	✓																															
36 41																																
41 46	✓																															
46 63																																
63																																

CARBON PARTINGS

COAL ST.

COAL ST @ 41

Volcanic Conglomerate

manalta Cuttings Description

Project TELEKUT Contractor COLL BLVD Driller DERR Lith. by REMI HOLE TE-P-34 pg 1 of 1
 Remarks SITE 16m casing Start 7-20 9/7/05 Geo-log RB Depth RB
FLUSTING 20 spec H3D Finish _____ Date 7-24/02 lsd S T R _____

13			
4			1

Depth (m)	Lithology						Coal	Other	Colour											Indurate			Comments					
	Till	Gray	Sand	Sasn C M F					Slen	Mdsn	Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown		Black	Soft	Med.	Hard	
12	✓																											<u>30 spec H3D Flow TELE</u>
34						✓																					<u>Coal ?</u>	
57							✓																				<u>Coal ?</u>	
62.5							✓																				<u>Coal 26.5?</u>	
66.5							✓																				<u>Coal 26.5?</u>	
69							✓																				<u>Coal 26.5?</u>	
74							✓																				<u>Coal 26.5?</u>	
76							✓																				<u>Coal 26.5?</u>	
81							✓																				<u>Coal 26.5?</u>	
86.5							✓																				<u>Coal 26.5?</u>	
98							✓																				<u>Coal 26.5?</u>	

manalta Cuttings Description

Project TELKWA Contractor CORA Lynn #5 Driller Rick Lith. by Rick HOLE T96 R.35 pg of

Remarks _____ Start July 23 Geo-log _____ Depth 72m

Finish _____ Date _____ Isd S T R

13	16
4	1

Depth ()	Lithology							Indurate				Coal				Other	Colour								Comments											
	from	to	Mdsn	S/Md	S	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Gray	Till	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow		
0	1																	✓	✓																	
1	2																	✓	✓																	
2	3		✓							✓													✓	✓												
3	8.5													✓																						
3.5	5.5		✓							✓													✓	✓												
5.5	7.0		✓							✓													✓	✓												
7	13						✓				✓												✓	✓												
13	14													✓																						
14	23		✓							✓																										
23	35																																			
							✓				✓																									
35	39										✓																									
39	46										✓																									
46	59																																			
59	62						✓				✓																									
62	65																	✓																		
65	67		✓																																	
67	72		✓																																	

VOLCANIC CONGLOMERATE

VOLCANIC CONGLOMERATE

VOLCANIC

Till to 1.00?

FRASURES

Coal st @ 5.5 m

 " 6 m

Carby st @ 8 m

COAL STRINGERS

manalta Cuttings Description

Project TALKWA Contractor Coria Lynn Driller Ray Lith. by Rex HOLE T96236 pg 1 of 2

Remarks _____ Start July 23 Geo-log _____ Depth _____

Finish _____ Date _____ Isd S T R

13		16
4		1

Depth () from to	Lithology					Indurate			Coal				Other	Colour										Comments						
	Mdsn	S/Md	S/	S/SS	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Gray	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow
	F	M	C																											
0	4													✓	✓															
4	5																												H ₂ O 3 GPM (CASED OFF)	
5	6.8	✓																										✓	✓	FRACTURED
6.8	8																													H ₂ O .5 GPM
8	8.5													✓																
8.5	10																													
10	11.5		✓																											
11.5	17		✓																											
17	22		✓																											
22	29		✓																											
29	31																													
31	33																													
33	34																													
34	34																													
34	37																													
37	59		✓																											
59	61																													
61	64		✓																											
64	70		✓																											
70	76		✓																											
76	82																													
82	82.5																													
82.5	96.5		✓																											
96.5	101		✓																											
101	107																													
107	110																													
110	118																													
118	119		✓																											
119	123																													
123	137		✓																											
137	138		✓																											
138	141																													
141	144																													
144	150																													
150	151		✓																											

+6m

 Correct
 @
 101m

(VERY SOFT)

H₂O 3 GPM (CASED OFF)
 FRACTURED
 H₂O .5 GPM

BM YARDS 1/2 2 GPM

H₂O 2 GPM
 COAL ST @ 99m

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R 59 pg of

Remarks Site 53 Start 7:00 Geo-log Ryan Depth 61m
 Finish 10:00 Date July 25 Isd S T R

13		16
4		1

Depth () from to		Lithology				Indurate			Coal				Other	Colour									Comments											
		Mdn	S/Md	S/	S/SS	SS F M C			Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Gray	Till	Light		Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow	
0	3																																	
3				✓						✓													✓	✓										
11.7										✓																								
12.2			✓							✓													✓	✓										
25.4										✓																								
26.1		✓								✓													✓	✓										
27.6										✓																								
28.4			✓							✓													✓	✓										
37							✓			✓												✓	✓	✓	✓									
38							✓			✓												✓	✓	✓	✓									
41.5							✓			✓												✓	✓	✓	✓									
46							✓			✓												✓	✓	✓	✓									
47.9	61						✓			✓												✓	✓	✓	✓									
61																																		

COAL STRENGTH 12.5 @ 18.9 - 17.8 @ 18.9
 " " 22.6

Conglomerate
 Conglomerate

manalta Cuttings Description

Project TELWA Contractor CORA LYNN Driller RICK Lith. by RICK HOLE T96R40 pg 1 of 2

Remarks PIEZOMETER Start July 25 Geo-log _____ Depth 177M
 Finish July 26 Date _____ lsd S T R

13	16
4	1

Depth () from to	Lithology				Indurate			Coal				Other	Colour										Comments												
	Mdsn	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow			
0	3																																		
3	3.5																																		
3.5	5.5																																		
5.5	6																																		
6	11.5																																		
11.5	22																																		
22	27																																		
27	30																																		
30	33																																		
33	33.5																																		
33.5	34																																		
34	37																																		
37	39																																		
39	40.5																																		
40.5	41																																		
41	43																																		
43	52																																		
52	57																																		
57	63																																		
63	65																																		
65	72																																		
72	82																																		
82	83																																		
83	84																																		
84	86																																		
86	88																																		
88	103																																		
103	109																																		
109	110																																		

FRAC. H₂O 10GPM CASED OFF

TRACE H₂O 4 GPM

COAL STR BET 44 ⇒ 48 TRACE H₂O

COAL STRINGERS
 COAL @ 71 POSSIB CARBY
 COAL STRINGERS

H₂O 2GPM

manalta Cuttings Description

Project LEKKA 4 Contractor Geodynamics Driller Rock Lith. by Rock HOLE FR6 R4D pg 2 of 2

Remarks RECONSTRUCTOR Start July 25 Geo-10g _____ Depth 137m

Finish July 26 Date _____ Isd _____ S _____ T _____ R _____

13					
4					
					1

Depth ()	Lithology						Indurate						Coal						Other	Colour	Comments													
	Mdsn	S/Md	S	S/SS	F	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till				Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow		
110 / 115	✓																																	
115 / 119	✓																																	
119 / 120	✓																																	
120 / 129																																		
129 / 132																																		
132 / 136																																		
136 / 139																																		
139 / 153																																		
153 / 192																																		

DRY ST @ 118m

manolita Cuttings Description

Project ELKWA Contractor CCO Driller MIKE Lith. by MIKE HOLE T9GR-41 pg 9 of 1

Remarks 25m Capping Start Geo-log Depth 122.5m

Finish Date July 26 Isd S T R

13			
16			
4			1

Depth () from to	Lithology				Indurate			Coal				Other	Colour										Comments						
	Mdsn	S/Md	S/	S/SS	Soft	Med.	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow
28					✓																								Possible bedrock at 23m
30																													
34																													green specks.
43.5																													
48.9																													
49.2																													
51																													
51.5																													
53.5																													
61																													
70																													
71.1																													
79																													
85																													
105																													
110																													
222																													

CONGLOMERATE
COAL STRINGER 1173

1/2 possible COAL STRINGER - 22.9m

57.8 COAL STRINGERS → 60

Possible bedrock at 23m

green specks.

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-93 pg of

Remarks Site 18 Start Geo-log Depth 92m
 Finish Date JULY 27 Isd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coal				Other	Colour									Comments											
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow			
0	55																																	Rocks Throughout	
155					✓			✓								✓					✓													20m Coal Stringer	
271								✓																										25.4 CARRY	
273				✓				✓													✓														
45.5								✓																										mdsn Partings	
53.5		✓						✓													✓													55.6 COAL STRINGER	
59					✓			✓													✓													57m COAL STRINGER	
68.5								✓																											
70.2			✓					✓													✓														COAL stringers
71.4								✓																											
72.7			✓					✓													✓														
75								✓		✓											✓														
83	92				✓			✓													✓														81m COAL STRINGER + 82.6m

manalta Cuttings Description

Project TELKWA Contractor CORA LYNN'S Driller RICE Lith. by RICE HOLE T96 R44 pg ___ of ___

Remarks _____ Start JULY 28 Geo-log _____ Depth EBM

13		16
4		1

Finish _____ Date JULY 28 lsd S T R

Depth () from to	Lithology				Indurate			Coal				Other	Colour										Comments											
	Mdsn	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow		
0 3																																		
3 6																																		
6 12																																		
12 15																																		
15 16																																		
16 19																																		
19 21																																		
21 21.5																																		
21.5 22																																		
22 29																																		
29 32																																		
32 35																																		
35 41																																		
41 44																																		
44 49																																		
49 53																																		
53 54																																		
54 59																																		
59 63																																		
63 67																																		
67 69																																		
69 88																																		

RACTURED 1/2 30 GPM.

Coal st @ 18.5

Coal st @ 36.5

SH Break @ 51 + 52.5

~~XXXXXXXXXX~~

manalta Cuttings Description

Project TENNIS GROVE Contractor CORA LYM Driller REK Lith. by REK HOLE T96RFB pg 1 of 1

Remarks _____ Start JULY 29 Geo-log _____ Depth 140m
 Finish JULY 30 Date _____ Isd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments							
	MdSn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow
0 3.5																	✓															
3.5 4.0												✓																				
4.0 6			✓																													
6 9					✓			✓																								
9 10												✓																				
10 18		✓						✓																								
18 20																																
20 21.5								✓																								
21.5 23.5																																
23.5 30		✓						✓				✓																				
30 40							✓	✓																								
40 45			✓					✓																								
45 46																																
46 48		✓						✓																								
48 49.5																																
49.5 54			✓					✓																								
54 55.5																																
55.5 60		✓						✓																								
60 65																																
65 71		✓						✓																								
71 75								✓																								
75 81								✓																								
81 84																✓																
84 90		✓						✓																								
90 93																✓																
93 101								✓														✓										
101 112		✓						✓																								
112 140								✓																								

CRAC ST AROUND 81m

SH ST @ 133

manalta Cuttings Description

Project _____ Contractor McAULLEY Driller D. MACBETH Lith. by _____ HOLE T96R-49 pg of _____

Remarks Site 67 Start _____ Geo-log _____ Depth _____
 Finish _____ Date _____ Isd S T R _____

13		16
4		1

Depth ()	Lithology								Coal	Other	Colour											Indurate	Comments					
	Till	Grav	Sand	Sasn			Slen	Mden			Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray			Brown	Black	Soft	Med.	Hard
				C	M	F																						
																										0-10.97 DENSE BROWN POOLY TILL		
																										10.97-17.98 LIGHT GREY SANDSTONE FINE		
																										17.98-26.82 MEDIUM GREY MUDSTONE		
																										26.82-28.95 GR BROWN SANDSTONE		
																										28.95-32.00 BROWN SANDSTONE MED		
																										32.00-36.27 LIGHT AND DARK GREY MUDSTONE		
																										36.27-67.97 Banded LIGHT AND DARK GREY SANDSTONE MUDSTONE		
																										67.97-68.21 CARB SHALE		
																										68.21-72.08 SILTSTONE DK BROWN GREY		
																										72.08-73.60 GREY BROWN MUDSTONE COAL		
																										TRACES BENTONITE PYRITE TRACES		
																										73.60-86.86 LIGHT GREY MUDSTONE		
																										86.86-90.83 GREY SANDSTONE		
																										90.83-108.20 Banded GREY MUDSTONE SAND		
																										STONE		
																										108.20-115.82 VOLCANICS		

manalta

Cuttings-Description

Project LEWIS C&C Contractor CLD #15 Driller Steve Lith. by Steve HOLE 796 R53 pg 01
 Remarks _____ Start Asph Geo-log _____ Date _____ Depth 722
 Finish _____ Date _____ Isd _____ S _____ T _____ R _____

13				
16				
4				
				1

Depth () from to	Mdsn	Lithology					Indurate			Coal				Other	Colour									Comments														
		S/Md	S/	S/SS	F	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow							
0-3																																						
3-6																																						
6-10																																						
10-12																																						
12-14																																						
14-16																																						
16-23																																						
23-25																																						
25-32																																						
32-33																																						
33-35																																						
35-36																																						
36-41																																						
41-42																																						
42-44																																						
44-46																																						
46-48																																						
48-52																																						
52-53																																						

FRC HD 20 GRN

Lith. Str.

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-54 pg of
 Remarks SITE 62 Start Geo-log Depth 104 m
6.5m Casing Finish Date AUG 9/96 lsd S T R

13	.	16
4		1

Depth () from to	Lithology				Indurate			Coal				Other	Colour										Comments													
	Mdsn	S/Md	S'	S/SS	SS F M C			Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow				
0 4.8								✓								✓					✓															
4.8 7.				✓				✓													✓	✓														
7 10.3							✓		✓												✓	✓														
10.3 15				✓				✓													✓	✓														
15 54							✓		✓												✓	✓													53.3m CARBY SHALE & PYRITE 57.5 " " "	
54 60.7		✓						✓													✓	✓														
60.7 62.4								✓				✓																								
62.4 70.3		✓						✓														✓														
70.3 70.6								✓				✓																✓								
70.6 75.6		✓						✓													✓	✓														
75.6 81.0								✓				✓																	✓							Mcgn Parting 77m
81.0 82.5				✓				✓														✓														
82.5 83.5								✓				✓																✓								
83.5 87		✓						✓													✓	✓														
87 104						✓		✓														✓	✓													90.1 COAL STRINGER 97m " " 100m

manalta Cuttings Description

512-212

Project BEKWA Contractor Corb Lynn #1 Driller Wick Lith. by Wick HOLE 79100527 pg 9 of 1

Remarks _____ Start Aug 10 Geo-log _____ Date _____ Depth _____

Finish _____ Date _____ Lsd S T R _____

13	16
4	1

Depth () from to	Mdsn	S/Md	S/	Lithology			Indurate			Coal				Clay	Sand	Grav	Till	Other	Colour									Comments																							
				S/SS	F	M	C	Soft	Med	Hard	Clean	Dirty	Ox						Bone	Carb	Light	Dark	Grey	Brown	Blue	Green	Black		White	Red	Orange	Yellow																			
2																																																			
3																																																			
21.5																																																			
29																																																			
32																																																			
37																																																			
39																																																			
45																																																			
45																																																			
60																																																			
69																																																			
70																																																			
82																																																			
90																																																			
92																																																			
94																																																			
94																																																			
95																																																			
92																																																			

LARC @ ABOUT 74-76m
H2O 20GPM

COAL SP

NO SIGN CHSD OIL

manalta Cuttings Description

Project TELUKWA Contractor CEMA KUN Driller DEAN Lith. by DEAN HOLE T46-R59 pg 1 of 1

Remarks 24m CASING SITE 27 Start _____ Geo-log _____ Depth 24m Finish _____ Date _____ Isd S T R

13		16
4		1

Depth (m)	Lithology										Other	Colour										Indurate			Comments						
	Till	Grav	Sand	Sasn			Slsn	Mdsn	Dirty	Clean		Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.		Hard					
				C	M	F																									
3	✓																														
21											<i>Clay & Rocks</i>																				
26											✓											✓									
29.5												✓										✓									
47																						✓									
51																						✓									
52											✓											✓									
51.5																						✓									
59											✓	✓		✓								✓									
61												✓										✓									
62												✓										✓									
64.5											✓	✓		✓								✓									
65												✓										✓									
65.5												✓										✓									
67												✓										✓									
69																						✓									
74m																						✓									

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R 60 pg of

Remarks SITE 55 Start Geo-log Depth 49m

6m casing Finish Date AUG 11 Isd S T R

13		16
4		1

Depth (M)	Lithology							Coal		Other	Colour											Indurate	Comments			
	Till	Grav	Sand	Sasn			Slsn	Mdsn	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown			Black	Soft	Med.
0	✓											✓	✓								✓	✓				
0.9									✓												✓	✓				
1.1								✓												✓	✓					
2.5									✓												✓	✓				
2.6								✓												✓	✓					
7									✓												✓	✓				
13.1							✓													✓	✓					
13.9									✓												✓	✓				mdsn LAYERS THROUGHOUT
16.1							✓													✓	✓					
17.2									✓												✓	✓				
17.9								✓												✓	✓					18.1 COAL STRINGERS 22.1, 23.8, 25.7, 27.2
30.4									✓												✓	✓				29.1 " " 29.5
30.8																					✓	✓				
30.8									✓											✓	✓					
34									✓											✓	✓					
40			✓																			✓				CONGLOMERATE

manalta Cuttings Description

Project TEUKWA Contractor COAL LINK Driller DEAN Lith. by DEAN HOLE TGR-61 pg 1 of 1

Remarks 12M CASING SETE 24 Start YES Geo-log _____ Depth 118
 Finish YES Date SHE SAID NO lsd S ___ T ___ R ___

13		16
4		1

Depth (M)	Lithology								Colour													Indurate	Comments				
	Till	Grav	Sand	Sasn			Slen	Mden	Coal Dirty Clean	Other	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black			Soft	Med.	Hard	
				C	M	F																					
6.5	✓									CLAY ROCKS																	
11.5							✓				✓									✓			✓				
58							✓					✓									✓		✓				
58.5								✓				✓									✓		✓				
62							✓					✓									✓		✓				
60.5							✓					✓									✓		✓				
87								✓				✓									✓		✓				
90.5								✓		CARB.		✓								✓		✓		✓		COAL STRINGERS	
91.5								✓				✓									✓		✓				
93							✓			CARB.		✓								✓		✓		✓			
95.5							✓					✓								✓		✓		✓			
99							✓			CARB.		✓								✓		✓		✓		COAL STRINGERS	
102							✓					✓								✓		✓		✓			
105							✓					✓								✓		✓		✓			
111							✓			CARB.		✓								✓		✓		✓		COAL STRINGERS	

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-63 pg# of

Remarks SITE 20 Start Geo-log Depth
6m CASING Finish Date Aug 11/96 Isd. S T R

13		16
4		1

Depth (m)	Lithology										Colour										Indurate	Comments					
	Till	Grav	Sand	Sasn			Slsn	Mdsn	Dirty	Clean	Other	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray			Brown	Black	Soft	Med.	Hard
				C	M	F																					
0	✓												✓	✓													CLAY
3							✓					✓									✓						
24.8								✓		e											✓						
25.3							✓					✓									✓						
30.9								✓		d											✓						
31.3							✓					✓									✓						
34.6								✓		c											✓						
36.1							✓					✓									✓						43.6 Coal STRINGER 6
46.2								✓		rust											✓						
51.5							✓					✓									✓						
52								✓		alg											✓						
52.9							✓					✓									✓						
64.5				✓																		✓					CONGLOMERATE
66							✓					✓									✓						COAL STRINGERS 69m
70							✓					✓									✓						

manalta Cuttings Description

Project FELKWA Contractor COA LYN Driller DEAN Lith. by DEAN HOLE TG-R64 pg 1 of 1

Remarks SITE 17 Start _____ Geo-log _____ Depth 147
 Finish _____ Date _____ Isd S T R

13		16
4		1

Depth (M)	Lithology								Other	Colour											Indurate	Comments					
	Till	Grav	Sand	Sasn			Slen	Mden		Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray			Brown	Black	Soft	Med.	Hard
				C	M	F																					
2			✓																								
23									CLAY & SAND																		
82							✓				✓									✓							
90							✓				✓									✓							
95			✓								✓									✓							
97							✓				✓									✓							
98							✓				✓									✓							
112.5			✓								✓									✓							
119.5									✓											✓							
121							✓				✓									✓							
135							✓		CLAY		✓									✓							
147							✓				✓									✓							

COAL LAYERS 128, 130.5, 134.5,

manalta Cuttings Description

Project: TELKWA Contractor: CLA Driller: MIKE Lith. by: MIKE HOLE: 796R6T pg. 01
 Remarks: SITE 16 Start: _____ Geo-log: _____ Depth: 134.5m
6m casing Finish: _____ Date: Aug 12 1sd S T R

13				
4				
				1

Depth	Lithology					Coal		Other	Colour										Indurate	Comments							
	Till	Grav	Sand	Sasn	C M F	Sltn	Mden		Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White			Gray	Brown	Black	Soft	Med.	Hard	
1																											
3																											
7																											
30																											
43.5																											
81.3																											
83.1																											
95																											
97																											
102																											
108.3																											
111.3																											
113.1																											
127																											

28.7 DARK LAYER
 119.9 COAL STRIPES 121.2 122
 126.4 " "

manalta Cuttings Description

Project Rt 3 Contractor COCA LYNW #5 Driller Frank Lith. by Frank HOLE T9C R6B pg of
 Remarks Coar @ 4-6m CASST OFF Start Aug 10 Geo-log Depth 102 13 16
 Finish Aug 13 Date Isd S T R 4 1

Depth ()	Lithology						Indurate			Coal				Other	Colour										Comments							
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow
0 4																																
* 4 6																																
6 25		✓																				✓	✓									FRAG @ 9m
* 25 27																																
27 32																												✓				
32 35																																
35 39		✓																				✓	✓									COAL ST @ 36.5
* 39 42																																
42 44		✓																				✓										
44 58		✓																										✓				COAL ST @ 45
* 58 60																																
60 64		✓																										✓				
* 64 67																																
67 70																						✓	✓									
70 102		✓																				✓	✓									102m total depth.

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-69 pg of

Remarks SITE 50 Start Geo-log Depth 116m
Com casing Finish Date 11/26/13 Isd S T R

13		16
4		1

Depth (m)	Lithology							Coal		Other	Colour											Indurate	Comments				
	Till	Grav	Sand	Sasn			Slan	Mdan	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown			Black	Soft	Med.	Hard
				C	M	F																					
2.5	✓						✓							✓								✓					
8							✓												✓			✓					
28							✓													✓		✓					
35							✓													✓		✓					
60							✓													✓		✓			2 ppm H ₂ O		
72							✓				✓									✓		✓					
77.8							✓		✓											✓		✓					
83.2							✓				✓									✓		✓			85.7 COAL		
85.7									✓													✓					
86.4							✓													✓		✓			COAL 99m.		
100.3									✓											✓		✓					
100.9							✓													✓		✓					

monalta Cuttings Description

Project R-3 Contractor Coralyynn #5 Driller Rick Lith. by Rick HOLE T96R71 pg of
SR# 204

Remarks _____ Start Aug 13 Geo-log _____ Depth 151m

13		16
4		1

 Finish _____ Date _____ Isd S T R

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments								
	Mdsn	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Gray	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow	
0																																	
2																																	
28																																	
35																																	
56																																	
71																																	
102																																	
107																																	
107																																	
109																																	
114																																	
114																																	
120																																	
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121																																	
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125																																	
129																																	
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130																																	
130																																	
131																																	
131																																	

Coal SF @ 124

962-72 SITE 7 12m CASINGS

manalta Cuttings Description

Project TALKWA Contractor COBA L&N Driller DEAN Lith. by DEAN HOLE 1962-72 pg 1 of 1

Remarks: SITE 7 12m CASINGS Start _____ Geo-log _____ TD Depth 182
 Finish _____ Date _____ Isd S T R

13		16
4		1

Depth (m)	Lithology								Coal		Other	Colour											Indurate	Comments							
	Till	Grav	Sand	Sasn			Sltn	Mdsn	Dirty	Clean		Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black			Soft	Med.	Hard				
				C	M	T																									
7	✓																											Clay & Lenses			
31							✓					✓								✓											
48												✓								✓											
56							✓					✓								✓											
100												✓								✓											
113												✓								✓											
116.5							✓													✓								✓	CALCITE FEATURES		
138							✓					✓								✓											
149							✓					✓								✓											
176							✓					✓								✓									✓	SSEA BROWN INTERBEDDED (COAL) LAYERS	
178							✓					✓								✓									✓	160-176 MUDING OFF Run out	
182							✓					✓								✓									✓	OF WATER NO CUTTINGS	
																														✓	SSEA LAYERS Mdsn LAYERS

150m

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-73 pg of

Remarks SITE 10 Start Geo-log Depth 138 m
12 m casing Finish Date Aug 14/96 S T R

13		16
4		1

Depth (m)	Lithology						Coal		Other	Colour										Indurate	Comments						
	Till	Grav	Sand	Sasn			Slsn	Mdsn		Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White			Gray	Brown	Black	Soft	Med.	Hard
				C	M	F																					
	<input checked="" type="checkbox"/>																										
7.8							<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			CARBY LAYERS THROUGHOUT	
3.0							<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
10.5									<input checked="" type="checkbox"/>												<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
112.5							<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			115.5 COAL LAYERS 117-126-	
126.5									<input checked="" type="checkbox"/>												<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
127.5							<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
130							<input checked="" type="checkbox"/>														<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				

manalta Cuttings Description

100-120-

Project Pr 3 Contractor COBA Wynns #5 Driller Riek Lith. by Riek HOLE T96 R 74 pg. of
STR # 201

Remarks _____ Start Aug 15 Geo-log _____ Depth _____
 Finish _____ Date _____ Isd S T R

13		16
4		1

Depth () from to	Lithology					Indurate			Coal			Other	Colour										Comments								
	Mdsn	S/Md	S/	S/SS	SS	Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow	
0 3															✓																
3 18 ✓								/											/	/											
18 20 ✓								//																		/					
* 20 21											/																				
21 22															✓																
* 22 23											/																				
23 26 ✓								/			/														/						
26 28															✓																
* 28 28.5								/		/	/			/																	
28.5 38 ✓/✓								/		/	/								/	/											
* 38 40											/																				
40 42 ✓								/		/	/								/	/											
42 43											/																				
43 46 ✓								/		/	/								/	/											
46 53 ✓								/		/	/								/	/											
53 59 ✓								/		/	/								/	/											
* 59 60								/		/	/																				
60 65.5 ✓								/		/	/								/	/											
* 65.5 70								/		/	/																				
70 77 ✓								/		/	/															✓					
77 108 ✓								/		/	/														✓						

PRBY ST @ 34m

TRACES OF PYRITE

COAL STRINGERS @ 47m

LANCITE ST & TRACES OF PYRITE

INT COAL & PRBY ST

" " "

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-75 pg. of

Remarks SITE 11 Start Geo-log Depth 67m
18m CASING Finish Date AUG 15/96 1st S T R

13		16
4		1

Depth (m)	Lithology							Coal		Other	Colour											Indurate	Comments				
	Till	Grav	Sand	Sasn			Slas	Mdan	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown			Black	Soft	Med.	Hard
				C	M	F																					
4.5	✓	✓									✓		✓								✓						
16							✓				✓			✓							✓						
20							✓				✓									✓							
27.9									✓												✓						
36.2							✓													✓							
39.3									✓												✓						
40.3	40.3 mdsn PARTING																										
41.4							✓				✓									✓						51.4 COAL & CARBY LAYERS 58m	
51.4									✓											✓						60.5 " " " 61.5	
53.1							✓				✓									✓							
59.5							✓				✓									✓							

manalta Cuttings Description

Project TELKWA Contractor COA LNN Driller RICK B Lith. by DEAN HOLE 196-77 pg 1 of 1

Remarks 12m casing SITE 6 Start _____ Geo-log _____ Depth 166

Finish _____ Date _____ Isd S T R

13		16
4		1

Depth (m)	Lithology								Coal	Other	Colour											Indurate	Comments					
	Till	Grav	Sand	Sasn			Sltn	Mden			Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray			Brown	Black	Soft	Med.	Hard
				C	M	F																						
7	✓																											
43							✓					✓								✓			✓					
62								✓				✓								✓			✓					
108						✓														✓			✓					
109					✓							✓		✓						✓			✓					
134							✓					✓								✓			✓					
138									✓			✓								✓		✓						
140							✓					✓								✓		✓						
151					✓		✓					✓								✓		✓				1 siltstone and conglomerate		
160					✓		✓					✓								✓		✓						
166					✓		✓					✓								✓		✓						

manalta MANALTA Cuttings Description

Project _____ Contractor _____ Driller D. MACBETH Lith. by _____ HOLE 78 pg. of

Remarks _____ Start _____ Geo-log _____ Depth _____

13		16
4		1

Finish _____ Date _____ Isd S T R

Depth ()	Lithology								Coal	Other	Colour												Indurate			Comments						
	Till	Grav	Sand	Sasn			Slsn	Mdsn			Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.		Hard					
				C	M	F																										
																																3 - 3 BRN TIL Rocky
																													SA			3 - 6.4 GR SANDST
																																6.4 - 29.8 GR MUDST SANDST INTER B
																																29.8 - 32. SILTST GR BRN
																													SA			32. - 36.3 SANDST MUDST LT DK GR INTER B
																													SL			36.3 - 38.1 GR BRN SILTST MUDST
																													MD			38.1 - 41.4 DK GR MUD ST
																													SS			41.4 - 43.6 MUDST SANDST LT DK GR
																																43.6 - 45.4 CARB SH COALY
																													SS			45.4 - 49.1 LT DK GR SAND + MUDST
																																49.1 - 50.3 CARB SH COALY PIRITE FLECKSS
																													MD			50.3 - 50.4 GR MUD ST
																																50.4 - 50.9 CARB SH COALY
																																50.9 - 51.8 GR SAND ST PIRITE FLECKSS
																																51.8 - 53.2 LT DK GR SAND + MUDST
																																53.2 - 55.1 COAL
																																55.1 - 57.3 GR BRN SILTST PIRITE FLECKSS
																																57.3 - 68.9 BRN MUDST COAL FLECKED
																																68.9 - 72.2 GR AND BRN MUD + SILTST
																																72.2 - 75.4 TIF COAL
																																75.4 - 75.9 GR MUD ST
																																75.9 - 77.7 TIF COAL
																																77.7 - 77.9 BRN SILTST
																																77.9 - 78.3 I/A/B COAL
																																78.3 - 80.4 GR SANDST AND MUDST
																																80.4 - 80.7 IL COAL
																																80.7 - 81.7 GR BRN MUDST COAL BANDING
																																81.7 - 82.2 BENTIC WHIT BRN MUDST
																																82.2 - 85.6 GR BRN MUDST COAL FLECKED

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-79 pg of

Remarks Site 12 Start Geo-log Depth 74m

13		16
4		1

23m CASING Finish Date AUG 16 Isd S T R

Depth ()	Lithology							Coal Dirty Clean	Other	Colour												Indurate Soft Med. Hard	Comments	
	Till	Grav	Sand	Sasn			Slen			Mden	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black			
				C	M	F																		
10-20 to 30	✓	✓			✓														✓				Possibility of Coal AT Bedrock Contact Not Sure of Contact point.	
30																			✓					
31							✓			✓									✓					
44								✓											✓					
46							✓			✓									✓					
47							✓			✓									✓					

manalta Cuttings Description

Project Pit 3 Contractor COCA LYNN #5 Driller RICK Lith. by RICK HOLE T96R30 pg of
 Remarks _____ Start Aug 16 Geo-log _____ Depth 96m
 Finish _____ Date _____ Isd S T R

13		16
4		1

Depth () from to	Lithology					Indurate			Coal				Other	Colour										Comments														
	Mdsn	S/Md	S/	S/SS	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow								
0	3																																					
3	4																																					
4	12																																					
12	14																																					
* 14	15.5																																					
15.5	22																																					
* 22	35																																					
35.5	40																																					
40	45																																					
* 45	46																																					
46	50																																					
* 50	55																																					
55	59																																					
* 59	62																																					
62	66																																					
* 66	96																																					

H₂O + GPM

HARD TO TELL IF IT'S COAL w/ CARB OR CARB w/ COAL.

manalta Cuttings Description

Project FELKWA Contractor CLA Driller MIKE Lith. by MIKE HOLE T96R-83 pg of

Remarks Site 9 Start Geo-log Depth 80m
18m casing Finish Date AUG 18 Isd S T R

13		16
4		1

Depth (m)	Lithology								Coal	Other	Colour											Indurate	Comments					
	Till	Grav	Sand	Sasn			Slan	Mdan			Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray			Brown	Black	Soft	Med.	Hard
				C	M	F																						
0-13.5	✓											✓	✓									✓						
13.5-16								✓				✓										✓						
16-18.5										✓												✓						
18.5-24.5								✓				✓										✓					23.6 CARBY	
24.5-25										✓												✓						
25								✓				✓										✓						
45												✓										✓					CONGLOMERATE IN AREAS THROUGHOUT	
46												✓										✓						
48												✓										✓						
53												✓										✓						

manalta Cuttings Description

Project PIT 3 Contractor CORA LYNN #5 Driller Rek Lith. by Rek HOLE T96 R35 pg of
278 276

Remarks _____ Start Mar 18 Geo-log _____ Depth 84m

13		16
4		1

Finish _____ Date _____ Isd S T R

Depth () from to	Lithology						Indurate				Coal				Other	Colour										Comments													
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Gray	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow							
					F	M	C																																
0 3																																							
3 6																																							
6 13	✓						✓	✓														✓	✓																
13 15	✓						✓	✓														✓	✓																
15 17													✓																										
17 26	✓						✓	✓														✓	✓																
26 34	✓						✓	✓														✓	✓																
34 35													✓?				✓?																						
35 39	✓						✓	✓																		✓													
39 47	✓						✓	✓					✓																										
47 58	✓						✓	✓														✓	✓																
58 60	✓						✓	✓														✓	✓																
60 84	✓						✓	✓														✓	✓																

*SERIOUS BEDONITE ST. (POSSIB FEED)
 FACING @ 16*

*74m COAL ST.
 COAL? CARBY? @ 52m*

manalta Cuttings Description

Project _____ Contractor McAULLEY Driller D. MacBETH Lith. by _____ HOLE 89 pg 1 of 1

Remarks _____ Start _____ Geo-log _____ Depth 110.0 M
 Finish _____ Date _____ Isd S T R

13		16
4		1

Depth ()	Lithology							Coal		Other	Colour											Indurate	Comments				
	Till	Grav	Sand	Sasn			Sltn	Mdsn	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown			Black	Soft	Med.	Hard
				C	M	F																					
																										0-16.8 RED BRN GRV TIL	
																										16.8-20.7 GRV	
																										20.7-36.9 SOFT GR MUDST WITH CARB BANDING	
																										36.9-45.4 SOFT GR SILTST	
																										45.4-45.6 COAL	
																										45.6-46.3 SOFT GR SILTST	
																										46.3-47.4 DK GR BRN SILTST HEAVY CARB BANDING	
																										47.4-49.2 COAL	
																										49.2-53.0 DK GR MUDST CARBY	
																										53.0-56.4 S+P SANDST MED	
																										56.4-57.9 COARSE WHT BRN SANDST	
																										57.9-58.8 GR + BRN MUDST	
																										58.8-73.1 WHT BRN SANDST MUDST CAR LITERATURE CHIPS	
																										73.1-76.8 DK GR MUDST CARBY	
																										76.8-79.2 CARB SH COAL TRACES	
																										79.2-85.3 LT GR SILTY SAND MUDST	
																										85.3-87.5 DK GR MUDST	
																										87.5-89.9 LT GR SILTST	
																										89.9-91.4 SILTY LT GR MUDST	
																										91.4-93.9 COARSE WHT SANDST	
																										93.9-94.7 CONGLOMERATE	
																										94.7-109.4 LT BRN MUDST	
																										109.4-110.0 VOLCANICS	
																										110.0 - TD	


Cuttings Description

 Project PT 3 Contractor CORA INPTB Driller RICK Lith. by RICK HOLE TPR 90 pg of
 SE.# 311

 Remarks HOLE CASED TO 36.5 m (LEFT FORMED) Start Dec 19 Geo-log Depth

 Finish Date Isd S T R

13		16
4		1

Depth () from to	Lithology			Indurate				Coal				Other	Colour										Comments														
	Mdsn	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow					
0 1																																					
1 10																	✓	✓										✓									
10 13																		✓																			
13 18																						✓															
18 19																																					
19 24																	✓					✓															
24 34																	✓																				
34 37																		✓																			
37 42.5																	✓																				

 H₂O LOTS

 H₂O LOTS MORE

manalta Cuttings Description

Project TEKWA Contractor CORA LYNN Driller DEAN Lith. by DEAN HOLE 796R-92 pg 1 of 1

Remarks SITE 4 2 1/2" casing Start _____ Geo-log _____ Depth 80
 _____ Finish _____ Date _____ Isd S T R

13		16
4		1

Depth (M)	Lithology								Coal		Other	Colour											Indurate	Comments					
	Till	Grav	Sand	Sasn			Slsn	Mdsn	Dirty	Clean		Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black			Soft	Med.	Hard		
				C	M	F																							
1																													
17																													
20.5																													
24																													
29.5																													
31																													
34.5																													
36																													
70																													
80																													

Coal STRINGERS 46, 48, 53

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-93 pg of

Remarks SITE 308 Start Geo-log Depth 116m
18m CASING Finish Date AVG 20 Isd S T R

13		16
4		1

Depth ()	Lithology										Other	Colour										Indurate			Comments	
	Till	Grav	Sand	Sesn			Slsn	Mdsn	Coal			Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.		Hard
				C	M	F			Dirty	Clean																
16	✓											✓										✓				CLAY & ROCKS
26																						✓				
46																						✓				
60.5																						✓				STRINGERS TO 62m
62																						✓				
65.5																						✓				CALCITE STRINGERS IN COAL
66.5																						✓				
68																						✓				
68.9																						✓				70.3 GIDAL STRINGERS
74.5																						✓				Mdsn PARTINGS
76																						✓				
78																						✓				
81.5																						✓				
83																						✓				84.5 COAL STRINGERS 85.0
86																						✓				
98																						✓				
105																						✓				VOLCANIC CONGLOMERATE
110																						✓				VOLCANIC ROCK
114																						✓				VOLCANIC ROCK

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE 796R-95 pg of

Remarks Site 309 6m casing Start Geo-log Depth 79.5
 Finish Date AUG 21 lsd S T R

13	16
4	1

Depth ()	Lithology							Coal		Other	Colour											Indurate	Comments			
	Till	Grav	Sand	Sasn			Slen	Mden	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown			Black	Soft	Med.
4.5	✓											✓								✓		✓				CARBY STRINGERS
8.0										✓											✓	✓				
9.0										✓										✓	✓					CARBY Stringers
10.1										✓										✓	✓					
11.9										✓										✓	✓					
13.1										✓										✓	✓					
13.7										✓										✓	✓					
14.3										✓										✓	✓					
14.6										✓										✓	✓					
15.2																										
23.2										✓											✓	✓				
23.9										✓										✓	✓					
25										✓										✓	✓					
38				✓																		✓				VOLCANIC CONGLOMERATE 20gpm H ₂ O
42										✓										✓	✓					
45										✓											✓	✓				
46.5										✓										✓	✓					48.5 CARBY LAYER
50										✓										✓	✓					51.6 " "
54										✓										✓	✓					CARBY S.
61				✓						✓										✓	✓					
65				✓						✓										✓	✓					

manalta Cuttings Description

Project PT 12 Contractor CORA LYNN #5 Driller REK Lith. by REK HOLE T96 R97 pg of
 Remarks _____ Start Aug 21 Geo-log _____ Depth 96m
 Finish _____ Date _____ Isd S T R

13		16
4		1

Depth () from to	Lithology					Indurate			Coal				Other	Colour										Comments							
	Mdsn	S/Md	S/	S/SS	SS F M C	Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow	
0 2																															
2 4																															
4 8																															
8 13																															
13 15																															
15 18																															
18 19																															
19 20																															
20 22																															
22 25																															
* 25 25.5																															
25.5 26																															
* 26 27																															
27 30																															
* 30 32																															
32 34																															
* 34 36																															
36 41																															
41 45																															
# 45 47.5																															
# 47.5 49																															
49 54																															
54 57																															
57 64																															
64 70																															
70 85																															
85 96																															

H₂O @ 5 GPM

EMBEDDED COAL SF.

EMB. COAL SF.

Volcanic?

Volcanic CONGLOMERATES.

manalta Cuttings Description

Project TELUKWA Contractor CORA WNN Driller DEAN Lith. by DEAN HOLE T96R-99 pg 1 of 1

Remarks SITE S2 MUD 33m casing Start _____ Geo-log _____ Depth 80m
 Finish _____ Date 2/8/22 Isd S T R

13		16
4		1

Depth (m)	Lithology							Coal		Other	Colour											Indurate			Comments										
	Till	Grav	Sand	Sesn			Sltn	Mdsn	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.		Hard									
				C	M	F																													
2		✓																																	
14.5																																			
16.5		✓																																	
24.5																																			
28.0		✓																																	
32.5																																			
33		✓																																	
36.5												✓											✓	✓											
39												✓										✓	✓	✓											
41												✓										✓	✓	✓											
43.5												✓										✓	✓	✓											
47.5												✓										✓	✓	✓											
48.5												✓										✓	✓	✓											
49.5												✓										✓	✓	✓											
50												✓										✓	✓	✓											
54												✓										✓	✓	✓											
55.5												✓	✓	✓	✓							✓	✓	✓											
56												✓	✓	✓	✓							✓	✓	✓											
60.8												✓										✓	✓	✓											
80m												✓										✓	✓	✓											

CaC

manalta

Cuttings Description

Project TELKWA Contractor CORA CYMML Driller MIKE Lith. by MIKE HOLE T96R-103 pg 01

Remarks SITE 363 6m CASING Start _____ Geo-log _____ Depth 182m

Finish _____ Date NOV 23 1sd S T R

13				
16				
4				1

Depth ()	Lithology					Coal Dirty Clean	Other	Colour										Indurate			Comments						
	Till	Grav	Sand	Sasn C M F	Sltn			Mdan	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft		Med.	Hard				
4																											
30																											
96																											
104																											
109.5																											
110.3																											
115																											
124																											
125																											
140																											
142																											
155																											
160																											
164																											
164.5																											
165.5																											

65m CARBY
COAL STRIPPERS 87 490 497

118 CARBY
CONGLOMERATE

CARBY STRIPPERS
186 COAL STRIPPER
CONGLOMERATE

STRIPPERS 170-175

manalta Cuttings Description

Project 112 Contractor Bob Lynn #5 Driller Steve Lith. by Steve HOLE TAG 112 P9 - 01

Remarks _____ Start Aug 23 Geo-log _____ Depth 112 #2 305

Finish Aug 24 Date _____ Lsd _____ S _____ T _____ R _____

13				
16				
4				
				1

Depth () from to	Lithology					Indurate			Coal			Other	Colour							Comments															
	Mdsn	S/Md	S/	S/SS	F	SS	M	C	Soft	Med	Hard		Clean	Dirty	Ox	Bone	Carb	Clay	Sand		Grav	Till	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow		
0 2																																			
2 3																																			
5 13.5																																			
13.5 24																																			
27 30																																			
30 45																																			
40 46																																			
46 47																																			
49 50																																			
50 55																																			
55 57																																			
57 60																																			
60 61																																			
61 61.5																																			
61.5 63																																			
63 63.5																																			
63.5 65																																			
65 66																																			
66 69																																			
69 70																																			
70 73																																			
73 73.5																																			
73.5 76																																			
76 80																																			
80 81																																			
81 87																																			
87 87																																			
87 87																																			
87 85																																			
85 85																																			
85 109																																			
109 112																																			

Coal ST @ 77m

Coal ST @ 85.5m

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-107 pg of

Remarks AK 303 Start Geo-log Depth 116m

6m CW 51M/G Finish Date Aug 25 Isd S T R

13				
16				
4				
				1

Depth ()	Lithology						Coal Clean	Other	Colour										Indurate			Comments						
	Till	Grav	Sand	Sasn C M F					Slan	Mdan	Dirty	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown		Black	Soft	Med.	Hard		
9	✓																											
7																												
10																												
45																												
60																												
92																												
101																												
108																												

50m COKE
61m & 65m COAL 67 & 69 & 73
CARBY 80m
VOLCANIC CONGLOMERATE
COAL AT 101.3

manalta Cuttings Description

Project Pr 1/2 Contractor Costa Hydro #5 Driller Kick Lith. by Rick HOLE 196R 108 pg 108 of 302

Remarks _____ Start Feb 26 Geo-log _____ Depth 122 m

Finish _____ Date _____ Isd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coal					Other	Colour									Comments									
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow		
					F	M	C																											
0 6																																		
6 8																																		
8 10	✓							✓														✓												
10 11																																		
11 13	✓							✓																										
13 15								✓																										
15 21																																		
21 22																																		
22 35	✓																																	
35 38																																		
38 41	✓																																	
41 46																																		
41 42																																		
42 45	✓																																	
45 49	✓																																	
49 50																																		
50 90	✓																																	
90 93																																		
93 114																																		
114 122	✓																																	

COAL str @ 77 m

114-122 INORGANIC CONGLOMERATE

manalta Cuttings Description

Project TELKWA Contractor CORA LYN Driller DEAN Lith. by DEAN HOLE 196R-110 pg 1 of 1

Remarks SITE 2 Mud Start _____ Geo-log _____ Depth 42m

Finish _____ Date _____ Isd S T R

13		16
4		1

Depth (m)	Lithology							Coal		Other	Colour											Indurate			Comments			
	Till	Grav	Sand	Sasn			Slen	Mdan	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.		Hard		
				C	M	F																						
1																												
4		✓																										
22.5										Chc's Rocks																		
25.5																												
39.5										Clay + Rocks			✓										✓					Couldn't drill any deeper w/out mud so pulled off hole ... will redill water later with mud.

manalta Cuttings Description

Project VELKAD Contractor CORA Lynn #5 Driller Rick Lith. by Rick HOLE T96R111 #827 pg of

Remarks HOLE MIDDING OFF FROM 110M ON Start Aug 27 Geo-log Depth 560'

CUTTINGS DESC. EARLY SKETCHY 1296m ON Finish Date lsd S T R

13	16
4	1

Depth () from to	Lithology					Indurate			Coal				Carb	Clay	Sand	Grav	Till	Other	Colour										Comments									
	Mdsn	S/Md	S/	S/SS	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone							Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange		Yellow								
0	12													✓		✓																						
12	15				✓																																	
15	23	✓					✓																															
# 23	24																																		COAL SF @ 20m			
24	25	✓																																	SH BREAK @ 23.5			
# 25	25.5						✓																															
25.5	40	✓					✓																															
40	46	✓					✓																															
46	48													✓																						TRACE H ₂ O @ 47m		
# 48	51	✓																																				
51	52	✓																																				
52	52.5	✓																																				
# 52.5	53.5																																					
53.5	60	✓			VERY		✓																													COAL SF @ 55m, 58m		
60	68	✓					✓																															
68	87		✓				✓																															
87	96						✓																															
96	133	✓					✓																															
133	149	✓					✓																															
149	157																																					
157	163	✓					✓																															
163																																						

NON-AQUE CONGLOMERATE

PALITE EMPAIDED.

manalta Cuttings Description

Project TELKWA Contractor CORA LYNN Driller DEAN Lith. by DEAN HOLE T96R-112 pg 1 of 1

Remarks SITE 351 Start _____ Geo-log _____ Depth 75m

13		16
4		1

Finish _____ Date _____ Isd _____ S _____ T _____ R _____

Depth (M)	Lithology								Coal		Other	Colour											Indurate			Comments									
	Till	Grav	Sand	Sasn			Sltn	Mdsn	Dirty	Clean		Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.	Hard										
				C	M	F																													
28																																	SANDY CLAY		
30.5		✓																															CLAY ROCKS		
61																																	CLAY		
63.5?						✓									✓				✓					✓										VERY SILTY (LAKE BOTTOM)	
67										✓																									
75						✓									✓				✓					✓											VERY WEATHERED, IRON STAINED, ROUNDED

manalta Cuttings Description

Project _____ Contractor McAULEY Driller D. MACBETH Lith. by _____ HOLE R96 114 pg 1 of 1

Remarks _____ Start SEPT 6/96 Geo-log _____ Depth 110. M

Finish SEPT 7/96 Date _____ Isd S T R

13		16
4		1

Depth ()	Lithology								Coal Dirty Clean	Other	Colour													Indurate Soft Med. Hard	Comments		
	Till	Grav	Sand	Sasn			Slen	Mdsn			Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black						
				C	M	F																					
																										0 - 12	ROCKY GR BRN TILL
																										12 - 20.8	SAND S GRV
																										21.3 - 25.3	LT GR MUO ST
																										25.3 - 27.4	BLU GR SANDST MED
																										27.4 - 48.1	VOLCANICS
																										48.1 - 53.9	GR BRN SILTST CALCITE & PYRITE
																										53.9 - 54.2	CENTED PEA GRV
																										54.2 - 60.8	DK BAN GR MUO ST
																										60.8 - 61.2	CENTED PEA GRV
																										61.2 - 64.3	LT GR MUO ST
																										64.3 - 69.8	DK GR MUO ST BENJONITE BANDS
																										69.8 - 71.6	GRN BLUE MUO ST DK BRN SANDST BANDS
																										71.6 - 73.4	DK GR MUO ST LT GR BANDING.
																										73.4 - 81.7	DK GR BAN SILTST CALCITE & PYRITE
																										81.7 - 82.9	LT GR BRN MUO ST BLUE GR BANDING.
																										82.9 - 110	DK GR BRN SILTST CALCITE & PYRITE.
																										110 - 7D	

manalta Cuttings Description

Project TELKWA Contractor CORA LYNN Driller DEAN Lith. by DEAN HOLE T96R-115 pg 1 of 1

Remarks SITE 358 MUD Start _____ Geo-log _____ Depth _____
 Finish _____ Date _____ Isd S T R

13		16
4		1

Depth (m)	Lithology								Other	Colour										Indurate			Comments				
	Till	Grav	Sand	Sasn			Slen	Mden		Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black		Soft	Med.	Hard	
				C	M	F																					
13.7																											
19.8			✓																								
26.5									CLAY ROCKS																		
49							✓												✓				✓				Calcite Features
52.5								✓			✓								✓				✓				Thin layers of coarse sandstone
58			✓	✓							✓								✓				✓				
65								✓			✓								✓				✓				
73									CONGLOMERATE		✓	✓		✓				✓					✓				
85											✓								✓				✓				
95									CONGLOMERATE		✓	✓		✓				✓					✓				VERY COARSE
103																			✓				✓				
105								✓	CARB		✓								✓				✓				COOL STRINGERS
108																			✓				✓				
111								✓	CARB		✓								✓				✓				
113			✓								✓							✓	✓				✓				
117									VACC. ?		✓	✓		✓				✓					✓				
118									VACC.		✓								✓				✓				DARK GREEN TRANSPARENT INTERBED
119.5									VACC.		✓								✓				✓				
									VACC.		✓	✓						✓					✓				IRON PEBBLE INTERBED

manalta Cuttings Description

Project 102KWA Contractor CORA LYNN #3 Driller ALICE Lith. by ALICE #Mike. HOLE 196R 116 pg 1 of 1

Remarks JITB (DEUCES FARM) #352 Start Sept 8 Geo-log _____ Depth _____
 Abandoned Sept 8 @ 14.5m due to drilling problems
 Completed Sept 30 by Mike using mud. Finish Sept 30 Date _____ lsd _____ S _____ T _____ R _____

13		16
4		1

Depth () from to	Lithology				Indurate			Coal				Other	Colour									Comments							
	Mdsn	S/Md	S/	S/SS	F	SS		Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow
						M	C																						
0 25														<input checked="" type="checkbox"/>															
25 35															<input checked="" type="checkbox"/>														Dry Cemented Grav.
35 5														<input checked="" type="checkbox"/>															
5 6														<input checked="" type="checkbox"/>															
6 12														<input checked="" type="checkbox"/>															
12 135														<input checked="" type="checkbox"/>															
135 145														<input checked="" type="checkbox"/>															
145 102																													H ₂ O 10 GPM Clay & rocks to T.D. (102m) Abandoned @ 102 m.

manalta Cuttings Description

Project _____ Contractor McAULEY Driller D. MacBEITH Lith. by _____ HOLE 117 pg 1 of 1

Remarks _____ Start _____ Geo-log _____ Depth 158.5

13		16
4		1

Finish _____ Date _____ Isd S T R

Depth ()	Lithology								Coal		Other	Colour												Indurate			Comments			
	Till	Grav	Sand	Sasn			Sltn	Mden	Dirty	Clean		Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.	Hard					
				C	M	F																								
																														0-2.7 GR BRN CLY Reky
																														2.7-4.6 SAND
																														4.6-6.7 GRV
																														6.7-44.9 GR SANDST DISTURBED
																														14.9-19.2 GR MUDST CARB BANDS PYRITE CHIPS
																														19.2-19.3 COAL
																														19.3-22.2 GR BRN MUDST CARB COAL TRCK
																														22.2-24.7 SP SANDST INTAL. GR BRN MUDST
																														24.7-33.2 MULTI COLOURED SANDST
																														33.2-34.7 GR WHT MOD ST
																														34.7-36.6 WHT SAND ST
																														36.6-49.7 MULTI COLOURED SANDST
																														49.7-50.9 GR MUDST CARBY COAL BANOWNG
																														50.9-79.8 SP SANDST INTAL BZD SANDST & GR MUDST
																														79.8-82.3 CARBY BRN SILTST CALCITE & PYRITE
																														82.3-84.4 LT GR MUDST CARB TR.
																														84.4-88.4 SP SANDST INTAL LT GR MUDST CARB STRIPZRN
																														88.4-102.1 MULTI COLOURED SANDST
																														102.1-112.8 GR BRN SILTST CALCITE
																														112.8-113.9 DK BRN CALY MUDST
																														113.9-115.8 CARB SH & BENTONITE
																														115.8-123.4 GR BRN MUDST CARBTR.
																														123.4-126.5 DK BRN CARBY SAND ST
																														126.5-128 COAL BRN MUDST & BENTONITE
																														128-134.4 SILTST LT GR
																														134.4-146.3 MULTI COLOURED SANDST
																														146.3-146.9 CARB SH & COAL
																														146.9-148.7 BLUE GR LIMESTONE? PYRITE
																														148.7-158.5 VOLCANICS.
																														158.5-TD

manalta Cuttings Description

Project TENNIS CRK Contractor CORA LYNN #3 Driller RICK Lith. by RICK HOLE T96 R 120 pg of

Remarks SITE E Start SEPT 12 Geo-log _____ Depth _____

13		16
4		1

Finish _____ Date _____ Isd S T R

Depth () from to	Lithology					Indurate			Coal				Carb	Clay	Sand	Gray	Till	Other	Colour										Comments			
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty							Ox	Bone	Light	Dark	Grey	Brown	Blue	Green	Black	White		Red	Orange	Yellow
					F	M	C																									
0-7																																
7-25	✓						✓																									
25-25.4											✓																					
25.4-27	✓																✓	✓														
27-27.5											✓																					
27.5-32	✓						✓									✓	✓															
32-35.5											✓																					
35.5-43	✓						✓								✓																	
43-45												✓												COAL ST @ 44								
45-46.5	✓						✓														✓											
46.5-47												✓																				
47-59	✓						✓																									
50-63						✓		✓																								
63-65																																
65-72					✓			✓																								
<i>VOLCANIC CONGLOMERATE</i>																																

manalta Cuttings Description

Project TELKWA Contractor CORA LYNN Driller DEAN? Lith. by DEAN? HOLE T96R-121 pg 1 of 1

Remarks SITE C 9m casing Start _____ Geo-log _____ Depth 110

13		16
4		1

 Finish _____ Date 9/6/14 Isd S T R

Depth (M)	Lithology								Coal	Other	Colour											Indurate	Comments					
	Till	Grav	Sand	Sasn			Slen	Mdsn			Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray			Brown	Black	Soft	Med.	Hard
				C	M	F																						
4	✓																											
9									CLAY'S ROCKS																			
35							✓				✓												✓					
40.5						✓						✓											✓					
43							✓				✓												✓					
44.5								✓	coal		✓											✓						
47							✓				✓												✓					
49								✓	coal		✓											✓						
50							✓				✓												✓					
52								✓			✓												✓			Bentonite + mudstone.		
59							✓				✓												✓					
63.5							✓				✓												✓					
65								✓	coal		✓											✓						
66							✓				✓												✓					
70								✓	coal		✓											✓						
73.5							✓				✓												✓					
74.5?								✓			✓												✓					
77							✓		carb		✓											✓				85-86 coal		
10m						✓					✓											✓						

monalta Cuttings Description

Project JELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-122 pg of
 Remarks Site 480 Start Geo-log Depth 37m 13 16
3.75m CASING Finish Date Sept 14 Isd S T R
4 1

Depth (m)	Lithology							Colour															Indurate Soft Med. Hard	Comments	
	Till	Grav	Sand	Sasn			Slss	Mdan	Dirty	Clean	Other	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black			
C				M	F																				
	<input checked="" type="checkbox"/>																					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
3.75									<input checked="" type="checkbox"/>													<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		DAMP
5									<input checked="" type="checkbox"/>												<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
6									<input checked="" type="checkbox"/>												<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			H ₂ O
7.2									<input checked="" type="checkbox"/>												<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			H ₂ O
9.1									<input checked="" type="checkbox"/>												<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			H ₂ O
9.7									<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				VERY CARBY
15			<input checked="" type="checkbox"/>																			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		CONGLOMERATE
30											<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		VOLCANICS 25m?

manalta Cuttings Description

Project TELKWA Contractor CORA LYNN Driller DEAN Lith. by DEAN HOLE T96R-124 pg 1 of 1

Remarks SITE B 75' casing Start _____ Geo-log _____ Depth 91m
 Finish _____ Date _____ Isd S T R

13		16
4		1

Depth (M)	Lithology								Coal Dirty Clean	Other	Colour											Indurate Soft Med. Hard	Comments				
	Till	Gray	Sand	Sasn			Sltn	Mdsn			Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black						
				C	M	F																					
0-4	✓																										
4-7		✓																									
7-18									CLAY'S ROCKS																		
18-32		✓																									
32-35																											
35-43																											
43-45.5									CARBON LAYERS																		CARBON Coal 42 m
45.5-48																											
48-59.5																											
59.5-66.5																											
66.5-69																											
69-71																											
71-73									CARBON																		
73-78.5									CONGLOMERATE																		
78.5-80																											
80-91																											CARBON COAL LAYERS 91m

45

manalta Cuttings Description

Project TENNIS CREEK Contractor ROSA LYNN Driller RICK Lith. by RICK HOLE T9C-R25 pg of

Remarks SITE J Start SEP 15 Geo-log Depth 49

13		16
4		1

Finish Date lsd S T R

Depth () from to	Lithology					Indurate			Coal				Other	Colour										Comments										
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty		Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow		
	F	M	C	Soft	Med	Hard	Clean	Dirty	Ox	Bone	Carb	Clay		Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green	Black		White	Red	Orange	Yellow						
0 6.5																																		
6.5 7	✓							✓																										
7 9																																		
9 16						✓																												
16 16.2																																		
16.2 20	✓							✓																										
20 25																																		
25 26	✓							✓																										
26 26.5																																		
26.5 27	✓							✓																										
27 27.5																																		
27.5 28	✓							✓																										
28 28.5																																		
28.5 29	✓							✓																										
29 29.5																																		
29.5 34	✓							✓																										
34 37	✓							✓																										
37 49						✓		✓																										

FRAC H₂O 10GPM

CAL ST @ 36

manalta Cuttings Description

Project TELKWA Contractor COLA LYN Driller DEAN Lith. by DEAN HOLE TRK-127 pg 1 of 1

Remarks SITE A 89 casing Start _____ Geo-log _____ Depth 72m
 Finish _____ Date _____ Isd S T R

13		16
4		1

Depth (M)	Lithology								Coal	Other	Colour											Indurate	Comments					
	Till	Grav	Sand	Sasn			Slen	Mdsn			Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray			Brown	Black	Soft	Med.	Hard
				C	M	F																						
0-3	✓																											
3-21																												
21-26.5		✓																										
27												✓										✓						
33																						✓						
39																						✓	✓					
53												✓										✓						
54																						✓						
72												✓										✓						

manalta Cuttings Description

Project TENNAS CREEK Contractor Corah Hyatt Driller Rick Lith. by Rick HOLE T96 R179 pg. of

Remarks SITE K Start SEPT 16 Geo-log _____ Depth 66M Finish _____ Date _____ Isd S T R

13		16
4		1

Depth () from to	Lithology					Indurate			Coal				Carb	Clay	Sand	Grav	Till	Other	Colour										Comments
	Mdsn	S/Md	S	S/SS	SS F M C	Soft	Med	Hard	Clean	Dirty	Ox	Bone							Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	Orange	
0 8														✓															
8 12		✓					✓													✓									
12 21							✓													✓									
21 23										✓																			
23 34.5							✓																						
34.5 36										✓																			
36 38										✓																			
38 40										✓																			
40 43					✓		✓																						
43 44							✓																						
44 66		✓					✓																						

COAL ST @ 32M

manaka Cuttings Description

Project TEKKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-133 pg 01
 Remarks SITE 211 Start _____ Geo-log _____ Depth 152m
6.3m CASINGS Finish _____ Date SEPT 18/96 S _____ T _____ R _____

13			
4			1

Depth (m)	Lithology					Coal		Other	Colour										Indurate	Comments							
	Till	Grav	Sand	Sasn C M F	Slsn	Mdsn	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray			Brown	Black	Soft	Med.	Hard		
4	✓																										
8																											
17																											
32																											
37																											
46.7																											
97.4																											
101.5																											
102																											
111																											
119																											

POSSIBLE COAL (CHERRY)?
 111 COAL STRINGERS - ALLS, 119

manalta Cuttings Description

Project TELKWA Contractor CLA Driller MIKE Lith. by MIKE HOLE T96R-135 pg of

Remarks SITE 5 Start Geo-log Depth
 Finish Date Sept 7, 2014 Wed S T R

13	16
4	1

Depth (M)	Lithology										Other	Colour											Indurate			Comments	
	Till	Grav	Sand	Sasn			Slan	Mdn	Dirty	Clean		Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.	Hard		
				C	M	F																					
1.0	✓																				✓						
.5										✓											✓						
.7	✓																				✓						
2.1 2.3								✓			✓										✓						
8										✓												✓					
9.2								✓			✓										✓						
14										✓												✓					
14.3								✓													✓						15.6 CARBY
17										✓												✓					GAS
17.8								✓			✓										✓						
19.5										✓												✓					mdsn PARTING 20m
20.5								✓													✓						
21.1										✓												✓					
21.3								✓													✓						
25.9										✓												✓					
29.5								✓													✓						
32.6										✓												✓					
33								✓													✓						
37										✓											✓						
39										✓											✓						51.5 COAL-STRINGER
55										✓												✓					
56								✓													✓						
59										✓												✓					
64								✓													✓						
65										✓												✓					
65.7								✓													✓						
89										✓											✓						

manalta Cuttings Description

Project FELKWA Contractor CORA LYNN Driller DEAN Lith. by DEAN HOLE TROR-136 pg 1 of 1

Remarks 2.5m casing SET Start SOON Geo-log YES Depth 115m

Finish LATER Date NOT SURE Isd S T R

13		16
4		1

Depth (M)	Lithology								Coal	Other	Colour											Indurate			Comments		
	Till	Grav	Sand	Sasn			Slen	Mden			Dirty	Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft		Med.	Hard
				C	M	F																					
1	✓																										
2.5									Clay																		
5.5								✓													✓	✓					
9											✓										✓	✓	✓				
36						✓																					
37																											
40						✓					✓																
41											✓																
42								✓			✓																
44											✓																
46								✓			✓																
52											✓																
56						✓																					
75											✓																
115m																											

Siltstone and coal

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R-138 pg of

Remarks GM CASING SITE @ Start Geo-log Depth 103m
 Finish Date Sept 20 Isd S T R

13			16
4			1

Depth ()	Lithology										Other	Colour										Indurate			Comments	
	Till	Grav	Sand	Sasn			Sltn	Mdsn	Dirty	Clean		Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.		Hard
				C	M	F																				
0-5.0	✓											✓									✓	✓	✓			
5.6									✓													✓	✓			
5.7-8									✓			✓										✓	✓		FRACTURED	
8-8.2									✓													✓	✓			
8.2									✓													✓	✓		FRACTURED	
10.8									✓			✓										✓	✓			
11.5									✓			✓										✓	✓			
20																						✓	✓			
21.5									✓			✓										✓	✓			
22.7																						✓	✓			
23.7																						✓	✓			
27.7																						✓	✓		Mdsn PARTING @ 28.6 & 32m	
33									✓			✓										✓	✓			
42									✓			✓										✓	✓			
51									✓			✓										✓	✓			

manalta Cuttings Description

Project TELKWA Contractor CORA LYNN Driller DEAN Lith. by DEAN HOLE TR-139 pg 1 of 1

Remarks SITE V 3m casing Start _____ Geo-log _____ Depth 153m
 Finish _____ Date _____ Isd S T R _____

13		16
4		1

Depth (M)	Lithology							Coal		Other	Colour											Indurate	Comments					
	Till	Grav	Sand	Sasn			Slsn	Mdsn	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown			Black	Soft	Med.	Hard	
				C	M	F																						
10																												
10.5																												
18																												
19																												
21																												
22.5																												
30																												
42.5																												
44.0																												
49																												
51																												
52																												
54.5																												
58.5																												
61																												
65																												
70																												
82.5																												
83																												
87																												
89.5																												
90																												
92																												
115																												
153m																												

FRACTURE 24.5 15cm H₂O
 SLSA INTER BED

Coal STRINGERS
 Coal STRINGER 68m

Coal 85.5m

Coal 96m

COAL

manalta Cuttings Description

Project _____ Contractor McADULT Driller MacBETH Lith. by _____ HOLE T96R-140 pg 1 of 1

Remarks Site # M. Start _____ Geo-log _____ Depth _____

13		16
4		1

Finish _____ Date Sept 21 Isd S T R

Depth ()	Lithology								Coal		Other	Colour											Indurate			Comments		
	Till	Grav	Sand	Sasn			Slen	Mdsn	Dirty	Clean		Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.	Hard			
				C	M	F																						
																											0-2	BRN CLAY
																											2-4.2	CARB. TIL
																											4.2-5.2	GR MUDST
																											5.2-6.5	COAL
																											6.5-10.0	DKGR MUDST COALY
																											10.0-14.0	LT GR MUD & SILTST
																											14.0-16.4	COAL
																											16.4-18.0	DKGR MUDST CARBY
																											18.0-19.8	COAL
																											19.8-21.3	LT GR MUDST
																											21.3-24.7	LT GR SANDST
																											24.7-28.3	SAND SILT MUD GRBN
																											28.3-32.6	GRBN SS CARBY
																											32.6-32.5	GR MUDST COAL STRINGERS
																											32.5-37.6	COAL
																											37.6-40.4	GR MUDST
																											40.4-40.8	COAL
																											40.8-60.9	INTER BEDED SAND SILT MUD COAL COAL STRINGERS
																											60.9-73.1	GR MUDST
																											73.1-83.8	GR GRN SAND & SILTST
																											83.8-98.0	GR BRN SAND SILT MUDST
																											98.0-TD	

manalta Cuttings Description

Project TELKWA Contractor C.L.D Driller MIKE Lith. by MIKE HOLE T96R-141 pg of
 Remarks SITE R Start Geo-log Depth 110m
6m CASING Finish Date Sept 21/96 Isd S T R

13		16
4		1

Depth ()	Lithology							Coal		Other	Colour											Indurate	Comments				
	Till	Grav	Sand	Sasn			Slan	Mden	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown			Black	Soft	Med.	Hard
				C	M	F																					
0-4.7	✓	✓																			✓						
4.7								✓			✓									✓		✓					
11.8									✓													✓	✓				
12.2								✓												✓		✓					
14								✓			✓									✓		✓				CARBY STRINGERS	
16.7									✓													✓	✓				
17									✓		✓									✓		✓					
17.8									✓													✓	✓				
18									✓													✓	✓				
18.4									✓													✓	✓				
20.16							✓													✓		✓					
23.2									✓													✓	✓				
23.5								✓												✓		✓					
28.6									✓													✓	✓				
32.3									✓			✓								✓		✓					
34.9									✓													✓	✓				
35.4									✓											✓		✓					
38							✓													✓		✓					
49.2									✓													✓	✓				
51.7								✓												✓		✓					
53.9									✓													✓	✓				
55.9								✓			✓									✓		✓					
58.2									✓													✓	✓				
68.5								✓			✓									✓		✓				mdsn PARTINGS THROUGHOUT	

manalta Cuttings Description

Project RT3 Contractor COCA #5 Driller RICK Lith. by RCK HOLE TRGR143 pg. of

Remarks SITE W Start SEP 21 Geo-log _____ Depth 207
 Finish SEP 22 Date _____ lsd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments								
	Mdsn	S/Md	S/	S/SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow		
				F	M	C																											
0 3																																	
3 5	✓						✓																										
5 11			✓				✓																										
11 23	✓						✓																			✓							
23 46		✓					✓																										
46 67		✓					✓																										
* 67 64												✓																					
64 66							✓																										
66 70	✓						✓																										
70 76						✓																											
76 87					✓																												
* 87 90														✓																			
90 100	✓						✓																										
* 100 102														✓																			
102 104							✓																										
104 119			✓				✓																										
119 125	✓						✓																										
* 125 126												✓																					
126 130	✓						✓																										
* 130 133																																	
133 134	✓						✓																										
? 134 137														✓																			
137 141			✓				✓																										
* 141 142											✓																						
142 144		✓					✓																										
144 146												✓																					
144 149	✓											✓																					
149 162					✓		✓																			✓							
162 166							✓				✓																						

COAL ST @ 84

EMBS COAL ST @ 130

EMBEDDED COAL STRINGERS

manalta Cuttings Description

Project _____ Contractor McAULEY Driller MACBETH Lith. by _____ HOLE T96R - 145 pg 1 of 1

Remarks Site # 355 Start _____ Geo-log _____ Depth _____

Finish _____ Date Sept. 23 Isd S T R

13		16
4		1

Depth ()	Lithology							Coal		Other	Colour											Indurate			Comments			
	Till	Grav	Sand	Sasn			Slsn	Mdsn	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft	Med.		Hard		
				C	M	F																						
																											0-16.8	BROWN CLAY ROLLY
																											16.8-20.7	GR SANDST
																											20.7-27.4	GR MUD S SANDST
																											27.4-33.5	DK GR MUD S SANDST CARBY
																											33.5-40.8	MULTI COLOR SANDST
																											40.8-41.7	CARBY MUD ST COAL LENS
																											41.7-42.7	COAL CARB BANDS? OR BLACK SUCKER
																											42.7-49.0	BRN SILT ST
																											49.0-53.0	MULTI COLOR SANDST
																											53.0-63.1	GRN BRN MUD S SILT ST
																											63.1-65.8	BRN MUD ST CARB FLECKED
																											63.8-68.0	MULTI COLOR SILT ST
																											68.0-77.7	VOLCANICS
																											77.7-84.1	GR BRN MUD ST
																											84.1-91.5	GR BRN SANDST
																											91.5-	TD

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE 796R-146 pg of

Remarks site 300 Start Geo-log Depth
19.6m casing Finish Date Sept 23 Isd S T R

13		16
4		1

Depth ()	Lithology							Coal		Other	Colour										Indurate			Comments		
	Till	Grav	Sand	Sasn			Sltn	Mdsn	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black	Soft		Med.	Hard
				C	M	F																				
18.5	✓								✓			✓									✓	✓				
19.5											✓									✓		✓				201 COAL STRINGER
26				✓								✓								✓		✓				
28				✓																		✓				CONGLOMERATE
34												✓								✓		✓				35-7 36 CARBY STRINGERS
37												✓								✓		✓				
38.5				✓																		✓				CONGLOMERATE
39																					✓	✓				MDSN PARTING 40.1
41.5												✓									✓	✓				
42																						✓	✓			
42.5												✓									✓	✓				
44																						✓	✓			
45												✓									✓	✓				
45.9																						✓	✓			
46.1												✓									✓	✓				
47				✓								✓									✓	✓				
48.5												✓									✓	✓				
60				✓								✓									✓	✓				
67												✓										✓	✓			VOLCANIC CONGLOMERATE
71.5				✓								✓									✓	✓				CARBY 71m
72.5																						✓	✓			CONGLOMERATE
74												✓									✓	✓				
78				✓																		✓	✓			CONGLOMERATE
85												✓										✓	✓			VOLCANICS
97												✓										✓	✓			

manalta Cuttings Description

Project TALKWA Contractor CEA Lynn #5 Driller RICK Lith. by RICK HOLE T96 R148 pg of

Remarks SITE # 326 Start 5/27/00 Geo-log Depth 201m

Finish 5/27/00 Date Isd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coal				Other	Colour									Comments														
	Mdsn	S/Md	S/	S/SS	F	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow							
0 16															✓		✓																					
16 17	✓							✓							✓						✓																	
17 20															✓																							
* 17 19															✓																							
19 20															✓																							
20 50	✓							✓													10																	
50 53	✓														✓																							
* 53 55															✓																							
53 59	✓							✓													✓																	
59 71			✓					✓													✓																	
71 105	✓							✓																														
105 109	✓							✓																														
109 115					✓			✓																														
115 136					✓			✓																														
136 152	✓				✓			✓																														
152 152															✓																							
152 170	✓							✓																														
* 170 174															✓																							
174 201	✓							✓																														

ALMOST PETROLITE (HMM)
 (EMBEDDED BROWN MUD LAYERS)
 W/COAL STRINGERS

manalta Cuttings Description

Project TALKWA Contractor CORA hynn #5 Driller RAE Lith. by RAE HOLE T96 R152 pg of

Remarks SITE # 330 Start SEP 25 Geo-log Depth 201

Finish SEP 26 Date Isd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coal				Carb	Clay	Sand	Grav	Till	Other	Colour										Comments		
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox							Bone	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red		Orange	Yellow
					F	M	C																									
0 6																																
6 9																																
9 22	✓						✓																									
22 83	✓						✓																									
83 96						✓			✓																							
96 117	✓						✓		✓																							
117 150				✓			✓		✓																							
130 135	✓								✓																							
135 146	✓						✓		✓																							
146 167	✓						✓		✓																							
167 170					✓		✓		✓																							
170 182						✓			✓																							
182 188						✓			✓																							
188 194	✓						✓		✓																							
194 201	✓						✓		✓																	COAL STRINGS						

CONCRETE AT 182 VOLCANIC?

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T96R153 pg of

Remarks site 314 Start Geo-log Depth 201 m
21m casing Finish Date Sept 26 Isd S T R

13		16
4		1

Depth ()	Lithology								Coal Dirty Clean	Other	Colour											Indurate Soft Med. Hard	Comments					
	Till	Grav	Sand	Sasn			Slan.	Mdsn			Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown	Black							
				C	M	F																						
18	✓																											
18.7					✓																							
19																												
2.1							✓																				FRAGTURED	
30																											(1m Coal)	
31																												
32.5																											(1m Coal)	
33.2																											34.6 COAL STRENGER	
35.5																											(5m COAL)	
40.2																												
41																												
42.2																											(2m Coal)	
44.5																											(46.5 COAL STRENGER)	
48.1																												
49.6																											(115m Coal)	
87																												
150																												
160																												
185																												✓ 190m possible Coal

Hole: T96R-01
 Site: 32

Project: Telkwa 1996
 Date Finished: 07/11/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Mike

Drill Contr: Cora Lynn Drilling

Surveyed Location:

Driller: Mike

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma density caliper verticality
 sonic neutron electric dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
6.6	2.00	till, dark brown, soft
21.3	6.50	siltstone, light gray, soft
36.1	11.00	mudstone, dark gray, soft
44.3	13.50	sandstone (medium), dark gray, medium soft
52.5	16.00	siltstone, dark gray, soft
85.2	26.00	sandstone (fine), dark gray, medium soft
196.7	60.00	mudstone, light gray, soft
206.6	63.00	siltstone, dark gray, soft
216.4	66.00	mudstone, dark brown, soft
229.5	70.00	sandstone (fine), dark gray, medium soft
337.7	103.00	COAL (dirty), black, soft
357.4	109.00	, dark brown, soft
373.8	114.00	siltstone, dark gray, soft
380.3	116.00	mudstone, dark gray, medium soft
406.6	124.00	siltstone, dark gray, medium soft
426.2	130.00	COAL (dirty), dark brown, soft
449.2	137.00	siltstone, dark gray, soft
459.0	140.00	siltstone, dark gray, soft
524.6	160.00	siltstone, dark gray, hard
583.6	178.00	sandstone (fine), dark gray, medium soft
603.3	184.00	sandstone (medium), light gray, medium soft

Hole: T96R-02
 Core: 40

Project: Telkwa 1996
 Date Finished: 07/11/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w Lithology by: Dean

Drill Contr: Cora Lynn Drilling

Surveyed Location:

Driller: Dean

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma density sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
3.3	1.00	till
18.0	5.50	clay, red
19.7	6.00	- gravel
04.9	32.00	siltstone, dark gray, soft
114.8	35.00	sandstone (medium), light gray, medium soft
201.6	61.50	- mudstone, black, soft
216.4	66.00	COAL (dirty), black, soft
219.7	67.00	mudstone, dark brown, soft
223.0	68.00	- COAL (dirty), black, soft
226.2	69.00	mudstone, soft
231.1	70.50	siltstone, light gray, medium soft
234.4	71.50	- sandstone (medium), gray, medium soft
252.5	77.00	conglomerate, hard
262.3	80.00	conglomerate, dark gray, soft
275.4	84.00	- conglomerate, green, soft
298.4	91.00	conglomerate, light green, soft

File: T96R-03
 Hole: 31

Project: Telkwa 1996
 Date Finished: 07/11/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Rick

Drill Contr: Cora Lynn Drilling

Driller: Rick

Surveyed Location:

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

-Logs: gamma

sonic

density

neutron

caliper

electric

verticality

dipmeter

Casing: 0.0

Case Type:

Downhole Units: Feet

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
45.0	13.73	till, soft
63.0	19.22	sandstone (fine), dark gray, soft
10.0	33.55	sandy siltstone, light gray, medium soft
23.0	37.52	mudstone, dark brown, soft
140.0	42.70	mudstone, dark gray, soft
161.0	49.11	sandstone (fine), dark gray, soft
210.0	64.05	sandstone (fine), blue, medium soft
215.0	65.58	mudstone, black, soft
230.0	70.15	mudstone
260.0	79.30	mudstone, dark gray, soft
265.0	80.83	mudstone
280.0	85.40	silty mudstone, black, soft
287.0	87.54	COAL (dirty), black
298.0	90.89	silty mudstone, black, soft
330.0	100.65	mudstone, dark gray, soft
340.0	103.70	sandstone (medium), light gray, medium soft
365.0	111.33	silty mudstone, dark gray, medium soft
440.0	134.20	sandstone (fine), dark gray, hard

File: T96R-05
 Site: 38

Project: Telkwa 1996
 Date Finished: 07/12/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Dean

Drill Contr: Cora Lynn Drilling

Driller: Dean

Surveyed Location:

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
27.9	8.50	till
29.5	9.00	gravel
52.5	16.00	sandstone (medium), gray, medium soft
80.2	33.00	sandstone (fine), light gray, medium soft
139.3	42.50	sandstone (medium), dark gray, medium soft
167.2	51.00	mudstone, dark brown, soft
172.1	52.50	siltstone, dark gray, soft
188.5	57.50	COAL (dirty), black, soft
193.4	59.00	siltstone, dark brown, soft
200.0	61.00	COAL (dirty), black, soft
203.3	62.00	siltstone, dark gray, medium soft
209.8	64.00	COAL (dirty), black, soft
219.7	67.00	siltstone, dark gray, medium soft
265.6	81.00	COAL (dirty), black, soft
267.2	81.50	siltstone, dark gray, soft
273.8	83.50	COAL (dirty), black, soft
275.4	84.00	sandstone (fine), gray, medium soft

Hole: T96R-06
 Site: 35

Project: Telkwa 1996
 Date Finished: 07/12/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Rick

Drill Contr: Cora Lynn Drilling

Driller: Rick

Surveyed Location:

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
38.0	11.60	clay
41.0	12.50	gravel
55.7	17.00	- clay
72.1	22.00	sandstone (fine), light gray, soft
127.9	39.00	silty mudstone, dark gray, soft
141.0	43.00	- mudstone, black, soft
168.9	51.50	sandstone (fine), dark gray, medium soft
172.1	52.50	COAL (dirty)
175.4	53.50	- mudstone, gray, soft
182.0	55.50	COAL (clean)
198.4	60.50	mudstone, black, soft
206.6	63.00	- sandy siltstone, black, medium soft
219.7	67.00	mudstone
229.5	70.00	silty mudstone, black, medium soft
254.1	77.50	- COAL (dirty)
278.7	85.00	mudstone, black
295.1	90.00	sandstone (medium), brown, medium soft
314.8	96.00	- silty mudstone, black, soft
360.7	110.00	sandstone (fine), black, hard

File: T96R-08
 Site: 45

Project: Telkwa 1996
 Date Finished: 07/13/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Mike
 Drill Contr: Cora Lynn Drilling
 Driller: Mike

Surveyed Location:

Geoph. Comp:

N: 0.0
 E: 0.0
 EL: 0.0

Logs: gamma density sonic
 caliper neutron
 verticality electric
 dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
6.6	2.00	till, light gray, soft
11.5	3.50	mudstone, light gray, soft
16.4	5.00	COAL (clean), black, soft
17.0	5.20	mudstone, dark brown, soft
21.6	6.60	COAL (clean), black, soft
28.9	8.80	mudstone, light gray, soft
59.0	18.00	siltstone, dark brown, soft
78.0	23.80	sandstone (fine), light gray, soft
85.2	26.00	mudstone, dark gray, soft
98.4	30.00	sandstone (fine), light gray, soft
114.8	35.00	sandstone (fine), light gray, medium soft
121.3	37.00	conglomerate
154.1	47.00	sandstone (medium), dark gray, medium soft
170.5	52.00	siltstone, dark gray, medium soft
186.9	57.00	siltstone, dark brown, hard
190.2	58.00	sandstone (medium), dark brown, hard
193.4	59.00	conglomerate
219.7	67.00	-

Hole: T96R-09
 Site: 39

Project: Telkwa 1996
 Date Finished: 07/13/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Dean

Drill Contr: Cora Lynn Drilling

Driller: Dean

Surveyed Location:

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
11.5	3.50	till
14.8	4.50	gravel
27.9	8.50	till
34.4	10.50	COAL (dirty), black, soft
88.5	27.00	sandstone (fine), dark gray, medium soft
91.8	28.00	COAL (dirty), black, soft
119.7	36.50	sandstone (medium), light gray, hard
124.6	38.00	mudstone, dark brown, soft
278.7	85.00	sandstone (medium), light gray, medium soft
285.2	87.00	mudstone, dark gray, soft
293.4	89.50	sandstone (fine), gray, medium soft
318.0	97.00	siltstone, dark gray, soft
354.1	108.00	mudstone, dark gray, soft
367.2	112.00	sandstone (coarse), gray, hard

File: T96R-10
 Site: 30

Project: Telkwa 1996
 Date Finished: 07/14/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Rick

Drill Contr: Cora Lynn Drilling

Surveyed Location:

Driller: Rick

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
16.4	5.00	clay, brown
23.0	7.00	silty mudstone, dark gray, soft
32.8	10.00	sandstone (fine), dark gray, soft
52.5	16.00	mudstone, black, soft
62.3	19.00	COAL (clean)
75.4	23.00	mudstone, soft
85.2	26.00	silty mudstone, black, soft
91.8	28.00	COAL (dirty)
98.4	30.00	mudstone
116.4	35.50	sandstone (fine), dark gray, hard
121.3	37.00	sandstone (coarse), dark brown, hard
134.4	41.00	conglomerate, hard
193.4	59.00	sandstone (fine), black, hard
203.3	62.00	sandstone (medium), brown, hard
216.4	66.00	conglomerate, hard

Hole: T96R-11
 Site: 46

Project: Telkwa 1996
 Date Finished: 07/14/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Mike

Drill Contr: Cora Lynn Drilling

Driller: Mike

Surveyed Location:

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
6.6	2.00	mudstone, dark gray
10.5	3.20	COAL (clean), black; soft
13.1	4.00	siltstone, dark gray, soft
36.1	11.00	COAL (clean), black, soft
36.7	11.20	siltstone, dark gray, soft
46.6	14.20	COAL (dirty), black, soft
47.9	14.60	siltstone, dark gray, soft
52.8	16.10	COAL (clean), black, soft
54.4	16.60	siltstone, dark gray, soft
75.4	23.00	COAL (clean), black, soft
78.7	24.00	mudstone, dark gray, soft
79.0	24.10	COAL (clean), black, soft
80.0	24.40	mudstone, dark gray, soft
82.0	25.00	COAL (clean), black, soft
85.2	26.00	mudstone, dark gray, soft
85.9	26.20	COAL (dirty), black, soft
86.2	26.30	siltstone, dark gray, soft
111.8	34.10	COAL (clean), black, soft
113.1	34.50	siltstone, gray, soft
137.7	42.00	sandstone (fine), dark gray, medium soft
147.5	45.00	sandstone (medium), medium soft
191.8	58.50	sandstone (fine), dark brown, medium soft
318.0	97.00	COAL (dirty), black, soft
321.3	98.00	siltstone, dark brown, medium soft
327.9	100.00	siltstone, light green, medium soft
337.7	103.00	siltstone, dark red, hard
350.8	107.00	sandstone (fine), dark red, hard

Hole: T96R-14
 Date:

Project: Telkwa 1996
 Date Finished: 07/14/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Rick
 Drill Contr: Cora Lynn Drilling
 Driller: Rick

Surveyed Location:

Geoph. Comp:

N: 0.0
 E: 0.0
 EL: 0.0

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0
 Case Type:
 Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
9.8	3.00	clay, brown
29.5	9.00	clay, gray
78.7	24.00	- sandstone (fine), gray, soft
95.1	29.00	mudstone, dark gray, soft
149.2	45.50	sandstone (medium), dark gray, medium soft
166.9	50.90	- siltstone, gray, medium soft
172.1	52.50	COAL (dirty), black, soft
183.6	56.00	siltstone, gray, medium soft
216.4	66.00	- mudstone, gray, soft
237.7	72.50	COAL (dirty), black, soft
277.1	84.50	sandy siltstone, light gray, medium soft
298.4	91.00	- mudstone, dark gray, medium soft
314.8	96.00	sandstone (fine), gray, medium soft
327.9	100.00	mudstone, dark gray, soft
337.7	103.00	- sandstone (medium), gray, medium soft
398.4	121.50	sandy siltstone, light gray, hard

Hole: T96R-15
 Site: 37

Project: Telkwa 1996
 Date Finished: 07/15/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Dean

Drill Contr: Cora Lynn Drilling

Driller: Dean

Surveyed Location:

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma density sonic
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
6.6	2.00	till
8.2	2.50	gravel
36.1	11.00	till
37.7	11.50	gravel
95.1	29.00	siltstone, gray, soft
101.6	31.00	gravel, gray, medium soft
118.0	36.00	gravel, gray, soft
168.9	51.50	sandstone (fine), gray, medium soft
172.1	52.50	COAL (dirty), black, hard
198.4	60.50	sand, medium soft
200.0	61.00	COAL (dirty), black, soft
213.1	65.00	sand, medium soft
219.7	67.00	COAL (dirty), black, soft
223.0	68.00	siltstone, dark gray
237.7	72.50	siltstone, black
278.7	85.00	siltstone, dark gray, medium soft
285.2	87.00	siltstone, light gray
311.5	95.00	siltstone, dark gray, medium soft
360.7	110.00	sandstone (fine), dark gray, hard
368.9	112.50	sandstone (medium), dark gray, hard
391.8	119.50	sandstone (coarse), hard
419.7	128.00	sandstone (fine), dark gray, hard

Hole: T96R-16
 Site: 57

Project: Telkwa 1996
 Date Finished: 07/14/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Mike

Drill Contr: Cora Lynn Drilling

Driller: Mike

Surveyed Location:

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
1.0	0.30	COAL (clean), black, soft
3.9	1.20	siltstone, light gray, soft
4.9	1.50	COAL (clean), black, soft
8.2	2.50	mudstone, light gray, soft
13.1	4.00	siltstone, light gray, medium soft
19.7	6.00	mudstone, soft
24.6	7.50	COAL (dirty), black, medium soft
25.2	7.70	siltstone, light gray, soft
31.1	9.50	COAL (clean), black, soft
38.0	11.60	sandstone (fine), light gray, soft
46.6	14.20	COAL (clean), black, soft
59.7	18.20	mudstone, dark brown, soft
65.6	20.00	sandstone (fine), light gray, soft
77.0	23.50	siltstone, light brown, soft
98.4	30.00	sandstone (fine), dark brown, soft
108.2	33.00	sandstone (coarse), medium soft
115.7	35.30	COAL (dirty), black, soft
118.4	36.10	siltstone, dark gray, soft
144.3	44.00	sandstone (fine), light gray, medium soft
147.5	45.00	sandstone (coarse), medium soft
193.4	59.00	sandstone (fine), dark gray, soft
236.1	72.00	sandstone (coarse), soft

Hole: T96R-19
 Date: 21

Project: Telkwa 1996
 Date Finished: 07/15/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Mike

Drill Contr: Cora Lynn Drilling

Driller: Mike

Surveyed Location:

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma density caliper verticality
 sonic neutron electric dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
7.5	2.30	siltstone, dark brown, soft
48.9	14.90	COAL (clean), black, soft
49.8	15.20	siltstone, dark gray, soft
75.1	22.90	COAL (clean), black, soft
80.3	24.50	siltstone, dark gray, soft
112.5	34.30	COAL (clean), black, soft
115.1	35.10	siltstone, light brown, soft
117.7	35.90	siltstone, dark brown, soft
119.7	36.50	COAL (clean), black, soft
131.8	40.20	siltstone, dark gray, soft
133.1	40.60	COAL (clean), black, soft
134.8	41.10	siltstone, dark gray, soft
137.7	42.00	sandstone (fine), dark brown, medium soft
139.3	42.50	sandstone (coarse), light brown, hard
154.1	47.00	siltstone, dark gray, soft
185.2	56.50	sandstone (fine), dark gray, medium soft
214.8	65.50	sandstone (coarse), soft
229.5	70.00	sandstone (fine), dark gray, soft

Well: T96R-21
 Core:

Project: Telkwa 1996
 Date Finished: 07/15/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Rick
 Drill Contr: Cora Lynn Drilling
 Driller: Rick

Surveyed Location:

N: 0.0
 E: 0.0
 EL: 0.0

Geoph. Comp:

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
19.7	6.00	clay
23.0	7.00	gravel
36.1	11.00	clay
55.7	17.00	sandstone (medium), gray, medium soft
95.1	29.00	sandstone (fine), light gray, soft
118.0	36.00	mudstone, gray, soft
127.9	39.00	mudstone, soft
144.3	44.00	mudstone, dark gray, soft
154.1	47.00	silty mudstone, light gray, soft
163.9	50.00	mudstone, black, soft
177.0	54.00	COAL (clean), light gray
186.9	57.00	mudstone, soft
190.2	58.00	carby
195.1	59.50	COAL (clean)
203.3	62.00	mudstone, dark gray, soft
209.8	64.00	carby
216.4	66.00	mudstone, dark gray, soft
223.0	68.00	sandstone (fine), black, medium soft
232.8	71.00	sandstone (coarse), dark gray, medium soft
249.2	76.00	sandstone (coarse), brown
255.7	78.00	carby
275.4	84.00	silty mudstone, black, medium soft

Hole: T96R-22
 Site: 41

Project: Telkwa 1996
 Date Finished: 07/16/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Dean

Drill Contr: Cora Lynn Drilling

Surveyed Location:

Driller: Dean

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
19.7	6.00	till
21.3	6.50	gravel
24.6	7.50	till
95.1	29.00	siltstone, dark gray, soft
98.4	30.00	COAL (dirty), black, soft
109.8	33.50	siltstone, dark gray, soft
127.9	39.00	COAL (dirty), black, medium soft
132.8	40.50	siltstone, dark gray, soft
144.3	44.00	COAL (dirty), black, medium soft
160.7	49.00	siltstone, dark gray, hard
163.9	50.00	siltstone, dark gray, medium soft
175.4	53.50	siltstone, dark gray, hard
177.0	54.00	COAL (dirty), medium soft
219.7	67.00	siltstone, gray, medium soft
229.5	70.00	siltstone, black, medium soft
311.5	95.00	siltstone, gray, hard
349.2	106.50	sandstone (medium), dark gray, hard
360.7	110.00	sandstone (coarse), medium soft
419.7	128.00	sandstone (medium), dark gray, hard

File: T96R-24
 Site:

Project: Telkwa 1996
 Date Finished: 07/16/96 (Month/Day/Year)

Torrens Location:

lsd sect twp rg w

Lithology by: Mike

Drill Contr: Cora Lynn Drilling

Driller: Mike

Surveyed Location:

Geoph. Comp:

N: 0.0

E: 0.0

EL: 0.0

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0

Case Type:

Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
8.2	2.50	gravel, medium soft
9.8	3.00	till, dark gray, soft
19.7	6.00	siltstone, dark gray, soft
73.8	22.50	COAL (clean), black, soft
74.8	22.80	mudstone, dark gray, soft
92.1	28.10	COAL (clean), black, soft
95.4	29.10	siltstone, dark brown, soft
123.0	37.50	COAL (clean), black, soft
128.5	39.20	mudstone, dark gray, soft
131.5	40.10	COAL (clean), black, soft
147.9	45.10	siltstone, dark brown, soft
190.2	58.00	COAL (clean), black, soft
216.4	66.00	mudstone, dark brown, soft
219.7	67.00	siltstone, dark gray, soft
232.8	71.00	sandstone (coarse), light brown, soft
242.6	74.00	siltstone, dark gray
262.0	79.90	COAL (dirty), black, soft
273.4	83.40	mudstone, soft
311.5	95.00	sandstone (fine), light gray, soft
409.8	125.00	sandstone (coarse), light brown, hard

Hole: T96R-25
 Core: 29]

Project: Telkwa 1996
 Date Finished: 07/17/96 (Month/Day/Year)

Torrens Location:
 Tsd sect twp rg w

Lithology by: Rick
 Drill Contr: Cora Lynn Drilling

Surveyed Location:

Driller: Rick

Geoph. Comp:

N: 0.0
 E: 0.0
 EL: 0.0

Logs: gamma sonic
 density neutron
 caliper electric
 verticality dipmeter

Casing: 0.0
 Case Type:
 Downhole Units: Meters

other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION
23.0	7.00	clay
82.0	25.00	mudstone, gray, soft
14.8	35.00	silty mudstone, gray, soft
18.0	36.00	carby, soft
119.7	36.50	COAL (clean)
129.5	39.50	carby, soft
132.8	40.50	COAL (clean)
150.8	46.00	silty mudstone, light gray, soft
177.0	54.00	mudstone, black, soft
186.9	57.00	COAL (dirty)
196.7	60.00	carby
219.7	67.00	mudstone, light gray, soft
255.7	78.00	siltstone, black, medium soft

TELKWA 1997 DRILL-HOLE SUMMARY

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. hole Samples	Date Drilled	Driller	Comments
T97R-01	2	153.8	GDCDp	23.0	19.0	Pit #3	---	---	18-Jul-97	SDS; Garth	
T97R-02	4	97.0	GDC	5.5	0.3	Pit #3	---	---	18-Jul-97	CoraLynn; Rick B.	
T97R-03	6	190.0	GDCDp	6.0	4.5	Pit #3	---	---	18-Jul-97	Cora Lynn; Mike	
T97R-04	7	164.6	GDC	5.5	4.6	Pit #3	---	---	19-Jul-97	CoraLynn; Rick B.	
T97R-05	1	136.4	GDC	47.6	44.0	Pit #3	---	---	18-Jul-97	SDS; Garth	
T97R-06	5	176.0	GDCDp	6.0	4.5	Pit #3	---	---	20-Jul-97	Cora Lynn; Mike	
T97R-07	516	206.5	GDC	12.0	6.1	Pit #3	---	---	22-Jul-97	Cora Lynn; Rick B	
T97R-08C	42	155.4	GDC	19.0	18.0	Pit #3	27	42	27-Jul-97	Cora Lynn; Rick V	Pit #3; ARD #1
T97R-09	11	61.0	GDC	6.0	3.2	Pit #3	---	---	21-Jul-97	Cora Lynn; Mike	
T97R-10	513	66.0	G	12.2	7.0	Pit #3	---	---	22-Jul-97	Cora Lynn; Mike	Geoph. log only to 58.1 m.
T97R-11	515	91.8	GDCDp	5.2	0.5	Pit #3	---	---	22-Jul-97	SDS; Garth	
T97R-12	10	97.0	GDCDp	5.7	3.0	Pit #3	---	---	22-Jul-97	Cora Lynn; Mike	Piezometre (single in #2-seam)
T97R-13	54	148.8	GNC	11.0	55.0	Pit #3	---	---	26-Jul-97	SDS; Garth	
T97R-14	8	192.1	GDCDp	6.0	2.6	Pit #3	---	---	24-Jul-97	Cora Lynn; Rick B	
T97R-15	15	79.3	GDC	5.8	5.0	Pit #3	---	---	24-Jul-97	Cora Lynn; Mike	Piezometre (double in #3 & 4/5-seam)
T97R-16	9	128.5	GNDC	6.0	3.0	Pit #3	---	---	25-Jul-97	Cora Lynn; Rick B	
T97R-17	3	116.0	GDCDp	24.5	21.5	Pit #3	---	---	26-Jul-97	Cora Lynn; Mike	Piezometre (double in #2/3 & 4/5-seam)
T97R-18	519	188.3	GDC	24.8	19.1	Pit #3	---	---	27-Jul-97	Cora Lynn; Rick B	
T97R-19	52	197.4	GDC	48.3	41.0	Pit #3	---	---	29-Jul-97	SDS; Garth	
T97R-20	24	163.8	GDCVDp	6.0	5.5	Pit #3	---	---	30-Jul-97	Cora Lynn; Mike	Piezometre (double in #4/5 & #8). Single in #2.
T97R-21	28	140.0	GDCVDp	13.3	7.0	Pit #3	---	---	30-Jul-97	Cora Lynn; Rick V	Piezometre (single in c-seam??)
T97R-21C	28	98.0	GDC	13.2	7.0	Pit #3	20	31	29-Jul-97	Cora Lynn; Rick V	Pit #3; ARD #2 and Piezometre (#1-seam)
T97R-22	517	205.8	GDCVDp	11.7	3.0	Pit #3	---	---	29-Jul-97	Cora Lynn; Rick B	
T97R-23	501	104.8	GDCVDp	43.0	39.0	Pit #3	---	---	31-Jul-97	SDS; Garth	Piezometre (single in #1-seam)
T97R-24	518	205.5	GDCVDp	6.2	5.0	Pit #3	---	---	31-Jul-97	Cora Lynn; Rick B	
T97R-25	25	79.0	GDCVDp	6.0	3.4	Pit #3	---	---	31-Jul-97	Cora Lynn; Dean	
T97R-26	23	110.3	GDCVDp	6.0	5.0	Pit #3	---	---	1-Aug-97	Cora Lynn; Dean	
T97R-27	510	161.0	GDCVDp	55.8	53.0	Pit #3	---	---	2-Aug-97	SDS; Garth	
T97R-28	514	80.5	GDCVDp	6.0	3.0	Pit #3	---	---	1-Aug-97	Cora Lynn; Rick B	
T97R-29	22	89.3	GDC	5.8	5.0	Pit #3	---	---	2-Aug-97	Cora Lynn; Dean	
T97R-30	512	72.8	GDCDp	5.8	3.2	Pit #3	---	---	2-Aug-97	Cora Lynn; Rick B	
T97R-31	21	95.3	GDC	5.7	5.6	Pit #3	---	---	2-Aug-97	Cora Lynn; Dean	
T97R-32	27	176.0	GDC	6.0	6.0	Pit #3	---	---	12-Aug-97	Cora Lynn; Rick V	Logged thru rods to 162.8 metres.
T97R-32C	27	170.0	GDC	12.0	6.0	Pit #3	11	77	15-Aug-97	Cora Lynn; Rick V	
T97R-33	12	125.4	GDCV	5.6	4.0	Pit #3	---	---	12-Aug-97	Cora Lynn; Rick B	Piez (3 x singles; #2-mdsn, #3 SS & upr SS) ARD #3
T97R-34	503	183.0	GDCV	10.7	9.0	Pit #3	---	---	12-Aug-97	SDS; Garth	Log TD = 175.4 metres.
T97R-35	97	128.0	GDCVDp	14.8	13.0	Pit #3	---	---	12-Aug-97	Cora Lynn; Dean	
T97R-36	44	164.2	GDVC	11.5	9.0	Pit #3	---	---	13-Aug-97	Cora Lynn; Mike	Piezometre (single; #2-mudstone)
T97R-36W	44	132.6	GDVC	11.6	9.0	Pit #3	---	---	22-Aug-97	Dave Schroeder; SWW	Waterwell completed at site.
T97R-37	506	115.0	GNDC	0.0	67.0	Pit #3	---	---	15-Aug-97	SDS; Garth	

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. hole Samples	Date Drilled	Driller	Comments
T97R-38	14	70.8	GDC	10.0	5.0	Pit #3	---	---	15-Aug-97	Cora Lynn; Rick B	
T97R-39	45	121.1	GDCVDp	24.5	22.0	Pit #3	---	---	15-Aug-97	Cora Lynn; Mike	
T97R-40	13	97.4	GDCVDp	24.2	23.0	Pit #3	---	---	16-Aug-97	Cora Lynn; Rick B	
T97R-41	505	110.5	GDCVDp	43.2	41.0	Pit #3	---	---	16-Aug-97	SDS; Garth	
T97R-42C	18	160.9	GDCV	4.5	3.9	Pit #3	20	56	19-Aug-97	Cora Lynn; Rick V	LSp Dnsy to 154.0 m. SSp Dnsy to 107.0m. ARD #4
T97R-43	40	175.8	GDCVDp	11.0	6.0	Pit #3	---	---	17-Aug-97	Cora Lynn; Mike	
T97R-44	20	149.6	GDCVDp	12.4	11.0	Pit #3	---	---	18-Aug-97	Cora Lynn; Rick B	
T97R-45	51	124.0	GDCVDp	44.5	41.0	Pit #3	---	---	17-Aug-97	SDS; Garth	
T97R-46	32	171.5	GDCVDp	12.5	11.0	Pit #3	---	---	18-Aug-97	Cora Lynn; Mike	
T97R-47	50	145.2	GDC	44.3	41.0	Pit #3	---	---	19-Aug-97	SDS; Garth	
T97R-48	19	133.2	GDCVDp	11.5	8.5	Pit #3	---	---	19-Aug-97	Cora Lynn; Rick B	
T97R-49	41	116.4	GDCVDp	12.0	11.0	Pit #3	---	---	19-Aug-97	Cora Lynn; Mike	Piezometre (single; Seam #3-sandstone)
T97R-50	49	210.5	GDCVDp	23.5	20.0	Pit #3	---	---	20-Aug-97	SDS; Garth	
T97R-51	96	100.8	GDCVDp	10.5	16.0	Pit #3	---	---	20-Aug-97	Cora Lynn; Rick B	
T97R-52	43	169.3	GDCVDp	15.5	15.0	Pit #3	---	---	24-Aug-97	Cora Lynn; Rick B	
T97R-53	55	109.7	GD	0.0	48.5	Pit #3	---	---	25-Aug-97	Cora Lynn; Rick V	
T97R-54	48	133.0	GDCVDp	30.0	25.0	Pit #3	---	---	22-Aug-97	Cora Lynn; Mike	
T97R-55	53	197.2	GDCVDp	44.2	42.0	Pit #3	---	---	22-Aug-97	SDS; Garth	
T97R-56	46	151.8	GDCVDp	28.2	25.0	Pit #3	---	---	23-Aug-97	Cora Lynn; Mike	
T97R-57	47	204.7	GDCVDp	38.0	36.0	Pit #3	---	---	24-Aug-97	SDS; Garth	
T97R-58	509	140.3	GDVC	4.0	2.0	Pit #3	---	---	24-Aug-97	Cora Lynn; Mike	
T97R-59	29	150.1	GDVC	5.7	5.0	Pit #3	---	---	25-Aug-97	Cora Lynn; Rick B	
T97R-60	502	147.3	GDCVDp	39.1	38.5	Pit #3	---	---	26-Aug-97	SDS; Garth	No cuttings description
T97R-61	504	147.0	GDVC	11.0	8.0	Pit #3	---	---	26-Aug-97	Cora Lynn; Mike	
T97R-62	126	60.1	GDCVDp	4.7	4.7	Tenas	---	---	26-Aug-97	Cora Lynn; Rick B	
T97R-63	56	146.0	GDC	63.0	102.0	Pit #3	---	---	10-Sep-97	Cora Lynn; Rick V	
T97R-64	507	110.4	GDVC	24.9	24.9	Pit #3	---	---	28-Aug-97	SDS; Garth	
T97R-65	105	29.8	GDC	0.0	0.0	Tenas West	---	---	27-Aug-97	Cora Lynn; Rick B	
T97R-66	100	36.5	GDC	4.3	3.0	Tenas West	---	---	27-Aug-97	Cora Lynn; Rick B	
T97R-67	129	79.4	GDC	5.0	5.0	Tenas West	---	---	28-Aug-97	Cora Lynn; Rick B	
T97R-68	508	141.7	GDVC	30.7	23.0	Pit #3	---	4	29-Aug-97	SDS; Garth	Gravel ARD samples #1 = 0-6m, #2 = 6-12m, #3 = 12-18m
T97R-69	125	128.0	GDVCDp	11.0	13.0	Tenas	---	---	29-Aug-97	Cora Lynn; Rick B	Dipmeter stuck in hole @ 60.0 m.
T97R-70	118	45.8	GDC	11.0	11.0	Tenas	---	---	29-Aug-97	Cora Lynn; Mike	
T97R-71	117	103.7	GDVCDp	12.5	14.0	Tenas	---	---	29-Aug-97	Cora Lynn; Mike	
T97R-72	511	134.4	GDVC	12.5	9.0	Pit #3	---	---	29-Aug-97	SDS; Garth	
T97R-73	26	163.0	GDVCDp	5.7	5.8	Pit #3	---	---	9-Sep-97	Cora Lynn; Mike	
T97R-74	63	92.0	GDCV	16.9	15.0	Pit #6	---	---	9-Sep-97	SDS; Garth	
T97R-75	123	135.1	GDCVDp	15.5	15.0	Tenas	---	---	8-Sep-97	Cora Lynn; Rick B	
T97R-76	66	181.6	GDCVDp	23.7	20.0	Pit #6	---	---	9-Sep-97	SDS; Garth	
T97R-77	31	169.8	GDVC	6.5	6.5	Pit #3	---	---	12-Sep-97	Cora Lynn; Mike	
T97R-78	119	85.8	GDVCDp	9.0	9.5	Tenas	---	---	9-Sep-97	Cora Lynn; Rick B	Flowed @ 2gpm, plugged
T97R-79	121	50.0	GDC	9.0	9.5	Tenas	---	---	10-Sep-97	Cora Lynn; Rick B	

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. hole Samples	Date Drilled	Driller	Comments
T97R-80	120	91.3	GDCVDp	10.6	10.5	Tenas	---	---	11-Sep-97	Cora Lynn; Rick B	
T97R-81	75	114.4	GDCVDp	5.5	5.0	Pit #6	---	---	10-Sep-97	SDS; Garth	
T97R-82C	69	180.0	GDCVDp	29.5	32.0	Pit #6	36	49	14-Sep-97	Cora Lynn; Rick V	Pit #6 ARD #1
T97R-83	74	90.0	GDC	16.5	14.0	Pit #6	---	---	12-Sep-97	SDS; Garth	
T97R-84	122	90.0	GDCVDp	16.5	13.0	Tenas	---	---	12-Sep-97	Cora Lynn; Rick B	
T97R-85	73	134.8	GDCVDp	35.2	33.0	Pit #6	---	---	12-Sep-97	SDS; Garth	
T97R-86	30	170.0	GDCVDp	10.3	10.1	Pit #3	---	---	13-Sep-97	Cora Lynn; Mike	
T97R-87	127	116.8	GDCVDp	10.5	9.5	Tenas	---	---	13-Sep-97	Cora Lynn; Rick B	
T97R-88	152	49.5	GDC	17.6	16.5	Tenas	---	3	13-Sep-97	SDS; Garth	Gravel samples #1 0-6m #2 6m-12m #3 12m-16.5m
T97R-89	34	115.4	GDCVDp	9.8	8.5	Pit #3	---	---	14-Sep-97	Cora Lynn; Mike	
T97R-90	156	98.0	GDCVDp	24.0	21.0	Tenas	---	---	14-Sep-97	SDS; Garth	
T97R-91	128	67.5	GDC	10.8	9.0	Tenas	---	---	15-Sep-97	Cora Lynn; Rick B	
T97R-92	36	121.1	GDCVDp	12.9	12.0	Pit #3	---	---	15-Sep-97	Cora Lynn; Mike	
T97R-93	37	139.3	GDCVDp	13.1	11.0	Pit #3	---	---	16-Sep-97	Cora Lynn; Mike	
T97R-94	108	30.0	GDC	4.5	1.0	Tenas	---	---	16-Sep-97	Cora Lynn; Rick B	
T97R-95	103	36.0	GDC	0.0	1.0	Tenas	---	---	16-Sep-97	Cora Lynn; Rick V	
T97R-95C	103	26.5	GDC	0.0	1.0	Tenas	16	21	16-Sep-97	Cora Lynn; Rick V	Tenas West ARD #1
T97R-96	149	124.0	GDCVDp	17.0	14.0	Tenas	---	---	16-Sep-97	SDS; Garth	
T97R-97	113	23.8	GDC	12.6	11.0	Tenas	---	---	17-Sep-97	Cora Lynn; Rick B	
T97R-98	39	150.9	GDCVDp	12.8	12.0	Pit #3	---	---	17-Sep-97	Cora Lynn; Mike	
T97R-99	153	80.0	GDC	10.2	7.0	Tenas	---	---	19-Sep-97	SDS; Garth	
T97R-100C	141	46.0	GDC	3.0	2.7	Tenas	0	21	18-Sep-97	Cora Lynn; Rick V	All coals * smpld for ARD kinetic tests. Tenas ARD #2
T97R-101	151	74.4	GDC	11.2	10.0	Tenas	---	---	17-Sep-97	SDS; Garth	
T97R-102	145	61.0	GDC	0.0	3.0	Tenas	---	---	17-Sep-97	Cora Lynn; Rick B	
T97R-103	150	135.0	GDCV	10.5	8.5	Tenas	---	---	18-Sep-97	SDS; Garth	
T97R-104	144	41.8	GDC	5.5	5.0	Tenas	---	---	18-Sep-97	Cora Lynn; Rick B	
T97R-105	142	31.0	GDC	3.0	0.4	Tenas	---	---	18-Sep-97	Cora Lynn; Rick V	
T97R-106	136	152.2	GDCVDp	4.1	3.5	Tenas	---	---	19-Sep-97	Cora Lynn; Mike	
T97R-107	131	128.0	GDCVDp	16.5	15.0	Tenas	---	---	19-Sep-97	Cora Lynn; Rick B	
T97R-108C	154	81.0	GDC	26.5	26.0	Tenas	15	27	20-Sep-97	Cora Lynn; Rick V	Piezo (single) in 1-seam. C, b & 1L seams smpld for ARD * kinetic tests. Tenas ARD #3.
T97R-109	133	142.5	GDCV	10.3	8.5	Tenas	---	---	20-Sep-97	SDS; Garth	
T97R-110	132	78.6	GDC	9.9	8.0	Tenas	---	---	20-Sep-97	Cora Lynn; Rick B	Flowed @ 2gpm, plugged
T97R-111	134	121.6	GDC	11.8	8.0	Tenas	---	---	20-Sep-97	Cora Lynn; Mike	Flowed @ 2gpm, plugged
T97R-112	147	207.3	GDCVDp	5.4	5.0	Tenas	---	---	21-Sep-97	SDS; Garth	
T97R-113	135	122.3	GDCV	4.5	4.0	Tenas	---	---	21-Sep-97	Cora Lynn; Rick B	
T97R-114	139	122.0	GDCVDp	4.0	1.8	Tenas	---	---	21-Sep-97	Cora Lynn; Mike	
T97R-115	140	75.0	GDC	4.8	2.0	Tenas	---	---	22-Sep-97	Cora Lynn; Rick B	
T97R-116	137	151.4	GDCV	3.7	0.8	Tenas	---	---	22-Sep-97	Cora Lynn; Mike	
T97R-117	146	141.0	GDCV	4.5	3.0	Tenas	---	---	23-Sep-97	Cora Lynn; Rick B	
T97R-118	155	91.9	GDCVDp	29.7	29.0	Tenas	---	---	23-Sep-97	Cora Lynn; Rick V	
T97R-119	146	133.6	GDCV	6.3	6.3	Tenas	---	---	23-Sep-97	Cora Lynn; Mike	

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. hole Samples	Date Drilled	Driller	Comments
T97R-120	107	30.0	GDC	1.5	0.1	Tenas	---	---	23-Sep-97	Cora Lynn; Rick B	
T97R-121	111	78.6	GDC	4.2	3.0	Tenas	---	---	24-Sep-97	Cora Lynn; Mike	
Totals:		<u>15,072.9</u>	metres				<u>145</u>	<u>331</u>			
T97RP-01	---	16.0	Nil	---		Pit #3 test-pit West (lower slope)		9		SDS; Garth	Pit #3 test-pit double piezometer (aka TOB97-01)
T97RP-02	---	21.0	Nil	---		Pit #3 test-pit (mid-slope)		10		SDS; Garth	Pit #3 test-pit single piezometer (aka TOB97-02)
T97RP-03	---	12.0	Nil	---		Pit #3 test-pit East (upper slope)		5		SDS; Garth	Pit #3 test-pit single piezometer (aka TOB97-03)
TOB97-04	404	9.0	Nil	---		Pit #3 wastedump				SDS; Garth	Shallow overburden piezometer
TOB97-05	402	8.0	Nil	---		Pit #3 wastedump				SDS; Garth	Shallow overburden piezometer
TOB97-06	T93R-16	21.0	Nil	---		Tenas N wastedump					Shallow overburden piezometer
TOB97-07	T93R-20	24.0	Nil	---		Tenas N wastedump					Shallow overburden piezometer
Total:		<u>111.0</u>	metres				<u>0</u>	<u>24</u>			
Core total:		917.8									
Rotary total:		14,155.1									
Ovbn geotech holes total:		<u>111.0</u>									
		<u>15,183.9</u>	metres								

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. hole Samples	Date Drilled	Driller	Comments
TRC97-01	400	4.60	TRC Dscr'tn	N/A		Pit #3 East	---	---	18-Aug-97	RA; Piteau	
TRC97-02	401	4.65	TRC Dscr'tn	N/A		Pit #3 East	---	3	18-Aug-97	AL	aka TIL97-02
TRC97-03	402	4.40	TRC Dscr'tn	N/A		Pit #3 East	---	---	18-Aug-97	RA; Piteau	
TRC97-04	403	4.50	TRC Dscr'tn	N/A		Pit #3 East	---	---	18-Aug-97	RA; Piteau	
TRC97-05	404	4.90	TRC Dscr'tn	N/A		Pit #3 East	---	3	18-Aug-97	SN & Piteau RA	aka TIL97-05
TRC97-06	417	4.20	TRC Dscr'tn	N/A		Plantsite	---	---	18-Aug-97	RA; Piteau	
TRC97-07	416	4.80	TRC Dscr'tn	N/A		Plantsite	---	---	18-Aug-97	RA; Piteau	
TRC97-08	415	4.00	TRC Dscr'tn	N/A		Plantsite	---	4	18-Aug-97	SN & Piteau RA	aka TIL97-08
TRC97-09	418	3.60	TRC Dscr'tn	N/A		Plantsite	---	---	19-Aug-97	RA; Piteau	
TRC97-10	420	5.00	TRC Dscr'tn	N/A		Plantsite	---	---	19-Aug-97	RA; Piteau	
TRC97-11	419	5.00	TRC Dscr'tn	N/A		Plantsite	---	---	19-Aug-97	RA; Piteau	
TRC97-12	Site #2	5.00	TRC Dscr'tn	N/A		Tal'gs pond	---	---	19-Aug-97	RA; Piteau	
TRC97-13	Site #3	5.00	TRC Dscr'tn	N/A		Tal'gs pond	---	---	19-Aug-97	RA; Piteau	
TRC97-14	Site #4	5.00	TRC Dscr'tn	N/A		Tal'gs pond	---	3	19-Aug-97	SN & Piteau RA	aka TIL97-14
TRC97-15	Site #1	5.50	TRC Dscr'tn	N/A		Tal'gs pond	---	---	19-Aug-97	RA; Piteau	
TRC97-16	N of 93-16	4.29	TRC Dscr'tn	N/A		Tenas North	---	4	24-Sep-97	KU	aka TIL97-16
TRC97-17	A road	4.20	TRC Dscr'tn	N/A		Tenas North	---	3	24-Sep-97	KU	aka TIL97-17
TRC97-18	120 road	5.30	TRC Dscr'tn	N/A		Tenas North	---	4	24-Sep-97	KU	aka TIL97-18
TRC97-19	of 94-20	4.60	TRC Dscr'tn	N/A		Tenas North	---	2	24-Sep-97	KU	aka TIL97-19
TRC97-20	1	4.85	TRC Dscr'tn	N/A		Pit #3	---	4	24-Sep-97	KU	survey = T97R-05 (aka TIL97-20)
TRC97-21	9	3.65	TRC Dscr'tn	N/A		Pit #3	---	2	24-Sep-97	KU	survey = T97R-16 (aka TIL97-21)
TRC97-22	12	3.05	TRC Dscr'tn	N/A		Pit #3	---	2	24-Sep-97	KU	survey = T97R-33 (aka TIL97-22)
TRC97-23	14	4.86	TRC Dscr'tn	N/A		Pit #3	---	4	24-Sep-97	KU	survey = T97R-38 (aka TIL97-23)
TRC97-24	507	4.57	TRC Dscr'tn	N/A		Pit #3	---	2	25-Sep-97	KU	survey = T97R-64 (aka TIL97-24)
TRC97-25	43	4.83	TRC Dscr'tn	N/A		Pit #3	---	2	25-Sep-97	KU	survey = T97R-52 (aka TIL97-25)
TRC97-26	55	4.27	TRC Dscr'tn	N/A		Plantsite	---	3	26-Sep-97	KU	survey = T97R-53 (aka TIL97-26)
TRC97-27	56	5.08	TRC Dscr'tn	N/A		Plantsite	---	2	26-Sep-97	KU	survey = T97R-63 (aka TIL97-27)
		<u>123.7</u>							<u>47</u>		
Total ARD samples:							402				

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. hole Samples	Date Drilled	Driller	Comments
--------------	--------	---------------------------	----------	----------------------------	--------------------------	---------------	-------------------	-----------------------	--------------	---------	----------

* Samples collected for ARD kinetic testing include:

T97R-100C:	Sample:	Seam:
	A011	1-upper
	A012	1U/1 prtg
	A013	1-seam
	A014	1-seam
	A015	1-seam
	A017	1La
T97R-108C:	A006	c-seam
	A010	b-seam
	A017	1La
	A020	1Lb
	A022	1Lb
	A024	very carb mdsn
T97R-68G	1	0 - 6 metres
	2	6 - 12 m
	3	12 - 18 m
	4	18 - 20 m
T97R-88G	1	0 - 6 metres
	2	6 - 12 m
	3	12 - 16.5 m

Totals:	Total # of D-holes	Total Metres		Casing Depth	Overburden thickness	Avg hole depth	Avg casing depth
Garth B.	32	4,341.40		793.49	821.40	135.7	24.80
Rick B.	40	4,239.98		356.00	291.07	106.0	8.90
Rick V.	15	1,648.40	incl 8 cores	222.70	290.47	109.9	14.85
Mike S.	32	4,208.60		345.55	287.50	131.5	10.80
Dean C.	5	501.90		38.25	32.00	100.4	7.65
		<u>14,940.3</u>					
Garth B.	5	66.0	surficial holes				

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R-09 pg of

Remarks SITE II Start Geo-log Depth 30 M

6.1m casing

Finish Date JULY 20 Isd S T R

13		16
4		1

Depth () from to	Lithology					Indurate			Coal				Carb	Clay	Sand	Grav	Till	Other	Colour										Comments
	Mden	S/Md	S'	S/SS	SS	Soft	Med	Hard	Clean	Dirty	Ox	Bone							F	M	C	Light	Dark	Grey	Brown	Blue	Green	Black	
0 3.2						✓											✓			✓	✓								
3.2 5.8						✓				✓													✓						
5.8 12.2			✓			✓																✓							
12.2 12.3						✓				✓													✓						
12.3 14.6			✓			✓																✓							
14.6 17.2						✓					✓												✓						
17.2 17.9			✓			✓																✓							
17.9 18.2						✓					✓												✓						
18.2 21			✓			✓																✓	✓						
21 24					✓						✓											✓	✓						
24 30				✓							✓											✓	✓						
30					✓						✓											✓	✓						

manalta Cuttings Description

Project TELKWA Contractor CLK Driller MIKE Lith. by MIKE HOLE T97R-0 pg of

Remarks SITE 513 Start Geo-log Depth 60m
12.2 m CASING Finish Date JULY 21 lsd S T R

13		18
4		1

Depth () from to	Lithology					Indurate				Coal			Other	Colour											Comments						
	Mdsn	S/Md	S'	S/SS	SS F M C	Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Gray	Till	Light	Dark	Grey	Brown	Blue	Green		Black	White	Red	Orange	Yellow	
0 7						✓							✓		✓																
7 10	✓					✓												✓	✓												
10 17	✓					✓															✓					✓	✓			Volcanic Rock	
17 18						✓							✓																		
18 35	✓					✓													✓	✓										29m BAD FRACTURE	
35 40	✓					✓													✓	✓										OUT OF FIRED BRICK	
40 66	✓					✓													✓	✓						✓	✓			IN FIRED BRICK	
																															NO RETURNS AFTER 45M

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R-15 pg of
 Remarks SITE 15 6m CASING Start Geo-log Depth 90m
 Finish Date JULY 24 Isd S T R

13		16
4		1

Depth () from to	Lithology				Indurate			Coast				Other	Colour										Comments									
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow
					F	M	C																									
0 5								✓	✓											✓	✓	✓										
5 12		✓						✓												✓	✓											
12 12.2								✓				✓															✓					CARBY Mdsn
12.2 22.7		✓						✓												✓	✓											
22.7 24								✓				✓															✓					CARBY
24 25	✓								✓											✓	✓											
25 29								✓				✓															✓					
29 47		✓						✓												✓	✓											
47 51								✓				✓															✓					Mdsn PARTINGS
51 65		✓						✓												✓	✓											56.5 COAL STRINGER
65 80					✓			✓												✓	✓											58.5-75.9 COAL

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R-17 pg of

Remarks SITE 3 24.5m CASING Start Geo-log Depth 116m

Finish Date lsd S T R

13		16
4		1

Depth () from to	Lithology							Indurate				Coal				Other	Colour										Comments					
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone	Carb		Clay	Sand	Gray	Till	Light	Dark	Grey	Brown	Blue	Green		Black	White	Red	Orange	Yellow
					F	M	C																									
0 21.5									✓							✓								✓	✓							
21.5 22								✓				✓				✓								✓			✓					
22 25		✓							✓													✓	✓									
25 27								✓				✓				✓											✓					CARBY
27 48.6		✓						✓	✓													✓	✓				✓					48.6 PARTING
48.6 49.9								✓				✓												✓			✓					
49.9 55.1			✓						✓															✓			✓					VERY GASK
55.1 57.7								✓			✓											✓	✓				✓					
57.7 59		✓							✓			✓										✓	✓				✓					
59 60.5		✓						✓				✓															✓					
60.5 68		✓							✓													✓	✓				✓					CARBY MDSN
68 70									✓			✓				✓						✓	✓				✓					
70 71		✓							✓													✓	✓				✓					
71 72								✓				✓															✓					
72 72.5		✓							✓													✓	✓				✓					
72.5 72								✓				✓															✓					
72 116		✓							✓													✓	✓				✓					97m CARBY LAYERS 103 soft to 103.5

manalta Cuttings Description

Project _____ Contractor SDS Driller GARTH Lith. by _____ HOLE 797R-19 pg of
SITE-52

Remarks _____ Start 07-26-97 Geo-log _____ Depth _____

13		16
4		1

Finish _____ Date July 26/97 lsd S T R

Depth () from to	Lithology							Indurate			Coal				Other	Colour										Comments						
	Mden	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow
					F	M	C																									
0 2																																VERY BAD GRAVEL + Boulders 38-41
2 4																																
4 24																																
24 30								✓								✓																
32 38																																
38 41																																
41 41.5												✓																				
41.5 43																																
43 49			✓					✓															✓									
49 115																							✓									
115 151 ✓																							✓									Coal w/shale ledge
151 154												✓																				
154 170 ✓			✓																				✓									
170 197 ✓			✓																													
197 202								✓																			✓					Log Hole to 170m B P B VOLCANIC

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R20 pg of

Remarks SITE 24 6M CASING Start 7:00 Geo-log Depth 164m

Finish Date JULY 28 Isd S T R

13		16
4		1

Depth () from to	Lithology				Indurate			Coal				Carb	Clay	Sand	Grav	Till	Other	Colour										Comments		
	Mdsn	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard	Clean							Dirty	Ox	Bone	Light	Dark	Grey	Brown	Blue	Green	Black		White	Red
12 55								✓										✓												
5.5 12.9			✓						✓																					
12.9 14								✓		✓																				
14 25.4			✓					✓		✓																				
25.4 26								✓			✓																			
26 34.5			✓					✓		✓																				
34.5 35.5								✓			✓																			
35.5 37			✓					✓		✓																				
37 39								✓		✓																				
39 36.7			✓					✓		✓																				
56.7 57.7								✓		✓																				
57.7 65			✓					✓		✓																				
65 67.5								✓		✓																				
67.5 79.9			✓					✓		✓																				
79.9 82								✓		✓																				
82 101.2			✓					✓		✓																				
101.2 104								✓		✓																				
104 105.6			✓					✓		✓																				
105.6 106								✓		✓																				
106 120.2			✓					✓		✓																				
120.2 122								✓		✓																				
122 125.6			✓					✓		✓																				
125.6 126.6								✓		✓																				
126.6 129.8			✓					✓		✓																				
129.8 131								✓		✓																				
131 164								✓		✓																				

36.5 STRINGER COAL

63m & 64m STRINGERS
masn PARTINGS

is meta Stringer

134 VERY SOFT?

manalta Cuttings Description

Project TAKWA Contractor CORA Lynn Driller RICK V Lith. by JAMES HOLE T97R-21 pg of

Remarks _____ Start _____ Geo-log _____ Depth _____

13		16
4		1

Finish _____ Date _____ Isd S T R

Depth () from to	Lithology			Indurate			Coal				Other	Colour										Comments								
	Mdsn	S/Md	S/	S/SS	SS	Soft	Med	Hard	Clean	Dirty		Ox	Bone	Carb	Clay	Sand	Gray	Till	Light	Dark	Gray		Brown	Blue	Green	Black	White	Red	Orange	Yellow
	F	M	C																											
0 5																														
5 7.5																														
7 9																														
9 12																														
12 16																														VERY BROKEN
16 20																														
20 29																														
29 29.5																														
29.5 30.5																														
30.5 31																														
31 36.5																														
36.5 40																														
40 47.5																														
47.5 73																														
73 79																														
79 80.5																														
80.5 83																														
83 86																														
86 92																														
92 102.5																														
102.5 117																														
117 118																														
118 127																														
127 128																														
128 133																														
133 140																														

VERY BROKEN

H₂O 60PPM

CONGLOMERATE

VOLCANIC

manalta Cuttings Description

Site 517

Project _____ Contractor _____ Driller Rick Butler Lith. by _____ HOLE T97R-22 pg 1 of 1

Remarks _____ Start _____ Geo-log _____ Depth _____

Finish _____ Date 97-07-28 lsd S T R

13	16
4	1

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments						
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Gray	Till	Light	Dark	Gray	Brown		Blue	Green	Black	White	Red	Orange
0 3																															
3 8				✓			✓									✓	✓					✓	✓								FRACTURED
8 10			✓					✓													✓	✓									
10 31			✓					✓													✓	✓									
31 41					✓			✓													✓	✓								H ₂ O 2-3 gal.	
41 43								✓													✓	✓									
43 104					✓			✓													✓	✓									
104 129				✓				✓													✓	✓									
129 130								✓				✓										✓	✓							?	
130 142		✓						✓				✓									✓	✓									
142 148								✓				✓										✓	✓								
148 153		✓						✓				✓										✓	✓								
153 156								✓				✓										✓	✓								
156 165		✓						✓				✓									✓	✓									
165 167								✓				✓										✓	✓								
167 176		✓						✓				✓									✓	✓									
176 177								✓				✓										✓	✓								
177 183				✓				✓				✓									✓	✓									
183 185								✓				✓										✓	✓							? maybe coal	
185 207								✓				✓										✓	✓								

manalta Cuttings Description

Project _____ Contractor SOS Driller GROTH Lith. by _____ HOLE T97R-23 pg 500 of 501

Remarks _____ Start _____ Geo-log _____ Depth _____
 Finish _____ Date July 30/97 Isd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments									
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Gray	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow		
0 5																	✓	✓																
5 32																			✓															
32 39																																		
39 43				✓					✓													✓												
43 61				✓					✓													✓												
61 69														✓																				
69 104				✓																														
104 110																																		
110 129									✓														✓											
129 148									✓																			✓						

Bed Rock 39+
 TEXAS SPRINGER

6 120
29 480

manalta Cuttings Description

Project TELKWA Contractor CLD Driller DEAN Lith. by DEAN HOLE T9710-26 pg L of 1
 Remarks SITE # 23 6m casing Start 9:00 AM Geo-log _____ Depth 9170m
 Finish 15:30 Date 5 Aug 1/97 led S T R

13		16
4		1

Depth (M)	Lithology						Indurate			Coal				Carb	Clay	Sand	Gray	Till	Other	Colour										Comments									
	Mdn	S/Md	S	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox							Bone	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red		Orange	Yellow							
0	S																																						
5	19	✓						✓							✓																								
19	21							✓																															
21	21.5							✓																															
21.5	25							✓																															
25	25.7							✓																															
25.7	31	✓						✓																														COAL STRINGS (WHITE INTERBEDDED)	
31	34.5							✓																														BENTONITE LAYERS	
34.5	38							✓																														BENTONITE LAYERS	
38	38.5	✓						✓																															
38.5	41							✓																															
41	41.5							✓																															
41.5	43							✓																															
43	53							✓																															INTERBEDDED Mdn & S
53	54							✓																															
54	55	✓						✓																															
55	56							✓																															
56	57.5	✓						✓																															
57.5	60							✓																															
60	63.5							✓																															
63.5	64							✓																															
64	72.5	✓						✓																															
72.5	75							✓																															
75	90							✓																															
90	96							✓																															
96								✓																															BENTONITE LAYERS

manalta Cuttings Description

Project TELKWA Contractor CLD Driller DEAN Lith. by DEAN HOLE T97R-29 pg 1 of 1

Remarks SITE 22 6m casing Start 7:00 Geo-log BPB Depth 91m
 Finish 11:00 Date Aug 2/97 Tid S T R

13		16
4		1

Depth (m)	Lithology									Indurate			Coal			Other	Colour										Comments									
	from	to	Mdn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow		
							F	M	C																											
D	S																																			
S	13.5		✓							✓														✓											CARRY STRUNGERS 8m	
13.5	16									✓			✓																							
16	16.4		✓							✓														✓												
16.4	18.8									✓				✓																						
18.8	22				✓					✓														✓												
22	26							✓		✓													✓	✓												
26	27.5			✓						✓													✓	✓												
27.5	27		✓							✓													✓	✓												
27	37									✓														✓												
37	38									✓														✓												
38	45									✓														✓	✓										Raym H ₂ O	
45	49		✓							✓														✓	✓										BENTONITE LAYERS	
49	51.5									✓				✓										✓											HR COIL STRUNGERS	
51.5	51.5		✓							✓													✓	✓												
51.5	53.2									✓																										
53.2	54.5				✓					✓														✓												
54.5	57									✓														✓												
57	61				✓					✓														✓												
61	62.5									✓				✓																						
62.5	63		✓							✓														✓	✓											
63	64									✓																										
64	66.5				✓					✓														✓	✓											
66.5	68									✓				✓																						
68	69				✓					✓														✓	✓											
69	75									✓														✓	✓											
75	81				✓					✓														✓	✓											
81	87		✓							✓														✓	✓											
87					✓					✓																										LAYERS OF BROWN SILT STONE
										✓														✓	✓											BENTONITE LAYERS

manalta Cuttings Description

Site 512

Project _____ Contractor _____ Driller R. Butler Lith. by _____ HOLE T97R-30 pg 1 of 1
 Remarks _____ Start _____ Geo-log _____ Depth 60m
 Finish _____ Date 97-07-02 lsd S T R

13		16
4		1

Depth () from to	Lithology				Indurate			Coal			Carb	Clay	Sand	Grav	Till	Other	Colour									Comments	
	Mden	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard							Clean	Dirty	Ox	Bone	Light	Dark	Grey	Brown	Blue		Green
0 3																											
3 7			✓					✓													✓						
7 9								✓														✓					H ₂ O
9 18			✓					✓														✓					
18 19.5								✓														✓					Sour smelling
19.5 24			✓						✓														✓				
24 29			✓					✓															✓				
29 40								✓														✓					
40 72			✓						✓														✓				

manalta Cuttings Description

Project TELKWA Contractor CLD Driller DEAN Lith. by DEAN HOLE T97R-31 pg 1 of 2
 Remarks SITE 21 6m CASING Start 13:30 Geo-log B.P.B Depth 98m
 Finish 17:30 Date _____ lsd S T R

13		16
4		1

Depth (m)	Lithology						Indurate			Coal				Other	Colour										Comments											
	from	to	Mdsn	S/Md	S/	S/SS	F	M	C	Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Gray	Brown	Blue	Green	Black	White	Red	Orange	Yellow		
0	0																	✓																		
6	21		✓							✓													✓	✓											FINE SS INTERBEDDED	
21	22			✓						✓													✓	✓												
22	23.7									✓																										
23.7	26.5		✓							✓														✓	✓										COAL STRINGERS	
26.5	29									✓													✓	✓												
29	32.5									✓													✓	✓											BENTONITE LAYERS	
32.5	34.6									✓																										
34.6	35.5			✓						✓														✓												
35.5	37.8									✓																										
37.8	38			✓						✓														✓	✓											
38	40									✓													✓	✓												
40	41.5									✓													✓	✓											CALCITE FRACTURES	
41.5	46									✓																										
46	58									✓															✓											BROWN Mdsn INTERBEDDED
58	62									✓															✓											
62	65									✓																										
65	68			✓						✓														✓												
68	69									✓														✓	✓											
69	80		✓							✓													✓	✓												
80				✓						✓														✓	✓											

" " Coal 7.3m, 76
Mdsn INTERBEDDED

manalta Cuttings Description

Project _____ Contractor SOS Driller BARZA Lith. by _____ HOLE T97R37 pg of

Remarks T97R-37-SITE 506 Start _____ Geo-log _____ Depth _____

Finish _____ Date Aug 13/97 S T R

13		16
4		1

Depth () from to	Lithology						Indurate				Coal				Other	Colour										Comments											
	Mdn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow					
					F	M	C																														
0	11																																				
11	32																																				
32	67																																				
67	115	✓																																			

CLAY LAYERS
DRILL 6 1/4 hole w/mud.

NO CASING

DRILL 5 3/4" Hole to 67m

DRILL 6 1/4 67 to T.D.

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R-43 pg of

Remarks SITE 40 24.5 m CASING Start Geo-log Depth 176.7m
 Finish Date AUG 16/97 Isd S T R

13		16
4		1

Depth ()	Lithology							Coal		Other	Colour											Indurate	Comments					
	Till	Grav	Sand	Sasn			Slsn	Mdsn	Dirty		Clean	Light	Dark	Red	Yellow	Green	Blue	Violet	White	Gray	Brown			Black	Soft	Med.	Hard	
				C	M	F																						
0	✓																											
14							✓													✓								
16										✓												✓						
22							✓												✓									
41										✓											✓							
44										✓										✓								
71.8																				✓								
73.8							✓													✓								
77.1										✓											✓							
78.5							✓													✓								
93.4																				✓								
102.7																				✓								
103.9																				✓								
107.5							✓													✓								
108							✓													✓								
116																				✓								
116.5							✓													✓								
132.7																				✓								
145.6																				✓								
148.6							✓													✓								
150																				✓								
152																				✓								
158																				✓								
160							✓													✓								
162																				✓								

87.3 Coal stringer Conglomerate
 COAL 102.7-103.9

coal

140m POSSIBLE COAL ? → 142m

CLARBY LAYERS

POSSIBLE COAL - SOFT ?

manalta Cuttings Description

Site # 20

Project TELKWA Contractor CORA-LYNN Driller R. Butler Lith. by _____ HOLE T97 R-44 pg of

Remarks _____ Start _____ Geo-log _____ Depth 120 m
 Finish _____ Date 97-08-17 Isd S T R

13		16
4		1

Depth ()	Lithology						Indurate			Coal				Other	Colour											Comments											
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow					
0	6																																				
6	11																																				
11	17				✓				✓											✓																	
17	18								✓																												
18	25																			✓																	
25	28								✓																												
28	34			✓																✓																	
34	47				✓	✓														✓																	
47	49.5								✓																												
49.5	58			✓																																	
58	66								✓																												
66	90			✓																																	
90	91								✓																												
91	98			✓					✓																												
98	100								✓																												
100	110			✓																																	
110	115								✓																												
115	122			✓																																	
122	124								✓																												
124	152			✓	✓																																

1/2 meter break at 59.5

manalta Cuttings Description

Project _____ Contractor gdf Driller Rand Lith. by _____ HOLE T97R-47 pg ____ of ____

Remarks T97R-47 site 50 Start _____ Geo-log _____ Depth 147m
 Finish _____ Date Aug 18/97 lsd S T R

13	16
4	1

Depth () from to	Lithology				Indurate			Coal				Other	Colour										Comments										
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Grey	Brown	Blue	Green	Black	White	Red	Orange	Yellow	
D 4																																	
4 14																	✓	✓	✓														
18 41																																	
41 92		✓																															
92 93																	✓																
93 125		✓																															
125 125																																	
125 146		✓																															
141 147																												✓					

ORGANIC / MUSKELG-7.

Volcanic @ 141m

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R-49 pg of
 Remarks SITE 41 Start Geo-log Depth 116m
 Finish Date AUG 19 Isd S T R

13		16
4		1

Depth () from to	Lithology				Indurate			Coal			Other	Colour										Comments													
	M/Sn	S/Md	S/	S/SS	SS F M C	Soft	Med	Hard	Clean	Dirty		Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow					
0	11																																		
11	18																																		
18	25																																		
25	29.5																																		
29.5	33																																		
33	38																																		
38	40.8																																		
40.8	47																																		
47	54																																		
54	57																																		
57	60																																		
60	62.5																																		
62.5	63																																		
63	67																																		
67	68																																		
68	69																																		
69	71																																		
71	72.5																																		
72.5	73																																		
73	75.5																																		
75.5	76.5																																		
76.5	77.8																																		
77.8	78.5																																		
78.5	90																																		
90	94																																		
94	100																																		
100	102.5																																		
102.5	105																																		

Combination of mudstone + coal
 Combination of mudstone + coal
 Combination of mudstone + coal

manalta Cuttings Description

Project TELKWA Contractor CORA-LYNN Driller RICK SWALE Lith. by _____ HOLE J97R-52 pg 1 of 1

Remarks _____ Start _____ Geo-log _____ Depth _____
 Finish _____ Date _____ lsd. S T R _____

13		16
4		1

Depth () from to	Lithology			Indurate			Coal			Other	Colour											Comments						
	Mdsn	S/Md	S/S	Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow
	F	M	C																									
0 15																												
15 24			✓																									
24 27																												
27 41			✓																									
41 45																												
45 46			✓																									
46 48																												
48 53			✓																									
53 56																												
56 83			✓																									
83 86																												
86 100			✓																									
100 104																												
104 170			✓																									

6 1/2' to 33m

5 1/4 to 76m
5 1/8

manalta Cuttings Description

Project TELKWA Contractor CORA LYNN Driller RICK Lith. by REL HOLE T97R-55 pg of

Remarks _____ Start Aug 20 Geo-log _____ Depth _____

Finish _____ Date _____ Isd S T R _____

13		16
4		1

Depth () from to	Lithology					Indurate			Coal			Other	Colour										Comments									
	Mden	S/Md	S	S/SS	SS			Soft	Med	Hard	Clean		Dirty	Ox	Bone	Carb	Clay	Sand	Grav	Till	Light	Dark		Gray	Brown	Blue	Green	Black	White	Red	Orange	Yellow
					F	M	C																									
0	5.5																															
5.5	6																															
6	11																															
11	11.5																															
11.5	12.5																															
12.5	14																															
14	21																															
21	24																															
24	30																															
30	31.5																															
31.5	45																															
45	48.5																															
48.5	76																															
76	76.5																															
76.5	83																															
83	85																															
85	86																															
86	90																															
90	93																															
93	93.5																															
93.5	107																															
107																																

Big Cobbles
Cobbles

NOT SURE OF THICKNESS

manalta Cuttings Description

Project _____ Contractor SOS Driller Garth Lith. by _____ HOLE T97R-55 pg of

Remarks T97R-55 - Site 53 Start _____ Geo-log _____ Depth _____

Aug 21 Finish _____ Date _____ Isd S T R

13			16
4			1

Depth () from to	Lithology				Indurate			Coal				Other	Colour									Comments								
	Mdsn	S/Md	S/	S/SS	SS	Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow
0 2															✓															
2 36																✓	✓													
36 42																✓														
42 43										✓																				
43 44																														
44 132	✓				✓															✓										
132 140					✓				✓											✓									Coal - Dirty Embodies w/ siltstone	
140 147	✓				✓															✓										
147 151	✓				✓															✓										
151 152					✓					✓																				
152 156	✓				✓																									
156 157					✓					✓																				
157 180																				✓										
180 192																				✓										
192 202					✓																					✓			SAWDSTONE VOLCANICS	

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R-56 pg of

Remarks SITE 46 28m CASING Start Geo-log Depth 152m

Finish Date AUG 23 Isd S T R

13		16
4		1

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments										
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow			
					F	M	C																												
0	25							✓								✓		✓	✓																
25	33								✓																										
33	40.7		✓							✓																									
40.7	55									✓																									
55	62			✓						✓																									
62	70									✓																									
70	72.5									✓																									
72.5	74									✓																									
74	86		✓							✓																									
86	88.8									✓																									
88.8	91.8		✓							✓																									
91.8	93									✓																									
93	99.5		✓							✓																									
99.5	101.5									✓																									
101.5	108		✓							✓																									
108	108.5									✓																									
108.5	112									✓																									
112	114		✓							✓																									
114	114.8									✓																									
114.8	116.4	✓	✓							✓																									
116.4	117									✓																									
117	119.9	✓	✓							✓																									
119.9	122									✓																									
122	131		✓							✓																									
131	135		✓							✓																									
135	138		✓							✓																									
138	142									✓																									
142	142.5									✓																									
142.5										✓																									

Small fracture 43.5m

CONGLOMERATE SS.

COAL

81m COAL STRINGER

90m COAL STRINGER

CONGLOMERATE SS

COAL STRINGER

VOLCANICS

manalta manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R-61 pg of

Remarks SITE 504 10m CASING Start Geo-log Depth 146m

Finish Date AUG 25/97 Isd S T R

13		16
4		1

Depth ()	Lithology						Indurate			Coal				Carb	Clay	Sand	Grav	Till	Other	Colour										Comments ^o
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox							Bone	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	
from	to			F	M	C																								
0	8						✓									✓	✓	✓												
8	20		✓					✓																		15m fracture				
20	39			✓				✓																						
39	49						✓																							
49	50		✓					✓																						
50	533		✓					✓																						
533	63																													
63	64		✓					✓																						
64	74						✓																							
74	81		✓					✓																						
81	82		✓					✓																						
82	90.5			✓																										
90.5	110		✓																											
110	112							✓				✓																		
112	113.3		✓																											
113.3	116.3							✓				✓																		
116.3	117		✓																											
117	118							✓				✓																		
118	122.5		✓																											
122.5	124							✓				✓																		
124	130.3		✓																							125.9 ← COAL STRINGER-128.7				
130.3	131							✓				✓																		
131	135		✓																											
135	143			✓																										
143																										VOLCANIC CONGLOMERATE-144m				

manalta Cuttings Description

Project TELKWA Contractor CORA LYNN Driller RICK Lith. by RICK HOLE T97K63 pg of

Remarks OVERBURDEN (BIG DEEP) Start Aug 26 Geo-log Depth 100m+

13		16
4		1

Finish Date lsd S T R

Depth () from to	Lithology						Indurate				Coal				Other	Colour											Comments										
	Mdsn	S/Md	S'	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue	Green		Black	White	Red	Orange	Yellow					
					F	M	C																														
0 6																✓	✓																				
6 65																																					
65 21																																					
21 22																																					
22 34																																					
34 405																																					
405 61																																					
61 102																																					
62 84																																					
84 845																																					
845 94																																					
94 96																																					
96 97																																					
97 101																																					
101 102																																					
102 122				✓					✓																												
122 143							✓																														
143 146																																					

H₂O 100+ GPM.

H₂O 100 GPM

BLACK (STRANGE LOOKING)

VOLCANIC.

manalta Cuttings Description

Site # 125

Project TELKWA Contractor CORA LYNN Driller R. BURLER Lith. by _____ HOLE T97R-69 pg of

Remarks _____ Start _____ Geo-log _____ Depth _____
 Finish _____ Date 97-08-28 Isd S T R

13		16
4		1

Depth ()	Lithology						Indurate			Coal				Carb	Clay	Sand	Grav	Till	Other	Colour										Comments																
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox							Bone	Light	Dark	Gray	Brown	Blue	Green	Black	White	Red		Orange	Yellow														
					F	M	C																																							
0	13																																													
13	23.5		✓					✓																			✓																			
23.5	34							✓																																						
34	48.5		✓					✓																																						
48.5	104.5							✓																																						
104.5	113		✓					✓																																						
113	113.5		✓					✓																																						
113.5	130		✓					✓																																						

Carby to 105.5
 Carby

manalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R-71 pg of

Remarks SITE 117 12m CASING Start Geo-log Depth 103.8m

13		16
4		1

Finish Date AUG 29/97 lsd S T R

Depth () from to	Lithology						Indurate			Coal				Other	Colour										Comments														
	Mdn	S/Md	S	S/SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow								
				F	M	C																																	
0 14							✓								✓						✓																		
14 47.5								✓														✓																	
47.5 48.5							✓				✓																✓												
48.5 52.5			✓					✓														✓																	
52.5 53.7								✓																			✓												
53.7 59.5			✓						✓													✓																	
59.5 61.5								✓																			✓												
61.5 70			✓						✓																		✓												
70 73								✓																			✓												
73 76			✓						✓																		✓												
76 77								✓																			✓												
77 78						✓				✓																	✓												
78 80								✓																			✓												
80 81			✓						✓																		✓												
81 83.5								✓																			✓												
83.5 84						✓				✓																	✓												
84 84.3								✓																			✓												
84.3 86.3						✓				✓																	✓												
86.3 87								✓																			✓												
87						✓				✓																	✓												COAL STRINGERS 91m 94m 97

monalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R-73 pg of

Remarks SITE 26 6m CASING Start Geo-log Depth 164m
 Finish Date SEPT 8/97 lsd S T R

13		16
4		1

Depth () from to	Lithology				Indurate			Coal				Other	Colour										Comments													
	Mden	S/Md	S/	S/SS	SS			Clean	Dkty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow							
					F	M	C																							Soft	Med	Hard				
0	5.8																																			
5.8	21.4		✓																																	
21.4	26.5			✓																																
26.5	37		✓																																	
37	44			✓																																
44	46.5		✓																																	
46.5	47.5				✓																															
47.5	50.5		✓																																	
50.5	51.6																																COAL			
51.6	59.4																																			
59.4	60.3			✓																																
60.3	61.3																																	COAL		
61.3	66.5																																			
66.5	90																																			
90	81			✓																																
81	83																																		COAL	
83	90			✓																																
90	100.3																																			
100.3	100.7																																		STRINGER 97.2 + 99.7	
100.7	101.7																																			
101.7	104																																			
104	116			✓																															108.7 .5 m STRINGER	
116	120			✓																																
120	120.5																																			
120.5	123																																			COAL
123	131			✓																																
131	136																																			
136			✓																																	STRINGER AT 135M COAL STRINGER AT 145.5-145.6

manalta Cuttings Description

Project JELKWA Contractor CLD Driller MIKE Lith. by MIKE HOLE T97R-77 pg of

Remarks SITE 31 CASING 6.8m Start Geo-log Depth
 Finish Date Sept 11/97 lsd S T R

13		16
4		1

Depth ()	Lithology									Indurate			Coal				Other	Colour									Comments										
	from	to	Mdn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown		Blue	Green	Black	White	Red	Orange	Yellow			
							F	M	C																												
0	6.5									✓							✓						✓														
6.5	32		✓							✓													✓														
32	49						✓				✓												✓														
49	49.9									✓			✓																								
49.9	84.5			✓							✓													✓													
84.5	64.9						✓				✓															✓											
64.9	66.8									✓			✓																								
66.8	85.1					✓					✓													✓													
85.1	85.6									✓			✓																								
85.6	91.4					✓					✓													✓													
91.4	94.5									✓			✓																								90.3 COAL STRINGER
94.5	100.5			✓							✓												✓														
100.5	103.2									✓			✓																								
103.2	120.5					✓	✓				✓													✓													
120.5	121									✓			✓																								
121	123.5					✓					✓													✓													
123.5	123.9										✓			✓																							
123.9	123.7							✓				✓												✓													
123.7	124.1									✓			✓																								
124.1	124.8			✓							✓													✓													
124.8	125.1									✓			✓																								
125.1	132.3					✓					✓													✓													
132.3	133									✓			✓																								
133				✓							✓													✓													COAL & CARBY STRINGERS 133 -> 139m

manalta Cuttings Description

Project _____ Contractor SOS Driller Garth Lith. by _____ HOLE T97R-81 pg of
 Remarks T97R 81- 51075 Start _____ Geo-log _____ Depth _____
 Finish Sept 10/97 Date _____ Isd S T R

13		16
4		1

Depth () from to	Lithology					Indurate			Coal				Other	Colour										Comments						
	Mdsn	S/Md	S/	S/SS		Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow
				F	M																									
0 5																														
5 84		✓																		✓										Red Rock 4.5m to 5m
84 89										✓																				
89 90		✓																		✓										6.5m of Csg.
90 93										✓																				
93 96		✓																												
96 97										✓												✓								
97 98		✓																												
98 99										✓																				
99 107		✓																												
107 111																									✓	✓				Volcanics @ 107m.

manalta Cuttings Description

Project TELKWA Contractor CORA Lyon Driller R. Butler Lith. by _____ HOLE T97R-84 pg ___ of ___

Remarks _____ Start _____ Geo-log _____ Depth 90m

Finish _____ Date 97-SEPT-12 lsd ___ S ___ T ___ R _____

13		16
4		1

Depth () from to	Lithology				Indurate			Coal				Carb	Other	Colour										Comments										
	Mdsn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean			Dirty	Ox	Bone	Clay	Sand	Grav	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow		
					F	M	C																											
0 13															✓	✓	✓																Casing to 16.5	
13 42			✓				✓													✓														
42 42.5							✓					✓									✓													
42.5 44			✓				✓													✓	✓													
44 46.5							✓						✓								✓													
46.5 62			✓				✓													✓	✓													
62 67							✓						✓								✓													
67 69			✓				✓													✓	✓													
69 69.5							✓						✓								✓													
69.5 74			✓				✓													✓	✓													
74 90						✓				✓										✓	✓													lots of H ₂ O

manalta Cuttings-Description

Project TRINAS Contractor CORALYN Driller BRYAN Lith. by SEYMOUR HOLE TR-95 pg of

Remarks Start Geo-log Depth
 Finish Date lsd S T R

13		16
4		1

Depth ()	Lithology						Indurate			Coal				Other	Colour									Comments															
	Mdn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow							
					F	M	C																																
0 4	✓																																						
4 5																																							
5 6	✓																																						
6 8		✓																																					
10 12																																							
13 13.5	✓																																						
13.5 15																																							
15 17	✓																																						
17 17.5																																							
17.5 36	✓																																						

Coil SS @ 24m or 26m

manalta Cuttings Description

Project TELKWA Contractor CORA LYNN Driller MIKE Lith. by MIKE HOLE 997R-111 pg of

Remarks SITE 134 12m CASING Start Geo-log Depth 122 m

Finish Date SEPT 20 Isd S T R

13		16
4		1

Depth () from to	Lithology					Indurate			Coal				Other	Colour										Comments						
	Mdsn	S/Md	S/	S/SS	SS F M C	Soft	Med	Hard	Clean	Dirty	Ox	Bone		Carb	Clay	Sand	Grav	Till	Light	Dark	Grey	Brown	Blue		Green	Black	White	Red	Orange	Yellow
0 / 8																														
8 / 55					✓			✓												✓	✓									
55 / 76			✓					✓												✓	✓								60m CARBY → 62m	
76 / 77.8					✓			✓																	✓				COAL	
77.8 / 88.7								✓																	✓				COAL	
88.7 / 93.2			✓					✓													✓									
93.2 / 99.1								✓			✓														✓				COAL	
99.1 / 101.9			✓					✓												✓	✓									
101.9 / 102.9								✓			✓														✓				COAL	
102.9 / 104.7			✓					✓												✓	✓									
104.7 / 105.3								✓			✓														✓				COAL	
105.3 / 107.2			✓					✓												✓	✓									
107.2 / 107.7								✓			✓														✓				COAL	
107.7 / 113.7			✓					✓													✓									
113.7 / 114.3								✓			✓														✓				COAL	
114.3 / 115.9			✓					✓													✓									
115.9 / 116.6								✓			✓														✓				COAL	
116.6 / 119.2			✓					✓													✓									
119.2 / 119.9								✓			✓														✓				COAL	
119.9 / 121.7			✓					✓													✓									
121.7 / 122								✓			✓														✓				COAL STRINGER	

monalta Cuttings Description

Project TELKWA Contractor CLD Driller MIKE Lith. by MIKE & DAN HOLE 197R-119 pg of

Remarks 6m CASING Start Geo-log Depth 134m

SITE 146 5/8 BIT Finish Date SEPT 23 Isd S T R

13	16
4	1

Depth () from to	Lithology						Indurate			Coal				Other	Colour									Comments									
	Mdn	S/Md	S/	S/SS	SS			Soft	Med	Hard	Clean	Dirty	Ox		Bone	Carb	Clay	Sand	Grav	Till	Light	Dark	Grey		Brown	Blue	Green	Black	White	Red	Orange	Yellow	
0	6.3																																
6.3	18							✓															✓										
18	22							✓																	✓								
22	60							✓	✓																								
60	94.6			✓				✓	✓														✓										
94.6	94.8							✓					✓															✓					
94.8	100.7			✓				✓																									
100.7	102.3							✓					✓															✓					COAL
102.3	113			✓				✓																				✓					
113	114.5							✓					✓															✓					COAL
114.5	115.4			✓				✓																				✓					
115.4	119.3							✓					✓															✓					COAL
119.3	120.6			✓				✓					✓																				
120.6	123	✓						✓																									
123	125			✓				✓																									
125	126.9							✓																									
126.9	127.1							✓					✓															✓					COAL - STRENGTHEN
127.1	130			✓				✓															✓										
130								✓																				✓					

TELKWA 1998 DRILL-HOLE SUMMARY

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. hole Samples	Date Drilled	Driller	Comments
T98R-01	20	132.00	GDCDpR	11.8	7.50	tailings	---	---	24-Jul-98	SDS; Garth	
T98R-02	16	80.00	GDCDpR	17.5	5.75	tailings	---	---	24-Jul-98	CoraLynn; Bryan B.	
T98R-02C	16	71.70	GDCDpR	18.0	17.20	---	8	16	26-Jul-98	CoraLynn; Bryan B.	ARD core-hole
T98R-03C	30	36.60	GDCR	6.0	-	tenas	28	---	24-Jul-98	McAuley; Don	6" core-hole @ pilot T93R-06C
T98R-04	18	30.20	GDCR	5.6	5.00	tailings	---	---	24-Jul-98	SDS; Garth	
T98R-05	21	103.50	GDCDpR	5.4	4.50	tailings	---	---	25-Jul-98	SDS; Garth	
T98R-06	19	98.00	GDCDpR	5.7	3.00	tailings	---	---	25-Jul-98	SDS; Garth	flowing
T98R-07C	33	97.50	GDCR	19.0	-	tenas	26	13	29-Jul-98	McAuley; Don	6" core-hole @ pilot T96R-65C; & ARD chip samples
T98R-08	4	145.00	GDCDpR	11.5	8.80	pit #3	---	---	26-Jul-98	SDS; Garth	
T98R-09C	38	77.90	GDCR	15.0	15.00	tenas	17	15	29-Jul-98	CoraLynn; Bryan B.	ARD core-hole
T98R-10	2	119.80	GDCDpR	6.3	0.00	pit #3	---	---	26-Jul-98	SDS; Garth	
T98R-11	1	122.00	GDCDpR	6.5	5.50	pit #3	---	---	27-Jul-98	SDS; Garth	dipmeter stuck for 6 hrs at 90m
T98R-12	7	152.00	GDCDpR	12.1	10.50	pit #3	---	---	28-Jul-98	SDS; Garth	
T98R-13C	32	101.50	GDCR	12.0	-	tenas	22	---	2-Aug-98	McAuley; Don	6" core-hole @ pilot T97R-111
T98R-14	29	84.20	GDCR	4.5	3.80	tenas	---	---	30-Jul-98	CoraLynn; Bryan B.	rotary
T98R-15	8	140.00	GDCR	12.5	9.50	pit #3	---	---	30-Jul-98	SDS; Garth	
T98R-16	37	53.00	GDCR	0.0	4.00	tenas	---	---	1-Aug-98	SDS; Garth	
T98R-17	11	170.50	GDCDpR	12.4	10.50	pit #3	---	---	31-Aug-98	CoraLynn; Bryan B.	
T98R-18	27	37.40	GDCR	3.0	3.00	tenas	---	---	1-Aug-98	CoraLynn; Bryan B.	
T98R-19	3	172.60	GDCDpR	6.9	6.00	pit #3	---	---	2-Aug-98	SDS; Garth	
T98R-20	26	42.20	GDCR	3.0	3.00	tenas	---	---	2-Aug-98	CoraLynn; Bryan B.	flowing
T98R-21C	35	90.75	GDCR	12.0	-	tenas	36	---	5-Aug-98	McAuley; Don	6" core-hole @ pilot T96R-131
T98R-22	5	154.70	GDCDpR	12.0	12.00	pit #3	---	---	2-Aug-98	SDS; Garth	
T98R-22C	5	120.50	GDCR	14.0	12.00	---	20	42	13-Aug-98	McAuley; Don	pit 786 ARD, piezo installed w/in #2-seam
T98R-23	25	23.50	GDCR	3.0	1.60	tenas	---	---	3-Aug-98	CoraLynn; Bryan B.	
T98R-24	24	30.20	GDCR	0.0	1.80	tenas	---	---	3-Aug-98	CoraLynn; Bryan B.	
T98R-25	28	18.50	GDCR	5.7	4.50	tenas	---	---	3-Aug-98	CoraLynn; Bryan B.	
T98R-26	48	47.00	Nil	0.0	> 47.00	pit #6	---	---	3-Aug-98	CoraLynn; Bryan B.	abandoned in till
T98R-27	6	178.50	GDCDpR	0.0	5.50	pit #3	---	---	4-Aug-98	SDS; Garth	
T98R-28	47	47.30	Nil	0.0	> 47.30	pit #6	---	---	5-Aug-98	CoraLynn; Bryan B.	
T98R-29	40	164.30	GDCDpR	7.0	6.00	pit #3	---	---	5-Aug-98	SDS; Garth	
T98R-30	12	167.20	GDCDpR	9.5	---	pit #3	---	---	6-Aug-98	SDS; Garth	
T98R-31C	31	51.20	GDCR	6.7	-	tenas	32	---	7-Aug-98	McAuley; Don	6" core-hole @ pilot T95R-24
T98R-32	17	76.70	GDCDpR	6.5	6.50	tailings	---	---	6-Aug-98	CoraLynn; Bryan B.	
T98R-33	13	169.00	GDCDpR	9.1	9.00	pit #3	---	---	7-Aug-98	SDS; Garth	
T98R-34	22	58.40	GDCR	0.0	24.00	tailings	---	---	7-Aug-98	CoraLynn; Bryan B.	
T98R-35	9	153.00	GDCDpR	9.2	8.50	pit #3	---	---	8-Aug-98	SDS; Garth	
T98R-36	B	114.60	GDCDpR	5.5	5.50	tailings	---	---	9-Aug-98	CoraLynn; Bryan B.	added site
T98R-37	10	163.00	GDCDpR	11.6	---	pit #3	---	---	9-Aug-98	SDS; Garth	
T98R-38	A	90.60	GDCDpR	6.5	5.00	tailings	---	---	10-Aug-98	CoraLynn; Bryan B.	added site
T98R-39	39	103.00	GDCDpR	15.9	---	pit #3	---	---	10-Aug-98	SDS; Garth	
T98R-40	46	192.50	GDCR	38.9	38.80	pit #3	---	---	12-Aug-98	CoraLynn; Bryan B.	

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. hole Samples	Date Drilled	Driller	Comments
T98R-41	14	153.00	GDCDpR	15.7	13.50	pit #3	---	---	11-Aug-98	SDS; Garth	piezo installed w/in #2-seam
T98R-42	48 west	49.80	GDCR	11.0	9.00	pit #6	---	---	12-Aug-98	SDS; Garth	
T98R-43	15	132.70	GDCDpR	15.0	14.00	pit #3	---	---	13-Aug-98	SDS; Garth	
T98R-44	41	95.50	GDCDpR	11.9	12.00	pit #3	---	---	13-Aug-98	CoraLynn; Bryan B.	
T98R-45	42	79.40	GDCDpR	12.8	12.00	pit #3	---	---	14-Aug-98	SDS; Garth	
Totals:		4,792.45	metres				189	86			
ARD Core:		278.40					144				
Rotary total:		4,514.05					45				
		4,792.45	metres				189				

Totals:	Total # of D-holes	Total Metres	Casing Depth	Overburden thickness	Avg hole depth	Avg casing depth
Garth B.	23	2,935.70	213.05	153.80	127.6	9.26
Bryan B.	16	1,209.10	118.40	125.75	75.6	7.40
Bryan B. (core)	2	149.60	33.00	32.20	74.8	16.50
Don McAuley	6	498.05	69.70	12.00	83.0	11.62
	47	4,792.45				

Drill-hole #	Site #	Total Depth Geophylog (m)	Logs Run	Casing Depth Geophylog (m)	Overburden thickness (m)	Resource Area	# of coal Samples	# A.R.D. hole Samples	Date Drilled	Driller	Comments
TRC98-01	18	5.10	TRC Dscr'n	N/A	5.10	Tailings	---	---	April 5/98	Bill R	
TRC98-02	16	4.95	TRC Dscr'n	N/A	4.95	Tailings	---	3	April 5/98	Bill R	
TRC98-03	15	5.11	TRC Dscr'n	N/A	5.11	Tailings	---	3	April 5/98	Bill R	
TRC98-04	14	4.75	TRC Dscr'n	N/A	4.75	Tailings	---	---	April 5/98	Bill R	
TRC98-05	13	5.10	TRC Dscr'n	N/A	5.10	Tailings	---	---	April 5/98	Bill R	
TRC98-06	17	3.00	TRC Dscr'n	N/A	2.80	Tailings	---	4	April 5/98	Bill R	Hit Bedrock
TRC98-07	12	3.60	TRC Dscr'n	N/A	3.60	Clean Coal Haul	---	3	April 5/98	Bill R	
TRC98-08	11	3.60	TRC Dscr'n	N/A	3.60	Clean Coal Haul	---	---	April 5/98	Bill R	
TRC98-09	10	4.50	TRC Dscr'n	N/A	4.50	Clean Coal Haul	---	3	April 5/98	Bill R	
TRC98-10	28	4.65	TRC Dscr'n	N/A	4.65	Clean Coal Haul	---	3	April 6/98	Bill R	
TRC98-11	9	4.55	TRC Dscr'n	N/A	4.55	Clean Coal Haul	---	---	April 6/98	Bill R	
TRC98-12	8	4.55	TRC Dscr'n	N/A	4.55	Clean Coal Haul	---	---	April 6/98	Bill R	
TRC98-13	7	5.10	TRC Dscr'n	N/A	5.10	Clean Coal Haul	---	2	April 6/98	Bill R	
TRC98-14	19	4.00	TRC Dscr'n	N/A	4.00	Raw Coal Haul	---	---	April 6/98	Bill R	
TRC98-15	20	5.20	TRC Dscr'n	N/A	5.20	Raw Coal Haul	---	2	April 6/98	Bill R	
TRC98-16	21	3.00	TRC Dscr'n	N/A	2.30	Raw Coal Haul	---	---	April 6/98	Bill R	Hit Bedrock
TRC98-17	22	4.85	TRC Dscr'n	N/A	4.85	Raw Coal Haul	---	4	April 6/98	Bill R	
TRC98-18	23	5.00	TRC Dscr'n	N/A	5.00	Raw Coal Haul	---	---	April 6/98	Bill R	
TRC98-19	24	4.70	TRC Dscr'n	N/A	4.70	Raw Coal Haul	---	4	April 6/98	Bill R	
TRC98-20	1	4.00	TRC Dscr'n	N/A	4.00	Load Out	---	---	April 7/98	Eugen Wittwer	
TRC98-21	2	4.15	TRC Dscr'n	N/A	4.15	Load Out	---	3	April 7/98	Eugen Wittwer	
TRC98-22	3	4.15	TRC Dscr'n	N/A	4.15	Load Out	---	5	April 7/98	Eugen Wittwer	
TRC98-23	5	4.12	TRC Dscr'n	N/A	4.12	Load Out	---	3	April 7/98	Eugen Wittwer	
TRC98-24	4	4.50	TRC Dscr'n	N/A	4.50	Load Out	---	3	April 7/98	Eugen Wittwer	
TRC98-25	6	4.25	TRC Dscr'n	N/A	4.25	Clean Coal Haul	---	3	April 7/98	Eugen Wittwer	
TRC98-26	25	4.55	TRC Dscr'n	N/A	4.55	Raw Coal Haul	---	3	April 7/98	Bill R	
TRC98-27	26	4.82	TRC Dscr'n	N/A	4.82	Raw Coal Haul	---	---	April 7/98	Bill R	
TRC98-28	27	4.20	TRC Dscr'n	N/A	4.20	Raw Coal Haul	---	3	April 7/98	Bill R	
TRC98-29	33	5.00	TRC Dscr'n	N/A	5.00	Plant Site	---	---	April 8/98	Bill R	
TRC98-30	32	5.10	TRC Dscr'n	N/A	5.10	Plant Site	---	3	April 8/98	Bill R	
TRC98-31	30	5.10	TRC Dscr'n	N/A	5.10	Plant Site	---	---	April 8/98	Bill R	
TRC98-32	31	4.96	TRC Dscr'n	N/A	4.96	Plant Site	---	4	April 8/98	Bill R	
Totals		144.21						61			

T98R-01	0.00	7.50	OB
T98R-01	7.50	86.00	SASN
T98R-01	86.00	86.49	COAL
T98R-01	86.49	86.72	MDSN
T98R-01	86.72	86.95	COAL
T98R-01	86.95	115.00	SASN
T98R-01	115.00	132.00	VOLC

T98R-02	0.00	17.25 OB
T98R-02	17.25	19.00 SASN
T98R-02	19.00	22.50 SLSN
T98R-02	22.50	23.75 SASN
T98R-02	23.75	26.50 SLSN
T98R-02	26.50	29.75 SASN
T98R-02	29.75	30.25 SASN
T98R-02	30.25	35.50 SLSN
T98R-02	35.50	40.25 SASN
T98R-02	40.25	45.00 SASN
T98R-02	45.00	46.00 MDSN
T98R-02	46.00	47.25 SLSN
T98R-02	47.25	48.00 MDSN
T98R-02	48.00	48.75 SLSN
T98R-02	48.76	51.25 MDSN
T98R-02	51.26	52.75 SLSN
T98R-02	52.76	53.00 SASN
T98R-02	53.01	55.75 SLSN
T98R-02	55.76	56.00 SASN
T98R-02	56.01	57.00 MDSN
T98R-02	57.01	57.35 SLSN
T98R-02	57.36	57.65 COAL
T98R-02	57.66	57.90 MDSN
T98R-02	57.91	58.05 COAL
T98R-02	58.06	60.33 SLSN
T98R-02	60.34	61.40 COAL
T98R-02	61.41	62.06 MDSN
T98R-02	62.07	62.55 COAL
T98R-02	62.56	63.95 MDSN
T98R-02	63.96	64.96 COAL
T98R-02	64.97	65.30 MDSN
T98R-02	65.31	65.88 COAL
T98R-02	65.89	66.75 MDSN
T98R-02	66.76	67.00 SLSN
T98R-02	67.01	74.51 SLSN
T98R-02	74.52	75.06 COAL
T98R-02	75.07	79.00 SLSN
T98R-02	79.01	80.00 MDSN

manalta Cuttings Description

Project TELKWA Contractor CORALYNN Driller BRYAN B Lith. by _____ HOLE T-98E-02 pg 1 of 2

Remarks _____ Start _____ Geo-log _____ Depth 80m

13		16
4		1

 Finish _____ Date JULY 24/98 lsd S T R

Depth () from to	Lithology						Indurate			Coal				Carb	Clay	Sand	Gray	Till	Other	Colour										Comments
	Mdsn	S/Md	S/	S/SS	F	SS	SS	Soft	Med	Hard	Clean	Dirty	Ox							Bone	Light	Dark	Grey	Brown	Blue	Green	Black	White	Red	
0	5.15																													
5.75	6.5																													
6.5	14.25																													
14.25	17.25																													
17.25	19																													
19	19.75																													
19.75	22.5																													
22.5	22.75																													
23.75	26.5																													
26.5	29.75																													
29.75	30.25																													
30.25	30.75																													
30.75	35.5																													
35.5	36.25																													
36.25	36.75																													
36.75	37.25																													
37.25	39.5																													
39.5	40.25																													
40.25	41.5																													
41.5	41.75																													
41.75	42.75																													
42.75	43.25																													
43.25	45																													
45	46																													
46	47.25																													
47.25	48																													
48	48.75																													
48.75	49																													
49	51.25																													

17.25 m BEDROCK H₂O ≈ 5 gal/min

H₂O @ 24.75 m ≈ 2 gal/min
 H₂O @ 27 m ≈ 2 gal/min

coal stringers from 32 - 36 m

H₂O @ 42.75 m ≈ 2 gal/min

coal stringers from 43 - 45 m

T98R-02C	0.00	17.56 OB
T98R-02C	17.56	20.56 SLSN
T98R-02C	20.56	21.02 SLSN
T98R-02C	21.02	21.76 SLSN
T98R-02C	21.76	22.66 SLSN
T98R-02C	22.66	24.02 lost
T98R-02C	24.02	24.52 SLSN
T98R-02C	24.52	25.25 SASN
T98R-02C	25.25	26.52 lost
T98R-02C	26.52	26.75 SASN
T98R-02C	26.75	27.02 lost
T98R-02C	27.02	29.52 SASN
T98R-02C	29.52	30.02 SASN
T98R-02C	30.02	32.02 SASN
T98R-02C	32.02	33.02 SASN
T98R-02C	33.02	34.84 SASN
T98R-02C	34.84	35.30 SASN
T98R-02C	35.30	36.02 SASN
T98R-02C	36.02	37.52 SASN
T98R-02C	37.52	38.82 SASN
T98R-02C	38.82	39.02 SASN
T98R-02C	39.02	40.27 SASN
T98R-02C	40.27	40.87 MDSN
T98R-02C	40.87	42.02 SASN
T98R-02C	42.02	43.05 SASN
T98R-02C	43.05	45.02 SASN
T98R-02C	45.02	45.27 SASN
T98R-02C	45.27	46.12 SASN
T98R-02C	46.12	48.02 SASN
T98R-02C	48.02	49.32 SASN
T98R-02C	49.33	50.02 SASN
T98R-02C	50.03	51.02 SASN
T98R-02C	51.03	51.59 SASN
T98R-02C	51.60	51.89 MDSN
T98R-02C	51.90	53.52 MDSN
T98R-02C	53.53	54.17 MDSN
T98R-02C	54.18	55.40 MDSN
T98R-02C	55.41	55.52 COAL
T98R-02C	55.53	55.67 COAL
T98R-02C	55.68	57.02 MDSN
T98R-02C	57.03	57.15 MDSN
T98R-02C	57.16	58.28 MDSN
T98R-02C	58.29	58.55 MDSN
T98R-02C	58.56	59.75 MDSN
T98R-02C	59.76	60.02 COAL
T98R-02C	60.03	60.62 COAL
T98R-02C	60.63	60.95 COAL
T98R-02C	60.96	61.62 MDSN
T98R-02C	61.63	61.70 MDSN
T98R-02C	61.71	61.90 COAL
T98R-02C	61.91	62.02 COAL
T98R-02C	62.03	62.14 COAL
T98R-02C	62.15	62.69 MDSN
T98R-02C	62.70	63.02 MDSN
T98R-02C	63.03	63.29 MDSN
T98R-02C	63.30	63.39 MDSN
T98R-02C	63.40	65.52 COAL
T98R-02C	65.53	66.02 COAL
T98R-02C	66.03	67.18 COAL
T98R-02C	67.19	68.00 COAL
T98R-02C	68.01	68.22 MDSN

T98R-02C	68.23	68.52 MDSN
T98R-02C	68.53	68.74 MDSN
T98R-02C	68.75	69.02 MDSN
T98R-02C	69.03	69.10 MDSN
T98R-02C	69.11	69.39 COAL
T98R-02C	69.40	70.09 COAL
T98R-02C	70.10	71.02 MDSN
T98R-02C	71.03	72.02 MDSN

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RUN	DEPTH	run length	BOX #
1	17.2 - 20.2	3	1
2	20.2 - 20.66	4	1
3	20.66 - 23.66	3	1 & 2
4	23.66 - 26.16	2.5	2
5	26.16 - 26.66	.5	3
6	26.66 - 29.66	3	3 & 4
7	29.66 - 32.66	3	4 & 5
8	32.66 - 35.66	3	5 & 6
9	35.66 - 38.66	3	6 & 7
10	38.66 - 41.66	3	7 & 8
11	41.66 - 44.66	3	8 & 9
12	44.66 - 47.66	3	9 & 10
13	47.66 - 49.66	2	10 & 11
14	49.66 - 50.66	1	11
15	50.66 - 53.16	2.5	11 & 12
16	53.16 - 55.16	2	12
17	55.16 - 56.66	1.5	12
18	56.66 - 59.66	3	12 & 13
19	59.66 - 61.66	2	13 & 14
20	61.66 - 62.66	1	14
21	62.66 - 65.66	3	14 & 15
22	65.66 - 68.16	2.5	15
23	68.16 - 68.66	.5	16
24	68.66 - 71.66	3	16 & 17

T.D = 71.66 m