

RESEARCH COUNCIL OF ALBERTA

Report 67-3

COAL SURVEY BOREHOLES,
VULCAN-GLEICHEN AREA, ALBERTA

by

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CONTENTS

	Page
Explanatory note	1
Logs of 1961 Research Council of Alberta Coal Survey boreholes . .	2

ILLUSTRATION

Figure 1 Borehole locations, Vulcan-Gleichen area, Alberta	3
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COAL SURVEY BOREHOLES,
VULCAN-GLEICHEN AREA, ALBERTA

EXPLANATORY NOTE

When the results of the Research Council of Alberta coal survey project in the Vulcan-Gleichen area were published*, it was thought adequate to include complete logs only of the 40 boreholes that intercepted coal seams 1 foot or more in thickness; locations of the remaining 160 boreholes were only briefly noted.

However, the number of inquiries for information contained in the unpublished logs, chiefly from parties interested in other subsurface occurrences than coal, make it advisable now to publish the logs in their entirety.

This report, which is to be considered an addendum to the original Vulcan-Gleichen report (R.C.A.Rept. 64-2) consists of complete logs of all 200 boreholes drilled by the Research Council of Alberta coal survey in the 1961 field season, presented in order of the Alberta land survey system; together with a map of the Vulcan-Gleichen area showing location of the boreholes.

It should be noted that 28 of the 1961 R.C.A.boreholes were drilled on lands of the Blackfoot Indian band at Gleichen, whose permission to explore is gratefully acknowledged.

* Campbell, J. D. and Almadi, I. S. (1964): Coal occurrences of the Vulcan-Gleichen area, Alberta; Res. Coun. Alberta Prelim. Rept. 64-2, 58 pages.

1961 RESEARCH COUNCIL OF ALBERTA BOREHOLES

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 32-11-22 3179; June 21st		NE cor. 20-12-22 3377; June 20th
0-60	Buff till	0-10	Buff till
60-70	Dark grey lake deposit	10-15	Buff shale
70-75	Gravel	15-20	Buff ss
		20-25	Buff shale
		25-30	Light grey silty bentonite
		30-35	Dark grey bentonitic shale
	NE cor. 34-11-22 3150; June 21st	35-40	Dark grey to brown coaly shale
0-45	Gravel	40-55	Dark grey bentonitic shale
		55-60	Dark brown coaly shale
		60-75	Dark grey shale
	NE cor. 9-12-22 3305; June 21st	75-85	Light grey bentonitic siltstone
0-30	Buff till	85-90	Light grey s & p *
30-95	Dark grey lake deposit	90-100	bentonitic ss
95-105	Gravel		Dark grey silty shale
105-120	Light buff s & p ss *	100-105	Dark brown coaly shale
120-125	Black coaly shale	105-115	Dark brown bentonitic shale
125-130	Coal chips; dark grey siltstone	115-120	Dark grey shale
130-135	Dark grey siltstone; coal stringers	120-122	Dark brown well-cemented siltstone
135-140	Dark grey bentonitic shale		
140-170	Light grey bentonitic siltstone		
170-195	Light grey bentonitic siltstone; shale stringers		
195-230	Dark grey shale - Bearpaw		

* s & p - salt and pepper

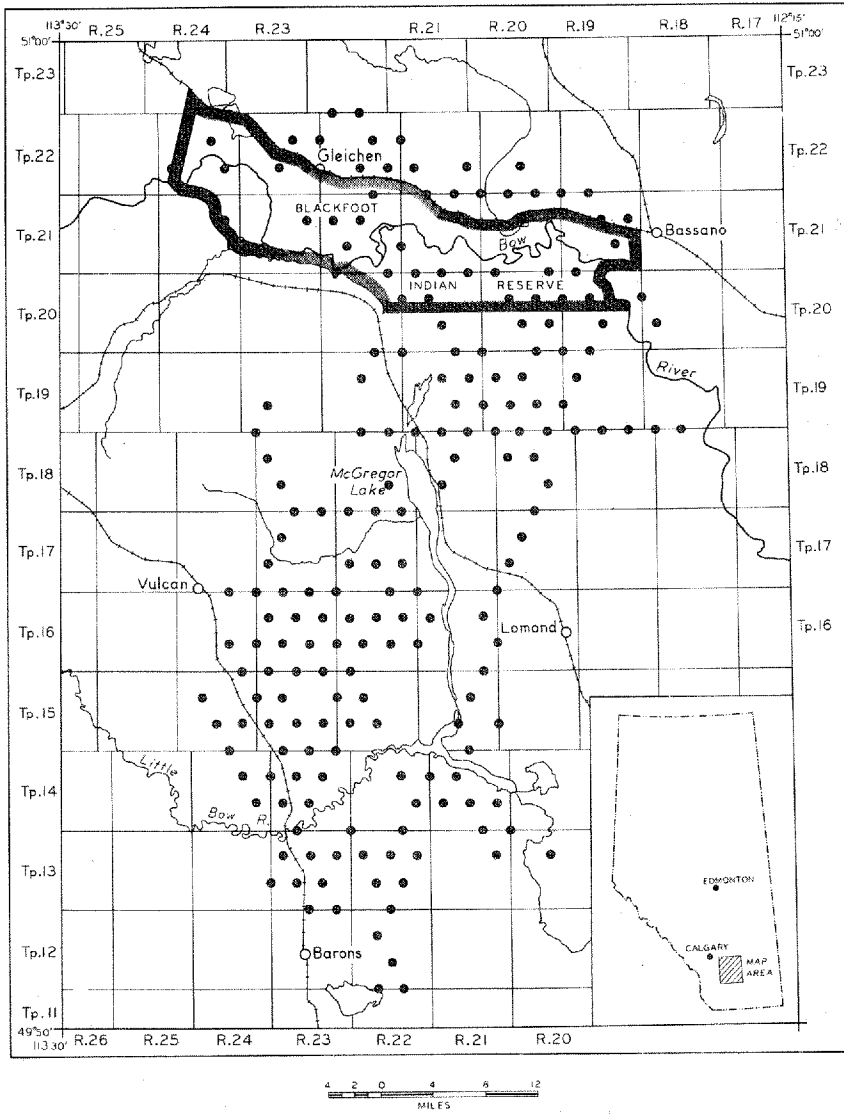


Figure 1. Borehole locations, Vulcan-Gleichen area, Alberta

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 33-12-22 3355; June 20th		
0-41.5	Buff till	105-110	Brown coaly shale & light grey bentonitic siltstone
41.5-61	Dark brown weathered coaly shale		Light grey siltstone
61-110	Light grey & dark brown bentonitic silty shale	110-120	
110-123	Dark brown shale		
123-125	Coal		NE cor. 21-13-20 2895; June 7th
125-134	Light grey bentonitic shale		
134-135	Coal	0-35	Buff till; weathered coal
135-150	Dark grey hard shale	35-40	Brown silty sandy shale
		40-45	Brown silty shale; weathered coal
	NE cor. 33-12-23 3113; June 22nd	45-60	Brown silty sandy shale
0-20	Buff till	60-65	Dark grey bentonitic silty shale
20-105	Dark grey lake deposit; few coal chips	65-150	Dark grey bentonitic shale; hard stringers @ 127 & 130 feet
	NE cor. 35-12-23 3190; June 21st		
0-20	Buff shale		NE cor. 23-13-21 3000; June 7th
20-35	Light grey shale		
35-50	Dark brown coaly shale	0-15	Buff till
		15-55	Buff silty shale; coal chips @ 30, 35, 40 & 45 feet
50-60	Light grey bentonitic shale		
60-80	Light grey shale; coal chips @ 65 feet	55-60	Dark grey silty shale
80-95	Light grey to brown shale	60-65	Buff silty shale
95-105	Brown coaly shale	65-150	Dark grey bentonitic shale

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 34-13-21 3120; June 6th		
0-35	Buff till; coal chips @ 25 feet	95-110	Light grey siltstone
35-50	Dark grey silt & sandy clay	110-120	Light grey well-cemented s & p ss; few coal chips
50-65	Dark grey unconsol. silty sand	120-125	Brown shale
65-80	Dark grey silt, s & p sand & bentonite	125-135	Dark brown coaly shale
80-85	Light grey unconsol. silt & sand	135-150	Light grey well-cemented siltstone
85-120	Light grey unconsol. silt & sand; coal chips @ 90 & 115 feet		
120-125	Light grey unconsol. bentonitic silt		NE cor. 10-13-22 3260; June 19th
125-135	Brown silty bentonite	0-15	Buff till
135-140	Silty bentonite	15-20	Gravel
140-150	Dark grey silty bentonitic sand		
			NE cor. 19-13-22 3272; June 22nd
	NE cor. 36-13-21 3003; June 7th	0-15	Buff siltstone
		15-35	Brown shale
		35-39	Brown coaly shale
0-45	Buff till	39-73	Light grey to brown bentonitic shale
45-120	Dark grey silty bentonitic clay	73-74	Coal
120-125	Dark grey shale - hard	74-94	Light to dark grey bentonitic shale
125-150	Dark grey shale	94-94.5	Coal
		94.5-99	Light grey bentonitic siltstone
	NE cor. 8-13-22 3362; June 19th	99-105	Light grey shale
0-35	Buff till		
35-90	Light grey bentonitic shale		
90-95	Dark grey shale		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
NE cor. 21-13-22 3327; June 20th		NE cor. 34-13-22 3215; June 20th	
0-10	Buff till	102-137	Light grey siltstone
10-32	Buff shale	137-138	Coal
32-37	Light grey bentonitic well-cemented s & p ss	138-142	Shale
37-47	Light grey to light green bentonitic shale	142-147	Weathered coal & shale
47-52	Light grey bentonitic siltstone	147-150	Shale
52-56	Light grey bentonitic shale		
56-61.5	Light grey well- cemented siltstone	0-10	Buff till; weathered coal
61.5-62.5	Coal	10-25	Light buff bentonitic silt
62.5-77	Dark grey shale	25-30	Buff shale
77-82	Light grey s & p ss	30-35	Buff shale & weathered coal
82-85	Black shale	35-45	Buff silt
85-87	Light grey bentonitic s & p ss	45-50	Dark brown shale
87-91.5	Black shale	50-55	Light grey silt
91.5-94.5	Light grey siltstone	55-75	Dark grey bentonitic shale
94.5-112	Black to dark brown coaly shale	75-80	Light grey bentonitic s & p ss
112-122	Dark grey shaly siltstone	80-85	Dark grey bentonitic shale
122-131.5	Light brown bentonitic shale	85-90	Light grey well- cemented siltstone
131.5-132.5	Coal	90-95	Dark brown coaly shale
132.5-150	Light grey bentonitic shale	95-100	Light grey silty bentonite
NE cor. 23-13-22 3172; June 19th		100-105	Light grey bentonitic siltstone
0-35	Buff till	105-120	Dark grey shale
35-77	Light brown shale; coal stringers	120-125	Light grey bentonitic siltstone
77-85	Light grey siltstone	125-150	Dark grey shale
85-89	Light brown shale		
89-90	Coal		
90-102	Light brown shale		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 8-13-23 3125; June 22nd		
0-20	Buff till	70-75	Light grey shale
20-25	Coal chips	75-105	Light grey bentonitic shale; ss stringer @ 85 feet
25-30	Buff till		
30-45	Unconsol. sand		
45-50	Buff till		
50-90	Dark grey lake deposit		
90-105	Buff siltstone		
			NE cor. 21-13-23 3097; June 23rd
		0-50	Buff till
	NE cor. 10-13-23 3110; June 22nd	50-65	Dark grey lake deposit
		65-70	Gravel
0-45	Buff till	70-75	Dark grey lake deposit; coal chips & gravel
45-105	Dark grey lake deposit	75-105	Dark grey lake deposit
	NE cor. 19-13-23 3105; June 23rd		NE cor. 23-13-23 3125; June 22nd
0-30	Buff till & plastic clay	0-50	Buff till
30-40	Buff siltstone	50-95	Dark grey lake deposit; some coal chips
40-45	Buff shale		
45-50	Light grey bentonitic shale	95-105	Dark brown coaly shale
50-55	Light grey silty shale	105-110	Buff s & p ss
55-60	Light grey bentonitic shale	110-120	Light grey siltstone
60-70	Dark brown coaly shale & light grey silty bentonite		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 32-13-23 3088; June 23rd		NE cor. 9-14-21 3124; June 6th
0-75	Buff till	0-45	Buff till
75-105	Dark grey lake deposit	45-50	Dark grey unconsol. silt & sand; coal chips
	NE cor. 36-13-23 3091; June 23rd	50-55	Dark grey unconsol. s & p silt & sand
0-45	Buff till	55-60	Dark grey clay
45-69	Dark grey lake deposit	60-65	Shale
69-72	Brown coaly shale	65-70	Light brown silty shale
72-73	Coal	70-75	Dark grey s & p unconsol. bentonitic sand
73-90	Light grey bentonitic shale	75-90	Dark grey s & p unconsol. bentonitic sand; coal chips @ 85 feet
90-105	Light grey s & p ss	90-105	Dark grey bentonitic silty shale
	NE cor. 12-13-24 3137; June 23rd	105-115	Light grey siltstone
0-35	Buff till & plastic clay	115-120	Dark grey silty shale
35-40	Buff silt	120-135	Light grey siltstone
40-55	Light grey bentonitic shale	135-140	Lost circulation
55-65	Light grey silty bentonite	140-150	Light grey bentonitic siltstone
65-105	Light grey bentonitic shale		
	NE cor. 7-14-21 3125; June 19th		
0-45	Buff till		
45-60	Light grey clay		
60-75	Lost circulation		
75-90	Buff sand & gravel		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 11-14-21 3060; June 6th		NE cor. 33-14-21 2904; June 17th
0-45	Buff till; coal chips @ 45 feet	0-20	Buff till
45-55	Dark grey silt	20-95	Dark grey lake deposit; coal chips @ 30 feet
55-60	Dark grey silty clay	95-110	Gravel & sand
60-70	Dark grey silty shale	110-150	Dark grey lake deposit
70-75	Shale		
75-90	Light grey bentonitic siltstone		
90-95	Light grey s & p fine ss		NE cor. 11-14-22 3120; June 5th
95-105	Light grey s & p ss		
105-110	Light grey s & p fine ss; coal chips	0-40	Till & gravel; lost circulation
110-120	Light grey unconsol. bentonitic siltstone		
120-135	Dark brown silty shale		NE cor. 22-14-22 3112; June 5th
135-150	Light grey bentonitic silty shale		
		0-35	Till
		35-45	Buff silty clay
		45-50	Light grey silty clay
		50-60	Light grey siltstone
		60-65	Dark brown silty shale
		65-70	Dark grey siltstone
		70-80	Lost circulation
		80-85	Dark grey siltstone
		85-90	Coal (3 feet) & dark brown shale
		90-95	Light grey siltstone
		95-105	Dark brown silty shale
		105-120	Lost circulation
	NE cor. 20-14-21 3100; June 6th		
0-65	Till; coal @ 10, 15, 20 & 65 feet		
65-70	Buff unconsol. silty clay		
70-85	Dark grey unsorted silty till		
85-90	Light grey silty shale		
90-95	Dark grey unconsol. s & p ss		
95-100	Dark grey unconsol. silt		
100-120	Dark grey sandy clay - unsorted sand		
120-145	Lost circulation		
145-150	Light grey s & p silt & sand		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 24-14-22 3110; June 5th		NE cor. 20-14-23 3165; June 28th
0-45	Buff till	0-10	Till
45-110	Dark grey lake deposit	10-30	Buff shale & siltstone
110-112	Dark grey silty shale	30-40	Dark grey silty shale
112-115	Coal	40-90	Dark grey bentonitic silty shale
115-126	Light grey silty shale	90-95	Light grey bentonitic s & p ss
126-132	Light grey bentonitic siltstone	95-105	Light grey bentonitic shale
132-138	Light grey bentonitic shale		
138-139.5	Coal		
139.5-150	Brown silty coaly shale; thin coal stringers		NE cor. 22-14-23 3109; June 28th
	NE cor. 7-14-23 3148; June 26th	0-30	Buff till
0-60	Buff till	30-35	Buff till; gravel & coal chips
60-75	Buff to light grey bentonitic shale	35-105	Dark grey lake deposit
75-80	Light grey bentonitic shale		
80-105	Light grey very bentonitic shale		NE cor. 31-14-23 3140; June 29th
	NE cor. 9-14-23 3085; June 26th	0-30	Buff till
0-60	Buff till	30-40	Buff bentonitic shale
60-105	Dark grey lake deposit	40-50	Buff siltstone - hard
		50-65	Buff siltstone
		65-85	Light grey bentonitic shale
		85-105	Light grey bentonitic siltstone

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 33-14-23 3077; June 29th		NE cor. 22-14-24 3209; June 28th
0-40	Till	0-5	Buff till
40-48	Brown coaly shale	5-30	Brown s & p ss - hard
48-54	Grey siltstone	30-70	Light grey bentonitic silt
54-66.5	Light grey bentonitic shale	70-105	Light grey bentonitic shale
66.5-68	Shaly coal		
68-105	Light grey to brown shale		
	NE cor. 35-14-23 3058; June 29th		NE cor. 24-14-24 3200; June 28th
0-60	Buff till	0-10	Buff till
60-75	Dark grey lake deposit	10-30	Buff s & p ss
75-90	Light grey bentonitic shale	30-75	Light grey bentonitic shale
90-105	Dark brown bentonitic shale	75-80	Brown bentonitic shale
		80-110	Brown coaly shale
		110-115	Light grey siltstone - hard
	NE cor. 11-14-24 3116; June 28th		NE cor. 33-14-24 3185; June 30th
0-45	Buff till	0-30	Buff till
45-60	Dark grey lake deposit	30-45	Light grey bentonitic siltstone
60-70	Buff siltstone	45-55	Light grey well-cemented s & p ss
70-75	Brown shale	55-60	Light grey siltstone
75-80	Brown coaly shale	60-105	Light grey s & p bentonitic ss
80-90	Light grey bentonitic shale		
90-95	Light grey siltstone		
95-100	Light grey bentonitic shale		
100-105	Light grey siltstone		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 9-15-21 2805; June 17th		NE cor. 7-15-22 3089; July 4th
0-35	Buff till	0-25	Buff till
35-150	Light grey bentonitic shale - Bearpaw	25-105	Dark grey lake deposit
	NE cor. 12-15-21 2936; June 17th		NE cor. 9-15-22 3225; June 3rd
0-25	Buff till	0-55	Till
25-30	Lost circulation	55-100	Dark grey lake deposit
30-35	Dark grey lake deposit	100-110	Dark grey bentonitic siltstone
35-45	Lost circulation	110-120	Brown shale
45-150	Dark grey lake deposit	120-123.5	Coal
	NE cor. 22-15-21 3110; June 16th	123.5-129.5	Bentonitic siltstone
		129.5-135	Silty shale
		135-141	Siltstone
		141-144	Shale
		144-146	Light grey siltstone; coal stringers
0-75	Buff till	146-150	Brown silty shale
75-80	Gravel		
80-150	Dark grey lake deposit		
	NE cor. 35-15-21 3078; June 16th		
0-65	Buff till		
65-75	Lost circulation		
75-122	Buff till & gravel		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 20-15-22 3250; June 3rd		NE cor. 7-15-23 3150; June 29th
0-55	Till	0-35	Buff till
55-65	Dark grey siltstone	35-105	Dark grey lake deposit
65-81	Shale		
81-98	Shaly siltstone		
98-100	Coal & shale		
100-110	Dark brown silty shale		NE cor. 9-15-23 3075; July 4th
110-115	Light grey siltstone		
115-120	Shale		
120-123	Light grey siltstone	0-30	Buff till
123-128	Shale	30-105	Dark grey lake deposit
128-131	Light brown siltstone		
131-137	Light brown silty shale		
137-144	Light brown siltstone		
144-150	Dark brown silty shale		NE cor. 11-15-23 3089; July 4th
		0-30	Buff till & brown clay; coal chips
	NE cor. 31-15-22 3225; July 11th	30-40	Dark grey lake deposit
		40-48	Light grey bentonitic siltstone
0-15	Buff till	48-53.5	Dark grey silty shale
15-30	Light brown shale	53.5-54.5	Ss
30-35	Dark brown bentonitic shale	54.5-71.5	Dark grey bentonitic silty shale
35-55	Light grey bentonitic shale; hard shaly siltstone band @ 50 - 55 feet	71.5-72.5	Coal
		72.5-78	Light grey bentonitic coaly shale
55-60	Light grey bentonitic shale	78-81	Light grey shale
60-65	Hard dark grey siltstone	81-85	Siltstone
65-70	Light grey bentonitic siltstone	85-98	Light grey shale
		98-101.5	Brown silty shaly coal
70-75	Light grey bentonitic shale	101.5-105	Shale
75-80	Light grey s & p ss		
80-90	Dark brown coaly shale		
90-105	Light grey silty bentonitic shale		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 20-15-23 3075; June 30th		
0-15	Buff till	10-20	Dark grey shale, black shale, coal
15-105	Dark grey lake deposit	20-44	Grey ss & shale
		44-46	Ss
		46-63	Grey silty shale
	NE cor. 24-15-23 3150; June 3rd	63-67	Coal
		67-100	Grey siltstone
0-38	Till	100-104	S & p ss
38-50	Very bentonitic siltstone	104-150	Grey shale
50-52.5	Coal		
52.5-70	Dark grey bentonitic silty shale		NE cor. 35-15-23 3272; June 2nd
70-79	Dark grey bentonitic siltstone	0-15	Buff till
79-86	Silty shale	15-20	Light grey to buff unconsol. silt
86-91	Dark grey siltstone	20-25	Buff siltstone
91-100	Dark brown silty shale	25-35	Light grey to buff unconsol. siltstone
100-102	Light grey bentonitic siltstone	35-55	Light grey bentonitic silt
102-126	Shale & siltstone	55-60	Dark brown shaly silt
126-126.75	Coal	60-65	Light grey siltstone
126.75-144	Dark brown silty shale	65-70	Dark brown bentonitic shaly siltstone; coal chips
144-146	Coal	70-75	Light grey silty shale
146-150	Dark brown shale	75-85	Light grey silty shale; coal chips
	NE cor. 31-15-23 3151; July 4th	85-90	Light grey silty shale; good coal chips
0-20	Buff s & p sand	90-95	Dark brown silty shale
20-35	Light grey silty shale	95-115	Dark grey silty shale; coal chips
35-60	Light grey bentonitic s & p ss	115-120	Light grey bentonitic siltstone
60-105	Light grey bentonitic silty shale	120-125	Light grey shale; coal chips
	NE cor. 33-15-23 3280; June 1st	125-130	Light grey shale
0-10	Dark grey s & p ss	130-150	Light grey silty shale

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 9-15-24 3175; June 30th		
0-30	Buff till	50-65	Dark grey well- cemented s & p ss
30-35	Buff well-cemented siltstone	65-80	Light grey siltstone
35-40	Light grey bentonitic shale	80-90	Light grey siltstone; hard stringer of dark grey ss
40-45	Dark grey bentonitic shale	90-95	Light grey siltstone
45-50	Light grey bentonitic shale	95-105	Light grey bentonitic shale
50-55	Light grey bentonitic siltstone		
55-60	Light grey s & p ss		
60-105	Light grey bentonitic shale		NE cor. 35-15-24 3274; July 4th
		0-20	Gravel & till
		20-35	Light grey bentonitic s & p silt & ss
	NE cor. 11-15-24 3174; June 29th	35-85	Light grey bentonitic silty shale
0-35	Buff till	85-90	Light grey silty shale
35-105	Dark grey lake deposit	90-95	Dark grey bentonitic shale
		95-105	Dark grey silty shale
	NE cor. 20-15-24 3175; June 30th		NE cor. 12-16-21 2985; June 16th
0-35	Buff till & gravel	0-35	Buff till
35-105	Dark grey lake deposit	35-90	Dark grey lake deposit
		90-115	Sand & gravel
	NE cor. 24-15-24 3155; June 30th	115-135	Clean pea gravel
		135-150	Dark grey lake deposit
0-35	Buff till		
35-50	Buff siltstone		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 19-16-21 2976; July 5th		NE cor. 10-16-22 3300; July 11th
0-49	Buff till	0-45	Buff till
49-61.5	Gravel	45-50	Dark grey lake deposit
61.5-70	Light grey siltstone		Gravel
70-73	Coal	50-55	Buff bentonitic silty shale
73-86	Brown bentonitic coaly shale	55-80	Brown coaly shale
86-87	Coaly shale?	80-85	Light grey bentonitic shale
87-89	Light grey bentonite	85-90	Light grey siltstone
89-92	Coaly shale?	90-95	Light grey bentonitic silty shale
92-105	Dark grey bentonitic shale	95-105	
	NE cor. 23-16-21 3000; June 16th		NE cor. 12-16-22 3135; July 11th
0-50	Buff till	0-20	Buff till
50-150	Dark grey lake deposit	20-75	Dark grey lake deposit
	NE cor. 36-16-21 3030; June 15th	75-80	Gravel
		80-95	Buff silt & shale; reworked Edmonton
		95-105	Light brown bentonitic shale
0-50	Buff till		NE cor. 19-16-22 3175; July 5th
50-150	Dark grey plastic lake deposit		
	NE cor. 8-16-22 3232; July 11th	0-33	Buff till
		33-78	Dark grey lake deposit
0-45	Buff till	78-79	Coal
45-105	Dark grey lake deposit	79-92	Dark brown coaly shale
		92-105	Dark silty shale

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
NE cor. 21-16-22 3148; July 5th			
0-35	Buff till	75-80	Dark grey bentonitic shale
35-100	Dark grey lake deposit; gravel @ 95-100 feet	80-85	Dark brown coaly shale
100-105	Buff shale	85-105	Dark grey bentonitic silty shale
NE cor. 23-16-22 3120; July 5th		NE cor. 34-16-22 3172; July 7th	
0-46	Buff till	0-35	Buff till
46-47	Coal	35-90	Dark grey lake deposit
47-52	Brown coaly shale	90-96	Gravel
52-75	Light brown bentonitic shale	96-102	Coaly shale
75-79	Light grey bentonitic siltstone	102-103	Coal
79-95	Light brown bentonitic shale	103-107	Brown bentonitic coaly shale
95-100	Light brown bentonitic coaly shale	107-107.5	Coal
100-105	Light grey siltstone	107.5-120	Dark grey bentonitic shale
NE cor. 32-16-22 3291; July 7th		NE cor. 36-16-22 2994; July 5th	
0-30	Buff till	0-44	Buff till
30-35	Buff to dark brown shale	44-69	Dark grey lake deposit
35-40	Weathered coal	69-70.5	Gravel
40-45	Rusty-colored hard shale	70.5-79	Dark grey bentonitic shale
45-55	Buff hard shale	79-80	Coal
55-65	Light grey siltstone	80-100	Light grey bentonitic shale
65-70	Light buff s & p ss; hard siltstone stringer	100-105	Light grey siltstone
70-75	Light brown well-cemented siltstone		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 8-16-23 3295; June 1st		NE cor. 12-16-23 3210; July 6th
0-23	Buff till	0-20	Buff till
23-40	Buff to grey bentonitic s & p ss	20-35	Dark grey lake deposit; coal chips
40-52	Bentonitic siltstone	35-40	Buff to light grey shale
52-62	S & p ss; thin coal stringers	40-50	Dark brown coaly shale
62-77	Light grey siltstone	50-60	Light grey silty bentonite
77-78	Coal	60-85	Light grey silty bentonitic shale; some brown coaly shale
78-86	Shale	85-90	Light grey siltstone
86-125	Shaly siltstone	90-100	Light grey shale; coal chips
125-128	Shale	100-105	Light grey silty shale
128-150	Light grey siltstone		
	NE cor. 10-16-23 3263; July 6th		NE cor. 19-16-23 3305; July 6th
0-15	Buff till	0-20	Buff till
15-30	Buff shale	20-35	Dark grey lake deposit; weathered coal @ 35 feet
30-35	Light grey well-cemented ss; hard stringer @ 38 feet	35-45	Brown bentonitic shale
35-40	Dark grey well-cemented siltstone & light grey bentonitic shale	45-50	Light grey bentonite
40-50	Light grey bentonitic shale	50-60	Light grey bentonitic shale
50-60	Dark grey coaly shale	60-65	Lost circulation
60-70	Light grey bentonitic shale	65-85	Light grey bentonitic shale
70-75	Light grey silty shale	85-100	Lost circulation
75-90	Dark grey hard silty shale		
90-100	Light grey silty shale		
100-105	Brown coaly shale		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 21-16-23 3112; July 6th		NE cor. 36-16-23 3138; July 7th
0-35	Buff till	0-50	Buff till
35-45	Light green bentonitic shale	50-72	Buff shale
45-50	Dark grey bentonitic shale	72-85.5	Light grey to brown coaly shale
50-70	Light buff s & p ss	85.5-86	Coal
70-75	Lost circulation	86-105	Light grey bentonitic shale
75-80	Light grey well-cemented ss		
80-85	Brown coaly shale		
85-100	Light grey silty shale		
100-105	Lost circulation		
			NE cor. 10-16-24 3270; June 2nd
	NE cor. 23-16-23 3192; July 6th	0-50	Buff till
0-5	Till	50-113	Dark grey lake deposit
5-40	Sand & gravel	113-120	Silty shale
40-65	Light grey bentonitic shale	120-130	Silty bentonite
65-67	Coaly shale	130-135	Bentonitic siltstone
67-68	Coal & shale	135-136	Coal
68-105	Light grey bentonitic shale	136-154	Bentonitic siltstone
		154-159	Light grey s & p bentonitic ss
		159-169	Bentonitic siltstone
		169-171	Light grey s & p coarse ss
		171-179	Bentonitic siltstone
		179-186	Shale
		186-199	Light grey s & p bentonitic ss; thin coal stringers
	NE cor. 32-16-23 3289; July 7th	199-202	Shale
0-35	Buff till	202-206	Light grey s & p bentonitic ss
35-45	Buff very hard siltstone & ss		
45-85	Light buff bentonitic silty shale, siltstone & ss	206-210	Shale
85-95	Light grey bentonitic shale	210-220	Bentonitic siltstone
95-100	Light grey s & p ss	220-224	Shale
100-105	Brown bentonitic shale	224-228	Light grey siltstone
		228-233	Light grey shale
	NE cor. 34-16-23 3192; July 7th		
0-30	Buff till		
30-45	Dark grey lake deposit		
45-60	Gravel & quicksand		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 12-16-24 3310; June 2nd		NE cor. 36-16-24 3216; July 10th
0-30	Buff till	0-35	Buff till
30-35	Buff coarse s & p ss	35-60	Dark grey lake deposit
35-40	Buff siltstone	60-65	Light grey well- cemented s & p ss
40-45	Dark grey bentonitic siltstone	65-70	Dark grey silty shale
45-55	Light grey s & p bentonitic ss	70-80	Light grey silty shale
55-60	Light grey s & p coarse bentonitic ss; coal chips	80-85	Light grey well- cemented siltstone
60-100	Light grey s & p bentonitic coarse ss; coal @ 90 feet	85-90	Dark grey silty shale
100-105	Dark grey bentonitic siltstone; some coal	90-105	Dark grey bentonitic shale
105-110	Bentonite		
110-120	Dark grey very bentonitic siltstone		
120-130	Bentonite		
130-150	Dark grey bentonitic siltstone		
			NE cor. 7-17-20 3025; June 15th
		0-57	Buff till
		57-110	Dark grey lake deposit
		110-118	Shale
		118-119	Coal
		119-126	Silty shale
		126-137	Light grey bentonitic siltstone
		137-150	Silty shale
	NE cor. 34-16-24 3307; July 10th		
0-15	Buff till		
15-25	Buff s & p ss		
25-30	Light grey siltstone		
30-35	Light grey silty bentonite		
35-50	Light grey s & p ss		
50-85	Light grey bentonitic shale		
85-90	Brown coaly shale; coal chips		
90-95	Brown coaly shale		
95-100	Dark grey bentonitic shale		
100-105	Light grey siltstone		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 20-17-20 3175; June 15th		
0-40	Buff till	70-75	Dark grey bentonitic shale
40-85	Gravel & till	75-80	Light grey siltstone
85-105	Dark grey lake deposit	80-90	Light brown bentonitic shale
105-110	Siltstone	90-105	Light grey bentonitic shale
110-117	Silty shale		
117-127	Dark grey shale		
127-128	Weathered coal		
128-141	Dark grey shale		
141-150	Light grey siltstone		
			NE cor. 11-17-22 3064; July 10th
	NE cor. 33-17-20 3055; June 15th	0-60	Buff till
		60-105	Dark grey lake deposit
0-30	Buff till		
30-150	Dark grey bentonitic lake deposit		
			NE cor. 31-17-22 3210; July 13th
	NE cor. 7-17-22 3058; July 10th	0-55	Buff bentonitic shale
0-30	Buff till	55-60	Light grey bentonitic shale
30-105	Dark grey lake deposit	60-65	Dark brown coaly shale
		65-90	Light grey bentonitic shale
	NE cor. 9-17-22 3080; July 10th	90-95	Dark grey shale
0-60	Buff till	95-100	Light grey s & p ss
60-65	Dark grey well-cemented siltstone	100-105	Light green bentonitic shale
65-70	Light buff s & p ss		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 33-17-22 3000; July 13th		
0-30	Buff till	60-70	Brown hard shale
30-50	Dark grey lake deposit	70-90	Light grey silty hard shale
50-60	Gravel	90-100	Light grey s & p ss
		100-105	Dark grey shale
	NE cor. 35-17-22 2925; July 13th		
0-35	Buff till		NE cor. 35-17-23 3200; July 13th
35-45	Gravel	0-20	Buff till
		20-100	Dark grey lake deposit
	NE cor. 7-17-23 3175; July 11th	100-105	Bottom 3 feet light grey s & p ss
0-20	Buff till		
20-75	Dark grey lake deposit		NE cor. 32-18-18 2923; June 12th
75-80	Buff bentonitic silt	0-50	Buff till
		50-130	Dark grey lake deposit
	NE cor. 20-17-23 3216; July 12th	130-145	Dark brown shale - Bearpaw
0-20	Buff till	145-150	Light grey siltstone
20-70	Gravel	150-155	Dark grey bentonitic shale
70-105	Dark grey lake deposit	155-210	Dark grey to brown bentonitic shale
	NE cor. 33-17-23 3256; July 12th		
0-20	Buff till		
20-60	Buff silty bentonitic shale		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 32-18-19 3057; June 10th		NE cor. 34-18-19 2935; June 12th
0-35	Buff till	0-20	Buff till
35-40	Buff till & weathered coal	20-25	Dark grey lake deposit
40-45	Buff till & gravel	25-30	Lost circulation
45-60	Lost circulation	30-105	Dark grey lake deposit
60-65	Light grey bentonitic siltstone		
65-70	Dark grey bentonitic shale		
70-75	Coal		NE cor. 36-18-19 2923; June 12th
75-80	Chocolate brown bentonitic shale		
80-90	Light grey silty bentonite	0-60	Buff till
90-100	Light grey well- cemented siltstone	60-150	Dark grey lake deposit
100-105	Light grey bentonite		
105-110	Lost circulation		
110-115	Light green hard shale		NE cor. 10-18-20 3008; June 14th
115-120	Light grey bentonitic siltstone	0-15	Buff till
120-130	Dark grey silty bentonitic shale	15-35	Till - lost circulation; no samples
130-135	Dark grey silty bentonitic hard shale	35-121	Dark grey lake deposit
135-140	Light grey silty bentonite	121-123	Shale
140-145	Dark brown silty bentonitic hard shale	123-131	Light grey bentonitic siltstone
145-150	Light grey bentonitic siltstone	131-132	Coal
		132-134	Shale
		134-135.25	Coal
		135.25-138	Shale
		138-139	Coal
		139-150	Light grey shale

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 19-18-20 3179; July 18th		NE cor. 32-18-20 3040; June 10th
0-40	Buff till	0-43	Buff till
40-65	Light grey bentonitic shale	43-57	Light grey siltstone
65-66	Coal	57-64	Dark brown bentonitic shale
66-71	Light grey silty shale	64-77	Light grey siltstone
71-75	Silty shale	77-78	Coal
75-81	Light grey s & p ss	78-83	Dark brown silty shale
81-87	Light grey siltstone	83-86	Light grey bentonitic siltstone
87-89	Coal	86-121	Dark brown & light grey bentonitic shale
89-105	Shale; siltstone & coal stringers	121-122	Coal
		122-150	Light grey silty bentonitic shale
	NE cor. 21-18-20 3090; June 14th		NE cor. 34-18-20 2955; June 10th
0-30	Buff till	0-25	Buff till
30-45	Buff siltstone	25-86	Dark grey lake deposit
45-50	Buff silty shale & weathered coal	86-88	Dark brown silty shale
50-55	Dark brown shale	88-89	Coal
55-60	Rusty siltstone	89-110	Shale
60-65	Weathered coal & brown shale	110-112.5	Coal
65-75	Light grey silty bentonite	112.5-121	Shale
75-80	Dark grey silty bentonitic shale	121-128	Coal stringers & brown coaly shale
80-95	Light grey silty bentonite	128-136	Shale
95-100	Light brown hard shale	136-137	Coal
100-105	Dark brown silty bentonitic shale	137-138	Shale
105-110	Dark brown coaly shale	138-140	Coal
110-115	Light grey coaly shale	140-150	Shale; thin coal stringers
115-120	Light green bentonitic shale		
120-130	Dark grey to green silty shale		
130-135	Dark grey to green silty shale; coal		
135-140	Chocolate brown coaly shale		
140-145	Light grey hard shale		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
NE cor. 36-18-20 2960; June 10th			
0-20	Buff till	98-100	Coal
20-78	Dark grey lake deposit	100-107	Dark grey bentonitic shale
78-90	Gravel	107-110	Light grey bentonitic siltstone
90-141	Dark grey lake deposit	110-150	Dark grey bentonitic silty shale
141-142	Coal		
142-150	Brown silty shale; thin coal stringer		
NE cor. 8-18-21 2901; July 18th		NE cor. 34-18-21 3125; June 9th	
0-45	Buff till	0-30	Buff till; weathered coal @ 10 feet
45-75	Dark grey lake deposit	30-35	Dark grey plastic clay lake deposit
75-90	Light grey s & p ss	35-40	Buff plastic clay
90-95	Light grey well-cemented s & p ss	40-45	Buff silty clay
95-105	Light grey bentonitic s & p ss	45-55	Dark grey silty bentonitic shale
		55-60	Light grey silty bentonite
		60-65	Light green silty bentonitic shale
NE cor. 21-18-21 3039; July 18th		65-70	Dark grey silty shale
		70-75	Dark grey silty bentonitic shale; coal chips
0-35	Buff till	75-80	Dark brown shale
35-60	Lost circulation	80-85	Dark grey well- cemented siltstone
60-80	Brown bentonitic shaly coal @ 65-70 feet	85-95	Dark grey silty bentonite
80-100	Lost circulation	95-100	Green bentonitic shale
NE cor. 32-18-21 3033; June 9th		100-105	Dark grey silty shale
		105-110	Light grey well- cemented siltstone
0-50	Till	110-125	Dark grey silty shale
50-55	Lost circulation	125-135	Light grey bentonitic siltstone
55-98	Dark grey lake deposit	135-140	Dark brown silty shale
		140-150	Dark green shale

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 36-18-21 3167; June 9th		NE cor. 34-18-22 2859; June 8th
0-25	Buff till	0-30	Buff till
25-66	Light grey silty shale	30-50	Dark grey till
66-68	Light grey bentonitic siltstone; coal stringers	50-60	Till; coal
68-90	Dark brown silty shale	60-65	Preglacial gravel
90-91	Coal	65-75	Light grey silty bentonite
91-95	Dark brown silty shale	75-80	Light grey bentonitic siltstone
95-98	Light grey siltstone	80-85	Dark grey siltstone; coal chips
98-150	Light grey to dark grey silty shale; siltstone stringers	85-95	Chocolate brown silty shale
	NE cor. 10-18-22 2910; July 13th	95-100	Coaly dark grey shale
0-35	Buff till	100-120	Coaly & chocolate brown shale
35-45	Gravel	120-125	Chocolate brown bentonitic shale
	NE cor. 32-18-22 3055; June 8th	125-130	Buff to grey hard shaly well-cemented siltstone
0-150	Till - reworked Edmonton	130-135	Chocolate brown bentonitic shale
150-155	Preglacial gravel	135-145	Light grey bentonitic shale
		145-150	Grey silty bentonite

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 36-18-22 2876; June 9th		
0-30	Buff till	75-80	Dark grey shale
30-40	Buff to dark grey plastic till	80-90	Dark grey silty shale & siltstone
40-45	Dark grey till	90-105	Dark grey bentonitic shale
45-50	Light grey very plastic lake clay		
50-100	Dark grey silty till; lake deposit		
100-105	Light to dark grey bentonitic siltstone		NE cor. 19-18-23 3456; July 12th
105-115	Light grey bentonitic siltstone	0-60	Buff till
115-135	Dark grey silty bentonite	60-75	Brown well-cemented s & p ss - Paskapoo
135-140	Chocolate brown shale	75-80	Light buff silty bentonitic shale
140-145	Dark brown silty shale	80-85	Buff ss
145-150	Light grey bentonitic siltstone; coal chips	85-90	Dark grey to brown bentonitic shale
150-155	Light grey bentonitic siltstone	90-105	Light grey bentonitic shale
155-160	Dark grey silty shale		
160-165	Light grey bentonitic siltstone		NE cor. 36-18-24 3443; July 12th
165-170	Light grey well- cemented siltstone	0-40	Buff till
170-180	Light grey silty bentonite	40-80	Dark grey lake deposit
		80-85	Brown ss - Paskapoo
		85-95	Light grey to buff well-cemented ss
	NE cor. 8-18-23 3292; July 12th	95-105	Brown coarse ss
0-40	Buff till		
40-50	Gravel		
50-75	Buff till; coal chips @ 55 feet		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 19-19-19 3112; June 13th		NE cor. 8-19-20 3094; July 17th
0-64	Buff to dark grey till	0-47	Buff till
64-71	Brown bentonitic shale	47-52.5	Brown shale
71-75	Dark grey silty bentonitic shale	52.5-53.5	Weathered coal
75-79	Light grey siltstone	53.5-60	Dark grey shale
79-86	Light grey bentonitic shale	60-69	Light grey s & p ss
86-89.5	Light grey well-cemented siltstone	69-90	Light grey & brown shales; coal stringers
89.5-92.5	Brown shale	90-105	Light grey to dark brown bentonitic shale
92.5-93	Coal		
93-99.5	Brown shale		
99.5-100.5	Coal		
100.5-105	Chocolate brown bentonitic shale		NE cor. 10-19-20 3000; July 20th
105-118	Silty shale	0-20	Buff till
118-150	Dark grey shale	20-30	Dark grey till
		30-45	Buff till
		45-60	Lost circulation
	NE cor. 32-19-19 2904; June 13th		
0-15	Buff till		NE cor. 12-19-20 2975; June 14th
15-105	Dark grey lake deposit		
105-115	Buff weathered siltstone	0-35	Buff till
115-120	Brown silty clay	35-150	Dark grey lake deposit; last 65 feet very bentonitic
120-135	Light grey bentonitic siltstone		
135-150	Grey bentonitic shale		
			NE cor. 19-19-20 2956; July 20th
		0-30	Buff till
		30-105	Dark grey lake deposit

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 21-19-20 2937; July 20th		
0-50	Buff till	85-90	Dark brown coaly shale
50-55	Light greyish-green bentonitic shale	90-95	Light grey bentonitic siltstone
55-60	Brown coaly shale	95-105	Light grey silty shale
60-65	Light grey bentonitic shale		
65-70	Light grey s & p ss		
70-75	Light grey siltstone		
75-80	Dark brown hard shale		NE cor. 10-19-21 3017; July 17th
80-100	Dark grey bentonitic shale	0-60	Buff till
100-105	Coal & brown coaly shale	60-100	Dark grey lake deposit
105-110	Brown coaly shale	100-105	Brown bentonitic shale
110-115	Light grey siltstone		
115-120	Dark grey shale		
	NE cor. 34-19-20 2949; July 21st		NE cor. 12-19-21 3225; July 17th
0-30	Buff till	0-22	Buff till
30-70	Dark grey lake deposit	22-30	Grey silty shale
70-75	Light grey bentonitic shale	30-32	Siltstone
75-90	Light grey bentonitic siltstone	32-34	Brown bentonitic shale
90-100	Dark grey to green bentonitic shale	34-36	Siltstone
100-105	Light grey siltstone	36-44	Brown bentonitic shale
		44-45	Buff s & p ss
		45-64	Light buff bentonitic shale
		64-64.75	Weathered coal
		64.75-73	Brown bentonitic shale
	NE cor. 36-19-20 3076; July 21st	73-73.75	Coal
0-30	Buff till	73.75-78	Shale
30-85	Dark grey lake deposit	78-79	Coal
		79-96	Light grey bentonitic shale
		96-96.75	Coal
		96.75-105	Light grey bentonitic shale

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 21-19-21 2906; July 17th		NE cor. 36-19-21 2965; July 21st
0-40	Buff till	0-45	Buff till
40-44	Light grey silty shale	45-65	Dark grey lake deposit
44-48	Coaly shale	65-80	Brown bentonitic shale
48-52	Weathered coal & light grey silty shale	80-85	Brown coaly shale
52-70	Dark brown coaly shale; coal stringers	85-105	Brown bentonitic shale
70-71.5	Coal		
71.5-80	Brown coaly shale		
80-95	Lost circulation.		
95-105	Light grey bentonitic shale		NE cor. 21-19-22 3051; July 14th
		0-20	Buff till
		20-105	Dark grey lake deposit
	NE cor. 23-19-21 3092; July 20th		
0-30	Buff till		NE cor. 34-19-22 2947; July 14th
30-54	Light grey to buff silty bentonitic shale		
54-57	Coal (2 feet) & coaly shale	0-45	Buff till
57-65	Buff shale	45-85	Dark grey lake deposit
65-67.5	Coal & coaly shale	85-90	Gravel - lost circulation
67.5-105	Brown to dark grey shale		
			NE cor. 36-19-22 2883; July 14th
	NE cor. 34-19-21 2883; July 21st		
0-30	Buff till	0-55	Buff till
30-105	Dark grey lake deposit	55-75	Dark grey lake deposit
		75-90	Gravel
		90-95	Light grey siltstone
		95-105	Light grey silty shale

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 8-19-23 3774; July 14th		
0-5	Buff shale	65-115	Dark brown shale
5-45	Buff silty shale; hard bands of dark grey well-cemented siltstone	115-120	Chocolate brown shale - weathered coal
45-55	Dark grey siltstone	120-145	Light grey silty shale
55-60	Dark grey silty shale	145-150	Dark brown shale
60-80	Dark grey bentonitic siltstone		
80-95	Light grey s & p ss		
95-100	Buff s & p ss		NE cor. 20-20-19 2987; July 25th
100-125	Light grey bentonitic s & p ss	0-5	Gravel
125-130	Light green bentonitic shale	5-52	Buff till
130-150	Light grey bentonitic shale	52-78	Dark grey lake deposit
		78-79	Coal
		79-80	Coaly shale
		80-81	Coal
		81-83.5	Shale
	NE cor. 7-20-18 2791; Aug. 3rd	83.5-85	Coaly shale
		85-91.5	Dark grey to brown coaly shale
0-45	Buff till	91.5-95	Coal & coaly shale
45-65	Dark grey lake deposit	95-130	Dark grey & brown bentonitic shale
65-105	Dark grey to black shale - Bearpaw	130-138.5	Light grey siltstone
		138.5-152.5	Light grey silty shale
		152.5-154.5	Coaly shale
	NE cor. 9-20-19 2841; June 13th	154.5-172	Dark grey silty shale
		172-173	Coal
0-25	Buff till; coal chips @ 25 feet	173-179	Dark grey silty shale
25-30	Dark grey lake deposit	179-180	Coal
30-50	Dark brown shale - Bearpaw	180-191	Light grey silty shale
50-55	Light grey silty bentonite	191-200	Brown bentonitic shale
55-60	Dark brown shale - Bearpaw	200-225	Light grey s & p ss & shale
60-65	Light brown bentonitic shale		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 24-20-19 2795; Aug. 3rd		NE cor. 33-20-19 2704; July 25th
0-20	Buff till	0-25	Buff till;
20-25	Light grey sandy shale	25-36.5	boulders & gravel
25-45	Light grey silty shale	36.5-40	Dark grey bentonitic shale
45-75	Dark grey bentonitic shale	40-40.75	Coal
75-80	Light grey silty shale	40.75-42	Light grey s & p ss
80-90	Brown bentonitic shale - Bearpaw; hard stringer @ 83 feet	42-54	Coal
90-95	Brown bentonitic shale	54-59	Dark grey sandy shale
95-100	Brown bentonitic shale; few coal chips	59-62.5	Dark grey bentonitic shale
100-105	Brown bentonitic shale	62.5-94	Ss
		94-95.5	Light to dark grey silty shale
		95.5-105	Grey well- cemented siltstone
			Silty shale
	NE cor. 31-20-19 2812; July 25th		NE cor. 9-20-20 3025; July 24th
0-70	Buff till	0-40	Buff till
70-85	Gravel & coal chips	40-75	Dark grey lake deposit
85-105	Light grey s & p bentonitic ss	75-90	Light grey s & p ss
105-120	Light grey silty bentonite	90-95	Dark grey to light green
120-135	Light grey bentonitic siltstone; hard stringer @ 121 & 124 feet	95-100	bentonitic shale
135-150	Light grey bentonitic shale	100-105	Brown bentonitic shale
			Dark grey bentonitic shale

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 11-20-20 3125; July 24th		NE cor. 22-20-20 2975; July 24th
0-15	Buff till	0-35	Buff till
15-30	Dark grey lake deposit	35-45	Buff s & p ss
30-33	Light grey bentonitic shale	45-50	Light buff shale
33-35	Ss	50-60	Dark brown coaly shale
35-40	Light grey bentonitic shale	60-65	Light grey s & p ss
40-50	Light grey s & p ss	65-70	Brown coaly shale
50-80	Light grey to green & brown bentonitic shale	70-75	Dark grey bentonitic shale
80-82.5	Coal	75-80	Dark brown coaly shale
82.5-105	Light grey bentonitic shale	80-85	Dark grey well- cemented siltstone
		85-90	Light grey s & p ss
		90-105	Dark grey silty shale
	NE cor. 20-20-20 2873; July 26th		NE cor. 24-20-20 2936; July 24th
0-50	Buff till	0-35	Buff till
50-55	Brown coaly shale	35-75	Dark grey lake deposit; some coal chips & gravel @ 60-65 feet
55-60	Brown bentonitic shale	75-80	Brown bentonitic coaly shale
60-65	Light grey bentonitic shale	80-90	Lost circulation, hard ss
65-70	Brown coaly shale		
70-75	Dark grey well- cemented ss		
75-85	Light grey silty bentonitic shale		
85-90	Dark grey coaly bentonitic shale		
90-95	Light grey bentonitic shale		
95-100	Light grey s & p ss		
100-105	Light grey bentonitic silty shale		NE cor. 31-20-20 2671; July 26th
		0-55	Unconsol. river sand
		55-60	Gravel

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 35-20-20 2854; July 24th		NE cor. 31-20-21 2852; Aug. 8th
0-30	Buff till	0-55	Buff till
30-51.5	Brown & dark grey bentonitic shale	55-65	Dark grey lake deposit
51.5-61	Light grey well- cemented s & p ss	65-75	Gravel - cemented
61-79	Light grey to green & brown (coaly) bentonitic shale		
79-80	Coal		NE cor. 33-20-21 2860; July 26th
80-100	Light grey & brown bentonitic shale	0-55	Buff till
100-102	Brown coaly shale	55-75	Dark grey lake deposit
102-102.75	Coal		
102.75-105	Brown coaly shale	75-80	Gravel
105-106	Coal		
106-111	Brown coaly shale		
111-120	Light grey well- cemented siltstone		NE cor. 35-20-21 2805; July 26th
	NE cor. 9-20-21 2852; July 21st	0-30	Buff till
		30-100	Dark grey lake deposit
0-25	Buff till	100-105	Gravel
25-105	Dark grey lake deposit		
	NE cor. 20-20-21 2825; Aug. 8th		NE cor. 24-20-22 2890; July 26th
		0-35	Buff till
0-40	Buff till	35-55	Gravel
40-60	Dark grey lake deposit		
60-75	Gravel - cemented		NE cor. 35-20-22 2892; July 26th
		0-50	Buff till
		50-65	Gravel

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 10-21-19 2726; Aug. 3rd		NE cor. 21-21-20 2680; Aug. 7th
0-30	Buff till	0-15	Pea gravel & boulders
30-90	Dark grey lake deposit		
90-95	Dark grey unconsol. s & p ss; few coal chips		
95-115	Dark grey unconsol. ss; coal chips		NE cor. 32-21-20 2789; Aug. 2nd
115-120	Dark grey ss	0-45	Buff till
		45-105	Dark grey lake deposit
	NE cor. 21-21-19 2707; Aug. 3rd		
0-30	Buff till		NE cor. 34-21-20 2766; Aug. 2nd
30-105	Dark grey lake deposit	0-35	Buff till
		35-85	Dark grey lake deposit
	NE cor. 23-21-19 2664; Aug. 3rd	85-105	Dark grey varved lake deposit
0-25	Buff till		
25-105	Dark grey lake deposit		NE cor. 36-21-20 2790; Aug. 2nd
		0-65	Buff till
	NE cor. 32-21-19 2727; Aug. 2nd	65-75	Dark grey lake deposit; boulders @ 75 feet
0-30	Buff till		
30-105	Dark grey lake deposit		NE cor. 34-21-21 2917; Aug. 1st
		0-60	Buff till
	NE cor. 8-21-20 2665; Aug. 7th	60-80	Mountain gravel, cemented
0-15	Pea gravel		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 36-21-21 2805; Aug. 2nd		NE cor. 34-21-22 2842; Aug. 4th
0-45 45-65	Buff till Mountain gravel, cemented	0-30 30-105	Buff till Light grey to buff plastic bentonitic clay, varved
	NE cor. 8-21-22 2879; Aug. 4th		NE cor. 23-21-23 2893; Aug. 4th
0-15 15-105	Buff till & sand Light grey to buff plastic bentonitic clay	0-20 20-105	Buff till Light grey to buff plastic clay; 60 feet of s & p river sand above the clay
	NE cor. 12-21-22 2865; Aug. 7th		NE cor. 23-21-24 2926; Aug. 8th
0-10 10-105	Buff till Light grey to buff plastic clay	0-30 30-105	Buff till Dark grey plastic clay; gravel stringer @ 105 feet
	NE cor. 19-21-22 2868; Aug. 4th		NE cor. 9-22-20 2807; Aug. 2nd
0-25 25-105	Buff till Light grey to buff plastic clay; sand 15 feet above the clay	0-15 15-105	Buff till Dark grey lake deposit
	NE cor. 21-21-22 2894; Aug. 4th		
0-30 30-105	Dark grey s & p unconsol. river sand Light grey to buff plastic clay		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 7-22-21 3000; Aug. 1st		
0-30	Buff till	40-45	Buff to brown shale
30-60	Dark grey lake deposit	45-50	Dark grey shale
60-65	Light grey well- cemented siltstone	50-55	Light grey shale
65-95	Light grey bentonitic silty shale	55-60	Light grey silty shale
95-100	Brown bentonitic shale; hard stringers	60-65	Light grey bentonitic shale
100-105	Light grey shale; some brown coaly shale	65-70	Light grey shale; hard stringer of light grey s & p ss
		70-90	Light grey shale; hard stringer of dark grey shale @ 88 feet
		90-105	Light grey silty shale
	NE cor. 11-22-21 2945; Aug. 1st		
0-5	Buff till & gravel		
5-25	Mountain gravel		
			NE cor. 22-22-22 2960; Aug. 1st
		0-30	Buff till
	NE cor. 9-22-22 2890; Aug. 1st	30-60	Dark grey lake deposit
		60-70	Light grey bentonitic shale
0-50	Buff till	70-80	Light grey s & p ss
50-105	Dark grey lake deposit	80-90	Light grey to buff silty shale
		90-100	Brown silty shale
		100-105	Coal chips & coaly shale
	NE cor. 11-22-22 2956; Aug. 1st	105-110	Brown silty shale
0-15	Buff till	110-120	Light grey bentonitic shale
15-25	Buff silty shale		
25-30	Buff shale		
30-35	Buff siltstone		
35-40	Buff s & p ss		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 24-22-22 3050; Aug. 1st		NE cor. 33-22-22 3050; July 31st
0-25	Buff till	0-40	Buff till
25-30	Buff s & p ss - Paskapoo	40-45	Buff s & p coarse ss - Paskapoo
30-45	Buff silty shale	45-50	Buff shale
45-95	Light grey silty shale	50-55	Buff silty shale
95-100	Buff shale	55-60	Buff s & p ss - Paskapoo
100-105	Light grey silty shale	60-70	Light grey silty shale
		70-75	Light grey to green bentonitic shale
	NE cor. 31-22-22 3060; July 31st	75-80	Light grey shale
		80-85	Light grey silty hard shale
0-35	Buff till	85-105	Light grey bentonitic shale
35-40	Buff brittle shale		
40-45	Buff shale		
45-60	Light grey silty shale		
60-70	Light grey siltstone & shale		NE cor. 9-22-23 2780; July 31st
70-75	Light grey well- cemented s & p ss	0-40	Buff till
75-80	Very hard stringer of light grey s & p ss	40-105	Dark grey lake deposit
80-85	Light grey silty bentonite		
85-90	Light grey s & p ss		
90-95	Light grey s & p ss; hard stringer @ 95 feet		NE cor. 11-22-23 2930; July 31st
95-100	Dark grey bentonitic shale	0-50	Buff till
100-105	Dark grey-mauve shale	50-95	Light grey bentonitic shale
		95-100	Light grey siltstone
		100-105	Light grey bentonitic shale; hard stringer @ 101 feet

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
	NE cor. 20-22-23 2987; July 27th		
0-15	Buff till	90-100	Light grey bentonitic silty shale
15-75	Dark grey lake deposit		
75-90	Buff s & p unconsol. sand	100-105	Light grey s & p ss
90-102	Grey & buff river sand		
			NE cor. 7-22-24 3050; July 27th
	NE cor. 22-22-23 2980; July 31st	0-5	Buff till
		5-15	Buff shale
0-40	Buff till	15-20	Buff s & p ss
40-45	Buff s & p ss	20-30	Buff shale
45-70	Light grey bentonitic unconsol. s & p ss, mostly shale	30-35	Dark grey bentonitic shale
70-77	Light grey bentonitic unconsol. s & p ss, mostly shale; hard stringer @ 77 feet	35-40	Dark grey silty shale
77-105	Light grey s & p ss & shale	40-65	Light grey silty shale
		65-75	Light grey s & p ss
		75-90	Dark grey silty shale
		90-95	Dark grey bentonitic shale
		95-105	Light grey to greenish bentonitic shale
	NE cor. 24-22-23 3000; July 27th		
0-35	Buff till		
35-60	Dark grey lake deposit		
60-65	Light grey s & p ss		
65-85	Light grey s & p ss & bentonite		
85-90	Light grey bentonitic shale & dark grey to mauve shale		

Depth (feet)	Location W 4th Mer. Top elevation (feet); Date	Depth (feet)	Location W 4th Mer. Top elevation (feet); Date
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NE cor. 11-22-24
3000; Aug. 8th

0-45	Buff to brown s & p bentonitic ss	75-80	Dark grey silty shale
45-50	Brown s & p ss	80-90	Light grey siltstone
50-60	Brown s & p bentonitic ss	90-95	Light grey s & p coarse ss
60-70	Brown sandy bentonite	95-100	Light grey bentonitic shale
70-75	Hard stringer	100-105	Dark grey to black bentonitic shale
75-85	Brown s & p bentonitic ss	105-140	Shale ("mauve")
85-90	Buff to brown bentonitic shale; some ss & light grey bentonitic shale	140-150	Sandy shale ("white")
90-105	Light grey bentonitic shale		

NE cor. 22-22-24
3020; July 27th

0-20	Buff till
20-25	Buff s & p ss
25-30	Buff well-cemented s & p ss
30-45	Light buff bentonitic silty shale
45-50	Light grey s & p coarse ss
50-55	Buff s & p coarse ss
55-70	Buff s & p bentonitic coarse ss
70-75	Light grey to buff s & p coarse ss