

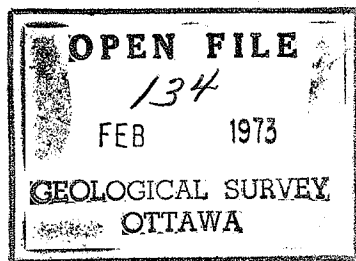
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DESCRIPTIONS OF EXPOSURES OF UNCONSOLIDATED
DEPOSITS AT LOCATIONS SHOWN ON PHOTOGEOLOGIC
MOSAICS OF THE HAYES RIVER (54C) AND KETTLE
RAPIDS (54D) AREAS, MANITOBA

BY

R. W. KLASSEN AND J. A. NETTERVILLE



SECTION - Stop 1

June 5, 1972

LOCATION: North side of Nelson River below Kettle Rapids in sec. 30,
 twp. 85, rge. 20 E. 1st Mer. (56° 23' lat., 94° 29' long.);
 thicknesses measured by range pole; described by R. W. Klassen

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
4	Peat	1
3	Silt and clay; pale brown (10 Y/R 6/3 wet - silt) or yellowish brown (10 Y/R 5/4 wet - clay): thinly bedded with thicknesses from 1/2 to 3 inches, becomes clayier towards top of unit; slightly fossiliferous (marine - below water line of low tide)	5
2	Clay; greyish brown (10 Y/R 5/2 wet); slightly stony; massive with small lenses (6 inches) of laminated clay along contact with Unit 1; slightly fossiliferous (marine?); contact with Unit 3 marked by slight concentration of stones	6
1	Till; greyish brown, (2.5 Y 5/2 wet) oxidized; sandy; moderately stony, crumbly; jointed with limonite and manganese staining along joints; hackly fracture; contact with Unit 2 is even and in places marked by a zone of boulders up to 1 foot thick (Upper till)	18
Total to river level.....		30

SECTION - Stop 51 ✓

LOCATION: North bank of Nelson River below Spruce Rapids in NW¼ sec. 32, twp. 85, rge. 21 E. of 1st Mer. (56° 25' N. lat., 94° 17' W. lat.); thicknesses measured by altimeter; described by R. W. Klassen

7	Silt, greyish brown (10 Y/R 4/2 wet), clayey (marine)	4
6	Silt and sand; thinly bedded (fluvio-lacustrine?)	20
5	Clay; thinly varved; distinctive bed along bank (glaciolacustrine)	1

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
4	Sand and Till; sand is poorly sorted with stony, till-like bands (ablation till?); till-like bands are grayish brown (2.5 Y 5/2 wet), compact and fissile (similar to "Shield Type" till)	15
3	Silt and Sand; thinly bedded (6 inches to 1 foot); some gravelly beds; sharp contact with Unit 4 (glaciofluvial?)	15
2	Till; olive (5 Y 4/4 wet), slightly oxidized; silty; mod. stony; jointed; crumbles fairly easily; sharp contact with Unit 3 (Lower Till?)	
1	Covered interval	10
	Total to River Level	75

SECTION - Stop 34

August 21, 1971

LOCATION: West bank of Nelson River near mouth of Limestone River in NE $\frac{1}{4}$ sec. 1, twp. 87, rge. 21 E. of 1st. Mer. (56° 31' lat., 94° 05' long.); thicknesses estimated; described by R.W. Klassen

4	Clay; brown; fossiliferous (marine-below water line of low tide)	4
3	Sand and Gravel (fluvial?)	15
2	Sand and Silt; thinly bedded to laminated (glacio-lacustrine?)	40
1	Till; brownish grey; silty; mod. stony with large boulders in places (Upper till)	20
	Total to River Level	79

SECTION - Stop 2 ✓

June 5, 1972

LOCATION: North side Nelson River near confluence with Limestone River in SE $\frac{1}{4}$ sec. 12, twp. 87, rge. 21, E. of the 1st. Mer. (56° 32' lat., 94° 09' long.); measured by range pole; described by R. W. Klassen

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
9	Sand; fossiliferous (marine)	4
8	Sand; fine to med. grained; current bedding; some gravel beds 2 inches to 1 foot thick (fluvio-lacustrine?)	16
7	Clay; thinly varved (glaciolacustrine)	1.5
6	Sand; light brown; very fine grained; massive (glaciofluvial?)	1.5
5	Silt; light grey to brownish grey; sandy or clayey in part; thinly bedded up to 4 inches thick (glaciofluvial?)	8
4	Till; dark greyish brown (2.5 Y 4/2 wet); oxidized; silty; mod. stony; crumbly; hackly fracture (Upper till)	6
3	Clay; very dark grey (2.5 Y N/3 wet); unoxidized; slightly stony	0.25
2	Till; dark greyish brown (2.5 Y 4/2 wet); oxidized; silty; mod. stony; jointed with limonite staining along joints (Middle till)	10
1	Till; olive grey (5Y 4/2 wet) or olive (5Y 4/4 wet); unoxidized; silty; mod. stony; jointed with limonite staining along joints; hard (Lower till)	34

Total to river level..... 81

SECTION - Stop 52 ✓

June 22, 1972

LOCATION: North side of Nelson River about 2 miles below mouth of Limestone River in NE $\frac{1}{4}$ sec. 8, twp. 87, rge. 22, E. of the 1st. Mer. (56° 32' lat., 94° 05' long.); thicknesses by altimeter; described by R. W. Klassen

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
5	Sand and gravel; bouldery in upper 10 feet; lower zone is highly fossiliferous (marine - below water line of low tide)	15
4	Clay; thinly varved; forms a distinctive, continuous bed along the river bank (glaciolacustrine)	1
3	Silt and sand; massive or thinly bedded; thickness ranges from 20 to 60 feet and is greatest where it fills a former channel cut into till (glaciofluvial? deltaic?)	84
2	Till; olive grey (5 Y 4/2 wet); silty, mod. stony; jointed with limonite and manganese staining along joints, very hard and forms steepest parts of bluff; thickness ranges from 20 to 50 feet (Lower till); this unit is thickest outside a former channel cut into the till where it is overlain by a somewhat darker grey till (Middle till?; this unit was inaccessible because of the steep bank)	20
1	Dolomite; light grey with numerous buff colored nodules; Bad Cache Rapids Group (Lower Ordovician)	6
Total to river level.....		126

SECTION - Stop 53

June 22, 1972

LOCATION: South bank of Nelson River opposite mouth of Goose Creek in NW $\frac{1}{4}$ sec. 20, twp. 88, rge. 2 E. of 2nd Mer. (56° 39' lat., 93° 49' long.); thicknesses measured by altimeter; described by R. W. Klassen

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
4	Silt and sand; gravelly in part with scattered boulders (marine?)	15
3	Sand, gravel and till; beds are fairly stony throughout and in the upper 1 foot zone it is very till-like; till-like bed is greyish brown (2.5 Y 5/2 wet); fairly hard (glaciofluvial and glacial?)	20

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
2	Till, dark grey (5Y 4/1 wet); slightly oxidized in part; silty or clayey; mod. stony; jointed; crumbly (Upper Till?)	10
1	Covered interval	90
Total to river level.....		135

SECTION - Stop 36

June 9, 1972

LOCATION: Test-pit in northeast end of terrace on south side of Nelson River in SW $\frac{1}{4}$ sec. 10, twp. 89, rge. 2, E. of 2nd Mer. (56° 42' lat, 93° 46' long.); thicknesses estimated; measured by R. W. Klassen

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
2	Silt and sand; thinly bedded, fossiliferous (fluvial and fluviolacustrine)	2
1	Gravel, coarse and bouldery (fluvial?)	20

SECTION - Stop 3

June 5, 1972

LOCATION: Small tributary valley on the north side of Nelson River about 4 miles above the mouth of Angling River in SE $\frac{1}{4}$ of sec. 25, twp. 89, rge. 3 E. of the 2nd Mer. (56° 43' lat., 93° 44' long.); thicknesses are estimated; described by R. W. Klassen

3	Sand and clay; fossiliferous (marine); contact with till is bouldery	3
2	Till; dark greyish brown (10 YR 4/2 wet), silty; mod. stony (Upper till)	10
1	Till; dark greyish brown (2-5Y 4/2 wet); silty; mod. stony (Middle till? and Lower till?)	107
Total to river level		120

SECTION - Stop 37

June 9, 1972

LOCATION: Mouth of Angling River in SW $\frac{1}{4}$ sec. 34, twp. 89, rge. 3 E. of 2nd Mer. (56° 45' lat., 93° 36' long.); thicknesses are estimated; described R. W. Klassen

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
5	Clay, brown, fossiliferous (marine - below water line of low tide)	2
4	Sand; fine; cross-bedded (glaciofluvial?)	20
3	Till; olive grey (5 Y 4/2 wet); slightly oxidized; silty; mod. stony (Middle till?)	30
2	Till; olive (5Y 4/3 wet), oxidized, silty; mod. stony (Middle till?)	30
1	Till; olive grey (5 Y 4/2 wet) unoxidized silty; mod. stony, very hard (Lower till)	30

Total to river level..... 112

SECTION - Stop 51

August, 1971

LOCATION: South bank of Nelson River about 5 miles below mouth of Angling River in NW $\frac{1}{4}$ sec. 7, twp. 90, rge. 4 E. of 2nd Mer. (56° 48' lat., 93° 31' long.); thicknesses measured by range pole; described by R. W. Klassen

7	Silt; yellowish brown; clayey; crumbly; limonite stained lenses; scattered stones to 4 inches; fossiliferous (marine)	8
6	Silt; light grey; clayey; slightly stony and somewhat till-like in part; fossiliferous (glacio-marine?)	45
5	Silt; yellowish brown; thinly bedded to laminated glaciolacustrine?)	6
4	Covered interval	30
3	Silt; yellowish brown; massive (glaciolacustrine?)	4

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
2	Silt; yellowish brown; thinly bedded to laminated (glaciolacustrine?)	22
1	Till; olive grey (5 Y 4/2 wet) silty; mod. to slightly stony; jointed with limonite staining along joints; hard (Lower till)	5
Total to river level.....		120

SECTION - Stop 54

June 22, 1972

LOCATION: North bank of Angling River about 2 miles above confluence with Nelson River; thicknesses estimated; described by R. W. Klassen

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
1	Peat	5
5	Clay; greenish grey; organic detritus (recent lacustrine)	1
4	Sand and fine gravel; very fossiliferous (marine)	5
3	Clay; grey; silty; weakly bedded; fossiliferous (marine)	8
2	Till; dark greyish brown (2.5 Y 4/2 wet); slightly oxidized, silty; mod. stony, soft; crumbly (Upper till)	11
1	Covered interval	30
Total to river level.....		60

SECTION - Stop B14

June 10, 1972

LOCATION: North bank Nelson River about 2 miles downstream from Seal Island in NW $\frac{1}{4}$ sec. 35, twp. 92, rge. 8 E. of 2nd Mer., (56 $^{\circ}$ 56' 30" lat., 92 $^{\circ}$ 46' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
5	Covered to top of section	15
4	Sand; fine grained; shells and shell fragments on surface (marine delta?)	4
3	Clay; silt and sand aggregate; moderately stony; very soft; poor exposure (glaciomarine?)	5

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
2	Till; greyish brown (10 YR 5/2 wet); hard; moderately stony, blocky fracture; limonite stain on joint faces; unit contains coarse sand lenses 30' from base above which the till becomes more crumbly, having a hackly fracture, moderate stoniness, the same color and limonite stained joints (Middle? and Upper tills?)	40
1	Covered interval	15
Total to river level.....		79

SECTION - Stop B15

June 11, 1972

LOCATION: North bank Nelson River about 3 miles downstream from Deer Island in NW $\frac{1}{4}$ sec. 26, twp. 9, rge. 6 E. of 2nd Mer. (56° 55' 30" N 93° 05' W); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
6	Sand and minor gravel; sand is fine to medium grained (marine?)	1
5	Silt, clay and sand; oxidized; contains rare stones; ($\frac{1}{2}$ " to 4"); contains a 3" to 6" band of red silt 3' from base containing a 1" thick bed of silt resembling loess (glaciomarine?)	4
4	Till; greyish brown (10YR 5/2 wet); hard; mod. stony; blocky fracture; limonite stain along joints (Upper till)	4
3	Till; very dark greyish brown (10 YR 3/2 wet); unoxidized; clayey; soft; moderately to slightly stony; limonite stain on joints; unit gets siltier and less massive towards top; capped by a distinctive 1" to 2" bed of fine sand (Middle till?)	8

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
2	Till; greyish brown (10 YR 5/2 wet); hard; mod. stony; blocky fracture; limonite stain along joints (Middle till?)	17
1	Covered interval	15
	Total to river level.....	49

SECTION - Stop B16

June 11, 1972

LOCATION: North bank Nelson River about 2 miles downstream from its confluence with Weir River in NE ¼ sec. 20, twp. 91, rge. 5, E. of (56° 54' 30" lat. 93° 18' W. long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
4	Silt and sand (fine grained) with minor clay; thinly bedded (¼"-4"); cliff exposure; contains wood parallel to bedding 6" from base	3
3	Till: very dark greyish brown (10 YR 3/2 wet); unoxidized; clayey; soft, mod. to slightly stony; limonite stain along joints (Middle till?)	10
2	Till; greyish brown (10 YR 5/2 wet); hard; mod. stony; blocky fracture; limonite stain along joints (Middle till?)	25
1	Covered interval	6
	Total to river level.....	44

SECTION - STOP 74

June 26, 1972

LOCATION: East side of Wigwam Creek about 5 miles above the confluence with Gods River (56° 04' lat., 92° 14' long.); thicknesses are estimated; described by R. W. Klassen

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
3	Sand, silt and stony clay; thinly bedded; beds to about 1 foot thick; clay appears till-like (Marine?)	15
2	Till?; pale yellow (5 Y 7/3 wet); fairly loose; fissile; sandy; stony; fissile; color and texture suggests deposit is possibly sand rather than till (Upper till?)	10
1	Till; olive (no munsell color); silty or sandy; mod. stony (Lower till?)	15
Total to bottom of bluff.....		40

SECTION - Stop B17

June 22, 1972

LOCATION: East bank Gods River about 150 yards north of its junction with Wigwam Creek (56° 01' lat., 92° 20' long.); thicknesses estimated, described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
4	Sand, silt and gravel; rare shells (marine)	1
3	Till; brown (10 YR 5/3 wet); sandy to clayey; soft and crumbly; moderately stony; limonite stain on numerous joint faces; uppermost 1½' washed (silty, clayey, very soft and crumbly, hackly fracture); contact with Unit 2 is sharp (Upper till)	42
2	Till, olive gray (5 Y 4/2 wet) to dark grayish brown (2.5 Y 4/2 wet); sandy to silty; hard, not easily crumbled; moderately stony; blocky fracture, limonite stain in numerous joints (Lower till)	6
1	Covered interval	5
	Total to river level	54

SECTION - B2

June 6, 1972

LOCATION: East bank of Gods River about 4 miles downstream from its confluence with Wigwam Creek - (56° 03' lat., 92° 24' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
7	Silt and sand; oxidized (soil horizon?)	2
6	Sand and gravel; sand is medium to coarse grained; boulders to 1 foot diameter, most pebbles are rounded (marine?)	3
5	Clay; mod. stony (glaciomarine?)	1
4	Till; dark brown (7.5 YR 4/2 wet) or dark greyish brown (10 YR 4/2 wet); sandy; crumbly and soft; moderately stony; contact with unit 2 indistinct but even (Upper till)	5
3	Till; very dark greyish brown (10 YR 3/2 wet); sandy; very hard; moderately stony; hackly fracture; jointed, iron and manganese (?) stain on joint faces; appears to be the same till as at Stop B1; boulder/gravel horizon 27' from base, sand layer 30' from base, (Lower till)	40

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
2	Covered interval	20
1	Bedrock; limestone; "yellowish white"; thinly bedded (1"-3"); fossiliferous (mainly snails), Silurian?	4
	Total to river level	75

SECTION - Stop B21

June 22, 1972

LOCATION: East bank Gods River about 8 miles downstream from its junction with Wigwam Creek, (56° 03' lat. 92° 25' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
10	Clay and silt; light yellowish brown; occasional pebbles; fossiliferous (fluvial and lacustrine)	2
9	Till(?); dark grayish brown (10 YR 4/2 wet); oxidized; sandy to clayey; soft; moderately stony (Upper till)	5
8	Till (?); dark greyish brown (10 YR 4/2 wet); gravelly; hard but crumbly, (Upper till?)	2
7	Sand; fine to medium grained; oxidized	1
6	Till; dark greyish brown (10 YR 4/2 wet); sandy, silty, very hard to hard (cliff-forming); moderately stony; blocky to hackly fracture; limonite and manganese stain on joints (Middle till)	15
5	Sand; fine to medium grained; well sorted; oxidized; crossbedded where thicker; sharp contact with till of Unit 6	4
4	Sand and gravel (pea size); moderately sorted; oxidized; torrential crossbedding (current apparently to west)	8
3	Sand; oxidized; fine to coarse grained; torrential crossbedding indicating current to west	12

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
2	Gravel and sand; occasional boulders and pure sand layers; very poorly sorted; rounded gravel; shallow dip of beds to west; oxidized; weathered surface bleached white	17
1	Covered interval	4
Total to river level		70

SECTION - Stop B25

June 23, 1972

LOCATION: East bank Gods River approximately 10 3/4 miles downstream from the confluence with Wigwam Creek (56° 07' lat., 92° 27' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
7	Gravel, sand and silt; shell fragments	1
6	Till; dark greyish brown; sandy; hard; cliff-forming; hackly fracture; limonite stain on joint faces (Upper till)	5
5	Gravel, silt and sand; possibly a gravelly till similar to Unit 8, Stop B21	2
4	Till; dark greyish brown (10 YR 4/2 wet); sandy; hard, moderately stony; blocky to hackly fracture; limonite stain on joints, (Middle till)	4
3	Sand; fine grained with minor silt and clay; occasional clay interbeds sometimes containing pebbles occur in the lower 1' and are 3/4" to 1 1/2" thick (color-grey); upper 1-1 1/2' contains wood fragments and fibers within crossbeds; contact with overlying till is very sharp	2
2	Sand; light yellowish brown; slightly oxidized; fine to medium grained; well sorted; massive; poor exposure towards base may conceal coarser sands and gravel	16
1	Covered interval	6
Total to river level		36

SECTION - Stop B24

June 23, 1972

LOCATION: East bank of Gods River about 11 miles downstream of its confluence with Wigwam Creek (56° 07' lat., 92° 27' long.); thicknesses measured by range pole; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
9	Clay and silt (marine?)	3
8	Sand, gravel and silt; shell fragments at top (marine?)	2
7	Till; dark greyish brown (10 YR 4/2 wet); hard; hackly fracture; sharp contact with Unit 6 (Upper till)	7
6	Till; dark greyish brown (2.5 Y 4/2 wet); oxidized towards base; sandy to silty; hard; moderately stony (becoming more cobbly towards the base; contains wood 8" above top of Unit 5, (Middle till?))	20
5	Sand; fine to medium-grained; occasional interbeds of Middle till?	1
4	Till; (Middle till?)	2
3	Sand; fine to medium-grained; well sorted; occasional stringers of "Middle till?"	1
2	Till; dark greyish brown (2.5 Y 4/2 wet); sandy to silty; hard; moderately stony; blocky fracture (Middle till?)	18
1	Covered interval	8
Total to river level.....		62

SECTION - Stop B29

June 24, 1972

LOCATION: East bank Gods River approximately 12 miles downstream from its confluence with Wigwam Creek - opposite southern end of small island (56° 09' lat., 92° 32' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
9	Clay; brown	4
8	Boulders; wood chunks; peat; uncertain stratigraphic position (slumped)	1
7	Till; dark greyish brown (2.5 Y 4/2 wet); reddish oxidation in lowermost 2'; sandy to silty; moderately stony; hackly to blocky fracture; limonite stain on joints; crumbly; "brownish" weathering tone distinguishes from Unit 6 (Upper till)	5
6	Till; dark greyish brown (2.5 Y 4/2 wet): sandy to silty; moderately to slightly stony; lower contact gradational over 1'; harder than Unit 7 (Middle till)	11
5	Peat and silt; interbedded; weathered surface is "light yellowish brown" with "medium-greyish white" layers; relatively steep exposures; flat surface; contains occasional pebbles near top; uppermost 4" is a layer of wood chunks (radiocarbon dated as > 41,000 years B.P.; GSC-1736); fragments and fibers occur sporadically throughout this unit	5
4	Sand; medium to coarse grained; gravelly in upper 1'	3
3	Till; olive grey (5Y 4/2 wet); silty to clayey, (not much grit in matrix); slightly stony; blocky fracture; limonite stain on joints (Lower till)	2
2	Covered interval	16
1	Till, same as Unit 3 (Lower till)	4
	Total to river level.....	52

SECTION - Stop B28

June 24, 1972

LOCATION: East bank Gods River about 16 miles downstream from its confluence with Wigwam Creek, (56° 10' lat., 92° 30' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
9	Clay and silt; silt beds gritty, brown and about 2" thick (marine?)	2
8	Gravel and sand	1
7	Till; dark greyish brown; sandy to silty; hackly fracture (Upper till)	10
6	Till; dark greyish brown (Middle till?)	10
5	Pea gravel; pinches and swells with Unit 4; discontinuous	1
4	Sand; medium grained; oxidized; pinches and swells with Unit 5; discontinuous	1
3	Till; dark greyish brown (Middle till?)	8
2	Sand; fine to medium grained; oxidized; pinches and swells; discontinuous	2
1	Till; dark greyish brown (Middle till?)	35
	Total to river level	70

SECTION - Stop B32

June 25, 1972

LOCATION: North bank Gods River approximately 18 miles downstream from its confluence with Wigwam Creek (56° 11' lat., 92° 35' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
7	Sand, silt and clay; bedded	3
6	Gravel, sand and silt	1
5	Till; dark greyish brown (Upper till)	8
4	Pea gravel and sand; oxidized	1

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
3	Till; dark greyish brown; sandy (sandier than the lower 10' of Unit 1); hard; blocky fracture; limonite and manganese stain on joints (Middle till)	25
2	Sand; medium to coarse grained; contains minor pea gravel; oxidized	1
1	Till; dark greyish brown; clayey to sandy, becomes sandier upsection; slightly to moderately stony; blocky fracture; limonite and manganese stain on joints (Middle till?)	25
Total to river level		64

SECTION - B34

June 25, 1972

LOCATION: Northeast bank Gods River about 23 miles upstream from its confluence with the Hayes River (56° 12' lat., 92° 39' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
9	Till; dark greyish brown (Upper till)	8
8	Till; medium olive grey (Middle till)	15
7	Clay, silt and sand; occasional pebbles; till-like	4
6	Sand and gravel; discontinuous occurrence	1
5	Till; medium olive grey (Middle till)	7
4	Sand; fine to medium grained	4
3	Pea gravel and sand	2
2	Till; dark olive grey (Lower till)	15
1	Covered interval	8
Total to river level		64

SECTION - Stop B35

June 25, 1972

LOCATION: East bank Gods River adjacent to northern end of island about 20 miles upstream of the confluence with the Hayes River (56° 14' lat., 92° 44' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
8	Sand, silt and gravel; thinly bedded; some clay beds, some mixed lithologies each lithologic "bed" would be about 1' thick (marine beach)	7
7	Silt and clay; gravelly; stratified; numerous shells and shell fragments (marine beach)	2
6	Sand; fine to medium grained	1
5	Gravel and sand; stratified; oxidized (deltaic?)	10
4	Sand; fine to medium grained; highly oxidized (reddish); some layers are limonite stained, others stained by manganese (most are limonite stained); 1" to 3" beds; apparent dip is N to NW (deltaic?)	8
3	Clay; medium to light grey; wet and greasy; possibly contains permafrost (deltaic?)	10
2	Till?; grey; unoxidized; clayey to sandy; compact; no staining on joints; possibly stony clay (glaciomarine?)	5
1	Covered interval	60
	Total to river level	103

SECTION - Stop B37

June 25, 1972

LOCATION: North east bank Gods River 300 yards south of small island; about 11 miles upstream from confluence with Hayes River (56° 17' lat., 92° 48' long.); thicknesses estimated, described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
7	Sand, silt, clay and gravel; interbedded ($\frac{1}{2}$ to 6" beds); gravel at base (alluvial?)	4
6	Till; dark greyish brown (10 YR 4/2 wet); sandy; moderately stony; blocky fracture in lowest 5' then softer and hackly (Upper till)	10
5	Sand; pea gravel at top; oxidized	1
4	Till; brown (10 YR 5/3 wet) to dark brown (10 YR 4/3 wet); sandy; moderately stony to stony; blocky fracture (Middle till)	8
3	Sand; pea gravel near top; oxidized; rarely discontinuous	2
2	Till; dark greyish brown (2.5 Y 4/2 wet); sandy; hard; moderately stony; blocky fracture; limonite and manganese stain on joints	20
1	Covered interval	10
Total to river level		55

SECTION - Stop B38

June 25, 1972

LOCATION: East bank Gods River about $2\frac{1}{2}$ miles upstream from its confluence with the Hayes River ($56^{\circ} 21'$ lat., $92^{\circ} 52'$ long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
4	Silt, sand and clay; interbedded (alluvial?)	2
3	Gravel, sand and silt (alluvial?)	1
2	Sand; fine to medium grained; oxidized, massive to bedded; well sorted (deltaic?)	20
1	Covered interval	8
Total to river level		31

SECTION - Stop B39

June 26, 1972

LOCATION: South bank Hayes River at its confluence with the Fox River (56° 03' lat., 93° 17' 30" long.); thicknesses measured by range pole; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
3	Clay (grey) and silt (reddish); interbedded (¼ to ¾" beds) freshwater and terrestrial fossils (alluvial)	4
2	Gravel and sand; oxidized; fossiliferous (fluvio-marine)	5
1	Till; dark greyish brown (2.5 Y 4/2 wet); sandy; hard; blocky fracture, limonite stain on joints (Middle till?)	22
Total to river level.....		31

SECTION - Stop B42

June 26, 1972

LOCATION: North bank Hayes River about ¾ mile upstream from its confluence with Gods River (56° 17' 30" lat., 92° 52' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
6	Clay, sand and silt; bedded with 1" to 2" beds (alluvium?)	4
5	Gravel and sand (alluvium?)	2
4	Silt?, dark greyish brown; slightly stony, sandy; contains shell fragments in upper 15 ft.; blocky to hackly fracture; contains oxidized medium to coarse grained sand layers at 10' and 15 ft. from base, each layer is 1' thick (glaciomarine?)	25

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
3	Clay and silt; massive to bedded (marine deltaic?)	6
2	Sand; coarse grained; oxidized; massive (marine deltaic?)	2
1	Covered interval	20
Total to river level.....		59

SECTION - Stop B8

June 8, 1972

LOCATION: West bank Hayes River about 10 miles downstream from its confluence with Gods River; (56° 27' 30" lat., 92° 46' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
6	Sand, silt and clay; interbedded; mainly fine sand; rare boulders and shell fragments (marine delta)	6
5	Sand and gravel; oxidized; contains shell fragments, (marine delta?)	10
4	Clay (light grey) and fine grained sand; interbedded (1/8" to 1/3" thick); mainly clay (marine delta?)	10
3	Sandy clay (marine delta?)	8
2	Sand and gravel; oxidized (marine delta?)	10
1	Covered interval	20
Total to river level.....		64

SECTION - B41

June 26, 1972

LOCATION: West bank Hayes River about 24 miles upstream from its confluence with Gods River (56° 11' 30" lat., 93° 01' 30" long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
4	Clay; light grey; massive; compact; tabular fracture; fossiliferous (marine delta)	20
3	Clay and silt; interbedded with ¼ to 1" beds (marine delta?)	25
2	Clay; "grey"; unoxidized; massive (marine delta)	10
1	Covered interval	4
Total to river level.....		59

SECTION - B9

June 8, 1972

LOCATION: West bank Hayes River about 19 miles downstream from its confluence with Gods River in SW¼ sec. 9, to 88, rge. 9 E. 2nd Mer. (56° 36' 45" lat., 92° 41' long.), thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
5	Sand and clay; interbedded; occasional gravel horizons; becomes increasingly sandy towards top (alluvium?)	6
4	Clay; occasional pebbles and boulders; soft and crumbly; blocky fracture; limonite stain on joint faces; forms hard crust at weathered surface yielding cliffs; fossiliferous (marine delta)	10
3	Sand; medium grained with occasional pebbles near base; oxidized reddish; well sorted; rounded to subangular grains; very fossiliferous (marine delta)	10

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
2	Clay; oxidized; massive; nonfossiliferous (glaciomarine?)	20
1	Covered interval	10
Total to river level.....		56

SECTION - Stop B11

June 9, 1972

LOCATION: East bank Hayes River about 1½ miles downstream from its junction with Pennycutaway River in SE¼ sec. 29, twp. 89, rge. 9 E. 2nd Mer. (56° 44' lat., 92° 41' long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
5	Clay; scattered fine grained sand or gravel lenses and laminae; peat occurs in upper 1½' as thin ½" beds (alluvial?)	4
4	Fine grained sand, silt and clay; interbedded and laminated (1/8 to 1" thick); wood found at 20 and 24 ft. from base of unit radiocarbon dated as 4890± 140 years B.P. (GSC 1745); upper 14 feet predominantly fine to medium grained sand with occasional interbeds of clay; unit is capped by 1½' sand, silt and gravel; shell fragments in uppermost 4 ft. of unit (marine deltaic and alluvial?)	44
3	Clay, silt and sand (fine grained); oxidized in top 15 ft., occasional pebbles and boulders; fossiliferous (marine delta?)	30
2	Sand; medium grained; oxidized reddish; fossiliferous; correlative with Unit 3, Stop B9 (marine delta)	1
1	Covered interval	10
Total to river level.....		89

SECTION - Stop B12

June 9, 1972

LOCATION: East bank Hayes River about 20 miles upstream from York Factory in NW $\frac{1}{4}$ sec. 11, twp. 91, rge. 9 E. 2nd Mer. (56° 52' 40" lat., 92° 36' 30" long.); thicknesses estimated; described by J. A. Netterville

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
4	Silt and fine grained sand; gravelly horizons; unit becomes sandier and better sorted in the upper zone; wood fragments imbedded horizontally in silty fine grained sand layer 2 ft. from base (alluvium?)	10
3	Sand and gravel (alluvium?)	1
2	Clay and minor fine grained sand; occasional pebbles and boulders; crumbly; upper 10' oxidized; massive; contains shell fragments; even contact with Unit 3 (marine delta?)	20
1	Covered interval	15
Total to river level.....		46

SECTION - Stop 58

June 23, 1972

LOCATION: Northwest wall of a broad spillway about 2½ miles wide and marked by scabland type erosional hills; site is 6 miles southwest of the Weir River siding and in sec. 29, twp. 89, rge. 20 E. of 1st. Mer. (56° 45' lat., 94° 24' long.); thicknesses measured by altimeter; described by R. W. Klassen

<u>UNIT</u>	<u>DESCRIPTION</u>	<u>THICKNESS</u> (feet)
3	Gravel; sandy; scattered boulders; lag deposit	1
2	Till; greyish brown (2.5 Y 5/2 wet) or yellowish brown (10 YR 5/4 wet) in oxidized upper zone; silty; mod. to slightly stony; crumbly in part (Upper till)	35
1	Till; yellowish brown (10 YR 5/4 wet); oxidized; mod. stony with markedly higher carbonate rock content than Unit 2; jointed with manganese staining along joints; contact with Unit 2 is sharp and even (Middle till?)	35
Total to bottom of bluff		71