



Quaternary

[illegible]

	Wynyard Formation (59 m maximum thickness): Chert and quartzite gravel, overlain by a finely-upturned sequence of olive-coloured friable sand and light grey to light red and clay.
	Turtle Mountain Formation (186 m maximum thickness): Goodlands member: bentonitic carbonaceous sand, silt and clay; thin lignite beds. Peace Garden Member: grey silty shale and minor sand.
Creataceous	
	Boisevain Formation (51 m maximum thickness): Greenish-grey sandstone, minor shale, in part kaolinitic.
	Pierre Formation, Coulter Member (47 m maximum thickness): Soft grey, bentonitic, clayey siltstone and shale.
	Pierre Formation, Odanah Member (341 m maximum thickness): Hard grey siliceous shale.
	Pierre Formation, Millwood Member (175 m maximum thickness): Soft greenish-bentonitic shale.
	Pierre Formation, Pembina Member (39 m maximum thickness): Thinly interbedded carbonaceous shale, bentonite and bentonitic shale.
	Pierre Formation, Gammon Ferruginous Member (73 m maximum thickness): Dark grey to brown mudstone or silty shale.
	Carlile Formation, Boyne Member (formerly Niobrara Formation; 69 m maximum thickness): Grey calcareous speckled shale, carbonaceous shale and brown siltstone.
	Carlile Formation, Morden Member (formerly Morden Formation; 66 m maximum thickness): Black carbonaceous shale.
	Favel Formation (Second Specks equivalent; 50 m maximum thickness): Calcareous speckled shale, minor limestone, calcarenite, bentonite and oil shale; includes the Assiniboine Member and Kesh Member.
	Ashville Formation, Belle Fourche Member (33 m maximum thickness): Grey-black to black carbonaceous, organic shale with abundant fish fragments and occasional bentonite seams, including the prominent X-bentonite seam.
	Ashville Formation, Westgate Member (43 m maximum thickness): Dark grey noncalcareous shale, with occasional silt and fine-grained sand lenses; rare bentonite seams.
	Ashville Formation, Newcastle Member (eastern limit; 26 m maximum thickness): Fine-grained sand with interbeds of silt and clay.
	Ashville Formation, Skull Creek Member (57 m maximum thickness): Dark grey shale with occasional sandy lenses and siltstone beds.
	Swan River Formation (145 m maximum thickness): Sandstone, in places glauconitic; kaolinitic shale, minor lignite; channel and karst infill within Paleozoic outcrop belt; locally missing from outcrop sequence due to nondeposition.
	Success Formation, S₂ Member (eastern limit; 49 m maximum thickness): Weathered red shale with splintered dolomite concretions and sandy beds with white kaolinitic matrix, formerly mapped as part of the Lower Melita Member and Melita Formation.
Jurassic–Triassic	
	Waskada Formation (eastern limit; 69 m maximum thickness): Brown bentonitic shale with minor beds of carbonaceous shale, red shale and calcareous cemented sandstone.
	Melita Formation (161 m maximum thickness): Upper Melita Member: greenish-grey to brownish-grey, slightly calcareous shale with thin coquina beds and dense limestone. Lower Melita Member: varicoloured shale with interbeds of calcareous sandstone.
	Reston Formation (61 m maximum thickness): Lower beds of greenish-grey and grey shale; middle beds of dense, argillaceous, light-coloured limestone; and upper oolite to sandy beds.
	Amaranth Formation (105 m maximum thickness): Upper (Evanore) Member: Widespread, thick gypsum and anhydrite. Lower (Red Bed) Member: Red argillaceous dolomitic siltstone and sandstone.
Mississippian	
	Charles Formation (70 m maximum thickness): Massive anhydrite and minor dolostone.
	Kisbey Interval (23 m maximum thickness): Silty dolomite and calcareous sandstone.
	Mission Canyon Formation (124 m maximum thickness): MC-2 Member: Fragmental limestone, dolomite limestone and dolostone. MC-2 Member: Interbedded anhydrite and shaly carbonate rocks with a dense to argillaceous dolostone marker bed. MC-1 Member: Crinoidal fragmental and oolitic limestone and dolostone; cherty.
	Lodgepole Formation (223 m maximum thickness): Shelf to slope sequence of argillaceous, oolitic, crinoidal and cherty limestone.
	Bakken Formation (35 m maximum thickness): Upper Member: massive black organic shale. Middle Member: grey mottled to laminated siltstone and sandstone; Devonian–Mississippian boundary at base of this unit. Lower Member (locally preserved): massive black organic shale.
Devonian	
	Torquay Formation (58 m maximum thickness): Interbedded grey-green dolomitic shale and light brown dolomitic arenitic siltstone; finely bedded to laminated; brecciated; often oxidized to earthy red-brown.
	Birdbar Formation (73 m maximum thickness): Fossiliferous porous limestone and dolostone, capped by anhydrite.
	Duperow Formation (213 m maximum thickness): Limestone and dolostone with occasional argillaceous and anhydritic units.
	Souris River Formation (153 m maximum thickness): Sequence of basal red shale (First Red Bed); argillaceous micrite, high-Ga micritic limestone and upper dolomite in northern area, complex facies of limestone and dolomite to the south.
	Dawson Bay Formation (120 m maximum thickness): Sequence of basal red shale (Second Red Bed); bituminous dolomite grading upward to micritic limestone to transgressive micritic (high-Ga) to grey silty fossiliferous calcareous shale; highly fossiliferous coral stromatoporeid limestone (high-Ga), locally dolomitized.
	Prairie Exporte (149 m maximum thickness): Thick halite beds with occasional potash beds near the top; minor interbeds of anhydrite and shale; basal transition beds are the only remnants in places where salt is completely dissolved.
	Winnipegosis Formation (119 m maximum thickness): Lower Member: dolomitized platform facies, in part shows lighter yellowish dolomite mottling; pure high-Ga limestone to calcareous dolomite; includes the Elm Point Formation (limestone, pale yellowish brown fine grained biotermite), which grades laterally to the grey Winnipegosis Formation. Upper Member: thin inter-bed bituminous laminates or thick reefal carbonate rocks.
	Ashern Formation (51 m maximum thickness): Dolomitic shale and argillaceous dolomite, red to greenish-grey, local basal breccia.
Silurian	
	Interlake Group (150 m maximum thickness): Mottled, fossiliferous, stromatolitic and stromatolite mound with several sandy argillaceous marker beds; includes the Falter Branch Formation, Moose Lake Formation and the sameing Formation, East-Arm Formation and Cedar Lake Formation.
	Stonewall Formation (95 m maximum thickness): Dolomite, fine-grained, sparsely fossiliferous, in part conglomeratic; medial sandy argillaceous marker (s-marker) may define Ordovician–Silurian boundary.
Ordovician	
	Stony Mountain Formation (60 m maximum thickness): Gum and Pentasternian members: calcareous shale, fossiliferous limestone and argillaceous dolomite. Guston and Wilton members: micritic limestone and sandy argillaceous dolomite.
	Red River Formation (234 m maximum thickness): Upper Member: massive to laminated dolomite, minor argillaceous dolomite and high-Ga limestone; in part cherty; thin argillaceous beds; includes the Fort Garry Member and Unit C in outcrop, and Concord Unit and Lake Alima Unit in the subsurface. Lower Member: mottled dolomite limestone that passes northward to outcrop (Dog Head Member in outcrop); cherty dolomite that passes southward to mottled limestone (Cat Head Member in outcrop); mottled dolomite limestone and that passes northward to dolomite (Selkirk Member in outcrop); argillaceous sandy dolostone at base (Heca Beds).
	Winnipeg Formation (87 m maximum thickness): Basal sandstone overlain by complex sequence of quartzose sandstone and shale.
Cambrian	
	Deadwood Formation (45 m maximum thickness): Interbedded, highly glauconitic argillaceous siltstone to fine sandstone.
Precambrian	
	Igneous and metamorphic rocks: Basement rocks underlying Phanerozoic cover: exposed Precambrian shield; includes brecciated and remelted rocks associated with the Permian-age Lake St. Martin and High Rock Lake Metamorphic impact craters.

NOTE:

Maximum thicknesses have been calculated as vertical thickness (isochore) from the cross-sections

Suggested reference:
Matile, G.L.D. and Keller, G.R. 2012: Subsurface Phanerozoic geology of southern Manitoba, Transect 91 (5880870N); Manitoba Innovation, Energy and Mines, Manitoba Geological Survey, Stratigraphic Map SM2012-1, scale 1:600 000.

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 360-1395 Ellice Avenue,
 Winnipeg, Manitoba R3G 3P2
 Canada

Phone: (204) 945-4154
 Toll-free: 1-800-223-5215
 E-mail: minesinfo@gov.mb.ca

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E-mail: minesinfo@gov.mb.ca