



Figure 1. Structural subdivisions.

**Abstract**  
The 1:50 000 scale bedrock geological map of Stimson Creek (N13 82-30) is the result of geological fieldwork conducted in 1967 and 1968, combined with reinterpretation of pre-existing maps. The area covered by the map extends from the Alberta syncline westward to the inner part of the southern Rocky Mountain foothills. Bedrock geology in the Stimson Creek area is characterized by gently dipping Upper Cretaceous to Paleocene nonmarine clastic strata. Exposed in the northern part of the area, a narrow zone of imbricate thrust faults and folds developed in Upper Cretaceous clastic strata that form the upper detachment of a triangle zone. Foreland-vergent thrust faults and some back-thrusts developed in Jurassic and Cretaceous clastic strata characterize the Rocky Mountain Foothills. Resistant, marine Mississippian carbonate outcrops in the structurally highest thrust sheet. Deformation is thin-skinned and probably Late Cretaceous to Early Tertiary. Thick, Lower Cretaceous igneous-clast-bearing, incised, channelled conglomerate occurs in the Corral Creek area.

**Résumé**  
La carte géologique à l'échelle de 1:50 000 de la région du ruisseau Stimson (Stimson Creek, S13C 82-30) est le résultat de travaux géologiques menés sur le terrain en 1967 et 1968, combinés à la réinterprétation de cartes préexistantes. La région de la carte s'étend du synclinal de l'Alberta vers l'ouest jusqu'à la partie orientale de la zone des collines rocheuses. Dans le synclinal de l'Alberta, la géologie du substratum rocheux est caractérisée par des séries clastiques non marines, à faible pendage, du Crétacé supérieur au Paléocène. La partie nord de la région présente une zone étroite de failles de chevauchement et de plis, à vergence vers l'arrière-pays, qui se sont développées dans les séries clastiques du Crétacé supérieur correspondant au décollement supérieur d'une zone triangulaire. Des failles de chevauchement, des plis et de rares retromontages à vergence vers l'avant-pays, qui se sont développés dans des séries clastiques du Jurassique et du Crétacé, caractérisent les contreforts des Rocheuses. Des roches carbonatées marines résistantes du Mississippien affleurent dans la nappe de charriage structuralement la plus élevée. La déformation est superficielle et date probablement du Crétacé tardif au Tertiaire précoce. D'épais conglomérats de remplissage de chenaux, incisés, canalisés, composés des classes de roches grès et de silt, datant du Crétacé inférieur, sont présents dans la région du ruisseau Corral.

82-310	82-319	82-327
827A	OF3875	
82-317	82-326	82-335
CGM B		CGM 24
82-323	82-331	82-340
1824A	1831A	1837A
	981A	DF368

National Topographic System reference and index to adjoining published Geological Survey of Canada maps

**Cover illustration**  
Resistant, crossbedded sandstone of the Upper Cretaceous Virgelle Formation at McConnell Falls, Peikako Creek, Alberta. Faulted folds outlined by resistant Virgelle sandstone characterize large parts of the foothills in the Stimson Creek area. Photograph by M.E. McMechan, 2015-199

Catalogue No. M183-124-2011E-1P  
ISBN 978-1-109-19873-6  
doi:10.4095/293115

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<b>QUATERNARY</b>	<b>Qa</b> Alluvium, colluvium, and fill: deposits of gravel, sand, and silt. This unit is shown only where these deposits cover the bedrock extensively.	<b>Qls</b> Landslide: blocks of nearby bedrock.
<b>TERTIARY</b>	<b>TPH</b> Porcupine Hills Formation: shale, carbonaceous, olive-brown or grey, massive, silty sandstone; calcareous, fine to coarse-grained, grey, light tan-weathering, medium to very thick-bedded, massive to crossbedded, multistoried, mudstone; grey-green, fat, and red, minor conglomerate; granule to pebble, limestone; fine-grained, pedogenic. Thick sandstone forms characteristic resistant bands.	<b>TPH-ss</b> Porcupine Hills Formation, sandstone bodies: sandstone: fine- to medium-grained, thick, to very thick-bedded, crossbedded; minor shale: muddy, interbeds with sandstone. Resistant, cliff-forming unit.
<b>CRETACEOUS-TERTIARY</b>	<b>KTWC</b> Willow Creek Formation: shale and mudstone, locally carbonaceous, green, red, purple, and grey, sandstone: lithic wacke, fine- to coarse-grained, grey, light tan-weathering, medium to very thick-bedded, massive to crossbedded, friable; minor limestone: occurs as nodules or concretions in shale (caliche), conglomerate: granule to pebble. Sandstone becomes coarser and more indurated upward, locally contains fresh water molluscs.	<b>KTWC-ss</b> Willow Creek Formation, sandstone bodies: sandstone: fine- to medium-grained, thick, to very thick-bedded, crossbedded.
<b>CRETACEOUS</b>	<b>KSMR</b> St. Mary River Formation: sandstone: fine-grained, hard to soft, grey to greenish-grey, nodules common; silty shale and shale: grey to greenish-grey, carbonaceous, minor limestone (stonestone), coal.	<b>KSP</b> Bearpaw Formation: mudstone and shale: locally silty, dark grey-brown, bubbly, concretions common; sandstone: siliceous or lithic wacke, very fine to medium-grained, brownish-grey, thin- to medium-bedded, coarsens and cleans upward, variable concretion content; minor bentonite. Unit contains bivalves.
	<b>KBR</b> Belly River Group: mudstone: silty, grey and green sandstone: grey and green, very fine- to medium-grained, crossbedded; limestone: pedogenic, occurs as concretions or calcitic nodules, rare coal, bentonite.	<b>KDP</b> Deadhorse Coulee and Pakowki formations: undivided.
	<b>KPk</b> Pakowki Formation: mudstone and shale: dark grey to greenish-grey, contains distinctive bed of floating chert pebbles at base; minor sandstone: silty, very fine- to fine-grained, grey to olive-grey, thin- to medium-bedded, parallel to current-rippled or hummocky cross-stratified, trace fossils common, interbedded with shale, coarsens and thickens upward. Unit is recessive, typically 25 m to less than 10 m thick. Unconformably overlies Deadhorse Coulee Formation.	<b>KCh</b> Milk River Group (KTC-KCs) Deadhorse Coulee Formation: sandstone: fine- to medium-grained, light greenish-grey, thin- to thick-bedded, massive, trough crossbedded, or current-rippled, may contain mica, chert, and part dolomite, shale: silty, greenish-grey, bubbly, mudstone and shale: carbonaceous, grey or greenish-grey, locally rusty-weathering, sideritic concretions; minor coal: impure. Overlies unconformably by Pakowki Formation.
	<b>KV</b> Virgelle Formation: sandstone: quartz arenite, locally calcareous or iron-bearing, fine- to medium-grained, light grey to white or light brown, very thick bedded, massive to crossbedded, contains small, rounded, sandstone: magnesian quartz arenite; prominent cliff and ridge former.	<b>KTC</b> Telegraph Creek Formation: shale: silty or sandy, dark grey, sandstone: very fine- to fine-grained, light grey, locally thick-bedded, sandstone: locally nodular, bentonite: contains limestone concretions, lower and upper contacts gradational.
	<b>KWP</b> Alberta Group (Kb-Kws) Wapiapi Formation: shale: locally calcareous, locally silty, dark grey to black, contains sideritic concretions, sandstone: thin-bedded, sandstone: calcareous, fine-grained, grey, thin-bedded limestone: contains ammonites.	<b>KC</b> Cardium Formation: sandstone: quartz arenite, fine-grained, grey to dark grey, thin- to medium-bedded, locally crossbedded, crossstratified, or bioturbated; shale: silty or sandy, conglomerate: granule, at base of unit, limestone: occurs as concretions, contains ammonites and bivalves.
	<b>KBs</b> Blackstone Formation: shale and mudstone: silty, locally calcareous, dark grey to black, sideritic concretions; sandstone: locally lufaceous, very fine- to fine-grained, grey, thin-bedded, limestone: argillaceous, conglomerate: chert-pebble at base of unit, bentonite: contains ammonites and bivalves.	<b>KMM</b> Blainmore Group (KCC-KAM) Beaver Mines and Mill Creek formations: undivided.
	<b>KMC</b> Mill Creek Formation: mudstone and siltstone: dark grey to black, locally variegated in upper part, sandstone: quartz arenite, chert grains more abundant upward, fine- to coarse-grained, grey to white, crossstratified, bioturbated; minor conglomerate: quartzite, chert, and igneous pebbles, argillic matrix, locally developed in upper part of unit; bentonite: increases in abundance upward. There are upward-coarsening cycles in lower part.	<b>KSM</b> Beaver Mines Formation: sandstone: feldspathic, some volcanic grains, fine- to coarse-grained, green to grey, locally crossbedded, siltstone: olive-green, laminated, calcite nodules, mudstone: variegated green and red, blocky, contains root traces and pedogenic horizons, minor conglomerate: pebble to cobble, thick-bedded to massive, igneous-clast-bearing, channelled.
	<b>KSM-og</b> Beaver Mines Formation: conglomerate facies: conglomerate: pebble to cobble, thick-bedded to massive, igneous-clast-bearing, incised, channelled.	<b>KG</b> Gladstone Formation: sandstone: quartz, medium grey, brown-weathering, fine-grained, hard, interbedded with mudstone: grey, green-grey, mudstone: red and green with a few quartz sandstone interbeds in basal part.
	<b>KCD</b> Caldwin Formation: conglomerate: chert and quartzite clast, pebble- to cobble-sized, matrix of quartz sand, fine- to coarse-grained, modally brown-weathering, resistant; sandstone: quartz arenite, locally carbonaceous, light grey.	<b>JURASSIC-CRETACEOUS</b>
	<b>JKME</b> Kootenay Group Mist Mountain and Elk formations: shale and mudstone: carbonaceous, dark grey to black, siltstone: light to dark grey, greyish-brown-weathering; sandstone: lithic or quartz arenite, locally carbonaceous, fine- to coarse-grained, light to dark grey, coal: low- to high-volatile, bituminous to semibituminous, some economic seams, conglomerate: chert- and quartzite-pebble, rare, but conspicuous beds (Mist Mountain Formation); sandstone: lithic, fine- to coarse-grained, grey; siltstone: carbonaceous, mudstone: silty, carbonaceous (Elk Formation).	<b>JF</b> Femie Formation: basal sandstone: phosphatic, dolomitic, field, black, fossiliferous, minor pebbles, 0.1 m thick; lower shale and mudstone: dark grey to black, brownish-grey-weathering, soft, commonly laminated and fissile, may contain concretions and bellerophon (Poker Chip Shale); middle sandstone: quartzose, finely laminated, light grey, buff-weathering, with fine grey limestone beds (Book Creek Member); overlain by shale and limestone: phosphatic, nodular, black, fossiliferous, strongly graded upward to shale: soft, fissile, grey, with local concretions (Highwood Member); upper shale: fissile, black with siltstone and sandstone: very fine- to fine-grained, thin-bedded, brown-weathering, increasing in content, grain size, and bed thickness upward with local sandstone: massive or crossbedded, fine-grained, brown-weathering in upper part (Passage Beds).
	<b>Mhvs</b> Mississippian Rundle Group (ML-MLHvs) Mount Head Formation Wilman, Bari, and Saller members: dolomite: silty or sandy, yellow-grey-weathering, thin-bedded to laminated, ripple crossstratified, local fenestral fabric, siltstone to sandstone: light grey to brown-grey-weathering, thin-bedded to laminated, ripple crossstratified, commonly dolomitic, recessive (Wilman Member), lime granitose: skeletal, light to medium grey, commonly crossbedded, resistant (Bari Member); silty dolomite to dolomitic siltstone: tan to light grey-weathering, very fine- to thick-bedded, laminated, crossstratified, recessive (Saller Member).	<b>MLv</b> Livingstone Formation: limestone: skeletal granitose, locally dolomitic or cherty, finely to coarsely crystalline, grey, pale grey-weathering, locally waxy, massive, resistant; sandstone: grey, fossil content includes crinoid ossicles and bryozoans.

Contact	Defined
	Approximate
	Inferred
	Concealed
Mapping precision change	
	Map unit grouping at dotted line
	Fault, thrust, symbol on hanging wall
	Defined
	Approximate
	Inferred
	Concealed
	Fault, back thrust, symbol on hanging wall
	Approximate
	Inferred
	Concealed
	Fault, transverse
	Approximate
	Inferred
	Concealed
	Fault zone
	Zone of faults, deformation
	Anticline, upright
	Defined
	Approximate
	Inferred
	Concealed
	Anticline, overturned
	Defined
	Approximate
	Inferred
	Concealed
	Syncline, upright
	Defined
	Approximate
	Inferred
	Concealed
	Syncline, overturned
	Approximate
	Inferred
	Concealed
Station	
	Overlook visited, altitude not determined
	x
	Burrow
	Bedding, top known
	15
	Inclined
	75
	Vertical, ball on younger side
	Overturned
	Bedding, top known (historical)
	15
	Inclined
	75
	Inclined, dip not recorded
	Vertical, ball on younger side
	Overturned
	Bedding, top unknown
	15
	Inclined
	Bedding, top unknown (historical)
	15
	Inclined
	Vertical
	Groundwater
	Spring
	Wells
	Drilled and cased
	Open
	Dry, abandoned
	Oil well, abandoned

Note 1. Structural thickening probably occurs in this area, but cannot be mapped due to poor exposure.

**REFERENCES**  
Hume, G.S., 1947. Stimson Creek, west of the 99th meridian, Alberta. Geological Survey of Canada, Map 954A, scale 1:63 300.  
Hume, G.S. and Hage, C.O., 1942. Peikako Creek, Alberta. Geological Survey of Canada, Map 699A, scale 1:63 300.

Recommended citation  
McMechan, M.E., 2013. Geology, Stimson Creek, Alberta. Geological Survey of Canada, Canadian Geoscience Map 24, scale 1:50 000. doi:10.4095/293115



**CANADIAN GEOSCIENCE MAP 24**  
GEOLOGY  
**STIMSON CREEK**  
Alberta  
1:50 000



Author: M.E. McMechan  
Geological interpretation by M.E. McMechan based on ground observations by M.E. McMechan, 1967-1968, 2007; published geological maps by Hume and Hage, (1942), Hume, (1947), and studies of vertical airphotographs and high-resolution orthorectified images.  
Geomatics and cartography by B. Firmston, FA, Harpaj, and P.R.J. Wozniak.

Scientific editing by E. Inglis  
Map projection Universal Transverse Mercator, zone 11, North American Datum 1983  
Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications.  
Elevations in feet above mean sea level.

**CANADIAN GEOSCIENCE MAP 24**  
GEOLOGY  
**STIMSON CREEK**  
Alberta  
1:50 000



The Township/Range grid provides spatial reference and is not intended for defining legal land ownership. See Open File 5578 metadata.  
Mean magnetic declination 2013, 14°45'E, decreasing 12.2 annually.  
The Geological Survey of Canada welcomes corrections or additional information from users.

Data may include additional features not portrayed on this map.  
See documentation accompanying the data.  
Additional descriptive notes and references are included in the map information document.  
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