

**Appendix 1a. Landform Element Occurrences of Special Conservation Concern:  
≤ 5 Occurrences in Alberta.**

<u>Site Name</u>	<u>Element Name</u>	<u>Subelement</u>
Airdrie Murdlins	Murdlins	
Andrew Lake	Stocks	
Black Butte	Stocks	
Burning Sulphur	Burning sulphur	
Cadomin Cave	Rock Labyrinths	
Cold Lake Baymouth Bars	Baymouth Bars	
Coliseum-Shunda Mountain	Rock Labyrinths	
Crowsnest Volcanics	Volcanic Rocks	
Del Bonita Uplands/Shanks Lake	Asymmetric Valleys	
Driedmeat Lake	Deltas	Unilobate
Eagle Butte Impact Structure	Impact Structures	
Hot Pot	Burning gas	
LaCrete Sand Hills	Dune Ridges	Lacadena Ridge
Leland Lake/Tulip Lake	Plutons	
Lost River	Honeycomb Weathering	
Ma Butte	Volcanic Rocks	
Mackay River Palsa	Palsa Bogs	
Middle Sand Hills	Dune Ridges	Dune-Track Ridge
Moose Mountain	Ice Caves	Cold Zone
Newman volcanics	Volcanic Rocks	
Pekisko	Crag-and-Tail	
Pincher Creek South	Volcanic Rocks	
Plateau Mountain Ecological Reserve Extension	Biscuit Board Topography	
Ptolemy Creek	Ice Caves	Cold Trap
Ptolemy Creek	Ice Caves	Relict Permafrost
Ptolemy Creek	Ice Caves	Cold Zone
Ptolemy Creek	Ice Caves	Perennial
Ptolemy Creek	Ice Caves	Perennial
Ptolemy Creek	Ice Caves	Perennial
Ram River Falls/Canyon	Plunge Pool Lakes	
Richardson River	Dune Ridges	Lake Claire Ridge
Richardson River	Dune Ridges	Cree Lake Ridge
Ronald Lake Sandhills	Dune Ridges	Lake Claire Ridge
St. Agnes	Crag-and-Tail	
Whitemud Falls Ecological Reserve Extension	Stacks	
Wolverine River Sand Hills	Dune Ridges	Lacadena Ridge
Ya Ha Tinda	Rock Labyrinths	



**Appendix 1b. Landform Element Occurrences of Special Conservation Concern:  
Outstanding Occurrences.**

<u>Site Name</u>	<u>Element Name</u>	<u>Subelement</u>	<u>Description</u>
Algar Bog	Wooded Bogs with Internal Lawns	Flat Bog	A large and diverse peatland of provincial significance.
Alice Creek	Non-Patterned Fens with Internal Lawns	Horizontal Fen	A good sized, 300 sq. km., non-patterned open horizontal fen. Channel fens are very well developed and extensive.
Alice Creek	Non Patterned Fens without Internal Lawns	Channel Fen	A good sized, 300 sq. km., non-patterned open horizontal fen. Channel fens are very well developed and extensive.
Andrew Lake	Fault-line Scarps		Area has excellent examples of fault-line scarps. They occur along a major fault which transects the rock strike in a NNW to NW direction.
Andrew Lake	Raised Beaches		Area has an excellent series of raised beaches that mark the former shorelines of Andrew Lake.
Athabasca Flutings	Flutings	Giant	Excellent examples of giant flutings and remnant ridges formed subglacially under hydrostatic pressure. They have a N-S orientation. Produced by the Livingstone Lake flow event. The flute field is about 15 km wide.
Audet Lake Patterned Fens	Patterned Fens	Northern Ribbed Fen	An excellent example of a northern ribbed fen. Patterning extends over 5 to 6 sq. km. of peatland NE of Audet Lake.
Bain Bluff	Earth Slides		A good example of an earth slide along a southern Alberta river. It has multiple retrogressive failures that probably originated from lateral basal erosion by the river. The slide is about 2.5 sq. km. in area.
Bear River Sandhills	Dunes	Parabolic	Classical examples of parabolic and dome dunes. Presently inactive. Highest dunes are commonly 10 to 11m above the surrounding surface. Dune field covers about 7700 ha.
Beavermines Valley	Valleys	V-Shaped	A good example of a v-shaped valley located within an earlier-formed u-shaped valley. The junction of the v-shaped and u-shaped valleys is usually marked by a waterfall, in this case, Castle Falls. The waterfall marks a former position of the glacial ice in the u-shaped valley.
Big Sagebrush	Patterned Ground		Good examples of patterned ground.
Bistcho Lake Peat Plateaux	Peat Plateaux		Excellent example of peat plateaux in the Boreal Subarctic. A large peatland covering 3750 sq. km.
Black Mountain	Hogbacks		Rugged hogback ridges of national significance.
Blackfoot Reserve	Megablocks		One of the most important known megablocks in Alberta due to its large size and surface exposure. The block is at least 10 sq. km. in area and has been correlated to bedrock outcrops found 250 km to the north. It has an approximate thickness of 10m.
Bourque Lake Tunnel Lake	Glacial Tunnel Lakes		A good example of a glacial tunnel lake.
Brazeau Tufa	Tufa Depositing Springs		A good example of a tufa-depositing hillside spring. Tufa is still actively mineralizing out of the spring water and being deposited on the bottom of the stream bed.
Brule Lake	Dunes	Parabolic	An excellent example of montane sand dunes and sandhills in Alberta. Has active and stabilized dunes. The dunes forms here are derived from wind deposition and erosion of sand originating on the floodplain of the Athabasca River. Aeolian material is strongly calcareous.
Buffalo Lake	Moraine Plateaux		The highest moraine plateau in the area. It is about 45m above the surrounding landscape.
Cadomin Cave	Karst Caves	Joint	A cave with a length of about 2500m and a depth of about 220m. An important bat hibernacula.
Calahoo Creek Warm Springs	Warm Springs		A good example of a warm spring (temperature of 14 C). Spring has a flow rate of about 3.8 litres/sec.
Cameron Hills	Flutings	Giant	Area has the largest glacial flutings known in Canada. Their long-axial orientation reflect ice flows from a NE source or sources plus localized divergences and convergences around major uplands.

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Canmore Corridor/Lac des Arcs	Fluviatile Lakes	Alluvial Fan Dammed	Lac des Arcs was formed by the coalescing of two alluvial fans on opposite sides of the river, which created a damming effect on the flow of water.
Chappice Lake	Drift Basins	Saline/Alkaline Lake	A permanent hypersaline lake in a region of the province where naturally occurring, permanent wetlands are rare. Has extensive saline springs/seepages in excellent condition.
Charles Lake	Tectonic Lake Basins	Fault Lake	Charles Lake is an outstanding example of a structurally controlled waterbody. It follows a major fault structure, the Allan Fault, for about 40 km.
Chelsea Creek Flutings	Flutings		Area has some of the best examples in Canada of glacial flutings formed by retreating glaciers.
Cherry Point Earth Flows	Earth Flows		A good example of an earthflow. The appearance of the cavity and debris apron suggest that after a possible initial rotational slip on the bank face, the surficial lacustrine clay was remoulded to the consistency of a thick porridge. It then flowed through a narrow bottleneck in the upper valley wall and down the bank to form a spoil pile.
Clear Hills	Iron Depositing Springs		A nationally significant iron oxide spring (47.5% mineral content). The outlet and surrounding area are rust-red from the iron deposits which form either a soft mass or miniature dams and pools that resemble rimstone. The water temperature is cold (2.3 C).
Clear Hills	Patterned Fens	Northern Ribbed Fen	A large northern ribbed fen. The area also has a number of 'peat mounds' which may be an early stage to peat plateau or palsa development. The density and diversity of the mounds here is unparalleled elsewhere in Alberta.
Clearwater Patterned Fen	Patterned Fens	Spring Fen	A unique saline patterned fen along the Clearwater River.
Coal Lake	Glacial Tunnel Lakes		Good example of a glacial tunnel lake. It lies in the Gwynne subglacial meltwater channel. This channel is dotted with a number of shallow lakes which have formed as a result of the low gradient and variation in thickness of the alluvial fill.
Cold Lake	Ice Scour Lakes		The deepest ice-scour lake in Alberta.
Coliseum-Shunda Mountain	Non-Patterned Fens without Internal Lawns	Spring Fen	An excellent example of a spring fen.
Crowsnest Mountain	Klippes		A striking example of a klippe where the Lewis Thrust carried Palaeozoic limestones over much younger sandstones and shales of Cretaceous age. It was cut off from the main range by erosion in the Allison Creek valley.
Crowsnest River	Rock Falls		A massive rockfall failure that originated in steeply dipping and folded limestone beds. It had a volume of 37,000,000 cubic metres and ranks among the world's largest. The rockfall contains huge boulders ranging up to 15m in diameter.
Crowsnest River	River Terraces		Excellent examples of gravel river terraces (well preserved). There are several levels of these terraces along the Crowsnest River.
Crowsnest River	Sulphur Depositing/Odor Springs		An excellent example of a karst spring containing concentrations of sulphur. The spring has a flow rate of about 7.6 litres/sec. Sulphur bacteria are present. The suspended sulphur gives the springwater a milky appearance.
Cypress Hills	Erosional Remnants		The highest plateau on the plains of western Canada. It encompasses about 2600 sq. km. of nearly level plateau. Paleosols occur there. Also excellent examples of Tertiary conglomerates. About 210 sq. km. of the hills projected above the ice sheet as a nunatak, one of the best documented.
Del Bonita Uplands/Shanks Lake	Erosional Remnants		An exceptional area that was unglaciated by both Cordilleran and Laurentide ice. The area is capped by a thick covering of preglacial sands and coarse quartzitic gravels deposited after the Laurentide Orogeny. These gravels served as an "armor plating" for the softer, underlying sediments and protected the area from being eroded and removed from the landscape.
Del Bonita Uplands/Shanks Lake	Ice Wedge Casts		Area contains excellent examples of ice wedge casts which are relict periglacial features. The largest ones are up to 2-3m wide and more than 3m deep.

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Devil's Head Klippe	Klippes		A good example of a klippe formed as a result of a Middle Cambrian Eldon Formation being thrust over an Upper Devonian Fairholme Group in the Front Ranges of the Rocky Mountains.
Driedmeat Lake	Meltwater Channels	Subglacial	An excellent example of a subglacial meltwater channel. The channel averages about 1 km in width and contains steeply sloped banks as high as 46m. Now occupied by a chain of lakes: Ord, Coal, and Saunders.
Driftwood Bend Megablock	Megablocks		One of the largest megablocks yet discovered in Alberta. It covers at least 10 sq. km. It is over 10m thick and extends for more than 1.5 km along the Oldman River, where it outcrops.
Drumheller Badlands	Badlands		One of the best badland areas in Alberta. Many badland features including miniature pediments and fans, rills, gullies, veneered terraces, hoodoos, buttes and mesas, knife edge divides, rounded interfluvial and soil erosion features. Piping is also common. Has outcrops of the Upper Cretaceous Horseshoe Canyon Formation.
Dune Point	River Terraces		Area contains classic examples of terrace succession and other features characteristic of a meandering river channel. River terraces are massive and have a complex geomorphology. Terraces are the largest in southern Alberta.
Dune Point	Salt Depositing Springs		Area contains some of the most diverse saline and alkali springs in Alberta.
Edgerton Dunes	Dune Ridges	North Battleford Ridge	Has good examples of the North Battleford type of dune ridge. The ridges are quite long and aligned parallel to each other. The dune field covers about 130 sq. km.
Edgerton Dunes	Non-Patterned Fens without Internal Lawns	Stream Fen	An excellent example of a stream fen in a sand plain/dune area. Good condition.
Edgerton Landslide	Rock Slides		One of three contiguous translational slides with a volume of 350,000 cubic metres. The slide evolved from a rapid rockslide to a slow earthflow slide, the first description of such a transition in Canada.
Ells River Incised Meanders	River Meanders	Incised	The Ells River has excellent examples of well developed and deeply incised meanders.
Fairview Marl Lake	Marl Lakes		Excellent example of a marl lake and wetland complex.
Forgetmenot Mountain	Karst Caves	Joint	The deepest known cave in Alberta.
Forgetmenot Mountain	Felsenmeer		Good examples of felsenmeer on Forget-Me-Not Mountain.
Forgetmenot Mountain	Patterned Ground		Good examples of stone stripes and polygons on the summit of Forget-me-not Mountain.
Fort Hills	Kames	Kame Delta	An excellent example of a large (65 sq. km.) kame delta complex. The complex comprises the Fort Hills.
Fort Hills	Patterned Fens	Northern Ribbed Fen	Two fens surrounding McClelland lake, one to the SW and the other to the E of the lake have the most prominent string and flark pattern in the province.
Fort Smith (Slave River Rapids)	Rapids		One of the premiere set of rapids in Canada. There is a 35m drop over a distance of 27 km. The scenic red granite of the rocks here mark the western margin of the Canadian Shield.
Fort Vermilion Sandhills	Dunes	Transverse	This area has a greater variety and morphology of dune forms than in any other dune occurrence in Canada. Three sets of transverse dunes occur. Dune field covers about 610 sq. km.
Front Canyons	Hanging Valleys		A scenic hanging valley with about 300m of elevational drop.
Ft. Chipewyan	Raised Beaches		An excellent example of raised beaches from former Glacial Lake McConnell. They occur at elevations considerably higher than the current level of Lake Athabasca.
Glenwood Erratic	Erratics		A large, glacial erratic rock measuring 7 x 9 metres in size. It is made of quartzite. This erratic is part of the Foothills Erratics Train that has rocks originating from the Jasper area.
Grassi Lake	Rock-Shelters		Good examples of rock-shelters. Cliffs in the area are remnants of Devonian reefs that are 'riddled' with caves.

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Grassi Lake	Disappearing Streams		The stream flowing through the area vanishes into a subterranean channel, only to reappear with greatly increased flow.
Grassy Mountain Crowsnest	Flatirons		Good examples of flatirons in massive limestone.
Hand Hills	Erosional Remnants		An excellent example of an erosional remnant. It is covered with Tertiary conglomerate and gravels, a rare geological feature. It is an ancient plateau that now rises 225m above the surrounding prairie.
Hawk Hills Slope Fens	Non-Patterned Fens without Internal Lawns	Slope Fen	An excellent example of a slope fen.
Hay Lake Thermokarst Lake	Thermokarst Lakes		Excellent examples of thermokarst ponds.
Hell's Gate Water Gap	Water Gaps		A good example of a water gap created by the erosive action of the Smoky and Sulphur River. Vertical 'canyon' walls of bedrock and conglomerates occur at the site.
Horseshoe Lake	Drift Basins	Saline/Alkaline Lake	An excellent example of a hypersaline lake. Large areas of the basin dry up during severe droughts.
Indian Cabins Peat Plateaux	Peat Plateaux		Excellent example of peat plateaux. The peatland has extensive collapse scar development.
Island Lake	Drift Basins	Holm Lake	Lake has several large and numerous smaller islands, an excellent example of a holm lake.
Jackknife Springs	Tufa Depositing Springs		The spring has a large travertine mound about 3m high and 30m in diameter. It is capped by a twin bathtub-like structure.
Kakwa North	Warm Springs		A good example of a warm spring. It has a temperature of 9 C.
Kakwa North	Patterned Ground		Excellent example of stone stripes, circles, and boulderfields at an elevation greater than 1800m.
Kilini Creek	Patterned Fens	Spring Fen	Good example of a spring fen. Springs are calcareous.
Kinsella Tufa and Ice-walled Channel	Meltwater Channels	Ice-walled	Area contains an excellent example of an ice-walled meltwater channel.
Kinsella Tufa and Ice-walled Channel	Tufa Depositing Springs		Site has one of the few examples of dome springs with tufa deposits in the east-central part of Alberta.
Kipp Megablock	Megablocks		A well exposed glacial megablock and geological type section. It is visible for about 1.5 km along the Oldman River, where it outcrops.
Kipp Megablock	Aligned Coulees		An excellent example of well-developed aligned coulees. Marked parallelism and the tendency to occur on windward valley walls are well displayed here.
Kleskun Hills	Erosional Remnants		A good example of an erosional remnant that has some badland characteristics. Bedrock of the Cretaceous Wapiti Formation is exposed here.
LaCrete Sand Hills	Dunes	Transverse	An important area for transverse dunes. Dune area covers about 65 sq. km.
Lake Athabasca South Shore	Beaches		This area has the longest beach in Alberta, extending along the south shore of Lake Athabasca.
Landslide Lake	Landslide Lakes		A good example of a lake formed as a result of a landslide in the Front Ranges of the Rocky Mountains.
Leland Lake/Tulip Lake	Tectonic Lake Basins	Fault Lake	A good example of a fault lake. The intriguing shape of Tulip Lake is believed to be the consequence of the combination of NNE foliation and an east-trending system of fractures.
Lesser Slave Lake Provincial Park Extension	Aeolian Beach Ridges		Area has some of the best aeolian beach ridges in Alberta, however, some are highly disturbed by wellsites and cutlines.
Little Smoky Landslide	Rock Slides		A large (18,000,000 cubic metres) and relatively recent (1958) active slide. At intervals of the order of decades, sufficient subsidence and translation occur in front of the backscarp to permit a new block to fail by slow settlement and the scar to retrogress.
Livingstone Gap	Water Gaps		A spectacular water gap in which the Oldman River flows through a narrow incision in the Livingstone Range

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Lloydminster Crevasse Fillings	Crevasse Fillings		Area contains excellent examples of crevasse fillings (also termed linear disintegration ridges). The ridges vary in size but can range up to 7m in height, 90m wide and several kilometres in length. There are two sets of ridges that intersect at acute or right angles, thus forming a waffle, diamond or box pattern.
Lonepine Creek Dendritic Eskers	Eskers		This area has some of the best examples of tributary esker ridges having a dendritic pattern. The dendritic pattern is believed to be relatively uncommon in Alberta.
Lost River	Drumlins		Area contains good examples of drumlins and drumlinoid ridges. Classic drumlins range to 15m in height and are composed entirely of gravel and sand.
Lousana Canyon	Gorges/Canyons		Part of the deepest (90 to 150 m) canyon along the Red Deer River. Has outcrops of the Upper Cretaceous Horseshoe Canyon and Tertiary Paskapoo Formations. Also has excellent examples of slope failure and slump features including perched wetlands.
Lower Red Deer River	Badlands		Contains the largest and most spectacular area of badlands in Canada. Numerous badland features including pipes, tunnels, sinkholes, caves, dry valleys, buttes, mesas, natural bridges, disappearing streams, ephemeral stream terraces, channels, ephemeral waterfalls, hoodoos, pediments, fluvial fans and aprons.
Lower Red Deer River	Alluvial Fans	Coalescing	A good example of a coalescing fan. At least ten, clearly identifiable, fine grained alluvial fans have coalesced forming a bajada across the site. The surface of the bajada is covered by a distributary, semi-radial pattern of braided streams.
Mackay River Incised Meanders	River Meanders	Incised	The lower Mackay River has some of the best, deeply incised meanders in Alberta.
Many Island Lake	Playa Lakes		A large playa lake with extensive marshes in wetter years.
Manyberries Creek Badlands	Sandstone Dikes		Good examples of sandstone dikes occurring in the Oldman and Bearpaw Formations.
Margaret Lake	Veneer Bogs		Excellent examples of veneer bogs.
Marten Mountain Ribbed Fen	Patterned Fens	Northern Ribbed Fen	A large and excellent example of a northern ribbed fen.
McLelland Lake Sinkholes	Dolines	Collapse	Area has excellent examples (12) of collapse dolines. The dolines are circular and deep.
McLennan Sloping Fens	Non-Patterned Fens without Internal Lawns	Slope Fen	Good example of a slope fen. It is comprised mainly of sphagnum peats and to a lesser extent, sedge peats. Small, more or less circular mounds of glaciolacustrine materials are scattered throughout the wetlands.
Middle Sand Hills	Dunes	Parabolic	Area contains one of the largest and most diverse blocks of mixed grassland and sand dunes remaining in Canada. Excellent examples of parabolic dunes.
Middle Sand Hills	Gorges/Canyons		One of the premiere wild river sections in the Grassland Region of Canada. One of two deep canyons in the mixed grassland of Canada.
Mikkwa River Wooded Bog	Wooded Bogs without Internal Lawns	Northern Plateau Bog	Peatland has excellent examples of northern plateau bogs. Peatland is large (375 sq. km.) and situated on an elevated plateau. In addition, channel fens are very well developed and extensive.
Milk River Valley - Pinhorn	Badlands		An exceptional area that contains a diversity of badland features (e.g., sandstone outcrops and concretions, solitary buttes, clay flats, narrow ravines, gullies, piping features, etc.). There are outcrops of Comrey sandstone of the Oldman Formation plus outcrops from the Foremost Formation of Upper Cretaceous age.
Milk River Valley - Pinhorn	Gorges/Canyons		A spectacular canyon in the grasslands of Alberta. It is over 120m deep and 1.5 km wide in places and is incised in bedrock. The Oldman and Foremost Formations are exposed along the valley sides. The canyon served as a major spillway during the last deglaciation.
Milk River Valley - Pinhorn	Neck Cutoffs		There are excellent examples of neck cutoffs in the Milk River valley that have been created by the erosive action of the Milk River.
Milk River Valley - Pinhorn	Bar-and-Swale Topography		Good examples of bar-and-swale topography occur in the Milk River valley.

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Milk River Valley - Pinhorn	Pipes and Related Phenomena		The Milk River badlands contain spectacular examples of piping phenomena, some of the best in Canada. Piping phenomena can be observed over an area of about 260 sq. km. Piping produces a spectacular display of disappearing streams, dry valleys, sinkholes, blind and hanging valleys, waterfalls, natural bridges, residual hills and caves.
Mokowan Butte	Erosional Remnants		Mokowan Butte is the only place in Alberta that provides a record of early Quaternary cordilleran glaciation. It has the most complete and best preserved stratigraphy of the Kennedy Drift, containing evidence for at least six glacial and six interglacial episodes. The site contains rare pre-Wisconsin paleosols. The Butte is part of the preglacial Flaxville Plain, of Pliocene age, the oldest and highest bench. The area was unglaciated during the Wisconsin period.
Montagneuse River Earth Slide	Earth Slides		A massive slide (1300m long, 1400m wide, 80m thick). It had a volume of 76,000,000 cubic metres. As of 1996 it was the largest historic rapid landslide on the Interior Plains of Canada. For a period of time it dammed the Montagneuse River, stopping its flow, and formed a reservoir 1.5 km long.
Moose Mountain	Anticlinal Mountains		A good example of an anticlinal mountain. The center of the dome has been eroded down to the Mississippian Rundle Group.
Moose Mountain	Patterned Ground		Excellent examples of patterned ground features, including solifluction lobes, terracettes, sorted circles, nets and stripes.
Moose Point	Moraine	de Geer	Excellent example of a de Geer moraine.
Morley Drumlins	Drumlins		Reputed to be the largest drumlin field in Alberta. Individual drumlins range from 70m to a kilometer in length, from 10 to 50m wide and from 5 to 23m high. They consist of Cordilleran till. Some of the more irregular ridges are bedrock cored.
Mud Butte	Hill-hole Pairs		This area probably has North America's largest and best exposed site of glaciotectionic deformation. Mud Buttes is a prominent ice-thrust ridge, rising about 100 m above surrounding land. It is comprised of a compact group of low hills about 2 km long and 800 m wide.
Mudspring Lake Soapholes	Soapholes		One of the largest concentration of soapholes in the grassland/parkland region of Alberta. Soapholes occur in and around Mudspring Lake.
Muriel Lake hill/hole pair	Hill-hole Pairs		One of the largest thrust hills in the Sand River area. It covers an area of 140 sq. km. In places, the hills exceed 100m in height. The source depression is partially filled by Muriel and Sinking Lakes.
Muskeg Mountain Channel Fens	Non-Patterned Fens without Internal Lawns	Channel Fen	Peatland has extensive well developed channel fens.
Muskeg River Bog	Wooded Bogs with Internal Lawns	Northern Plateau Bog	A good example of a northern plateau bog. One of the most southerly plateau bogs with evidence of collapse scar formation.
Neutral Hills	Hill-hole Pairs		A large ridge comprised of upthrust glacially contorted bedrock that rises 150m above the surrounding landscape and extends along an east-west axis into Saskatchewan. This feature forms a classical large hill-hole pair. The source depression is located NE of the Hills, immediately up-glacier of the thrust mass.
Okotoks Erratic	Erratics		One of the largest glacial erratics in North America and the largest known surface erratic in the world (excluding buried or partially buried megablocks). It weighs about 18,000 tons. Its original dimensions were 9m tall, 18m wide and 41m long.
Oldman River Oldman River	Aligned Coulees Reverse Faults		One of the few major high angle thrust faults on the plains. Site has a series of imbricate thrusts.
Oliva Lake	Drift Basins	Saline/Alkaline Lake	Oliva Lake is 2 to 3 times more saline than sea water; the lakeshore is encrusted with salt.
Oliva Lake	Meltwater Channels	Ice-walled	Area contains an excellent example of an ice-walled meltwater channel.

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Pakan Bog Iron Springs	Iron Depositing Springs		Site has a sizable deposit of ochre (about 0.5 ha and 20 cm in depth).
Pakowki Dunes	Blowouts		The sand hills have excellent examples of blowouts.
Pakowki Lake	Playa Lakes		A large playa lake. It is part of the Pakowki Lake Endoreic Basin, a small pocket of interior drainage with no outlet north of the Milk River Ridge.
Pekisko	Hogbacks		A good example of hogbacks composed of Belly River Formation.
Pekisko	Pitted Deltas		A good example of a pitted delta of late Pleistocene age. The pitted surface of the gravel delta is due to the proximity of the glacier snout and the burial of ice during deposition into Glacial Lake Highwood.
Pekisko	Cuestas		A good example of cuestas in the foothills of Alberta.
Pelican Lake Wetland	Wooded Bogs with Internal Lawns	Northern Plateau Bog	Good examples of northern plateau bogs within an extensive area of peatland between the Athabasca River and Pelican Lake.
Plateau Mountain Ecological Reserve Extension	Limestone Pavement		A good example of limestone pavement at an elevation of 2100m. A rare feature in the Alberta Rockies.
Porcupine Hills	Erosional Remnants		An excellent example of an erosional remnant, parts of which were unglaciated. It is about 90 km long and 27 km wide. The hills are "outliers" on the western edge of the plains that differ notably in geological structure from the neighbouring foothills in that they are underlain by gently eastward-dipping sandstone and shale beds of late Cretaceous age.
Prince's Springs	Salt Depositing Springs		The permanent springs here are among the largest in the grasslands of Alberta.
Ptolemy Creek	Karst Springs		One of the largest karst springs in Alberta. It has a flow of about 2120 litres/second and is classified as a mature spring (i.e., where waters discharge from a well-formed cave that may be of enterable dimensions and which is located at or close to the elevation of a valley floor). This is the only unequivocal example of a mature spring known in the Canadian Rockies.
Ptolemy Creek	Karst Caves	Joint	The cave system is the second longest in Canada at over 12,798m. It has six entrances. The cave has many pitches and frequent constrictions. There are more pitches in this cave than any other Canadian cave.
Ptolemy Creek	Marl Lakes		An important marl wetland in the Municipality of Crowsnest Pass.
Ptolemy Creek	Frost Pockets		A good example of a frost pocket cave. It has one entrance and a length of 21m.
Ptolemy Creek	Speleothems		The cave has good examples of speleothems, such as 'cave pearls'.
Ptolemy Creek	Anticlinal Valleys		A good example of an anticlinal valley. Allison Creek flows along the strike of the breached Allison Anticline.
Ptolemy Creek	Dolines	Solution	The doline in this area is large in size. It is backed by a small cliff.
Ptolemy Creek	Fluviatile Lakes	Alluvial Fan Dammed	A good example of an alluvial fan dammed lake.
Ram River Falls/Canyon	Waterfalls		A striking waterfall with a drop of about 25m. Water flows over a resistant sandstone bed within the Upper Cretaceous Cardium Formation.
Ram River Falls/Canyon	Gorges/Canyons		A deeply incised gorge or 'canyon' of the Ram River with numerous rapids and waterfalls. Numerous waterfalls tumble off the 150 to 300m canyon walls into the river.
Ratsnest Cave	Speleothems		Site contains extensive and relatively undisturbed speleothems.
Ratsnest Cave	Karst Caves	Bedding	Canada's 8th longest cave (just over 4 km long). It is the warmest cave in the Rockies at 5 C year round. It has extensive development of a fault-guided bedding plane fissure.
Reflex Lake/Salt Springs	Salt Depositing Springs		Site has one of the most diverse and complex saline spring ecosystems in Alberta. Associated with the main springs are marl or tufa deposits which are considered rare in the region.
Richardson River	Dunes	Parabolic	Area contains excellent examples of parabolic dunes in the largest single uninterrupted dune field in Canada. The parabolic dunes are asymmetrical with their left, SW wings shorter.

<u>Site Name</u>	<u>Element Name</u>	<u>Subelement</u>	<u>Description</u>
Richardson/Marguerite Rivers Dissected Kame	Kames	Kame Moraine	An excellent example of deeply dissected kame moraine in Alberta. Area has high, well-drained ridges, some of which are covered with a pebble "pavement".
Ronald Lake Sandhills	Dunes	Parabolic	Area has excellent examples of parabolic dunes. Dune field covers about 655 sq. km.
Rycroft Earth Slide	Earth Slides		A spectacular example of an earth slide. It had a volume of 39,000,000 cubic metres. One of the largest landslides in Alberta. It dammed the Saddle River for a period of time.
Sand Point	Spits		One of the longest sand spits in Alberta. It juts 3 km into Lake Athabasca.
Shunda Water Gap	Water Gaps		A spectacular Grand-Canyon-style canyon occurs where the North Saskatchewan River crosses the Brazeau Range. The river is antecedent, i.e. it was present before the mountains were and eroded through them during uplift of the range, thus producing a true canyon, not merely a gorge.
Slave River Islands	River Islands	Bedrock Island	An excellent example of a bedrock island within the Slave River.
Smoke Lake	Marl Bogs		A good example of a marl bog (has mixed marl and tufa deposits).
St. Mary River Incised Meanders	River Meanders	Incised	Excellent examples of meanders that have been incised (about 45m) into the sandstone bedrock.
Sturgeon River Delta	Deltas	Stable Channel-Mouth Bar	A good example of a stable channel-mouth bar delta (also termed a birdsfoot delta).
Suffield South	Neck Cutoffs		The site has a classic meander cutoff.
Sundance Hoodoos	Hoodoos		Contains some of the most unique hoodoo formations in Alberta.
Sweetgrass Hills East	Dikes		One of the best examples of an igneous intrusive dike in Alberta, a rare feature for the province.
Thistle Creek-Brazeau Bluehole Springs	Blue-hole Springs		Excellent example of a blue-hole spring. Site also has calcareous tufa and salt deposits.
Thunder Lake Eskers	Eskers		The largest esker and kettle lake complex so far documented in Alberta (1984). It can be traced more than 14 km along the Brazeau River valley. In places it is more than 2 km wide. Consists of steep-sided ridges of coarse gravel with a sand and fine gravel matrix.
Upper Oldman Rock Cut Terraces	River Terraces	Rock-cut Terrace	Area contains some of the best examples of rock-cut terraces in Alberta. A thin lag of gravel overlies the terraces.
Verdigris Coulee	Overflow Channels		One of the best examples that illustrates the classic form of a glacial spillway.
Vermilion Chutes	Rapids		Large set of rapids where the river abruptly drops 7m in elevation.
Wapiabi Cave	Karst Caves	Bedding	This cave features some of the finest phreatic passages in Alberta. It has one entrance with 540m of tunnel. The cave has examples of speleothems (soda straws, stalactites and stalagmites).
Wappau Lake	Patterned Fens	Net Fen	An excellent example of a net fen. Area also has excellent examples of channel fens.
West Castle West Castle West Castle	Patterned Ground Paternoster Lakes Iron Depositing Springs		Good examples of patterned ground. Good examples of paternoster lakes. An important area for spring deposits. The Peigans have harvested their sacred paint from this area.
Whiskey Gap	Erosional Remnants		This area has the only exposure of the No. 3 bench pre-glacial erosional surface in Alberta.
Whitefish Lake Rubble Terrain	Ice-Thrust Moraine		The best example of ice-thrust moraine in Alberta.
Wildhorse #1	Eskers		The largest and best developed esker in this region of Alberta. It is over 19 km long and in places rises 15m above the surrounding prairie level. It is over 1.5 km wide for a considerable part of its length.

<u>Site Name</u>	<u>Element Name</u>	<u>Subelement</u>	<u>Description</u>
Willow Creek	Meltwater Channels	Subglacial	An excellent example of a subglacial meltwater channel perched on the side of a hillslope. The channel is large and steep-sided and has massive sandstone outcrops. The channel had a convex-up shape.
Wolf Lake	Hill-hole Pairs		Wolf Lake and Wolf Hill in combination represent a large hill-hole in a complex setting, probably the best example of this feature in Alberta. The boundaries of the ice-scooped depression are essentially tear faults along which material from Wolf Lake basin was shoved into Wolf Hill. The hill covers about 42 sq. km. and is about 135m high.
Ya Ha Tinda Ya Ha Tinda	Patterned Ground Waterfalls		A large, diverse area of patterned ground features. Spectacular falls that cascades over rock ledges and dropping in two stages; the upper stage rather short and the lower stage much deeper.
Zama City Patterned Fen	Patterned Fens	Net Fen	Good example of a net fen. Has numerous small ponds and pools of water throughout the peatland.
Zama Lakes	Levee Dammed Lakes		Best example of levee-dammed lakes in Alberta.