



# LIVING IN THE SHED

ALBERTA'S NORTH SASKATCHEWAN RIVER WATERSHED

B I L L I E M I L H O L L A N D



# LIVING IN THE SHED

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EDMONTON, ALBERTA, CANADA

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## ACKNOWLEDGMENTS

While creating *Living in the SHED*, many people offered moral support, advice and information, as well as editorial and research assistance. Not all information collected could fit into the book. Only a fraction of the rich history and pre-history is mentioned. Many spectacular photographs had to be left out. Additional information and images will be featured on the North Saskatchewan Watershed Alliance website: [www.nswa.ab.ca](http://www.nswa.ab.ca). If anyone has information or images that could add to this ongoing story, please contact us.

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## DEDICATION

*Living in the SHED* is dedicated to Ed Hoyes, Water Resources engineer extraordinaire. Ed's interest in water began when his mother sat him on the beach at Wabamun Lake and a wave washed over him. He was inconsolable when he had to leave the water. Later his dad showed him how to dig ditches to drain water from their yard. That began a fascination with the dynamics of drainage; the function of hydrologic systems that grips him to this day.

After writing his final exam for his Civil Engineering degree on a Friday morning in 1974, Ed was put to work that afternoon on the Vermillion River 1974 Flood Study. In 1976, Ed joined the Water Rights Branch of Alberta Environment and he began a Master's Degree in Civil Engineering - Water Resources. Nothing slowed him until a heart attack interrupted his fun in 2007. What Ed loved most about his job was meeting people and hearing concerns from both sides of water issues. With long-term disability keeping him away from that, in the fall of 2008, Ed volunteered his knowledge about water rights and watershed management to the North Saskatchewan Watershed Alliance. He has been an invaluable resource for all technical projects and an unflinching booster of *Living in the SHED* project.



*A generous donation from the Thompson family in memory of their parents, Andrew and Agnes Thompson has helped with the production costs of this book.*

For generations, growing up “Thompson” involved exploring western Canada. When Andrew and Agnes moved to Edmonton in 1950, the North Saskatchewan River became their children’s backyard. They canoed on the river; learned to ski at Whitemud Creek; skated at Hawrelak Park. In the 1990s, Thompson grandchildren rediscovered the North Saskatchewan River through dragon boating.

It is fitting that we help sponsor this book in the memory of our parents. They placed a high value on sharing knowledge. Dad was a pioneer in the fields of

environmental, aboriginal, and oil and gas law. He and Mom traveled widely learning about environmental, social, economic and political issues. They brought this knowledge home to share with their children. Although they are gone, this book will pass on the kind of information about the geography, hydrology and history of the North Saskatchewan River basin that they valued. Hopefully people will use it to develop the understanding necessary for making decisions that will allow future generations to continue enjoy the basin as our parents did.



## INTRODUCTION

The relationship between people and the places where they live, work and play is complex. The light, the seasons, the natural features all contribute to a sense of place. Because urbanization came so quickly to the North Saskatchewan River watershed, not many people retain roots in surrounding rural landscapes. The mountainous vistas in four headwaters subwatersheds may be more familiar to many of us. The other eight have their own, equally spectacular landscapes and fascinating histories that may surprise you. *Living in the SHED* invites you to explore and fall in love with all 12 subwatersheds.

### REFERENCES TO FIRST NATIONS PEOPLE

Many words used to describe First Nations people in popular culture are often misused. For *Living in the SHED* terms were chosen from “Key Terminology Guidebook for

Reporting on Aboriginal Topics” which was written for The Strategic Alliance of Broadcasters for Aboriginal Reflection (SABA).

**Indian:** This term was used historically to describe the first inhabitants of what Europeans called the ‘New World’. It is used to define Indigenous people under the Canadian Indian Act. It is not a term agreed to by the First Nations people to whom it refers. In this book the term “Indian” appears only in direct quotations from historical sources.  
**Métis:** This term is used broadly to describe people with mixed First Nations and European ancestry. In recent times the accent over the ‘e’ is often dropped. In this book the accent is retained.

## WATERSHED

A watershed is any area of land over which surface water flows to one destination. That destination can be a lake, bog, stream, creek or river. Most surface water, everywhere on earth, eventually flows downward over land into an ocean or sea. Using watershed boundaries to identify cause and effect of land-based activities encourages people to work together to protect water resources. Protecting water resources does not mean the end of development. It means learning how to be strategic about development, so activities related to it are sustainable and water supplies are secure.

### NORTH SASKATCHEWAN RIVER SUBWATERSHEDS IN ALBERTA

The North Saskatchewan River watershed in Alberta is divided into twelve subwatersheds according to the Water Survey of Canada hydrometric network. The North Saskatchewan Watershed Alliance (NSWA) is the Watershed Planning and Advisory Council (WPAC) tasked with initiating and encouraging watershed management in the North Saskatchewan River watershed in Alberta.

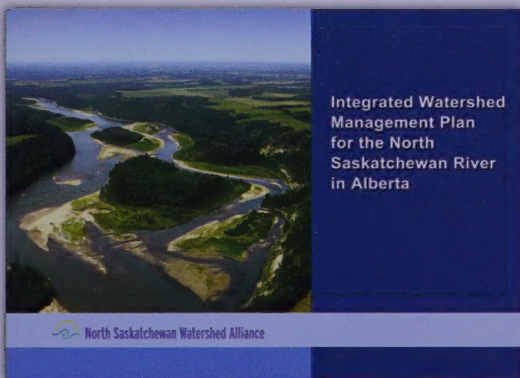


### WATERSHED MANAGEMENT

As the population in the North Saskatchewan River watershed increases, the need for integrated watershed management becomes more urgent. Effective watershed management requires the efforts of everyone, whether people live in urban or rural areas, whether they work or just play in any particular subwatershed. In the same way that every journey begins with a single step, good watershed management of large basins like the North Saskatchewan River watershed begins with singular land use decisions. How land is managed in the subwatersheds is key to sustaining a sufficient and high-quality water supply for everyone.

For more about what is happening in the North Saskatchewan River watershed in Alberta, visit:

[www.nswa.ab.ca](http://www.nswa.ab.ca)







# CLINE SUBWATERSHED

**T**he western boundary of the Cline subwatershed is the height of land that forms the Alberta/British Columbia border. From there the subwatershed stretches over 378,629 hectares (934 acres) including 37,286 hectares (91.5 acres) of lakes, rivers and the Saskatchewan Glacier (in the Columbia Icefield), where the North Saskatchewan River begins. The North Saskatchewan River headwaters are protected within Banff National Park, the White Goat and Siffleur Wilderness areas and the Kootenay Plains Ecological Reserve.

The Cline is the least disturbed subwatershed in the North Saskatchewan River watershed, with only 0.1% (365 hectares or 902 acres) of the land area interrupted by linear development, the majority of which are roads, cutlines and trails. Most aquatic ecosystems in the Cline subwatershed are relatively unimpaired and likely to be in a natural, optimal functioning state. The word 'likely' is used, because no detailed fish population assessment has been completed nor has a systematic examination of riparian health, aquatic plants or benthic invertebrates been attempted for this subwatershed.

# NATURAL FEATURES

## GLACIERS

The **Columbia Icefield**, the largest glacial remnant in the Canadian Rocky Mountains, drapes over a three-way hydrological divide where water flows north to the Arctic Ocean (Athabasca River), west to the Pacific Ocean (Columbia River) and east to Hudson Bay (North Saskatchewan River). It is the only glacier expanse in North America that can be reached by a short walk from a parking lot.

The **Saskatchewan Glacier**, one of eight major Columbia Icefield glaciers, is the largest outflow of ice, covering 23 square miles (60 square km). The North Saskatchewan River begins as a trickle of cold water tumbling off the tip of it down into a narrow valley between Mt. Castleguard and Mt. Adromenda.

Columbia Icefield Photo-Roger  
Kirchen, Images Alberta

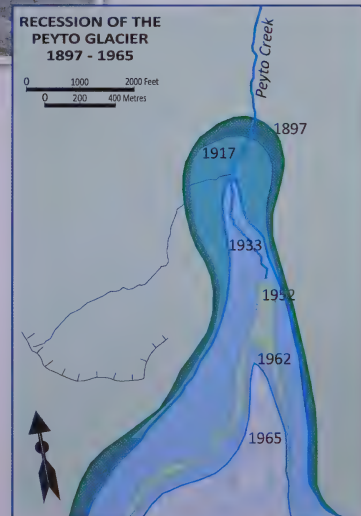




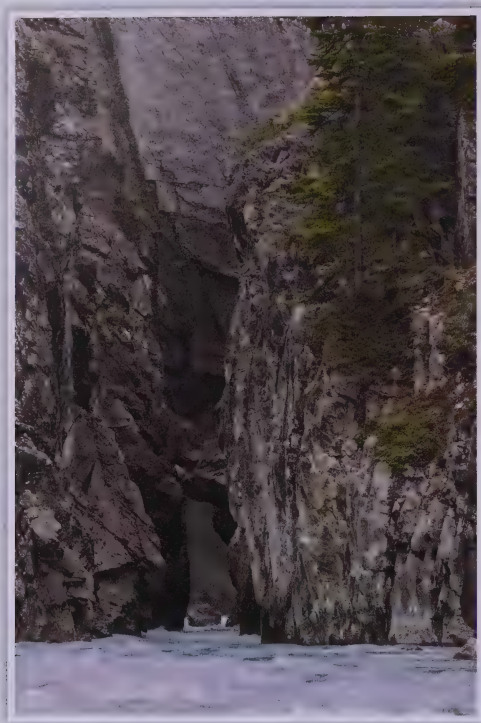
The Saskatchewan Glacier. The ribbon of pale blue in the upper left quadrant of the photo is the beginning of the North Saskatchewan River.  
Photo-Brian Peters

In 1999, a severe rainstorm eroded over 6 metres (19.5 feet) of till and outwash deposits exposing tree stumps rooted in a well-preserved paleosol (soil formed in a past geological period). The 30 tree-ring samples collected from these stumps identified them as subalpine fir *Abies lasiocarpa*, Engelmann spruce *Picea engelmanni* and whitebark pine *Pinus albicaulis*. Radiocarbon dating suggests these trees died during an advance of the Saskatchewan Glacier about 3000 BP (ages expressed in 'years before present' (BP) where "present" is defined as AD 1950).

The **Peyto Glacier** is one of the most extensively studied glaciers in North America. In 1896, Walter D. Wilcox, his friend, R. L. Barrett, two packers and a cook with five saddle horses and 10 pack horses left Laggan (now Lake Louise) on July 12 to explore the headwater tributaries of the North Saskatchewan River. At that time very few water bodies or landmarks in the mountains had been given European names. The adventurers descended



The North Saskatchewan River rolls lazily over an alluvial plain until it is forced through this narrow canyon before waters from Nigel Creek doubles its flow. Photo-Derald Lobay, Images Alberta



through what Wilcox referred to as ‘Little Fork Valley’ along what is now known as the Mistaya River. *“The scenery is very grand near the lakes. [Waterfowl Lakes] A striking peak [Mount Chephren] about 10,000 feet in height with a precipitous rock face and a wedge-shaped summit stands guardian...”* The North Saskatchewan River flowing southeast to where it is joined by the Mistaya, he referred to as the North Fork. From the hydrological divide between the headwaters of the Bow and North Saskatchewan Rivers Walter Wilcox took the first known photograph of the Peyto Glacier. The photo appeared in National Geographic Magazine April, 1899.

The Lyell Glacier flows out of the vast Lyell Icefield, which

stretches between the headwaters of the Alexandra and Howse Rivers, giving birth to Glacier Lake. In 1857, geologist James Hector named the five-peaked mountain that towers over the glacier after Sir Charles Lyell, a Scottish geologist and patron of the John Palliser Expedition. The five peaks have since been renamed for five Swiss mountain guides.

The Cline Glacier once came close to becoming commercial ice cubes. On May 2, 1989, Alberta’s Minister of Forestry, Lands and Wildlife issued a lease to the Ice

## Source of the Little Fork of the Saskatchewan River (now known as Peyto Glacier)

from National Geographic Magazine, April, 1899 photo: Walter D. Wilcox



Age Company Inc. of Banff to mine ice from the Cline Glacier. The company intended to remove 5,000 cubic metres of ice a year, out of which they would create special 'ancient' ice cubes for a foreign market. The lease required that the company apply for a licence from Alberta Environment under the Water Resources Act. During the licence application process the public vigorously opposed granting the licence, and in the end, the company didn't mine the glacier. The fact that they might have mined it sparked vigorous discussion about what should and should not be removed from pristine mountain headwaters.

## RIVERS

Where the **Alexandra River** joins the North Saskatchewan River, a broad, braided river channel (known as Graveyard Flats) creates a unique valley bottom between Mount Amery and Mount Saskatchewan. A canoe run on the North Saskatchewan River from the mouth of the Alexandra River to the Big Horn Dam takes about a day and a half. The rapids range from Grade II to Grade VI, requiring a minimum of intermediate canoeing skills (*see the Rapid's Classification Chart in the Ram subwatershed section*). Canoeing is not recommended during spring run-off or after heavy rain events.

Confluence of the Alexandra River  
and the North Saskatchewan River.

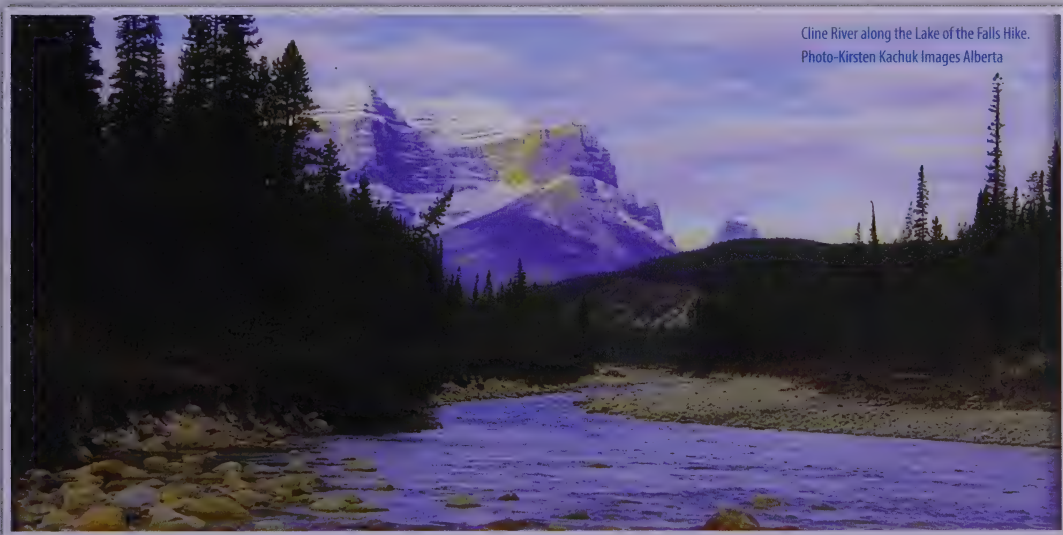
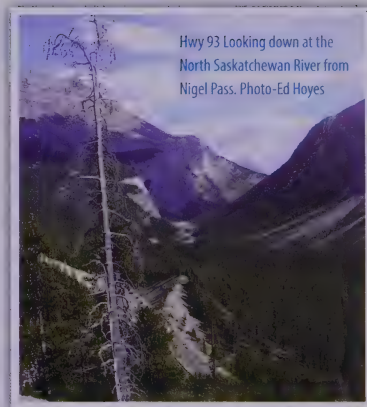
Photo-Ed Hoyes



The **Howse River** is a short, braided river, formed when Forbes, David and Lagoon Creeks, flowing from the Freshfield Glacier, meet and run north to discharge into the North Saskatchewan River at Saskatchewan River Crossing. This river is 33 km (20.5 miles) long. Two distinct layers of volcanic ash, visible in the North Saskatchewan River bank east of the Howse River confluence were deposited during Mount Mazama (Oregon State) volcanic activity over 7,000 years ago.

The **Mistaya River** originates in Peyto Lake, the most southern location in the North Saskatchewan River watershed. The Mistaya flows northwest, receiving water from Delta, Silverhorn, Cirque, Noyes, Chephren, Totem, Epaulette, Bison, Kaufmann and Sarback Creeks. It is a short river, about 38 km (23.5 miles) long.

The **Cline River** flows from Pinto Lake north of Sunset Pass in Banff National Park, joining the North Saskatchewan River at Lake Abraham.



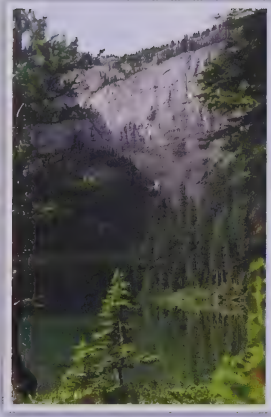
Pinto Lake is fed with glacial melt water from Minister Mountain, Mount Coleman, and Cirrus Mountain.

## LAKES

**Glacier Lake** is the fourth largest lake in Banff National Park. It is fed from the massive Lyell Glacier. The 18 kilometer (11 mile) hike to Glacier Lake and back is relatively easy. It can be done in 5-6 hours.

**Waterfowl Lakes** are a string of small, blue jewels along Highway 93 south of Saskatchewan Crossing. Mount Chephren (3,307 meters - 10,850 feet) towers over the lakes. It was called Pyramid Mountain by early European adventurers, but since there was already a Pyramid Mountain near the Town of Jasper, the name was changed to honor an Egyptian Pharaoh.

**Peyto Lake** is most likely the most photographed lake in the national parks.



Pinto Lake, headwaters of the Cline River. Photo-Brian Peters



Pinto Lake. Photo- Cameron Strandberg



The well-known view is easy to get to and the vibrant colours are irresistible. Fine grained rock flour flowing into Peyto Lake from the Peyto Glacier creates stunning turquoise colours. The colour varies from season to season and depending on the time of day. The lookout for Peyto Lake is at the Bow Summit, the highest point along the Columbia Icefields Parkway at 2088 meters (6850 feet) above sea level.

## OTHER FEATURES

**Saskatchewan Crossing**, where the Howse and Mistaya Rivers join the North Saskatchewan River, is an ancient First Nations gathering place.

**Castleguard Cave** is Canada's longest subterranean cavern with over 21 km (13 miles) of surveyed passages (as of 2015). Because of its remote location, phreatic tubes (perfectly round passages) and sapphire plugs of intruded glacial ice, it is a favourite



Waterfowl Lakes. Photo-Brian Peters



Saskatchewan Crossing. Photo-Bill Trout Images Alberta

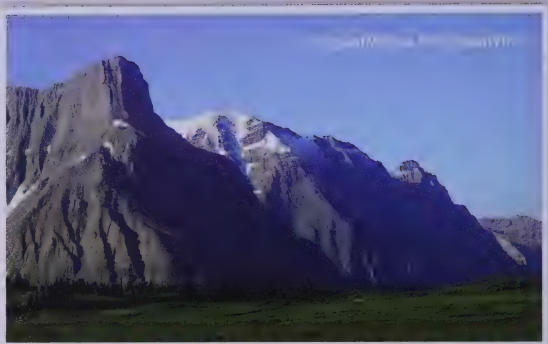
If there are no toilet facilities along a hiking trail or near a campsite, a 'cathole' can be used in most terrestrial environments.

Dig it a minimum of 200 feet away (60.96 metres or about 70 adult steps) from water, trails, and campsites, ideally near thick underbrush, decaying logs and in organic soil to facilitate decomposition.

After a deposit is made, the hole must be filled in, covered over and disguised with ground material. Scatter catholes when camping in a group.



Castleguard Cave. Photo-Christian Stenner



Whirlpool Ridge. Photo-Bill Trout  
Images Alberta

adventure destination for extreme cavers and speleologists from around the world. It is navigable only in winter, because of the high flood risk at the entrance during the rest of the year. The 20 km (12.5 mile) ski over Saskatchewan Glacier ice, pulling a sled of camping gear and then rappelling down an 8 metre (26 foot) drop into the cave is not for the faint of heart. Cavers often stay underground for four or five days at two underground camps.

**Castleguard Meadow** stretches between the headwaters of the North Saskatchewan and Castleguard rivers. It is an extremely remote area. The grueling hike should only be attempted by experienced mountaineers.

### **Whirlpool Ridge**

On the edge of Abraham Lake, which was created by the Bighorn Dam in 1972, precambrian rock at least 600 million years old forms a hard ridge. In this area, the North Saskatchewan River runs parallel to the ridge. The actual 'whirlpool' marks the place where the river changes course and cuts through the ancient rock.

### **The Oldest Tree in Alberta**

A 1200 year old Limber Pine *Pinus flexilis*



grows 35 km (nearly 22 miles) upstream from Whirlpool Point, clinging precariously to cracks in a massive riverside rock. Limber Pine is a 5 needled pine, adapted to dry, windy conditions. The “*flexilis*” part of its scientific name comes from the fact the twigs are flexible enough to be tied in a knot.

### Kootenay Plains

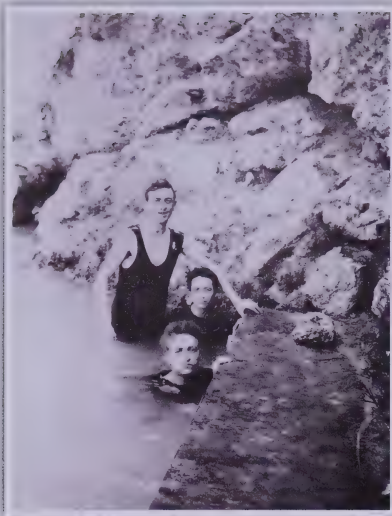
South of Abraham Lake, in the rain shadow of the Rocky Mountains and the northern edge of the Chinook Region in Alberta is a unique dry climate that supports specialized plant communities, including grasslands. The large, fragile and ecologically sensitive area was used by First Nations people for thousands of years. Gravesites flooded by the creation of Abraham Lake, behind the Bighorn Dam, were relocated to the present Kootenay Plains area. The Kootenay Plains Ecological



Prayer cloths on trees in the Kootenay Plains, a reminder that this is an ancient, sacred place still visited by First Nations people. Photo-Kirsten Kachuk Images Alberta



Fall in the Kootenay Plains. Photo-Bruce Smith Images Alberta



Swimmers at Cave and Basin Hot Springs Banff 1900-1903. Glenbow Archives, NA-1126-10

Reserve supports significant plant communities in a willow-birch fen and a spring fed wetland. It also shelters several rare plant species: *Haplopappus uniflorus*; *Primula mistassinica* (dwarf Canadian primrose); *Townsendia sericea*; *Cheilanthes Feei* (slender neck fern).

**The Banff Hot Springs** (known today as Cave and Basin) are in the Bow River watershed, just beyond the North Saskatchewan River watershed. They are mentioned here, because it was the discovery of these thermal springs that led to the creation of Canada's first national park, part of which protects the land and water in the Cline subwatershed today.

James Hector, of the Palliser Expedition mentioned visiting this hot springs in 1859. It wasn't until 1883, when Canadian Pacific Railway workers William McCardell and Frank McCabe built a cabin there with the intention of commercializing the springs that it received national attention. Other men had similar ideas and conflicting claims prompted the Canadian government to intervene. In 1885, an order-in-council reserved 10 square miles (26 km<sup>2</sup>) around the Cave and Basin, calling it the Banff Hot Springs Reserve. That was the beginning of the Canadian national parks system.

#### When you visit the woods, LEAVE NO TRACE (LNT)

The modern notion of LNT emerged in the 1960s when the concept was introduced by the USDA Forest Service. In the 1970s and 80s, the Bureau of Land Management and National Park Service joined the Forest Service to develop "Leave No Trace Land Ethics" in response to increased recreational land use.

The Leave No Trace Center for Outdoor Ethics was incorporated as a nonprofit organization in the United States in 1994. The 7 principles of LEAVE NO TRACE have become familiar, world-wide.

1. Plan Ahead and Prepare.
2. Travel and Camp on Safe, Durable Surfaces.
3. Dispose of Waste Properly – "Pack it in, pack it out".
4. Leave What You Find (flowers, rocks, wood etc).
5. Minimize Campfire Impacts.
6. Respect Wildlife.
7. Be Considerate of Other Visitors.

# NATURAL RESOURCES

## ANIMAL

Most of these animal species, still found in the Cline subwatershed, were once harvested by First Nations people for food, medicine, clothing and tools. Now they populate an ever-shrinking habitat.

### Bighorn Sheep *Ovis canadensis*

Today few of us think of bighorn sheep when buying meat for the barbeque, but as late as 1847, artist Paul Kane reported eating them at Jasper House. "... *the Indians brought them in everyday, so we fared most sumptuously.*" In 1859, James Hector, geologist/naturalist from the Palliser Expedition described how bighorn sheep were caught and how hundreds of them were preserved for winter meat at mountain forts.

### Rocky Mountain Goat *Oreamnos americanus*

Mountain goats are not true goats. They are bovids (family Bovidea) closely related to the chamois of Europe and the goral and serow of Asia. They are found throughout mountainous regions of Alberta and British Columbia. Historically, First Nations people made clothing, drums, tools, and ceremonial regalia from the hide, wool, horns, and hooves, and stored food products in the bladder. Goat products taken in fur trade were not mentioned often, but they must have had some value, because in 1807, North West Company fur trader, David Thompson, shipped about 100 mountain goat hides to England.

### Woodland Caribou *Rangifer tarandus*

It is unlikely any caribou remain in Banff National Park. A large avalanche in 2009 killed the last five individuals remaining there. If any caribou range in the Cline subwatershed they are part of a declining herd in the south part of Jasper National Park. Prior to settlement, caribou were found throughout the North Saskatchewan



Bighorn Sheep. Photo-Bruce Smith  
Images Alberta

#### LITTER LASTS THIS LONG

- Cigarette Butts – 1 to 5 years
- Disposable Diapers – 450 years
- Aluminum Cans – 80 to 100 years
- Monofilament fishing line – 600 years
- Orange Peels – up to 2 years
- Leather – 50 years
- Plastic Bags – 10 to 20 years
- Foam Plastic Cups – 50 years
- Glass Bottles – 1 million years
- Plywood – 1 to 3 years
- Wool Socks – 1 to 5 years
- Newspaper – 6 weeks
- Paper Towel – 2 to 4 weeks

*Statistics from: the State of Connecticut  
Department of Energy & Environmental  
Protection*



Elk in the spring, shedding winter coat.  
Photo-Karen Albert Images Alberta

River watershed. Samuel Hearne, an explorer writing in 1768: “*Of all the dishes cooked by the Indians, a beatee ... is certainly the most delicious that can be prepared from caribou only. It is a kind of haggis, made with the blood, a good quantity of fat shred small, some of the tenderest of the flesh, together with the heart and lungs cut, or more commonly torn into small slivers; all of which is put into the stomach and toasted by being suspended before the fire on a string. . . it is certainly a most delicious morsel, even without pepper, salt or any other seasoning.*”

### Elk or Wapiti *Cervus canadensis*

Through over hunting, elk had become extinct in Alberta by the turn of the 20<sup>th</sup> Century. In 1917, they were reintroduced from herds in Yellowstone National Park. Today they are a common sight in the North Saskatchewan River headwaters region and move freely through populated areas of Banff National Park. Elk are dangerous during rutting season.

### Black Bear *Ursus americanus*

Black bear are still found in every subwatershed in the North Saskatchewan River system. They are opportunistic omnivores. When living far from humans they are content to eat berries, roots, grass, fish and insects. When human food becomes available, usually in the form of garbage, bears, like many of us take the convenient, fast food route. That is when they become a dangerous nuisance.

**Don't Feed Wildlife!** is a serious directive.

### Grizzly Bear *Ursus arctos horribilis*

Grizzlies are only found in the upper North Saskatchewan River watershed today, but before settlement, their range extended downstream at least as far as the White Earth subwatershed. They are the second largest bear species in the world (polar bears are the largest). Grizzlies are an “umbrella species”, meaning that when they and their habitat are protected, many other species are protected as well.

Bear eating buffalo berries in the Kootenay Plains. Photo-Bill Trout, Images Alberta



## VEGETABLE

**Engelmann Spruce** *Picea engelmannii* grows from 25 to 40 m (82 to 131 ft) tall. The wood is harvested for general construction lumber and for making paper. First Nations people used sheets of spruce bark to make cooking baskets and baby carriers.

**Douglas Fir** *Pseudotsuga menziesii* can reach 40 m (131 ft). It is one of the world's most highly prized timber producers. The wood is used for dimensional lumber, timbers, pilings, plywood, fencing, flooring, pulp, and furniture. Douglas fir seeds are an important food for voles, shrews, chipmunks, juncos, finches and pine siskins.

**Moss Campion** *Silene acaulis*, a long-lived perennial, is one of many alpine flowers that produce stunning displays in the high country. This compact plant community can live for several hundred years.

**Gaillardia** *Gaillardia aristata*, also known as great blanket flower, is common throughout the Cline subwatershed.

## PRE - CONTACT

Archaeological evidence dates human activity in the Banff National Park area to 10,300 B.P. First Nations people who lived and hunted here include: Stoney, Kootenay, Tsuu T'ina, Kainai, Piikani, and Siksika.

In the Kootenay Plains, along the upper reaches of the North Saskatchewan River, the Kootenay and the the Secwepemc People, known by Europeans as Shuswap, "*occupied both the eastern and western slopes of the Canadian Rockies from the North Saskatchewan River, south...both groups fished the lakes and rivers of the Rocky Mountain trench.*"



Moss Campion in Castleguard Meadows. Photo-Brian Peters

Gaillardia. Photo-Billie Milholland



## WHAT'S IN A NAME?

**Banff National Park** was named for the Canadian Pacific Railway station, which was named after the Banffshire region in Scotland.

Before **Peyto Lake** was named after Londoner, Ebenezer William “Bill” Peyto, it was known as Doghead Lake. From 1895 until his retirement in 1933, Bill Peyto was an explorer, guide, miner, hunter and park warden in the Banff Park region.

**Ktunaxa/Kutenai/Kootenai** are names given to people from the Upper Kootenays who traveled from what is now British Columbia over the Continental Divide to join the annual bison hunts with First Nations people on the plains.

**Two O’Clock Creek:** In the morning in the summer there is very little flow in the creek bed, but by two o’clock the sun has melted some of the snow pack that feeds it. When the snow is deep, the flow can become vigorous, so if you want to cross the creek you’d better do it before two o’clock.

Samson, Frances Louise and Leah Beaver in the Kootenay Plains 1902. (V527/NG-124, Mary Schäffer fonds), WMCR

**The Cline River**, as well as Mount Cline and Cline Pass, are named after Michel Klyne, an early fur trader from Quebec. On older maps the Cline River is marked as the



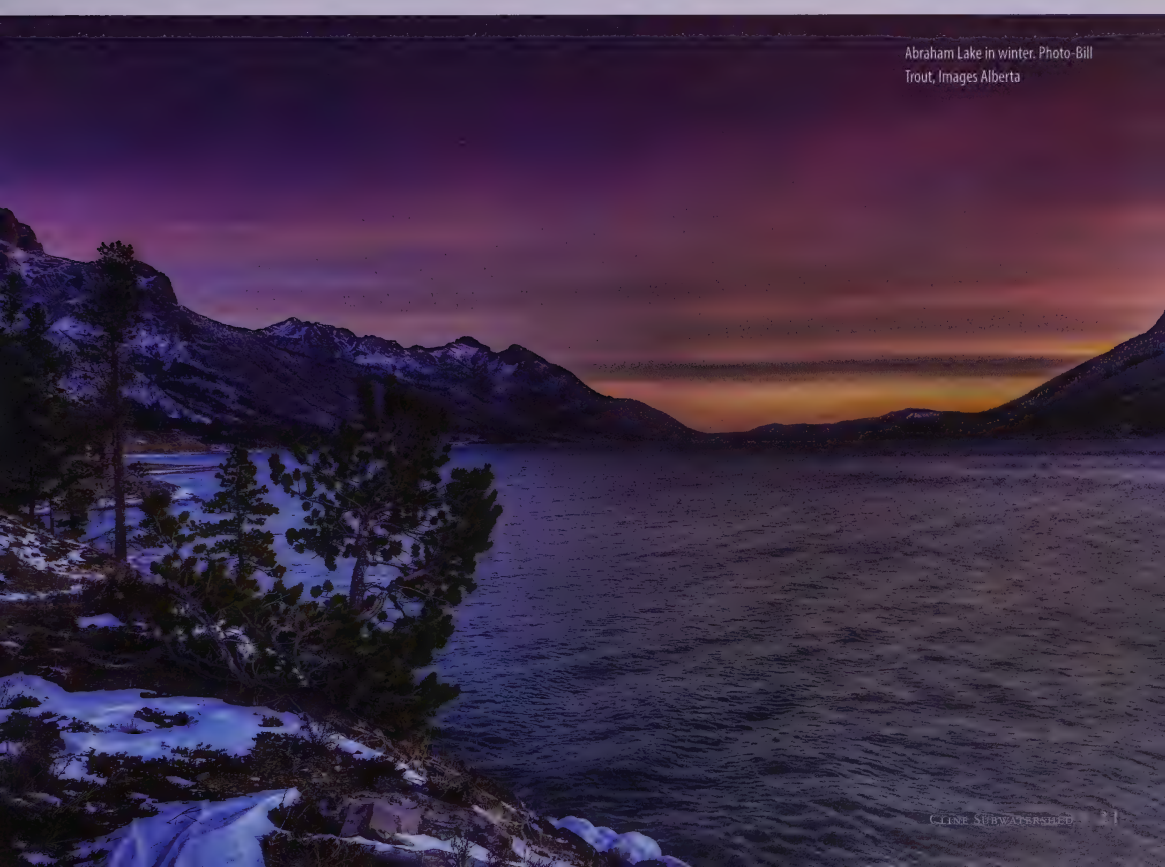


Whitegoat or Mirliton River. Mirliton is a Creole word for a gourd, now known as chayote. How it became associated with this river is not known.

**Abraham Lake**, formed by the Bighorn Dam, was named after Silas Abraham (First Nations, Stony). He was a wilderness guide for many early European visitors – e.g. Martin Nordegg, Mary Schaffer, Elliott Barns. In 1902, Silas and his family helped build Tom Wilson's cabin, the first log structure in the valley.

Mirliton: once a staple food of the Aztecs and Mayas, this gourd is now prized in Louisiana cookery. Most often it is served stuffed with a ground beef mixture.

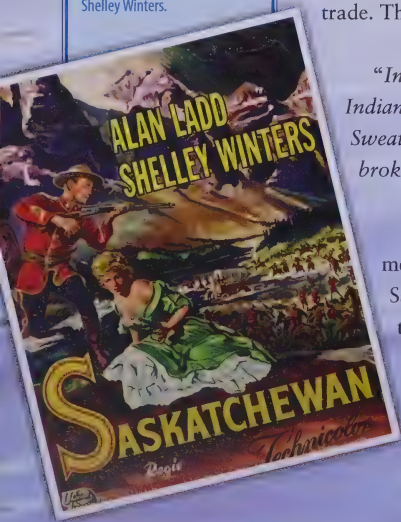
Abraham Lake in winter. Photo-Bill Trout, Images Alberta



Kootenay Plains were once known as *Kadoona Tinda* (Windy Prairie), expressing the activity of warm chinook winds blowing down through Howse Pass.

Howse Pass was named after the fourth, not the first European to travel through it. In 1800, with little fanfare, North West Company fur trader, Duncan McGillivray, used the pass. Six years later in 1806, Métis Jaco Finlay, went over the pass to mark the trail for David Thompson. The next year, in 1807, David Thompson and his crew reached the summit of the pass. This is the event most often recognized in historical articles. It wasn't until two years later, in 1809, that Hudson Bay Company clerk Joseph Howse went over the pass, and for reasons unknown, his name became associated with it.

In 1954, the movie *Saskatchewan* was filmed in Banff National Park, at Bow Lake and Peyto Lake. The film, directed by Raoul Walsh, is classified as a western adventure. It starred Alan Ladd, Shelley Winters, and J. Carrol Naish. Mabel Hedemarker-Brewster from Blackfalds, Alberta was the stunt double for Shelley Winters.



## POST CONTACT – FUR TRADE

Between the 17<sup>th</sup> and 20<sup>th</sup> Centuries, the First Nations meeting site at Saskatchewan Crossing, in the upper reaches of the North Saskatchewan River was favoured by the fur trade. Three rivers meet there: the Mistaya, the Howse and the North Saskatchewan.

*“In the Big Horn reservoir area, [before the dam was built] 61 campsites of Indians were recorded. On the Kootenay Plain, the larger sites were not excavated... Sweat lodges were also discovered and one indicator of their presence was fire-broken rocks piles, stone cairns and fire pits.”*

In 1787, fur trader, David Thompson, wintering with the Blackfoot, mentions that the Kutenais used to live and hunt from the headwaters of the Saskatchewan, downstream “*right down to the western plains*”. Evidence of those ancient seasonal sites was in plain view to the end of the 19<sup>th</sup> Century.

In the summer of 1800, fur trader, Duncan McGillivray explored west of Rocky Mountain House to the headwaters of the North Saskatchewan River.

In 1806, Jaco Finlay built a supply post “*on the Saskatchewan, well up in the mountains above Kootenai Plains.*”

In 1807, David Thompson, guided by the Kootenay people, “*followed the*

North Saskatchewan River valley to Howse Pass.” Thompson went by pack train “while his family [wife and children] went up in canoes.” They reached Kootenay Plains on June 3rd.

In the fall of 1858, James Hector, the geologist from the Palliser Expedition, reached the Saskatchewan River Crossing area and attempted to locate Howse Pass. Travelling up the Howse River, he was slowed by dense forests and ended up at a lake, which he named Glacier. Hector travelled up the Howse River reaching the point below Mount David where fur trader, David Thompson had camped while waiting for the snow to melt in 1807.

## POST CONTACT – SETTLEMENT

Except for the development of Banff National Park, there has been little population pressure in the Cline subwatershed. It is still, primarily a wilderness recreation area.

### BANFF NATIONAL PARK

In 1883, railway workers discovered a cave with hot springs. This led to the creation, in 1885, of a protected area, Canada’s first national park, the world’s third national park. At first it was known as the Banff Hot Springs Reserve. The park was expanded in 1887 and became Rocky Mountains Park. At first, the park was the exclusive playground of wealthy American, British and European tourists.

Since the park was designed for sportsmen and tourists, officials didn’t want wildlife depleted by First Nations people’s “*reliance on subsistence hunting.*” The Stoney (Assiniboine people) were removed from Banff National Park in 1890.

In 1902, the park was extended to cover 11,400 km<sup>2</sup> (4,400 sq mi), and then reduced in 1911 to 4,663 km<sup>2</sup> (1,800 sq mi) to allow for logging and grazing in the foothills. The boundary was finally fixed in 1930 at 6,697 km<sup>2</sup> (2,586 sq mi), under the National Parks Act. The use of motor vehicles increased park visitation, but until after World War II, when regular wage earners could afford to buy cars, Banff National Park remained a playground for the rich and famous.

#### Banff National Park

1936 – 1938

##### VISITORS

The Park was open from May 18 to September 30

1936 – 1937 – Motor Vehicles 48,404  
Passengers 178,940

1937 – 1938 – Motor Vehicles 52,347  
Passengers 194,435

##### IMPROVEMENTS

12 miles of new telephone line was constructed.  
100 spruce trees planted at Tunnel Mountain camp-ground. 7 miles new construction on Banff/Jasper highway completed. Rocky Mountain goat and sheep, moose, elk, mule deer on the increase.  
Fishing in park waters is excellent.

**Pre-amble from the 2013 Act:**

**WHEREAS** the continuing expansion of industrial development and settlement in Alberta will leave progressively fewer areas in their natural state;

**WHEREAS** it is in the public interest that certain areas of Alberta be protected and managed for the purposes of preserving their natural beauty and safeguarding them from impairment and industrial development;

**WHEREAS** to carry out these purposes for the benefit and enjoyment of present and future generations it is desirable to establish certain kinds of areas and reserves and to provide varying degrees of protection to those areas and reserves;

**WHEREAS** it is also desirable to establish certain lands as heritage rangelands in order to protect their grassland ecology;

## WILDERNESS AREAS

Wilderness Areas, designated in the mid-20<sup>th</sup> Century, now come under the Province of Alberta's *Wilderness Areas, Ecological Reserves, Natural Areas and Heritage Rangelands Act 2013*. The intention is to preserve and protect natural heritage while at the same time provide opportunities for non-consumptive, nature-based outdoor recreation. Alberta's three wilderness areas (Ghost River, Siffleur and White Goat) are among the most strictly protected areas in Canada.

No development of any kind is permitted. Travel in wilderness areas is by foot only. Collecting, destroying and removing plant and animal material, fossils and other objects of geological, ethnological, historical and scientific interest is prohibited. Hunting, fishing and the use of horses are not permitted in wilderness areas.

## WHITE GOAT WILDERNESS AREA

Established in 1961, it has the strictest environmental protection that is possible in Canada. No development, hunting, fishing or motorized vehicles are allowed.



Canada Day at the headwaters of Cataract Creek in the White Goat Wilderness. Photo-Brian Peters

## SIFFLEUR WILDERNESS AREA

Established in 1961, it also has the strictest environmental protection that is possible in Canada. Even hunting, fishing, horses and mountain bikes are not allowed. Open fires are prohibited. All litter and refuse must be packed out. Human waste needs to be buried at least 60 metres (about 197 feet) away from any water source.

The most popular access to the Siffleur Wilderness Area is from Hwy 11 at Siffleur Falls trailhead, about 65 km (about 40 miles) west of Nordegg. Most trails follow old seismic lines, but they are not maintained. Vegetation above the 2100 metre (8890 foot) level is dominated by grasses, sedges and wildflowers; below 2100 metres it is mostly subalpine forest (Engelmann spruce, fir and lodgepole pine).



## RECREATIONAL TRAILS

### Cline River Trail

The Cline River Trail provides access to Bighorn Backcountry and White Goat Wilderness with valleys and streams, alpine meadows and picturesque lakes in the upper reaches. The region is capped by Mount Cline and the Wilson Icefield / Mt Wilson on the Banff Park boundary.

Cline River Canyon. Photo-Roxy Hastings, Images Alberta

### The Pinto Lake Trail (Pinto Lake is the headwaters of the Cline River)

The trail head is 16.5 km (10 miles) north of Saskatchewan Crossing on Highway 93 or 28.5 km (18 miles) south of the Banff-Jasper boundary at Sunwapta Pass. There is a small parking area just off of the road west of where Highway 93 crosses Norman Creek.

A two to three day hike is possible, leading from the estuary of the Cline River to Pinto

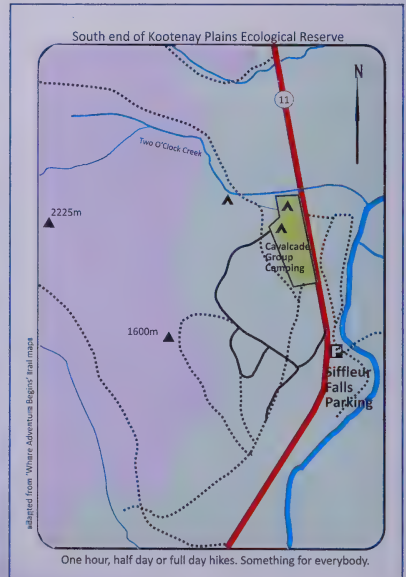
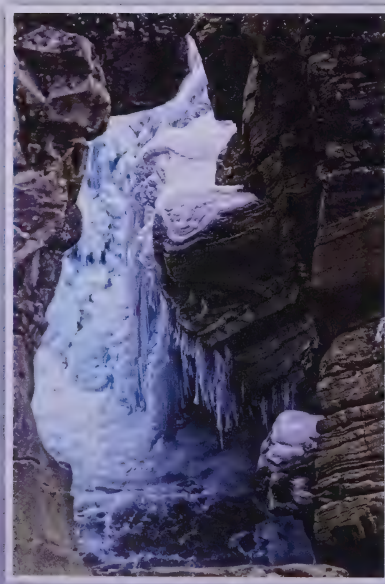


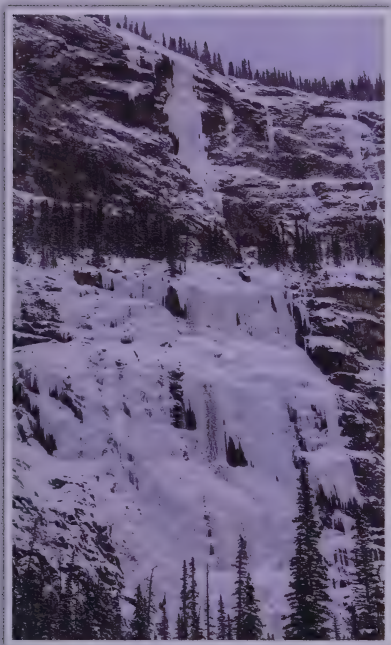
Lake and over Sunset Pass to the Icefield Parkway. There are a number of possible side trips to Landslide Lake and Lake of the Falls. These multi-day hikes are vigorous. They are only for the adventurous, which, until the use of all-terrain vehicles, kept the valley pristine and rich in wildlife.

People were attracted to the remoteness and beauty of the area, early in the 20<sup>th</sup> Century. In September of 1907, Mary Sharples Schaffer and her crew were stranded in a snowstorm on the way to see Brazeau Lake. They camped at Pinto Lake. From Pinto Lake they followed Cline River out to the ‘golden plains of the Saskatchewan River’. Here they came upon the tipis of two First Nations families headed by Silas Abraham and Jonas Sampson who welcomed Schaffer, the person they called “Mountain Woman.”

In the fall of 1923, Frank Pierce, his wife, daughter Maxine and one cow trekked to his trap line cabin on the east shore of Pinto Lake. Early in the winter, Frank accidentally

On the Lower Siffleur Falls a “goblins pelt” has appeared on the snowpack on the right. The long tubular “fairy bells” are formed from seeps and springs in the rocks. Once they become long enough they pick up the spray from the river and form the bell shapes. Photo-Roxy Hastings, Images Alberta





Ice Climbers. Photo-Roger Kirchen, Images Alberta

Saskatchewan River, leading to a long wooden boardwalk. From the boardwalk, the trail winds down a wide gravel road, then across Siffleur River Bridge. The Siffleur Falls view point is about a 4 km (2.5 miles) hike. Believe the posted 'dangerous slopes' signs. People have lost their lives there.

The second set of falls is another 2.5 km (1.5 miles) up the trail. This set of falls can only be viewed from the open viewpoints located on the trail. The last set of falls is another 1.5 km (just under 1 mile). There is small camp site there with a few inuksuks.

Popular Ice Climbing in this area include: Nightmare on Elm Street and Pure Energy.

shot himself in the arm. The arm was so damaged his wife had to amputate it. Mrs. Pierce and Maxine kept the family alive until a hunting party of First Nations people discovered them in June of 1924. The hunting party hiked out to Nordegg and returned with a rescue crew. Before they left, the rescuers carved their names into two Lodgepole pines. In *Alberta Trees of Renown*, published by the Alberta Forestry Association in 1984, those two trees are listed as still standing.

### Siffleur Falls Hike

The hike starts on the Kootenay Plains, next to the David Thompson Highway, 210 km (130.5 miles) west of Rocky Mountain House, a 4.5 hour drive from Edmonton; 3.5 hours from Calgary. From the parking lot at the Siffleur Falls staging area, there is a trail down to the North Saskatchewan River. A suspension bridge crosses the North



Ice Climbers on the Weeping Wall. Photo-Bruce Smith, Images Alberta

## ABRAHAM LAKE

Abraham Lake, along Highway 11 about 25 km (15.5 miles) west of Nordegg, was created by the Bighorn Dam in 1972.

*The Dam is in the Ram River watershed and will be described there.*

The vivid turquoise colour of Abraham Lake is caused by “rock flower” – silt ground fine by glacier movement. High winds and variable ice conditions make traveling on the ice in winter unpredictable and dangerous.

In the 1950s, before the dam was built, Whirlpool Ridge was the starting point for rounding up wild horses that moved from one side of the ridge to the other to winter and summer pasture. Fishing is best at the mouth of Terishshner Creek. There, fishers

Mount Michener overlooking  
Abraham Lake. Photo-Linda  
Treleaven, Images Alberta





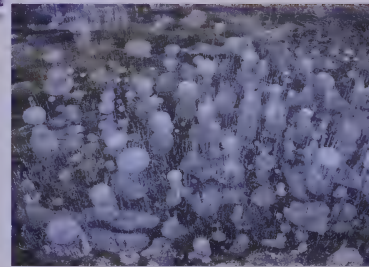
can bring in cutthroat trout and brook trout up to 2 pounds (nearly 1 kilogram); bull trout up to 12 pounds (5.4 kilograms); some rainbow trout and lake trout. Lake trout coloration is similar to that of bull trout, so look closely to tell them apart.

Use caution when boating on Abraham Lake to avoid submerged rock ledges. Don't navigate during violent winds. Fishing near shore is recommended. There is a bait ban in effect on the lake and its tributaries

**Ice Bubbles in Abraham Lake** are a rare phenomenon, caused by frozen methane gas. Methane is created when organic matter sinks to the bottom of the lake and composts, producing methane gas. During the winter, methane bubbles freeze when they get close to the lake surface. They stack up like pancakes below the ice, creating peculiar frozen columns.



North Saskatchewan River a few hundred meters before it enters Abraham Lake near Preacher Point. Photo-Roxy Hastings Images Alberta



Pancake stack ice, created when methane bubbles rise. Photo-Linda Treleven, Images Alberta

## 21<sup>ST</sup> CENTURY

Climate change is the wild card for all subwatersheds in the 21<sup>st</sup> Century, but particularly so in a region with breathtakingly beautiful wilderness. Increased recreational pressure due to growing populations, shrinking green space and the explosive popularity of off-road vehicles also make protecting the last wild lands particularly challenging.

It is estimated that over the last 100 years, glaciers in western Canada have lost about 25% of glacier area, and possibly more, in terms of volumetric ice loss. In the future, decreased runoff is expected, due, in part, to reduced flow from glaciers and reduction of snowpack. This would reduce water availability, hydropower potential, and change the seasonal flow in the Cline River subwatershed.



# RAM SUBWATERSHED

**L**ess than 1% (4,405 hectares or 10 Acres) of this subwatershed is in Banff National Park and the Siffleur Wilderness Area. Ninety-nine percent of the Ram subwatershed lies within a Forest Management Unit (FMU). Linear development (cutlines, roads, pipeline and railway line rights of way) takes up 1.6% of the land area. Municipalities include: Clearwater and Brazeau Counties; the Town of Rocky Mountain House and the Hamlet of Nordegg. The Big Horn IR 144A and Sunchild IR 202 are in this subwatershed.

## NATURAL FEATURES

The **Bighorn River**, as well as the Bighorn mountain range and Bighorn Dam are named for bighorn sheep *Ovis Canadensis*, which dominate the area. Flowing from Mount McGuire, this short river takes on Littlehorn and Sunkay creeks, before plunging over a rock embankment to create the spectacular Crescent Falls. The river then passes through the Big Horn Indian Reserve 144, before joining the North Saskatchewan River downstream of Lake Abraham.

### PLUZ - Public Land Use Zone

No motorized vehicles are permitted to leave the road other than to use trails designated for an off-highway vehicles (OHV) of a particular size or type. Trail designations indicate the maximum vehicle width accepted for trail sustainability. Vehicles the same width or smaller than those indicated are allowed. PLUZs are not designated as parks or protected areas.

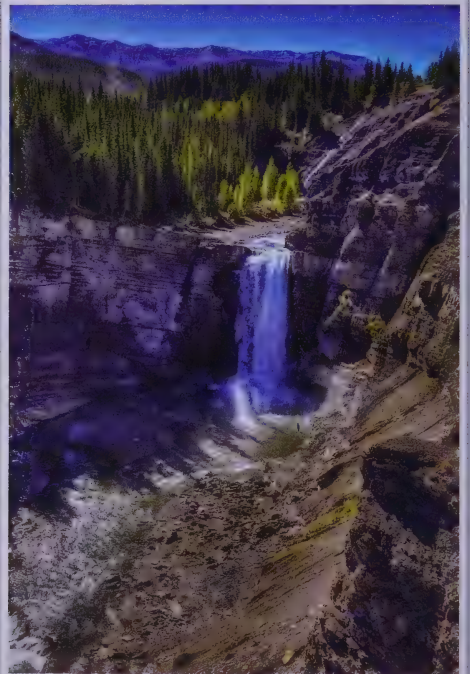
**FMU - Forest Management Unit**

A clearly demarcated area of land covered predominantly by forests. It is managed according to a long-term forest management plan.

There are five other waterfalls after **Crescent Falls**. The first one, **Curtain Call**, is a 50 ft (15 m) drop, popular with extreme kayakers. The run between Curtain Call and the next waterfall: **Particle Accelerator** is Class II-III paddling that comes to a Class V drop. Portage is on the river left. The third waterfall, **Schoolhouse Ledge**, is a straightforward 10 ft (3 m) drop. A few hundred meters downstream of that, the fourth waterfall, **Freefall**, is a 25 to 30 ft (7.5 to 9 m) drop. The 5th waterfall, **Final Analysis**, is a bit of a distance downstream, so there is breathing room before confronting it. Final Analysis is only a 15 ft (4.5 m) drop, but there is a rock ledge that that must be avoided. From



Crescent Falls at the head of the Bighorn Canyon plunges in two major falls before the river cuts a serpentine path through a narrow gorge. Photo-Derald Lobay, Images Alberta



Ram River Falls. Photo-Bill Trout, Images Alberta



Brierley Rapids, near Rocky Mountain House. Photo-Rob Kent, Images, Alberta

there, the rest of the river is Class II-III paddling.

In 2014, fishing was allowed on the Bighorn River between June 16 and August 31 when anglers could keep two of any species of trout (combined). From September 1 to October 31 people were allowed to fish on a catch-and-release basis only. *Alberta Guide to Sports Fishing Regulations can be found online.*

The **Ram River** is characterized by magnificent waterfalls and rugged, deep canyons. The South Ram River rises in the Rocky Mountains, flowing east to take up the North Ram River before joining the North Saskatchewan River upstream of the Town of Rocky Mountain House. It is bridged by Highway 734 and by Township Road 393A.

On the South Ram River, **Ram Falls** cuts through layers of marine sandstone and shales deposited about 100 million years ago. Immediately downstream from Ram Falls is ideal canyon habitat for mountain sheep. Paddlers may also see elk, deer, black bear and grizzly bear along the river. Further downstream are **Tapestry Falls** as well as **Table Rock Falls**, which is named for a flat rock in the center of the stream just before the water drops. The confluence of the North and South Forks of the Ram River is about a two hour paddle from **Table Rock Falls**. Shortly after the confluence, the river enters another canyon creating **Ricochet Rapid** before flowing through a final canyon. After that, the river calms as it meanders around a series of gravel bars.



Brierley Rapids, near Rocky Mountain House. Photo-Rob Kent, Images Alberta

## RAPIDS BETWEEN NORDEGG AND ROCKY MOUNTAIN HOUSE

Over fifteen sets of rapids from Class I to Class III rough up the North Saskatchewan River between Nordegg and Rocky Mountain House. The named rapids include the Gap Rapids, Gray's Rapid, Upper Fisher's Rapid, Greer Rapid, Lower Fisher's Rapid and Brierley Rapid. There are also strong eddies, boils and thrilling swift water in the vicinity of shale ledges in Devil's Elbow, about 103 km (64 mi) below the Big Horn Dam. Upper Fisher's Rapid, 120 km (74.5 mi) below the dam, "*is the most technical rapid of the whole run to paddle...*"

## INTERNATIONAL SCALE OF RIVER DIFFICULTY

This scale was created by the American Whitewater Association for evaluating rivers throughout the world.

### CLASS I – Easy

Fast moving water with riffles and small waves. Few obstructions, all obvious and easily missed with little training. Risk to swimmers is slight; self-rescue is easy.

### CLASS II – Novice

Straightforward rapids with wide, clear channels, which are evident without scouting. Occasional maneuvering may be required, but rocks and medium-sized waves are easily avoided by trained paddlers. Swimmers are seldom injured and group assistance, while helpful, is seldom needed. Rapids at the upper end of this difficulty range are designated Class II+.

### CLASS III – Intermediate

Rapids with moderate, irregular waves, which may be difficult to avoid and which can swamp an open canoe. These require complex maneuvers in fast current and good boat control in tight passages or around ledges. Large waves or strainers may be present, but are easily avoided. Strong eddies and powerful current effects can be found, particularly on large-volume rivers. Scouting is advisable for inexperienced parties. Injuries while swimming are rare; self-rescue is usually easy, but group assistance may be required to avoid long swims. Rapids at the lower or upper end of this difficulty range are designated Class III or Class III+ respectively.

## CLASS IV – Advanced

Intense, powerful, but predictable rapids requiring precise boat handling in turbulent water. Depending on the character of the river, it may feature large, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure. A fast, reliable eddy turn may be needed. Rapids may require “must make” moves above dangerous hazards. Scouting may be necessary the first time down. Risk of injury to swimmers is moderate to high and water conditions may make self-rescue difficult. Group assistance for rescue is often essential, but requires practiced skills. For kayakers, a strong roll is highly recommended. Rapids at the lower or upper end of this difficulty range are designated Class IV- or Class IV+ respectively.

## CLASS V – Expert

Extremely long, obstructed, or very violent rapids which expose a paddler to added risk. Drops may contain large, unavoidable waves and holes or steep, congested chutes with complex, demanding routes. Rapids may continue for long distances between pools, demanding a high level of fitness. What eddies exist may be small, turbulent, or difficult to reach. At the high end of the scale, several of these factors may be combined. Scouting is recommended, but may be difficult. Swims are dangerous, and rescue is often difficult even for experts. Proper equipment, extensive experience, and practiced rescue skills are essential. Because of the large range of difficulty that exists beyond Class IV, Class V is an open-ended, multiple-level scale designated by class 5.0, 5.1, 5.2, etc. Each of these levels is an order of magnitude more difficult than the last. **Example:** increasing difficulty from Class 5.0 to Class 5.1 is a similar order of magnitude as increasing from Class IV to Class 5.0.

## CLASS VI – Extreme and Exploratory Rapids

Runs of this classification are rarely attempted and often exemplify the extremes of difficulty, unpredictability and danger. The consequences of errors are very severe and rescue may be impossible. For teams of experts only, at favorable water levels, after close personal inspection and taking all precautions. After a Class VI rapid has been run many times, its rating may be changed to an appropriate Class 5.x rating.

### What can change river difficulty classification?

A class designation can change with fluctuating water levels. Usually, high water levels increase the difficulty of rapids. Sometimes rapids become more technical and more difficult at lower water levels. The classification system does not take into account the type of water craft used. Landslides, ice storms or floods can change the shape of rapids, altering the classification. Assigning scale of difficulty classification to river sections is subjective. It is only meant as a guide. Before having a river adventure, paddlers must personally monitor local conditions in every season.

One cord of wood = 2.4 m<sup>3</sup> or  
4 ft (1.2 m) high X 4 ft (1.2 m)  
wide X 8 ft (2.5 m) long.

Northern Saw-whet owl *Aegolius acadicus* becomes active in the late evening. During the day it roosts in foliage close to the ground. When threatened, a Saw-whet owl can elongate to appear like a tree branch or bump, often bringing one wing around to the front of the body. This little owl will kill as many as 6 mice at a time in the winter and cache them to be thawed out later by "brooding" the frozen carcasses. When food is plentiful, it is common for only the head of each prey to be eaten. Photo- Bill Trout, Images Alberta



## NATURAL RESOURCES

### ANIMAL

**Wolverine** *Gulo gulo* (Latin for glutton) is a powerful bear-like animal, the largest member of the weasel family. Opportunistic eaters, wolverine will travel about 15 miles (23 kilometres) a day looking for food. These rugged animals eat plants and berries in the summer, but the majority of their diet is meat, mostly small mammals and birds. They also feed on carrion—the corpses of larger mammals, such as elk, deer, and caribou. Wolverine fur was once prized for lining winter coats.

**Fisher** *Martes pennant* is a medium sized member of the weasel family. Winter fisher fur is thick and shiny. It was highly prized for trimming coats, hats, muffs and gloves as well as elegant scarves and neck pieces. In spite of the name, fishers very rarely eat fish. They feed mostly on rabbit and are one of few predators able to catch and eat porcupine.

### VEGETABLE

#### TIMBER

Timber in the Ram subwatershed comes under the Clearwater Forest Management Unit.

**Lodgepole Pine** *Pinus contorta*, Alberta's official tree, is abundant in the Ram subwatershed. Cones and seeds can stay on this tree for upwards of 10 years. They open when exposed to heat. When these trees are harvested, the seed supply taken with them is more than enough to reforest the area. A stand of lodgepole pine matures in anywhere from 60 to 100 years. Twigs are browsed by deer and elk. Squirrels, chipmunks and grosbeaks eat the seeds. Lodgepole pine is a first class joinery wood, used for furniture, windows, doors, shutters, panelling, siding, mouldings, and other architectural millwork items. Other uses of this wood include telephone poles, fence posts and corral rails (because of its small diameter and lack of taper), mine timbers, railway ties, and fuel.



**White Birch** *Betula papyrifera* is valued as wood stove fuel because of its high heating value. Birch sap can be made into syrup, although it takes 2 to 3 times more sap than is required for making maple syrup. Commercially, white birch is used for manufacturing furniture, flooring, and toys.

**Tamarack Larch** *Larix laricina* is the only conifer that sheds all of its needles annually. The trees don't produce seeds until they are about 10 years old. First Nations people used the inner bark of tamarack to make a poultice for burns, boils, frostbite, infected wounds or deep cuts. Tea made from the needles is high in Vitamin C, a useful protection against scurvy. Tamarack roots were used in canoe-making. Toboggans, canoe paddles, snowshoes and drums are all items that have been made out of tamarack wood by First Nations people. Tamarack has been used commercially to make railway ties and telephone poles.



Ravens *Corvus corax* are among the smartest birds, curious and ever alert to everything around them. Even though collective nouns for a group of ravens include "unkindness" and "conspiracy", ravens are positive symbols in cultures all over the world. In North America, the raven is often known as a messenger and light bringer. The ancient Greeks believed ravens brought good luck and messages from the gods. In Viking mythology, two ravens are the eyes and ears of Odin. Even today, ravens guard the crown jewels in the Tower of London. Photo-Roger Kirchen, Images Alberta

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(C) 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 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2678, 2679, 2680, 2681, 2682, 2683, 2684, 2685, 2686, 2687, 2688, 2689, 2690, 2691, 2692, 2693, 2694, 2695, 2696, 2697, 2698, 2699, 2700, 2701, 2702, 2703, 2704, 2705, 2706, 2707, 2708, 2709, 2710, 2711, 2712, 2713, 2714, 2715, 2716, 2717, 2718, 2719, 2720, 2721, 2722, 2723, 2724, 2725, 2726, 2727, 2728, 2729, 2730, 2731, 2732, 2733, 2734, 2735, 2736, 2737, 2738, 2739, 2740, 2741, 2742, 2743, 2744, 2745, 2746, 2747, 2748, 2749, 2750, 2751, 2752, 2753, 2754, 2755, 2756, 2757, 2758, 2759, 2760, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2768, 2769, 2770, 2771, 2772, 2773, 2774, 2775, 2776, 2777, 2778, 2779, 2780, 2781, 2782, 2783, 2784, 2785, 2786, 2787, 2788, 2789, 2790, 2791, 2792, 2793, 2794, 2795, 2796, 2797, 2798, 2799, 2800, 2801, 2802, 2803, 2804, 2805, 2806, 2807, 2808, 2809, 2810, 2811, 2812, 2813, 2814, 2815, 2816, 2817, 2818, 2819, 2820, 2821, 2822, 2823, 2824, 2825, 2826, 2827, 2828, 2829, 2830, 2831, 2832, 2833, 2834, 2835, 2836, 2837, 2838, 2839, 2840, 2841, 2842, 2843, 2844, 2845, 2846, 2847, 2848, 2849, 2850, 2851, 2852, 2853, 2854, 2855, 2856, 2857, 2858, 2859, 2860, 2861, 2862, 2863, 2864, 2865, 2866, 2867, 2868, 2869, 2870, 2871, 2872, 2873, 2874, 2875, 2876, 2877, 2878, 2879, 2880, 2881, 2882, 2883, 2884, 2885, 2886, 2887, 2888, 2889, 2890, 2891, 2892, 2893, 2894, 2895, 2896, 2897, 2898, 2899, 2900, 2901, 2902, 2903, 2904, 2905, 2906, 2907, 2908, 2909, 2910, 2911, 2912, 2913, 2914, 2915, 2916, 2917, 2918, 2919, 2920, 2921, 2922, 2923, 2924, 2925, 2926, 2927, 2928, 2929, 2930, 2931, 2932, 2933, 2934, 2935, 2936, 2937, 2938, 2939, 2940, 2941, 2942, 2943, 2944, 2945, 2946, 2947, 2948, 2949, 2950, 2951, 2952, 2953, 2954, 2955, 2956, 2957, 2958, 2959, 2960, 2961, 2962, 2963, 2964, 2965, 2966, 2967, 2968, 2969, 2970, 2971, 2972, 2973, 2974, 2975, 2976, 2977, 2978, 2979, 2980, 2981, 2982, 2983, 2984, 2985, 2986, 2987, 2988, 2989, 2990, 2991, 2992, 2993, 2994, 2995, 2996, 2997, 2998, 2999, 3000, 3001, 3002, 3003, 3004, 3005, 3006, 3007, 3008, 3009, 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3674, 3675, 3676, 3677, 3678, 3679, 3680, 3681, 3682, 3683, 3684, 3685, 3686, 3687, 3688, 3689, 3690, 3691, 3692, 3693, 3694, 3695, 3696, 3697, 3698, 3699, 3700, 3701, 3702, 3703, 3704, 3705, 3706, 3707, 3708, 3709, 3710, 3711, 3712, 3713, 3714, 3715, 3716, 3717, 3718, 3719, 3720, 3721, 3722, 3723, 3724, 3725, 3726, 3727, 3728, 3729, 3730, 3731, 3732, 3733, 3734, 3735, 3736, 3737, 3738, 3739, 3740, 3741, 3742, 3743, 3744, 3745, 3746, 3747, 3748, 3749, 3750, 3751, 3752, 3753, 3754, 3755, 3756, 3757, 3758, 3759, 3760, 3761, 3762, 3763, 3764, 3765, 3766, 3767, 3768, 3769, 3770, 3771, 3772, 3773, 3774, 3775, 3776, 3777, 3778, 3779, 3780, 3781, 3782, 3783, 3784, 3785, 3786, 3787, 3788, 3789, 3790, 3791, 3792, 3793, 3794, 3795, 3796, 3797, 3798, 3799, 3800, 3801, 3802, 3803, 3804, 3805, 3806, 3807, 3808, 3809, 3810, 3811, 3812, 3813, 3814, 3815, 3816, 3817, 3818, 3819, 3820, 3821, 3822, 3823, 3824, 3825, 3826, 3827, 3828, 3829, 3830, 3831, 3832, 3833, 3834, 3835, 3836, 3837, 3838, 3839, 3840, 3841, 3842, 3843, 3844, 3845, 3846, 3847, 3848, 3849, 3850, 3851, 3852, 3853, 3854, 3855, 3856, 3857, 3858, 3859, 3860, 3861, 3862, 3863, 3864, 3865, 3866, 3867, 3868, 3869, 3870, 3871, 3872, 3873, 3874, 3875, 3876, 3877, 3878, 3879, 3880, 3881, 3882, 3883, 3884, 3885, 3886, 3887, 3888, 3889, 3890, 3891, 3892, 3893, 3894, 3895, 3896, 3897, 3898, 3899, 3900, 3901, 3902, 3903, 3904, 3905, 3906, 3907, 3908, 3909, 3910, 3911, 3912, 3913, 3914, 3915, 3916, 3917, 3918, 3919, 3920, 3921, 3922, 3923, 3924, 3925, 3926, 3927, 3928, 3929, 3930, 3931, 3932, 3933, 3934, 3935, 3936, 3937, 3938, 3939, 3940, 3941, 3942, 3943, 3944, 3945, 3946, 3947, 3948, 3949, 3950, 3951, 3952, 3953, 3954, 3955, 3956, 3957, 3958, 3959, 3960, 3961, 3962, 3963, 3964, 3965, 3966, 3967, 3968, 3969, 3970, 3971, 3972, 3973, 3974, 3975, 3976, 3977,

With a Timber Permit from the Government of Alberta people may cut from designated areas:

3 Christmas Trees for personal use, each no taller than 8 ft (2.5 m);

20 trees for transplanting, all under 8 ft (2.5 m) high

2 Cords of birch for firewood for personal use.

#### 1 Bushel/Weight Table (in pounds)

Alfalfa 60	Onion Top Sets 30
Apples (green) 48	Onion Bottom Sets 32
Apples (dried) 25	Orchard Grass Seed 14
Barley 48	Osage Orange 36
Bermuda Grass 35	Peaches (dried) 33
Blue Grass Seed 14	Peaches (green) 48
Bran 20	Peas (stock & green) 60
Buckwheat 50	Potatoes (Irish) 60
Cane Seed 50	Potatoes (sweet) 50
Carrots 50	Rape Seed 50
Castor Beans 46	Red Top Seed 14
Clover Seed 60	Rice (rough) 45
Corn (shelled) 56	Rutabagas 50
Corn (on ear) 70	Rye 56
Corn Meal 50	Salt (fine) 50
Cotton Seed 33	Sorghum (forage) 50
Flax Seed 56	Sorghum (grain) 56
Hemp Seed 44	Soy Beans 60
Hungarian Seed 48	Sunflower 22
Kaffir Corn 56	Sweet Clover 60
Malt Rye 35	Timothy Seed 45
Miller Seed 50	Tomatoes 60
Navy Beans 60	Turnips 55
Oats 32	Wheat 60
Onions 57	

**White Spruce** *Picea glauca* is also known as: Canadian Spruce, Skunk Spruce, Cat Spruce, Black Hills Spruce, Western White Spruce, Alberta White Spruce, and Porsild Spruce.

White spruce is one of the hardiest Boreal Forest conifers in North America. It is found in every subwatershed. It is highly prized in building construction (framing, sheathing, roofing and sub-flooring), general millwork, interior finishing, and for making boxes and packing cases. It is also used in making food containers (it is almost colourless and odourless when dried), paddles and oars, cooperage, organ pipes, shelving and ladder rails.

**Black Spruce** *Picea mariana*, because it is heavier, stronger and harder than white spruce, was once used for mine timbers. It has exceptional resonance qualities, making it valuable for manufacturing sound boards for musical instruments. Men in lumber camps and early settlers used spruce resin as chewing gum.

#### Rare Plants

During the second Franklin Expedition, 1825-27, Thomas Drummond, the assistant naturalist, found a rare moss, *Miebachhoferia macrocarpa* in the Ram subwatershed. Around Nordegg, a disjunct plant (a species separated by long distances from others of that species), the wood anemone *Anemone quinquefolia*, grows in mixed wood clearings, on sandy stream sides and along the riverbank. It is one of the rarest species in the province of Alberta. The next closest species of its kind is in the Province of Saskatchewan.

#### MINERAL

##### LIMESTONE

Limestone in the area around Nordegg has a high quality rating. The only limestone production attempted in the Ram subwatershed at the turn of the 20<sup>th</sup> Century was from two small quarries that provided material for railway



## EXERCISE 24.

1. How many cubic feet of earth will be removed in digging a cellar 18 ft. by 12 ft. by 8 ft.?
2. What will it cost at 65¢ a cubic yard?
3. The dimensions of a room are 15 ft., 14 ft. and 9 ft. How many square feet of floor? Of walls? Of ceiling? How many cubic feet of volume?

## COUNTING.

12 things = 1 dozen (doz.)  
 12 dozen = 1 gross (gr.)  
 12 gross = 1 great gross.  
 20 things = 1 score.

## Paper Table.

24 sheets = 1 quire.  
 20 quires or 480 sheets = 1 ream.  
 2 reams = 1 bundle.

## CAPACITY.



## Liquid Measure.

4 gills = 1 pint (pt.)  
 2 pints = 1 quart (qt.)  
 4 quarts = 1 gallon (gal.)  
 1 gallon = 231 cubic inches.

## Dry Measure.

2 pints (pt.) = 1 quart (qt.)  
 8 quarts = 1 peck (pk.)  
 4 pecks = 1 bushel (bu.)  
 10 pecks, 2½ bushels = 1 barrel,  
 (bbl.)  
 1 bushel = 2150.42 cu. in.

1800, he discovered a bed of "pure coal" about 100 yards (91 metres) below Rocky Mountain House. This was used by the blacksmith at the Fort with excellent results.

The Nordegg Mine was the last major bituminous coal deposit developed in Alberta. Of the five coal seams at Nordegg, only two were mined: the No. 2 and No. 3 seams. Major coal production began in this area in 1912. By 1942, the Nordegg mine was one of the top-producing coal mines in Alberta. The mines were worked by underground room and pillar methods. Production peaked at 500,000 tons in 1923. A briquetting plant was added in 1937 to produce a marketable product from powdery fine coal. A surface mining operation was added in 1946.

ballast. The quarries were abandoned when the railroad ceased to operate in the mid-1950s. Since the 1980s, limestone for erosion control, transportation, chemical grade and decorative architectural applications has been quarried at Nordegg.

## COAL

During the early fur trade, 300 yards (27 metres) below the fort (Rocky Mountain House), coal tumbled into the river. Blacksmiths used it along with "equal parts of charcoal made from birch or aspen." David Thompson mentions collecting bushels (1 bushel = 4 pecks or 8 gallons) of coal from the North Saskatchewan River banks. In

from The New Student's Reference Work for Teachers, Students and Families Compton and Company 1914

## HEATING VALUE OF COMMON WOOD SPECIES

The heat value measurement used is the British Thermal Unit (BTU) — the amount of thermal energy required to raise one pound of water one degree F.

Wood needs to be dried at least 4 to 6 months before use. The volume of a stack of firewood varies according to whether or not it is split and how it is stacked. Moisture content plays a role in heating values. Values below assume an average moisture level in the wood of 20%.

Apple — 26.5 BTU per cord

Tamarack — 20.8 BTU per cord

Paper Birch — 20.3 million BTU per cord

Black Spruce — 15.9 million BTU per cord

Aspen — 14.7 million BTU per cord

Cottonwood — 13.5 million BTU per cord

The Brazeau Collieries at Nordegg closed permanently in 1955. Steam engines fired by coal had given way to engines run on diesel. Although the coal reserves are not exhausted, mining has never resumed. Total production from these mines was about 9.6 million tons of coal. Between the North Saskatchewan and Brazeau rivers there is estimated to be 60 miles<sup>2</sup> (155 km<sup>2</sup>) with a coal content of at least 1,400,000,000 tons.

## GOLD

In the 1860s, Tom Clover, returning from a failure to strike it rich in the Cariboo, panned the North Saskatchewan River upstream from Rocky Mountain House where he found enough gold to live on.

In 1870, Sir William Francis Butler, on a tour of the North Saskatchewan River, observed a great number of gold prospectors along the upper North Saskatchewan River corridor. He predicted that gold would soon be found there and was concerned that First Nations people would be harmed by a sudden influx of desperate miners.

Modern day panners still claim to find gold on the North Saskatchewan River from below the rapids near Rocky Mountain House to Prince Albert, Saskatchewan.

## OIL & GAS

The oil and gas fields within the Ram subwatershed are maturing. New oil development is limited, given that the majority of the reserves are natural gas. It is estimated that the oil and gas industry will remain active within this region for the next 10 to 20 years under present market conditions. The issue is not running out of natural gas, but rather having a place to market it.

## PRE - CONTACT

The Shunda Valley and the upper North Saskatchewan River corridor have a history of First Nations occupation estimated from at least 10,000 years ago.

There is an immense post-glacier Cordilleran erratic right in the Town of Rocky Mountain House. It is a rock that fell from a mountain on to a glacier ice flow 18,000

years ago. It traveled on the ice until the glacier melted at the end of the last glaciation, leaving it where it stands today, sheltered by trees. It can be viewed at the northwest end of the Town of Rocky Mountain House.

## WHAT'S IN A NAME

### Rocky Mountain Bighorn Sheep

According to Duncan McGillivray of the North West Company, the Cree people called this animal, “*My-Attic or the Ugly Rein Deer*”. The Blackfoot Nation called it “*Ema-ki-ca-now... a species of deer.*” The Métis traveling with fur trader, Duncan McGillivray “*named it le belier des montagnes (the mountain ram).*”

### Bison

Bison is a Latin word meaning ox-like animal. Buffalo was the name used by French fur trappers, a colloquial extension of *bœufs*, meaning ox or bullock. The Cree called them *paskwamostos (prairie moose)*; the Blackfoot, *iiniwa*. In many First Nations languages there are different words for male and female buffalo, for old and young and for different coloured animals.



Rocky Mountain Bighorn Sheep *Ovis Canadensis* is the official mammal of Alberta. According to a 1912 Bulletin of the American Museum of Natural History, “*The first specimen of this sheep known to science was killed and preserved by Duncan McGillivray of the North West Fur Company...*” while traveling with David Thompson in the fall of 1800. Photo-Bruce Smith, Images Alberta



Photo-Emille Currie, Images Alberta



Pine and spruce cones provide a steady diet for squirrels. Photo-Linda Treleaven, Images Alberta

## Nordegg

The Cree had many names for the area around Nordegg: *kaskitew kamwin* (coal place); *kimiwan* (rainy place); *meskanask kapasiwin* (many trails camping place); *maskikisiwin* (little swampy place); *nisto wachi* (3 mountains).

## Rocky Mountain House

David Thompson, in his writings, sometimes refers to Rocky Mountain House as Clearwater House or *Riviere l'Eau Claire* House.

During the fur trade there were at least five trading posts called Rocky Mountain House. The one on the North Saskatchewan River, two on the Athabasca River, one on the Peace River at Hudson Hope, and one on the Mackenzie River below Fort Simpson.

**Squirrel** was first specified as a word in 1327. It comes from the Anglo-Norman *esquirel*, which is from the Old French *escurel*. This Latin word was borrowed from the Ancient Greek word *σκιουρος*, *skiouros*, which means shadow-tailed.

## POST CONTACT – FUR TRADE

Not much is known about the extent of fur trading activity in the Ram subwatershed before the forts near present day Rocky Mountain House were built at the end of the 18<sup>th</sup> Century. Evidence that fur traders from Montreal and from the United States frequented this area from at least the middle of the 18<sup>th</sup> Century is found in early journals.

In 1751, *Bouchier de Niverville's* men from New France may have been the first Europeans to enter the North Saskatchewan River watershed in Alberta, venturing past *La Verendrey* and his sons who had built fur trading posts as far inland as The Pas. *de Niverville's* ten men, in two canoes, ascended the River Paskoya (North Saskatchewan) to build a post near the Rocky Mountains.

In 1790 American fur trader, Peter Pangman, carved his name and date in the bark of a pine tree near the present Town of Rocky Mountain House. There it remained for 160 years until, in the middle of the 20<sup>th</sup> Century, a landowner bulldozed the tree.

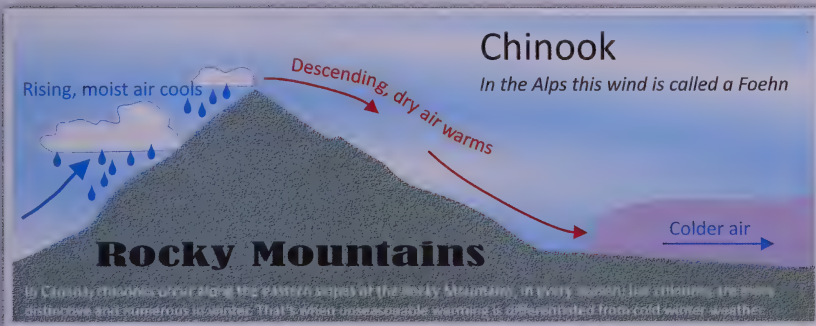
## Permanent Rocky Mountain House Forts

In 1798, North West Company trader John McDonald of Garth and six men paddled upriver from the Edmonton area to explore the upper North Saskatchewan River corridor. They wanted to expand their trade in furs. In 1799, in response to his report, the North West Company and the Hudson's Bay Company built permanent trading posts on the edge of a spruce forest near Brierly Rapids on the North Saskatchewan River. Duncan McGillivray was in charge of Rocky Mountain House, the North West Company fort. James Bird commanded Acton House, the Hudson's Bay Company fort.

In the fall of 1800 near Rocky Mountain House, David Thompson wrote about wild life in the area. *"I killed a fisher today. There are many of this animal about the woody hills as also of wolverines, buffalo, red deer [elk], moose and small deer are also plentiful and grizzled bears, but too many."*

At Rocky Mountain House in January, 1811, North West Company trader Alexander Henry the younger described what we now call a chinook. *"At 12 o'clock we began to observe the tops of the pines bend to the wind, and in a short time the gale reached us. It was warm and gentle."* An hour later the temperature rose to 56F (13.3C). The next day: *"At sunrise, to our great surprise, we found the snow all melted away and nothing but a few ponds of water remaining."*

During the winter of 1837 there was still plenty of buffalo to supply the fort with meat. Métis hunters brought in 4300 pounds (1950.5 kilograms) of meat. Much more



"Those who have not the warm, invigorating Chinook winds of this country cannot well comprehend what a blessing they are. The icy clutch of winter is lessened, the earth throws off its winding sheet of snow. Humanity ventures forth to inhale the balmy spring like air. Animated nature rejoices."  
(1900—Calgary weekly Herald)

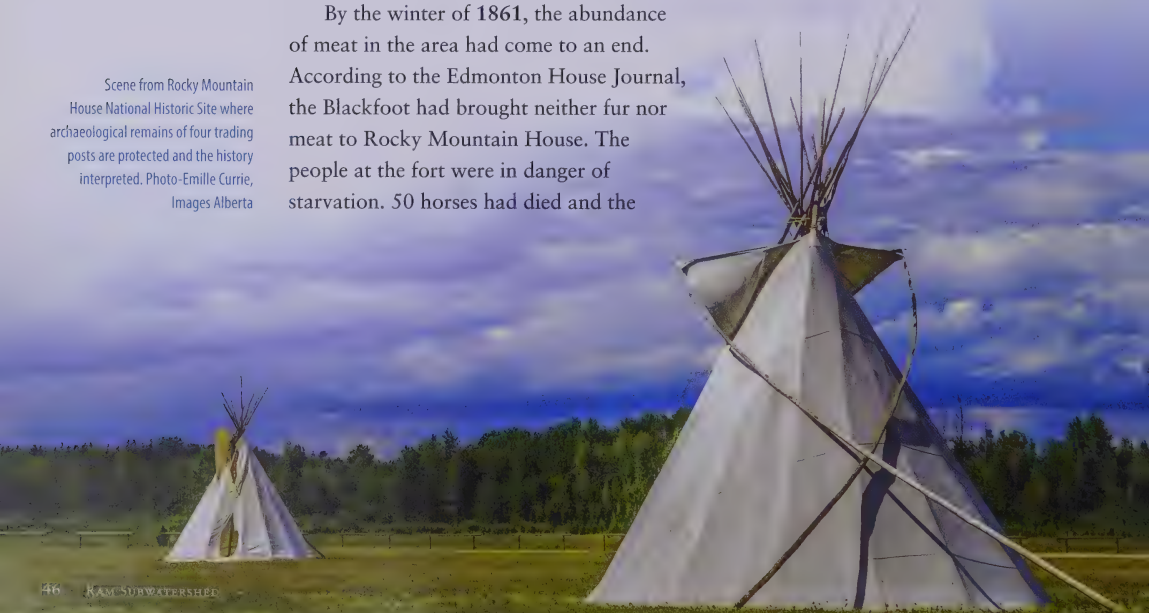
was left on scaffolding out on the plains to add to 10,000 pounds (4536 kilograms) of meat delivered earlier by Stony First Nations people. This meat was stored in a new ice house.

In 1855, Hudson's Bay Company trader Henry Moberly left Rocky Mountain House with 8 boats, 6 of which had been built on site. They carried 2500 buffalo robes; several tons of dried meat and grease; over 300 cured buffalo tongues; 600 wolf skins and other fur that were headed for markets in England. 200 horses were sent over land to join the herd at Fort Edmonton.

In 1858, York boats were still being built at Rocky Mountain House. Geographer John Palliser observed: "*13 fine Mackmaw (York) boats were turned out before the 1<sup>st</sup> of May. About 35' long and capable of carrying 75 pieces of 90 pounds [41 kg] each.*" (made from white spruce) In his memoir, "Everyday Life in the Wilds of North America", Robert Ballantyne described the York boat: "*...long, broad and shallow, capable of carrying forty hundredweight, and nine men, besides three or four passengers, with provisions for themselves and the crew.*"

By the winter of 1861, the abundance of meat in the area had come to an end. According to the Edmonton House Journal, the Blackfoot had brought neither fur nor meat to Rocky Mountain House. The people at the fort were in danger of starvation. 50 horses had died and the

Scene from Rocky Mountain House National Historic Site where archaeological remains of four trading posts are protected and the history interpreted. Photo-Emille Currie, Images Alberta





buffalo were so far away that with the few horses left, the men could not go out and get meat. Joseph Brazeau who was in charge had no choice but to abandon the fort for the rest of the winter.

During the summer of 1866 at Rocky Mountain House: “*all hands set snares for rabbits to keep themselves alive*”, because they didn’t have “*a single load of ammunition.*”

In 1870, Captain William Butler described the land around Rocky Mountain House as, “*a level meadow cleared of trees and dense forest around for some distance.*”

## POST CONTACT – SETTLEMENT

In 1886, small coal mining operations began in the Ram subwatershed with the opening of collieries in the Nordegg foothills along the North Saskatchewan River. Men who came to work the mines often stayed to settle.

The hundred mile trek from the Edmonton/Calgary rail line, through heavy forest, bog and marsh discouraged early settlement in the Ram subwatershed.



Snowshoe hares are most likely the ‘rabbits’ consumed during hard times. Photo-Mufty Mathewson, Images Alberta

Snowshoe hare *Lepus americanus* are active year round. They have between 2 to 3 litters a year with three to five leverets per litter. These rabbits were a food source for lean times during the fur trade and often filled the stew pots of early settlers.



Agricultural production along the David Thompson Highway. Photo-Roger Kirchen, Images Alberta

By the first decade of the 20<sup>th</sup> Century a vibrant agricultural community had developed in the Ram subwatershed. Aug 29, 30, 1929 – The Town of Rocky Mountain House held its 16th Agricultural Fair.

#### PRIZE CATEGORIES

**HORSES:** purebred draft, grade draft, agricultural horses, general purpose horses, saddle horses and saddle ponies.

**CATTLE:** Shorthorn, Hereford, Red polled, Aberdeen Angus, Ayrshire, Holstein and Jersey.

**CHICKEN:** Plymouth Rock, Rhode Island Red, Wyandotte, Ancona, Leghorn and Buff Orpington.

**OTHER POULTRY:** Toulouse Geese and Bronze Turkeys.

Henry Stelfox (Mt. Stelfox in the Cline subwatershed is named after him) was the director in charge of Grains (wheat, oats, barley, rye, peas, buckwheat, fodder corn and sunflowers), Field Roots (potatoes, carrots, turnips, mangels & sugar beets), Vegetables, and Grasses (Timothy, Brome Grass, Blue Grass, Alfalfa, Clover, Rye Grass, Soudan Grass, Orchard Grass).

Lard pails served as lunch buckets for miners and school children.

The Alberta Centre Railway started building a bridge across the North Saskatchewan River at Rocky Mountain House in the summer of 1912, so the railroad could reach the coal mines. It took two years to freight in enough cement for the pillars. They hauled bridge building material by horse and wagon over narrow trails, through thick bush, muskeg and unpredictable fords across rivers and streams.

The influx of settlers into the North Saskatchewan River watershed that began at the turn of the 20<sup>th</sup> Century resulted in vast tracts of land converted to grain production. This happened even in the heavily forested Ram and Clearwater subwatersheds. Between 1910 and 1915, an extensive survey of the North Saskatchewan River system from Rocky Mountain House downstream to Grand Rapids, Manitoba was undertaken by L. R. Voligny of the Dominion Department of the Interior. He recommended “*the construction of several dams to raise the water sufficiently to move grain downriver.*” The First World War intervened. When it was over, it became obvious that transporting agricultural products by the new railway lines was more efficient than trying to navigate an unpredictable river.

Rocky Mountain House, with a population of 800, became a town in 1939.

## COAL GHOST TOWNS

### ALEXO

Built as a coal mining town in the early part of the 20<sup>th</sup> Century, Alexo is now a ghost town near the David Thompson Highway between Nordegg and Rocky Mountain House. Shunda Creek runs to the south of it, not far from its confluence with the North Saskatchewan River. In 1913, the Brazeau Branch Rail Line reached the coal mine at Nordegg, creating better access to markets. When a mine opened at Alexo, a mining community sprang up. At its height there was a hotel, a cookhouse, a bunkhouse, a store, and about 30 cottages. The mine payroll



included about 70 people. 30 of those were miners. The mine operated from **1920 to 1955**. By **1948**, annual production was about 33,000 tons. The mine worked a single seam about 5 foot (1.5 metre) thick. Mining was done by underground room and pillar methods. The Alexo mine closed in **1955** after the market for coal dropped off sharply. The town was eventually dismantled. Most of the former Alexo town site is leased from the Provincial government by the Youth and Volunteer Centre of Red Deer, Alberta for Camp Alexo.

## SAUNDERS

Down the hill to the southeast of Alexo is Saunders Provincial Recreational Area. People were mining coal here as early as **1899**, but it wasn't until the Saunders Creek Mine opened in **1913** that a community sprang up. By **1940**, the town had a CN train station, a blacksmith shop, a hotel, a miners' bunkhouse, at least 30 homes, a sawmill, a pool hall, a union hall, a ball diamond, and a tennis court. Trains arrived Monday, Wednesday and Friday from Rocky Mountain House and Red Deer. Saunders became a ghost town in the early **1950s**. A canoe trip on the North Saskatchewan River from Saunders to Rocky Mountain House takes about 8 hours.

## NORDEGG

In **1907**, Martin Nordegg of the German Development Company, working with D.B. Dowling of the Geological Survey of Canada, staked claims covering coal deposits near the Brazeau and North Saskatchewan Rivers. He began mining coal in the area in **1911**. The first coal mine car wheels came in by pack horse along narrow mountain trails. Nordegg named his mine after the Brazeau River. He helped design one of the most modern towns in Canada at that time. In **1915**, because Martin Nordegg was still a German citizen, he was expelled from Canada

Brazeau Mine Portal #2





Abandoned house in Nordegg 2014.  
Photo-Bill Trout, Images Alberta

during World War I. In 1920, an effort was made to change the town's name to Brazeau, but it didn't stick. When Martin Nordegg was allowed to return to Canada in 1921, he sold his shares in the company.

At its height, the Town of Nordegg had a population of 3,500. What is left now is a collection of abandoned buildings and rusted mining equipment giving a glimpse into a past when coal-powered trains ran the Canadian economy. The mine had over 1,000 km (621 mi) of underground tunnels. Between 1914 and 1955, it produced approximately 20 million tons of coal. On October 31, 1941

an underground explosion destroyed a mineshaft, killing 29 miners. A small miner's cemetery containing their graves and a large memorial stone pays tribute to the lost men. Six weeks after the disaster, mining resumed. In 1942, the Nordegg mine was one of the top-producing coal mines in Alberta.

Nordegg eventually became a ghost town. Due to the lobbying efforts of former miner Dennis Morley and a group of former residents, the Brazeau Collieries site was declared a Provincial Historical Resource in 1993. In 2002, it became a National Historic Site.

## BAPTISTE RIVER METIS SETTLEMENT ROCKY MOUNTAIN METIS HERITAGE PROPERTY

By 1810, Métis settlers were scattered along lake shores and rivers throughout Rupert's Land. Following the turmoil at Red River, starting in 1869, many Métis families became wanderers, settling in out-of-the-way places whenever they could. They were not tolerated by incoming European settlers and not allowed to become legal members of any Indian Reserve. *"They relocated to traditional lands further west to avoid discrimination, maintain their identity and culture, and diversify their economic activities."*

The Fleury family moved to the Baptiste River region after an intermittent journey

that took them from Red River, down into Montana and then to Frog Lake where they lived for 30 years.

The Baptiste River Métis Settlement Site (also known as the Rocky Mountain Métis Heritage Property) represents a settlement occupied by the extended family of Tom and Louise Fleury on the Baptiste River northwest of Rocky Mountain House, Alberta. The Fleury family lived there between 1930 and 1945. The site contains the remains of five log cabins and several associated structures, as well as archaeological deposits. All structures



Baptiste Lake Métis Settlement Tony Kaye, Edmonton Musician has this photo on his webpage

were built on Crown Land adjacent to a wagon trail between the Town of Rocky Mountain House and the Sunchild and O'Chiese Indian Reserves (I.R. 202 and I.R. 203). The area covers about 80 hectares (198 acres) on a level terrace on the south side of the Baptiste River, near its confluence with the North Saskatchewan River. Artifacts collected from this site are housed at the Royal Alberta Museum, in the City of Edmonton.

In 1947, Tom and Louise Fleury had the opportunity to join the Sunchild Indian Reserve. Because their children and grandchildren were not allowed to come with them, they declined the invitation. After that, because they had no legal right to live on Crown Land, they had to leave. They moved close to Crimson Lake, 23 km (14 mi) southwest.

Archaeological investigation of the site was conducted in 1995, including mapping, excavation and interviews with Fleury family members raised at the settlement.

## SUNDANCE

As reported in the Rocky Mountain House newspaper: **Settlers observe a traditional Sundance July 9, 1938.**

First Nations people living on the Kootenay Plains held a Sundance 20 mi (32 km) west of Rocky Mountain House. Joshua Salteaux, a farmer from Caroline, was the Medicine Man. Joshua, his wife and two daughters, as well as five other men took part

in the dance. Chief Walking Eagle from the Kootenay Plains explained the ritual to European observers. “*We all believe in God,*” he said. “*Maybe you think your religion is different, but if we worship God and you worship God, it is all the same.*” The king-pole, he explained, symbolizes the Tree of Life and the rafters are the branches. At the foot of the tree, a fire burns day and night until the ceremony is finished. On the last afternoon gifts are put around the king-pole. Each person who offered a gift explained what blessing he was thankful for over the last year. The gifts included cowboy hats, blankets, new suits of clothes, buckskin jackets, rifles and horses. A final prayer was given for somebody suffering from rheumatism. Then the people who had been fasting for 5 days were given food and tea. The Europeans, who gathered to watch each day, also brought food and gifts, especially for the children. 99 year old Mrs. Moses Wesley was the oldest person there; 4 month old Red Stone Woman was the youngest.

## **INDIAN RESERVES**

The Indian Reserves in this subwatershed were awarded later than the ones in most of the other North Saskatchewan River subwatersheds.

### **O’Chiese I.R. 203**

In 1950, 15 Chippewa people living in the area signed a treaty and settled on the O’Chiese Indian Reserve. The leading families were Strawberry, Bremner, Whitford, Beaverbones, Crooked Legs and O’Chiese.

### **Sunchild I.R. 202**

The Sunchild Indian Reserve was formed in the late 1940s to accommodate a group of Cree people who had left various reserves in the province to settle in the mountains. The leading families at that time were Bigchild, Red Calf, Frencheater, Lagrelle, Sunchild and Beaverbones.

## Big Horn I.R. 144A

John Abraham and his people from the Wesley Band were at Blackfoot Crossing in 1877 for the signing of Treaty 7. At that time, land was set aside for the Stoney people near Morley, Alberta, but no land was reserved for the Wesley Band in the Kootenay Plains where they had been living, so they had to move to Morley. In 1894, with food scarce and living conditions poor at Morley, Peter Westley led 100 of his people back to the Kootenay Plains. They petitioned the Federal Government to be allowed back on their land. Finally, in 1910, the Federal Government accepted the Stoney land claim, but cancelled it in 1911 because coal had been discovered along Bighorn River and Whiterabbit Creek.

The Stoney land claim remained unresolved until 1947 when the Big Horn Indian Reserve was created at the confluence of the Bighorn and North Saskatchewan Rivers. The leading families at that time were Abraham, Wesley, House, Crawler, and Beaver. The area was too small to support them, so the people continued to use the Kootenay Plains to hunt and to pasture their horses and cattle. In 1972, the Bighorn dam flooded their cabins, grave sites, campgrounds and pastures. In 1974, the Federal Government agreed they should receive another 18,000 acres (7,300 hectares) of land, but the Provincial Government refused to give up that much land. Instead, in compensation for lost grave sites, the Provincial government released 1,186 acres (480 hectares) across from the Two O'Clock Creek Recreation Area campground and 1,730 acres (700 hectares) across the highway from the Siffleur Falls Staging Area parking lot.

## IMPOUNDMENT

The **Bighorn Dam** is a 300-foot earth-filled dam built on the North Saskatchewan River by Calgary Power (now TransAlta), upstream from the Town of Rocky Mountain House and south of the Town of Nordegg. This embankment

Random camping near TransAlta Bighorn Dam. Photo-Carol Rusinek, Images Alberta





TransAlta Bighorn Dam power plant.  
Photo-Carol Rusinek, Images Alberta

dam was built in 1972 in the mountain gap at Windy Point, in the Front Ranges of the Canadian Rockies, west of the confluence of the North Saskatchewan River and the Bighorn River.

The Bighorn Dam created Lake Abraham – Alberta’s largest artificial lake. The hydroelectric plant, one of two on the North Saskatchewan River System in Alberta, has been producing electricity since 1974. The Bighorn Plant is TransAlta’s highest performing hydro plant, with an average output of 408,000 megawatt hours a year. It generates more electricity each year than any of TransAlta’s other hydro plants, enough to supply the equivalent of 58,300 Alberta households.

## RECREATION

### Tershishner Creek Trail

On the north side of Abraham Lake, Highway 11 crosses Tershishner Creek. There is no bridge, but the road curves over large culverts. Parking is just south of the stream on a gravel road on the west side of the highway. There is a thin gravel trail up-stream next to the creek.

### Hummingbird Creek Trail

South on the trunk road from Nordegg or west of Cow Lake to the trunk road and then north, is Hummingbird Recreation Area. Three maintained trails, the Hummingbird Creek Trail, the Canary Creek Trail and the Onion Lake Trail all provide a full day of horseback riding. There are backcountry campsites for a longer stay. Grizzly and black bear, bighorn sheep, whitetail deer, elk, wolf, marten and fisher all inhabit the area.

### Canoe Run

From Nordegg to Rocky is a popular canoe run on summer weekends. As many as 200 canoes have been counted on a long weekend. There are good wilderness campsites in this area and good fishing up Shunda Creek.



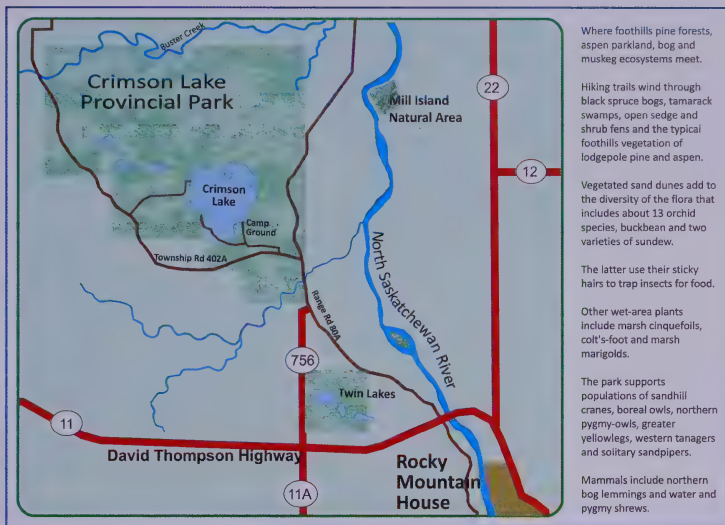
**Crimson Lake Provincial Park** has sand dunes, parts of which support forest plants. There is also wetland wildlife in the depressions between the dunes. In 1945, land surrounding Crimson Lake was reserved as a provincial park. Crimson Lake Provincial Park, which was officially established in 1955, completely surrounds the lake.

In a great variety of habitats, 266 species of vascular plants, including 13 orchid species, buckbean and two varieties of sundew have been reported. Organic bogs and fens cover most of the central portion of the park while sand dunes and sand plains cover much of the rest.

There are no permanent inflowing or outflowing streams to the lake; groundwater plays a significant role in maintaining the water balance of Crimson Lake. Algae growth is minimal and water quality is good. The lake has a rich organic layer at the bottom, from which aquatic plants flourish.

Because the lake winterkills most winters there are no sports fish. Stocking the lake with sports fish was attempted in past, using both yellow perch and rainbow trout, but the program was unsuccessful. Fathead minnows and brook stickleback, tolerant to low oxygen levels, are abundant. Leeches also fare well in the lake, along with freshwater shrimp and horsehair worms. Clams are found along the sandy shorelines.

Over 100 species of birds have been identified in and around Crimson Lake, including nesting sandhill cranes, mourning doves, pygmy owls and boreal owls. common loons nest on Crimson Lake, as do mallards, teal, and common goldeneye.



Driving on soft, muddy trails can cause permanent damage to the ecosystem.

Wet spring conditions cause many headwater trails to be closed to motorized vehicles to protect the trails for both users and the environment.

Thirty-one species of mammals inhabit the park, including wolves, black bears and mink. The loud songs of frogs can be heard in the spring; amphibian species include western and Dakota toads and chorus, wood and leopard frogs. Two reptile species, western and common garter snakes are often seen here.

Lake area: 2.32 km<sup>2</sup> Maximum depth: 9.1 m Mean depth: 2.2 m Trophic status: mesotrophic

## 21<sup>ST</sup> CENTURY

People on off-highway vehicles find their way into the back country along cut lines and pipeline rights of way. Random camping became so popular that by 2007, on the May long weekend, there were upwards of 60,000 campers swarming into the back country looking for wilderness campsites. The mountains of garbage left behind required significant clean-up efforts. By the May long weekend of 2014, cooperative efforts of Clearwater County, ESRD, law enforcement and many groups and organizations, resulted in the most successful May long week in 22 years. Less garbage was left behind, more people were reached with educational literature and some areas were successfully closed off. The serious impact to the landscape by off-highway vehicles and random camping is still an issue, but there are a variety of plans in place to direct more people to safe trails and authorized camping sites.

### TROPHIC LEVELS IN LAKES

#### OLIGOTROPHIC

"Oligo" means - very little; so an oligotrophic lake is one with few nutrients (phosphorus and nitrogen). These lakes have deep, clear water; rocky and sandy bottoms; and very little algae. Fish found in oligotrophic lakes require cold, high oxygenated water (lake trout and whitefish).

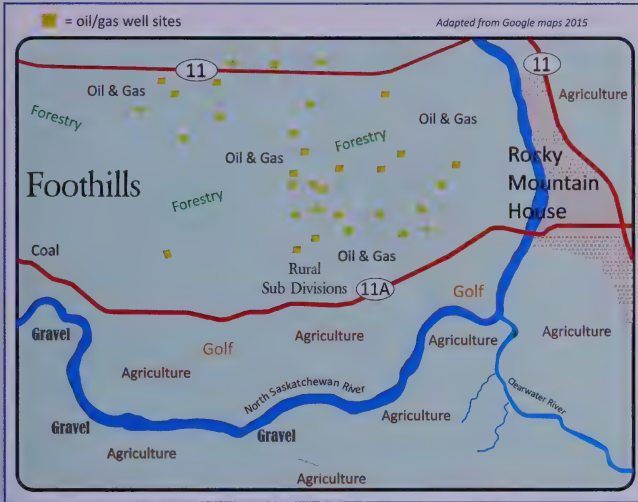
#### MESOTROPHIC

"Meso" means middle or mid; so a mesotrophic lake is one with a medium amount of nutrients (phosphorus and nitrogen). These lakes have clear water with some algal blooms in late summer. They are good fishing lakes, home to walleye, perch, and northern pike. Mesotrophic lakes separate into layers in the summer. The top layer of water, warm from the sun, contains algae. The by-product of photosynthesis is oxygen, so oxygen concentration stays high at the lake surface. The bottom layer is cooler and can become anoxic (oxygen

poor) in mid-summer. This happens when algae and other organisms die and decompose at the bottom of the lake. Decomposition uses oxygen. Since the bottom layer of water doesn't mix with the top layer of water in the summer, oxygen is not replenished. Therefore, in late summer, fish move to shallower water where oxygen is still available.

#### EUTROPHIC

"Eu" means true; therefore, a eutrophic lake is one which is truly nutrient rich (phosphorus and nitrogen). Eutrophic lakes are fertile from nutrients that flow into the lake from the surrounding landscape. They are shallow, with murky water and mucky bottoms. They support lush plants and algae growth. In less eutrophic lakes, common fish include, northern pike, perch. As a lake becomes more eutrophic, fish populations decrease. As lakes increase in nutrients they can change from mesotrophic to eutrophic.



Landuse in the Ram Subwatershed near Rocky Mountain House

Wilderness access in remote areas of the headwaters has become easier with the use of helicopters and ATVs. This has increased environmental damage.

Off-roading allows automobile travel in places not designed for that kind of traffic.

Off-roading activities churn up soil, make ruts, damage root systems, compact soil, accelerate erosion, increase frequency of dust storms and sedimentation in waterways.

Off-roading damages plants, spreads seeds from invasive plant species as soil is churned up.

Off-roading disturbs wildlife. When natural habitat is churned up, eroded and taken over by invasive plants, wildlife that depends on the habitat is displaced. Engine noise from ATVs and dirt bikes disorients animals and birds, moving them into even more remote locations.

A Montana State University Extension Service study found that one dirt bike can distribute 2,000 seeds over a 10-mile (16-kilometer) radius.





# CLEARWATER SUBWATERSHED

**T**he economic base in the Clearwater subwatershed is built on oil and gas, forestry, agriculture and tourism. About 2% of the land mass is taken up by linear developments. These include cut lines, roads, pipelines, transmission lines and railway rights of way. 3.4% of the land is classified as municipal or reserve land and a small percentage is affected by well sites and other facilities.

## NATURAL FEATURES

**Mount Willingdon** is the 44<sup>th</sup> highest mountain in the Canadian Rocky Mountains. The summit is 3373 m (11,067 ft). It was first ascended by a survey crew in **1919**. The long valleys that stretch out from Mount Willingdon are the last true wilderness within Banff National Park. The remote, sweeping vistas, spectacular scenery and wild animal encounters attract serious hikers and climbers. Ascending Mount Willingdon is not for novice climbers, nor for the faint of heart.



Trail riders crossing Elk Creek. Photo-Carol Rusinek, Images Alberta

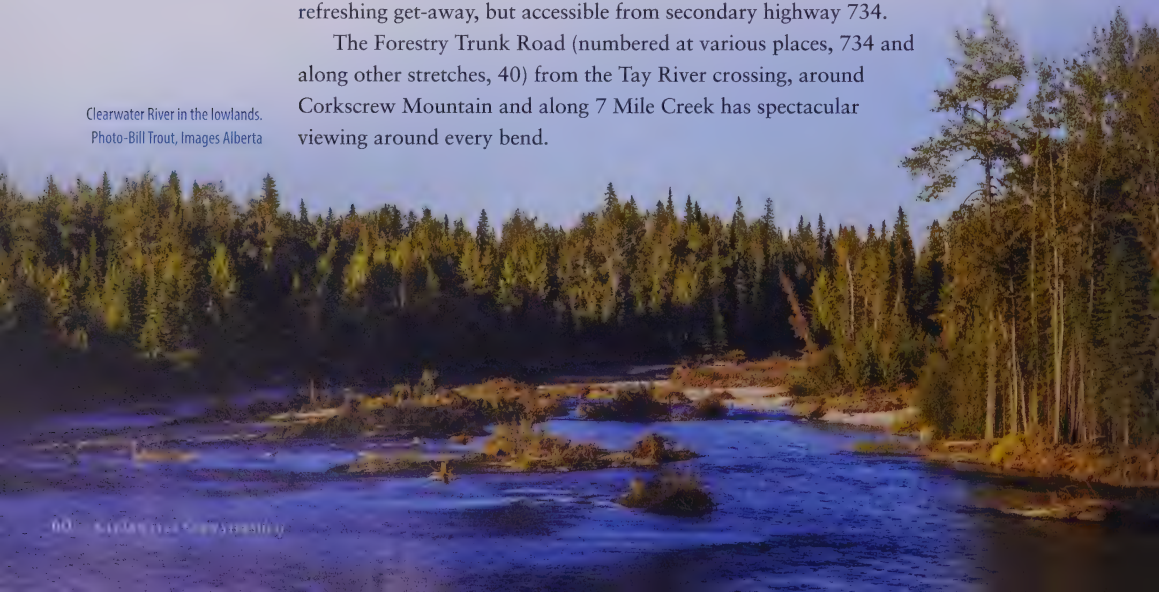
Clearwater River drainage begins along the south slope of Mount Willingdon in Banff National Park. Three mountain tributaries flow into Trident Lake where the Clearwater River becomes navigable by canoe. 15 km (9 mi) west of Trident Lake the river leaves Banff National Park and continues west for 18 km (11 mi) before turning north out of the Ram Range in the Rocky Mountain Foothills. After about 20 km (12 mi), the river flows west for 70 km (44 mi) before turning northwest for about 30 km (19 mi) where it empties into the North Saskatchewan River just south of the Town of Rocky Mountain House.

Clearwater River Headwater Lakes region has a reputation for being one of Banff's best remote camping areas. Devon Lakes, Clearwater Lake, Martin Lake and Trident Lake are popular overnight locations.

The Elk Creek area is popular with trail riding groups. It is remote enough to be a refreshing get-away, but accessible from secondary highway 734.

The Forestry Trunk Road (numbered at various places, 734 and along other stretches, 40) from the Tay River crossing, around Corkscrew Mountain and along 7 Mile Creek has spectacular viewing around every bend.

Clearwater River in the lowlands. Photo-Bill Trout, Images Alberta





The Milky Way over the Clearwater River. Photo-Eddie Carle

Tay River has good fly fishing for brown trout, bull trout and whitefish. Night skies around the Tay River campground are class 4 on the **Bortle Scale**. This is better sky viewing than from a suburban area, but not as good as from a remote rural area. A class 4 sky is one in which light pollution domes are visible in several directions; clouds are illuminated in the directions of the light sources; dark overhead surroundings are clearly visible, even at a distance; and the Milky Way is still impressive, but lacks detail.

#### DARK SKY PRESERVE (DSP)

Canada has an extensive standard for dark-sky preserves, based on work done by the Royal Astronomical Society of Canada. It addresses light within the DSP as well as skyglow influence from urban areas in the region. There are no other established standards for dark sky preserves. Outside Canada, designations are usually done by self-proclamation.

As of February 6, 2012, there were 35 recognized DSPs in the world. Canada led all other countries with 15 DSPs. Three of Canada's DSPs are in Alberta. Two of those are in the North Saskatchewan River watershed. Beaverhills – designated Sept 3, 2006 and Jasper National Park – designated March 11, 2011.

### BORTLE SCALE

A nine-level numeric scale that measures the night sky's brightness at a particular location. It quantifies the astronomical observability of celestial objects and the interference caused by light pollution. John E. Bortle created this scale in 2001 to help amateur astronomers evaluate the darkness of an observing site. The scale ranges from Class 1, the darkest skies available on Earth, to Class 9, which would be skies seen from light polluted inner-cities

Morning at Trident Lake. Photo-Eddie Carle



Clearwater River in the foothills.  
Photo-Eddie Carle







7 Mile Creek Valley. Photo-Bill Trout,  
Images Alberta

Wetlands near Corkscrew Mountain.  
Photo-Bill Trout, Images Alberta

# NATURAL RESOURCES

## ANIMAL

Killdeer *Charadrius vociferous*.  
Photo-William Shalewa



Killdeer *Charadrius vociferous* is a wading bird that nests on dry ground within wetland areas. These birds are known for their use of a distraction display (broken-wing act) to lead predators away from their nests. Killdeer chicks are precocial (“ripened beforehand”, from the same Latin root as precocious). They, like baby chickens, ducks and quail, can use their little legs right after they hatch. Most other baby birds are altricial (helpless, stationary nestlings). Precocial birds stay in the egg twice as long as altricial birds, so they have more time to develop.

Sandhill Crane *Grus canadensis*.  
Photo-William Shalewa



**Sandhill Cranes** *Grus canadensis* have one of the longest fossil histories of any extant (still in existence) bird. The oldest sandhill crane fossil is 2.5 million years old, older than the earliest remains of most other living species of bird. They nest on the ground in wet, forested areas close to small ponds or marshes. They are not frequently seen in mountainous areas, but are known to nest in the area around Rocky Mountain House.

**Northern Flicker** *Colaptes auratus*, also known as yellowhammer or harry-wicket, is a medium sized member of the woodpecker family. It is the only woodpecker that feeds on the ground, searching for insects, most often ants, which make up 45% of its diet. In agricultural areas, flickers will tear apart cow patties to reach the insects that burrow inside. They do eat some fruits, seeds and nuts, but their primary food is insects.

### 1895 FISH AND GAME REGULATIONS (In what is now Alberta)

Season for Elk, Moose, Cariboo, Antelope, Deer, Mountain sheep or goat – September 1 to February 1.

Limit is six head except for food for self or family.

Season for Grouse, Partridge, Pheasant, and Prairie Chicken – September 1 to January 1. No limits.

Season for Whitefish, Tullibee, Lake Trout – December 15 to October 5. No limits.

Season for Pickeral, Pike and Goldeye – May 15 to April 15. No limits.

Season for Sturgeon – July 15 to May 15. No limits.



Northern Flicker *Colaptes auratus*. Photo-Carol Rusinek, Images Alberta

**Mallard Duck** *Anas platyrhynchos* (Greek, *platy* – flat, *rhynchos* – nose or bill). The mallard is the most widely recognized wild duck in North America, identified by the male's glossy green head and white neck collar. The female is less noticeable with dun brown feathers. Both genders have orange feet. In the spring, mallard meat and eggs supplemented the diet of First Nations people as well as that of many early settlers.

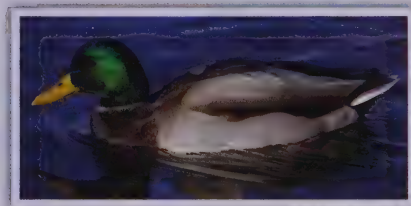
Mallards feed by dabbling and upending, tipping head first into the water, tail in the air. 90% of what they eat is vegetation (seeds of grasses, sedges, pond weeds). Snails, insects and small fish make up the rest of their diet. When alarmed, mallards spring directly out of the water and into the air. The sudden flight of mallards is a spectacular sight. Mallards are seasonally monogamous, the male deserting the female after the first week of incubation. The female incubates the 5 to 14 eggs. The young leave the nest soon after hatching flying from 49 to 60 days later.

**Wolf** *Canis lupus* fur colour ranges from black to white. Shaped much like German shepherd dogs, wolves were once common throughout the North Saskatchewan River watershed, but are now found mostly in the foothills and mountains, where they feed on bighorn sheep, elk and smaller animals such as mice, rabbits and other rodents. Although wolves almost never attack humans, they have the reputation as one of the animal kingdom's most feared villains. Early peoples all over the world had a deep admiration and respect for wolves. Wolf-related names were common among First Nations people in North America. In Europe, pre-Christian Germanic warriors often had names that compared them to wolves: *Wolfbroc* (Wolf-Frock), *Wolfhetan* (Wolf Hide), *Isangrim* (Grey Mask), *Scrutolf* (Garb Wolf), *Wolfgang* (Wolf Gait) and *Wolfdregil* (Wolf Runner).

White Wolf *Canis lupus*. Photo-Tarra  
Kongsrude, Images Alberta



Female Mallard *Anas platyrhynchos*.  
Photo-Bill Trout, Images Alberta



Male Mallard *Anas platyrhynchos*.  
Photo-Bill Trout, Images Alberta



**FISH** See *Brazeau subwatershed* for a list of cold and cool water and non-game fish species.

During the last quarter of the 20<sup>th</sup> Century catching wild fish for sport began to eclipse catching wild fish for food. This was partly due to concern about mercury levels in fish and partly because of diminishing commercial fish populations. Game fish are edible, but catching fish for food now plays a minor role in the sports fishing industry that expanded dramatically in the latter part of the 20<sup>th</sup> Century.



Rainbow Trout

**Rainbow Trout** *Oncorhynchus mykiss* are the most sought after trout in the province of Alberta. The only true native rainbow trout in Alberta is the Athabasca Rainbow, which is abundant in the North Saskatchewan River watershed system. Trout in the Bow River watershed were accidentally stocked in the mid-1920s when a train on the way to Banff National Park derailed on the banks of the Bow. Live fish from the Sacramento River watershed in Northern California were on board. In order to save them, they were transplanted into the Bow River. Rainbow trout thrive in the cool, oxygen rich, swift flowing water in the Clearwater subwatershed.



Brown Trout

**Brown Trout** *Salmo trutta* are not native to Alberta, but were introduced in 1925 when a truck carrying 45,000 fingerlings broke down. The driver released the fish into the nearest stream, which connected to the Bow River. Brown Trout are now part of the Alberta fish stock program and are found moderately in the Clearwater subwatershed. They breed in the fall when temperatures drop below 8° Celsius (46° Fahrenheit).



Bull Trout

**Bull Trout** *Salvelinus confluentus*, the official fish of Alberta, are a native species. Bull trout used to be known as **Dolly Varden** *Salvelinus malmo*, but in 1980 they were reclassified. Bull trout live far upstream, because they need water temperatures below 13° Celsius (55° Fahrenheit), clean gravel beds, low amounts of silt, and



Burbot

deep pools. Currently at-risk, they are strictly protected by a 0 keep limit across the province. They are lightly stocked and found in a few locations in the Eastern Slopes of Alberta.

**Burbot** *Lota lota*, also known as ling cod, eelpout, Mariah or lawyer fish, are the only freshwater cod-like fish. Although burbot is very tasty, sometimes referred to as ‘poor man’s lobster,’ many fishers find the eel-like shape unsettling and don’t keep them.

## MINERAL

### Oil, Gas & Coal

In the 1960s and early 1970s there was considerable exploration for oil, gas and coal in the upper reaches of the Clearwater. There is still evidence of coal exploration in the banks above Scalp Creek. Today the upper Clearwater region falls under the Prime Protection Zone of the Eastern Slopes Policy and Category 1 of the Coal Policy. This puts the upper watershed off limits to industry.

Pump jacks near Dovercourt. Photo-  
Images Alberta

### WHAT’S IN A NAME?

**Mount Willingdon** was named in 1927 after Major Freeman Freeman-Thomas, the First Marquis of Willingdon, Governor General of Canada from 1926 to 1931 and also favourite tennis partner of King George V.

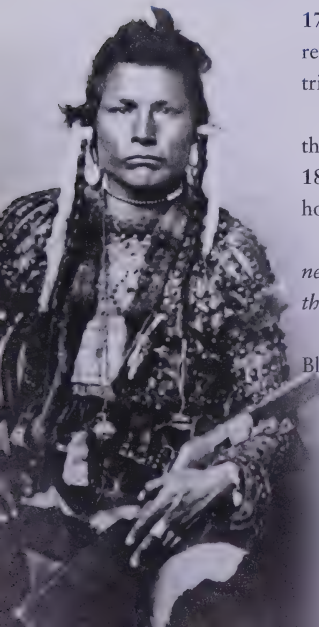
**Rainbow Trout** *Oncorhynchus mykiss* was named in 1792 based on a species found in Siberia. The genus name is from Greek *onkos* which means hook and *rynchos* which means nose. Male fish develop hooked jaws during mating season. Mykiss comes from *mykizha* the name used by the Kamchatkan people in Siberia.





Gros Ventre, Old Man, Big Kidney,  
Dominating Man. Province of Alberta  
Archives P39.

*Kha Ya Wo Ta Ni*, Bear Sheild, Blood  
Indian 1879. Province of Alberta  
Archives P189



**Northern Pike** *Esox Lucius* is a common fish in England and Europe. Its name comes from a mediaeval pole weapon known as a pike (middle English for pointed). *Esox* is Celtic for ‘big fish’. Other common names: grass pike, snot rocket, slough shark, snake, slimmer, slough snake, northern gator, jackfish, sharp tooth McGraw, Mr. Toothy.

The **Gros Ventre**, sometimes called Fall Indians by fur traders in the North Saskatchewan River watershed, are also known as *A'ani*, *A'aninin*, *Haaninin*, and *Atsina*. The name *Gros Ventre* (French for big belly) recorded in European journals is possibly a translation from *Atsina*, a Piikáni (Piegan) word, which meant either “gut people” or “like a Cree”. *A'ani*, *A'aninin*, and *Haaninin* are names preferred by these First Nations people. These names can be loosely translated to mean “White Clay People” or “Lime People”.

## POST CONTACT – FUR TRADE

For 76 years, after the first fur trading fort was built at Rocky Mountain House in 1799, trading posts in the Rocky Mountain House area were abandoned, re-built, and re-opened as needed. Need was determined by competition with other fur traders, inter-tribal hostilities, availability of game for food and the travels of early explorers.

An old Piikáni (Piegan) trail follows the Clearwater River from its confluence with the North Saskatchewan River up to the Bow River headwaters. In the autumn of 1800, David Thompson, Duncan McGillvray and four other men followed that trail on horseback.

In 1810, fur trader Alexander Henry, the younger – “*Along the Clearwater River and near the foot of the mountains are still to be seen the remains of some of the dwellings of the Kootenai, built of wood, straw and pine branches.*”

In 1819 and 1820, a severe measles epidemic killed over a third of the Gros Ventre, Blood and Piikáni (Piegan) First Nations people trading at Rocky Mountain House.



### Logging Camp Food circa 1930s.

#### Daily food for 30 – 35 men

10 fresh-baked loaves of bread

# = pound

#### BREAKFAST

167 Pancakes

10# Sausage

10# Bacon

6 Dozen Eggs

Butter, Jam & Syrup

Coffee & Tea

#### DINNER

Soup & Crackers

20# Roast Beef or Pork with a

half-gallon of Gravy

30# Mashed Potatoes

15# Carrots

4 large cans of Corn

6 Apple Pies

#### SUPPER

15# baked trout

2 heaped platters of cold pork  
or beef

30 # Fried Potatoes

5# Macaroni made with Cheese or

Tomatoes

2 Gallon Tins of Canned Fruit

Cakes n Cookies

## 1916 General Regulations of the Department of Education in Alberta

1. These regulations shall apply to all schools under the control and management of the Department of Education.
2. In rural village districts the site for the school to be approved by the Department, as far as possible should meet the following standards:
  - a. It should be located near the centre of the district as practical
  - b. It should be easily accessible to all children of the district.
  - c. It should be in a dry, elevated position, admitting of easy drainage.
  - d. It should be removed from stagnant water and noisy surroundings.

In the era between the two world wars (1920s and 1940s) dozens of small sawmills and lumber camps operated in the Clearwater subwatershed. In 1921, the Atlas Lumber Company (part of the Revelstoke lumber empire) came to Rocky Mountain House. One of the biggest lumber companies during the inter-war era, it operated a planer mill that was supplied with logs from 35 bush camps. The planer was powered by a steam engine with a 20 foot (6 metre) flywheel. At its peak, Revelstoke shipped 26 million board feet of finished lumber. After the planer mill burned down in 1946, it was rebuilt and an electric planer installed.

## 21<sup>ST</sup> CENTURY

Fish in high-altitude lakes contain an elevated concentration of organochlorine compounds (e.g. PCBs, DDT, toxaphene and hexachlorobenzene) associated with industrial contaminants and agricultural pesticides. It is believed that these compounds travel through the atmosphere from Canada, the United States, Asia and Mexico and are deposited via snowfall in the mountains. The higher the elevation the higher the contaminant concentration in fish.

Hayfields are vulnerable to invasive species.

Photo-Bill Trout, Images Alberta



## INVASIVE PLANT SPECIES

Invasive plants are species occurring outside their natural habitat where they impact the economy, environment or society. As settlers moved into the back country, invasive plants came along intentionally as ornamental flowers or unintentionally as contaminants in feed, seed or machinery and equipment.

After Alberta became a Province in 1905, one of the first pieces of legislation was the **Noxious Weeds Act 1907**. Nineteen species were identified as noxious at that time:

Cockle *Agrostemma githago*; Canada thistle *Cnicus arvensis* (Known as common field thistle in Britain where it originated); Tumble weed *Amaranthus albus*; Hare's ear mustard *Conringia orientalis*; Red root *Amaranthus retroflexus*; Blue bur *Echinosperrum lappula*; Ragweed *Ambrosia trifida*; Wormweed mustard *Erysimum Cheiranthoides*; Wild oats *Avena fatua* and *Avena strigosa*; Ball mustard *Neslia paniculata*; Russian pigweed *Axyris amaranthoides*; Russian thistle *Salsola kali v. tragus*; Common wild Mustard *Brassica sinapistrum*; Tumbling mustard *Sisymbrium altissimum*; False flax *Camelina sativa*; Tansy mustard *Sisymbrium incisum*; Shepherd's purse *Capsella bursa-pastoris* and Stinkweed *Thlaspi arvense*.

On the farm, invasive plants are more often referred to as weeds, plants that compete with crops, reduce yields, affect crop quality and are toxic to grazing farm animals. Farm practices and agricultural commerce can contribute to the spread of weeds.

Invasive plants also affect natural forests, native grasslands, and waterways. The World Resources Institute, in conjunction with the World Conservation Union and the United Nations Conservation Program, identified alien species (weeds and pest animals) as the second greatest cause of biodiversity decline after habitat loss.

### **Invasive plants of particular concern in the Clearwater sub-watershed:**

**Leafy Spurge** *Euphorbia esula* (native to central and southern Europe and most of Asia) was first identified in Alberta in 1933 and in the Clearwater area in 2010. It causes digestive upset in cattle and horses, but goats and sheep can eat it.



Purple Loosestrife *Lythrum salicaria*, like many invasive species, are beautiful on the landscape.

**Purple loosestrife** *Lythrum salicaria* is a wetland plant from Europe and Asia. Infestations result in a sharp decline in biological diversity as native plant species, especially cattail, are crowded out. This affects the life cycles of many organisms from waterfowl to amphibians to algae.

**Canada thistle** *Cnicus arvensis* is another plant from Europe and Northern Asia. The taproot is edible and highly nutritious. The Bruichladdich (*broo-ee-clah-dee*) Distillery on the isle of Islay in Scotland is known for its single malt Scotch whisky, but it also produces a gin called the Botanist, augmented by nine wild Islay botanicals – one of them being thistle root.

**Common tansy** *Tanacetum vulgare* was brought to North America in the 1600s by the first European settlers, who used it as an insect repellent and for embalming.

**Common toadflax** *Linaria vulgaris* has a beautiful flower, often mistaken for a miniature snapdragon. In Europe, an ointment made from the flowers was used against various skin conditions.

**Oxeye daisy** *Leucanthemum vulgare* buds are spicy. They were, at one time, marinated and used in cooking in a similar way to capers.

**Perennial sow thistle** *Sonchus arvensis* are cousins of dandelions. They are cooked with spaghetti in Italy. In New Zealand they are eaten as a vegetable and fed to rabbits.

**Scentless chamomile** *Matricaria perforate* adapts easily to heavy clay soils and tolerates both periodic flooding and dry areas. It reduces yields in hay fields, pastures and cropland. In Sweden and Norway it's called Baldr's brow.

**Tall buttercup** *Ranunculus acris* have a sharp, pungent, bitter juice which causes severe pain and inflammation when grazed by livestock. It contains ranunculin, which breaks down to protoanemonin, a chemical that can cause severe dermatitis, vomiting and dizziness.

**White Cockle** *Silene alba* contributes to yield loss in alfalfa, clover and small grains. It is also an alternate host for Lychnis Ring Spot virus, which infests sugar beets. Both the stem and root pieces sprout to form new plants; cultivation can spread an infestation.

### ALL-TERRAIN VEHICLE (ATV) USE

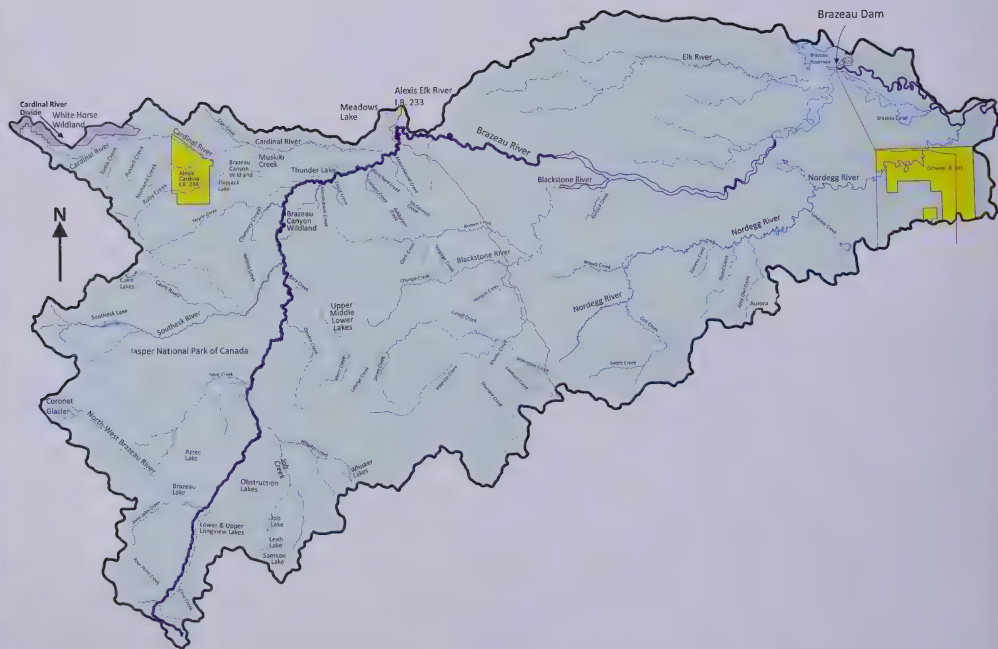
All-Terrain Vehicle (ATV) use in the North Saskatchewan River headwaters region has increased dramatically. During the May long weekend, thousands of ATVs have been counted entering the area. ATVs drive on un-improved roads and trails, along pipelines and into rangeland. ATVs are able to cross jurisdictional or land management boundaries, introducing new and spreading established invasive plants.



Riding through the beautiful Tyrell Pass, which separates the North Saskatchewan River watershed from the Red Deer River watershed. This area is now easily accessible by off-road vehicles. Photo-Brian Peters.



High above Forbidden Creek on a horse trail seldom used before the advent of off-road vehicles. Photo-Brian Peters



# BRAZEAU SUBWATERSHED

About 16.4% of the Brazeau subwatershed lies within Banff and Jasper National Parks. This subwatershed is sparsely populated. Permanent residents live on the First Nations Alexis Cardinal I. R. 234; O'Chiese I. R. 203 and Sunchild I. R. 202.

## NATURAL FEATURES

The **Coronet Glacier**, birthplace of the northwest branch of the Brazeau River, is the largest and only named glacier in this subwatershed.

The **Elk River** beginning south of the ghost town of Coalspur flows east into the Brazeau Reservoir created by the TransAlta Brazeau Dam on the Brazeau River. The Elk River Road runs along the river for much of its course. The Elk River Provincial Recreation Area is also located on the river.

Elk River. Photo-Bill Trout, Images Alberta





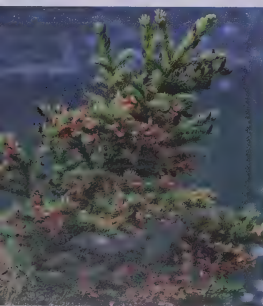
Blackstone River. Photo-Carol Resinek,  
Images Alberta

The **Blackstone River** is a small, relatively short river with a variety of water types where anglers have realistic chances of catching fish. The Blackstone's gravelly bottom and cold, clear water makes for good mountain fishing. The main species caught here are cutthroat trout *Oncorhynchus clarkia*, bull trout *Salvelinus confluentus* and mountain whitefish *Prosopium williamsoni*. Anglers divide this river into three sections. The upper reach, from Beaver Flats upstream to the Gap and beyond; the middle reach from Beaver Flats down to the Forestry Trunk Road, and the lower reach from the Forestry Trunk Road to the confluence with the Brazeau River.

**Brown Creek** varies from slow, deep pools to shallow riffles and runs. About an hour's walk downstream from the Forestry Trunk Road is a small set of falls on Brown Creek. Walk a little further to the confluence with the Blackstone River. There are good fishing pools near this confluence.

Brown Creek. Photo-Bill Trout,  
Images Alberta

Black spruce in Brazeau River low  
lands. Karen Albert, Images Alberta



The **Cardinal River** flows east, from just outside the Jasper National Park boundaries, through the eastern slopes of the Canadian Rockies and into the foothills. It cuts through a steep banked valley producing surf waves that kayakers love. Additional swift paddling sections are created where boulders and ledges constrict the flow. The Cardinal River and other surrounding landmarks were named for Jacques Cardinal, an early fur trader. His grave is located on the banks of the Cardinal River. The Cardinal Divide at the south end of the Whitehorse Wildland Provincial Park rises to 1981m (6499 ft), towering over the Cardinal River headwaters, separating two major watersheds. To the north, the Athabasca River system drains into the Arctic Ocean, while to the south, the North Saskatchewan River system (which includes the Cardinal River) drains into the Hudson Bay.

Canoeists and kayakers like the **Brazeau River** canyons, waterfalls, standing waves and the braided channels that lead into the Brazeau reservoir. An interesting hydrological condition occurs at the confluence of the North Saskatchewan River with the Brazeau River. Here, the clear blue water of the Brazeau remains unmixed with the brown silt-laden water of the North Saskatchewan River for at least a half a kilometre.



Butterwort *Pinguicula vulgaris* is a carnivorous plant found along subalpine valley floors. Photo-Brian Peters



Brazeau River. Photo Bill Frost, Images Alberta



**Whitehorse Wildland Park**, established in 1998, is 60 kilometres (37 miles) south of Hinton. Only the southeastern portion of the 175 km<sup>2</sup> (67.5 mi<sup>2</sup>) of park is within the Brazeau subwatershed, but since access to the wonders of the park, as well as to the Cardinal River is from Hinton, the whole park is described here.

Located in the northern front ranges of the Rocky Mountains, it shares part of its western boundary with Jasper National Park and its eastern boundary with the Cheviot coal mine. Most of the park is above the tree line where alpine meadows and sub-alpine slopes are habitat to more than 277 plant

species, including 37 that are considered rare or that have unusual distribution.

At high elevations, alpine meadows support a variety of hardy plant species such as willow shrubs, lichen and small alpine wildflowers. These plants survive in an extremely harsh environment, but can take centuries to recover from human disturbance.

At low elevations, forests are populated by lodgepole pine, spruce and sub-alpine fir. Wildlife species in the park include elk, moose, mule deer, bighorn sheep, grizzly bear, wolves, cougar, hoary marmot and pika. The park is particularly important for conservation of the grizzly bears that travel the mountain ranges between Whitehorse and Jasper National Park.

Whitehorse Wildland Park is also home to about 128 bird species. Of these, 70 species breed in the area and 28 are permanent residents. Some of the species found in the alpine and sub-alpine areas of the park: mountain bluebird *Sialia currucoides*, horned lark *Eremophila alpestris*, American dipper *Cinclus mexicanus*, Townsend's solitaire *Myadestes townsendi*, varied thrush *Ixoreus naevius*, Townsend's warbler *Setophaga townsendi*, golden-crowned sparrow *Zonotrichia atricapilla* and American pipit *Anthus rubescens*.

Mountain Blue Bird *Sialia currucoides*.  
Photo-Bill Trout, Images Alberta





The Whitehorse Creek Valley is prime habitat for a variety of carnivores and ungulates such as grizzly bear and bighorn sheep. It is also breeding habitat for harlequin ducks, whose range in Alberta is restricted to the Rocky Mountain Natural Region. Fiddle Pass provides one of the few east-west corridors in the region that penetrate the mountain barrier through to Jasper National Park.

**Cadomin Cave**, located just southwest of the Town of Cadomin, is a limestone cave that scientists believe began forming millions of years ago. The cave's name is an acronym for Canada Dominion Mining. The first known survey of the cave was performed in 1959 by W.L. Biggs and R.S. Taylor. When the Alberta Speleological Society was formed in 1968, the Cadomin Cave was one of only a few caves known in Alberta, and it had already been vandalized. The Alberta Speleological Society resurveyed and documented the cave's extent. They also collected litter and removed spray-painted graffiti to try to make the cave presentable for other visitors.



The cave is important habitat for bats and is one of four known bat hibernacula (over-wintering residences) in Alberta. It shelters about 800 little brown bats that are at high risk of exposure to white-nose syndrome. This fungal disease has killed more than one million bats in caves and mines in Ontario, Quebec and north-eastern United States. It's not harmful to humans, but can be spread by humans when they explore caves, so the caves are now closed to the public.

### Temporary Closure of Cadomin Cave

To reduce the risk of White-Nose Syndrome spreading to bats in Alberta, Cadomin Cave is temporarily closed. Until further notice, the cave is not open to the public.

White-Nose Syndrome is a fungal disease that has caused massive mortalities of bats in the eastern United States, Ontario and Quebec. All cave-roosting bats across North America may be at risk.

This cave is an important habitat and our province's largest known bat hibernation site. Because it is a popular destination for caving enthusiasts, it is considered to be at the highest risk of exposure to the disease in Alberta. The fungus is not harmful to humans, but it is believed that humans contribute to the spread of the disease when they explore caves.



Access to Cadomin Cave is by permit only, for researchers conducting bat population monitoring activities.

For more information, please visit:  
[www.albertaparks.ca/knownB4UGo.aspx](http://www.albertaparks.ca/knownB4UGo.aspx)

Government of Alberta

#### ENCOUNTERING RAPTORS

Nesting raptors are very protective. People and/or pets that get too close to a nest will be dive-bombed. It is not wise to let extremely small pets run loose when camping in remote areas. If raptor fledglings fall out of the nests, leave them alone. Raptors are aggressive parents. If you see a raptor that is too injured to fly away call a Fish and Wildlife officer.

## NATURAL RESOURCES

### ANIMAL

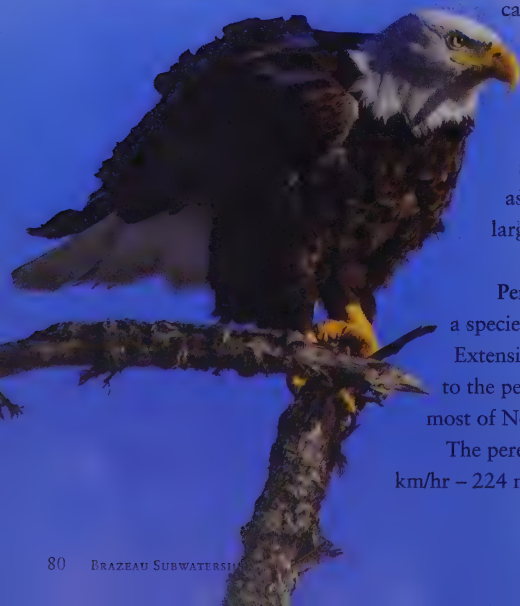
#### Birds

**Golden Eagle** *Aquila chrysaetos* prey on hares, rabbits, marmots and other ground squirrels. Females are generally larger than males. Golden eagles are the most superlative fliers among eagles and perhaps among all raptorial birds, with broad, long wings and finger-like indentations on the tips of the wing.

**Bald Eagle** *Haliaeetus leucocephalus* are dark brown with white feathers covering head and tail. They have hooked yellow beaks and large talons at the end of over-sized feet padded with small spicules that help them grasp slippery prey. The word 'bald' comes from piebald, which describes a spotting pattern of unpigmented hair, feathers, or scales (usually white) and pigmented patches (often black). When a bald eagle loses a feather on one wing, it will drop a feather on the other wing so it can keep its balance. Bald eagles can see fish from several hundred feet above the water even though most fish are counter-shaded (darker on top to make them harder to spot from above). Fishermen know how difficult it is to see fish just beneath the surface of the water when they are only a short distance away. Bald eagles make their homes in forested areas near large bodies of water, as far from humans as they are able to get. This environment ensures good fishing and large trees for nesting.

**Peregrine Falcon** *Falco peregrinus* (peregrine, the wanderer) is a species that has been brought back from the edge of extinction. Extensive use of the pesticide DDT after WWII caused such a decline to the peregrine population that by 1975, the bird had disappeared from most of North America.

The peregrine falcon is the world's fastest bird (clocked in at over 360 km/hr – 224 miles/hr in a swoop) and most widely dispersed species. Its



Bald Eagle *Haliaeetus leucocephalus*  
Photo: Bill Hunt, Images Africa

relationship with humans, through the sport of falconry, goes back as far as ancient Egypt.

Every four years, the Peregrine Falcon Survey takes place, cataloging the nesting pairs of birds in Canada. In Alberta, the Peregrine Falcon has been downgraded from “endangered” to “threatened”. To be de-listed entirely there needs to be 70 pairs of falcons producing an average of 1.5 young every 5 years. As of the 2012 survey Alberta had 68 pairs.

Peregrine Falcon nesting sites can be found along cliffs in the Brazeau Reservoir, as well as on a cliff near Drayton Valley; at Dow Chemical near Fort Saskatchewan; at Envirofuels near Sherwood Park; and within the City of Edmonton, on the high level bridge, the Bell Tower, Weber Centre and at the University of Alberta. Each season, the Alberta Conservation Association sets up peregrine watching cameras in some of these locations. These are broadcast online.



Ospreys *Pandion haliaetus* Photo-Roger Kirchen, Images Alberta

**Osprey** *Pandion haliaetus* is a large, fish-eating raptor, sometimes called fish eagle, sea hawk, river hawk, or fish hawk. Ospreys search for fish by circling high over relatively shallow water. They often hover briefly before diving feet first to grab a fish. Osprey and owls are the only raptors that have a reversible outer toe, which lets them clutch their prey with two toes in front and two behind. In flight, the osprey has arched wings and drooping wing tips, giving it a gull-like appearance. They call with a series of sharp whistles: *cheep, cheep* or *yewk, yewk*. If disturbed near the nest, the call is a frantic *cheereek!* The Brazeau Canal area is habitat for the greatest concentration of osprey nests in Alberta, about fifteen. Artificial nesting platforms built on power poles were put into the water by helicopter.

#### DDT and RAPTORS

DDT is a chlorinated hydrocarbon, which accumulates in fatty tissue. Predatory birds, with a relatively long life span, may have ingested only a small amount of DDT each day, but over time it messed with the bird's calcium metabolism, reducing the hardness of their eggshells.

## FISH

### Coldwater Game Species:

Most of these are found in the Brazeau subwatershed. Brook Trout (introduced); Brown Trout (introduced); Cutthroat Trout (introduced); Rainbow Trout (introduced); Golden Trout; **Bull Trout** (official fish of Alberta); Lake Trout; Mountain Whitefish.

**Coolwater Game Species:** Burbot, Goldeye, Lake Sturgeon, Lake Whitefish, Mooneye, Northern Pike, Sauger, Walleye, Yellow Perch.

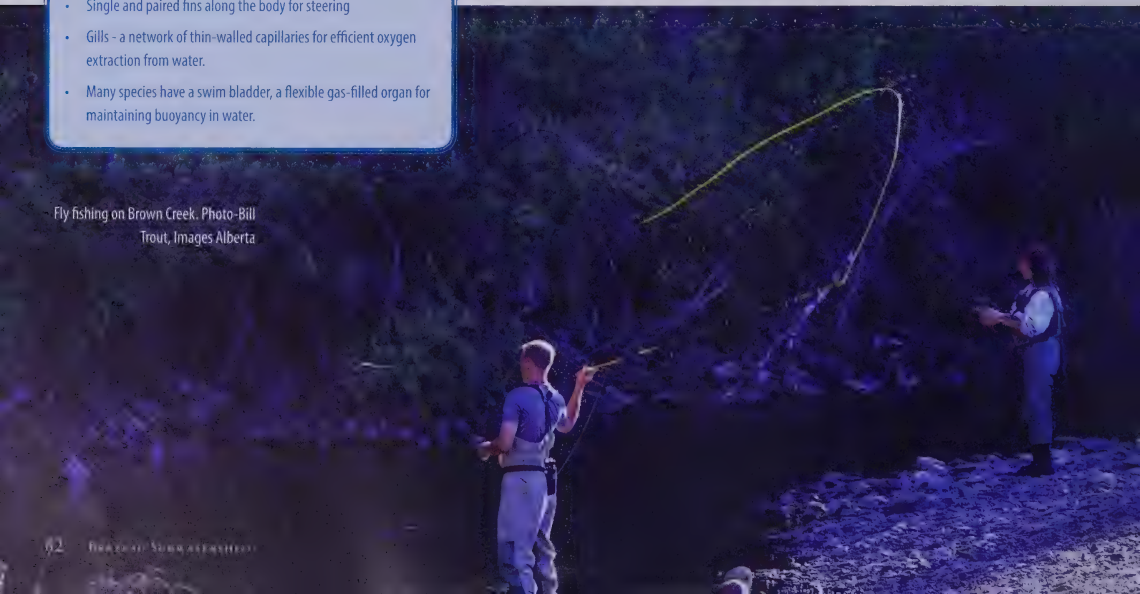
**Non-Game Species:** Brook Stickleback, Emerald Shiner, Fathead Minnow, Flathead Chub, Finescale Dace, Iowa Darter, Lake Chub, Longnose Dace, Longnose Sucker, Mountain Sucker, Northern Redbelly Dace, Shorthead Redhorse, Pearl Dace, Quillback, River Shiner, Silver Redhorse, Spoonhead Sculpin, Spottail Shiner, Trout-perch, White Sucker.

Fish are cold-blooded vertebrates, specially adapted for life in the water.

Some important adaptations include:

- Streamlined, muscular bodies, tapered at the head and tail for efficient movement through water.
- A mucous covering that waterproofs the body and reduces friction in water
- Single and paired fins along the body for steering
- Gills - a network of thin-walled capillaries for efficient oxygen extraction from water.
- Many species have a swim bladder, a flexible gas-filled organ for maintaining buoyancy in water.

Fly fishing on Brown Creek. Photo-Bill Trout, Images Alberta



## VEGETABLE

### Forests

The mixed sub-alpine forests of the upper North Saskatchewan River headwaters region are made up of limber pine, lodgepole pine, white spruce, alpine fir, as well as closed stands of Douglas fir intermixed with trembling aspen. At lower elevations, the species mix is mostly lodgepole pine, trembling aspen, white spruce, balsam poplar, paper birch, black spruce, tamarack and balsam fir.

In 1871, the Dominion of Canada incorporated Rupert's Land into the North West Territories (NWT), which included what is now Alberta. There was concern over exploitation of timber resources in the West and the destruction of timber by fire. Surveyors reported a scarcity of water for irrigation as well as a lack of timber for fuel and construction. In 1872, the Dominion Lands Act enabled the new Canadian federal government to set aside Dominion Forest Reserves to create timber revenue and protect watersheds for agriculture and settlement. The Department of the Interior was formed in 1873 to administer federal assets, including timber. An amendment to the Dominion Lands Act in 1884 identified the importance of the "crests and slopes" along the east slopes of the Canadian Rockies. It authorized reservations of land specifically for the protection of the headwaters of rivers.

Forest fires during the drought years after the turn of the 20<sup>th</sup> Century were extensive, 1910 being the worst fire year in Alberta in recorded history. This led to significant efforts to reduce fire frequency. Provincial fire legislation at that time had been written to control prairie fires; it was not adequate for dealing with fire in forested areas. The failure to understand the role fire played in fire dependent ecosystems translated into decades of fire suppression.

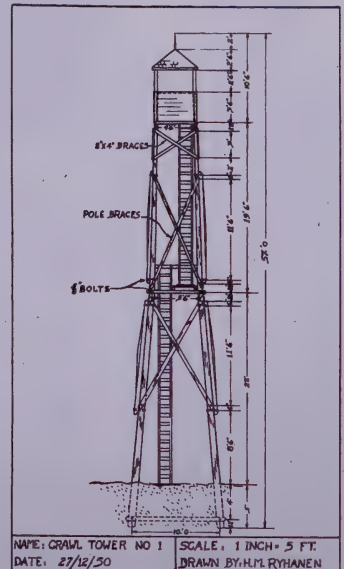
These measures increased the average age of forest stands, converted mixed-forest to conifer forest and reducing the number of open meadows.

In the 1950s, Alberta Forest Service introduced crawl towers, because the radio towers, then in use, were hampered by topographical obstructions, producing blind spots. The recommended timber for crawl tower legs was

*We are recklessly destroying the timber of Canada and there is scarcely a possibility of replacing it... It occurs to me that the subject should be looked in the face and some efforts made for the preservation of our timber.*

Sir John A. MacDonald, 1871

From Alberta Forest Service *Wooden Crawl Tower*, a historic document from the Forest History Association of Alberta.



lodgepole pine or suppressed white spruce. The cost of constructing one crawl tower: \$150.00, not including Forest Ranger labour. It was suggested that the first six feet of each leg be given a heavy coat of Osmoc and the remainder of the structure painted with 2 coats of paint to ensure that the tower would last at least ten years.

A forest ranger cabin in an Alberta forest reserve. Taken from the May, 1921 issue of *Illustrated Canadian Forestry Magazine*.



In 1857, Captain John Palliser, an Irish sportsman and adventurer, petitioned the Royal Geographical Society in Britain for support for his exploration of the country west of Red River (now Winnipeg). He received 5000 pounds sterling, to head a scientific expedition into the territory still controlled by the Hudson Bay Company. Other members of the expedition included: Dr. James Hector, geologist and naturalist; Eugène Bourgeau, botanical collector; John W. Sullivan, secretary and astronomical observer, and Lt. Thomas W. Blakiston, magnetic observer.

## MINERAL

### Oil & Gas

Oil was discovered in the Pembina Oil Field in the Drayton Valley area by Mobil Oil in February 1953. This opened up one of the largest conventional oil fields in Alberta. Many well sites are still found in the Brazeau River subwatershed.

### WHAT'S IN A NAME?

**Brazeau River** was named after Joseph Brazeau, a Missouri-born fur trader working for the Hudson's Bay Company between 1830 and 1864. He wore a flat, black hat and a flowing cloak. He may have resembled Zorro more than he did a typical, mid-nineteenth century fur trader. Because he was fluent in at least six aboriginal languages, he became the translator for the John Palliser Expedition.

## POST CONTACT – FUR TRADE

From 1805 to 1807 there was a post at the mouth of the Brazeau River called North Branch House.

In 1807, fur trader, Pruden at North Branch House sent 4 men to Acton House (near present day Rocky Mountain House) to “*fetch some old stones concealed there last spring.*” There they found “*three men who had come from Mr. Thompson, who it appears, had built into the side of a lake in the Cootanaha country...*”

From 1825 to 1827, Thomas Drummond, the assistant naturalist on the second Sir John Franklin Expedition, left the expedition at Cumberland to explore the Rocky Mountains instead of the Arctic. There he found an ancient and rare moss, *Mielichhoferia macrocarpa*, now known as: Porsild's Bryum. Members of this species have been identified in the Whitehorse Wildland Park area.

In 1859, over the course of a week, 32 year old James Carnegie, the 9<sup>th</sup> Earl of Southesk, hunting in the Brazeau River Headwaters, killed more than 30 bighorn sheep. His comment on one day's hunt: “*... a man who travels thousands of miles for such trophies may be excused for taking part in one day's rather reckless slaughter. After all, there were not more than 12 killed and a few wounded, out of a very large herd...*”

Shoulder detail from a dress bought by the 9<sup>th</sup> Earl of Southesk in 1859. It was made from mountain sheep skin. The dress, purchased in 2006 from the 9<sup>th</sup> Earl's collection of western Canadian artifacts, is now owned by the Royal Alberta Museum. Photo-Billie Milholland

“Towards the close of 1858, while visiting at the house of a friend, I happened to mention my desire to travel in some part of the world where good sport could be met with among the larger animals, and where, at the same time, I might recruit my health by an active open-air life in a healthy climate. ‘Why not go to the Hudson's Bay country?’ said one.” 9<sup>th</sup> Earl of Southesk



Rear-Admiral Sir John Franklin, Arctic explorer, aka 'the man who ate his boots' because of the starvation suffered during his Coppermine Expedition 1819-22. He and his crew never returned from their 1845 expedition to the Arctic.

9th Earl of Southesk. Photo-Royal Alberta Museum.



## POST CONTACT – SETTLEMENT

The Saulteaux (pronounced soh-toh) are a branch of the Ojibway Nation, sometimes known as Anihšīnāpē (Anishinaabe). Saulteaux is a French term meaning “people of the rapids,” referring to their former location around Sault Ste. Marie where French fur traders and the Ojibwa met to trade in the late 17<sup>th</sup> Century.

Alexis Cardinal River Indian Reserve 234 and Alexis Elk River I.R. 233 are two of the four reserves under the governance of the Alexis Nakota Sioux First Nation, a member of Treaty 6. People who belong to the Alexis First Nation are Stoney or Nakoda people. The Stoney are sometimes also known as Assiniboine. Both the Stoney and the Assiniboine are related to the Sioux people. Their traditional language is Nakoda/Stoney, or Isga Iabi.

Even in this remote subwatershed, First Nations people were continually dislocated by European settlement. Because their presence was thought to be detrimental to tourism, the Stoney were excluded from Banff National Park between 1890 and 1920.

Samson Beaver, his wife, Leah Beaver and their daughter, Frances Louise Beaver were members of the Stoney First Nation. In 1891 Samson travelled to *Chaba Imne* (Beaver Lake) with his father, Job Beaver. 16 years later, in 1907, Samson drew from memory, a map to that lake for American explorer, Mary Schaffer. In 1908, using Samson’s map,

Mary and her crew found the lake and named it HMS Chaba. We now know the lake as Maligne Lake. Mary Schaffer named Samson Peak and Leah Peak, visible from Maligne Lake, in honour of the good humoured, generous couple who contributed so much to her survey work and Rocky Mountain exploration.

### O’Chiese I.R. 203

The O’Chiese First Nation is a Saulteaux First Nation. The ancestors of O’Chiese First Nation people spent their winters in the Baptiste/Nordegg River region hunting moose and deer, and trapping small game. In the summer they migrated south to the Milk River area in Montana. O’Chiese First Nation is a signatory to Treaty 6 adhesion, signed on May 13, 1950.

Europeans adopted names that other tribes used for the Assiniboine. In Siouan, the Assiniboine called themselves the Hohe Nakota. The English borrowed Assiniboine from French colonists, who had adapted it from what they heard from the Ojibwe. They called the people in Ojibwe asinīi-bwaan (stone Sioux). The Cree called them asinīpwāta.

Other tribes associated “stone” with the Assiniboine, because they cooked with heated stones. They dropped hot stones into water to heat it to boiling for cooking meat. Some writers see this as a confusion between “-boine” and French “bouillir”, to boil.

The first European to describe the Assiniboine was Hudson’s Bay Company employee, Henry Kelsey in the 1690s. Later Jean Baptiste de La Vérendrye and his sons (1730s), Anthony Henday (1754–55), and Alexander Henry the younger (1800s) confirmed that the Assiniboine held a vast territory across the North Saskatchewan River watershed.

### Mary Schaffer Warren (1861-1939)

A Philadelphia Quaker, she came to the Canadian Rockies looking for peace and quiet. She spent 30 years exploring, painting, photographing, speaking about, and writing about remote mountain locations.

After losing her mother, father and husband in 1903, at the age of 42, Mary Schaffer was alone. In 1904, Mary returned to the Rockies to complete the botanical guide her husband had started. The completed book, *Alpine Flora of the Canadian Rockies*, is illustrated with her paintings and photographs. The First Nations people called her Mountain Woman.



## IMPOUNDMENTS

### Brazeau River Dam

The earliest scheme to harness the power of the Brazeau River emerged in 1913. It involved a dam and storage on Brazeau Lake. The potential power generation, 5,000 to 10,000 kVA, would have been used by Edmonton and Calgary, both about 400 km (249 mi) from the generator. This was an ambitious plan: long-distance transmission was not common at the time). The plan was scuttled after the discovery of a large underflow at Brazeau Lake, precluding its use as a storage facility.

The present Brazeau Dam, the largest hydroelectric plant owned by TransAlta (formerly Calgary Power), is a 400 ft (122 m) dam on the Brazeau River. In 1961, Calgary Power, in partnership with the Alberta government, began construction of a multi-use dam on the Brazeau River. The first turbine was commissioned in 1965.

Brazeau River Dam. Photo-Bill Trout,  
Images Alberta



By 1967, a second unit at Brazeau was supplying power. An unusual feature of this hydroelectric development is a pump system that lifts water from the reservoir into the 20 km (12.5 mi) long canal leading to the power plant, so it can operate at low reservoir water levels.

The present 99 square kilometre (38 square mile) **Brazeau Reservoir** was created on the lower course of the river. Its hydroelectric power plant is Alberta's largest, with a capacity of 355 MW and an annual production of about 394,000 MW·h of electrical energy. The area is popular for boating, but care must be taken to avoid driftwood and snags just below the water's surface.

Former Brazeau County Councillor  
and NSWA Board member, Bob  
Kitching at the Brazeau Reservoir.

Photo-Billie Milholland



## 21<sup>ST</sup> CENTURY

Weyerhaeuser's Drayton Valley facility was one of the first in the province to be certified under the FORESTCARE program that was developed in the 1990s to encourage forestry companies to become more committed to best practices that included environmental concerns.

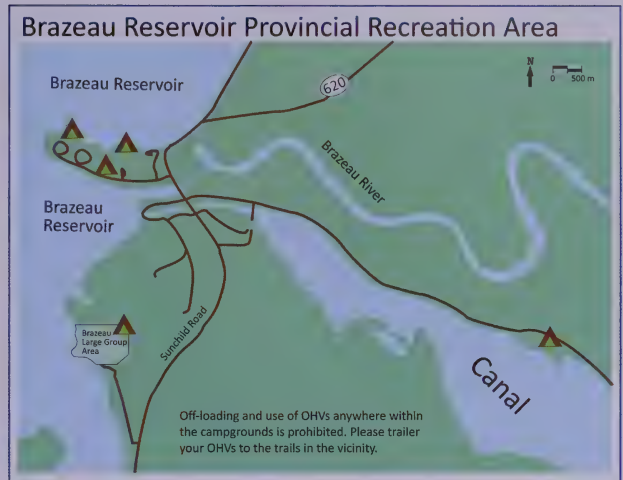
A partnership between Weyerhaeuser Canada Ltd. and Drayton Valley Power uses wood waste to boost the province's power grid by an extra 10.5 megawatts of electricity each year. The partnership operation has reduced air-borne particulate emissions, nitrogen dioxide, carbon monoxide and volatile organic compounds.

Although Weyerhaeuser dominates the forestry industry in the Brazeau subwatershed, opportunity still exists for smaller sawmills. Tall Pine Timber Co. Ltd. began operating in 1968 and produces 30,000 m<sup>3</sup> of spruce and pine lumber annually. It was the first sawmill in the Rocky/Clearwater forest to produce wood chips for sale to pulp producers. Unger's Sawmill was established in 1976. At Unger's Sawmill, the current production is 17,000 m<sup>3</sup> of lumber from small timber permits, salvage and deciduous trees from private land.

In the 1990s, the national parks introduced a system of 'prescribed burns' in hope that these changes would restore deciduous forests and grasslands, plus increase age variation in park forests.

At the turn of the 21<sup>st</sup> Century, about 60% of the eastern slopes pine forest was over 80 years old. Old growth forest is particularly susceptible to insect infestation.

The pressure of random camping, the significant refuse left behind for the county to clean up and the easy access to the backcountry by off-road vehicles is a significant 21<sup>st</sup> Century issue.



## FOREST PESTS IN THE HEADWATERS

**Large Aspen Tortrix** *Choristoneura conflictana* is one of the most serious pests of trembling aspen. Aspen is the preferred host, but the tortrix will also feed on willow, balsam poplar and white birch. Outbreaks may last 3-4 years. Damage is predominantly caused by the later larval stages which may also feed on buds. Massive defoliation can reduce growth, but rarely results in tree mortality.

**Bruce Spanworm** *Operophtera bruceata* (the little green inch worm we loved when we were kids) prefers to feed on Trembling Aspen, but will also feed on willow, balsam poplar, white birch, Saskatoon, currants and wild rose. Outbreaks don't last more than 2 years and decline quickly.

**Tent caterpillar** *Malacosoma disstria* is the most serious defoliator of hardwoods. Aspen is the preferred host, but the tent caterpillar will attack almost any hardwood species during a tent caterpillar outbreak, which usually last 2 to 4 years. Infestations reoccur every 8-10 years. Several years of severe defoliation can kill trees, especially during a prolonged drought when the trees are already stressed.

Incidence of tent caterpillar outbreaks in the North Saskatchewan River headwaters region is low; the only infestation recorded was noted in 2002.

**Mountain Pine Beetle** *Dendroctonus ponderosae* is the most destructive pest of mature pine forests in North America. Mature and over-mature pine under stress are the preferred host, but as populations increase, smaller-sized pines and healthy trees can be attacked. The beetle kills trees by clogging and destroying the conductive tissue. The larvae feed in the phloem of the tree, disrupting the flow of water and nutrients. They introduce a blue-stain fungus which prevents the tree from using pitch to repel the beetles.

As of 2011, the Mountain Pine Beetle had not caused serious harm to the trees in the North Saskatchewan River watershed. Insects usually die in sub-zero temperatures because the water in their bodies freezes, but mountain pine beetles produce their own



Large Aspen Tortrix. Photo-Steven Katovich, USDA Forest Service

antifreeze. The beetles produce anti-freeze in late fall, reaching their full tolerance to cold by January. After that, sustained temperatures of -40 C or lower for at least two full days are required to kill them. Unseasonably cold weather early, before the beetles produce glycerol for the winter, is ideal for reducing pine beetle populations.

Extreme fluctuations in winter temperatures, from cold to unseasonably warm then back to below freezing also reduces beetle populations.

*“Diversity, both in species and age structure, can help to limit the damage inflicted by many tree pests.”* Mike Undershultz, Forest Health Officer with Sustainable Resource Development (SRD).



Tent Caterpillar. Photo-Griff Wigley, Locally Grown Northfield

## NEW THREAT FOR RAPTORS:

PBDE, polybrominated diphenyl ether and its much iteration, commonly used as a fire-retardant, may be causing new problems for birds. It accumulates similarly to the way DDE and PCB have done in fish and birds in the past.



# MODESTE SUBWATERSHED

**T**he Modeste subwatershed lies in both the Foothills and Boreal Forest natural regions of Alberta, covering 482,746 hectares (1191 acres) including 21,461 hectares (52 acres) of natural and artificial water bodies. Brazeau, Clearwater, Leduc, Parkland and Wetaskiwin Counties are within the Modeste subwatershed, as well as the settlements of Alder Flats, Betula Beach, Breton, Buck Creek, Carvel, Drayton Valley, Duffield, Fallis, Kapasiwin, Keephills, Lakeview, Lodgepole, Point Alison, Rocky Rapids, Seba Beach, Tomahawk, Wabamun, Winfield and the First Nations Reserves Wabamun Lake 133A, O'Chiese 203 and Buck Lake 133C.

The Jack Pine Provincial Grazing Reserve and the Buck Mountain Provincial Grazing Reserve are within this subwatershed.

## NATURAL FEATURES

### Sturgeon Hole

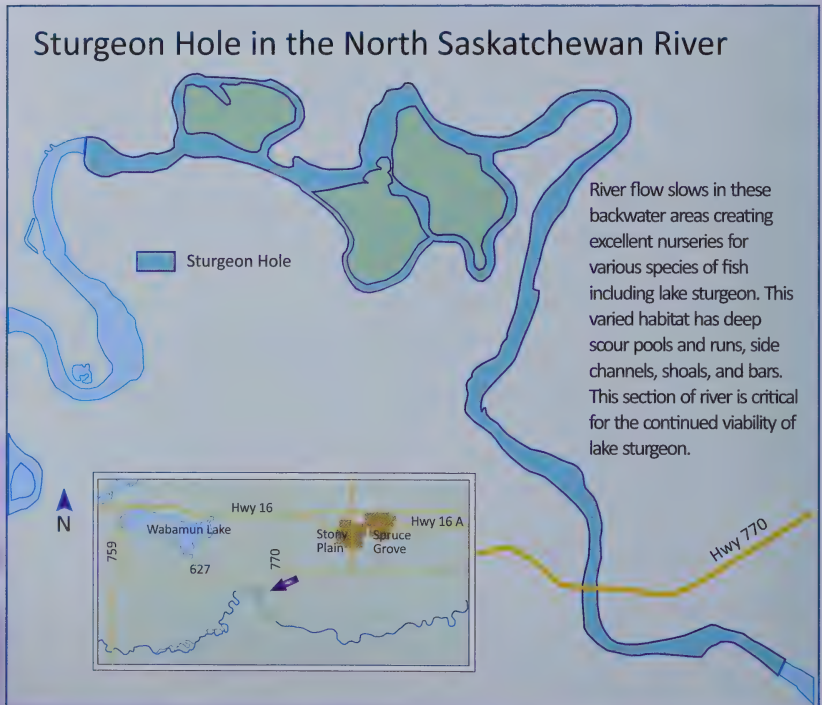
This is one of a few sturgeon holes in the North Saskatchewan River. The area is critical for the continued viability of lake sturgeon and several other fish species. It is in the vicinity of the confluence of Wabamun Creek and the North Saskatchewan River,

#### STURGEON HOLE

Lake sturgeon can grow up to 9 feet (3 meters) long and weigh nearly 200 pounds (90 kilograms). They are a long-lived fish, males living up to about 55 years and females reaching 150. Lake sturgeon are living fossils, having survived unchanged for more than 150 million years. Lake sturgeon spawn during May and June. Before spawning, adult sturgeon gather in groups in deep holes near spawning sites. At this time, sturgeon sometimes roll around near the bottom of the stream and then leap out of the water fall back in with a loud splash.

and downstream to about the Highway 770 river crossing.

Backwaters in the sturgeon hole provide low flow velocities and depositional areas suitable for rearing various species of fish including lake sturgeon. The section of river is located in a stream transitional area. Upstream, the channel is unconfined, meandering, with multiple side channels, oxbows, islands, and sand bars. Downstream the river is confined, sinuous, with a narrow flood plain. The varied habitat created at this location includes deep scour pools, deep runs, side channels, shoals, and bars.





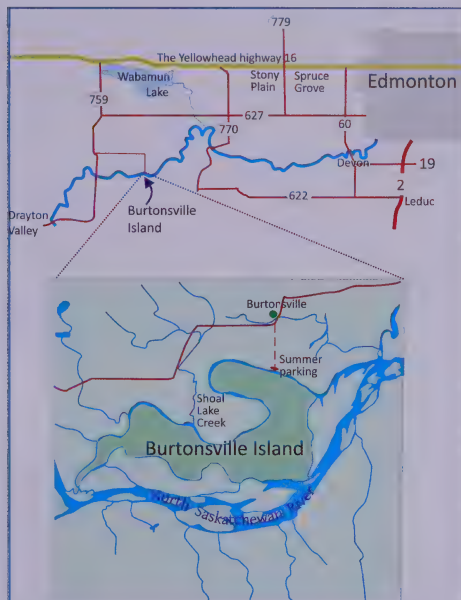
## Burtonsville Island

Burtonsville Island is a Provincial Natural Area that is actually one large island and several smaller islands, creating a variety of riverine habitats. Bird life is plentiful and diverse. Burtonsville Island is surrounded by the fresh water of the North Saskatchewan River and Shoal Lake Creek. Other than a round of logging through the 1940's and 1950's the island has suffered minimal impact from human activity. The island provides outdoor education experiences for students from the University of Alberta, Grant MacEwan College and many other youth groups in the Edmonton area. Burtonsville Island can accommodate a wide variety of user interests, and is large enough to isolate and disperse the sites where outdoor activities may be conducted.

Initial interest in protecting Burtonsville Island occurred in the early 1950's. In celebration of the Wildlife '87 centenary, the island was officially designated a natural area, ensuring its continued protection.

**Wabamun Lake**, listed as White Lake on Palliser's 1865 map, is one of the most heavily used lakes in Alberta. It is 65 km (40 mi) west of Edmonton. People come to boat, swim, fish, camp, bird watch and hike. It is a large lake: 19.2 km (11.9 mi) long, 6.6 km (4.1 mi) wide, covering 82 square km (32 square miles). In places, the water is 11 m (36 ft) deep.

The lake is contained by a wide glacial meltwater channel. Its long fetch, aligned with prevailing winds, results in frequent heavy wave action. Natural beaches rim much of the shoreline. Sandy areas are found at depths less than 2 m (6.5 ft) with soft clay or organic sediments over most of the lake bottom. Marshy zones surrounded by sedges and cattails are frequent along the perimeter. Several gravel pits have been excavated on the north side of the lake. A variety of migrating, breeding and molting wildfowl frequent the lake, because heat from the TransAlta power stations keeps the water ice-



**PEOPLE USING BUCK MOUNTAIN  
GRASING RESERVE MUST:**

- Not litter;
- Have direct control of any animal brought onto the agricultural disposition land;
- Not park vehicles so that they block an approach to land;
- Not enter or use any building or improvement on the disposition;
- Not cause any damage to the agricultural disposition land or the property of the disposition holder;
- Leave gates and other property as they were found;
- Comply with an applicable recreational management plan, if any; and
- Comply with the restrictions, prohibitions, terms and conditions, if any, imposed by the Local Settlement Officer, or Director.

free. Coal deposits surrounding the lake are mined by TransAlta to operate power plants.

Large colonies of red-necked and western grebes (up to 560 nests recorded) nest on Wabamun Lake. The cooling ponds associated with the power plants at Wabamun provide year-round open water for hooded mergansers, common mergansers and several thousand mallards. Ospreys nest on man-made structures (raptor platforms and power structures) in the area, and peregrine falcons nest at the three power plants. A significant number of Canadian toad records occur in the vicinity of Wabamun Lake, as do a number of rare plant species.

Surrounded by boreal forest (pine and aspen), **Buck Lake** is less developed than most lakes close to Edmonton. Crown land surrounds some of the lake, limiting development. On north end of the lake, crown land is used as a grazing reserve. Calhoun Bay Camp is run by the Province of Alberta. Private lands are subject to restrictions on how much forest can be cleared. In order to stabilize lake water levels,



Pier at Seba Beach, east end of 5th street, looking east over Wabamun Lake. Photo-Robert Burkholder, Images Alberta

the provincial government built an outlet control weir at the north end on the lake where Buck Lake Creek flows out. Buck Lake Campground in the hamlet of Buck Lake has a beach, boat launch, picnic shelter, picnic tables and camping spots. A third of the shore line is crown land, resulting in large areas of continuous forest.

The Buck Mountain Provincial Grazing Reserve abuts part of the north shore. It covers about 17,114 acres (6926 hectares) including the 3,100 ft (945 m) hill known as Buck Mountain.

In the spring, the riparian areas resound with the music of nesting song birds. Ducks, geese and gulls populate the marshes and lake edges. In mid-summer, hummingbirds are active; pipers and blue heron wade the shallow waters; hawks, eagles and owls swoop,



Western Canadian Wagon Train event in the Buck Mountain Provincial Grazing Reserve. Photo-Carol Rusinek, Images Alberta



Wagon Trains, trail riding groups, hikers and wildlife photographers help to raise the awareness of the importance of wilderness conservation. Photo-Carol Rusinek, Images Alberta

and loons call out over the water in the evening. Muskrat and beaver are busy. In the fall, deer and moose are often seen. Winter brings out rabbits, bluejays, chickadees and ice anglers, considered by some to be ‘wildlife’.

Coyote Lake is surrounded by one of the richest biological areas of Alberta. Tucked in a transition zone between dry mixed wood boreal forest and central parkland natural region, the Coyote Lake watershed supports over 22 mammal species, 154 bird species, 266 plant species including a number of rare and uncommon orchids. It is in a rolling hill terrain with wetland depressions, tamarack-black spruce-sphagnum peatlands, willow-birch shrubland, sedge meadows and small sloughs. Upland vegetation is aspen and balsam poplar forest, with some areas of white spruce. It is the only known Alberta location for Columbian watermeal *Wolffia columbiana*, the world’s smallest flowering plant, a floating aquatic plant in the duckweed family.

The area is important feeding habitat for great blue heron as well as nesting habitat for red-necked grebe, common loon and ring-necked duck.

In 1996, landowners, Doris and Eric Hopkins, donated their private property to the Nature Conservancy of Canada (NCC). Combined with donations from other landowners and land designated as Natural Areas by the Province of Alberta, there is now 800 acres (324 hectares) of lands conserved by NCC. The **Coyote Lake Nature Sanctuary** has two designated areas: the Nature Sanctuary (320 acres/129 hectares) and the Conservation Area (480 acres/194 hectares).

Because the area has remained so untouched, it can be used as a baseline guide for gauging the health of other natural areas. Coyote Lake is to what other areas aspire.

Within the forest of the Coyote Lake Nature Sanctuary is the **Coyote Lake Memorial Grove**, dedicated to the memory of those who have held nature close to their hearts. It is designed for people who want to remember their loved ones in a peaceful natural environment. There is room along a short loop trail for permanent plaques to be placed. The trail is wheelchair-friendly.

# NATURAL RESOURCE

## ANIMAL

### FISH

#### Wabamun Lake

First Nations people harvested fish here for centuries before the fur trade brought Europeans into the area. At the turn of the 20<sup>th</sup> Century, a commercial fishery on Wabamun Lake exported whitefish by box car load to J.Y. Gainer (later he operated Gainers Meat Packing Plant) in Edmonton and he shipped the fish east, as far as New York City.

*“In the winter holes were cut 150 feet [46 metres] apart in the lake ice and nets were put in the water. If the net pulled the gills back the fish would drown and were not fit to eat as the flesh was soft. It was easy to tell a fish that had drowned because the eye would be a milky colour, otherwise the eye would be clear.”*

Before the First World War people could sell a small fish for 4 cents and a large one for 6 cents. Many people made 60 dollars a week selling fish. Solomon Letendre, who lived on the north end of Moonlight Bay, smoked fish for people. His smoked fish were in great demand. Seba Beach, a summer village on the western edge of the lake, once had a whitefish cannery.

#### Buck Lake

In 1883, geologist, Joseph Burr Tyrell, with the Geological Survey of Canada, made a note of the abundance of whitefish in Buck Lake. He was on his way to the trading post at Rocky Mountain House, which relied heavily on these fish as a supplementary food source. Early in the 20<sup>th</sup> century Buck Lake had a large winter whitefish industry. These fish were shipped east, out of the province.

### BIRDS

The Modeste subwatershed has habitat for ravens, gray jays and great gray and barred owls, which normally are found further north and west. Migrating, breeding and molting water birds, including gulls, terns, rails, herons, loons, kingfishers, sandpipers, and American white pelicans are easily spotted on Buck Lake.

#### The DUCKWEED FAMILY

(Lemnaceae) is made up of 38 species of minute flowering plants, floating at the surface of ponds, swamps and quiet streams. They are severely reduced flowering plants, without leaves or stems, and with only the remnants of vascular tissue in some species.

Members of the genus *Wolffia* are the ultimate in reduction of a flowering plant consisting of tiny, rootless spheres only 1 mm long (or less). The common name “watermeal” is often used for *Wolffia* species, because they look and feel like small, mealy particles in the water. Five species of *Wolffia* are now known to occur in the western North America, with 11 species worldwide.



Common Loon *Gavia immer*. Photo-  
Robert Burkholder, Images Alberta

**Common Loon** *Gavia immer* has intense red eyes, black heads and necks, and white striping, checkering, and spotting on their backs. Their haunting cries, which go from tremolos to yodels, can be heard at great distances. Loons breed on quiet, freshwater lakes where they are sensitive to human disturbance.

**Common Merganser** *Mergus merganser* is a large, slender diving duck. The showy males with their dark, iridescent-green heads, orange beaks and bright white bodies are easily identified, but the ginger headed female is more often spotted. Once the chicks leave the nest, the males take a holiday, gathering in flocks away from their families, leaving the females to feed and protect the young until fall. Mergansers are sometimes known as ‘sawbills’, because of their serrated beaks, designed to grip slippery fish. Mergansers also eat snails, crayfish, worms, insect larvae and amphibians. They are cavity nesters requiring an entrance 15 cm (5.9 in) in diameter.

**Red-necked Grebe** *Podiceps grisegena*, a medium sized diving duck, builds a nest from water plants on top of floating vegetation in a shallow lake or bog. With a small wing area grebes need a long run across water to get up enough speed for take-off. The red-

Common Merganser *Mergus merganser*  
baby catching a ride on mom. Photo-  
Roger Kirchen, Images Alberta



Red-necked Grebe *Podiceps grisegena* feeding baby. Photo-Roger Kirchen, Images Alberta

necked grebe uses its feet for propulsion underwater, steering by rotating its legs. Parents take turns incubating the eggs for 21–33 days until the chicks hatch. The chicks climb immediately onto either parent’s back, where they stay until they are 10–17 days old. These birds feed mostly on aquatic invertebrates including water beetles, dragonfly larvae, crayfish and snails.



**Great Blue Heron** *Ardea herodias* is a tall, graceful wading bird with long wings, thin legs and a short tail. It is the biggest heron species in North America. The heron’s long, stilt-like legs are designed for foraging in shallow waters for fish, frogs, salamanders and large insects. They stand so still in long reeds that they are often heard before they are seen. A low croak or a series of bill clapping and chattering give away their hiding place. Herons usually nest in colonies, in trees close to lakes or wetlands.

Great Blue Heron *Ardea herodias*.  
Photo-Roger Kirchen, Images Alberta

**Black Tern** *Chlidonias nigers* is a small, swift flying marsh bird that is in population decline due to disappearing wetlands and chemicals leaching into the wetlands that have survived. These terns forage in flight, dipping to the water surface and catching flying insects in the air. Both parents build the nest low in a marsh, on a floating mat of plant material; sometimes on abandoned muskrat houses or on the ground close to water.

Black Tern *Chlidonias nigers*.  
Photo-Roger Kirchen, Images Alberta

## OTHER CREATURES

**Coyote** *Canis latrans* is smaller than the gray wolf, with longer ears, thinner frame, face and muzzle and a larger braincase. The coyote wears its tail down when running or walking, rather than horizontally as does the wolf. The first Europeans to come to North America did not distinguish between coyotes and wolves. It wasn’t until 1819 that Thomas Say, during a government-sponsored expedition, fifteen miles up





Coyote *Canis latrans*. Photo-Roger Kirchen, Images Alberta

the Missouri River from the mouth of the Platte, first scientifically described the coyote as a separate species. The Spanish called it “Spanish fox” or “jackal”. The word coyote comes from the *Nahuatl* (Aztec) *coyotl*. English speakers spelled it *cayjotte* and *cocyotie*, until the spelling was standardized as “coyote” by the 1880s.

## VEGETABLE

### Timber

Timber from the Modeste watershed supplied the direct needs of the Edmonton Area from the late fur trade era to 1926 with the last official North Saskatchewan River log drive. After that, the Fraser Company brought its own saw mills up river to saw lumber on site. Before the First World War the Old Mill Trail followed the north shore of the North Saskatchewan River west from Edmonton into the Modeste subwatershed. John



The cook house at Morrow Lumber Co. 1920s from “A Patchwork of Memories”



Walter and D.S. Fraser used it as a supply trail for their logging operations along the river. At the turn of the 20<sup>th</sup> Century local sawmills around Buck Lake were the main employers. By the 1930s all the largest trees had been harvested.

## MINERAL

### Coal

The first official coal mines around Wabamun Lake were on railway land. In 1907, Dr. W.C. Dunn, a dentist from Wisconsin, found coal while digging for water to supply his homestead. Underground coal mining operations started in 1910. These mines served a small local market at first. In 1948, when bigger markets opened up, strip mining began. Between 1954 and 1968 a four-unit power generating plant was built. By 1956, the Calgary Power (now TransAlta Utilities) Wabamun coal powered generating plant was in operation. The Whitewood Coal Mine, located northwest of Wabamun, became operational in 1962 to supply coal to the generating plant. Two other power generating plants were built on the south shore of the lake and the Keephills coal mine was developed to supply the two newer plants. The Sundance plant, on the opposite shore, began operations in 1970. A third plant, Keephills, is on the southeast end of the lake. All the power plants have separate cooling ponds.

The Highvale Coal Mine near Wabamun Lake is the largest surface strip mine in Canada. It supplies coal to the TransAlta Utilities Corporation Keephills and Sundance power plants.



Modeste Creek. Photo-Brian Peters



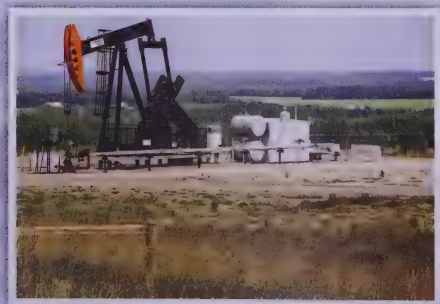
Wapomon (Mirror) Lake. Photo-Roger Kirchen, Images Alberta



## Oil & Gas

Oil well Buck Mountain Provincial Grazing Reserve. Photo-Carol Rusinek, Images Alberta

In the Buck Lake area, intensive drilling for oil and gas began in the 1950s and drilling rigs still dot the countryside.



The Discovery Well, drilled by Mobil Oil, was spudded on February 23rd, 1953. This oil field (the Pembina) was the largest in North America. Other oil companies flocked to the area. Within a year, the boom was on. More than 70 oil companies set up field operations in Drayton Valley. Before the boom, two churches, a post office and a two-classroom school were the extent of the community. In one year (1953) the town grew from 75 to 2,000 people. The hamlet was incorporated as a village in February 1956. On February 7<sup>th</sup>, 1957, Drayton Valley was became a town.

## Soil

In 1929, the Department of Soils University of Alberta established the **Breton Classical Soil Plots** near the Village of Breton, 100 km (62 mi) southwest of Edmonton. These plots were originally designed to find a system of farming suitable for grey-wooded soil, now known as Gray Luvisolic soils. These soils occur in the northern interior plains of Manitoba, Saskatchewan, and Alberta. Alberta has 20 million hectares of Gray Luvisolic soil, of which 5.7 million hectares have potential for cropping. On the Breton Plots, western farmers learned how to farm grey-wooded soils. Unlike loam, grey-wooded or luvisolic soil is topsoil thin, low in organic matter and difficult to farm.

Local farmer, Lou Hendrigan, wanted researchers to be guided by Mother Nature. From his observations he believed grey-wooded soil was more suited to pasture than crops. He lobbied for demonstration plots to show the benefit of non-cropping systems.

The Breton Plots are the only continuous, long-term plots on Gray Luvisols soils in Canada and possibly in the world. Farmers and rural communities have benefited



Canola field south of Highway 624. Photo-  
Robert Burkholder, Images Alberta

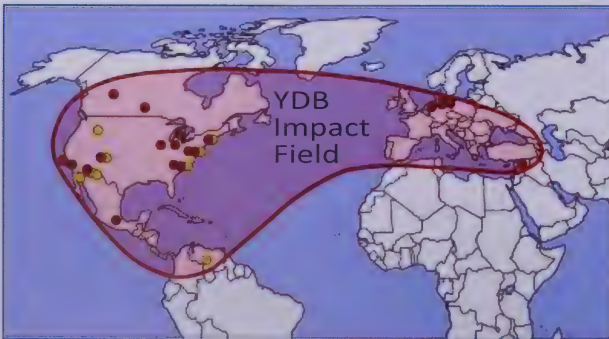
from the work done over the past 85 years. Experiments have included management of straw/tillage and phosphorus fertilizer. The plots have been used to assess interactions among the environment, crop productivity and soil quality. The Breton Plots are a part of the North American Great Plains Network and the Global Change and Terrestrial Environment Soil Organic Matter Network. The Breton Plots are now an Alberta Registered Historic Resource.

## PRE - CONTACT

Cretaceous Age Edmonton Foundation (formed between 135 and 65 million years ago) is the oldest rock formation exposed along the North Saskatchewan River. It consists of sandstone, mudstone, shale and sporadic coal seams. The high cliffs overlooking the river valley south of Stony Plain is a good place to see this.

Paleocene Age rocks (formed between 66 and 56 million years ago – the age of mammals) from the Paskapoo Formation can be seen along the river, south of the Town of Tomahawk.

About 12,500 years ago the ice front of the retreating glacier of the last glaciation was just northeast of Tomahawk. The land west of it for about 35 mi (22 km) was submerged in the melt water of Glacial Lake Drayton Valley. This lake lasted about 300 years. Lake Wabamun, the land around the present Towns of Tomahawk and Thorsby were free of ice, but were submerged under Glacial Lake Wildwood.



### BUCK LAKE CHOBOT SITE

Nearly 2/3 of the fluted points found in Alberta come from hills or ridges like Buck Mountain near Alder Flats. It is believed that people, during the Early Prehistoric period, sought high locations to monitor the movement of game in the relatively open post glacial environment. In the Modeste watershed fluted points have also been found in the Drayton Valley area.

*“There are 18 archeological or geological hot spots around the world that the researchers have identified as having evidence of a catastrophic meteoric or cometary explosion about 13,000 years ago.”*

One of those sites is at Buck Lake, Alta. Anton and Maria Chobot spent three decades uncovering numerous Clovis artifacts, all from a layer of black, carbon-rich soil called the Younger Dryas Boundary (YDB). This layer has been found in excavation sites around the world. It’s thought to be the result of widespread fires caused by an impact from space. The Chobot site includes a layer of dirt containing approximately 13,000-year-old “Clovis points” (chiselled stone spear tips used to hunt woolly mammoths and megafauna) that appear just below a thin, black mat of charred material.

Researchers *“believe the charred layer represents the fiery fallout of a massive extraterrestrial impact that abruptly ended the Clovis culture, kick-started the extinction of mammoths, sabre-toothed cats and a host of other prehistoric creatures and wreaked havoc on global climate, initiating a 1,000-year cooling known as the Younger Dryas.”*

## WHAT’S IN A NAME?

### Wabamun Lake

On John Palliser’s map, 1865, it is called White Lake. He said he emerged from the forest and *“came upon the deep very clear blue lake.”* The Methodist Mission, and later the Dominion Lake Survey called it White Whale Lake for the large whitefish caught in its waters; this name appears on maps from the late 1800s. The Cree people knew it as *wapamon saka hikan* (Mirror Lake). The lake’s name reverted back to the original Cree name sometime near the turn of the 20<sup>th</sup> Century.

### Buck Lake

The Cree people called the whole area around Buck Lake, *minnehik* (place of pines). On the Arrowsmith map of 1859, Buck Lake was named Bull Lake, from the Cree *ayapew saka hikan* (Bull Lake). **Buck Lake Creek**, on the other hand was known by the Cree as *namao sipi asis* (Sturgeon Creek)

The Cree called **Hasse Lake**, *maskwasis saka hikan* (young bear lake) and the fur trading post at **Boggy Hall**, *maskikiwin kamik* (building in the bog).

## POST CONTACT – FUR TRADE

During the fur trade era, the North Saskatchewan River through the Modeste subwatershed was a transportation corridor from Rocky Mountain House to Edmonton with small supply depots along the way. (Boggy Hall, White Earth House, Quagmire House)

In 1809 David Thompson was at Quagmire House, on the left bank of the river about 1.5 km (1 mile) upstream from the Barrymore Ferry. He called it ‘Fort Muskey.’

In 1810 Alexander Henry the younger traded at what he called New White Earth House (near the mouth of Wabamun Creek). Later that year, he and six men in a boat met David Thompson at Boggy Hall, just below Blue Rapids. He reported the country on both sides of the river thick with woods and the dung of buffalo, moose, red deer (elk), antelope and grizzly bear. In November of that year Alexander Henry recorded his fur supply: 720 beaver, 33 grizzly bear, 20 buffalo robes, 300 muskrat and 100 lynx.

## POST CONTACT – SETTLEMENT

### FIRST NATIONS PEOPLE

In 1877 *Kees-Kee-Chee-Chi* (Alexis) and his people, who hunted and fished in the Modeste subwatershed, signed Treaty No. 6 (see *Frog subwatershed for more about Treaty 6*).

Former Brazeau County Councillor and  
NSWA board member, Bob Kitching  
in the marshy field where Boggy Hall  
once stood. Photo-Billie Milholland



Nakoda and Cree people were already living on the north east shore of Wabamun before lands for the reserve were set aside in 1892. The families living there then included the Bearheads, Pauls, Firebags, Ironheads, Burnsticks, Michells and Wabamuns.

The **Alexis Stoney Indian Reserves 133A and 133B** were located on the eastern south shore of Wabamun Lake. In 1892 four or five families from the Sharphead Band of Wolf Creek joined them as well as 2 families from Buck Lake. Because Paul Firebag was the first chief of the reserve, the people have since been referred to as Paul's Band. The first reserve name was changed from Alexis to Wabamun and is now known as Paul Band First Nation. In 1906, the Paul band surrendered 426 acres (172 hectares) of their reserve land to the township of Wabamun so a new town site could be established in the hope the railway would bring economic development through their reserve. The original Town of Wabamun was moved across the ice to the new location. The Summer Village of Kapasiwin now sits on part of that original site of the Town of Wabamun.

In 1911, an additional 5,000 acres (2023 hectares) of reserve land was surrendered, of which 100 acres (40 hectares) became the Hamlet of Duffield. The remainder was sold as farmland by Indian Affairs. Over the years, some of these lands have been returned to the Paul Band.

## HOMESTEADERS

Homesteads were established in the Burtonsville area in the late 1800's, as loggers moved up-stream in search of timber. With the completion of the Grand Trunk Railway through Duffield in 1910 came substantial increase in settlement to the area. By 1912, one of the settlers, Cornelius Burton, established a Post Office in Burtonsville, just north of the island and Burtonsville Island formally took its name from that.

In 1902 it took three weeks to travel the sixty miles from White Whale Lake (Wabamun) to Edmonton. After the trains came the trip could be made in two hours.

When the Grand Trunk Pacific Railway came through on the north side of Wabamun Lake there was only one large flat spot to build a railway station. From there the community of Wabamun became the trading, mail and tourist centre for the area. Commercial ice harvesting, commercial fishing, coal mining, mink ranching and tourism brought people and wealth into the area.

**Before the First World War,** Logs were cut during the winter using axes and crosscut saws. The logs were then skidded with horse power to a site where the logs were stored until spring runoff allowed them to be floated downstream.

A sawyer was paid per thousand board feet sawed or whatever deal could be made. Small sawmills had a crew of three men, a sawyer, a tail sawyer and a canter.

The **sawyer** was the boss, the man with his hand on the controls, the man who decided what would be cut and how.

The **tail sawyer** kept an eye on the cut, pulled the sawed slabs off and stacked them.

The **canter** put the logs in place for sawing, big end first. He had to offset the end, so the log would be sawed straight. Then he set the **tail dog** (clamp) to hold the log in place. When the log returned after the first cut he loosened the dog and used a **canthook** to give the log a half-turn so the flat side was against the bunks. Then he set the dog again. For the next cut he gave the log a quarter turn, then a half turn on the third pass. That finished the log.

There were also a couple of other men (or boys) to keep a supply of logs on the runway and shovel sawdust. At least one horse was needed for skidding logs.

Soon Wabamun had a telephone system, post office, livery stable, blacksmith shop, two hotels with dining rooms, a doctor and pharmacist, a pool room and barber shop, several stores, a daily stage coach connection to Lac Ste. Anne, a curling rink and skating rink in the winter. Cottage subdivisions sprang up at Lakeview on Moonlight Bay and at Kapasiwin. These were the first summer villages in Alberta. By 1914 there was even a weekly newspaper, the Mirror. Wabamun was a tourist resort on the Grand Trunk Pacific Railroad, which ran summer weekend excursion trains from Edmonton. Sailing, rowing, fishing, moonlight trips on the tour boats, swimming, picnics on the beach, a bandstand and dance pavilion in the park, beer in the hotels.

At the turn of the 20<sup>th</sup> Century, the first settlers to migrate to the Tomahawk Creek area were lumberjacks, working the Burtonsville flats in the winter and driving logs on the river down to sawmills in Edmonton in the summer.

There were no roads along Buck Creek and Poplar Creek (now known as Modeste Creek), but in the winter, loggers travelled easily over the frozen ground, cutting down trees to float down the creeks in the spring. Those logs were caught and held at a boom

Decking logs for river drive  
to Edmonton 1921-22 from  
"Tomahawk Trails"





camp at the mouth of Buck Creek on the North Saskatchewan River. Men and logs waited there for more logs to come down the North Saskatchewan River from creeks and streams as far upstream as the Brazeau River. Once the logs were collected, there would be an enormous log drive down river to John Walter's and D. R. Fraser's saw mills at Edmonton.

In 1905, it took settlers two days to travel from Tomahawk to Stony Plain for supplies. They used winding trails through many miles of boggy wetlands.

In the spring of 1913, from Charles Cropley's logging camp, five or six miles downstream from Drayton Valley, three million board feet were ready to float downstream to the sawmills at Edmonton. In 1914, when the First World War sent loggers off to fight, their families moved to Edmonton or further east. Many did not return. The excursion trains to Wabamun Lake stopped running, which put an end to the summer tourist trade for hotels and boat rentals. The Prohibition Act of 1916 brought further decline. Wabamun stepped out of the limelight for several decades, becoming just one more ordinary stop on the Grand Trunk Pacific Rail line.

## SHORT-LIVED IMPOUNDMENTS

In 1909 an attempt was made, 125 miles (201 kilometres) above Edmonton on the North Saskatchewan River, to create a storage pool and sluice gates at a place where logs were often lost during spring freshets. This was the only federally managed project, of this nature, in Canada, outside of Quebec and Ontario. It proved too expensive to operate and was abandoned in 1911.

In 1910 a dam was built across a snye at Burtonsville Island, but ice break-up on the river during the spring of 1911 destroyed it.

In 1913, upstream of Rocky Rapids, Edmonton Hydro-Electric Power planned to build a dam. The project was funded by a British syndicate and all funding stopped with the outbreak of WWI. The great flood of 1915 wiped out all evidence of dam building.

## CROSSING THE RIVER

In 1906, timber man Charlie Cropley built a scow to ferry passengers and supplies across the river at the bend in the river where a trail to Lac Ste. Anne crossed at a ford. It was known as the Genesee Ferry. In 1910, Cropley put in a cable ferry. At the same time, the Scheideman family, four miles downstream from Cropley's ferry, began operating their own ferry from their homestead. In 1916 the Berrymoor Ferry operated south of Tomahawk. Ice bridges were built and used in winter. The Government of Alberta installed a ferry in 1917 at Fraser's Landing.

In 1954 the Drayton Valley Ferry was put in about three miles upstream from the present bridge. Two major oil discoveries in the area had turned the little village of Drayton Valley into a boom town overnight and traffic became too much for the Berrymoor Ferry.

Reconstruction of the Drayton Valley Bridge over the North Saskatchewan River began August 1, 2011. Photo-Heather Kuchma, Images Alberta



## 21<sup>st</sup> CENTURY

Population growth in urban centers increases land use conflict on wilderness landscapes. This is an issue throughout the whole North Saskatchewan River watershed. In the Modeste subwatershed, along the North Saskatchewan River from just south of Drayton Valley north to Mishow Creek, a provincial park and recreation area was created in 2007 to reduce recreational pressure in adjacent wilderness areas. The Eagle Point Provincial Park and Blue Rapids Provincial Recreation Area are managed by a volunteer council in cooperation with the Government of Alberta and the local community.

Boating near Blue Rapids on the North Saskatchewan River. Photo-Billie Milholland





The park offers curriculum-based educational programs that feature wetlands, wildlife habitat and forests. Recreational opportunities include: archery, target shooting, birding, hiking, horseback riding, Nordic skiing, ATVing and paddling.

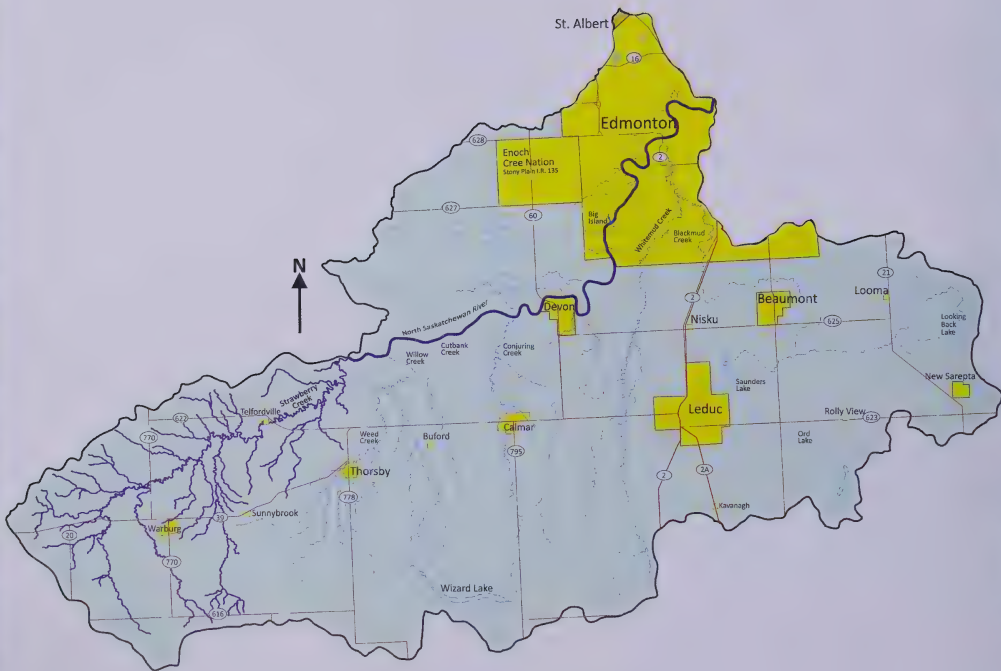
Increased development and recreational use in lake districts has given rise to community-based lake management organizations. In the Modeste subwatershed, the Wabamun Watershed Management Council, Jackfish Lake Management Association and Mayatan Lake Management Association are three examples of non-profit societies that have emerged since 2000. These groups are concerned with water quality, natural habitat conservation, boat congestion and recreational development. To address these issues, organizations usually begin by producing a State of the Watershed Report to outline the present condition of their lake and its watershed as well as to predict future issues. The next step is to develop a Lake Watershed Management Plan that details action needed to improve or maintain the condition of their lake.

Reducing carbon emissions is a global issue in the 21st Century, subjecting coal-fired power plants to more significant

scrutiny. In response to this, the TransAlta Genessee power plant, south of the North Saskatchewan River on highway 770, is the first facility in Canada to use supercritical boiler technology. A supercritical boiler uses less fuel to produce the same amount of power. This results in carbon dioxide emissions 18% lower per megawatt than from an average coal-fired plant. This plant also has clean air technologies that cut nitrogen oxide emissions in half, prevents 99.9% of particulates from entering the atmosphere and reduces sulphur dioxide emissions to below provincial emission levels.

Eagle Point-Blue Rapids Park system. Photo-Eagle Point-Blue Rapids Park Council





# STRAWBERRY SUBWATERSHED

**T**he majority of the land in this subwatershed is under agricultural production or urban development. Only 3.5% of it is treed. 4% of the land area is taken up by linear development (roads, pipeline rights of way, cutlines, transmission lines, and rail lines). Water bodies cover less than 2% of the subwatershed.

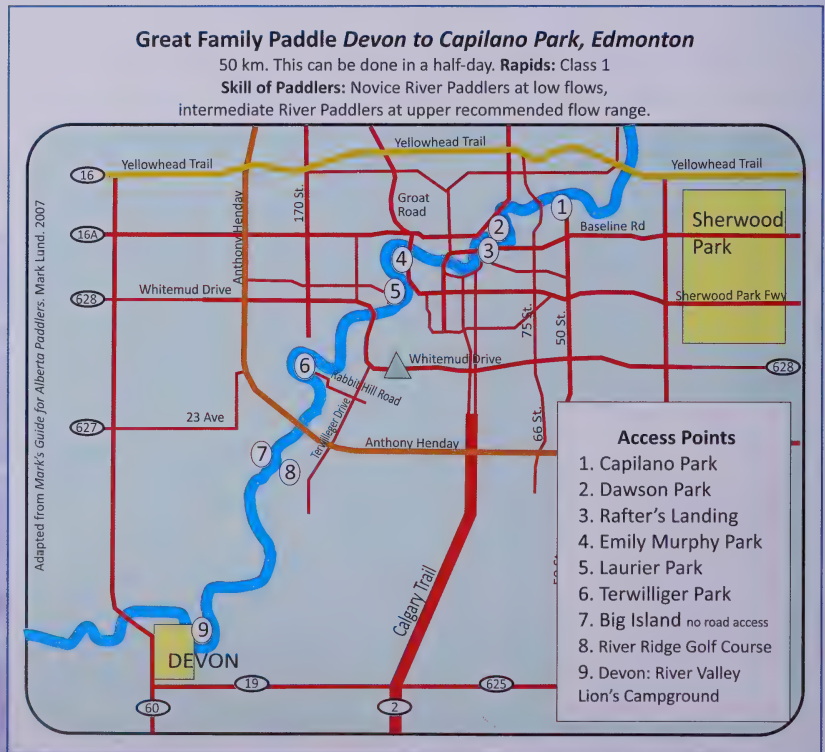
Communities include the rural municipalities of Leduc, Parkland, Strathcona and Wetaskiwin; the settlements of Beaumont, Buford, Calmar, Devon, Edmonton, Kavanagh, Leduc, Looma, New Sarepta, Nisku, Rolly View, Sunnybrook, Telfordville, Thorsby, Warburg and Stony Plain First Nations Reserve 135.

## NATURAL FEATURES

### **Big Island-Woodbend Natural Area**

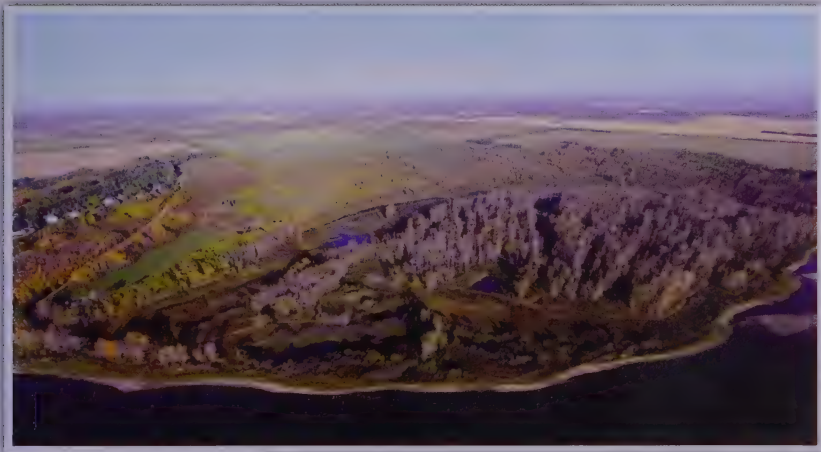
Upstream from the E.L. Smith Water Treatment facility Big Island is one of a series of islands nestled in the twisting bends of the river between Edmonton and Devon. It was the site of daylong community picnics and excursions during the late 1800s and early

1900s. The Big Island area includes Midnight Island and Fraser's Island. This natural area straddles about 5.5 km (3.4 miles) of the North Saskatchewan River in southwest Edmonton. This includes a 2.5 km (1.5 mile) ravine to the Sand Dunes Natural Area adjacent to Winterburn Road. It covers over 400 hectares (988 acres) of mostly unaltered landscape featuring some of Edmonton's most diverse biophysical features:





- Two “islands”, now attached, since the North Saskatchewan River changed its course.
- Edmonton’s largest riparian wetlands, fed by springs along the river bank, with the largest and most diverse bird population in the river valley.
- A spectacular narrow ravine cutting steeply through a pre-glacial channel, with a creek that flows underground until it reaches the river flats.
- The longest backchannel in Edmonton’s river valley, over one kilometer long. It is important fish habitat, sheltering 27 types of fish.
- Edmonton river valley’s only natural dikes – long, linear ridges of alluvium over 7 meters (23 feet) high, possibly created by being rafted up against ice jams during past major flood events.
- The Sand Dunes Natural Area, one of few places where the 21,000 hectare (51,892 acre) Stony Plain Dune Field reaches into the urban area and which includes a rare blow-out feature.
- A canoe trip from Devon to Laurier Park in Edmonton takes about 6 hours. Longer if you stop for a picnic and a wilderness adventure in the Big Island-Woodbend Natural Area.



Big Island-Woodbend Natural Area.  
Photo-North Saskatchewan River  
Valley Conservation Society

Clifford E. Lee Sanctuary. Photo-  
Bill Trout. Images Alberta

## Clifford E. Lee Nature Sanctuary

Clifford E. Lee was born on a farm in what is now the Hardisty district in the City of Edmonton. He was a school teacher, a pharmacist, a housing developer and finally a philanthropist. He established the Clifford E. Lee Foundation in 1969, but didn't live to see the advent of the Clifford E. Lee Nature Sanctuary. Originally founded on 140 acres (57 hectares) of marshland in 1978, the sanctuary expanded to 300 acres (121 hectares) in 1982. The Canadian Nature Federation, which became Nature Canada in 2004, was the steward of this property until 2005 when the Lee Nature Sanctuary Society took over the responsibility. As of 2015, the Sanctuary covers 348 acres (141 hectares), thanks to a 16 acre (6.5 hectare) gift from Parkland County and a 28 acre (11 hectare) parcel designated a Natural Area by the Province of Alberta.



Clifford E. Lee Sanctuary. Photo-Bill Trout, Images Alberta



#### BLUE-GREEN ALGAE

If a blue-green algae bloom occurs at a lake you are visiting, take the following precautions:

**DO NOT DRINK WATER** directly from the lake. Boiling the lake water will not remove toxins. Find an alternative source of drinking water for humans, pets and livestock.

**DO NOT SWIM OR WADE** or allow your pets to swim or wade in this lake.

**AVOID CONTACT** with blue-green algae along the shoreline.

**DO NOT feed** whole fish to pets (toxins are stored in fish liver).

Blue-green algae toxin (poison) can cause serious illness to animals or humans. Wind can move algae blooms from one location to another; however, the toxin can be present in the water after algae have disappeared.

Possible symptoms from touching or ingesting blue-green algae toxins: skin irritation, rash, sore throat, sore red eyes, swollen lips, fever, nausea and vomiting and/or diarrhea. Symptoms usually appear within one to three hours and resolve in one to two days. Symptoms in children are often more pronounced because they spend more time in the water and are more likely to accidentally ingest contaminated water. People who consume contaminated water as a primary source for drinking water can develop more serious illnesses, such as liver damage, over time.

## Wizard Lake

Spring-fed Wizard Lake is settled in a long, deep glacial meltwater channel (geologically similar to the channels occupied by Sauders and Ord Lakes, east of Leduc) 50 kilometres (31 miles) southwest of the City of Edmonton. The uniqueness of Wizard Lake's large catchment area and relatively intact surrounding upland forest has created diverse wildlife habit. The peatland that filters water flow into the northwest corner of Wizard Lake is a unique ecosystem type in the Central Parkland of Alberta, supporting at least two species listed as "sensitive," including the boreal toad and the common yellowthroat. The heavily wooded valley provides shelter from some summer winds, making this lake popular for water skiing, however, when winds do blow down the length of this lake conditions are ideal for wind surfing. This lake was known as Conjuring Lake until its name was changed to Wizard Lake in the 1960s.

Like many central Alberta lakes, Wizard can come under a blue-green algae advisory in the summer. Blue-green algae are not actually, algae. They are common, naturally occurring bacteria, known as cyanobacteria. From early July to mid-September, when the weather is warm, cyanobacteria can multiply rapidly to the point that a bloom is visible in nutrient-rich lakes. When the algal blooms decompose, they smell like sewage.

## Sand dunes by Devon

The Devon Dunes are the result of post-glacial winds blowing delta sand into dune shapes. The closest other examples of dunes are located near Redwater (White Earth subwatershed). During the late stages of the last glaciation, rivers of melt water poured off ice sheets that covered the western part of the watershed. This formed channels, deltas, and lakes to the east. Silt and sand were deposited in large deltas from Carvel to Stony Plain and north of Devon as rivers and streams flowed into Glacial Lake Edmonton (see *Greater Edmonton Area*).

#### HOW CAN YOU TELL IF YOUR LAKE HAS A BLUE-GREEN ALGAE BLOOM?

When blue-green algae bloom, a lake changes visibly. Clear water becomes soupy, often turquoise, bright blue, gray, tan or even red. Alberta Health Services posts blue-green algae alerts on their website every summer.

## Strawberry Creek

Strawberry Creek's long, sinuous route winds across farmland from its genesis southwest of Warburg to the North Saskatchewan River north of Thorsby. It is open for fishing from June 16 to October 31. The creek supports burbot, walleye, northern pike, yellow perch, trout, and arctic grayling. Fishing is regulated by the Alberta Environment and Sustainable Resource Development. There are limits to the number and size of fish that may be kept by fishers.

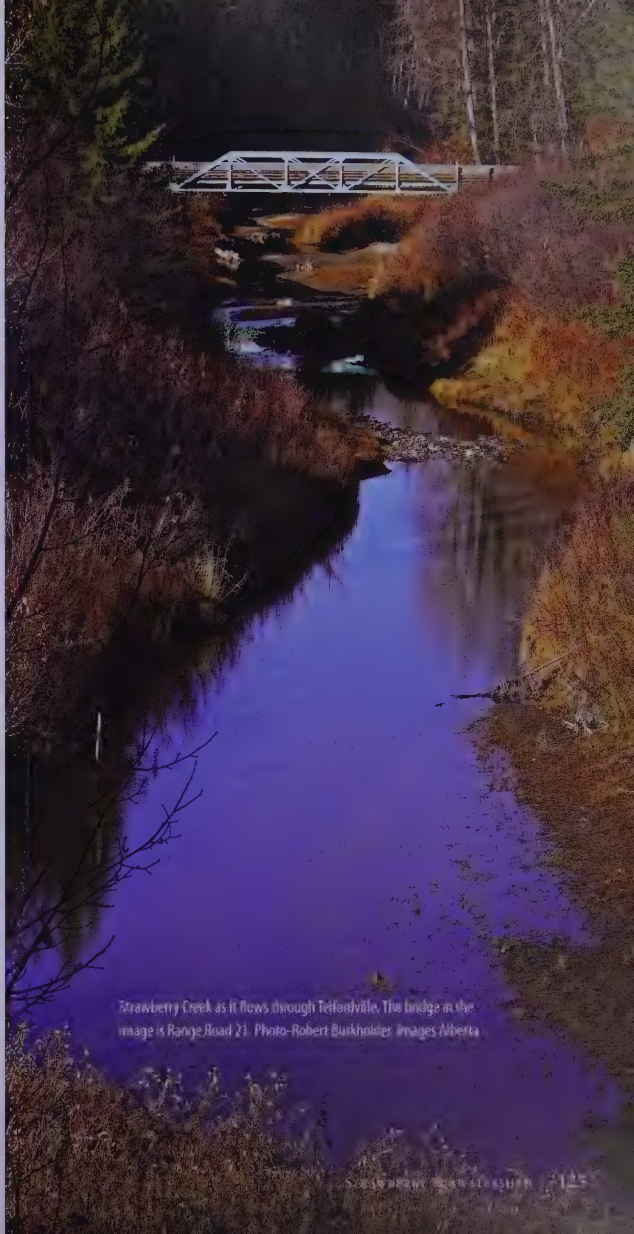
# NATURAL RESOURCES

## MINERAL

### Oil & Gas

On February 13, 1947, after drilling 133 dry wells in a row, Imperial Oil committed to drilling a series of 'last chance holes'. The first of these, Imperial Leduc #1, just south of Devon in Mike Turta's barley field, became a gusher. This discovery changed the scope and shape of Alberta's economy as oil and gas surpassed agriculture as a major industry.

Population in the North Saskatchewan River watershed doubled within the next decade. Turta's sister Mary said, "*It just ruined that*



Strawberry Creek as it flows through Telfordville. The bridge in the image is Range Road 21. Photo-Robert Buskholzer, Images Alberta

*washday.*” Turta’s wife didn’t bother to go outside to watch the well blow in. Farmers didn’t have mineral rights, so while others made millions, she told a reporter, “*We only get \$250.00 a year from No. 1 well.*”

On March 8, 1948, Atlantic #3, also near Devon, blew in. For three days the flames and black smoke could be seen as far away as Edmonton. It blew wild for the next 6 months.

Oil field activity is not as prevalent in the Strawberry subwatershed as it is many of the others.

Oil and agriculture are often partners on the landscape. Photo-Robert Burkholder, Images Alberta



## PRE-CONTACT

8015 BP – Bivalve mollusk shells, dating from this era found in terrace alluvium in Strawberry Creek Valley

6,000 BP – Quartzite, chert, petrified wood and mudstone were used by early people to fashion spear and arrow points. Where pre-glacial gravel formations were eroded by running water the North Saskatchewan River Valley and Whitemud and Blackmud Creek valleys cut deep exposing these gravel formations. In the Edmonton region, approximately 71 % of all the stone tools found are made from quartzite. Fluted points have also been found in the Thorsby area.

5640 BP – Wolf *Canis lupis* bones dated from this era were found in terrace alluvium in Strawberry Creek Valley, well as mega fauna bison bones.

2765 BP – Bison bones dated from this era were found in terrace alluvium in Weed Creek valley, upstream from the City of Edmonton.

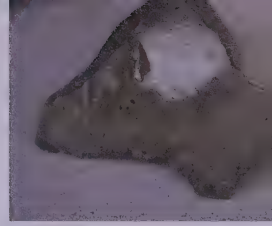
## WHAT'S IN A NAME?

### Leduc

In 1890, a telegraph office was set up by a recent settler, Mr. McKinley. He needed a name for it and said, “*We’ll name it after the first person who comes in.*” In through the door came Roman Catholic priest, Father Hippolyte Leduc.

### New Sarepta

Before Alberta became a province, a Moravian congregation that settled in the area chose the name Sarepta, from the Bible. It is an Old Testament town where the Prophet Elijah stayed during a time of drought. For a couple of years it was Sarepta, North West Territories. In 1904, Moravian people who had settled in the area that is now



Mollusk fossil in sedimentary rock.  
Photo-Billie Miholland

### HOW TO MAKE SAUERKRAUT

2.5 lbs. salt 100 lbs. cabbage

Select good firm heads of cabbage. Clean heads, trim outside leaves and leave cleaned head in cold water overnight. Drain.

Cut cabbage as finely as possible. Place layers of cabbage, about three or four inches, and sprinkle with salt. Pack with wooden stomper. Repeat. Cover with a clean cloth and a wooden cover. Leave the cabbage to ferment from two to eight weeks. Water will collect on top, but do not drain; it this helps fermentation.



Painting of Thor's Battle Against the Jötunn by Märten Eskil Winge, 1872.  
Photo-Public Domain.

Thor, the god of thunder, is one of the most prominent figures in Norse mythology. He was important to all branches of Germanic people before the advent of Christianity. Thor is the archetype of a loyal and honorable warrior, the ideal toward which Nordic men aspired. Thunder was the embodiment of Thor, lightning the embodiment of his hammer, Mjöllnir. During every summer storm, Thor rides across the sky in his goat-drawn chariot slaying giants as he goes.

Millwoods, within the City of Edmonton (they called their community Bruederfeld), moved to Sarepta. After 1905, when Alberta became a province, they had to add 'New' to the name, because there was already a Sarepta in Ontario with a registered post office.

## Thorsby

In 1929, the Salstrom brothers commented that the roar of the train rumbling past their homestead sounded like thunder. The two Swedes decided that was reason enough to name the community after Thor, the Norse God of thunder.

## Yellowhead Highway

Highway 16, also known as the Yellowhead Highway, takes its name from the Yellowhead Pass through which it stretches. Yellowhead Pass is named after Peirre Bostonnais, a fair haired Iroquois fur trapper, known by his contemporaries as *Tête Jaune* (Yellowhead). He was well known in the mountain areas. *Bostonnais* is what the First Nations people of Quebec called people from the United States (Boston man). This suggests that Pierre may have had American roots.

## POST CONTACT – FUR TRADE

It is likely that considerable fur and meat were harvested from the Strawberry subwatershed during the fur trade, but since there were no major fur trading posts in this subwatershed, there is minimal record of fur trade activity. It is known that in 1788, American fur trader, Peter Pangman, built a post near the outlet of Strawberry Creek on the north side of the North Saskatchewan River.

## POST CONTACT – SETTLEMENT

Stony Plain I.R. 135 Enoch Cree Nation, signed Treaty 6 under Chief Tommy *Lapotac Mah Min Ah Watab*



Telford Lake in Leduc. Photo-Dianne Fuson, Images Alberta



In 1881, the Hudson's Bay Company operated a coal strip mine on Big Island. It was close to good mooring, where a steamer could load directly, but it was not a successful mine and soon closed.

In 1882, the first people to take homesteads around what is now the Town of Beaumont, were people from old fur trade families: the Dumonts, Demers, Brunelles and Monettes. They were followed by French families from Quebec that had first tried to settle in Minnesota. Settlers travelled by train to Leduc, then rode across country in wagons if they could or made their way by 'shanks mare' (on foot) if they didn't have a horse. In those days, during high water, Blackmud Creek had to be crossed by boat.

From 1895 to 1898, Americans from Kansas, Minnesota and the Dakotas found their way into the

Calmar area. When Conjuring Creek still flowed through heavy timber, these settlers had to travel the rutty, boggy Pigeon Lake Trail to get to Leduc to sell their willow posts for 2 or 3 cents each. It was a ten hour round trip in the summer during good weather. During rainy weather or winter it was often a two day trip.

In 1889, Robert Taylor Telford, a former North West Mounted Police officer, took a homestead on a lake, which now bears his name in the present City of Leduc. He became postmaster of the new community which he named Telford Place.

In 1898, 20 families from Poland, following old fur trade trails, found a heavily timbered

#### HOW TO MAKE SOAP

1 can Gilletts Lye

2.5 pints cold water

4lbs. grease or fat in stone or iron barrel

Mix lye & cold water until dissolved. Heat grease & skim top. Mix grease into the lye; NOT the lye into the grease.

Mix until it drops like honey from wooden spoon. Pour in wooden box about 36" x 24". Store in a cool dry place. Cut into pieces after three to five days. This rough soap was used for washing clothes.

Common Grackle on Telford Lake, Leduc.  
Photo-Roger Kirchen, Images Alberta





Grain elevator in Leduc fall of 2013.  
Photo-Dianne Fuson Images Alberta

#### HOW TO FILL CRACKS IN A LOG BUILDING

6 to 8 gallons water

8 to 10 piles horse or cow dung  
(from old dried out piles)

14 to 18 bull rushes (tops  
removed or leaves or cut grass)

4 gallons ground and sand  
mixed

1 hole in the ground

Put the above ingredients in the  
hole in the ground and mix with  
bare feet. Place this mixture in  
the cracks of log buildings using a  
wooden scraper. Press firmly. Let  
dry. Repeat procedure in three  
weeks and once again in the fall.

area where the Town of Devon is now.

In 1900, at Wizard Lake, a sawmill was in production. It operated near the lake until about the time of the First World War. An underground coal mine went into production along the south shore of the lake about that same time. It operated until the 1940s.

In the summer of 1900, Robert Telford built roads. He sent Jim VanAlstyne to trace a line from Leduc through to Weed and Strawberry Creeks. The line, which passed through heavy timber and muskeg (16 sloughs and 5 bridges), was called the Blind Line. It is now known as Highway 39 to 622, west.

In 1902, after the area had been surveyed, Van Alstyne guided new families to land bordering Weed and Strawberry Creeks to find homesteads. The first post office, opened in 1904, was named Telfordville after his boss, Robert Telford. By 1908, 38 men had claimed homesteads in that area.

In 1905, Calmar was one store and a large slough, referred to by new settlers as the duck pond. Between 1900 and 1915, Big Island, upstream from Edmonton, across from the present Windemere Golf Course, was the site of early daylong community events. *"... up river [from Edmonton] within a series in a twisting streams is Midnight Island,*

*Fraser's Island and Big Island. It is 70 acres, 12 city blocks. Just before WWII there was still a grove of 80' poplar growing there.*" Long-time residents of Edmonton remember family stories of steamboat excursions to Big Island where people would picnic and party late into the evening. They would dance on the main deck of the steamboat on the way back, while the babies and small children slept on the upper deck.

## Devon

The Town of Devon sprung up nearly over night. With Leduc #1 and Atlantic #3 in production and wells being drilled all over the area, Imperial Oil needed a place for their workers to live, so they built a town. They chose a beautiful setting on the banks for the North Saskatchewan River and named the instant community after the Devonian Reef formation from which the oil from Leduc #1 was pumped. The first residents, Mr. and Mrs. A. Dingman, moved into town in May of 1948. By July, twenty-five houses were occupied. By the end of January, 1949, there were one hundred and twenty three homes finished and occupied.

Every building in Devon had electricity, natural gas, water, and indoor toilets. The houses were pre-fabricated in Calgary, and then built on basement foundations. Houses sold for between \$3,600 and \$6,000.

### GRAIN ELEVATORS

For over 100 years grain elevators dominated the landscape in hamlet, village and town in the North Saskatchewan River watershed.

The first settlers shovelled grain into two-bushel, jute sacks, which they transported to a loading platform along the rail line. There, they had to empty the sacks into a boxcar. The Railroad companies offered free land rental to private companies to encourage the construction of standard 25,000-bushel elevators. These unique buildings were outfitted with equipment to clean the grain, as well as with a 'leg' (an endless belt with scoops attached that carried the grain to the top of the elevator where the kernels then fell through a series of spouts into the appropriate bins) driven by a steam or gasoline engine. Those tall prairie sentinels, built using the familiar 'wood-cribbed' design, were built in the North Saskatchewan River watershed from the early 1900s until the mid-1980s. Until the late 1960s, grain elevators in the North Saskatchewan River watershed were painted Canadian Pacific Railway red except those that were metal clad. By the 1970s, companies were using their own corporate colours to identify their elevators.

In the Strawberry subwatershed Thorsby's elevator lasted until the first decade of the 21<sup>st</sup> Century and Calmar's 2 elevators were demolished in 2001.

Rural road west of Leduc, 2013. Photo-Bill Trout, Images Alberta



Northern Spreadwing at Devonian Garden. Photo-Roger Kirchen, Images Alberta

Pagoda Dine and Dance opened July 5, 1949 on Athabasca Avenue. In January, 1950, Devon was incorporated as a Village and by March it had grown big enough to become a Town.

## RIVER CROSSING

In 1907, a ferry went in, two miles north of Big Island. In 1908 it moved to a location two miles south of Big Island.

In 1911, the Holborn Ferry operated on the North Saskatchewan River south of Stony Plain, Alberta. This ferry was often stranded mid-stream by log booms sent down river from Rocky Mountain House.

In 1948, the Woodbend Ferry came into operation to accommodate the new town of Devon. This ferry crossed the river near the present Highway 60 Bridge.

Northern spreadwing damselfly *Lestes disjunctus*, cannot live in polluted water, so their presence is an indication of relatively clean fresh water. They are an ancient insect, with fossil remains dating back at least 250 million years. Damselfly larvae eat mosquito larvae, mayfly larvae, and freshwater shrimp. Adults eat almost any soft-bodied flying insect including mosquitoes, flies, small moths, mayflies, and flying ants.

### HOW TO TELL THE DIFFERENCE BETWEEN DRAGONFLIES AND DAMSELFLIES

#### DRAGONFLY

- The eyes touch, or nearly touch, at the top of the head.
- The body is usually stocky.
- Hind wings are broader at the base than are the front wings.
- Flies very fast, reaching speeds as high as 40 kilometres an hour.

#### DAMSELFLY

- The eyes are clearly separated, usually appearing on each side of the head.
- The body is usually long and slim.
- All wings are a similar shape.
- Has leisurely flight behaviour.



Devon Bridge, Highway 60. Photo-Robert Burkholder, Images Alberta



Devonian Garden. Photo-Bill Trout, Images Alberta

## THE UNIVERSITY OF ALBERTA DEVONIAN BOTANIC GARDEN

Established in 1959, the 240-acre (97 hectare) Devonian Botanic Garden is the most northerly of its kind in Canada. The Botanic Garden features a series of display areas: an alpine garden, a herb garden, a peony collection, a primula dell, an iris dell, a collection of Alberta plants, a First Nation's garden, a Japanese garden, and a Heritage Plants garden. Some of the research carried out there: bryophyte ecology and biodiversity; plant conservation; and taxonomy of microfungi. There is also a fully digitized herbarium with a large collection of bryophyte specimens used for research and teaching, as well as for horticultural plants grown at the garden.



Bumble bee at Devonian Botanic Garden, Photo-Roger Kirchen, Images Alberta

## Wizard Lake Weir

Concerns about fluctuating water levels in Wizard Lake and downstream flooding in Conjuring Creek emerged towards the end of the 20<sup>th</sup> Century. The Counties of Leduc and Wetaskiwin partnered to construct a weir on the eastern side of Wizard Lake where it flows into Conjuring Creek. In the fall of 1991 a weir and fish ladder were built. The fish ladder enables fish, particularly pike, to maintain spawning routes in the spring.

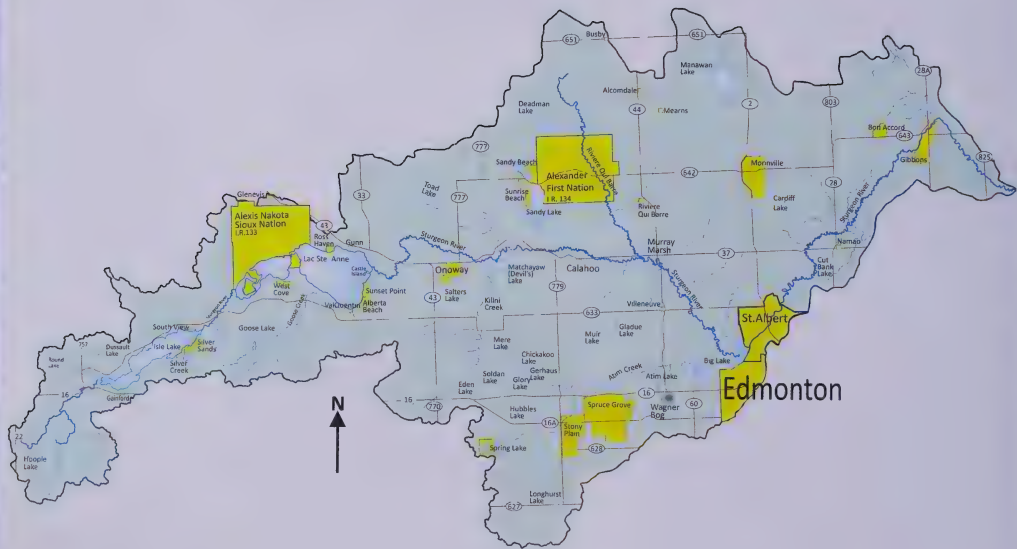


Wizard Lake Weir

**Bumblebee** *Bombus huntii*, one of at least 8 species of bumblebee in Alberta, is a social species. They are closely related to the honey bee *Apis mellifera*, but do not produce commercial quantities of honey. Bumble bees are important pollinators of indigenous flowers in mountain, boreal forest and prairie habitats, especially the flowers of berry bushes. They live in small underground colonies populated by a solitary, fertilized queen who has survived a winter of hibernation. The queen emerges in the spring, finds a nest site, builds a wax cup, and collects enough pollen to feed her first brood. It takes about 4 weeks from the first eggs laid, till the first adults are ready to take over hive duties. From then on the drones forage, care for the subsequent broods and clean the nest. In the fall before they die, the drones help raise a clutch of male and female bumble bees that fly off to mate. The old queen and males die. The new, fertilized queens each find an underground place to spend the winter and the cycle continues.

## 21<sup>st</sup> CENTURY

At the turn of the 20<sup>th</sup> Century, 75% of Albertans lived rurally. By the 1950s, more than 50% of Albertans had become urbanites. By the first decade of the 21<sup>st</sup> Century, about 19% of Albertans still lived in rural areas. Urbanization has changes how land is used in every subwatershed.



# STURGEON SUBWATERSHED

**T**he Sturgeon River is a prairie river, fed only by rain, snow and groundwater. Starting at Hoople Lake, in the far southwest corner of the watershed, the river flows east through Lake Isle, Lac Ste. Anne and Big Lake before emptying into the North Saskatchewan River downstream of the City of Fort Saskatchewan. Twenty percent of this watershed still has natural land cover; the rest has been developed for agriculture, urban and recreational interests. Less than 7% of the watershed has intact wetlands.

Human habitation includes the municipal boundaries of Barrhead, Lac Ste. Anne, Parkland and Sturgeon Counties; the communities of Spruce Grove, Stony Plain, Onoway, Morinville, Bon Accord, Gibbons, Calahoo, Villeneuve, and Spring Lake; First Nations Alexis 133 and Alexander 134, as well as parts of the cities of Edmonton and St. Albert.

Sturgeon River winding past Sturgeon Valley Golf and Country Club with the City of St. Albert and Big lake in the background. Photo-Airscapes



Sturgeon River near where it joins the North Saskatchewan River downstream of the City of Fort Saskatchewan. Photo-Bill Trout, Images Alberta





## NATURAL FEATURES

**Manawan Lake**, large and marshy, was once the water source for the Town of Morinville. Now a crown water body, the Manawan Lake Drainage District maintains a water control structure on the lake. In the mid-1980s, the lake was recognized by the provincial government as one of Alberta's top 20 wetlands for waterfowl. Bird Life International designated the lake under its Important Bird Area (IBA) program. Over the years, due to agricultural and recreational pressure, the 2,800 acre (1133 hectares) wetland area became less productive for waterfowl and other wildlife. It is also only marginally beneficial as an emergency water supply to the Town of Morinville. In 2006, a new structure was built to hold water at a level one inch below 1949 levels. The Manawan Drainage District, recognizing the ecological, social and economic benefits that wetlands provide, focuses on the restoration and protection of Manawan Lake as an important natural feature of the Morinville rural landscape.

**Sandy Lake** is a shallow lake, separated into two basins, covering about 12 km<sup>2</sup> (4.6 mile<sup>2</sup>). The south basin is larger than the north basin. The name of the lake comes from its extensive sandy shoreline, which made it a favourite tourist destination even before Alberta became a province. Both Dr. James Hector in 1859 and Captain John Palliser in 1865 referred to it on their maps as 'the Sandy Lakes'. There are over 30 species of grasses and grass-like plants around the shores of Sandy Lake. Nesting cover is plentiful along the shore, making ideal habitat for blue-winged teal, lesser scaup, American wigeon, mallard, northern shoveler, pintail, gadwall, bufflehead and ring-necked duck. Great blue heron are also common here.



*Sora Porzana Carolina* cautiously examining a discarded lighter tossed at the entrance to its hiding place in the reeds. Photo-Roger Kirchen, Images Alberta



Male Ruddy Duck *Oxyura jamaicensis*.  
Photo-Roger Kirchen, Images Alberta

**Ruddy Duck** *Oxyura jamaicensis* is common in prairie pot hole lakes. The male's distinctive blue beak, bright white cheeks, black head and fox red body make him easy to identify, even at a distance. In spite of that, few people get to glimpse this peculiar bird, because ruddy ducks feed mostly at night, sleeping deep in the cattails and reeds during the day. Ruddy ducks eat pondweeds and algae as well as the seeds of sedges, smartweeds and grasses. During the breeding season they eat mostly invertebrates, primarily chironomid larvae and pupae.

**Sora** *Porzana Carolina* is a short, compact bird, build to travel easily through dense, marshy vegetation. The marshlands around shallow pot hole lakes is perfect habitat for soras. They are shy birds that like to stay hidden in the reeds along the edges of lakes and ponds.



### Chickakoo Lake Recreation Area

This 480 acre (194 hectare) park complex, maintained by the County of Parkland, has over 14 kilometres (9 miles) of trails for walking or biking in the summer and cross-country skiing in the winter. It includes Chickakoo Lake, Kettle Lake, Little Mere Lake, North Lake, East Lake, Byers Lake, Sauer Lake, Dogleg Pond and Raindrop Pond.

Northern Shoveler *Anas dypeata* with its large spoon-shaped bill, which widens towards the tip, creating a shape not found in any other North American waterfowl. Photo: Roger Kirchen, Images Alberta

Aurora Borealis over Chickakoo Lake in late June. Photo: Bill Trout, Images Alberta



American Avocet *Recurvirostra americana* in breeding colors at Murray Marsh, NW of St. Albert. Photo-Roger Kirchen, Images Alberta



One of many trails at Chickakoo Lake Recreation Area. Photo-Bill Trout, Images Alberta

Murray Marsh is on private, agricultural land, north of Wagner Bog just off Highway 37, along Riviere Qui Barre. This large wetland is a birder's paradise, especially active during migration.

**Big Lake**, part of the Sturgeon River system, is fed by Atim Creek from the west and Carrot Creek from the north. It snugs up to the northwest corner of the City of Edmonton and the southwest corner of the City of St. Albert. Parkland County borders the lake on the south and Sturgeon County on the north. The lake sits on the sands and gravels left by retreating glacial meltwaters.

Big Lake was designated a "Conservation Natural Area" under the Province of Alberta's Special Places 2000 program; a "Globally Significant Important Bird Area" by Birdlife International; and recognized as a Wetland for Tomorrow by Ducks Unlimited. Big Lake acts as a natural reservoir, providing flood control for the City

Yellow-headed Blackbird *Xanthocephalus xanthocephalus* at Murray Marsh, NW of St. Albert. Photo-Roger Kirchen, Images Alberta





Redhead *Aythya americana*  
flying over Big Lake. Photo-Roger  
Kirchen, Images Alberta

of St. Albert. It is recognized as one of the 20 most important waterfowl habitat units in Alberta.

A deciduous forest on the south side of the lake is habitat for diverse vegetation including rare orchids and ferns.

Big lake is a birder's paradise, with over 235 bird species recorded. At risk species that use the lake include trumpeter swans, Sprague's pipits, peregrine falcons, short-eared owls and bald eagles. The western bay is a rare nesting habitat for the Franklin's gull, a bird with one of the longest migration routes, flying as far as southern Peru and northern Chile every year.

In the fall, the lake is a staging area for tundra swans and pelicans. Fall populations of swans have been as high as 20,000. Cormorants, loons, great blue herons and ospreys fish the lake. Lesser yellowlegs, dowitchers, American avocets and sandpipers are numerous during low water years. In 2005, a family of great egrets nested at Big Lake for the first time and raised four youngsters.

Fish species found in the lake include northern pike, goldeye, white sucker, walleye and sticklebacks.

The land surrounding Big Lake provides important habitat for moose, white-tailed deer, beaver, muskrat, mink, skunk, coyote, red fox, porcupine, snowshoe hare and red squirrel.

**Lac Ste. Anne** is a large lake: 54.5 km<sup>2</sup> (21 miles<sup>2</sup>), with a maximum depth of 9 m (29.5 ft) and an average depth of 4.8 m (16 ft). Originally known by the Cree people as *Manitou Sakhahigan* (Spirit Lake), and by the Nakota Sioux as *Wakamne* (God's Lake), it is still the site of an annual spiritual pilgrimage. Thousands of people gather every summer to bathe in the

Common Grackle *Quiscalus quiscula*. Photo-Sig Koslowski,  
Images Alberta



American White Pelican *Pelecanus erythrorhynchos* scooping up tiny fish. In their throat pouch the water drains out and they swallow by tilting their head back and propelling the catch with their pouch membrane. Photo-Roger Kirchen, Images Alberta

healing waters. The Lac Ste. Anne Pilgrimage site was declared a National Historic Site of Canada in 2004 for its social and cultural importance.

The Hudson Bay Company renamed it Devil's Lake, because the stern, Protestant fur traders believed any notion of God that was not Christian must be of the Devil. The name was changed again by Father Jean Baptiste Thibault after he established a Catholic mission on the south shore of the lake in 1844.

In 1912, the Alberta Northern Railway built a train track to what is now Alberta Beach, to where employees were transported for holidays and company picnics. By 1920, the railroad company had constructed a dance pavilion, a large wooden pier, and several cabins. Marshall Wells and Woodward's also brought their employees to relax at Lac Ste. Anne.

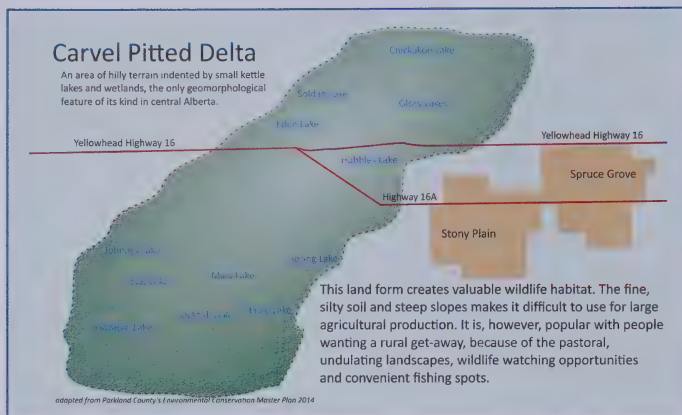
The Moonlight Express, operated by the Alberta Northern Railway, delivered people from Edmonton to Alberta Beach on Saturday morning, then brought them back to Edmonton on Sunday night. In 1918, a return ticket between Edmonton and Alberta Beach cost \$1.00.



Summer storm over Lac Ste. Anne. Photo-Bill Trout, Images Alberta



Sun set at Lac Ste. Anne. Photo-Bill Trout, Images Alberta



Once known as *Lac des Isles* or *Lac des Islets*, Lake Isle is a narrow, elongated strip of water, part of the Sturgeon River drainage system. It receives inflow from six intermittent tributaries. The area around Lake Isle has rolling topography (*knob and kettle terrain* – see *Beaverhill subwatershed section for definition*) and diverse vegetation communities.

The south shore is an excellent breeding site for osprey. The marshy edges are frequented by great blue heron, bufflehead, common golden eye,

lesser scaup and mallard. The lake supports a substantial number of western grebes that nest in two colonies (77 nests recorded in 2001), and a large population of eared grebes (794 adults in 2001). It is an important waterfowl staging and breeding area. Northern pike, yellow perch, walleye, burbot, white sucker, brook stickleback, fathead minnow, and spottail shiner are all found in the lake. Cottages, tucked within remnant stands of aspen/balsam/poplar forests surround portions of the lake. Land along the northwestern shore has been cleared for agriculture, as has a large area about one mile south of the lake.

A unique example of a glaciofluvial delta, the **Carvel Pitted Delta** is an extensive area of hummocky, hilly terrain with numerous small kettle lakes and wetlands created from sediment deposited on receding glacial ice. The Carvel Pitted Delta is the only geomorphological feature of its kind in central Alberta. The land around **Hubbles Lake** is a good example of pitted delta

**Glaciofluvial deposits** are sand and soil left behind by melting glaciers.



Round-leaf Orchid *Galearis rotundifolia* at Wagner Bog. Photo-Carol Rusinek, Images Alberta



Shooting Star *Dodecatheon pulchellum* at Wagner Bog. Photo-Carol Rusinek, Images Alberta

landform with a kettle lake. The lake is small, but it is one of the deepest lakes in Alberta (30 m – 98 ft). The area around **Spring Lake**, and in the Modeste subwatershed, the area surrounding **Jackfish Lake** and **Mayatan Lake** are also part of the pitted delta and kettle lake geomorphology. The soils are silty to fine-sandy and sloping, making cultivated land highly erodible if the soil has no cover. The pitted delta area has a tremendous diversity of uplands, lakes and wetlands. It is an important regional groundwater recharge area.

**Kilini Creek** flows northeast to Matchaway (Devil's) Lake. The creek moves through a variety of habitats including black spruce bog areas and uplands of aspen and white spruce before it reaches the *Kilini Creek Natural Area* west of Soldan Lake. Relatively undisturbed habitat forms a wide buffer along much of the west side of the creek, making the creek still quite inaccessible in some areas. Kilini Creek flows through a lowland characterized by peatlands, small lakes, ponds and marshes. Black spruce, pine, willow, and tamarack grow in the peatlands. Marl ponds (mineral spring-fed ponds) with calciferous deposits date back thousands of years. This is excellent habitat for orchids, carnivorous plants, and a diversity of rare species not found anywhere else except in the *Wagner Natural Area*. The creek links various habitats along its course and likely functions as a wildlife movement corridor. The creek is also a historical habitat area for leopard frogs. Kilini Creek helps maintain the hydrologic regime of the Sturgeon River.

**Wagner Natural Area** was set aside in 1975 to protect the unique vegetation found there. A diversity of habitats, including calcareous fens, marl ponds, springs, black spruce-sphagnum forest, birch-willow woodland, aspen/balsam poplar forest, white spruce forest, and open fields, characterize the area. Approximately one-third of all of Alberta's plant species can be found here, including 330 species of flowering plants. Sixteen of the 26 species of Alberta's native



Sparrow's Egg Lady Slipper *Cypripedium passerinum* at Wagner Bog in 2008. When the photographer returned in the spring of 2009 they were gone; only spaded soil remained. Photo-Diane Fuson, Images Alberta



Small Yellow Lady Slipper *Cypripedium parviflorum* at Wagner Bog. Photo-Carol Rusinek, Images Alberta



Round-leaved Sundew *Drosera rotundifolia* at Wagner Bog. Photo-Carol Rusinek, Images Alberta

#### CARNIVOROUS PLANTS

In Alberta there are no carnivorous plants with snap traps but the tiny, bog sundew has a similar shape. The widened leaf tips are rimmed with sticky hairs that catch insects. The plant absorbs nutrients as dead insects decay. Butterworts also use leaves to catch insects. Ironically, the same insects that feed the butterwort also pollinate its purple flowers. Bladderworts float on the surface of the water. When hairs at the mouth of small bladders on the stem are touched by an insect, water rushes in carrying the tiny invertebrate with it. The bladder mouth closes and the prey is digested.

orchids occur in Wagner Bog. These include the more common northern green bog orchid *Platanthera aquilonis* and sparrow's egg lady slipper *Cypripedium passerinum*, as well as rare species, like the bog adder's-mouth orchid *Malaxis paludosa*. Wagner is also known for the presence of carnivorous plants, such as the sundew, bladderwort and butterwort on the hummocky sphagnum moss.

## NATURAL RESOURCES

### ANIMAL

#### Fur

Fur harvested from the Sturgeon subwatershed filled the warehouses of the fur trade from the late 1700s right up until the end of the Second World War. In 1903, the sloughs were still full of muskrat. Traveling salesmen paid between 15 and 25 cents each for a muskrat pelt. Settlers took advantage of this to earn enough money to buy the tinned goods the salesmen sold. Selling muskrat, beaver and coyote pelts sustained many rural families during the depression years of the 1930's.

#### Fish

Lac Ste. Anne was known for hundreds of years for its bountiful fish population. Dr. John Rae, from the Palliser Expedition, reported that every year Fort Edmonton used from 30,000 to 40,000 whitefish averaging about 4 pounds apiece from Devil's Lake (Lac Ste. Anne)

In 1872, the Fleming expedition crossed, "*Sturgeon Creek, from which twenty-five pound fish are often taken.*" (The Sturgeon River). He declared the fish, "*the finest fresh water fish, perhaps in the world.*"

#### 1895 – FISH & GAME REGULATIONS IN WHAT IS NOW ALBERTA

Season opened Sept 1 to Feb 1 for Elk, Moose, Cariboo, Antelope, Deer, Mountain Sheep or Goat. Limit of 6 head except for food for self or family.

Season open Sept 1 to Jan 1 for Grouse, Partridge, Pheasant, Prairie Chicken.

Season open Dec. 15 to Oct. 5 for Whitefish, Tullibee, Lake Trout.

Season open May 15 to April 15 for pickerel, pike, goldeye.

Season open July 15 to May 15 for Sturgeon.

There was no limit on birds or fish.



## VEGETABLE

### Birch Bark

The Birch Hills, at the mouth of the Sturgeon River near present day Fort Saskatchewan, was a well-known and widely used seasonal canoe building encampment. In the spring of 1755 Anthony Henday and his Aboriginal guides, camped at the mouth of the Sturgeon River to build 40 birch bark canoes to ship furs to York Factory. There are several areas along the river known as ‘Birch Hills’ and it is likely that they all signify the location of early seasonal canoe building sites.

### Berries

During the first decade of the 20<sup>th</sup> Century, sand hills were popular destinations for fall berry picking. Families would camp out for 2 or 3 nights at a time to pick blueberries, low bush cranberries and high bush cranberries. Earlier in the summer, throughout the Sturgeon River subwatershed, people picked strawberries, saskatoons, black currants, pin cherries, chokecherries, and gooseberries. These berries sustained First Nations people throughout the winter before Europeans came and they provided the main fruit supply for settlers until after WWII. In 1902, children could get 10 cents a quart for fresh picked berries. Even a slow picker could make 30 cents in a lazy afternoon.

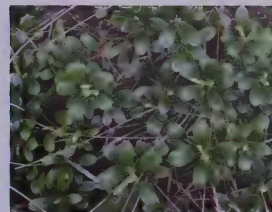
## MINERAL

### Coal

In 1882, the Lamoureux family mined coal near the Sturgeon River Mill, at the mouth of Egg Lake Creek. Six years later, they opened a drift in the North Saskatchewan River valley near Saddle Lake Creek. From that mine they barged 800 tonnes of coal to Battleford.

In 1902, the Cardiff mine opened, north of St. Albert. By 1913 it employed 262 men and produced 247,000 tonnes of coal.

In 1909, Rusty Roberts and his partner Montana discovered coal while digging water wells. There appeared to be enough coal to meet local demands, saving people the



Bearberry *Arctostaphylos uva-ursi* in bud. Sometimes known as kinnikinnick from an Ojibwe word, *giniginige* “to mix something animate with something inanimate”, this plant has been used medicinally in both the old world and the new for thousands of years. Photo-Billie Milholland



Saskatoon Berry *Amelanchier alnifolia* has a nutrient profile similar to blueberries, high in fibre, iron and manganese. Photo-Billie Milholland



Water is often overlooked as a natural resource. This water, taken from the North Saskatchewan River irrigates a sod farm in the Sturgeon River sub-watershed. Photo-Robert Burkholder, Images Alberta

long haul from the Cardiff Mine. The men dug a mine just west of the Village of Riviere Qui Barre where the water that collected in the mine could be emptied into a gully that led to the river. They found a 7 foot seam of semi-anthracite coal, which they removed by pick and shovel through a 12 foot square shaft. Local people used coal from this mine until 1913 when the railway went through Morinville. With no hope of a spur line to Riviere Qui Barre the mine soon closed down.

In 1912, the Edmonton Interurban Railway moved 400 tonnes of coal a day from St. Albert Collieries, a subsidiary of Canadian Coal and Coke Company, Canada's largest coal company.

By 1922, the coal producing area had stretched east from the Pembina River to Tofield, and north from Edmonton to Morinville, producing 12,000 tonnes per day and employing 3600 men.

A coal mine on the Middleton Hall place (discovered in the early 1920s when men dug a water well), just south of Bon Accord, provided coal for families in the area and domestic use in Edmonton until the late 1930s.

## GRAVEL

Between 1914 and 1916, the Alberta & Great Waterways Railway (A & G. W.) built a rail line between Carbondale (southeast of Morinville) and Lac La Biche. One of the gravel pits it operated to surface those roads was north of present day Gibbons, in the vicinity of the Goose Hummock Golf Resort. Gravel reserves in the Sturgeon River subwatershed helped build hundreds of miles of roads and sidewalks, as well as thousands of homes and businesses. Most of the aggregate used to make concrete in the greater Edmonton region comes from pre-glacial sand and gravel deposits, which underlie an area south of the Sturgeon River south of Villeneuve to west of Calahoo.

### HIGHWAY 28

Construction of Highway 28 began in 1938, starting at the junction with Highway 37. The road, 24 ft. (7 m) wide, was completed in 1940. Gravel surface was finished in 1941. The zig-zagging road was straightened and widened to 36 ft. (11m) in 1951, and paved in 1954.

# PRECONTACT

Over 780 archaeological sites have been recorded in the North Saskatchewan River watershed in the Edmonton area (from Redwater west to Morinville, south to Calmar and east to New Serepta). Many sites occur along the edges of the Sturgeon River and in creek valleys.

## WHAT'S IN A NAME?

**Bon Accord.** In 1892, thirty-four year old Sandy Florence, from Aberdeen, Scotland settled about 2 miles (3 km) southwest of the present Town of Bon Accord. The meeting for naming the district was held at Sandy's house, so he was allowed to choose the name. He called it Bon Accord (Good Agreement), which has been the motto of Aberdeen, Scotland since the 14<sup>th</sup> Century.

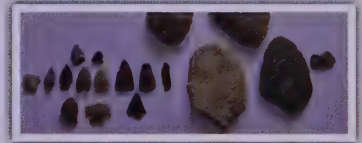
**Calahoo.** Named after Iroquois people from eastern Canada who came into the Sturgeon River subwatershed in the early 19<sup>th</sup> Century to trap beaver for the fur trade. Specifically, Louis Iroquois (also known as *Karhiio*, which means beautiful forest), his brother Bernard, along with their wives and children, from the Six Nations Reserve, came west sometime between 1820 and 1825. Father Lacombe called the *Karhiio* people: Caillou, which means pebble in French. Their name has been spelled Cailloux, Calliot, Calliou, Callihoo and finally Calahoo.

According to the Historical Resources Act 2013, "... no person shall make an excavation on any land in Alberta for the purpose of seeking or collecting historic resources unless the person is the holder of a valid permit..." Archaeological Research Permits are usually issued only to people engaged in the field of archaeology and who meet a rigorous assessment of academic qualifications.

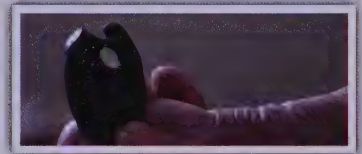
**Nameowak.** Cree for Sturgeon. The hamlet of Namao was built near the Sturgeon River in the late 1870s. The first church was built around 1880 and by 1892, it had a post office. From the August 22, 1891 Edmonton Bulletin: "*The Sturgeon river settlers had been requesting a post office since May 3, 1884. They wanted to call it Wilson Valley at first, then Sturgeon and finally Namao.*"



Pre-Contact projectile points, knapped by First Nations people, found in the Sturgeon River watershed by settlers preparing the land for crops. Photo-Billie Milholland



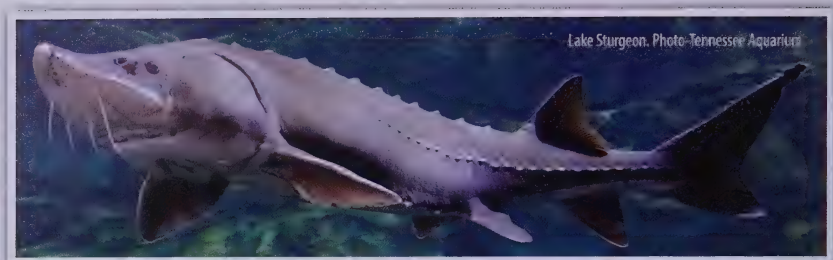
In archaeological terms, a projectile point is an object designed to be hafted to a spear, dart or arrow shaft, or used as a cutting device. Photo-Billie Milholland



Elegant hole drilled through a rock, long before power tools. Photo-Billie Milholland



Dried deer hooves, used as decoration and for making rhythmic sounds when shaken together. Photo-Billie Milholland



**Riviere Qui Barre.** The river that bars. In 1889, that's what the Moise Grainger family from Kansas called the river that barred their progress. They wanted to travel farther west for a homestead, but finding the river in flood, they camped on the east side and dug a cave in the river bank. By the time the flood waters receded they felt settled, so they stayed, living in the cave for a year while they cleared land for farming.

Victoria Belcourt Callihoo (1861-1966)



## POST CONTACT – FUR TRADE

The Métis people are a distinct cultural community that emerged during the fur trade, from the union of European and French Canadian fur traders and First Nations women. In the Sturgeon subwatershed, Métis people were the first to establish permanent communities long before the west was opened to European settlement. Between the 1810s and the 1860s, Métis people settled at Lac Ste. Anne and near Big Lake, just west of St. Albert. In the 1850s there were over 200 Métis living at Lac Ste Anne. The Métis settlement at Lac Ste Anne was best known as a provisioning post for Fort Edmonton, providing a steady supply of whitefish from the lake. By 1871, the St. Albert region had one of the largest Métis populations in western Canada.

**Victoria Belcourt Callihoo**, born at Lac Ste Anne in 1861 to Nancy Rowand (daughter of Fort Edmonton factor, John Rowand) and Alexis Belcourt, a French Canadian fur trader, has left a vivid account of what it was like to live in the fur trade era in this subwatershed. She married Louis Jerome Callihoo, whose uncle was Michel Callihoo and whose grandfather was the grand patriarch Louis Callihoo. She participated in her first buffalo hunt in 1874. The people from Lac Ste. Anne were joined

along the way by Métis from St. Albert. When they reached the hunting grounds, south of the North Saskatchewan River, about 100 families made camp.

*“We, of those days, never could believe the buffalo would ever be killed off, for there were thousands and thousands,” she recalled. “I was thirteen years old when I first joined in a buffalo hunt. We left Lac Ste Anne after the leaves were out on the poplar trees and our small fields and gardens were seeded or planted... my mother ... was a medicine woman who set bones and knew how to use medicinal herbs. We usually took three carts along. We had no axle grease, and tallow was used instead to lubricate the wooden axles. The carts were very squeaky and could be heard from a long way off... We used a good ford about where the high level bridge is now. About a day’s travel south from the [North] Saskatchewan River, we usually found the herd.*

*We had no matches, but got fire from flint and birch punk. It seems no one was anxious to start their morning fire, as we would wait and see if any smoke would come out of the tipis, and when smoke was seen, there was a rush to get a flame or a coal to start one’s own fire. Often we would run short of wood. Then ... we would go out on the plain and pick chips (buffalo dung). On a warm day, this was very dry and burned readily. Only the old ones were used for fuel. The buffalo was a very useful animal, for we ate the meat, we used its hide for robes, shelter for our lodges, footwear, clothes and bags... We always camped close to water...*

*The fall hunt, the last one before winter, which would start after haying, was the most important one, for we had to get enough dried meat and pemmican to last all winter. At this time, the buffalo would be fat and calves grown up. Calves were not killed... The homeward journey was slow, but who cared? ... we were accustomed to it and did not mind, as long as we had plenty of the best and most nourishing food I ever ate. In all, I made four trips into the plains hunting the buffalo.*

—Victoria Belcourt Callihoo

## EARLY TRAILS

In 1862, Father Lacombe organized the first non-fur trade cart brigade, because he could no longer afford the cost of using the Hudson's Bay cart system to transport supplies for his new settlement at St. Albert. He led 30 Red River Carts along North Saskatchewan River trails from St. Albert to Fort Garry and back. This became a regular river trail route for the Catholic missionaries and other non-fur traders along the river. Vestiges of this trail, with the deep cart ruts, can still be found along the North Saskatchewan River, particularly downstream from Victoria Settlement (*White Earth subwatershed*).

The first bridges built to cross rivers and streams were of timber trestle construction. This one crosses the Sturgeon River at St. Albert. Photo-Karen Albert, Images Alberta



## POST CONTACT – SETTLEMENT

Settlement came early to the Sturgeon subwatershed, while it was still part of Rupert's Land, administered by the Hudson's Bay Company. In January 1861, Bishop Tache, standing in the snow, on the banks of the Sturgeon River beside Father Lacombe, jammed his cane into the snow and declared, "*This shall be the site of your new mission, and I will name it after your patron, St. Albert.*"

In the spring of 1862, Father Lacombe and twenty Métis families moved from the settlement at Lac St. Anne to build a new community at St. Albert. By fall they had built a chapel and twenty homes, as well as harvested their first crop. In 1863, the Grey Nuns arrived in St. Albert to build a school and the first hospital in the North Saskatchewan River watershed.

### EARLY AGRICULTURE

In 1845, 20 bushels of potatoes, 12 bushels of barley and a substantial amount of other vegetables were harvested by the Métis people who had settled around Lac Ste Anne. *(see one bushel equivalencies in pounds in the Ram subwatershed section and the definition of bushel in Frog subwatershed section)*

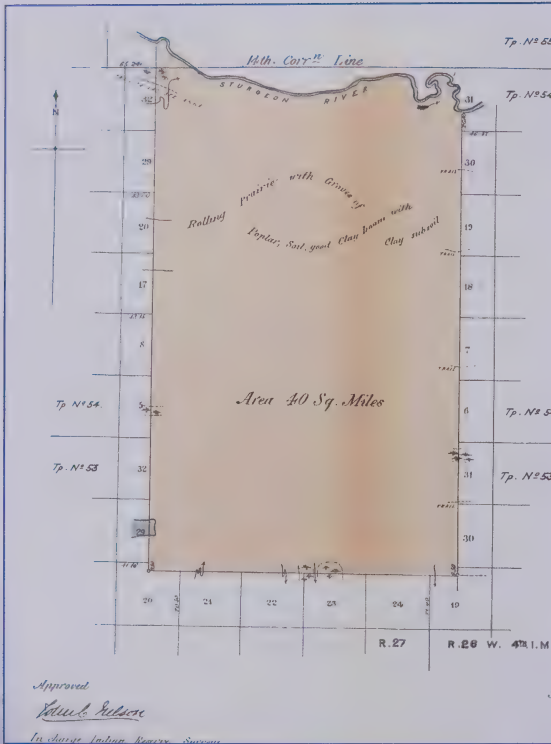
By 1880, according to the December 20<sup>th</sup> Edmonton Bulletin: "Mr. Frank Lamoreaux has threshed already between 7,000 and 8,000 bushels of grain."

In 1890 there was enough local grain harvested to support a grist mill, which was built right in the Village of St. Albert. In 1892, a spring discovered on (N.W. 1-56-24-W4) was the potable water source for most of the settlers in the area for many years until there



Potatoes grown in the Sturgeon River subwatershed in 2014. Photo-Robert Burkholder. Images Alberta

In 1871, engineer Sandford Fleming was appointed to survey the west for the Canadian Pacific Railway to discover the best route for crossing the mountains. Fleming proclaimed the Yellowhead Pass route the best. The Federal government agreed but in 1881, when the last part of the rail line was ready to be built, Fleming's route across the prairies and through the Yellowhead Pass was abandoned in favour of the Kicking Horse Pass. It wasn't until the early 20th Century, that the Canadian Northern Railway built a rail line along the survey route advocated by Fleming. This rail line shipped fish from Lac Ste. Anne to eastern markets.



Treaty No. 6, North-West Territories.  
Indian Reserve No. 132. Surveyed in  
September, 1880 by G. L. Simpson, DLS

was technology to dig deep wells. The Hewitt family, on their way to a homestead in the Bon Accord district bought a herd of 40 cows in Clover Bar, transported them across the North Saskatchewan River by ferry.

In 1898, the Remi Richer family from Kansas took up a homestead two miles east of the present community of Calahoo. The land was heavily treed and hard to clear, but they were able to sell tamarack posts to pay for their first team of heavy horses.

## FIRST NATIONS

**Alexander I.R. 134 Kipobtakaw** (enclosed or covered by trees) was surveyed in 1880 from the east side of Sandy Lake to east of Riviere Qui Barre along the Lac la Nonne Trail. It takes its name from the first Chief, *Katstaweskum*, whose European baptismal name was Alexandre Blanchet. *Katstaweskum* and his headman *Oosahwanaskew* signed Treaty 6 in 1877. In 1880, during their first year on the reserve, *Katstaweskum*'s people broke 49 acres of land and harvested 40 bushels of barley, 200 bushels of potatoes and 100 bushels of turnips. During the many years of crop failure and drought the people returned to hunting,

fishing and trapping in order to survive. In 1905, the Chief and council surrendered one third of the reserve to the Canadian Government. It was sold by public auction in Edmonton to raise money for farm equipment and better housing. In 1925, the Canadian Government wanted Alexander's people and many other First Nations people in western Canada to give up their land so it could be used by veterans and refugees of the First World War. They were promised new reserves further north. They unanimously refused.



### Alexis I.R. 139 Alexis Nakota Sioux Nation

The people of Alexis Nakota Sioux Nation are the most northern members of the Siouan language family. They are closely related to their Cree neighbors through intermarriage and centuries of neighborly interaction, but they maintain their cultural uniqueness as a Nakota Nation.

### I.R. 132

Established in 1878, under Treaty 6, for the band led by Michael Callihoo, it was 40 miles<sup>2</sup> (10360 hectares) bordering the south bank of the Sturgeon River, just east of the present Hamlet of Calahoo. “*Along the western boundary and along the Sturgeon River is well timbered. Nearly ½ the reserve is high rolling prairie; the soil is clay loam of the choicest quality.*” The land was sold off in 1958 to make room for agriculture.

## PIONEER LIFE

At the turn of the 20<sup>th</sup> Century, people in the Sturgeon River watershed still had to travel by horse and wagon to Fort Edmonton and Strathcona for supplies. The land between Edmonton and what is now Spruce Grove was covered by muskeg so dense that settlers from the Spruce Grove area travelled to Edmonton the long way around, via St. Albert.

In 1888 Edmund Juneau, a former gold-panner, took land west of what later became the Village of Riviere Qui Barre. At that time the only other house in the area belonged to Michel Callihoo.

### The Ray Settlement

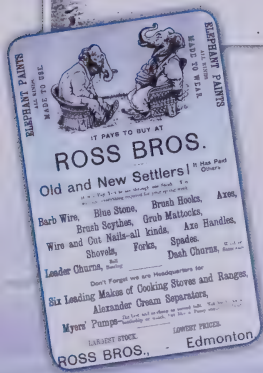
In August, 1891, Big Ranald MacDonald along with Miles and Angus McMillan, all from Glengarry County, Ontario, filed on homesteads halfway between St. Albert and Riviere Qui Barre. The next year they were followed by at least seven other families from Ontario. Two families from Quebec and two families from Belgium also filed homesteads in what soon became known as the Glengarry Settlement or the Ray Settlement for short. 1893 saw another influx of settlers from Ontario. By the summer of 1894 most of the rest of the land between St. Albert and Riviere Qui Barre had been claimed by families from Michigan, Wisconsin, Minnesota, Idaho and the Dakotas. In 1895

Sawmill at Bon Accord. 1902. Photo-Alberta Archives A145



Angus McMillan donated an acre of land from his homestead for a school. Within four years, land that had only known the footsteps of First Nations people and wandering herds of bison was transformed to accommodate farms, villages and towns.

November 1902, somewhere north of Edmonton, a young settler “Bought 1,800 pounds of potatoes for 35 cents.” He also bought 60 pounds of carrots for 40 cents and a hind quarter of beef for 6 cents a pound. In that same year a young immigrant in the Sturgeon River watershed wrote to relatives in Britain: “Beyond the woods are the sloughs and meadows whence our supply of hay is derived. I cut hay there 6 inches higher than my head. I never saw grass grow to the height it does here.”



## Riviere Qui Barre

In 1905, Henderson’s Directory lists the following businesses in the village: Post Office, Cheese Factory, Blacksmith, Harness Shop, Boarding House, Confectionery, Meat Market, General Store, Shamrock Hotel. Six years later there was a doctor, Pharmacist, Undertaker, a Sash and Door Factory and a Hardware Store. From 1910 to 1913 a coal mine operated close by, raising hopes that a railway would soon send a spur line that way. When that didn’t happen, people drifted away and like so many settler urban centers, Riviere Qui Barre’s time in the spot light was short (less than 20 years).

Ad in Edmonton Bulletin April 30, 1900

From 1907 to 1911, large quantities of lumber were freighted down the Sturgeon River from Dan and Wallace Noyes sawmill to Kelly’s Lumberyard in St. Albert. Lumber was piled on rafts that were wired and pegged together. When the rafts scraped bottom, people dammed the river temporarily to refloat the rafts.

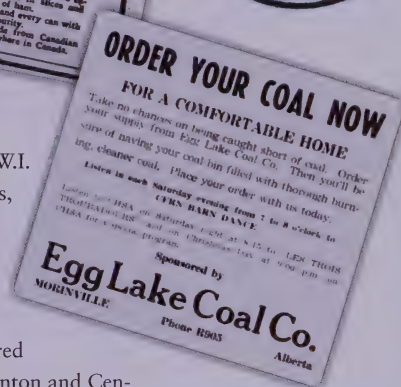
In 1917, the Alberta Department of Agriculture Annual Report judged the Stony Plain District harvest satisfactory, with alfalfa at 3 tons per acre (.4 hectare) and turnips yielding heavy, but not the best quality.

The winter of 1919/20, in the Sturgeon River watershed (just after the 1918 Spanish Flu had decimated the population in the region), was a long one. Freeze up came in early October and horses were still pulling sleighs the next May. Planting was very late that year.

In 1918, 23 year old, Wilfred Reid “Wop” May returned a hero from W.W.I. with few marketable skills. He was a good mechanic; he could build boats, work on cars, fly an aeroplane and shoot a machine gun. There were enough boat builders in the area, not many cars to work on and not much call for machine gun operators, so Wop and his brother Court rented a Curtiss JN-4 “Canuck” from the City of Edmonton for \$25.00 per month, and along St. Albert Trail they operated Canada’s first registered aircraft company “May Airplanes Ltd.” The company flew around Edmonton and Central Alberta, performing stunts at airshows and taking people for their first ride in an aircraft. In 1919, Edmonton Mayor, “Fighting” Joe Clark, flew with Wop over Diamond Park on the flats below the MacDonald Hotel and dropped the first baseball to open the 1919 season. Ever the dare devil, on the return to the airport, Wop told Joe the only safe way out of the North Saskatchewan River valley was to fly under the High Level Bridge. Under they went.



Ads in the Stony Plain Sun, 1921



Ad in the St. Albert Gazette, December 24, 1949, when coal was still king

Red Fife is Canada's oldest wheat. One story about its genesis: A load of wheat grown in Ukraine was on a ship in the Glasgow harbour. A friend of David Fife (a farmer in Ontario in the 1840s) dropped his hat into the red-coloured wheat, collecting a few seeds in the hatband. These he sent to his friend, who planted it. The family cow ate all the wheat heads that grew except for one. That head of wheat was the beginning of Red Fife wheat in Canada. By the 1860s Red Fife was well known and distributed widely. A fine milling and baking wheat, it set the Canadian wheat standard for more than 40 years (1860 to 1900). Marquis wheat, a cross between Red Fife and Hard Red Calcutta replaced Red Fife as the number-one Canadian wheat in the early 1900s.



The Sturgeon River as it enters Matchayaw  
(Devil's) Lake west of Calhoun. Photo-Airscapes

On June 30, 1921, the Stony Plain Sun announced that 1 cent per gopher tail would be paid by the councilors of the Municipal District of Liberty. The tails were to be delivered to council chambers to be counted by the council members at their monthly meetings. In January, 1922, at Harwicks, the Store of Quality & Value, a 10 pound pail of syrup cost \$1.10; a one pound tin of salmon, 10 cents; a 10 pound pail of Pure Jam, 95 cents; a 4 pound pail of Mixed Jam, 60 cents; 5 pounds of Prunes, 55 cents; Pure Sugar Candy, 20 cents a pound, and 2 packets of Maccaroni (not a spelling error, this is how it was spelled in the newspaper), 35 cents.

Today it is difficult to imagine the Sturgeon River subwatershed with many marketable trees, but in the 1930s, in the Calahoo district, there was still plenty of timber to harvest. In the winter of 1930, newlyweds Howard and Troudy Lowry bought a farm near Calahoo. They logged all winter, and then in the spring, moved south to another quarter section. They logged that land in 1931, and then moved on. After several more moves, in about 1934, they bought a quarter section SE 14-54-Rg1-W5. They logged this land for four years.

Before WWI, Marquis, Red Fife (may have also been known as Scotch Fife) wheat, as well as Swedish oats were grown in the Sturgeon River subwatershed. During WWII sugar rationing, bee keeping became popular. In 1943, the Bon Accord and District Beekeeping Association had 50 members. They ordered 200 packages of bees from California.

## 21<sup>ST</sup> CENTURY

Urban pressure on green spaces is a continuing issue in all subwatersheds. Along with urban sprawl, disappearing wetlands, and increased pressure on water bodies for recreational use comes the spread of invasive species. Flowering rush, yellow flag iris, goldfish and Prussian carp are recent invaders in the Sturgeon River system. Within the City of St.

### DON'T DUMP YOUR FISH

Many live fish dumped from aquariums into stormwater ponds, lakes, rivers or streams have survived long, cold winters and are becoming a problem. Unless it's a private pond, stocking fish in bodies of water is illegal, resulting in fines of up to \$100,000. Goldfish are long-lived; they have voracious appetites and reproduce prolifically. They easily crowd out native species.

### PRUSSIAN CARP

Carassius gibelio are native to central and northeast Asia. They used to be categorized as a sub-species of goldfish, but are now considered a separate species. Prussian carp causes decline of native fish species, benthic invertebrates and plankton. These fish, tolerant of low oxygen and pollution, affect water quality by increasing turbidity during foraging activities.

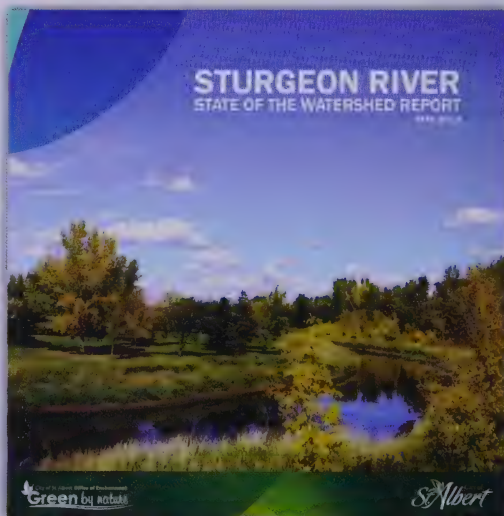
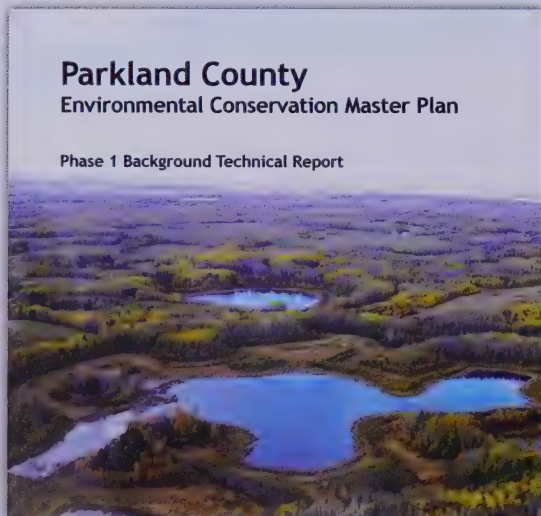


Flowering rush *Butomus umbellatus* is an attractive ornamental pond plant with tall, slender stalks and clusters of elegant pink flowers. It is difficult to believe they are dangerous and so tempting to save a few. Unfortunately flowering rush is a formidable invasive species. It restricts water flow through culverts, crowds out native cattail and bull rush. Removing the plant shakes bulblets loose. These float away and generate more plants. New plants also sprout from seeds. Flowering rush is easy to identify while it's flowering between early August and the end of September, but when it isn't flowering, it blends with cattails and sedges. It has become a serious problem in Lake Isle.

Albert, koi and goldfish flourish in Lacombe Lake stormwater pond, but this pond is not connected to the Sturgeon River, so they don't present immediate concern. Edgewater Pond in the northeast corner of St. Albert does connect to river. A lift station full of grates has been put between it and the Sturgeon River to prevent goldfish escaping into the main river system.

Municipalities throughout the North Saskatchewan River watershed are exploring a variety of strategies to answer emerging environmental issues. What's being done by Parkland, Lac Ste Anne and Sturgeon Counties, along with urban municipalities in the Sturgeon River subwatershed are good examples of the kinds of initiatives

page 7 of the Sturgeon River State of the Watershed Report... "[this report] helps us become more informed about the watershed, how it works, what information is needed, and what we need to do in the future to ensure its health."

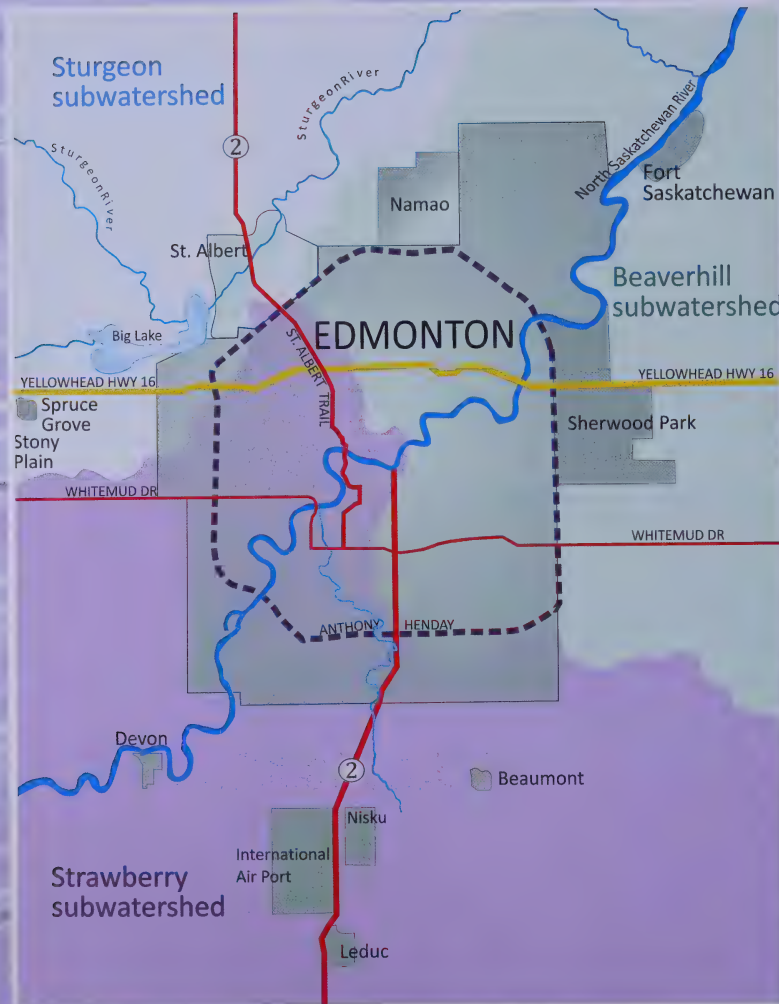


pursued by municipalities at the beginning of the 21<sup>st</sup> Century. These include: State of the Environment reports, Environmental Conservation Master Plans, Integrated Community Sustainability Plans, Land Trusts, Low Impact Recreational Directives, Alternate Land Use Services Programs (ALUS), and Inventories of Environmentally Sensitive Areas. *See individual municipal websites for up-to-date information.*

Most municipalities also support Environmental Advisory Committees (EAC) that include interested citizens.

In 2012, the City of St. Albert created a State of the Watershed Report for the Sturgeon River subwatershed. It summarizes what was known then about the Sturgeon River watershed. The report outlines gaps in information and comments on the watershed's environmental integrity. It recommends a shared governance approach to watershed management, where decisions are made together by regulators, policy makers, landowners and industrial users. The full technical document is available from the Office of Environment, City of St. Albert.

The Weed Act of 2010 lists 46 plants in the Prohibited Noxious category (pose a serious threat and must be eradicated). Plants that are labelled prohibited noxious include flowering rush, Himalayan balsam (poorman's orchid), purple loosestrife, and tansy ragwort. Himalayan balsam grows up to five feet high and bursting into lovely pink, orchid-shaped flowers. In the City of St. Albert, purple loosestrife has been systematically pulled for 20 years, so there are very few patches left.





# GREATER EDMONTON AREA

**T**he Greater Edmonton Area delineates “*a central location within trading distance of numerous tribes who occupied and exploited a wide range of ecological zones,*” and may have been a “*key rendezvous point and staging area in the annual travel patterns of aboriginal groups by the 1750s [and probably] for thousands of years.*”

By the 1770s, European fur traders had advanced up the North Saskatchewan River in a mad scramble for fur. The first to exploit the area were the French out of Montreal. The journeys of early French fur traders in western Canada have not been studied widely, so we have little information about their activities. We do know that they operated in the North Saskatchewan River watershed many decades before English fur traders arrived.

Juliette Champagne, in her **Overview of the History of the NE Edmonton Region**, suggests that one of the first *Fort-des-Prairies* in the Greater Edmonton Area was established by the French in 1778.

Frank Oliver, editor of the *Edmonton Bulletin*, wrote that the ruins of that early fort were still visible in the 1880s.

Evidence of its exact location, west of the Victoria Golf Course in the vicinity of what was then Groat Creek, was probably destroyed during the construction of Groat Road and Bridge.

What began as Edmonton House, near the present City of Fort Saskatchewan in 1795, soon became Fort Edmonton and eventually, just Edmonton.

**Edmonton** is *“situated in the center of an extensive country rapidly grown in population and wealth, possessed of almost unlimited resources for manufacturing, and with a location admirably adapted not only for the building of a great city, but a city of great beauty and attractiveness... Edmonton in 25 or 50 years will have grown to such a size that we of today would hardly recognize it. Not only is Edmonton situated in the centre of a large and remarkably fertile district, but the fact that it is also the capital of an immense province whose future greatness is only beginning to unfold, renders it necessary that it shall also be the center of all those things which are an index of man’s highest intellectual attainments, and that it must be a city which will reflect the dignity, stability, and good taste of its citizens”*

*“...no one thing is more important for large cities or cities which are assured of a great future, than that they shall early secure open spaces for the benefit of future generations”*

*“A crowded population, if they are to live in health and happiness, must have space for the enjoyment of that peaceful beauty of nature – which because it is the opposite of all that is sordid and artificial in our city lives – is so wonderfully refreshing to the tired souls of city dwellers; therefore most of the large cities have provided themselves with parks and large open spaces to be used as parks when necessity requires...”*

Fredrick Todd 1907

The Hudson’s Bay Company established Fort Edmonton as a permanent location in 1812, partly because it was the farthest point west of the Hudson Bay that a canoe brigade could reach before freeze up. Also important was a large, flat building site and easy access to vast herds of bison. Fort Edmonton became the collection depot for prime fur out of the Peace/Athabasca delta and for the tons of pemmican that fueled the northern fur trade.



# NATURAL FEATURES

## NORTH SASKATCHEWAN RIVER VALLEY

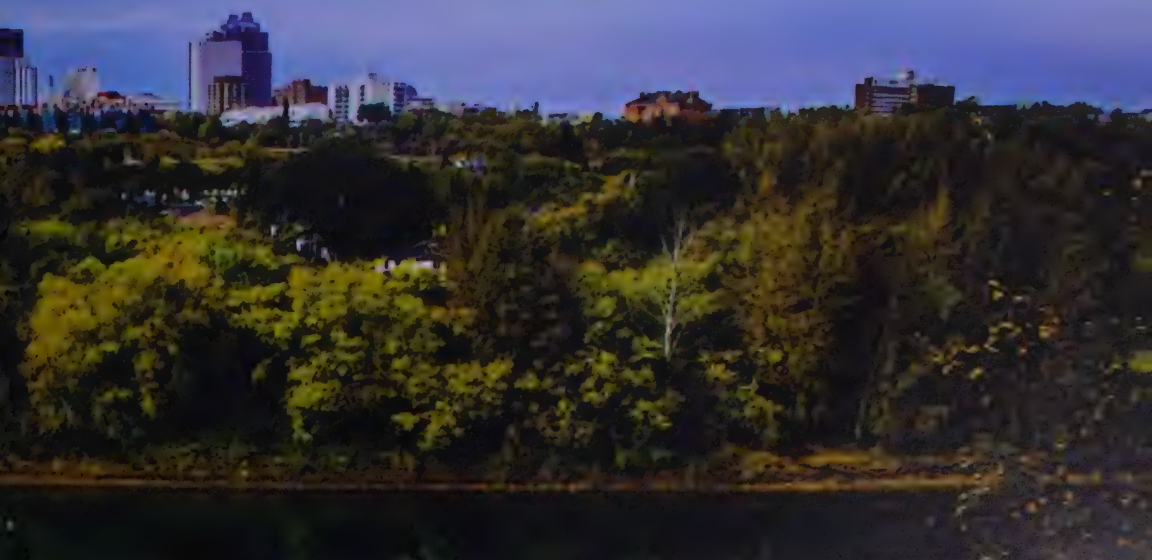
The most significant natural feature in the Greater Edmonton Area is the North Saskatchewan River valley that bisects the city. Even though it has been over 200 years since the river valley could have been described as in a natural state, the present ‘ribbon of green’ is an example of a natural feature in recovery.

### City of Edmonton Ribbon of Green

Invited by the young city, New Yorker Fredrick Todd visited Edmonton in the winter of 1906-1907. His mission: to examine “*the City of Edmonton with a view to reporting on the general scheme for parks and boulevards, which would amply provide the future needs of the city as far as best can be foreseen at the present time.*”

Todd wrote two separate reports describing his vision for a river valley park: one to the City of Edmonton and a second to the Town of Strathcona.

North Saskatchewan River Valley 2013.  
Photo-Images Alberta





Folk Festival in Gallagher Park, Muttart Conservatory in the background.  
Photo-Steve Ricketts, Images Alberta

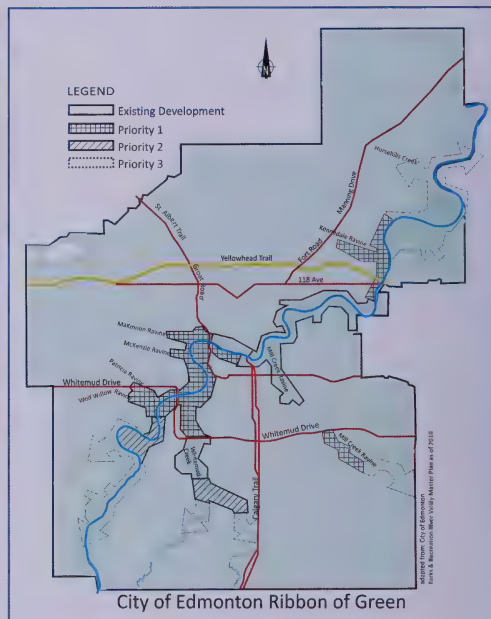
At that time, Edmonton's river valley was "a beehive, populated with dozens of coal mines, brick yards, lumber operations and even a couple of gold mining operations and boat builders."

Resource extraction was lucrative. The river valley was not pretty then; no one expected it to be. Natural landscapes, in the thinking of the day, were there to be tamed.

Todd urged Edmonton to set aside land for parks while land was still cheap and permanent development sparse.

*"For the past seventeen years, New York City has appropriated a million dollars each year for the purchase of playgrounds in the crowded part of the city, and this aside from the enormous sums spent on her large parks; if this land could have been acquired 50 to 100 years ago, the value would have been as nothing compared with what has to be given today"*

Todd felt it would "be a matter of regret" to future generations if land for a continuous boulevard along the entire river embankment was not secured before this



**Edmonton's river valley** and ravine system is one of the largest areas of urban parkland in North America, encompassing over 7,400 hectares (18300 acres). There are 97 km (60 mi) of biking, hiking, skiing, walking and snow-shoeing trails running through the city along the North Saskatchewan River.



was no longer possible. It took the City of Edmonton five years to respond to Todd's suggestions. In 1912, the city bought 155 acres (63 hectares) of land from the Hudson Bay Company for \$130,000.

It was not until after the worst flood in recorded history hit the city in 1915 that the Government of Alberta adopted Todd's vision for the river valley "*in-principle*". The City of Edmonton added the concept of a river valley park system into the City Plan.

A zoning bylaw to protect open spaces and parkland did not emerge until 1933. In 1949, Edmonton City Council adopted the Bland-Spence Report, which recommended no further private development in the river valley and suggested that the City should begin a long-term program to purchase private lands within the river valley.

Looking west from Saskatchewan Drive to the Quesnelle Bridge, 2013.  
Photo-Scott Henderson, Images Alberta

## TRIBUTARY RAVINES

### Rat Creek Ravine

From Muttart Conservatory, looking north across the river at the Fairmont Hotel Macdonald, 2013. Photo-Tarra Kongstrude, Images Alberta

At the turn of the 20<sup>th</sup> Century, there were two Rat Creeks running through Greater Edmonton. The first, the remnant of which is now known as Kinnaird Ravine, flowed out of vast wetlands covering what later became a municipal airport in north central Edmonton. Much of the area immediately north of the creek was marshy. This land, which includes the present neighbourhoods of Prince Rupert, Alberta Avenue and

Parkdale, along with the wetlands feeding Rat Creek, has been drained over the last hundred years to allow urban development.

In 1874, the North West Mounted Police camped near Rat Creek on their way from Fort Edmonton to build barracks at Fort Saskatchewan. They complained that their horses and wagons were continually mired in mud as they made their way around so many sloughs.

In 1916, Rat Creek Ravine was renamed Kinnaird Ravine in honour of George Johnstone Kinnaird, a Scottish immigrant who came to work for the Hudson's Bay Company in 1870. He later became Edmonton's town clerk. By 1915, he was auditor for the City of Edmonton. What is now 82<sup>nd</sup> Street came to be known as Kinnaird Street.

In the early days of settlement, ravines were used as garbage dumps. Rat Creek Ravine was one of the first to be exploited this way. The water draining into the river through that ravine system percolated through garbage for decades. Sewage lines were laid under Rat Creek during the 1930s. Today, what is left of the ravine can be seen east of Commonwealth Stadium, where the old creek bed is crossed by 82<sup>nd</sup> Street.



The **second Rat Creek** is now known as Kennedale Creek (and Ravine). It was once one of the longest creeks in the Greater Edmonton Area, fed by wetlands all the way back to the height of land that separates the Sturgeon subwatershed from the Beaverhill subwatershed. It drained a long, marshy stretch along what is now 137<sup>th</sup> Ave, north of the Yellowhead Highway. This ravine was also an early city dump site. Today, part of the Kennedale Ravine can be seen where it cuts through the neighbourhoods of Sifton Park, Belmont and Hermitage Park.

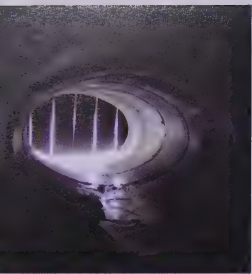
### Whitemud Creek Ravine

Whitemud Creek Ravine is still relatively untouched by urban development and wildlife is plentiful there: beaver, muskrat, frogs, garter snakes, coyotes, white-tailed deer, mule deer, occasionally moose, snowshoe hares, merlins, bohemian waxwings, woodpeckers, osprey, swallows, ducks, blue herons, belted kingfishers, ruby-crowned kinglets, northern orioles, spotted sandpipers, and northern saw-whet owls to name a few. Canoeing is often possible on Whitemud Creek during high water in the late spring. If a person begins at Smith's Crossing (the intersection of Whitemud Creek and 23<sup>rd</sup> Avenue) it is possible to canoe, with a few portages, as far as Snow Valley Ski Club, near the Whitemud freeway.



Whitemud Creek within the City of Edmonton, 2013. Photo-Bill Trout, Images Alberta





Looking out from inside Groat Creek outfall. Photo-Redux Zero

## Groat Creek Ravine

This deep ravine was partially filled in during the 1950s and 1960s in order to build Groat Road. The creek is now underground. The winding road that covers it is bracketed by lush vegetation uncommon along most other busy city routes.

## Mill Creek Ravine

Known as Stony Creek before Europeans arrived, it became known as Mill Creek after William Bird built a grist mill there in 1878.

In the 1960s, the City of Edmonton Department of Transportation proposed a freeway through Mill Creek Ravine. Community leagues, the head of parks and recreation, and individuals protested, because recreational parkland had become rare in the rapidly expanding city. 3000 people signed a petition: *“By virtue of Mill Creek Ravine’s unique elongated shape it has served, not only the year-round recreational needs in a large area otherwise without such facilities, but has also provided a natural wildlife sanctuary.”*

Today the Mill Creek Ravine is an idyllic wilderness oasis in the middle of the city. It has withstood and recovered from the ravages of early industry: coal mines, dump site for the meat packing industry and the construction and operation of a railway.

River Valley, looking east from upstream of downtown Edmonton, 2013. Photo-Clayton Reitzel, Images Alberta





# NATURAL RESOURCES

## VEGETABLE

### TIMBER

In the Greater Edmonton Area, early settlers needed lumber for construction (boats, buildings, scaffolding, fences, mine shaft reinforcement) and wood for domestic heating and brick kilning. After trees in the immediate vicinity had been harvested, timber adjacent to the river upstream was targeted.

Floating logs downstream was the only efficient way to bring enough wood to the Greater Edmonton Area to meet the needs of a growing population. It's not known how much timber was harvested during the early settlement days. We can only speculate by paying attention to the variety of uses to which that timber was put. York Boats, riverboats, gold dredges, ferries and barges were all built at Edmonton on the river flats.

On September 26<sup>th</sup> 1846, artist Paul Kane noted: “40 or 50 men...their employment chiefly is building boats, sawing timber, which they raft down river from 90 miles higher up, cutting up the small poplar along the margin of the river for firewood, 800 cords of which is consumed annually.”

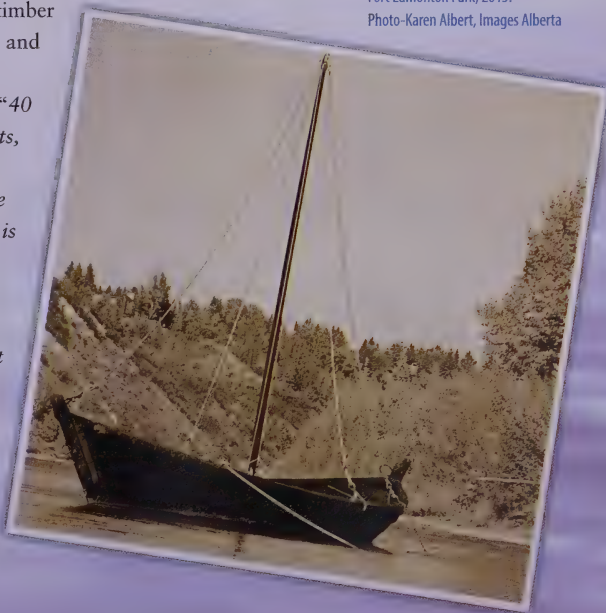
In 1847, Kane continued to be fascinated by the prodigious effort needed to keep a supply of York Boats. He wrote: They are “*building the boats, about thirty feet long and six feet beam, which go as far as York Factory, and are found more convenient for carrying goods on the Saskatchewan...more than one-half of the boats built here never return. This system requires them to keep constantly building.*”

It was a long and perilous river journey from Fort Edmonton to the Hudson Bay. Some boats were

**One Cord of Wood** According to Measurement Canada, a cord of wood is 128 cubic feet (3.6 cubic metres) of neatly stacked firewood, including wood, bark & airspace. “face cord”, “stove cord”, “apartment cord”, “furnace cord” and “short cord” are not recognized terms. They can mean whatever the wood seller wants them to mean.

York Boat anchored in the river next to Fort Edmonton Park, 2013.

Photo-Karen Albert, Images Alberta



### Clinker Bricks

These were the over fired, misshapen bricks, usually thrown out. But in a growing frontier city where most building supplies came from local sources, clinker bricks did not go to waste. They were used, interspersed with other bricks in many early buildings.

lost to rough water. Most likely many boats were not sea-worthy after being subjected to the harsh winter elements at the bay. Fur-laden boats left Fort Edmonton each fall and crews could not return with the next year's trade goods until the following late spring.

During the last quarter of the 19<sup>th</sup> Century, barges were built for non-fur trade use. One example of barge production: in 1885, between April 30<sup>th</sup> and May 13<sup>th</sup>, General T. B. Strange of the North West Mounted Police had barges built at Fort Edmonton. He needed to transport 224 men and one piece of field artillery downriver to Fort Pitt to help with the Northwest Rebellion.

## MINERAL WATER

The North Saskatchewan River brought them here: French, English, Iroquois from the Great Lakes region, European adventurers, explorers and eventually, desperate and hearty settlers. Flowing water in creeks and streams powered grist mills and washed away refuse. For over 175 years, ice cut from rivers and lakes preserved meat and fish for summer eating. Abundant water resources made the Greater Edmonton Area a preferred place to settle.

In the early 1800s, Muchias, a Métis water carrier, was one of the people who packed water daily from the river for domestic use. He walked up and down the steep hill to and from Fort Edmonton, using two buckets suspended from a yoke over his shoulders. Eventually, he drove a horse-pulled stone boat full of wooden kegs that he filled with water from the river. As the population grew at the fort and beyond its walls, more men and more teams formed water delivery brigades. Men drove their teams right into the river whenever they could, to make water collection more efficient.

In 1847, artist Paul Kane described the use of river ice for massive icehouses, built to preserve annually, "700 to 800 buffalo carcasses" - *"As soon as the ice in the river is of sufficient thickness, it is cut into square blocks of uniform size with saws..."*

The Arctic Ice Company wagon carrying river ice blocks weighing between 50 and 100 pounds (23 and 45 kilograms), early 20th Century. City of Edmonton Archives EA-413-26



In 1899, the Edmonton Ice Company began providing small blocks of river ice to individual Edmonton households. There was enough room in the company ice house to store 8,000 tons of ice, which they cut from the river in the winter. It was delivered door to door in the summer by horse pulled wagons.

In 1900, the Arctic Ice Company began business, joining the winter ice cutting crews that spread out on the river, upstream and downstream of Edmonton.

## CLAY

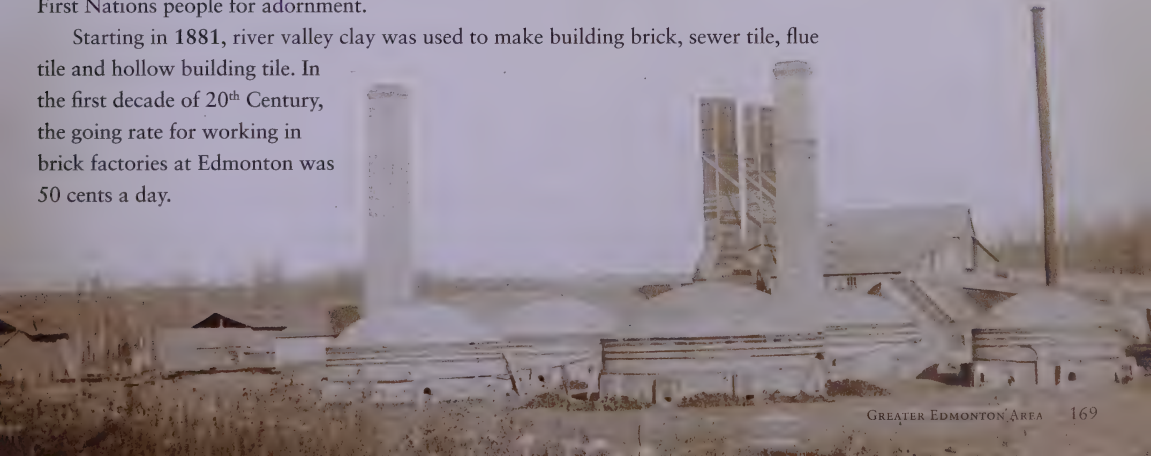
The Greater Edmonton Area is underlain by a variety of sedimentary deposits. Sediments left behind from Glacial Lake Edmonton in the form of clay allowed for an extensive brick making industry during the early days of settlement. Sticky bentonite clays that swell when wet and causes riverbank landslips were deposited about 6,000 years ago as volcanic ash from Mount Mazama in Oregon fell on this region. In early Edmonton, after a rain, before there was pavement or sidewalks, this clay made regular walking difficult after every rain event.

In 1849, after exploring Blackmud Creek, the visiting 9<sup>th</sup> Earl of Southesk recorded it as a place, “*where Indians have dug holes to get a certain substance found there...it was the colour and look of tar, but with no perceptible smell.*”

Blackmud Creek, Whitemud Creek and further downstream, White Earth Creek and the Vermilion River all have names that describe coloured clays used for centuries by First Nations people for adornment.

Starting in 1881, river valley clay was used to make building brick, sewer tile, flue tile and hollow building tile. In the first decade of 20<sup>th</sup> Century, the going rate for working in brick factories at Edmonton was 50 cents a day.

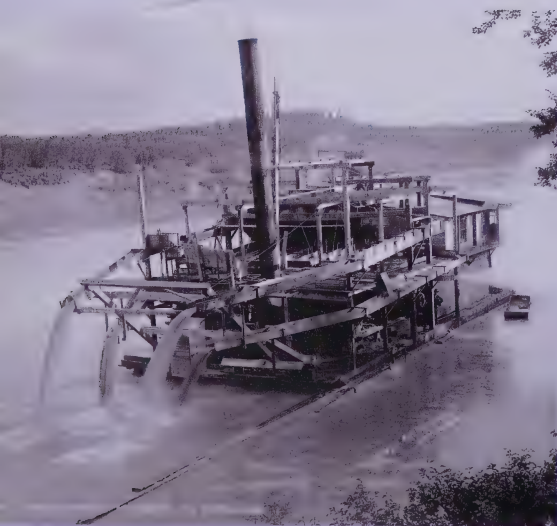
Cloverdale, Anderson's Brickyard, 1904.  
City of Edmonton Archives EA-157-83



21st Century gold panning on Gold Bar Creek, 2013. Photo-Steve Ricketts, Images Alberta



Gold mining the river in the Greater Edmonton Area lasted from about 1862 into the early 1900s. The last efforts to remove gold from river sand and gravel involved ponderous steam powered gold dredges. They could separate out about 2 oz. of gold a day. City of Edmonton Archives EA-157-373



## GOLD

In 1862, 60 miners, bound for the Cariboo gold rush, stayed behind in Edmonton to pan for gold in the North Saskatchewan River. When Thomas Clover and his friends started panning the gravel bars, word spread quickly. Miners Flats (now the Laurier Park/Storyland Valley Zoo area) was soon overrun with 300 miners in tents. Home-made gold panning gear was soon scattered up and down the river valley.

In 1872, George Grant, from the Sanford Fleming expedition, recorded, *“The men who wash the Saskatchewan sand bars for gold make on an average of four dollars per day, but that does not satisfy them; five dollars a day is called wages. This year there were only fifteen miners on the Saskatchewan.”*

By 1894, the Edmonton area had produced nearly \$3 million in gold dust. Gold panners became gold miners, at first using simple separating equipment, then graduating to ponderous mechanical dredges. Most of the dredges were manufactured in the river valley by John Walter and his partners. Gold dredges cluttered the river flats for decades.

In 1895, the June 6<sup>th</sup> Edmonton Bulletin reported, *“More gold is being taken out of the river this season than ever before.”* Gold extraction waned as building booms and coal mining jobs offered more predictable incomes. During the Great Depression of the 1930’s, panning became popular again. The price of gold then was \$20 an ounce. A diligent gold panner could make one or two dollars a day, which doesn’t sound like much, but with eggs at 20 cents a dozen, bread at 7 cents a loaf and potatoes at 10 pounds for 10 cents, a person could do well on that income.

## GRAVEL

Preglacial rivers flowing northeast from the Rocky Mountains deposited material now known as Saskatchewan sands and gravels. After the last glaciation, these pre-glacial sediments were exposed by the North Saskatchewan River as it cut its way through the landscape.

Building a city requires significant amounts of sand and gravel. The first massive gravel pits in the Greater Edmonton Area were excavated where this material was easiest to mine: in what are now Hawrelak, Laurier, Rundle and Hermitage Parks and the area around the Valley Zoo.

## COAL

The coal seams along the North Saskatchewan River valley at Edmonton are composed of transformed plant matter laid down 280 million years ago. It is a sub-bituminous coal, low in ash, burning long and bright. From about 1875 into the 1980s, when the last commercial coal mine in the Greater Edmonton Area shut down, there were at least 160 mines and prospects recorded.

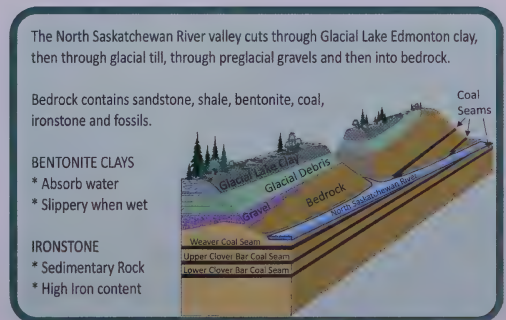
Mine workings covered 3,260 acres (1319 hectares) and produced over 15 million tons of coal. The local economy received a significant boost from this activity. Many of the early coal mines were small “*gopher hole*” mines, burrowed into the river bank, following coal seams in.

**The Weaver coal seam** is the uppermost seam in the Greater Edmonton Area. It accounts for mines worked in the Norwood, Kinnaird, Cromdale and Ada Boulevard neighbourhoods.

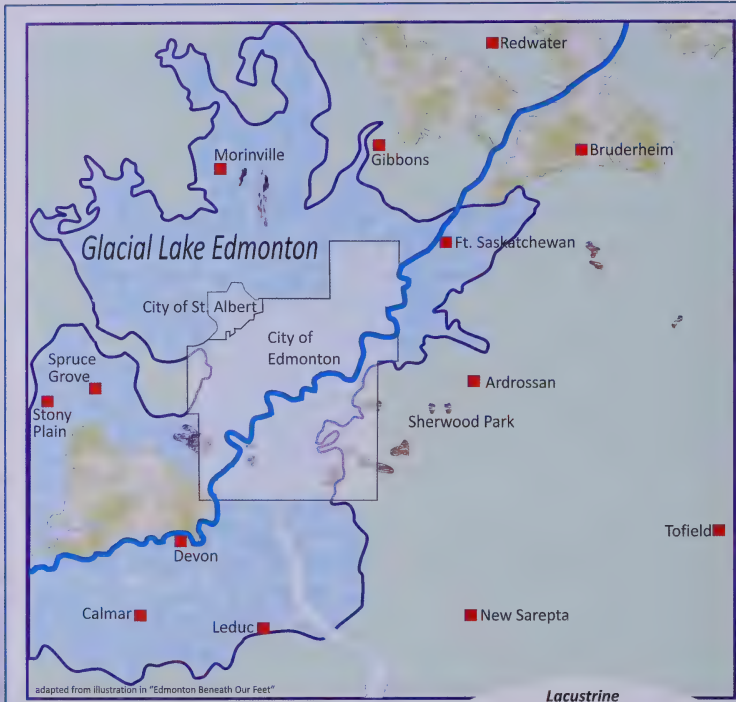
**The Upper Clover Bar coal seam** is about 25 metres (82 feet) above the Lower Clover Bar seam, reaching the surface downstream at the Rundle-Gold Bar Park footbridge.

**The Lower Clover Bar coal seam** rises from 75 metres (246 feet) below the North Saskatchewan River west of Whitemud Creek, to the river’s surface east of the Clover Bar Bridge.

In 1847, artist Paul Kane at Fort Edmonton recorded, “*Along the banks of the river...about twenty feet below the upper surface, beds of hard coal are seen protruding...used...in the blacksmith’s forge.*”



# Surficial Geology of the Edmonton Region



## Lacustrine

pertaining to lakes.  
 From the Latin word for lake, *lacus*.  
 Still water in lakes allows fine particles (sand, silt and clay) to settle out, forming lacustrine deposits.

The natural drainage of central Alberta is to the northeast. The last glacier retreated in that same direction, impounding meltwaters, which produced large temporary lakes. Lake deposits in the Edmonton area were recorded as early as 1886 by Tyrell.

# PRE-CONTACT

## GLACIAL LAKE EDMONTON

Glacial Lake Edmonton formed when the last glaciers (Wisconsin) stopped advancing and the 1 km (.6 miles) thick ice began to melt. For nearly 100 years, Lake Edmonton, about 50 to 100 feet (15 to 30.5 metres) deep, was contained on three sides by ice walls. It is believed that the huge lake drained abruptly. A thousand times the volume of water the North Saskatchewan River now carries in a day, rushed down through the Gwynne Outlet, near what is now the International Airport south of the City of Edmonton. It carried huge icebergs three stories high. After Lake Edmonton drained, the narrow gouges in the landscape, left behind by its abrupt passing, created a series of long, sinuous lakes (Saunders, Ord, Coal and Driedmeat Lakes).

# PRE-CONTACT

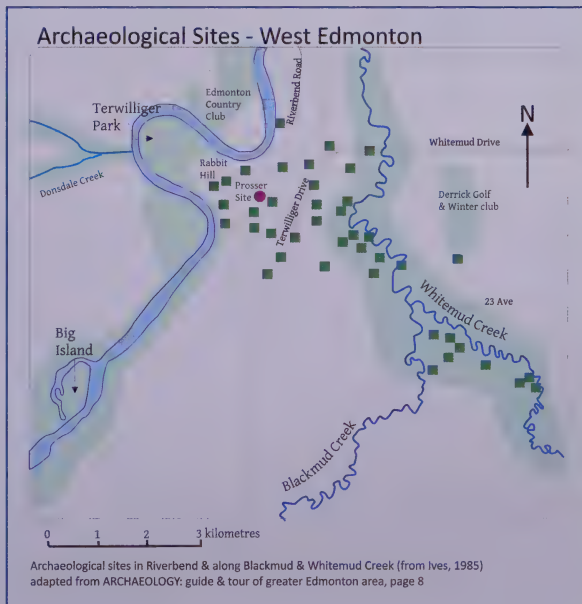
## HUMAN ACTIVITY

*B. P. "Before the Present", where the 'present' is understood to be 1950*

8185 BP – Bison bones, from this era, cracked for human consumption, have been found in the ravines along Whitemud Creek.

6,000 BP – Quartzite, chert, petrified wood and mudstone were used by early people to fashion spear and arrow points. Whitemud and Blackmud Creek valleys, cut deep by water, exposing gravel formations, often yield these stone artifacts.

About 71% of the stone tools found in the Greater Edmonton Area are made from quartzite.



### A Hundredweight

Before the 15<sup>th</sup> Century, a hundredweight equaled 108 pounds. By the time of the fur trade in Canada, it had become equal to 112 pounds (8 stone or 50.8 kg). After American independence, it became known as the 'long' hundredweight next to the American 'short' hundredweight, which was equal to 100 pounds.

6000 BP – Bones from post-ice-age bison were found on the banks of the North Saskatchewan River behind the Macdonald Hotel in Edmonton.

5000 BP – Rabbit Hill, one of the glacial kames along the North Saskatchewan River, has yielded many ancient artifacts. The people who left their arrow and spear points in the sandy soil there may have been buffalo hunters waiting for herds to come to the water to drink.

2765 BP – Bison bones dated from this era were found in terrace alluvium in Weed Creek valley, upstream from the City of Edmonton.

## WHAT'S IN A NAME?

**Edmonton House** made its debut upstream of the mouth of the Sturgeon River in 1795. Most historians believe that Orkneyman, William Tomison, named his new fort after his boss's (Sir James Winter Lake) home community in Middlesex, England. On the other hand, J.B. Tyrell thought that George Sutherland named the fort after a different Edmonton, the one near London, the home of his clerk, John Pruden.

North West Company (NWC) employee, Joseph McDonald, traveling up the North Saskatchewan River in 1805, insisted the fort was called *Fort des Prairie* or Hughes Fort. Since Hughes was the name of McDonald's North West Company boss, it is unlikely that a Hudson's Bay Company fort would be so named.

In 1830, when Factor, John Rowand rebuilt Fort Edmonton, just below the present Provincial Legislature Building, he wanted to call it **Fort Sans Pareil** (Fort Beyond Compare). The Hudson's Bay Company board of directors in London vetoed the name, so Fort Edmonton it remained.

According to oral history from the Dene Suline band at Cold Lake, Fort Edmonton was known in Dene as Beaver Pelt House, a name still in use in the Dene language to this day. Cree people called Fort Edmonton, *Amiskwaskahegan* – Beaver Hills House.



## POST CONTACT – FUR TRADE

The meat and fur harvest in the Greater Edmonton Area began with the French in the early 18<sup>th</sup> Century, increasing steadily toward the end of the century as the British and a handful of Americans found their way up the North Saskatchewan River. In 1788, following the trail of French fur traders out of Montreal, American fur trader, Peter Pangman, built a fort near present day Edmonton.

### FORT EDMONTON

In 1795 the first Edmonton fort, the Hudson's Bay Company's Edmonton House was built near the present day City of Fort Saskatchewan. In 1800, the Hudson's Bay Company recorded a fur harvest of 4,822 Made Beaver. The North West Company reported, 106,000 beaver, 32,000 marten, 11,800 mink and 17,000 muskrat, not to mention the lesser furs, "the majority came from the fur forest along the Saskatchewan."

From the 1801-02 season, Edmonton House shipped 3843 Made Beaver. In 1806, the Hudson's Bay Company built Fort Edmonton on the river flats where the EPCOR Power plant is today. In 1810, on the river flat, near the present 105 street bridge the first recorded grain crop (barley) was harvested.

The final version of Fort Edmonton (fort #5) was built in 1830, just below the present site of the Alberta Legislature.

In 1812 Fort Edmonton shipped 1296 swan skins and 450 hundredweight of swan quills. Swan skins were made into fans, collars and capes. The skins were also used to decorate hats for the women of Europe. The skins were sewn as edging around pillows and made into powder puffs. Swan quills were highly prized for making pen nibs. The market for quills remained high into the 1890s.

#### The Quill Pen

Goose quills were used for regular writing. Architects used **crow** quills; lawyers, **turkey** quills. **Swan** quills were highly prized, because a single swan quill could outlast 50 goose quills. Only the 5 largest feathers from each wing were used. **1912** was the last year the HBC listed quill sales. 52,000 quills were sold that year. The last quill company shut its London office in **1954**.

*From: 18th Century Naturalists of Hudson Bay by Stuart Houston, Tim Ball, Mary Houston*

Trumpeter swan *Cygnus buccinator*. Trade in skins and quills brought this majestic bird to near extinction by the early 1900s. Photo-Alan Wilson



Fur traders were not encouraged to farm, but whenever it was possible, in order to have variety in their diet, some of the men planted and tended gardens. In 1813, James Bird described the soil in the vicinity of Edmonton House as being “*a rich black mould of from one foot to eighteen inches in depth below which it becomes [river sand] at a depth of about three feet....*”

In 1814, the garden at Edmonton House produced two hundred bushels of potatoes, fifty bushels of turnips, eighty bushels of barley, and two thousand, three hundred heads of cabbage. The increase in barley and potatoes was about twenty fold. “*The fence around the garden was considerably enlarged last spring. Perhaps four times the extent of this garden might by degrees be brought into cultivation without additional expense, but the produce of a greater extent of ground ... would interfere with the necessary duties of the Men in the Autumn.*”

Between October 1846 and December 1847, the flourmill at Fort Edmonton ground 15-16 bushels of grain per day. (see the *Vermilion subwatershed* section for definition of bushel) The grain, most likely wheat and barley, was grown on the river flats.

Market Gardening on the fertile river flats, 1902. City of Edmonton Archives EA-157-56



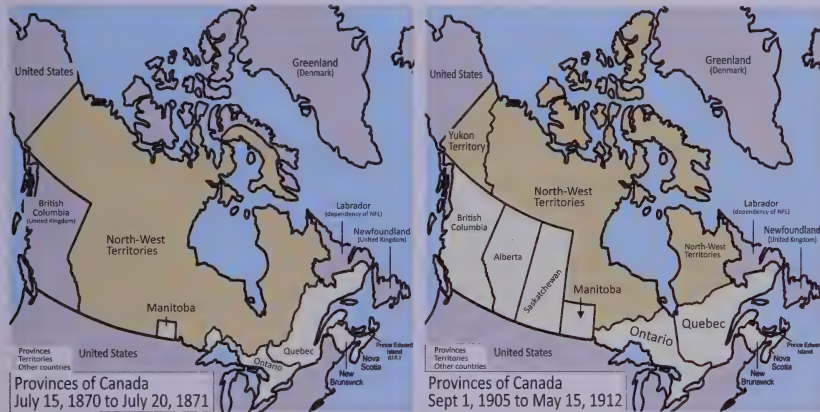
In 1847, December 5<sup>th</sup> artist, Paul Kane, still visiting Fort Edmonton: “*Outside, the buffaloes range in the thousands close to the fort; deer are obtained at an easy distance; rabbits run about in all directions, and wolves and lynxes prowl after them all through the neighboring woods.*” After riding 9 miles over river ice, Paul Kane and a group from Fort Edmonton find “*an enormous band of buffaloes, probably numbering nearly 10,000.*”

In 1866, the virgin soil and cooperative season resulted in a record harvest at Fort Edmonton: 1,333 bushels of wheat and 553 bushels of barley.

# POST CONTACT – SETTLEMENT

## Transition from Rupert's Land to Canada

In 1870, the new Canadian Government purchased Rupert's Land from the Hudson's Bay Company (HBC) for £300,000 plus rights to 20% of the arable land in the territory. In the middle of the young Edmonton settlement the Hudson Bay Company retained 3,000 acres (1214 hectares), but its 200 year corporate rule over the land that was now becoming the Dominion of Canada, was over.



In 1872, Donald Ross built the first permanent residence outside the fort walls, on the north side of the river, on 70 acres of flood plain. For many years it was known as Ross Flats, then later Rossdale. In 1876, Ross converted his house into the first hotel west of Manitoba. He called it Edmonton House. People paid 50 cents a night and guests had to sleep on the billiards table when the hotel was full.

In 1876, John Walters became the first official settler on the south side of the river. He built his house just west of the south end of what is now the 105<sup>th</sup> Street Bridge. He started a ferry service that year, providing the only easy way across the river. His ferry operated sporadically until 1882 when the Hudson's Bay Company began bringing supplies from the south. Since his was the only reliable transportation across the river to

### Papaschase Band Removed to Accommodate New Settlers.

On January 13, 1881, at a meeting in the Edmonton Hotel, European settlers demanded the Papaschase band be removed. Settlers had already begun to build cabins and cut timber on Papaschase land. In January 1883, chiefs around Fort Edmonton pleaded with the prime minister to honour Treaty 6 promises. When the federal survey of the Papaschase Reserve was completed in 1884, it had reduced Papaschase land to 64 square kilometres. On November 19, 1888, the Papaschase band lost their reserve in south Edmonton when three men from the band were persuaded to sign a surrender document.

### 1883 River Lot Survey

The Canadian Government survey established large lots on the north and south banks of the river. The first lot was where Hawrelak Park is today. The lots extended eastwards from there to Canon William Newton's Hermitage, near the Kennedale Ravine. There were 45 lots in all, with the odd numbers on the south side of the river, even on the north. The McCauley, Boyle and Riverdale area maintained the north-north-west and south-south-easterly angles of the river lot survey, as did Virginia Park, Bellevue and Highlands, but a more regimented north/south alignment grid system was adopted everywhere else.



Fort Edmonton, his ferry service became a major business venture.

In 1879, telegraph lines stretching from Winnipeg across vast parkland and prairie connected the small settlement at Edmonton to the rest of the world. In 1880, Frank Oliver started a newspaper, the *Edmonton Bulletin*.

In the 1880s, industry spread out along the river. A tannery *"was located in Walterdale in order to take advantage of the availability of water from the river."* The Pollard Brothers started a brickyard on John Walters' property *"to take advantage of the deposits of clay."*

In 1880, Chief *Papastayo* negotiated a reserve for his Cree band on the south side of the river in what is now south Edmonton. English variations on the spelling of his name include *Pahpastayo*, *Passpasschase* and *Papastew*. The chief was also known in the Fort Edmonton area by his English name, John Gladu Quinn. His band became known as the *Papaschase*. A federal surveyor calculated that the 241 members of the *Papaschase* band were entitled to 124 square kilometres on the south side of the river. (*see Beaverhill*

*subwatershed section for the perimeter of the Papaschase Reserve)*

HBC land sales records indicate that much of the subdivided land on the Rossdale flats was sold on April 12<sup>th</sup> 1882 to Walker Stuart and Co. and the Scottish Ontario and Manitoba Land Co. Limited. These were land speculators who believed the Canadian Pacific Railroad would run through Edmonton. They were vastly disappointed when the railway was built through Calgary.

When the railway finally stopped in Strathcona, south of the river, the speculators let their purchases lapse. Most of the subdivided property on Rossdale flats reverted to the HBC.

In 1902, new immigrants, Stephan and Olena Zurawell, from Galicia (Ukraine), arrived at Strathcona Railway Station (on the south side of the river). From the Immigrant Hall beside the station they could see a barn, a half dozen buildings and many tents. They bought liver, pig's feet and a pig's head for a reasonable price from the Gainers Packing Plant, on the Mill Creek ravine.

To cross the river, they rode down a steep hill in a wagon to the ferry near John Walter's lumberyard. Once across the river, their trunks were loaded onto a platform and a steam-driven cable system pulled the load up the hill.

At the top of the hill, Olena remembered seeing a little church, a few stores, a small hotel and a lumber yard. Below, to the east, was a valley where men were cutting lumber and building houses. Everywhere to the north were lakes, sloughs and cattle grazing.

From Edmonton it was a two day, ox-drawn wagon trip to Fort Saskatchewan, winding around lakes and sloughs. Many times the couple had to cut brush and pile it on wet spots and cover it with dirt so the wagon could pass. When they camped at night, they cut long grass with scythes for the oxen.

In 1903, where the Royal Alexandra Hospital and Kingsway Mall are now, there were miles and miles of sloughs outlined by willows. Thousands of ducks stopped there in the fall, making great feasting for the 7,000 people who lived in the Greater Edmonton Area.

On the north side of the river, Montague Aldous produced a plan for the southern portion of the Hudson Bay Reserve from Jasper Avenue to the North Saskatchewan River. The north-south streets were numbered from First to Twenty-first (101<sup>st</sup> to 121<sup>st</sup> Streets after 1914), and the east-west avenues were given official names. They, too, were numbered after 1914.

In 1896 the Canada Department of the Interior, preparing to advertise in Europe for more settlers, described the Edmonton District, in north-western Canada:

*"Lakes and rivers abound in fish: whitefish, pike, pike, gold eye etc. Game: deer, northern hare, partridges, prairie chicken and water fowl in great numbers and varieties. Tea – 30-50 cents per pound; Coffee – 30-50 cents per pound; white sugar – 14 pounds for a dollar; brown sugar – 16 pounds for a dollar; syrup – 80 cents a gallon; jam – 7 pound pail for a dollar."*

## ORTONA ARTS ARMOURY

In 1913 the HBC sold 75% of its property in Edmonton, keeping only one corner lot and one adjoining lot. They built a sturdy, brick stables and warehouse (today, the Ortona Arts Armoury) on the southeast corner of 102<sup>nd</sup> Street and Hardisty (98<sup>th</sup>) Avenue. South of there was pasture for delivery horses.

Until 1924, HBC delivery horses were light coloured palominos, with highly groomed manes and tails. They pulled green wagons with gold trim and lettering. In winter, the horses, decked with heavy harness bells, pulled sleighs.



The Loyal Edmonton Regiment having tea and sandwiches outside Battalion Headquarters, Ortona, Italy, 1943.

From 1924 to 1927 the Edmonton Pure Butter Company operated in the HBC stables and warehouse building. In 1925 over 750,000 pounds of butter were produced. From the Edmonton Bulletin, May 10, 1926: “*Orient Big Market For Edmonton Pure Butter.*” The Northern Alberta Dairy Pool (NADP) bought the company in 1928.

In 1928, when NADP relocated, Joseph S. Babiuk established the National Trade School in the building. During the Great Depression of the 1930s, the building was used by the Alberta Poultry Pool, and the Boys Department, Youth Training School, where men aged 18 to 30 participated in programs funded by the federal and provincial governments.

The HBC stables and warehouse building was sold to the Department of National Defense for one dollar shortly after the outbreak of the Second World War. A building permit was issued in August 1939 for a \$14,000 conversion of the stables and warehouse into a military facility, designed by Ottawa architect C.R. Sutherland. This provided office space and training facilities for the Royal Canadian Navy Volunteer Reserve. In 1941 as a tribute to the legendary role played by the Nonsuch in 1668 in the establishment of the HBC, the Edmonton district Royal Canadian Navy base was named HMCS Nonsuch. HMCS Nonsuch was one of the most active naval facilities in Canada during the Second World War. Many “prairie sailors” enlisted and trained there, seeing service through the global conflict.

In 1964 Federal budget cuts closed HMCS Nonsuch. In 1965 the building was renamed the Ortona Armouries to commemorate the 3<sup>rd</sup> Battalion, the Loyal Edmonton Regiment’s battle during the Second World War in the Italian town of Ortona. The town was in the path of the Allied advance toward Rome. Ortona fell on December 28, 1943, after seven days of heavy fighting.

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### Steamboat Trivia

S.S. Northcote cost \$53,000 to build. She made her first run from Grand Rapids to Fort Edmonton, return, with a full cargo both ways in 30 days, a full river distance of 2,500 miles (4023.4km). The Lily was built in Glasgow, Scotland by Yarrow & Co. The HBC paid 4,010 pounds for her, bringing her pre-fabricated parts to Grand Rapids for reconstruction.

## RIVER TRAVEL

As early as 1865, the Hudson's Bay Company wanted to use steamboats to upgrade the 940 mile transportation route from Fort Edmonton to the mouth of the Saskatchewan River at Grand Rapids, near Lake Winnipeg. One steamboat trip would eliminate a four-month journey by 400 Red River carts, reducing shipping cost by 50%.

It wasn't until 1875 that the first North Saskatchewan River sternwheeler, the S. S. Northcote, reached Edmonton. Joe Favel, pilot of the S. S. Northcote, in a conversation with NWMP Sam Steele: *"The Missouri, he asserted, was not so good a stream as the North Saskatchewan."*

The Northcote was built in the style of Mississippi River boats; *"her hull was built entirely out of Minnesota oak"*; her engines could generate 39.72 horsepower and *"with a load of 150 tons she drew 3.5 feet of water."*

On her first voyage to Edmonton she carried a cargo of 130 tons. Because passenger traffic was increasing on the Saskatchewan it was recommended, *"The Northcote be outfitted to carry paying customers..."*

Some years later The Northcote is described as having accommodation for 50 passengers. The Northcote provided transportation between Edmonton and Prince Albert, Saskatchewan until the route was taken over by the Lily in 1877.

The steamship era on the North Saskatchewan River spanned the years between 1871-1918. These stern-wheelers were wide, flat-bottomed, motorized rafts, designed to float on the surface, so they could navigate shallow water. The City of Edmonton, City of Edmonton Archives EA-10-1328







An excursion steamer taking Edmontonians to a day-long picnic upstream at Big Island. Possibly early 1900s. City of Edmonton Archives EA-10-1278

The Lily was a two-decked sternwheeler with a steel hull, copper steam and exhaust pipes and a brass-fitted engine. In 1879, the Lily delivered 900 pounds of flour and other freight at Battleford on July 1<sup>st</sup> and 10 days later “*discharged 15,992 pounds of freight for the Company’s post.*” at Edmonton. On August 7<sup>th</sup>, the Lily hit a rock 10 miles below Fort Saskatchewan. Her distinguished passenger, Lieutenant Governor Laird, had to travel on to Battleford in a rowing skiff. By the 1880 season, the Lily was back in operation. She traveled upstream six times that year. Her cargo included a steam gristmill, a sawmill, a threshing machine, and on a return trip downriver, she “*carried coal to be tried as winter fuel at Carleton House.*”

In 1882, the largest steamers to travel the river (the Marquis and the Northwest) were brought into service. The Northwest had 80 berths, two bridal suites and a piano. In spite of shifting sand bars and unpredictable flow, river pilots liked navigating the North Saskatchewan River.

An English syndicate, “*with the intention to put a line of steamers on the river*” chartered the Winnipeg and Western Transportation Company. It “*would take over*



Building the High Level Bridge and the Alberta Legislature, sometime between 1910 and 1913. City of Edmonton Archives EA-10-319

They started the Edmonton Boat Company, which built water crafts to export to British Columbia. Later they manufactured schooners and barges for the Hudson Bay Company and North West Mounted Police. During the Second World War, the boat company manufactured dog sleds, aircraft wings, airplane skis and tug boats. It built speedboats that could reach speeds of more than 69 kilometres per hour. The firm eventually became the Alberta Motor Boat Company.

## CROSSING THE RIVER - Ferries

John Walters had been in the ferry business since 1876. In 1882, he started the Belle of Edmonton ferry service. In 1883, John Walter installed another ferry where the present Clover Bar Bridge now crosses the river.

That year a NWMP report from Fort Saskatchewan, indicated there were “six ferries in the district, four of which are run on the tariff supplied by the North-West Ordinances. The two at Edmonton under the municipal licenses have a much cheaper tariff of charges. The four others are at Clover Bar, Fort Saskatchewan and Red Deer.”

*steamboat transportation on the river from the Hudson’s Bay Company.”*

The North West Navigation Company was also involved in the transfer of riverboats to the Saskatchewan.” Just as the new fleet of sternwheelers began business on the North Saskatchewan River, the river cut a new channel and changed its course downstream from Prince Albert and “*the confidence of shippers in the reliability of the Saskatchewan steamboats to deliver freight was destroyed.*”

In 1911 James W. Weir and James Buchanan bought the Inglis, MacDougall and Thom building at the north end of the Low Level Bridge.

## CROSSING THE RIVER – Bridges

In 1896 the Edmonton and District Railway Company received a charter to construct a railway connecting the towns of North and South Edmonton. The station grounds took up six blocks from 107<sup>th</sup> Street in the west, 104<sup>th</sup> Street on the east, Saskatchewan (97<sup>th</sup>) Avenue on the north, and down to the river between 107<sup>th</sup> Street and 105<sup>th</sup> Street. In 1908, the Low Level Bridge finally opened. It attracted new industries to Rosssdale. The Dowling Grist Mill and the Edmonton Brewing and Malting Company were two companies that established outside the HBC Reserve at Rosssdale. Both these industries were damaged during the flood of June 1915. Most businesses on the flats never recovered from this disaster.

Early in 1907, the Grand Trunk and Pacific Railway, with 150 men, began work on a railway bridge at Clover Bar. By October 30, 1907, over 300 men were working on the bridge. The Edmonton Bulletin reported: *“the bridge, which is over a quarter of a mile in length, is the longest and highest and largest bridge in every way on the new Transcontinental road from Winnipeg to Edmonton.”*

Rafting timber for bridge building,  
sometime between 1910 and 1913.  
City of Edmonton Archives EA-10-299



In 1912, the Dawson Bridge was constructed to carry horse-drawn wagons and electric trains back and forth to the Dawson Coal Company mine located on the east bank

In 1913, the High Level Bridge opened. Matt McCauley (First Mayor of Edmonton, 1892) was quoted in the Edmonton Bulletin: *“Before there were ferries, the only way to get across was to get a big boat, haul it some distance upstream, then jump on board and row and pull as hard as possible so as to reach the other side, praying fervently at the same time that the spot where you would land would be a reasonable distance of where you wanted to get.”*

## THE RAILROAD CONNECTION

A number of trails used by First Nation people were such practical overland routes that provision was made in the North West Territories Act of 1875 to have them surveyed and maintained as permanent highways. Railway lines often followed old trails.

Railway lines west of Edmonton to the Yellowhead Pass follow an old trail used by the Mountain Stony people. The Canadian Northern Railway from Edmonton to Calgary was built along a Blackfoot trail from the Great Plains to Edmonton. The Canadian Pacific, the Grand Trunk Pacific and the Canadian Northern main lines from Edmonton to Winnipeg conform in a general way to the cross-country trails of the Plains Cree. The railway lines running north of Edmonton follow some of the most important trails of the Wood Cree.

In September 1883 the Canadian Pacific Railway reached Calgary and a stage coach line was established between that point and Edmonton. The Edmonton Bulletin, August 4, 1883: *“Edmonton and Calgary stage, making weekly trips between said points, leaves Jasper house, Edmonton, at nine and the steamboat dock at 9:30 every Monday morning, stopping at Peace Hills, Battle River, Red Deer Crossing and Willow Creek and arriving at Calgary on Friday. Returning, leaves Calgary Monday, stopping at same places, and arrives at Edmonton on Friday. Fare each way, \$25; 100 pounds baggage allowed; express matter 10 cents per pound. First stage leaves Edmonton on Monday, August 6th. Edmonton office in Jasper House. Calgary office in Hudson’s Bay Company store. D. MacLeod, Proprietor.”*

In 1886, it was still cheaper to ship freight to Edmonton by steamboat than by railroad. It cost \$2.50 per hundred pounds to bring flour by railway/stage route, while it cost only \$1.80 to bring it by steamboat. For general merchandise, the rate by rail and stage was \$4.50, compared with \$2.90 by steamboat. As late as 1896, the S. S. Northwest arrived at Edmonton with 1,000 sacks of flour.

In 1891, *“The first train arrived in South Edmonton – from Calgary – at 1:00 p.m., August 1. The load consisted of mixed freight cars and passenger cars, with lumber and other building supplies and twelve passengers bound for Edmonton.”*

The Hudson Bay Company, hoping to benefit from rising real estate prices, delayed the sale and development of about 1,600 acres of its reserve lands. This land extended from 107<sup>th</sup> Avenue north to 122<sup>nd</sup> Avenue and from 101<sup>st</sup> Street west to 122<sup>nd</sup> Street.

That’s why the Grand Trunk Pacific Railway located its 18-stall, brick round house, repair shop and shunting yards near 127<sup>th</sup> Avenue, west of 118<sup>th</sup> Street. The facility was built on land purchased by the McRoberts Brothers in 1900 for \$4.50 and sold to the railway for an undisclosed sum. When work began on the railway yards several years later, the over 200 workers needed places to sleep and food to eat. This resulted in a tent city late in 1908. Consequently, many small communities established along the Hudson Bay boundaries, just outside city limits to service new industries springing up

First train to cross the Low Level Bridge, 1902. City of Edmonton Archives EA-430-1





in proximity to the railway property. This included the small community of Calder that didn't become part of Edmonton until 1917.

In 1899, the Edmonton and District Railway Company became the Edmonton Yukon and Pacific Railway. In 1901, the Canadian Northern Railway took over the charter and began to lay track to connect Rossdale with Strathcona. The Grand Trunk Pacific Railway started building the Hotel Macdonald in 1912, finishing it in 1915.

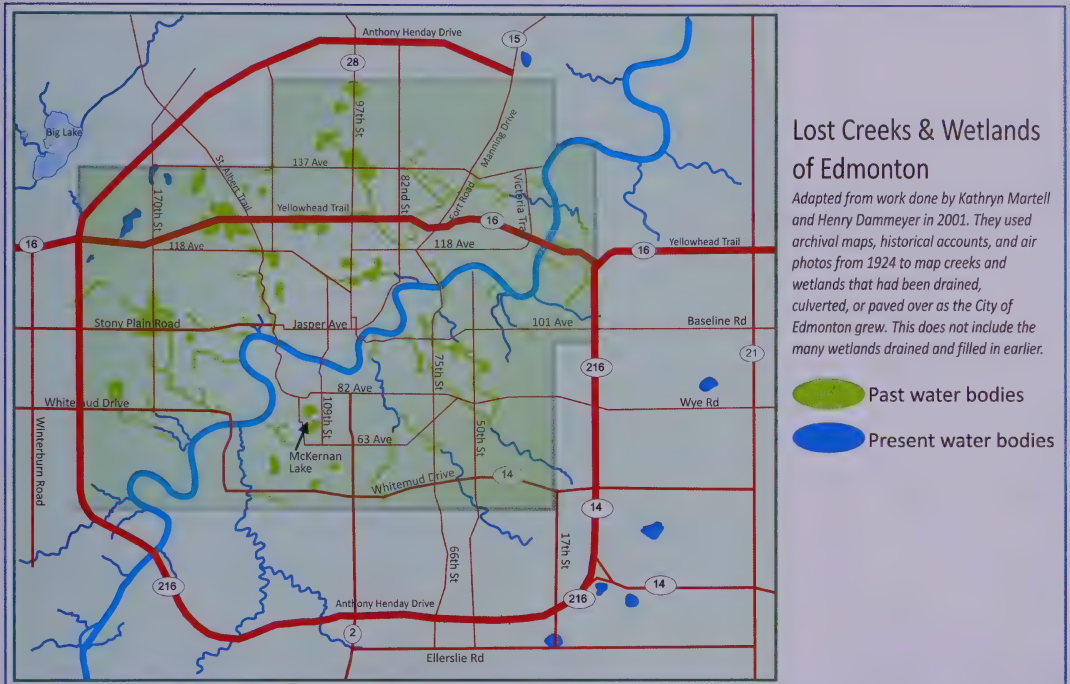
### EDMONTON'S LOST WETLANDS

Early Edmontonians had strong cultural connections to their water bodies. In Southwest Edmonton, that was especially true of McKernan Lake. It was a community gathering place in all seasons. Community events included boating, swimming, picnicking, skating and curling.

Creeks that have been severely impacted by urban development include Fulton Creek, Groat Creek, MacKinnon

Ravine, Rat Creek and Mill Creek, as well as marshlands on the city's outskirts. Many creeks and ravines were lost to road and bridge construction during the building boom of the 1960s.

Groat Creek was culverted and filled during the 1950s and 1960s. It was buried in order to construct Groat Road. Upper sections of MacKinnon Creek were culverted and paved to build residential neighbourhoods. In the 1960s, MacKinnon Ravine was



earmarked for a highway through central Edmonton. To this end, MacKinnon Creek and Ramsay Creek were culverted, filled and packed down to create a roadbed. This roadway is now a walking/cycling trail. The McKernan neighbourhood grew up over what used to be McKernan's Lake, once covering about 30 acres. Fulton Creek, in east Edmonton, illustrates gradual creek loss. Lower sections of the creek were culverted and filled to build Gretskey Drive and the Capilano Bridge. Current expansion of industrial areas encroaches on the remaining marshy areas.

# INDUSTRY

## EDMONTON: COAL TOWN

In 1880, one of the earliest and most significant Edmonton mines was opened by William Humberstone. He dug his first drift at the bottom of Grierson Hill and built a road up the hill to make coal deliveries into the settlement. The Edmonton Bulletin called his coal “the best from any of the drifts near town.” In 1886, when other coal went for \$1.70 a ton, Humberstone’s coal sold for \$1.80 a ton.

In 1881, Donald Ross opened two drifts in McDougal Hill to get coal to heat the rooms in his hotel, directly above. The Edmonton Bulletin reported, “*The Imperial Coal Mining Company of MacDonald, Annand and Yates have a drift in about 30 feet [9 metres] and struck the solid on Saturday. The vein is a little over 3 feet [1 metre] thick. The Zero Company, Robertson and Humberstone, are digging on the opposite side of the creek... The HBC began hauling coal from the Imperial drift last week. The main drift is in 45 inches [a little over 1 metre] and coal is being taken out from each side at the rate of about a ton a day per man. The coal costs, laid down at the Fort - \$4.60 per ton.*”

In 1882, the Moore, Ross and Dennis mine produced eight tons a day, with two shifts of three men each, using picks, shovels and wheelbarrows. Work was restricted to a single narrow coal face at the end of a simple drift.

In 1886, James Kirkness, a Scottish pioneer, began to mine the Upper Clover Bar coal seam at river level. His river lot stretched from the river, north, approximately along 75<sup>th</sup> Street (Gretzky Drive) to the present Northlands Grounds. The mine was 70 to 110 feet (21 to 34 metres) deep.

Today, a coal seam about 50 cm (20 inches) thick can be seen in the river bank west of the Capilano Bridge along the trail that runs past the Highlands Golf Course, where there is river access at the edge of a sand bar.

Only sporadic reporting in the Edmonton Bulletin gives an idea of how much coal was extracted from those early mines.

2,000 pounds  
(907 kilograms) = 1 ton

Today in Canada, metric ton  
measure is used (1 tonne).

1 tonne = 1,000 kilograms  
(2204 pounds)



## 10 Coal Mines in Edmonton operating - 1840s to 1920s



1. **Fort Mine** The exact location of this mine is unknown. The Hudson Bay Company was digging coal there prior to **1841**. In **1882**, the Edmonton Bulletin mentioned that the Hudson Bay Company was still taking coal from a seam directly below the Fort.
2. **River Lot 2** (north side of river, straddling Groat Creek – now Groat Road) This was a small mine. December **1880**, Edmonton Bulletin reported, “The HBC has let contract for 300 tons of coal to be taken out of the bank on Mr. Groat’s property.”
3. **River Lot 1** (where Hawreluk Park is today) A 45 foot (14 metre) shaft was sunk there in **1882**.
4. **River Lot 2** January 18, **1886**, Edmonton Bulletin: “M. Groat mines the coal required for his own use on his own claim on the west end.”
5. **River Lot 2** (the south end of River Lot 2 was on the south side of the river) There was a mine here sometime before **1890**.
6. **River Lot 3** Allan Osmand, who owned the river lot, mined a three foot (.9 metre) seam starting in **1894** and the Williams brothers mined a five foot (1.5 metre) seam there between **1905** and **1907**.
7. **River Lot 9** (owned by John Walter) Strathcona Mine. 8. **Mine 127**. 9. **Mine 773**. 10. **Mine 59**

By the middle of the 1920s, coal mining had caused significant damage to City of Edmonton infrastructure. The road and street railway along Jasper Avenue East continually settled and shifted.

Sewage disposal tanks at the Riverdale plant sank and water mains cracked in Riverdale and Viewpoint. Banks slumped over the Premier Mine affecting Ada Boulevard.

In 1923, the Crown Coal Co. operating underneath the Penitentiary Reserve caused serious surface settling. Finally the City put restrictions on undermining Jasper Avenue and required that 19 foot (6 metre) pillars be left when a mine was abandoned.

This mine tunneled under Queen's Avenue (now 99<sup>th</sup> Street) east to River Lot 22 (Norwood) and River Lot 24 (Parkdale). The miners exploited the Clover Bar Seam, which was 3 to 5 feet (1 to 1.5 metres) thick. The mine was in production for 4 years, yielding 19,760 tons of coal. Mine tunnels covered 7 acres (3 hectares) under 83<sup>rd</sup> Street to the west, underneath today's LRT, under 112<sup>th</sup> avenue and 113<sup>th</sup> avenue to the north and across 81<sup>st</sup> Street to the east. The hoisting shaft, 109 feet (33 metres) deep, was north and east of 112<sup>th</sup> Avenue and 83<sup>rd</sup> Street.

In October 1891, the Edmonton Electric Lighting and Power Company was granted the right to operate the first power plant.

The plant was fired by coal.

By 1895, many small mines were operating within the Town of Edmonton. When burning slag from the Moran and Graham mines could not be extinguished, Edmonton made a first attempt at regulating mine activity. A municipal committee recommended that the problem be fixed by dumping all future slag into the river.

Typical of mine owners of that era, Humberstone provided better working conditions for his men when he had to. In 1898, only at the insistence of the Territorial Deputy Commissioner of Mines, did he install adequate ventilation and a second safety exit in his mines.

By 1900, Humberstone's coal was selling for \$2.25 a ton. He was the major coal supplier to the Town of Edmonton. In December 1901, he sold 16 tons, and by August, 1904, when he sold the town seven tons, he was charging \$2.40 a ton. There is mention at this time that he also sold his slag for \$0.25 a ton to the Town of Edmonton, but it is not known what it was used for.

**PENITENTIARY MINE # 632;** also known as the Penn-Chinook Mine covered an area from 107<sup>th</sup> A Avenue – 95<sup>th</sup> Street to the river. It was one of the largest mines in Edmonton, extending over 100 acres (40.5 hectares). Mining began in 1901.

From 1908 to 1920, the mine was extended an estimated 8.5 acres (3.5 hectares) to reach the upper Clover Bar seam. Some of the shafts were about 20 metres (66

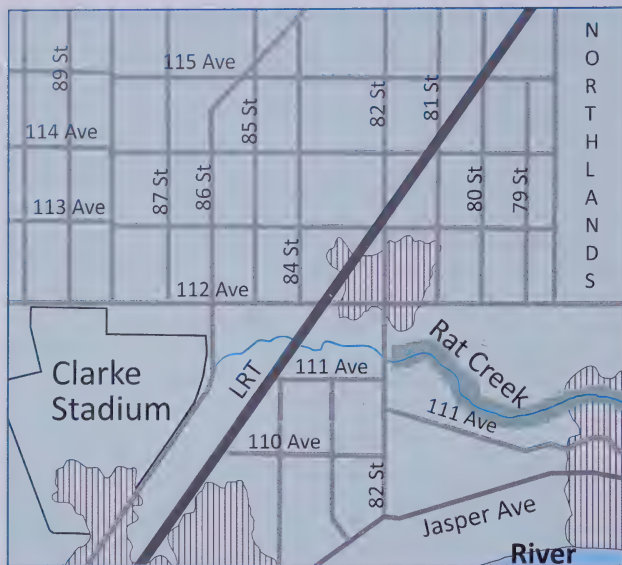
feet) below river level. This mine produced about 370,404 tons of coal. In June 1917, there was a fire in the 90 foot (27 metres) deep airshaft. The foundations of the federal penitentiary power house, boiler room, laundry room and workshop, built over this mine, all cracked. The penitentiary closed at this location in 1920. After 1920, the mine, contracted out, was known as the Penn mine.

The last four and half months of this mine's existence were more productive than the previous two and half years, due to pillar robbing. The mine was a "pillar mine", a technique which left large pillars of coal to support the ceiling, but upon abandoning the mine, the pillars were removed, allowing the mine to collapse as the miners retreated.

In 1903, the Town of Edmonton called for tenders to supply coal to the new electric light plant. Nine local companies were large enough to supply this market.

By 1907, Edmonton had become a city and was at the beginning of a building boom. Twenty-six coal mines were producing 2620 tons per day (this included the Tofield mines).





In 1911, the Board of Railway Commissioners granted the Ritchie Coal Company right to build a spur line across Columbia Avenue to deliver coal into the city.

In 1917 the Humberstone Mine produced over 100,000 tons from an eight foot (2.4 metre) seam. During the 1920s, it produced about 700 tons a day during peak season. Humberstone also operated a 60 acre (24 hectares) farm to grow feed for his mine ponies.

By 1925, only the Premier, Chinook, Dawson and Penn Mines were still located within city boundaries. By 1926, all mine operations between the High Level Bridge and 92<sup>nd</sup> Street were closed. In 1931, the Province of Alberta passed Bill 56, prohibiting mining in all towns with a population over 5000, or under highways or streets in current use.

From mines that recorded coal production, the total resource extracted within the Edmonton city limits is believed to have been about 14 million tons. The Black Diamond Mine, located north of Baseline Road (101<sup>st</sup> Ave) between the Strathcona Science Park and Anthony Henday Drive, was responsible for 22% of that total. It operated between 1905 and 1952.

Whitemud Creek Mine covered a large area, straddling Whitemud Creek in a south to east diagonal between 45<sup>th</sup> and 53<sup>rd</sup> avenues. It had a six to eight foot (2.4 metre) deep coal seam that was mined between 1952 and 1970. Pit ponies spent most of their lives underground in this mine, hauling out coal right up until it closed. During that time the land was not yet part of Edmonton. It was in Strathcona County, so it was still legal to operate a mine there.

During a building boom in the 1960s, Edmonton developers ran into constant trouble because of unidentified mine shafts.

A coal mine atlas, put out by engineer, Richard Spence Taylor in 1971, tried to address this issue by locating and mapping as many of those early mines as possible.

## RAT CREEK and area COAL MINES

According to The Edmonton Bulletin, January 1886: South of Jasper Avenue and 78<sup>th</sup> Street in the river bank, two men (McDonald and Kirkness) were removing coal for their own use from an 18 inch (20 centimetre) seam.

Between 1906 and 1910, on River Lots 22 and 24, the Parkdale Mines, straddling 82<sup>nd</sup> Street near present day Commonwealth Stadium were very active. One man was killed there in a methane explosion in November 1908. Typical of the early coal mines, it is not known whether the shafts of these mines were ever filled in.

Between 1905 and 1923, the mine area straddling Rat Creek (City Mine) was in operation, excavating two seams, between 4 and 6 feet (1.2 and 1.8 metres) deep. Every spring, the mines were shut down temporarily due to flooding during high water.

Between 1920 and 1937, the mine area straddling Capilano Freeway (Premier Mine) was in operation. The coal seams were between 4 and 5.5 (1.2 and 1.7 metres) feet thick. In 1932, the mining company paid the City of Edmonton \$1500.00 for repairs to Ada Boulevard, because mining activity had caused the area to sink. Regular cave-ins plagued the Highlands Golf Course until at least the spring of 1971, thirty-four years after the mine closed.

## RIVERDALE and area COAL MINES

**River Lot 23A.** Between 1880 and 1881 the Imperial Mine operated on Dowler's Creek on the south side of the river. Across from it, the Zero Mine was in production between 1880 and 1882. By mid-March of 1881, 70 tons of coal had been extracted.

**River Lot 12.** The mine workings were between the north east corner of the intersection of 101st Ave. and 96th St. Between 1881 and 1901, the Humberstone Mine produced between 8,500 and 10,000 tons of coal. In 1905 two men opened a new tunnel there.

**River Lots 6 and 8.** Between 1883 and 1897 Donald Ross's Gopher Hole Mine produced between 7,000 and 9,000 tons. He had to dig with pick and shovel through 75 feet (23 metres) of glacial debris before striking solid coal. In the 1920s, the majestic, brick-built, College Avenue School (on McDonald Drive) had to be torn down, because the foundation fell into Ross's old mine workings. McDougall Hill Road required repeated pavement repair throughout the 1920s due to settling over Donald Ross's Gopher Hole Mine.

North-West Territory labour laws (prior to 1905) prohibited girls, women and boys younger than 12 from working in the mines. In 1906, the new Government of Alberta passed **The Coal Mines Act**, which prohibited boys between 12 and 16 from any coal mining activity unless they could read, write and do arithmetic as far as including division. Boys younger than 14 were prohibited from operating mine machinery. The fine for contravening this legislation? \$20.



**River Lot 14.** (along Cameron Ave and up 95 St) Between 1887 and 1892 Hall and Moran received a five year lease to mine coal on the McLeod estate. Between 1892 and 1901 it was mined only by Moran, producing about 8,000 tons. Between 1893 and 1896, McDonald and Carruthers operated a mine in this area. In December, 1893, the Edmonton Bulletin reported that a car of coal was shipped from this mine to Calgary. In 1894, this mine won a contract to supply the Town of Edmonton with coal. In 1895, another contract with Edmonton was won, this time in cooperation with Milner's Mine.

Between 1899 and 1904 Baldwin's Mine operated what the mine inspector reported in 1901 as having one of the most extensive tunnels in the area. In 1902 the

inspector reported it was the largest producer in the district. Early in 1904 he reported the mine had the most extensive workings in the district, producing 40 tons a day.

**River Lot 8.** (stretched north from the river right into what is now downtown Edmonton) Between 1892 and 1898 Bass and Taylor operated a coal mine here. In September 1893, the Edmonton Bulletins reports: "*Mr. Bass is erecting a dwelling on the river front of River Lot 8 and opening a new coal drift there.*" In 1895, S. S. Taylor bought the property. In November 1897, a Town of Edmonton resolution required that the burning slag at the **Taylor Mine** be quenched. A special Council meeting in 1898 recommended that coal mining beneath River Lot 8 be discontinued.

**River Lot 25A.** (along the east side of Dowler Creek on the south side of the river) Between 1894 and 1895 Alexander McDonald operated a mine there. Between 1894 and 1898 at Egge's Mine three employees produced about 50 tons a month. In March,

#### River Lot 20

Between 1888 and 1904 Milner's Mine removed between 12,000 and 15,000 tons of coal.

Years after the mine was abandoned, a community group tried to flood an area at 105th Ave. and 92nd St. to make a skating rink.

The water disappeared. It was discovered later flowing out through the old Milner Mine entrance into the North Saskatchewan River

1898, a mine, then known as the Superior Mine, was purchased by J. H. McCartney, but he abandoned the mine that fall. Between 1896 and 1903, nearby Sleeve's Mine pulled out between 5,000 and 6,500 tons of coal. Between 1898 and 1903 the North Star Mine No. 2 produced 4,000 tons of coal from this location. In November 1904, the mine inspector reported the mine abandoned, covered by a landslide.

*FROM: Coal Mine Workings of the Edmonton Area, Richard Spence Taylor, Edmonton, 1971, City of Edmonton Archives, R. G. 75, G. P. 2436, 1971*

After the Second World War, coal production declined as diesel engines, oil furnaces, and an increase in automobile use made oil the dominant fuel. By the 1960s, the 100 year reign of King Coal in the Greater Edmonton Area was over.



Small riverbank coal mine at Edmonton. Some of the children in the photo may have worked in the mine. Glenbow Archives NA-2229-1



Loading coal on to barges from a small riverbank mine. City of Edmonton Archives EA-10-1430

For centuries spring conifer buds have been used to make beer. Photo-Tarra Kongsrude, Images Alberta



Beer barrels at Edmonton Brewing and Malting Company. Early 1900s. City of Edmonton Archives EA-157-80



## BREWERIES

In the early days of the fur trade, when the ration of rum from London ran out, and the next supply ship was many months away, an acceptable wilderness substitute was Spruce Beer, preferably made from early spring tips when the buds taste more like citrus than spruce. Actual beer brewing started much later in the river valley where water was close at hand.

In 1894, Tom Cairns and partners started the Edmonton Brewing Company west of the Low Level Bridge. In 1898 they moved their business to a location near the present Royal Glenora Club.

In 1905 the Edmonton Brewing and Malting Company opened in Rossdale on Lots 12 and 15 on Currie Street (now 9843 – 100<sup>th</sup> Street). It was owned by the Lines brothers and William Henry Sheppard, Strathcona mayor, who ran the Strathcona Hotel beer parlour. They bought equipment from the Tom Cairns Brewery, which had operated on the river flats near today's Royal Glenora Club. They built a 3.5 story, brick-clad

building. The malting plant was on the ground floor with 21 foot ceiling to allow operation of a drum system for sprouting barley. The first full year they turned out 2,000 barrels of beer. By 1908 production was up to 20,000 barrels. In 1911, when the North Saskatchewan River flooded, brewery workers hoisted vats to keep the floodwaters from spoiling the beer.

In 1913, the Rossdale Brewery became an icehouse. Ice cut from the frozen river was stored during the winter and delivered to customers by horse and wagon in the summer. During the June 1915 river flood, chunks of ice escaped and floated downstream. The brewery, which moved to larger holdings just off 104 Avenue and 121 Street, later became Molson House. Beer was brewed there until the brewery closed for good in August 2007.

In 1917 prohibition brought brewing and



ice delivery to an end and the Rossdale icehouse became a storage facility. When prohibition ended in 1924, the New Edmonton Breweries began making beer in the old brewery again. Then in Oct 1929, world markets crashed, beginning the Great Depression. Brewing halted again. From 1930 to 1962 the building was used as a telephone exchange and the headquarters for the Western Tie and Timber Company. In May, 1962 the building housed V & M Paint & Body Shop, which became V.W. Body & Paint Shop. In 1980 the Province declared the brewery an historic resource.

## BRICKYARDS

In 1881, the Humberstone Brick and Coal Company began to make bricks in what is now Louise McKinney Park. In 1893, James B. Little started a brickyard in what is now Riverdale. Brickmaking continued on that property until 1956.

In 1898, Frank and John Pollard began making bricks on the south side of river near the High Level Bridge on 10.5 acres (4 hectares) on River Lot 7.

In 1901, Pete Anderson started a Brickyard on Gallagher Flats. When the Great Depression closed his business for good in 1932, the land was used as a garbage dump and home of the Millcreek incinerator. Muttart Conservatory stands there now.

In 1902, Charles Sandison built a brickyard where the Mayfair Golf and Country Club are now. Later he moved it to the west end of what is now the Victoria Golf Course. In order to transport his bricks to the top of the river bank, Sandison built Brickyard Road (now 121<sup>st</sup> St.). Bricks from Sandison's Brickyard were used to build Wesley Methodist Church in Oliver.

In 1905, after Charles died, his company was sold and renamed the Edmonton Brick Co. Ltd. It made pressed bricks stamped "*Edmonton*" until 1914.

Started in 1907, the Hardstone Brick Company, founded by Cornelius Gallagher just east of Anderson's brickyard on 93<sup>rd</sup> St, operated until 1915.

In 1907, the Westpark Brick Company started production east of today's Quesnell Freeway near Keillor Farm. It produced bricks from 1907 to 1923.

In 1908, \$8.00 bought 1,000 bricks. After the railroads reached Edmonton, it became easier to order building material from 'away', so after the First World War many of the brickyards disappeared.

### Captain Cook's Recipe for Spruce Beer

Make a strong decoction of buds and twigs of the spruce, by boiling them 3 or 4 hours, or until bark strips with ease from twigs. Take them out of the copper. Put in 10 gallons molasses, which is sufficient to make a ton, or 240 gallons of beer. Let mixture just boil; then put into casks. To it add an equal quantity of cold water, according to your taste. When the whole is milk-warm, put in a little grounds of beer, or yeast if you have it, or anything else that will cause fermentation. In a few days the beer will be fit to drink.

J.B. Little used a soft-mud process to make bricks. Clay was dug from pits along the river and put in a machine. Water was added and horses were hitched to long poles to supply the power for grinding the clay. When the mixture reached the right consistency, it was put into molds and dried for 7 to 10 days before being fired in an enormous wood-fired kiln.

## DAIRIES

Small domestic milk producers with anywhere from a couple of cows to herds of a dozen or so were scattered throughout the Greater Edmonton Area starting from about the middle of the 1890s. In 1906 Edmonton City Dairy, with one horse-drawn milk wagon began regular milk delivery. The milkman's wagon carried large metal containers of milk into which he dipped a quart measure. From that he poured milk into whatever bucket or bowl the customer had handy. By 1944, Edmonton City Dairy had 38 milk wagons delivery bottled, pasteurized milk door to door.

In 1908, David and Sanford Haire were milking 18 cows in an open corral and delivering that milk to Edmonton customers with one milk wagon. By 1910, they had 3 milk wagons. In 1912 they became Woodland Dairy Limited (95<sup>th</sup> St – 108<sup>th</sup> Ave). They became part of Palm Dairy in 1956. Palm Dairy was purchased by Beatrice Foods in 1991.

In 1928 the Northern Alberta Dairy Pool (NADP), a farmer's dairy cooperative purchased the Edmonton Pure Butter Company. For the next 64 years NADP dominated the dairy industry in the North Saskatchewan River watershed as it bought up small creameries and cheese factories in the Strawberry, Sturgeon, Beaverhill, White Earth, Frog and Vermilion subwatersheds.

In September 1962, the last of NADP's 14 horse-drawn milk wagons were retired. Edmonton was one of the last cities in North America to use horses for milk delivery. Door-to-door milk delivery in Edmonton ended in 2012 when Dairyland delivery man, Barry Sverderus, the city's last milkman retired.

Woodland Dairy wagons delivering milk, cream and butter door to door, early 20th Century. Eventually they also delivered ice cream. City of Edmonton Archives EA-10-1358



## MEATPACKING CAPITAL OF WESTERN CANADA

At one time, Edmonton had at least six different meat processing facilities, some within a few blocks of Fort Road and 125<sup>th</sup> Avenue. The others were in the Ritchie neighbourhood in south Edmonton. Today a 30 metre tall brick chimney on Ft. Road is the only reminder of a significant meat packing industry that lasted over 100 years.

Between 1891 and 1911 the Gallagher-Hull Meat and Packing Company operated out of a two-story brick building on 35 acres along Mill Creek, fronting the North Saskatchewan River. Springs flowing into Mill Creek supplied fresh water. By 1900, it was producing 200,000 pounds of cured meats a year, making it Edmonton's largest meat dealer.

Between 1901 and 1913 butcher, Wilhelm Vogel operated a meat packing company in the Mill Creek Ravine near 88<sup>th</sup> Ave. The company processed bacon, ham, beef, and chicken; made smoked meats and sausage, and rendered out lard and tallow. The plant had a 24-horsepower steam boiler and a 16-horsepower steam engine, driving a shaft connected to a dynamo which generated enough electricity to power the lighting system as well as run the sausage making and other machinery. In 1908 Vogel installed a deep water well and pump system.

Between 1902 and 1982 the John Gainer Company had a long run. “*more guts than Gainers*” was a common expression in Alberta for decades. In 1902, John Gainer built a slaughterhouse near the CPR station in Strathcona. In 1903, he opened a bigger facility beside Mill Creek at 79<sup>th</sup> Ave and 96<sup>th</sup> Street. By the 1930s, Gainers employed 230 workers and produced 18 million pounds of meat a year. In 1933, a three-story reinforced concrete, brick and tile slaughterhouse was completed. In 1939 the plant expanded again. In 1972, when Gainers employed 500 people, it was sold to Agra Industries Ltd. of Saskatoon. Peter Pocklington, owner of the Edmonton Oilers hockey team, bought Gainers in 1978. Pocklington closed the plant in 1982. Buildings were demolished in 1991 and the area developed for residential housing.





The largest brick chimney in western Canada, all that's left of the Canada Packers meat processing plant, 2013.

Between 1908 and 1997 the **Swift Canadian /Gainers/ Burns/ Maple Leaf Companies** operated on 64<sup>th</sup> St & 124<sup>th</sup> Avenue, employing up to 110 men. During the 1940s, Swifts was a major supplier of canned ham to Alaska Highway construction workers. In 1980, Peter Pocklington bought it and renamed it Gainers. In 1994 it was purchased by Burns Meats, which in turn was bought by Maple Leaf in 1996. In 1997 the plant closed

In 1906, Patrick Burns opened a slaughterhouse on **Syndicate Avenue** (95<sup>th</sup> St) and **Norwood Boulevard** (111<sup>th</sup> Ave) right across from Norwood School. Residents complained to city council about the “*nuisance odours.*” In 1910, Burns purchased 160 acres near what is now 120<sup>th</sup> Ave and 74<sup>th</sup> St and in 1912 opened new plant there.

In 1936 **Canada Packers** employed 300 workers. In the 1950s through the ‘70s, it employed at least 1000 workers. At one time the killing floor was staffed exclusively by Black Canadians, from rural communities such as Amber Valley. The plant was demolished in 1995. The smoke stack, considered the largest brick chimney in Western Canada, was saved from the wrecking ball by Edmonton architect Gene Dub, who owned the property at the time. In the early days all the meat packers dumped their refuse into the nearest ravine.

## DON'T BUILD ON THE FLOOD PLAIN

In 1825 and 1830, severe spring high water covered the flood plain around Fort Edmonton, convincing the Hudson's Bay Company to move from Rossdale Flats (Edmonton House number 4) to its final location up on the river bank, just below where the Alberta Legislature buildings are today.

In 1891, the first power plant in Edmonton, the Edmonton Electric Light Co. Power Plant, was built west of the Low Level Bridge on the north side of the river on the flood plain below McDougall Hill. River water was used to cool the equipment. The spring flood of 1899 damaged much of that equipment, shutting down the power plant for three weeks. The flood also caused serious damage on Gallagher and Riverdale flats. Engineers raised the piers of the Low Level Bridge (construction of the bridge had just started prior to the flood) by eight feet in anticipation of future floods. Five years later, a new power plant was built further west, on the flood plain where the Rossdale Power Plant sits today.

1915 flood on the north side of the river. City of Edmonton Archives EA-25-35



### Notable Flood Years on the North Saskatchewan River at Edmonton

YEAR	PEAK DATE	PEAK FLOW (m3/s)
1912	July 10	2100
<b>1915</b>	<b>June 29</b>	<b>4640</b>
1923	June 25	2380
1925	Aug 18	2150
1944	June 16	3450
1952	June 25	3540
1965	June 29	2590
1972	June 27	2970
1986	July 19	3990
2013	June 23	2710



1911 flood on the south side of the river. City of Edmonton Archives EA 197.4.17

In Alberta, Alberta Environment provides forecasts & advisories for high streamflows, flooding & ice jams in rivers & streams

**A High Streamflow Advisory** means stream levels are rising or expected to rise rapidly but major flooding is not expected. Minor flooding in low-lying areas is possible. Anyone situated close to the streams affected (campers, fishermen, boaters and the general public) is advised to be cautious of the rising levels.

**A Flood Watch** means stream levels are rising and will approach or may exceed bank full. Flooding of areas adjacent to these streams may occur. Anyone situated close to the streams is advised to take appropriate precautionary measures.

**A Flood Warning** means rising river levels will result in flooding of areas adjacent to the streams affected. Anyone situated close to the river should take appropriate measures to avoid flood damage.

In June 1915, the most destructive flood in modern times inundated the flood plain. The river rose 10 feet (3 metres) in 10 hours. It demolished the river valley communities of Walterdale, Rossdale, Cloverdale and Riverdale.

A phone call from Rocky Mountain House was all the warning they had: “*My God, Edmonton, look out; the river’s up 20 feet [6 metres] and still jumping.*” Heavy rains caused the North Saskatchewan River to rise rapidly. At least 50 homes at Edmonton, were swept away; 500 more were partly or completely submerged. Upwards of 2,000 people were homeless and 35 city blocks were under water. This all happened in the course of one day.

1915 flood. City of Edmonton Archives EA-413-26





There is a general perception that extreme flood risk of the North Saskatchewan River has been reduced, because of the Brazeau and Bighorn dams, upstream of Edmonton. This is not the case, for at least two reasons. First of all, neither dam was designed to hold back flood water. Once each dam is filled in the spring, excess water from subsequent rain events have to be released, or risk compromising the dam structure. Secondly, four major river systems (Ram, Baptiste, Clearwater and Nordegg Rivers) plus a myriad of creeks and streams flow into the North Saskatchewan River below the dams and upstream of the City of Edmonton.

High water, June 23, 2013. Photo-Bill Trout, Images Alberta

## RECREATION

In the early days recreation in the Greater Edmonton Area took place on land. The river was a stinky stream, carrying away waste from homes, businesses, sawmills, coal mines, brick yards, tanneries, breweries, meat packing plants, dairies, and hog, chicken, turkey and mink farms. Cleaning up the river and using it for recreation are modern notions

In 1882, the first European sporting organization in Edmonton, the Edmonton Cricket Club, was formed. Edmonton had a population of 350 at that time; it was not yet a town. When Edmonton became a city in 1905, part of the celebration was a cricket play down.

A Rugby Football Club was organized next, followed by Lacrosse in 1883. Organized baseball emerged in 1884; the Edmonton Rifle Association in 1886, Edmonton Tennis

Edmonton Dragon Boat Festival 2013,  
Louise McKinney Riverfront Park. Photo-  
Heather Kuchma, Images Alberta





Club in 1891 and finally, Hockey Clubs in 1894, in both Edmonton and Strathcona. Edmonton's first Golf Club came into being in 1896. By 1899 there were Women's Hockey Clubs in Edmonton.

## WATER

In 1902, when the population of Edmonton was about 4,500 Edmontonians paid \$1.25/m<sup>3</sup> for water hauled by bucket from the river by a waterman. In 1903, the first piped water distribution system was constructed, taking water directly from the North Saskatchewan River. It cost \$140,000.00, serving 5,500 people with 10 miles (16 kilometres) of watermains, 55 fire hydrants, 103 water services, as well as one 330,000 litre (72,590 gallon) elevated storage tank.

In 1914, when the population of Edmonton was 72,516, Edmontonians paid 9¢/m<sup>3</sup> for water. People who had a tub and toilet paid an extra \$8 yearly. In 2003, when the population of Edmonton



Floating on the river on a hot summer day in the Greater Edmonton Area, 2013. Photo-Karen Albert. Images Alberta

#### Ultraviolet Treatment

Effluent disinfected by ultraviolet radiation reduced fecal coliform levels by 99.9%

was about 700,000 Edmontonians paid \$1.10/m<sup>3</sup> for water, and could have tubs and toilets at no extra cost. By then EPCOR had 3,600 km (2237 miles) of water pipe, 14,000 hydrants, 200,000 water services, and 800 million litres (212 million gallons) of water storage.

### WATER TREATMENT

In 1903, Rosssdale was the site of the Edmonton Water & Light company, a horse race track, and a village. The first water treatment plant was constructed at Rosssdale that year. It included one pumphouse, one low lift pump, one high lift pump and one sedimentation basin. One hundred years later, in 2003, Rosssdale was still the site of a water plant and a power plant. It also had a baseball stadium and new housing developments.

In 1905, filters were added to the Rosssdale water treatment plant to address complaints about muddy drinking water. In 1912, when Edmonton and Strathcona amalgamated as one city, the water treatment systems were combined, for a total of 96 miles (155 kilometres) of water mains. There were 264 cases of typhoid in Edmonton that year, but the city water supply was not blamed; “*Travellers and those returning home from summer vacations are peculiarly liable to bring back the infection in their systems.*” said a Health Services report. In 1927 the first mechanical clarifier was installed at Rosssdale, and a new sedimentation basin and chemical feed system were built.

### WASTE WATER TREATMENT

The earliest sewer system in Edmonton was built in 1880 for a population of about 200. It discharged directly into the river without treatment.

In 1916, Edmonton’s first wastewater treatment plant was built in Rosssdale. It was able to treat about half the wastewater produced by the city. It was shut down in 1916 to save costs during World War I.

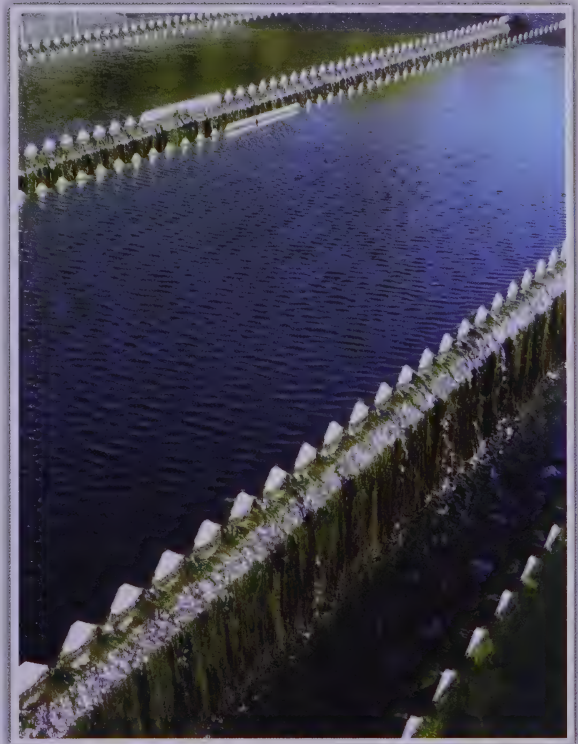
Another wastewater treatment plant was not built until 1925, this time in Riverdale. It operated until 1956, when the plant at Gold Bar opened. Another wastewater treatment plant was opened in 1930 in Queen Elizabeth Park. It treated wastewater until 1955 when a new plant went into operation right beside it. That plant shut down in 1972

after a pipeline was built to move wastewater from the west end of Edmonton to the Gold Bar plant. A water treatment plant on the south side of the river opened in 1931 in Mill Creek Ravine to deal mostly with waste water coming from Gainer's Meat Packing plant. Until then, wastewater from Gainers was dumped directly into Mill Creek. The Mill Creek plant closed in 1955 just before the Gold Bar plant went into production.

The Gold Bar Wastewater Treatment Plant opened in 1956 with one grit tank, two primary clarifiers, four digesters, three secondary aeration tanks, four sludge storage lagoons, a blower and boiler building, as well as an administration building with adjoining laboratory. The advanced secondary processes were a first in western Canada at that time.

By 1991, Gold Bar had five aerated grit tanks, eight primary clarifiers, six anaerobic digesters, eight secondary clarifiers and aeration tanks, two blower buildings, a remodeled administration building, and a new and expanded laboratory.

In 1996, Gold Bar hit a tertiary treatment milestone, opening two new bioreactors, followed one year later by ultraviolet disinfection facility. Then in 1998, a Waste Activated Sludge (WAS) thickening facility and a primary sludge fermenter were added. By 2002, all eight aeration tanks had been converted to bioreactors, completing the Biological Nutrient Removal upgrade program. By 2005 Gold Bar had achieved full tertiary treatment.



Gold Bar Waste Water Treatment Plant weirs, 2013. Photo-Tarra Kongsrude, Images Alberta

## WASTE

Edmonton's first municipal dump, or nuisance grounds as they were called then, opened in 1894 at an unknown location, probably in the river valley. Most of the early refuse dumps were on the banks of creeks to take advantage of the early spring 'Flush'. As the City expanded the smelly, vermin over-run trash heaps had to be located further and further from residential areas. Official garbage collection began in 1918 with horses and wagons. Horse-pulled wagons were still in use until the early 1950s, although by then most trash was picked up by trucks. What to do with trash is a continual issue requiring continual innovation.

Recycling may seem like a modern idea, but as early as 1956, the City of Edmonton asked residents to separate out paper and rags to be sold, along with cardboard, to a paper company. A glass firm was interested in buying used glass at that time and the city planned to sell cans to a steel factory. On the other hand, many businesses and homeowners still burned their trash in barrels in back alleys until at least the late 1960s.

City waste becomes useable compost.



In 1986, the City of Edmonton initiated a small pilot program to test curbside blue box recycling. In 1987 the first annual Toxic Round-Up was held to collect household hazardous wastes. In 1988, blue box curbside recycling began. In 1991, the first community recycling depot opened. By 2015 there were 20 of them. In 1992, collection of landfill gas, as a fuel source for electricity, began at the Clover Bar landfill site. In 1995, the first Eco Station for household hazardous waste opened, followed by a second in 1999 and a third in 2009.

In 1999, one of the most advanced plants in North America for recycling

mixed materials, the Materials Recovery Facility opened to sort recyclables. It processes all types of recyclables accepted in the City of Edmonton's Blue Bag, Blue Bin and Recycling Depot collection programs. Since 2000, the Edmonton Composting Facility has used organic waste collected from city households and sewage sludge to create compost. This, together with the recycling programs, enables Edmonton to divert over 50% of residential waste from landfill.

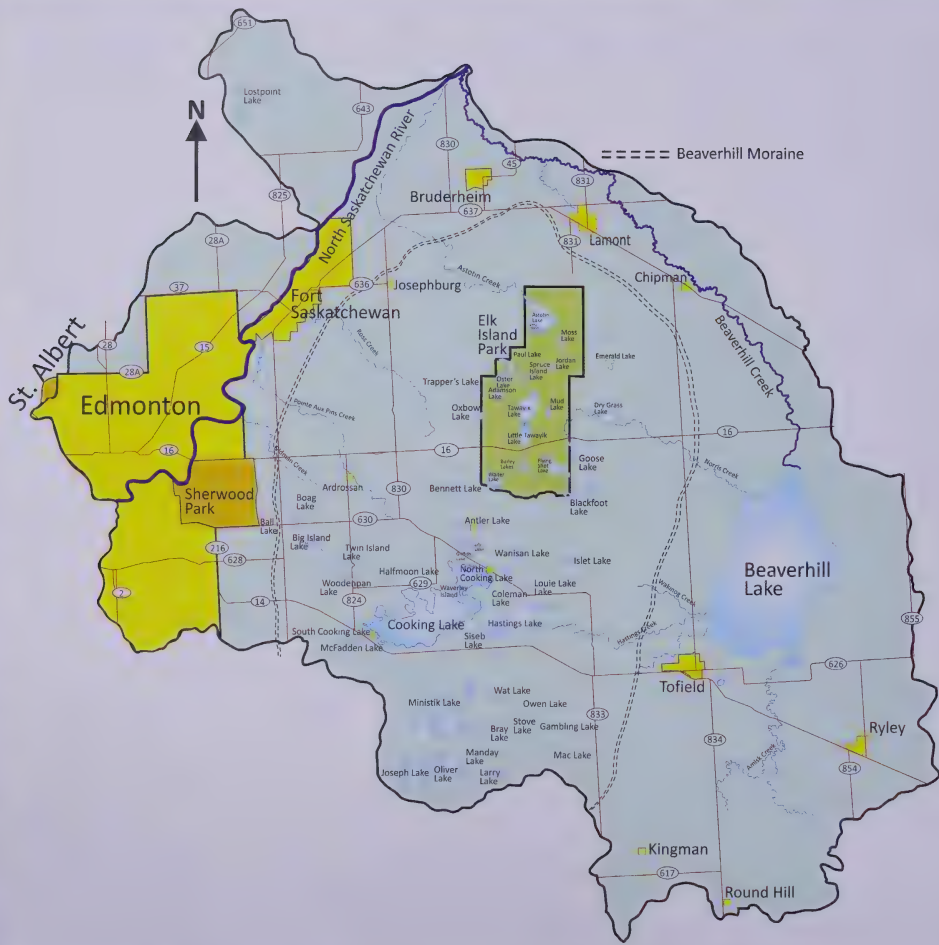
In 2006, Big Bin Events began, offering citizens, several times a year, free disposal of large waste items. In 2007 the first permanent Reuse Centre opened and the GEEP Electronics and Electrical Recycling Facility began to recycle e-waste. In 2008, construction and demolition waste recycling began at the Edmonton Waste Management Centre.

In 2009 the Integrated Processing and Transfer Facility (IPTF) opened. This is where garbage is divided into three separate waste streams: composting, biofuels production and landfill. Waste that can't be recycled or composted is turned into feedstock for Edmonton's Waste-to-Biofuels and Chemicals Facility, which opened in 2014. It is the first industrial scale waste-to-biofuels facility of its kind.

In 2008, the Greater Edmonton Area population surpassed one million, becoming the most northern city in North America with a population over one million people.

#### Early Edmonton Street and Avenue Names

Abernathy Ave = 111 Ave  
Athabasca Ave = 102 Ave  
Brazeau Ave = 113 Ave  
Churchill Ave = 108 Ave  
Elm Ave = 113 Ave  
Nipigon Ave = 112 Ave  
Okanogan Ave = 115 Ave  
Peace Ave = 103 Ave  
St. Lawrence Ave = 109A Ave  
Saskatchewan Ave = 97 Ave  
Waterloo Ave = 125 Ave  
Yukon Ave = 116 Ave  
Ottawa Ave = 93 St  
Namayo Ave = 97 St  
Grierson St = 101 Ave  
King St (Strathcona) = 108A St  
King St (Edm North) = 86 St  
Saskatchewan Drive = same  
Jasper Ave = same  
Strathcona Road = 99 St



# BEAVERHILL SUBWATERSHED

**L**and use in the Beaverhill subwatershed is primarily urban development, manufacturing, oil and gas related industries and agriculture. Just over 3% of the subwatershed is taken up by linear development. This includes roads, pipeline rights of way, transmission line rights of way, rail lines and cutlines. Water bodies cover about 9% of the subwatershed. Fish species in many of the lakes and creeks are limited by shallow water, which contributes to low oxygen levels and winterkill. Human habitation includes the rural municipal boundaries of Camrose, Leduc, Lamont, Strathcona and Sturgeon Counties. Large urban municipalities in the subwatershed include all or parts of the cities of St. Albert, Edmonton and Fort Saskatchewan. Other towns and hamlets: Antler Lake, Ardrossan, Bruderheim, Chipman, Collingwood Cove, Half Moon Lake, Josephsburg, Kingman, Lamont, North Cooking Lake, Round Hill, Ryley, Sherwood Park, South Cooking Lake and Tofield.

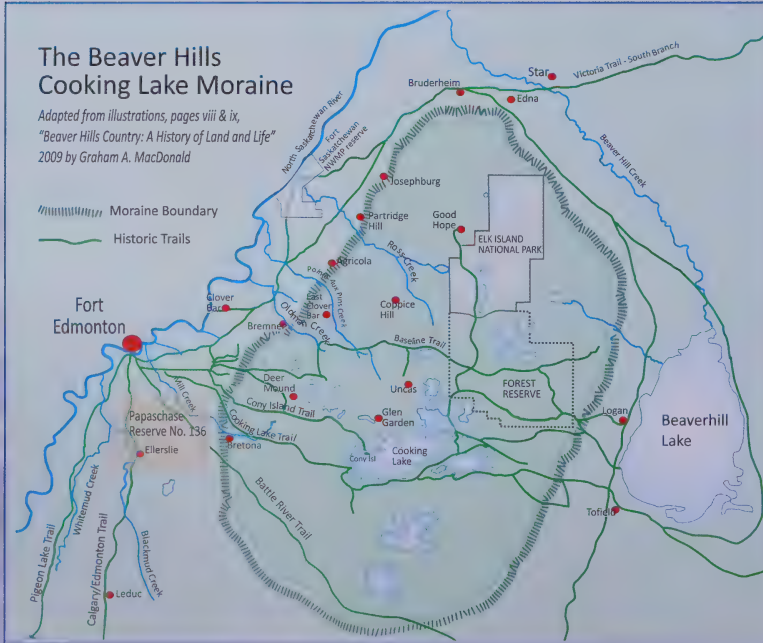
# NATURAL FEATURES

## BEAVER HILLS/COOKING LAKE MORAINE

Retreating ice flows formed this glacial moraine over 9,000 years ago. The rolling 'knob and kettle' terrain is rich in wetlands and boreal mixedwood forest habitat that supports a diversity of vegetation, waterfowl, mammals and birds. It is distinctly different from the surrounding prairie parkland in terms of soil, terrain, climate and elevation. This area has both public and private land. It is a large, relatively undeveloped area connecting northern boreal forests to prairie parkland, forming an ecological link

between the two.

The moraine is partially protected by Elk Island National Park, the Cooking Lake–Blackfoot Provincial Recreation Area, the Ministick Bird Sanctuary, Miquelon Lake Provincial Park and a number of smaller provincial natural areas. It is one of oldest protected areas in Canada, having been a forest reserve designated by the Canadian Department of the Interior in 1892. It was formalized as the Cooking Lake Forest Reserve in 1899, the first such reserve in Canada.





## Cooking Lake Forest Reserve

The Canadian Department of the Interior reserved forests in the Cooking Lake area to protect the supply of fuel wood and building material for new settlers. Logs from here supplied building material to the growing community in Edmonton. A tree nursery on the north shore of Cooking Lake began reforestation in 1910. During WWI the rabbit population was so dense that 80 acres (32 hectares) of the tree nursery had to be fenced off with chicken wire to keep the rabbits out. In the spring, the young rabbits were small enough to crawl in through the wire and soon the rabbit population inside the fence exceeded that outside the fence and the nursery project had to be abandoned.

When the Alberta Government took over the area in 1930, cattle grazing became the prime activity. The Blackfoot Grazing Association, formed in 1948, continues to operate, accommodating up to 8,000 animal units per season in the grazing fields.

In 1988, this area became the Cooking Lake-Blackfoot Grazing, Wildlife and Provincial Recreation Area. Abundant wildlife makes this area popular with bird watchers and nature photographers.

## COOKING LAKE

Like many shallow prairie lakes, the waters of Cooking Lake have receded significantly over the past century. The current boundary of Cooking Lake is now about 1,000 feet lakeward from where the Dominion Land Surveyor placed it in 1902.

As a consequence, the new shoreline is approximately half of the length of the original shoreline.

### KNOB & KETTLE TERRAIN

An undulating landscape in which a random scattering of knolls, mounds, or ridges is interspersed with irregular depressions, pits, or kettles that are often undrained swamps, ponds or small lakes.

North side of Cooking Lake. Photo-Heather Kuchma, Images Alberta

## BEAVERHILL LAKE

Beaverhill Lake is a large 'prairie pothole' lake. It has been one of the most important bird migratory habitats in Alberta. The lake, including surrounding wetlands has been a Ducks Unlimited (Canada) project since early 1969. Even though the lake has dried up considerably due to several decades of drought, snow geese still stop there on their migration north.

According to *Tales of Tofield Vol 1*, published by the Tofield Historical Society in 1969, William Rowland, an early settler, reported; "*In 1885, the buffalo had to go to the springs in the centre of Beaverhill Lake for water.*" Another settler, Pete Lerbekmo reported, between 1895 and 1897, when he and his father rowed over to "the point" trees four or five inches in diameter were standing in the water. Great blue herons were nesting in the branches. In the fall of 1899, a rainy cycle that lasted till 1903 replaced the dry years, and the lake is reported to have risen 18 feet. The lake level rose steadily after that. In 1917 farmers next to the lake petitioned the government to lower the level of the lake. In order to do that, a ditch 22 feet wide, 8 feet deep and 8 miles long would have had to be dug to lower the water level by 3 feet. The job would have taken three years. By 1922, the water level had receded to that of 1910. By 1929, the lake had dropped 4 or 5 feet. The level remained much the same until 1950 – 51 when the lake came close to drying up completely.

The birds of Beaverhill Lake have been under the eye of ornithologists since the beginning of the 20<sup>th</sup> Century. Starting in 1920, Professors William Rowan and Robert Lister, both from the Zoology Department of the University of Alberta, studied the birds on Beaverhill Lake for 37 years. In 1925, the lake was declared a Public Shooting Ground. By 1948, when visitors to the lake became more interested in identifying and observing birds than shooting them, the Edmonton Bird Club was founded.

Looking out on what used to be Beaverhill Lake, home to thousands of waterfowl. It once supported a commercial fishery. People remember hay wagons filled with pike and whitefish.

Photo-Bill Trout, Images Alberta



Night in the Beaver Hills Dark Sky Preserve. Photo: Bill Trout, Images Alberta

The Canadian Nature Federation designated the lake a National Nature Viewpoint in **1981**, recognizing its importance to birds and birdwatchers. In **1982**, the lake became part of the Wetlands for Tomorrow Program and in **1983** another group of birding enthusiasts began the Beaverhill Lake Bird Banding Station to encourage research and to provide instruction in ornithology. In June **1987**, the lake was designated a Ramsar site under the **1971** Ramsar Convention (an international agreement that identifies and protects wetlands of importance to migratory birds).

## BEAVER HILLS DARK SKY PRESERVE

Within Elk Island National Park and the Cooking Lake-Blackfoot Provincial Recreation Area is the Beaver Hills Dark Sky Preserve, which was designated in **2006**. It is one of seven dark sky preserves in Canada. Here park lighting is directed downwards or is sensor triggered. *See Clearwater subwatershed for Bortle Scale of Darkness.*

### SCOTOBIOLOGY

(skotos Greek for dark)

The study of the effects of darkness on biology. Mating patterns, migration and other behaviours of many species are disrupted by light pollution. Animals depend on darkness to avoid predators or to catch prey. Plants can mistake light polluted nights as 'longer' days, which can compromise development, flowering and the onset of dormancy.

On January 24, 2012, Elk Island National Park shipped 70 plains bison to the 3 million acre (1,214,057 hectare) American Prairie Reserve in northeastern Montana. The partnership between Parks Canada and the American Prairie Foundation completed a full-circle journey for North America's plains bison. This international conservation project is committed to the continued survival and well-being of an animal that once ruled North America's vast interior plains.

Twenty-three wood bison were transported from Wood Buffalo National Park to Elk Island Park in 1965. When brucellosis was detected in the herd, an intensive test and slaughter program was implemented to eradicate the disease. After infected cows produced calves, the cows were destroyed and the calves bottle raised. The EINP wood bison today have descended from those bottle-fed babies.

Bison in Elk Island National Park.  
Photo-Bill Trout, Images Alberta



## ELK ISLAND NATIONAL PARK

Public interest in conserving rapidly dwindling elk populations led to the establishment of an elk reserve in 1906. This evolved into Elk Island National Park. It is the only completely fenced national park in Canada. Within the park's boundary is a remnant of Beaver Hills terrain. Outside the fence, the land has been changed by outer suburbs of Edmonton, grain fields and pastures. Wildlife in the park today: coyote, rabbit, moose, elk, mule deer, over 600 plains bison and 375 wood bison, and at least 230 species of birds. Trumpeter swans have been re-introduced to the park. It has one of the highest concentrations of big game animals in the world.

# NATURAL RESOURCES

## ANIMAL

### Fish

In 1875, while building the NWMP barracks at Fort Saskatchewan, Sam Steele recorded in his journal, “*Our food at this time consisted of pemmican and mountain trout. The smallest trout weighed 5.5 lbs., and many were over 12 lbs. These fish have a flavour quite equal to salmon.*”

### Ducks Eggs & Beaver

While they were building the North West Mounted Police barracks at Fort Saskatchewan, Sam Steele and his men ate, “*large quantities of wild duck eggs were obtained from the shores of the lakes in the Beaver Hills... [and] beaver, which when roasted is delicious food.*”

### Fur

Large populations of beaver gave the Beaverhill area its name early in the fur trade, but rabbits became a valuable fur export during WWI when the rabbit population in the Beaverhill subwatershed hit a 9-10 year peak. During the war, rabbit fur imports to North America from Australia were cut off and the rabbit fur hat industry in New York became desperate. They sent American fur traders to Alberta, where they bought 6 million rabbit hides in one year. Dr. Rowen from the University of Alberta counted 32,000 rabbits per square mile during that time.

## VEGETABLE

### Birch Bark

In the spring of 1755, Anthony Henday, at Old Man Creek on the North Saskatchewan River below Edmonton, crossed to north side of river and camped for a few days. That was about two miles upstream

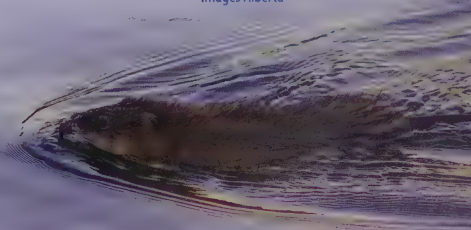


Red-necked Grebe *Podiceps grisegena* family pair feeding their chick. Photo-Roger Kirchen, Images Alberta



Female (juvenile) Northern Shoveler *Anas clypeata* feeding on a pond. Photo-Roger Kirchen, Images Alberta

Beaver swimming in Astotin Lake in Elk Island National Park. Photo-Bill Trout, Images Alberta





The tall timber is gone, but many old trails still pass through young trees that replace it. Photo-Bill Trout, Images Alberta

from the present City of Fort Saskatchewan. On March 5<sup>th</sup>, he and the First Nation people who guided him moved downstream from mouth of Sturgeon River to a traditional encampment to construct birch rind canoes. On April 28<sup>th</sup> with Cree people paddling 15 newly built canoes full of fur and Assiniboine people paddling 20, he traveled down river to the Hudson's Bay Company post at York Factory on the shores of the Hudson Bay.

In the summer of 1795, James Hughes of the North West Company came by canoe from Fort George, near the present Alberta/Saskatchewan border, to build Fort Augustus. In October of that year, William Tomison of the Hudson's Bay Company came upstream in five canoes from Buckingham House to build Edmonton House near mouth of Sturgeon River. During that summer independent fur traders from Montreal built two other trading posts in this area - Francois Beaubien was possibly one of them and men from David and Peter Grant's Fur Trade Company were the others. All of these men travelled in canoes built along the river by the First Nations people who guided them. Birch bark canoe building continued on the river for at least the next 25 years until York Boats became the preferred cargo hauler.

## Timber

From the turn of the 19<sup>th</sup> Century until after the Second World War, there was enough timber (poplar, tamarack and spruce) in the Beaverhill subwatershed to keep many sawmills busy.

About 1900, Alex Kelsey of Ypres Valley set up a mill where he squared logs and cut roofing lumber. About the same time, a Mr. Chadwick set up a saw mill where the hamlet of South Cooking Lake is today. Between 1902 and 1912, Bill Stewart ran a steam-powered mill near Ministik Lake. In 1918, Ludwig Prochnau built a lumber mill at Josephsburg which operated until 1970. R.P. Ottewell and Alex Rea ran two saw mills, one near the west end of Cooking Lake and the other on the north side of Old Man Creek, just south of the present Yellowhead Highway.



Postcard 4870 Coal mine, Tofield, Alberta. 1920. Peel Library UofA

## MINERAL

### Coal

Four or five early coal mines operated in an area bracketed by what is now the Anthony Henday ring road in the City of Edmonton and 17 street just east of the Strathcona Science Park. The earliest coal mine in that area opened about 1890. The largest producing mine in the Edmonton part of Beaverhill subwatershed was the Black Diamond Mine, in business from 1903 to 1952. The entrance to that mine was south of Strathcona Science Park. Between 1932 and 1950, the Ottewell Mine (west of 34 Street and south of the Baseline Road) produced more than 10,000 tonnes a year.

### Tofield Coal Mines

By 1913, three coal mines were in full operation in the Tofield area: the Dobell, the Tofield Coal Company and the Pioneer mines. The Dobell and Tofield Coal Company were strip mines with seams of coal 6 to 7 ft (1.8 to 2.1m) deep. The Pioneer Mine was an underground mine. The Dobell mine operated a small Marion Steam Shovel to dig the coal but it was loaded into wheel barrows by hand. At its peak, the Tofield Coal Company shipped 200,000 tons a year and employed over 100 men.

## OIL AND GAS

In 1912, the Town of Tofield drilled for water. At 500 feet they found an abundance of water, but it was salty. They dug deeper and struck gas at 1054 feet. From the Edmonton Journal June 23, 1912: *“Property values in Tofield have doubled and tripled as a natural gas strike is reported. Unofficial reports say the flow may reach 2,000,000 cubic feet. Townspeople say that Tofield is now another Medicine Hat since gas has been struck at*

*1054 feet.”* From another article: *“To dramatize discovery of natural gas, Tofield residents have devised a street lighting system with gas flares ten feet high. Townspeople say that Tofield will become the Hamilton of the West.”* The boom went bust in 1913, when the gas supply ran out.

Refinery Row, Upgrader Alley, Industrial Heartland are all names given to the largest geographic area in Canada dedicated to hydrocarbon processing. Most of the processors are in the Beaverhill subwatershed.



Shell Scotsford Refinery on a cold winter day, Photo-Bill Trout, Images Alberta







## POST CONTACT – FUR TRADE

The Beaverhill subwatershed supplied beaver and buffalo to the fur trading forts along the North Saskatchewan River for over 100 years. During that time the lush hills provided protected wintering campsites for many different First Nations people.

In 1793, Hudson's Bay Company cartographer and explorer Peter Fidler made reference sketches of the Beaver Hills on a number of occasions. Beaver Hills Lake appears prominently on David Thompson's 1814 map of western North America.

In 1809, Alexander Henry the Younger, a fur trader with the North West Company, recorded Sarcee living on the south side of the Beaver Hills. He writes of the "Sarcees", who used to live on the north of the Saskatchewan River, but are now on the south side and "*dwell commonly on the Southward of the Beaver Hills near the Slave Indians*". The Slave Indians are thought to be Blackfoot.

When beaver pelts reached Europe they were sorted into three categories: castor gras, castor sec, and bandeau.

Castor gras pelts had been worn by First Nations trappers. The accumulation of sweat and body oil made the fur more pliable and easier to felt. They brought the highest price.

Castor sec pelts had been scraped clean, but never worn; they required extra work to prepare for felting.

Bandeau pelts had been scraped, but were not completely clean. These were often partially rotted or decayed by the time they reached Europe.



Wetlands, like this one in Elk Island Park, once covered much of the Beaverhill subwatershed. Photo-Bill Trout, Images Alberta

## BEAVER HILLS

In 1857, James Hector with the Palliser Expedition: *“I was much struck with the admirable pasture which is to be found even at this season all over this extensive tract of country, and of that kind which is most valuable for the support of animals during the winter.”* The poplar thickets *“affording shelter surround and enclose limited prairies that yield a rich growth of vetches and nutritious grass of sufficient growth to bear up the snow and keep it loose, so that horses and cattle can scrape their food from under it at least until the later spring months, when in some winters, the crust might be a serious obstacle.”* Hector noted spots *“where there is a deep rich soil admirably adapted to agriculture”* and which are *“to be found in every direction.”*

In the early 1870s, Albert Tate, young son of Philip Tate (a clerk at Fort Victoria in the White Earth subwatershed) traveled with his father to visit Chief Bobtail and his people in an area northwest of Beaverhill Lake. There they feasted on *“... moose nose, beaver tail, buffalo “boss,” (hump), ducks, geese, eggs, and maple sugar”*, made right there from hundreds of Manitoba maple trees in the region. Maple sugar was stored in rogons (birch bark baskets) and maple syrup, in vessels made from buffalo bladders.

After the feast there was horse racing with various prizes for the winners. Philip Tate set out his contribution for the big and final race: *“... a single-barrel percussion gun, two pounds of tea done up in a cotton handkerchief, and two fathoms of rope tobacco on the ground, to be immediately balanced by [Chief Bobtail with] three bladders of dried tongue, six large beaver tails, and six rogons full of maple sugar and a bundle of fur.”*

The last race was run by Albert on his pony, Vermont, against his ‘cousin’ *Mayche-chakun* (Coyote) on his pony, Flying Crow. Albert lost the race, but Chief Bobtail still sent him home with six rogons of maple sugar.

Albert Tate returned to the Beaverhill area in 1907 for a visit and found the land much changed as he lamented in a letter to the *Tofield Standard*. *“The destruction and wanton waste caused by prairie fires are incalculable. Beautiful groves, timber, wild fruit trees, the young wild*



Dr. James Hector, geologist, naturalist and surgeon with the British North American Exploring Expedition, more commonly known as the Palliser Expedition, which traveled through the “rugged wilderness of western Canada” from 1857 to 1860. They were searching for routes for the Canadian Pacific Railway and hoping to discover new species of plants.



Northwest gun, typical of those traded by the Hudson's Bay Company, the Northwest Company, the Mackinaw Company, and the American Fur Company from about 1760 to the end of the 19<sup>th</sup> Century.



Modern day rogan, circa 1975, styled after traditional birch bark container. Sold at an auction in Vancouver, June 19, 2008 for \$100.

*animals, with thousands of duck eggs and prairie chicken eggs, are swallowed up ... having not seen Beaver Lake or neighborhood since I was a boy in the early seventies, it was with a genuine feeling of regret that I noted the total absence of maple trees during a recent tour of your beautiful Lake so changed from those early days."*

In 1883, Joseph B. Tyrell: the "country is found to be simply low ridges or sandy knobs, often thickly covered with large balsam, poplar and spruce separated by valleys drained by numerous small streams." The hills were apparently well named, for "these streams have everywhere been dammed back by beaver giving rise to extensive meadows." Some of these were "impassable marshes" but others where beaver dams had been broken down "are again drained by the creeks and form beautiful and wide alluvial tracts covered in long grass" sufficient to provide hay for "large herds of cattle and horses."

## POST CONTACT – SETTLEMENT

### North West Mounted Police (NWMP)

During the long march from eastern Canada to the west (1874), the newly created North West Mounted Police (NWMP) used old river trails along the North Saskatchewan River from Fort Carlton to Edmonton. In that same year Jean-Baptiste Beaurpré settled near the site of the present City of Fort Saskatchewan. This became an early French riverside community.

During the spring of 1875, NWMP Commissioner French ordered permanent barracks built on south side of river between Fort Edmonton and the mouth of the Sturgeon River. Richard Hardisty, Chief Factor of Fort Edmonton, picked a site for the police fort on site of present day University of Alberta. Inspector Jarvis wanted a down-stream location, because he believed the main community in that area would eventually be near the mouth of the Sturgeon River where the land was flatter. D. Ross, who presided over a public meeting at Edmonton protesting the building of the police fort 20 miles away, remembers, "Col. Jarvis [asked the committee] if they would pay the difference between the contract price of the timber at Fort Saskatchewan...one of the committee answered that the people of Edmonton could pay for a delegation to Ottawa to secure the change of the site. Jarvis got mad and built Fort Saskatchewan." At first the fort that Jarvis built was called Sturgeon Creek Post.

Established in 1970, the three-acre Fort Heritage Precinct (10006 100 Ave, Fort Saskatchewan AB) includes a fully reconstructed 1875-1885 North West Mounted Police Fort.

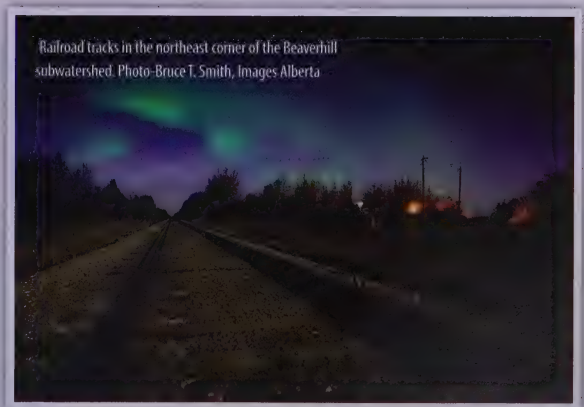


Smoke from grass fires near Bruderheim and Lamont, 2013. Photo-Bill Trout, Images Alberta

## EARLY SETTLEMENT

The western shore of Beaverhill Lake was first settled by Métis, who came to hunt buffalo in the early 1870s. Many of the Métis families later filed for homesteads and began farming. European settlers began to arrive during the 1880s and occupied land along the western shore.

During the spring of 1895, an editorial in the Edmonton Bulletin criticized the indiscriminate use of fire in the Beaver Hills. *“there is the greatest objection to the destruction of 100 or 1,000 acres, as the case may be, of good wood for the sake of the settler having greater ease in bringing ten, twenty, fifty or even one hundred acres of land under crop.”*



Railroad tracks in the northeast corner of the Beaverhill subwatershed. Photo-Bruce T. Smith, Images Alberta

### PRAIRIE WOOL

After the last glaciation, native prairie grasses evolved to withstand a harsh northern climate, grazing pressure from large ungulates and frequent fires. Grasses that once made up vast prairie grazing areas include: Plains rough fescue *Festuca hallii*; western porcupine grass *Stipa curtisetata*; June grass *Koeleria gracilis*; awned wheat grass *Agropyron subsecundum*; slender wheat grass *Agropyron trachycaulum*; and Hooker's oat grass *Hellctotrichon hookeri*.

St. Margaret's Church on the north shore of Hastings Lake, built in 1912 of dove-tailed hewn logs. Photo-Carol Rusinek, Images Alberta

## Cooking Lake

Cooking Lake as a stopping place goes back to the days of old Carlton Trail, which was the overland route from Winnipeg to Edmonton in the 1880s. Around the turn of the century, the first homesteaders coming to this district used this trail. The lakes were used for travel in winter when the ice was smooth. This could cut off many miles “as the crow flies.”

## BETWEEN EDMONTON AND FORT SASKATCHEWAN

When people began to settle the Beaverhill subwatershed they had trouble getting from place to place through hundreds of sloughs and wetlands. Wagons and buggies broke the wet ground creating large holes. To avoid this problem, people constructed “corduroy” roads” on marshy ground by placing poles across the wet area. At first this was a temporary fix, each man building for himself. By the early 1920s, farmers in the area built corduroy roads for the government in exchange for having their pay deducted from the taxes they owed. Most roads were still unpaved or ungravelled in the late 1940s, and were inaccessible during and after a rainfall. People managed to travel the



Photo-Roger Kirchen, Images Alberta



watery roads by weighing down the back of their vehicles with rocks. This practice allowed them to drive through mud holes without getting stuck.

At the turn of the 20<sup>th</sup> Century, on the land south of Tofield, horses and cattle grazed on the open range on 'prairie wool' which kept the animals in excellent condition, even in winter. The biggest challenge for early settlers using the open range for grazing was trying to protect their animals from the hordes of mosquitos during summer. Sometimes it was necessary to light smudges in the evening and keep them going all night.



## Recreation

From the 1880s to 1920s sledding down the river hills at Fort Saskatchewan, especially the hill at the north end of what is now 101 Street, was one of the most popular winter sports. As many as 16 people squeezed onto a sleigh, so they could get up enough speed to get down the hill, across the river ice, make a U-turn and come back down across the ice. Several hundred people would gather to watch this extreme sport.

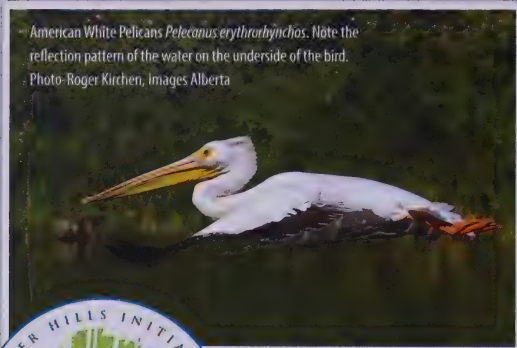
Wealthy Edmontonians formed the Koney Island Sporting Co. Ltd. in 1894 to develop an exclusive resort on a small island on the west side of Cooking lake. They built a log clubhouse and individual members put up cabins and docks. Once the railway came through, travelers could get to Cooking Lake from Edmonton in about an hour. The Cooking Lake Resort was at the height of its popularity in 1911, when special trains brought people to the resort. The Grand Trunk Pacific Railway planned to build a resort at the east end of the lake, but the plan was shelved when the Grand Trunk Pacific and the Canadian Northern were absorbed into the Canadian National Railway (CNR). The CNR chose Jasper National Park, instead of Cooking Lake, as the destination for its exclusive resort.

Koney Island Club members with their watercraft. Provincial Archives of Alberta, B.6542



Black-capped Chickadee *Poecile atricapillus* is all puffed up to insulate it from the cold. Photo-Roger Kirchen, Images Alberta

On January 17<sup>th</sup>, 1902, at Fort Saskatchewan, a curling rink “*is being prepared on the river below Shera’s Mill.*” Two weeks later the rink was completed and lit with electric lights provided by a generator at Shera’s Mill, which also lit a hockey rink built on the river.



American White Pelicans *Pelecanus erythrorhynchos*. Note the reflection pattern of the water on the underside of the bird. Photo-Roger Kirchen, Images Alberta



White-tailed Deer *Odocoileus virginianus* are abundant in the Cooking Lake-Blackfoot Recreational Area. Photo- Roger Kirchen, Images Alberta





# 21<sup>ST</sup> CENTURY

## BEAVER HILLS INITIATIVE

Rapid growth of the Greater Edmonton Area puts pressure on the Beaver Hills landscape. To address increasing land use issues the Beaver Hills Initiative (BHI) was born in 2002. It required collaboration among land managers from all levels of government and five counties (Strathcona, Leduc, Beaver, Lamont, and Camrose). The goal of the BHI is to facilitate cooperative land management in the Beaverhills/Cooking Lake Moraine area.

At the end of May, 2015, the Beaver Hills Initiative submitted a nomination for the Beaver Hills to be designated as a UNESCO Biosphere Reserve. This is an international designation by the United Nations Educational, Scientific and Cultural Organization (UNESCO) that would provide global recognition of the community's commitment to conservation and sustainable development. The BHI will not know until June 2016 whether or not the Beaver Hills nomination has been successful.

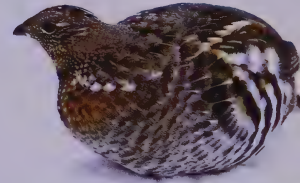
The challenge in the 21<sup>st</sup> Century will be to accommodate urban development and rural subdivisions while still preserving the environment that makes rural living so desirable.

Environment is where we live. Development is what we all do to attempt to improve our quality of life. The two are inseparable. Photo-Michael Frost, Images Alberta



Male Baltimore Oriole *Icterus galbula*  
feeding on small insects. Roger  
Kirchen, Images Alberta

Female spruce grouse *Lepidopygia  
Canadensis* Photo-Images Alberta





# WHITE EARTH SUBWATERSHED

**T**he White Earth subwatershed covers 649,481 hectares (1,604,902.5 acres). Sparsely populated, it includes the rural municipal boundaries of: Lamont, Improvement District 18, Smoky Lake, Sturgeon, Thorhild, Two Hills and Westlock Counties and the urban communities of Abee, Andrew, Bellis, Busby, Clyde, Egremont, Legal, Mundare, Newbrook, Opal, Pickardville, Radway, Redwater, Smoky Lake, St. Michael, Star, Vimy, Warspite, Waskatenau, and Wostok, as well as a small portion of Kikino Métis Settlement. The Smoky Lake and Thorhild Provincial Grazing Reserves are in this subwatershed.

Prairie Landscape near Smoky Lake.  
Photo-Linda Treleaven, Images Alberta



## NATURAL FEATURES

**Barchan** dunes form in areas of limited sand where winds blow from just one direction.

**Parabolic** dunes form when vegetation grows on the end of dunes, holding them in place while the rest of the dunes move on.

**Transverse** dunes form where sand is abundant and the wind blows in the same general direction.

In 2012, the **Redwater Natural Area**, a stretch of land with unique sand hills (transverse, parabolic and barchan sand dunes) was reclassified to allow for off-highway-vehicle recreation and hunting. It is now known as the **Redwater Provincial Recreation Area**. Jack pine-lichen woodlands on dune crests and diverse wetlands dot the landscape. Several rare plants are found here, including Sand Heather *Hudsonia tomentosa*.

**Mons Lake** is a small, sandy bottomed, clear water lake, about an hour's drive east of Edmonton and about a 15 minute drive northeast of the Town of Smoky Lake. It has some of the best perch and northern pike fishing in the area. The cry of the loon can still be heard across the lake in the early evening in the summer. In late July, Saskatoon berry bushes in this area are heavy with ripe fruit.



Common Loon *Gavia immer*. Photo-Bill Trout, Images Alberta

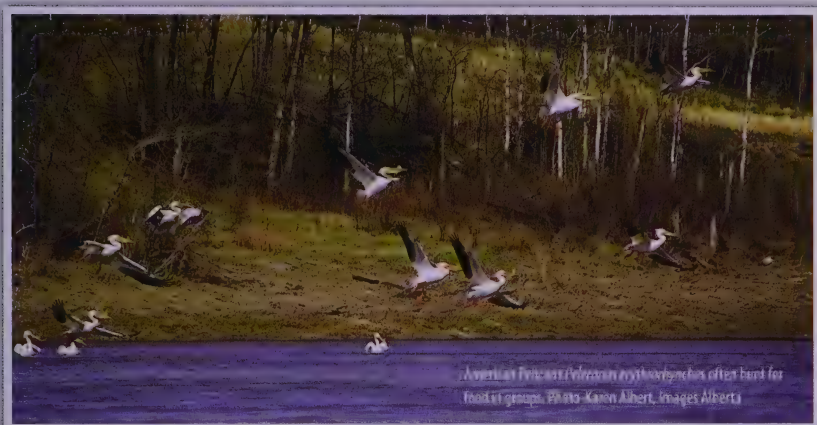


Redwater Sand Dunes Photo-David Cure-Hryciuk



Sand heather, also known as beach heather, false heather or poverty grass, is a rare species, found primarily on sand dunes where it is vulnerable to disturbance. Photo-Peter M. Dziuk

Whitford Lake is a good example of a shallow lake system that provides open water for waterfowl in wet years and ground-nesting opportunities for songbirds and marsh birds in dry years. The Village of Andrew just northwest of Whitford Lake celebrates the abundance of waterfowl in the area with a statue on its main street of a giant mallard duck.



Mallard Duck Statue in the Village of Andrew. Many early settlers looked forward to wild duck eggs in the spring and fat roast duck in the fall. Duck feathers were saved to make pillows and quilts. Photo-Steve Ricketts, Images Alberta



Picking Saskatoon berries.

Photo-Steve Ricketts, Images Alberta

#### SASKATOON BERRY PIE

- Pie pastry for a double crust.
- 4 C Saskatoon berries
- ½ C Sugar
- 2½ T Minute Tapioca
- 1 Egg for brushing the top
- 2 T diced Butter

Toss berries, sugar and tapioca together. Put bottom crust into pie tin. Pour berry mixture into pie tin. Add butter on top. Cover with top crust. Brush crust with beaten egg & sprinkle crust with sugar. Bake for 15 min. at 425 F. Lower oven to 350 F. Bake 50-55 more min. When pie edges brown, cover edges with foil.

## NATURAL RESOURCES

### ANIMAL

#### Fish

Fish from the lakes, creeks and rivers in the White Earth subwatershed have fed people for thousands of years. In 1828, Archibald McDonald, traveling with George Simpson (Governor of the Hudson's Bay Company) reported that the gold eye caught in the North Saskatchewan River were “*a kind of fresh herring about a foot long with bright iris, large and yellow. Indian name, Nacaish*”.

### VEGETABLE

#### Berries

In 1828, fur trader, Archibald McDonald, reported raspberries, currents, gooseberries and an abundance of “*poires, sascutum berries*” (Saskatoon berries). In August, 1872, near Victoria Mission, “*The ground was literally covered with cranberries, bearberries, the uva ursi, and other creepers.*”

### FOOD ROOTS

**Prairie Turnip** *Pediomelum esculenta*, also known as breadroot, (*tinpsula* Lakota Sioux), prairie potato, scurfpea, and *pomme blanche*, was an important First Nations food prior to European contact. It is a legume with a long, thin, edible tuber. The above-ground foliage has large purple flowers in the late spring. After flowering, the stem breaks off and blows away, spreading its seeds. The tuber, high in protein, starch and vitamin C, was dug from late June to early July. (The Lakota people call the month of June, *tinpsila itkahca wi*: the moon when breadroot is ripe.)

Breadroot can be boiled, baked, fried or roasted. Drying and pounding it creates a flour for thickening soup or making trail bread. Prairie turnip was so important to First Nations diet that where it grew influenced the selection of hunting grounds during the time of root harvesting.

Gooseberries and Currants, both wild and cultivated are not as popular as they once were, due to the spread of blister rust *Cronartium ribicola*. The genus *Ribes* (gooseberry, blackcurrant, redcurrant and white currant), hosts this persistent fungus, which can spread to stands of white pine, with devastating results for the pine.



Wild Gooseberry *Ribes hirtellum* grow best along the edges of fens (calcium-rich wetlands), on the shores of rivers, and along wetland margins. Dianne Fuson, Images Alberta

#### RUBABOO

A stew made during the fur trade from pemmican and wild plants, which could include: onion, turnip, fireweed shoots, sage, yarrow, cattail, wild parsnip, wild carrot, mushrooms, lily roots, berries, hazel nuts or wild rice.

## MUSHROOMS

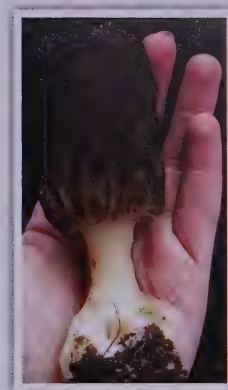
Early settlers lived off the land for many years while they established farms and farming communities. Ukrainian settlers in the Smoky Lake area discovered many wild mushrooms that were the same as those they picked back home.

- Pidpenky: Honey Mushroom *Armillariella mella*  
Shmorzhi: Black Morel Mushroom *Morchella elata*  
Kozari: King Bolete Mushroom *Boletus edulis*  
Kutcherabee: Meadow Mushroom *Agaricus campestris*  
Holubka: Brittle-gill Mushroom *Russula vesca*

## TIMBER

At Victoria Settlement, “from 1905 to the early 1920s, four sawmills were operated by Magnus Cromarty, Snyder and Nelson, Dowsett Brothers and Whitford Brothers.”

According to Frank Mitchell, who moved into the White Earth subwatershed in 1899 when he was a boy, “The lumber industry flourished in the Pakan area in the early 1920’s. Spruce timber was plentiful along the river banks. The farmers cut and hauled logs to my farm in the winter by horse-drawn sleighs. As soon as snow melted in the spring, the saw mill, operated by a steam engine, was set up on the lower river flats. Here as many as 12,000 logs annually were made into lumber, for the farmer’s use or to be sold locally.”



Mushroom Shmorzhi. Photo-Ace of the Fungal Kingdom



On old Victoria Trail between Edmonton and Victoria Settlement, west of where Highway 831 crosses the North Saskatchewan River (south of Waskatenau) Photo-Steve Ricketts, Images Alberta

## MINERAL

### Gold

At Victoria Settlement, “Mining began in the 1860s when gold was mined along the shores of the North Saskatchewan. The returns were small; the hours spent digging and panning long. Towards the end of the decade miners, taking as much as \$5.00 per day in gold from deposits in the sand bars, were rich. In those days, wages of \$20.00 a month were considered adequate. However, no large scale development took place and by the end of the century miners were finding only \$2 a day in gold.”

### COAL

By the 1870s, settlers had discovered coal outcrops on the river banks around Victoria Settlement and were using it to heat their homes. Large quantities of coal were found along both banks of the river, as well as along the banks of Egg Lake Creek. At Egg Lake Creek, a 13 inch (33 cm) seam was discovered at a depth of about 4 feet (1.2 m). William Garred mined 600 tons of coal along there. Several other mines were worked by tunnelling into the river banks and bracing the ceiling with timber props.

Pipeline construction north of Waskatenau. Photo-Carol Rusinek, Images Alberta



### OIL

In October 1948, Imperial Oil discovered oil on Hilton Cook's farm, turning a quiet farming community (the Hamlet of Redwater had a population of 160 at that time) into a bustling oil centre. Imperial Oil wanted to set up an office in Redwater immediately, but there were no buildings available, so they rented Emile Royer's chicken coop for two years until they had time to build an office. Redwater became a village in 1949 and a town in 1950. At the turn of the 21<sup>st</sup> Century, the Redwater oil field was still one of Canada's largest oilfields.



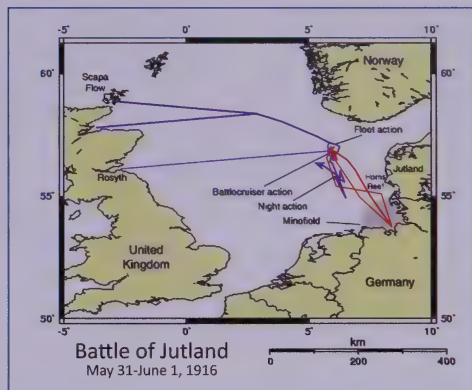
## WHAT'S IN A NAME?

French fur traders from New France penetrated the North Saskatchewan River watershed decades before the British left the safety of the Hudson's Bay to venture inland after fur. The French left behind place names that persisted in the local vernacular long after English names were superimposed upon them. Many place names we use today are Anglicized versions of names used by First Nations people prior to contact, then translated into French by the first fur traders.

**White Earth Creek** – *Rivière Terre Blanche* or *Rivière des Cates*. Cates being an old French word for otter or for the stream-side dens made by otters.

**Smoky Lake** – Smoke Lake – ‘*the lake where we smoke the peace pipe due to the northernmost range of the wild turnip*’ (root gathering prior to contact added significant complex carbohydrates to the diet of First Nations people).

**Warspite** was originally known as Frances Siding, named after the daughter of Martin Byrne, on whose land the community was first built. It was changed to commemorate **Warspite**, a British battleship in WWI, remembered for its action in the Battle of Jutland in 1916. Incidentally, it was not the first British war ship to be named that. Warspite was one of the ships sent by Elizabeth I to fight the Spaniards (1588 – 1596).



The Battle of Jutland was the only full-scale clash of battleships in WWI. 14 British ships (out of 33 in the British Grand Fleet) and 11 German ships (out of 18 in the German High Seas Fleet) were sunk. Both sides claimed victory.



Lobstick Giveaway is a 72" by 48" work of art by Leah Marie Dorion. It was created in 2013 with acrylic mica flakes, pumice stone, and glass beads on canvas for the Gabriel Dumont Institute. The giveaway celebration and feasting was a fundamental aspect of the Lobstick pole ceremony. In this art work, Métis people of all ages, dressed in traditional clothing, make their contributions and offerings to the Lobstick pole celebration.

#### VICTORIA SETTLEMENT 1872

##### Goods on Hand

2240 Muskrat hides  
39 Kitt Fox hides  
2 Red Fox hides  
80 Wolf hides  
2 Fisher hides  
110 Buffalo Robes  
7 Black Bear hides  
10 Brown Bear hides  
3 Grey Bear hides  
280 Whole Buffalo Dressed Skins  
40 Half Buffalo Dressed Skins  
1 Wolverine hide  
19 Mink hides  
12 Badger hides  
60 Beaver pelts  
27,000 pounds common pemmican  
1,000 pounds fine pemmican  
100 sinews

Lobstick Settlement was an early Métis community of 18 river lots, upstream of what is now the Victoria Settlement Provincial Historic Site. A Lobstick is a tall spruce or pine tree with all the branches cut off except for those at the very top. This was done to make a landmark that could be seen from a distance. Lobsticks were created to mark a meeting place or to celebrate an important person or event.

**Pembina** (high bush cranberry *Viburnum edule*) According to Mayne Reid, in his book, ‘The Young Voyageurs’, published in 1853, high bush cranberry was “... known among the Indians of Red River as “anepeminan,” from “nepen,” summer, and “minan,” berry. This has been corrupted by the fur traders and voyageurs into Pembina.”

## POST CONTACT – FUR TRADE

In 1810, 80 miles (129 kilometres) downstream from the second Edmonton House and Fort Augustus, the third Edmonton House and Fort Augustus were built at mouth of White Earth Creek.

On the 1812 map David Thompson made for the North West Company, Namepi Creek is labelled Carp Brook (later known as Sucker Creek), Redwater River is labelled Vermilion Rivulet and White Earth Creek is White Earth Brook.

In 1826, Aemilius Simpson, a step-cousin to Sir George Simpson (Governor of the Hudson’s Bay Company), became a hydrographer and surveyor for the Hudson’s Bay Company. Between Fort Carleton and Fort Edmonton, Simpson found the countryside pleasant to look at, but he noted, with typical European colonial attitude, “*this rich face of country made subservient to the use of civilized man how much would it enhance its beauty and value.*”

In 1862, Methodist missionary, Reverend George McDougall, moved his “*small mission outpost from Smoking, now Smoky Lake, to a new site on the North Saskatchewan River. His mission soon attracted about 150 Protestant, English-speaking, buffalo hunting settlers – many from Red River.*” Before McDougall settled there, the place along the river had

Victoria Settlement Provincial Historic Site.  
Photo-Heather Kuchma, Images Alberta



been known as ‘Hairy Bag’, a buffalo feeding ground and meeting place for First Nation people for thousands of years.

In 1862, William Wentworth-Fitzwilliam, the Viscount Lord Milton and his friend, Dr. Walter Cheadle, travelled by steamer toward Fort Edmonton. At Fort Pitt they hired one-handed Métis guide, Louis Battentotte, the Assiniboine, to take them overland. Passing Victoria Settlement, they remarked on the beauty of the landscape, “*rich and beautiful: a country of rolling hills and fertile valleys...*” These young Englishmen had substituted the traditional European Grand Tour for Grand Tour of the Canadian northwest via the North Saskatchewan River route. The book they wrote about their adventures was a popular travel guide to the Canadian northwest for the rest of the century.

On August 16, 1863, in a letter to his superior in Ottawa, Reverend George McDougall wrote from Victoria Settlement, “*We now have a good scow and the novel scenes of yore have passed away.*” The ‘novel scenes of yore’ involved goods wrapped in a leather tent and tied up like a pudding bag to be dragged behind a horse across the river.

The clerk’s house at Victoria Settlement, built in 1864-5, still stands on the original site making it “*the oldest building in situ in Alberta.*”

In 1872, George Monro Grant, from the Sandford Fleming scientific expedition, noted at Victoria Settlement, “*the log-houses of the English and Scotch half-breeds, intermingled with the tents of the Crees, extend in a line from this west end along the bank of the river, each man having frontage on the river...*”

What’s left of a log cabin. Photo-Bill Trout, Images Alberta



Clerk's House at Victoria Settlement  
Provincial Historic Site, built in 1864-  
65 by Philip Tate, father to Albert Tate  
(see story in Beverhill subwatershed).  
Photo-Linda Treleaven, Images Alberta



## POST CONTACT – SETTLEMENT

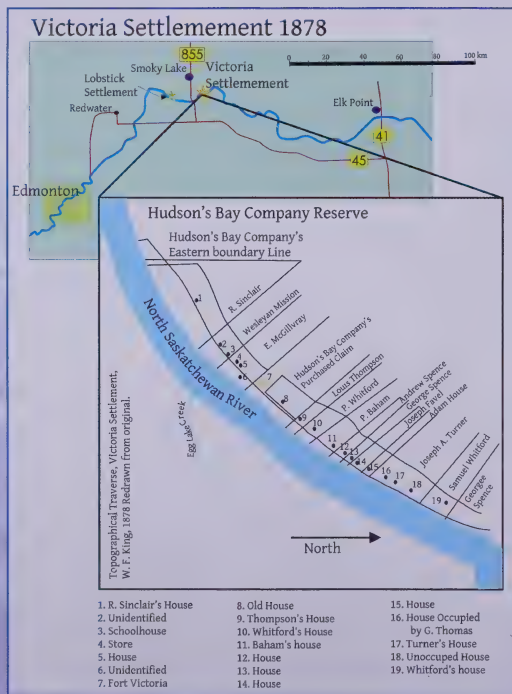
In 1873, the Hudson's Bay Company set up a gristmill at Victoria Settlement and Magnus Cromarty brought in the first horse-powered thresher. As the buffalo disappeared, farming, which had been a side line during the fur trade, became more necessary.

In 1884, the land along the river at Victoria Settlement was surveyed, giving legal recognition to the river lot system, even though it contravened the Dominion Survey System that had been established for western Canada. Some of these river lots still exist in the 21<sup>st</sup> Century in Smoky Lake County.

In 1886, 7840 acres (3173 hectares) of land along Waskatenau Creek was surveyed for the *Muskegatic* (Bear Ears) Reserve (*Whasatnow* I.R. No. 126). In 1890, a federal inspector reported the agricultural production on Indian Reservation No. 126: 92 bushels (5520 pounds or 2504 kilograms) of barley, 103 bushels (6180 pounds or 2803 kilograms) of potatoes, 130 tons of stacked hay, a small cattle herd and ten horses. The report suggested that because the distance of the reserve from the Indian Agent at Saddle Lake was so great, Bear Ears people

### THE DOMINION LAND SURVEY

The Dominion Land Survey was created in 1869 to survey the lands recently acquired by the Dominion of Canada from the Hudson Bay Company. This land, known as the Northwest Territory, would eventually become the Provinces of Alberta, Saskatchewan, Yukon, Northwest Territories and Nunavut, with an enlargement of the Province of Manitoba. The Dominion Land Survey needed to divide about 200 million acres (81 million hectares) into Townships. A Township measures 6 mi (9.7 km) square. It is divided into 36 Sections, each 1 mi (1.6 km) square. Each section is further divided into quarter sections. Each quarter section covers 160 acres (64.8 ha). These quarter sections were granted to settlers under the "Western Land Grants" program. The idea was to settle quickly the territory between Manitoba and what would become the Province of British Columbia, making a transcontinental Railway viable. The promise of a railway brought British Columbia into Confederation in 1872



were “deprived of the supervision they required.” The report recommended that Bear Ears people be moved to the Saddle Lake Reserve. In 1891, Indian Agent Ross reported to Regina: “Bear Ears band had agreed to ... give up all claim to the Wahsatanow Reserve if... an equal area of land would be added to the Saddle lake Reserve.”

On September 26, 1896, after much movement back and forth between the two reserves in protest, because additional land that had been requested had not been added to Saddle Lake

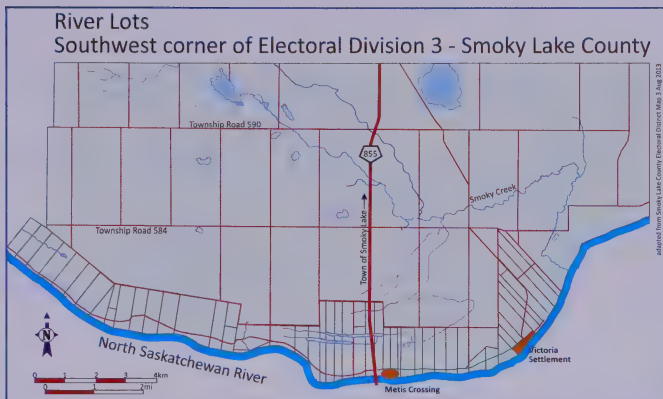
Reserve, Bear Ears people surrendered I.R. 126 to the Queen. On January 5, 1900, 14 square miles (36 square kilometres) were finally added to Saddle Lake Reserve to accommodate Bear Ear’s people. In 1904, the former *Whasatnow* I.R. 126 was opened to homesteading and the land was claimed by European settlers.

By 1907, there was still enough timber for building all along the North Saskatchewan River, so most settlers constructed houses and barns out of logs. However the emerging small towns wanted lumber. Shipping boards and shingles from Edmonton was too costly, so the Dowsett brothers set up a sawmill downstream to the east of North Bank, and to the west, upstream, Isaac Bibby set up another sawmill.

## THE LAY OF THE LAND

Surveyed in 1884, this is how Dominion land surveyors described the land in the White Earth subwatershed:

**Township 59** “... undulating throughout, densely wooded with 3 to 7 inch diameter poplar and high grey willows...here and there spruce trees 5 to 12 inches in diameter... There are no large bodies of water but it is well-watered and drained by small lakes and creeks. The subsoil... stiff clay throughout... overlaid in the east by 7 inches of black loam.”



#### Threshing Crew Meals

12 to 30 men were fed by each farm family in their turn.

#### Breakfast 6:00 a.m.

(eaten at trestle tables set up in the barn or shed): pancakes, bacon, eggs, fried potatoes, porridge, toast, jam and coffee.  
Mid-morning Break 10:00 a.m. (carried by the women to the field in wash tubs and pails): Sandwiches, pickles, coffee, cakes, cookies.

#### Lunch Noon

(most often carried by the women to the field, unless the farmstead was close by): Meat (chicken, pork or beef), potatoes, coffee, cooked vegetables (carrots, turnips, green beans), bread (usually freshly baked each day), butter, coffee, pie, cake, cookies.

#### Mid-afternoon Break 4:00 p.m.

(carried by the women to the field): Sandwiches, pickles, coffee, cakes, cookies.

#### Supper anywhere from 7:00 p.m. to 10 p.m.

Depending on how late the crew worked: Meat (chicken, pork or beef), potatoes, gravy, cooked vegetables (carrots, turnips, green beans), bread (usually freshly baked each day), butter, coffee, pie, cake, cookies.

Township 60 *“The northern portion is... one large muskeg, densely timbered with tamarack, 4 to 10 inches in diameter and spruce, 5 to 15 inches... There are no trails... The township is not well suited for agricultural purposes.”*

Township 61 *“The township is almost flat, composed of spruce muskegs with poplar islands... Good soil and farming land is found along Waskatenau Creek.”*

### Surveyed in 1910:

Township 62 *“... The surface is flat, spruce muskegs with poplar ridges... the greater part would require extensive drainage to render it fit for agricultural purposes... Waskatenau Creek rises in the muskeg in the northeast corner of the township.”*

Township 63 *“For the most part the surface is rolling and covered with spruce and tamarack, muskegs and swamps, interspersed with ridges of poplar and jackpine. A great deal of draining would be necessary to render this district suitable for agriculture...”*

In 1911, the first two homesteaders that filed in the Abee area signed abandonment papers after two years of trying to farm. Reason: *“too wet to farm”*, *“too many sloughs”*.

### HOMESTEAD LIFE

In 1912, eight Japanese families took homesteads west of Redwater: the Kimuras, Saitos, Watanabis, Yamauchis, Nishimotos, Kiyookas, Nakamuras and later Toyomatsu Kimura and his wife, Kuni Nogata. Toyomatsu and Kuni left Edmonton in 1928, after over a decade of running several successful businesses. Being ‘Oriental’, they were not allowed to hold a liquor licence for the hotel they wanted to buy. So instead, they bought a homestead near Opal and hired 18 European immigrants to help clear the land. The Kimuras farmed there until 1964 when they passed the land to their son.

Settlers from Finland in the White Earth subwatershed settled along Namepi Creek, because the landscape there reminded them of home. Every spring when Namepi Creek flooded, it deposited silt over the land, enriching the soil. During the spring flood, settlers supplemented their diet by stretching nets across the creek to catch fish swimming upstream to spawn.

In 1918, the Canadian Northern Railway line was built north of a small community at Smoky Lake. This was the beginning of the end for Victoria Settlement. The original site of the Town of Radway was on high ground, but the railway company could not come to an agreement with the owner of that land. Surveyors for the Alberta Greater Water Railroad, a branch of the Canadian National Railroad, found the Kennedy family more amenable. Even though their land was low and boggy it became the town site for the community of Radway. For many years local residents called the town, Kennedy's Duck Pond.

In 1918, when the railroad came through Redwater, men cutting timber for railroad ties made 80 cents per tie. In 1919, the arrival of the railway created the municipality of Waskatenau. The post office before the railroad came was known as Pine Creek.

Magnus Cromarty brought the first threshing machine into the region. It had a half feed and straw carrier separator and was driven by eight horses hitched to a revolving drum. The drum had a gear that drove a shaft connected to the separator. The next threshing machine to be used was run by a portable steam engine, but it still had to be moved from farm to farm by horsepower.



Canadian Northern Railway Station on Railway Drive in the Town of Smoky Lake, next to the abandoned railway right-of-way that is now part of a regional recreational corridor, the Iron Horse Trail. The station, built in 1919 according to Standard Third Class, Plan 100-72, is a reminder of the significant role played by railways in opening the watershed to rapid settlement. Photo-Linda Treleven, Images Alberta

At the Smoky Lake Pumpkin Festival 2013, threshing grain the old fashioned way. Photo-Bill Trout, Images Alberta



Custom threshing was the norm in Alberta until the late 1930's. Farmers cut wheat or oats and tied the grain stalks into bundles. When the grain dried, farmers loaded the bundles on a horse-drawn rack to be pulled to the threshing machine. Threshing crews traveled from farm to farm with huge machines that separated the grain from the straw. Crews spent several days at each farm, working long hours in the summer heat.

#### NORTHERN LIGHTS

In Norse mythology, Northern Lights came from a glow off the helmets, armor and weapons of the Valkyrie as they galloped across the night sky to lead fallen warriors to Valhalla.

#### AURORA BOREALIS

Galileo, in 1619, is thought to have coined the phrase from Aurora, Roman goddess of dawn, and Boreas, the Greek name for the north wind.

Until rural electrification after WWII, ice harvesting on the river was a good source of income for many settlers. The ice, usually harvested in March, sold for about \$4.00 per ton. The Andrew Creamery used six hundred tons a year. Farmers in the Andrew and Mundare districts who sold cream, put up several tons of ice for their own use.

In 1926, a trip to Edmonton from the Redwater area still took three or four days if the team of horses were left at Fort Saskatchewan and people took the train into Edmonton. If they used the horse drawn wagon for the whole trip, they had to add at least a day, especially during rainy weather.

In the 1930s, in July, when Saskatoon berries ripened along the river, men, women and children clambered up and down the banks picking washtubs of the prolific berry to store for winter. Then in August, when blueberries were ripe, wagon loads of people from all over the central part of White Earth subwatershed descended upon the vast wild berry patches in the sand hills surrounding Long Lake. People swarmed the hills with pails, washbasins and even washtubs. Each family camped there for as many days as the berries lasted. Pincherries, chokecherries and both high and low-bush cranberries were also harvested. Wild berries were canned, jammed, dried for winter and sold in town.

From 1952 to 1957, there was an observatory at Newbrook, equipped with a Super-Schmidt Meteor Camera, one of six built by the Perkin-Elmer Company and one of two used in Canada. A Newbrook Observatory scientist, Art Griffen, made history in the fall of 1957 when he became the first person in North America to photograph Russia's Sputnik 1 satellite (less than a week after its launch). The northerly location of Newbrook, with a clear view of the night sky and the relative lack of auroral interference, made it an ideal location for establishing a meteor observation station.

Light sky in the White Earth subwatershed.  
Photo: Bill Trout, Images Alberta



## 21<sup>ST</sup> CENTURY

With the population in the White Earth subwatershed in steady decline, repopulation of rural areas is a challenge for the 21<sup>st</sup> Century.

The Kalyna Country Ecomuseum, covering 20,000 sq. km and claiming to be the world's largest Eco museum (3 times the size of Prince Edward Island) is one innovative, cooperative venture designed to invite people back to the countryside. It includes most of White Earth, Frog, Vermilion and Monnery subwatersheds, promoting these rural landscapes as vacation adventures. Instead of just visiting one building or site to see exhibits and artefacts, visitors are encouraged to travel through the whole area. They are invited to paddle the river, hike, bike, horseback ride or use all-terrain vehicles on the historic trails to learn about the past, experience the present culture of rural communities, and explore beautiful natural areas.

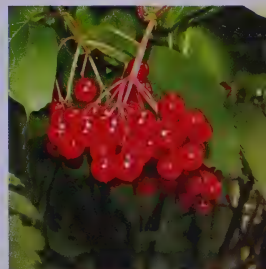
St. Elia's Russo Greek Orthodox Church, north of Pakan. Gregory Balechowsky, the blacksmith, shaped the iron crosses for the top of the domes. He chisel-stamped 1904 on the cross of the larger dome. By the summer of 1905 the community had completed the interior. In 1906 they built a belfry and bought bells for \$170. In August of that year the church was consecrated and dedicated to the Prophet St. Elia. Rural Churches are often the only buildings still standing where once vibrant communities flourished. Photo-Steve Ricketts, Images Alberta

Kalyna Ka-lyn-na Ukrainian for high bush cranberry. A Ukrainian saying, "Without Kalyna, there is no Ukraina". At the bottom of the Ukrainian coat of arms is a clump of high bush cranberries hanging between two stalks of wheat.

### KALYNA KETCHUP

Cook until soft: 1 lb chopped onion, 4 lbs (8 cups) highbush cranberry, 2 C water.  
Rub through a coarse sieve.  
Add 2 C vinegar, 4 C sugar, 1 T each of cloves, cinnamon, allspice, salt, celery seed and pepper.

Boil until thick, pour into sterilized jars and seal. Serve with poultry, meat or baked beans.



High Bush Cranberry *Viburnum trilobum*, also known as pembina from the Cree, nipiminnān and kalyna by Ukrainian speakers. Photo-Kaz Andrew





# FROG SUBWATERSHED

**T**he Frog subwatershed covers 562,622 hectares (1390269 acres). The Rannach Provincial Grazing Reserve borders the south bank of the North Saskatchewan River. The St. Paul Provincial Grazing Reserve is 19 km (12 mi) southwest of the Town of St. Paul on the north side of the North Saskatchewan River.

The Frog subwatershed includes the municipal boundaries of Smoky Lake, St. Paul, Two Hills, and Vermilion River Counties as well as a small portion of the rural municipality of Bonnyville, Improvement District 18. It also includes the communities of Ashmont, Derwent, Duvernay, Elk Point, Heinsberg, Horseshoe Bay, Lafond, Lindbergh, Myrnam, Spedden, St. Edouard, St. Paul, St. Vincent, Vilna and the First Nations Reserves of Puskiakiwenin 122, Saddle Lake 125, Unipouheous 121, Makao 120, Fishing Lake Métis Settlement as well as the south portion of Elizabeth Métis Settlement.

Garter snakes eat earthworms, frogs, fish, leeches, tadpoles and sometimes mice. Bears, skunks, fox, crows, magpies, hawks, great blue herons and owls eat garter snakes. Garter snake babies are born live, most often about 20 to 40 at a time. The most garter babies recorded born at one time was 98!

## NATURAL FEATURES

### SNAKE HILLS

In 1858, Dr. James Hector of the Palliser Expedition described the Snake Hills as he viewed them along the North Saskatchewan River 5 mi (8 km) upstream of Saddle Lake Creek. *“The country bordering the river in this part of its course is very beautiful, as the high banks of the river retire and form by combining with a still higher table land, undulating hills that rise to a height of 300 to 400 feet. On the north side are thus formed the Snake hills which are free of wood except in the ravines.”*

### SNIPE HILLS

On the south side of the river across from the Snake Hills, the Snipe Hills rise 2,127 ft (648 m) northwest of the Town of Two Hills, north of Sandy Lake.

### EAGLE CLIFF

Red-sided garter snakes *Thamnophis sirtalis parietalis*, emerge from underground wintering dens (hibernacula) in the spring. Photo-Terri Skakum

Eagle Cliff is a high river bank, marked with cracks, crevices and sliding shale along the north bank of the North Saskatchewan River, about 5 miles (8 km) southeast of the Town of Elk Point and just upstream from Fort George/ Buckingham House Provincial Historical Site. Near the top of the cliff, there once was a red-sided garter snake hibernaculum where thousands of snakes wintered. When the south-facing cliff warmed in the early spring, garter snakes emerged during the day to sun themselves. They returned to the cracks and crevices at night for several weeks before dispersing in an annual spring migration.

In the early 1970s, someone dynamited the garter snake winter home, killing thousands of snakes. The little snakes no longer return to this location. Other garter snake hibernacula can still be found in the river banks south east of the Hamlet of Lindbergh. Snake hibernacula are now protected from disturbance under the Alberta Wildlife Act.

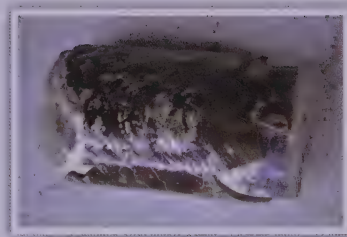


The lower part of Eagle Cliff is made up of shale which constantly shifts and slides toward the river. This shale is full of fossilized cephalopods that tumble down the bank every spring, released by the continual slumping of the river bank. Pat Johnson, long-time resident of the Elk Point area and ardent canoeist, collected them with the boy scouts for many decades.

Joseph Burr Tyrell, in his report to the Canadian government in 1887, mentions finding fossilized baculites (an extinct cephalopod genus) in the river banks from Eagle Cliff downstream to the mouth of Moosehills Creek.

## WHITNEY LAKES

North of the community of Heinsburg, the four lakes (Whitney, Ross, Borden, Laurier) in the Whitney Lakes Provincial Park, sculpted by glaciers, create a spectacular landscape of eskers, sand hills, hummocks and a mix of forests, meadows and wetlands. Whitney and Ross are clean, clear lakes with wide sandy beaches. An extensive walking trail system links the four lakes with interpretive signs along the way describing the diverse



Fossilized Baculite ("walking stick rock"), found by Charlie Hall along the shale banks of the North Saskatchewan River near Elk Point. Photo-Billie Millholland

Baculites are a genus of cephalopods that originated in the late Paleozoic Era, becoming extinct at the end of the Cretaceous Period. Baculite shells are straight and compressed like a tapering rod, except for a few coils in the back. If preservation conditions are ideal, the shell, made of alternating layers of aragonite and conchiolin, becomes fossilized.



Whitney Lake. Photo-David Aldana, Images Alberta



Aurora Borealis over Laurier Lake.  
Photo-Bill Trout, Images Alberta

Killdeer *Charadrius vociferous* are easily spotted along the shores of the Whitney Lake Provincial Park.

Photo-William Shalewa



wildlife (migrating whooping cranes are sometimes seen). Trails that allow mountain biking, range from easy family rides to more challenging, rolling terrain. The historic Carlton Trail can also be followed along the park's southern edge. The east side of Laurier Lake, which is not within the Provincial Park boundaries, is ringed with summer cottages and rural homes.

## BORDEN LAKE ESKER

About 10,000 years ago, glacial melt-water flowed over and under rapidly receding glaciers. In the Whitney Lake complex sand and gravel carried by melt-water was left behind, creating a unique, long hilly ridge that penetrates Borden Lake at its north end. Whitney Lakes Provincial Park protects this important representation of a major esker formation, just one of many landforms created by retreating glaciers. Gravel in unprotected eskers in much of the rest of the North Saskatchewan River watershed has been mined for road building and other development.



Esker at Borden Lake. Photo-Alberta Environment and Parks

## NATURAL RESOURCES

### WATER

In 1914, in the Hamlet of Elk Point, C. A. Johnson opened an ice cream parlour, complete with wire table and chairs. He made the ice cream right there with local cream using ice that had been cut from the river in the winter and stored in a cellar lined with hay and sawdust. A dish of plain ice cream cost 12 cents; a dish of ice cream with home-preserved wild strawberries, 25 cents.

Between 1916 and 1924, during the prohibition era in Alberta, the only alcohol available was locally made moonshine. Moonshine stills had to be built beside a spring or creek with a reliable supply of good-tasting water. The area around Elk Point had plenty of good tasting water.

In 1951, the Town of St. Paul began to withdraw its raw drinking water supply from Lac St. Cyr. Between 1959 and 1971 lake levels dropped about 2 metres (6.5 feet) due to increased water demand. In 1978, Alberta Environment allowed raw water from the North Saskatchewan River to be pumped into Lac St. Cyr over winter. A pump house was built on the North Saskatchewan River midway between the Myrnam Bridge on Highway 881 and the Elk Point Bridge on Highway 41. Initially, nutrient levels in Lac St. Cyr increased to a eutrophic level due to the river diversion, but over time nutrient levels declined as water quality in the river improved. Significant upgrades to the Gold Bar waste water treatment plant in Edmonton and the Capital Region Wastewater Commission plant led to a dramatic improvement in river water quality and subsequently to improved water quality in Lac St. Cyr.

#### HOW TO MAKE MOONSHINE

In a 30 imperial gallon (136 litre) wooden barrel make the brew. (wheat, water, 40 pounds (18 kilograms) of sugar, raisins, yeast cakes). Let the brew ferment for at least six days. Then set an 8 gallon (36 litre) cream can on three large rocks. Fill the can with brew and seal with a wooden cover through which a hole has been drilled.

Put one end of a copper tube into the hole. Coil the tube and pass the other end through a pail of cold water and out into a 1 gallon (4.5 litre) jug. Build a fire under the cream can. As the mash heats, steam carrying the moonshine will rise up through the tube, become condensed by the cold water and will drip into the jug. This moonshine sold for \$3.00 a gallon in the Frog subwatershed during the prohibition years.



Elk *Cervus Canadensis*, sometimes known as wapiti (Cree for elk), were once abundant in the Frog subwatershed. Today in this region elk are farmed for their meat (leaner and higher in protein than beef or chicken) and antlers (used in traditional medicine in Asia).  
Photo-William Shalewa

## ANIMAL

The Frog subwatershed contributed an abundance of fur to the fur trade industry which lasted from the middle of the 18<sup>th</sup> Century to the middle of the 20<sup>th</sup> Century. In the early days of the fur trade the Athabaskan brigade collected pemmican at Isle a la Crosse for the northern forts. That pemmican had been “*brought across by dog team in the winter from Fort George and Fort Vermilion on the Saskatchewan.*” In 1817, Dog Rump House was built just south of the present Town of Elk Point to broker the pemmican trade.

In 1829 Dog Rump House was dismantled and floated downstream to help build new Fort Pitt.

Until the late 1880s caribou, elk and deer supplemented the diets of First Nations people, fur traders and early settlers. By the turn of the 20<sup>th</sup> Century caribou and elk had disappeared from the Frog subwatershed. Between 1909 and 1943, the Province of Alberta restricted caribou to one per hunter. In 1910 the hunting season for Elk everywhere in the Province of Alberta was closed.

Both **ruffed grouse** *Bonasa umbellus* (also known as Fools Hen) and **sharp-tailed grouse** *Tympanuchus phasianellus* were called ‘prairie chickens’ by early settlers. Both birds were plentiful in the Frog subwatershed; they were easy to catch and tasty to eat. Many early pioneer cookbooks include recipes for fricassee of prairie chicken.

Ruffed grouse prefer the protection of a mixed forest. They need deadfall for their spring mating ritual, where males beat on fallen logs with their wings. The rhythmic thumping sound carries easily through the forest. Sometimes ruffed grouse drum in the fall, although with less vigour. Loss of mixed forest habitat has reduced ruffed grouse numbers in the Frog subwatershed.

Ruffed grouse female. Photo-Bill Trout, Images Alberta





Sharp-tailed grouse are grassland birds. They need dry, open ground for their spring ritual where they gather at communal “dancing grounds” called leks. Here, in the early morning, male grouse hold dancing competitions to attract females. Usually 10 to 20 males dance at one time, although as many as 45 dancers have been counted. They inflate air sacs on their necks, fan out tail feathers, flutter wings, stomp feet and spin in tight circles. Leks are occupied over several weeks, beginning in late March. The same spot is used for years, even decades. Loss of suitable lek habitat is a limiting factor for sharp-tailed grouse in the Frog subwatershed.

First Nations traditional dancers perform intricate foot and body movements based on grouse dances.

### MUSKRAT *ONDATRA ZIBETHICUS*

The Algonquin call it *muscascus* (it is red); the Abenaki, *mòskwas*; the Huron, *ondathra* and the British, *musquash*. Early fur traders called it musk-beaver. Muskrats are not actually rats; they are more closely related to voles and lemmings. Always found in or close to water, muskrats average 40 individuals per hectare (2.5 acres). They dig burrow into banks of streams and lakes where they use an underwater entrance, about 8 inches (20 cm) wide. In boggy areas they live in mounds (push-ups) made from vegetation and mud. In winter, they plug push-up openings with vegetation, which they replace every day. The open areas they maintain in marshland provide habitat for many water birds. Muskrat fur was used to make winter hats and coats for hundreds of years. The winter hats worn by the RCMP are made with muskrat fur. During the first half of the 20<sup>th</sup> Century, many settler families traded muskrat pelts for groceries. Traditional trappers still rely on muskrat for part of their income.



Sharp-tailed grouse lek pattern.



First Nations men ready to perform the Prairie Chicken Dance. Photo-Joe Mabel



RCMP muskrat winter hat.

## VEGETABLE

### Birch Bark

In 1767, near Mooswa, where today Canadian Salt has a processing plant, Hudson's Bay Company man, William Pink, had a seasonal birch bark canoe-building site.

### Maple Sap

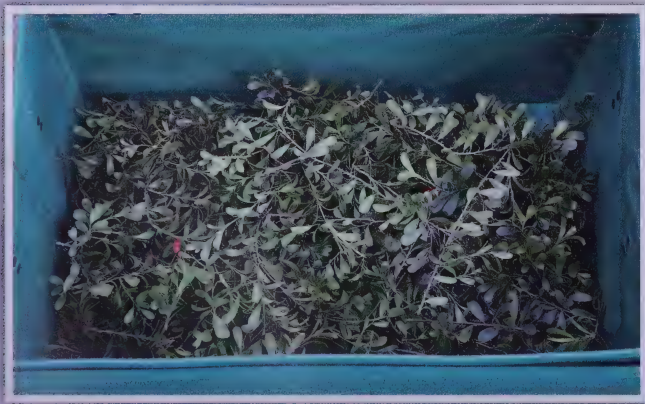
In April 1820, Lieutenant Hood of the Franklin Expedition reported in his journal, "*The maple is found in small groves in the Saskatchewan River valley, and those places are resorted to in the spring by the Indian women for the purpose of sugar making...sugar is produced in the form of hard cakes – very pleasant to eat by itself, but nothing to be compared to cane sugar in its sweetening properties.*"

Freshly picked bear berry *Arctostaphylos uva-ursi*, also known as kinnikinnick, has been used medicinally for centuries in both Europe and North America. First Nations people used it as a remedy for urinary tract infections. Until the discovery of sulfa drugs and antibiotics, *uva ursi* was a common treatment for bladder-related infections. Photo-Billie Milholland

### Berries

On August 22, 1872, around Mooswa Creek, "*Both yesterday and today, the Saskatoon berries that are put in the best or "berry pemmican" were pointed out to us and the creeper which the Indians make into "kinni-kinnick" when they can't get the bark of the red willow to mix with their tobacco.*"

Wild berries, including strawberries, saskatoons, raspberries, gooseberries, pin cherries, chokecherries, blueberries, and both high and low bush cranberries are still picked in the Frog subwatershed, but not in the quantities found in earlier times. During the depression years of the 1930s, wagon loads of blueberry pickers (men, women and children) would camp for days in the blueberry patches, picking wash tubs full of berries to sell.



## Roots

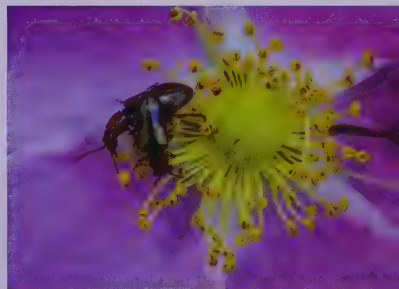
In July 1909, the sandhills in the Lindbergh area were red with tiger lilies.

**Seneca Root** *Polygala senega*, also known as snake root, is indigenous to North America. It was used widely by First Nations people across the continent as a remedy for sore throats, respiratory problems and inflammation. Export to Europe began in the 1700s. It is still used in herbal remedies today. The root was harvested for export in the Frog subwatershed early in the fur trade. The first settlers were quick to learn how to collect it to supplement their income. Next to muskrat hides, Seneca root was a mainstay trade item for many families during the depression years. Until the 1960s, Canada was the largest exporter of Seneca root, most of it coming from the Prairie Provinces. Intense harvesting, loss of habitat to overgrazing and the conversion of land to urban and agricultural use has reduced the range of Seneca root in the Frog subwatershed.

**Wild Rose** *Rose acicularis*, also known as Arctic rose and prickly rose, is the floral emblem of the Province of Alberta (since 1930). The most abundant rose species in the boreal forest, it is found throughout the North Saskatchewan River watershed. Squirrels, birds, deer, moose, rabbits and coyotes eat rose hips. First Nations people have been eating the hips for millennia. Scandinavian settlers made a traditional fruit soup using rose hips; Hungarian Pálinka, a fruit brandy, was often made with rose hips; other newcomers turned the abundant little hip into jam, jelly and ketchup. Rose hips are one of the richest plant sources of vitamin C. During World War II in Britain, people were encouraged to gather rose hips to make vitamin C syrup for children, because German submarines made it difficult for commercial ships to deliver citrus fruit. First Nations people knew to wait until after the first hard frost to eat the rose hip. Then it is soft and mellow separating easily from the prickly little seeds inside.



Western red lily *Lilium philadelphicum*, once covered prairie hills with blankets of blazing orange in early June. They are now a rare sight. First Nations people harvested the rootlets and stored them for winter food. Photo-David Aldana, Images Alberta



Wild Rose Photo-David Aldana, Images Alberta

Every person contains about 113 g of salt. Without salt, muscles would not contract, blood would not circulate, food would not digest, and hearts would not beat.

The Health Canada website states, each Canadian consumes about 3400 mg of sodium each day. This is more than double the amount needed. One teaspoon of table salt contains 2300 mg of sodium.

## TIMBER

In 1872, trees in the vicinity of Frog Creek, Middle Creek and Moose Creek, *“there was now what we had often craved for, variety of wood. Clumps and groves of tall white spruce in the gullies and valleys, and along lake sides, branching poplars with occasional white birch and tamarack, mingled with the still prevailing aspen.”* European settlers operated saw mills in the Frog subwatershed from the end of the 19<sup>th</sup> Century to the middle of the 20<sup>th</sup> Century.

## MINERAL

### Salt

In July 1948, salt production began on the banks of the North Saskatchewan River, southeast of the Hamlet of Lindbergh, where three oil companies: Anglo-Canadian Oil, Home Oil and Calgary Edmonton Corp. found a significant salt deposit 2600 ft (793 m) below the surface while drilling for oil and gas. Everything they needed for extracting salt economically was right there: gas, water and a railroad. The oil companies gave their support to the formation of the Alberta Salt Company. In 1951, the Alberta Salt Company was the first salt plant in the world to produce fused salt. By 1955, now the Canadian Salt Company, it produced 6 tons of salt an hour. By 1963, production was up to 250 tons a day. In 1970, it was 360 tons a day and by the turn of the 21<sup>st</sup> Century, about 425 tons of salt was produced every day.

The Lindbergh salt operation has its own natural gas wells and a water treatment facility for producing and supplying drinking water to the plant and the town site that was built close by.

Windsor Salt (now part of Morton Salt) facilities near Lindbergh. Photo-Heather Kuchma, Images Alberta



In 1952, a chlorine production plant was built near the North Saskatchewan River at Duvernay, just north of Two Hills, to take advantage of the salt deposits found there. Easy access to water, gas, and salt, as well as a promise from the CPR to construct a spur line to Two Hills made this an ideal location. Chemcell Ltd bought the company in 1960. They operated the plant until 1973 when Dow Chemical of Canada built a more efficient plant at Fort Saskatchewan. In order to try to keep the Duvernay plant going, Dow Chemical, in partnerships with the Alberta government, created the Two Hills Chemical Company. The plant continued to operate until 1980 when Western Truck and Body Manufacturing Ltd. took it over to build truck body parts. In 2015 the steel skeleton of the chemical plant could still be seen west of Highway 29 at Duvernay.

- In 1926, Canadian Celanese Limited was incorporated in Canada.
- In 1963, the company became Canadian Chemical Company, Limited.
- In 1966, the name changed to Chemcell Limited.
- In 1971 the company became Celanese Canada Limited again.
- In 1978 the name changed to Celanese Canada Inc.
- In 1999, Celanese Canada Inc. was acquired by Hoechst Aktiengesellschaft of Germany.

## OILAND GAS

The Cold Lake Oil Sands Reserves cover an area between Saddle Lake and the Alberta/Saskatchewan Border, south to the City of Lloydminster and north past Cold Lake. See *Monnery subwatershed section for a map and history of resource extraction.*



Pipeline construction in the Frog subwatershed in 2014. Photo-Bill Trout Images Alberta

## WHAT'S IN A NAME?

**St. Paul de Métis** According to Joe Anderson Jr. “*St. Paul was named after my maternal grandfather whose name was St. Paul Cardinal. He was one of the first Métis in the area and made his living trapping.*” Joe Anderson was born in St. Paul de Métis, Alberta, May 10, 1893. On September 1, 1929, the “*de Métis*” was dropped from St. Paul’s name.

**Vilna** was originally called Mile 90 by the Canadian Northern and Grand Trunk Pacific Railway survey. The first European settlers from central Europe renamed the community, Vilna, which means “peace” in Polish.

**Puskiakiwenin** In 1876, Woods Cree chiefs *Cas-cak-iskwes* (or *Tus-tuk-ee-skaws*, meaning he holds his head up high) and *Paskehawiyanan* (or *Puskiakiwenin*, meaning winner or champion) signed Treaty Six and selected reserves on the south end of Frog Lake.

**Wasagamu** means clear water in Cree. It is the name of a beautiful lake just south east of Frog Lake.

Looking downstream from Fort George/  
Buckingham House Provincial Historic  
Site. Photo-David Aldana,  
Images Alberta



**Mooswa** means moose in Cree. During the fur trade, the Carleton Trail from Onion Lake wound around Ross Lake to the small community of Mooswa on the banks of Mooswa Creek just east of the Canadian Salt processing plant. The old Mooswa Cemetery is south of the community of Lindbergh on the south side of Township Road 564.

## POST CONTACT – FUR TRADE

The fur trade came early to the Frog subwatershed. In 1792, Angus Shaw of the North West Company chose a site for his fort on the north side of the river southeast of present Town of Elk Point. He named it Fort George. William Tomison of the Hudson's Bay Company, following close behind his rival, built his fur trading fort, Buckingham House across a ravine from Angus Shaw.

In 1799, the XY Company, the Hudson's Bay Company and the North West Company each built a fort on a small island, in the North Saskatchewan River north of the present day Village of Myrnam. Each fort was known as *Fort de L'Isle* or Island Fort.

William Wentworth-Fitzwilliam Viscount Milton was 24 and Walter Butler Cheadle, 27 when they travelled through the Frog subwatershed. The book about their grand adventure, "The North-West Passage by Land" was published in London in 1865.



Fort George/Buckingham House Provincial Historic Site Interpretive Centre. Photo-David Aldana, Images Alberta

In 1877, The North West Territory (this included land that is now the Provinces of Alberta, Saskatchewan and Manitoba) the Ordinance for the Protection of the Buffalo was passed, but later repealed. In 1889 the last free-ranging Plains Bison in Alberta was killed in the Hand Hills.

On May 10, 1809, Alexander Henry the younger, fur trader with the North West Company, wrote of prairie pasque flowers blooming along the North Saskatchewan River near Fort Vermilion. *“Green grass begins to appear. Patches of snow still lie in the valley. The plains are covered in some places with blue flowers that sprout in the spring and are now full blown; the stalk is one to three inches long covered with a soft mossy coat.”*

In 1854, in his “Narrative of a Voyage to the North West Coast of America”, Gabriel Franchere, a wilderness adventurer, describes the country on the north side of the North Saskatchewan River as still heavily treed: *“The country north of the Saskatchewan is mostly thick woods, from the Rocky Mountains to old Buckingham House.”*

In 1872, Sandford Fleming’s expedition used a series of ancient campsites while surveying along the North Saskatchewan River for the Canadian Pacific Railway: Moose Creek (Frog subwatershed), Snake Lake (Frog subwatershed), Victoria Mission (White Earth subwatershed), Deep Creek (White Earth subwatershed) and Fort Edmonton (Strawberry subwatershed). From Fort Carleton to Fort Edmonton his guides and packers were: Maxime, Souzie, Haroosh, Legrace, The Little Bird, Kisanis, and Cheeman. In the vicinity of Moosehills Creek, George Grant commented on the landscape, *“There was now what we had often craved for, variety of wood. Clumps and groves of tall white spruce in the gullies and valleys, and along lake sides, branching poplars with occasional white birch and tamarack, mingled with the still prevailing aspen.”* There they were introduced to berries and herbs. *“Both yesterday and today,*

Moosehills Creek. Photo-Carole  
Rusinek, Images Alberta



*the Saskatoon berries that are put in the best or “berry pemmican” were pointed out to us and the creeper which the Indians make into “kinni-kinnick” when they can’t get the bark of the red willow to mix with their tobacco.”*

## Plains Cree in the Frog subwatershed

Plains Cree, the *nêhiyawak*, produced many revered aboriginal *okimaw* (leaders), including *Mistahi-maskwa* (Big Bear). *“The okimaw or leader of a group or band was always well looked after by his followers. They gave him the choicest cuts of their kill and his larder was supposed to be amply supplied at all times, so that he in turn could treat his many visitors to the best.”*

### Mistahi-Maskwa (Big Bear)

Big Bear was born in 1825, near Fort Carlton, the son of a *nêhiyawak* woman and *nahkawiniwak* (Saulteaux) Chief *Mukitoo* (Black Powder). In the 1860s, Big Bear was *okimaw* of a small *nêhiyawak* band living a traditional, autonomous lifestyle away from fur traders and missionaries. By 1873 he was the leader of 65 lodges. Hudson’s Bay Company trader William McKay, sent by the Dominion of Canada in 1874 to gift tea and tobacco to First Nations leaders, was snubbed by *Mistahi-maskwa*. Big Bear refused to accept what he believed to be bribes. In 1875, responding to the proposed Treaty 6, he said, *“When we set a fox-trap we scatter pieces of meat all round, but when the fox gets into the trap we knock him on the head. We want no bait; let your chiefs come like men and talk to us.”*

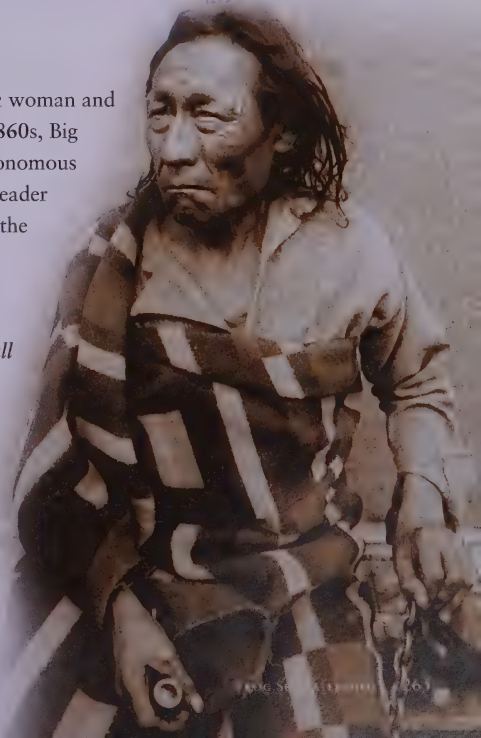
*Mistahi-maskwa* refused to sign Treaty 6 in 1876. He withheld his signature for the next 6 years. Finally, with the buffalo nearly gone and his failure to create a pan-Indian reserve in the Cypress Hills, Big Bear relented and signed Treaty 6.

He continued to advocate for a single large reserve on the North Saskatchewan River for all First Nations people in the area.

**DOWNSTREAM PEOPLE** *mamihkiyiniwak* was the name given to the eastern Cree bands. These were the Calling River People, Rabbit Skins and Touchwood Hills People. They travelled and traded from the far eastern edge of Frog subwatershed into what is now the Province of Saskatchewan.

**UPSTREAM PEOPLE** *natimijiwiniwak* refers to the western Cree bands. These included the House, Parklands, River People, Beaver Hills People, and sometimes the Prairie People. The term Upstream People could also refer specifically to the Beaver Hills People. They travelled and traded from the Frog subwatershed to upstream of Edmonton.

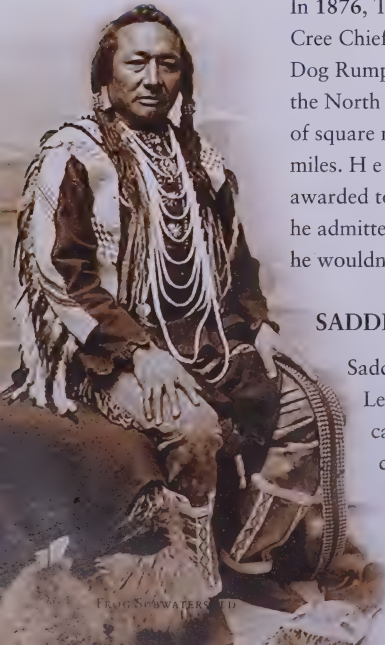
*Mistahi-maskwa* in chains. 1885. This is the photo most often associated with Big Bear. Photo-O. B. Buel



He also continued to practice traditional dances and other aspects of Nêhiyawak culture, some of which had been outlawed by the Canadian government. Mistahi-maskwa did not want war with the Dominion of Canada. When hostilities broke out between Métis peoples and the Dominion in 1885, war chief *Kâ-papâmahcakhwêw* (Wandering Spirit) and the Warrior Society took over the band, because Mistahi-maskwa would not join the conflict.

When the conflict was over, in spite of his efforts to keep the peace, the old okimaw was convicted of Treason-Felony and sentenced to three years at Manitoba's Stony Mountain Penitentiary. He fell gravely ill and was released from jail shortly before his death in January 1888. He was 63.

One of Big Bear's sons, Little Bear. 1897. The strength and pride emanating from this photograph is a glimpse at how Big Bear might have appeared had he been photographed before the North West Resistance (March-May 1885).



## POST CONTACT – SETTLEMENT

TREATY 6 paved the way for settlement.

In 1876, Treaty 6 promised each family of five persons one square mile of land. When Cree Chief James Seenum (Pakan – hazelnut) signed Treaty 6, he requested land between Dog Rump Creek and White Earth Creek (east to west) and between Beaver River and the North Saskatchewan River (north to south). Pakan was unable to say the number of square miles he needed, because First Nations people did not measure distance in miles. He knew it was three encampments between the two creeks. The amount of land awarded to his people was much smaller than he'd hoped for. During the winter of 1884, he admitted to Mistahi-maskwa, that had he known the size of land he would be given, he wouldn't have signed the treaty.

### SADDLE LAKE CREE NATION

Saddle Lake was once called *Onihcikiskowapowin*, “mirage on the lake”.

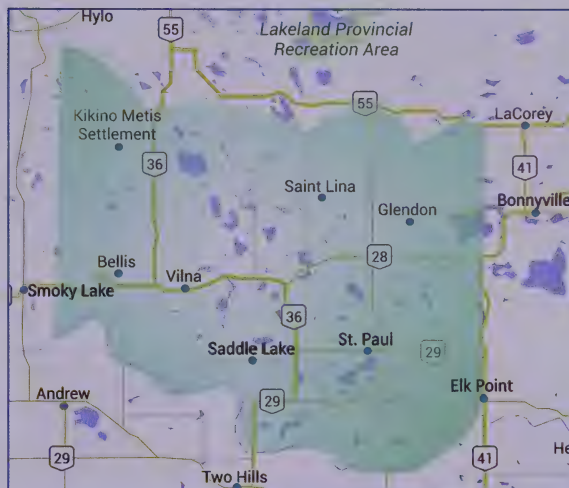
Legends tell of people seeing dog teams, people fishing and even a *Wibtikow* (a cannibalistic, human-like monster) crossing the ice in winter, but when anyone came near to where they were, they disappeared. They were mirages. In recent history the name was shortened to *Aspapiwin*, which means Saddle, and so it has remained.

The Cree People understood the treaty to be an agreement to ensure peace and help them cope with the looming threats to their hunting, trapping, and trading way of life. Final maps of the reserves in the Frog subwatershed were completed in 1887, and on May 17, 1889, an Order in Council P.C 1151 confirmed Saddle Lake I.R. 125 for the bands of Chiefs *Onchaminahos* (Little Hunter), James Seenum and Blue Quill. At first, 195 Papaschase tribal members lived on Indian Reservation #136 on the south side of the river across from Fort Edmonton. As Edmonton grew and expanded, pressure increased to have the First Nations people removed from their treaty lands. When this happened (see the *Greater Edmonton Area and Beaverhill subwatershed* section for more about the *Papaschase people*) some of the people came to live on the Saddle Lake Reserve.

In 1889, an Order in Council gave Chief Bear Ear's Band, 8960 acres (3626 hectares) adjacent to Saddle Lake. In 1902, four Cree bands were amalgamated as the Saddle Lake Cree Nation: Onchaminahos' Band, led by Chief Onchaminahos (Thomas Hunter); Seenum's Band, led by Chief Pakân (James Seenum); Blue Quill's Band, led by Chief Blue Quill; Wasatnow's Band, led by Chief Muskegwatic (Bear Ears).

## FROG LAKE FIRST NATIONS

In September 1876, Chiefs *Puskiakiwenin* and *Tustukiskwes* (father of *Unipouheos*) signed Treaty 6 at Fort Pitt, near present-day Onion Lake, Saskatchewan. Chief Tustukiskwes died before he could select a location for his reserve. His chieftainship passed to his son, Unipouheos. The two chiefs each chose land next to Frog Lake. In 1914, the two reserves, Unipouheos and Puskiakiwenin were amalgamated into one band.



Where Chief Pakan thought his people would live when he signed Treaty 6.



Settler's effects on display in St. Paul.  
Photo-Michael Frost, Images Alberta

## FIRST SETTLERS

The land in the Frog subwatershed was lush at the turn of the 20<sup>th</sup> Century and wildlife was abundant. In the fall of 1906, Jens Aarbo and his Uncle Gilbert built a raft at Edmonton and drifted downstream as far Myrnam Crossing. Winter came early, so they dug a hole in the river bank to wait out the cold weather. They had tea, salt, flour and butter with them. They ate well, catching plenty of rabbits, prairie chicken and fish to round out their diet. They didn't leave their cave to continue on to their homestead near Elk Point until the spring of 1907.

In 1908, slough hay cut around the perimeter of Frisby Lake was higher than the horse's back. In July, 1909, the vast sandhills in the Lindbergh area were solid red with tiger lilies.

Before 1914, a large lake reached from 2 miles (3.2 kilometres) east of Elk Point to a half mile (.8 kilometre) west of it. It drained eastward into Spring Park Lake (now known as Moosehills Lake). It was a good looking lake, full of waterfowl, but it was in the way of the road survey. In the spring of 1914, the Dominion Government paid \$1500.00 to local men to hand dig a .75 mile (1.2 kilometre) channel to drain the lake. The men were each paid a dollar for a 10 hour day. Working 7 days a week, it took them over a month to dig the drainage channel. By freeze up in late September most of the lake had drained. The government then paid homesteaders a dollar a load of 20 foot (6 m) logs. These they put down over the frozen lake bottom to make a road bed, piling the logs three feet high. In the spring of 1915, men, using horse-pulled wagons, covered the logs with dirt. That served as a road over boggy ground until Highway 41 was built.

## 21<sup>ST</sup> CENTURY

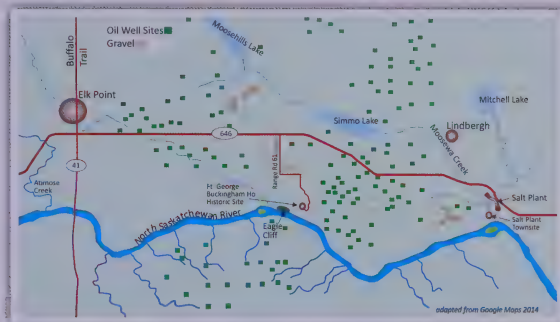
Today the eastern part of the Frog subwatershed is the land of lakes and oil, and in the west, it is the land of lakes and agriculture. Shrinking rural populations and the boom and bust oil economy make it necessary to explore new ways of using the land. The rolling terrain invites new approaches to tourism. See the White Earth subwatershed for a description of the **Kalya Country Eco Museum**, which also covers much of the Frog subwatershed.

The **Iron Horse Trail**, part of the Trans Canada Trail, stretches for 300 km through boreal forest, parkland and farmland, much of it in the Frog subwatershed. The notion for development began in 1980 when the CN rail service between Elk Point & Heinsburg was discontinued and people began using the 34 km corridor as an informal trail. In 1999, when rail line abandonment was complete in rest of north eastern Alberta the Riverland Recreational Trail Society was born. In 2004 an application for the Iron Horse Trail to be part of Trans Canada Trail was accepted. The trail on the old railroad right of way leads hikers, bikers, wagon trains and ATV riders over some of the most beautiful landscapes in western Canada.

For many years local oil service companies were primarily run by the settler population. That changed in 1984 when **Pimee Well Servicing Ltd.**, a 100% aboriginally owned company, began operations, taking advantage of the heavy oil activity in the Frog subwatershed and beyond. It is run by a group of six First Nations Bands: Beaver Lake Cree Nation, Frog Lake First Nation, Heart Lake First Nation, Kehewin Cree Nation, Saddle Lake Cree Nation and Whitefish (Goodfish) Lake First Nation. The Chiefs make up the Board of Directors, each holding a single vote with respect to business decisions.

(Pimee is Cree for oil)

Until 2000, the oil industry in the Frog subwatershed was mostly directed by outsiders. The Frog Lake First Nations economic development was limited to leasing reserve lands for natural resource exploitation to outside oil companies. This changed with the creation of **Frog Lake Energy Resources Corporation**, a good example of how First Nations people participate in the global economy.



Riding with the Western Canadian Wagon Train on the Iron Horse Trail near Lindbergh. Photo-Carol Rusinek, Images Alberta



# VERMILION SUBWATERSHED

**T**he Vermilion River subwatershed is a rural area dominated by agriculture. It covers 786,000 hectares (1,942,248 acres), or 14% of the total North Saskatchewan River watershed. Included in this area is the Minburn Provincial Grazing Reserve. Rural municipal boundaries include those of Beaver, Flagstaff, Lamont, Camrose, Minburn, Two Hills, St. Paul and Vermilion River. Urban municipalities are Beauvallon, Clandonald, Dewberry, Hairy Hill, Holden, Innisfree, Islay, Kitscoty, Mannville, Marwayne, Minburn, Mundare, Musidora, Ranfurly, Two Hills, Vermilion, Vegreville and Willingdon.

Prairie sunset between Vegreville and Two Hills, near the Vermilion River.  
Photo-Steve Ricketts, Images Alberta

Old train trestle crossing the Vermilion  
River valley east of Dewberry.  
Photo-Bill Trout

Over the past century, the Vermilion River subwatershed has been altered considerably. Extensive wetland drainage has benefited agriculture, transportation and development. These human alterations have affected a number of watershed functions, including the ability of the landscape to store water, recharge groundwater, contribute to stream baseflow and lessen the severity of flooding.



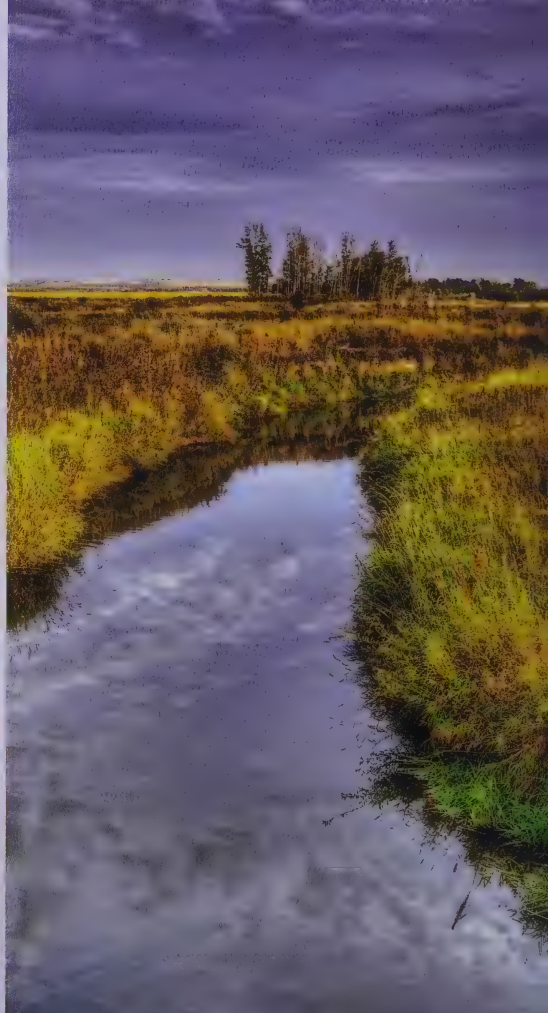




Vermilion River, Manitoba, with a church in  
the distance. Photo: Bill Frost, Images Alberta



Vermilion River north of Vegreville.  
Photo: Bill Frost, Images Alberta



# NATURAL FEATURES

## VERMILION RIVER

The Vermilion River is a prairie river, formed from spring runoff and rainfall. It begins south of the Town of Vegreville, flows northeast through the town, making its way through the Vermilion Lakes complex. At the Town of Two Hills, it flows east to Musidora, then heads southeast. At the Town of Vermilion, it collects in a reservoir creating a broad recreational area. Once past the dam, the river wanders leisurely northeast until it empties into the North Saskatchewan River 16 km (10 miles) north of the Village of Marwayne.

One of the many twists and turns of the Vermilion River northeast of Vegreville.  
Photo-Bill Trout, Images Alberta



#### **PRAIRIE POTHOLE REGION (PPR)**

An area of the northern Great Plains covered by thousands of shallow wetlands known as potholes. These potholes were created when the massive glaciers from the Wisconsin glaciation retreated about 10,000 years ago. Decaying ice left behind depressions known as potholes, glacial potholes, kettles, or kettle lakes. The Prairie Pothole Region covers about 715,000 km<sup>2</sup> (276,000 mi<sup>2</sup>).

The Vermilion River is 255 km (158 miles) long, with an average water level of 16.5 m (54 ft). It flows over a hummocky, pot-hole landscape. There are no rushing rapids or thundering waterfalls. Wetland drainage has diminished the natural water storage capacity of the land and increased stream flow variability (higher peak flows and lower low flows) in the river.

#### **BENS LAKE**

Bens Lake, southwest of the Town of Two Hills, is a good fishing lake and excellent bird watching location. Snow geese gather here in great numbers in the fall.

#### **BIRCH LAKE**

Birch Lake is south of the Yellowhead Highway near Innisfree, a wide stretch of water in a low, flat prairie landscape, surrounded by farm land. It is an example of a typical, alkali prairie lake.

Snow Geese gathering at Bens Lake before flying south for the winter.  
Photo-Bill Trout, Images Alberta

In alkali lakes (soda lakes), evaporation concentrates naturally occurring carbonate salts (sodium carbonate, potassium carbonate). Other alkaline compounds may also be present (sodium sulfate).



Aurora Borealis over Birch Lake near Innisfree.  
Photo-Bill Trout, Images Alberta

## KENILWORTH LAKE

### The Kenilworth Goose Project.

In 1972, when the Canada Goose *Branta canadensis* population was at a low ebb, the Fish and Game Clubs of Lloydminster, Marwayne, and Vermilion took on a project that would preserve and propagate the Greater Canada Goose by imprinting young geese to the general area so they would return for their reproduction. Kenilworth Lake, on Highway 16, between Lloydminster and Vermilion, was chosen as the site because it was a migratory bird refuge. Bill Bowthorpe and his wife from Round Hill, Alta gave 10 Canada geese to the project. These geese, along with three mated pairs from Alberta Fish and Wildlife multiplied rapidly. Today, Canada Geese are classified as Secure in the General Status of Alberta Wild Species report.

There are 7 subspecies of Canada goose

Atlantic Canada goose *Branta canadensis canadensis*

Interior Canada goose *Branta canadensis interior*

Giant Canada goose *Branta canadensis maxima*

Moffitt's Canada goose *Branta canadensis moffitti*

Vancouver Canada goose *Branta canadensis fulva*

Dusky Canada goose *Branta canadensis occidentalis*

Lesser Canada goose *Branta canadensis parvipes*

Ornithologists speculate that the Hawaiian goose *Branta sandvicensis* is derived from the Canada goose. Although decidedly smaller in size, and with a summer range in the far north, the 5 sub species of cackling goose *Branta hutchinsii* are often hard to distinguish from the Canada goose.



Canada Geese are monogamous, raising from 2 to 5 offspring a year. Photo-Bill Trout, Images Alberta

# NATURAL RESOURCES

## ANIMAL

### DEER COMMUNICATION

Deer communicate through the use of scents or pheromones that are produced in several different glands. The most important are the metatarsal (outside of lower leg), tarsal (inside of hock), and interdigital (between the toes).

**Metatarsal Gland:** Produces an alarm scent.

**Tarsal Gland** produces scent for mutual recognition.

**Interdigital Glands** leave a scent trail as deer travel.

In the Vermilion River subwatershed, the deer family supplemented the diet of First Nations people for thousands of years. After the buffalo were gone, they became primary food sources.

**White-tailed Deer** *Odocoileus virginianus* still populate the Vermilion River subwatershed. They are the smallest members of the North American deer family. They eat a varied diet: leaves, twigs, fruit, nuts, grass, alfalfa, and even lichens and fungi. When white-tailed are alarmed, they stomp hooves and snort to warn other deer. When a doe (female deer) runs, the white underside of her waving tail helps her fawns follow her. White-tails are now Alberta's most abundant cloven-hoofed animal, found in the prairie, parkland and southern boreal zones. Fossils of white-tailed deer predate the last ice age.

White-tailed deer. Photo-Roger Kirchen, Images Alberta



White-tail deer in winter. Photo-Steve Ricketts, Images Alberta

**Mule Deer** *Odocoileus hemionus*, so named because of long, mule-like ears, primarily browse on woody vegetation, eating little grass. They are more curious than shy. Even while running away when startled, they often stop and look back. Genetic studies suggest mule deer may have developed relatively recently through interbreeding of white-tailed with black-tailed deer. Each year male Mule Deer grow and shed a set of antlers. Their antlers have two main beams, each of which forks again into two beams (dichotomous branching). Not hindered by fences or deadfall, mule deer leap gracefully over obstacles when pursued by predators, whereas white-tails combine hiding with rapid getaway over unobstructed ground.

## VEGETABLE

Prairie hills and meadows in the Vermilion River subwatershed were once continually covered with a blaze of colour, starting with prairie crocus in the spring; shooting star and buffalo bean in early summer; blanket flower in midsummer and ending with western red lily in the late summer and fall. Widespread wild flower habitat is gone, but there are still places in the Vermilion River subwatershed where these flowers grow.

Prairie hills now grow grain. Photo-  
Steve Ricketts, Images Alberta

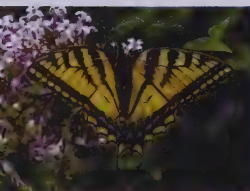




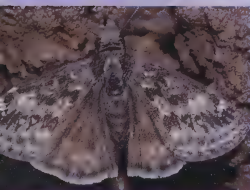
Buffalo Bean. Photo-Karen Albert, Images Alberta



Photo-Arthur Haines, New England Wild Flower Society



Tiger swallowtail *Papilio Canadensis*  
Photo-Bill Trout, Images Alberta



Afranius duskywing. Photo-Kim Davis & Mike Stangeland

**Pasque Flower**, also known as Prairie Crocus *Anemone patens*, thrives on open hillsides and meadows, flowering as soon as the snow melts. It is the floral emblem of Manitoba. In the middle of April, 1863, Viscount Milton and Dr. Cheadle mention seeing prairie crocus in the Vermilion River subwatershed. “*The prairie was beautiful, being covered with large, blue flowers of a species of anemone.*”

**Buffalo Bean** *Thermopsis rhombifolia* is a small legume that blooms early in grassland and patchy woodland areas. **Do not eat it.** It is toxic to humans and cattle. The buffalo bean is a prairie plant, but it has been spreading north into sandy areas of the parkland region advancing along railroad embankments and roadsides. The Afranius duskywing *Erynnis afranius*, a small brown butterfly, uses buffalo bean nectar. The duskywing’s caterpillars eat the leaves and flowers. The caterpillars are pale green with dark stripes on their backs and dark green heads.

Bison did not eat buffalo beans (they contain poisonous alkaloids). The yellow flower’s blooming signaled the return of large herds of bison that had migrated south for the winter, time to get ready for the spring hunt.

**Prairie Shooting Star** *Dodecatheon pulchellum* likes moist conditions in the spring, where it grows along streambanks, wet meadows, and seeps. This flower was used medicinally by the Blackfoot Confederacy (*Niitsitapi* people). An infusion of the roots made a soothing wash for sore eyes. A cooled infusion of leaves was also used as eye drops, as well as for a gargle for mouth sores.

**Blanket Flower** *Gaillardia aristata*, also known as brown-eyed Susan, is a prolific prairie flower, a popular food source for pollinators, wildlife, and livestock. *Gaillardia* was named after Gaillard de Marentonneau, an 18<sup>th</sup> Century French patron of Botany. *Arist* is Latin for bristle, in reference to the plant’s hairy stems and leaves. It prefers well-drained, open spaces in prairies, mountain foothills, and along roadsides and railroad rights-of-way. Because it is drought-resistant it is a popular addition to low watering zones of Xeriscape™ gardens.



**Western Red Lily** *Lilium philadelphicum* are pollinated by tiger swallowtail *Papilio Canadensis* and monarch *Danaus plexippus* butterflies, as well as sweat flies *Halictus rubicundus*. White-tailed deer love to eat it. First Nations people used the bulb in soup and stews. They also ate the unopened flower bud. Bulbs were dug when the flowers first opened, then roasted, steamed, or boiled. When boiled, the bulb tastes much like a potato. The bulbs can be ground into a meal for making camp bread. Flowers were crushed or chewed and applied to give relief from the pain of spider bites. European settlers called this flower, tiger lily; the Cree people know it as *wakican* (mouse-root).

## MINERAL

**Clay:** The red clay that gave the Vermilion River its name was used by indigenous people for thousands of years before Europeans arrived. Between 1906 and 1914, the Vermilion Brick Factory that had sprung up on the prairie to answer the need for local building materials, produced more than 1.5 million bricks. The present Canadian Imperial Bank of Canada building was built from those bricks.

**Gas:** In 1911, Peter More, near Ranfurly, while digging a water well, hit natural gas at 235 feet (72 m).

In July, 1912, the Town of Vegreville drilled for natural gas to provide for the community.

**Oil:** In 1939, the Waintown-Battleview well, six miles east of Vermilion, struck heavy crude. It was the second-highest producing oilfield in Canada for the first eight months of 1941.

**Salt:** In 1944, Vermilion Consolidated Oil No. 15 well, reached a salt bed at a depth of 3481 feet (1061 m) and drilled through 4232 feet (1290 m) of salt, much of it crystal clear.

Clay soils are compounds of silica and alumina. Calcareous clays have calcium carbonate and will burn to a yellow or cream colour. Non-calcareous clays contain feldspar and iron oxides. They burn to a brown, pink or red colour, depending on the amount of iron oxide. It takes about 3 m<sup>3</sup> of clay soil, 600 L of water and a cord and a half of wood (for firing the bricks) to make 1000 bricks.

## WHAT'S IN A NAME?

### Innisfree

The Village of Innisfree was first known as Del Norte (Spanish: of the North). The youngest daughter of the first post master, Mr. Puckette, chose the name. One day in 1905, Byron Edmond Walker (soon to become Sir Byron), president of the Canadian Bank of Commerce, stepped down from his private car on the Canadian Northern Railroad train that ran past the Puckette home. A dozen reporters scrambled after him. Mr. Puckette took the 60 year old business man in the 'soft grey suit' to the top of a hill behind the house. From there they could see how, as Mr. Puckette described it, "...the lakes lay blue in the hollows, the land all around us rolling beautiful like the green knuckled back of God's hand..." Byron Walker pointed to Birch Lake a mile or two away... "That looks just like my summer place," he said. "In Ireland. Innisfree, beauty... beauty." After the president of a major Canadian bank recited several lines from the William Yeats poem, "The Isle of Innisfree", he turned to Mr. Puckette and said, "You tell your community that if you rename this town, 'Innisfree,' I'll build you the most beautiful bank on the prairie." He was true to his word. Over 70 years later, the beautiful bank he built was still in use.

Kit's Coty House. Photo-David Risley



### Kitscoty

Trains between Islay and Kitscoty had to navigate a difference in altitude of 199 ft (61 m). In the early days, steam trains had to slow down to 3 or 4 miles an hour (4.5 to 6 kilometers an hour) to get up Kitscoty Hill. British contractor George Still, working for the Canadian Northern Railway, chose the name Kitscoty from a prehistoric site in Kent, England: Kit's Coty House. It's a Neolithic structure, about three meters high, made with three vertical stone slabs anchored in the earth with a fourth balanced across them. It is thought that the 'Kitscoty' hill up which his men had to lay track reminded him of the hill upon which those ancient stones stand.

## Dewberry

In 1906, Eli Sweet built a post office around which the Village of Dewberry grew up. He submitted the name Watson along with one or two others to the Canadian government. His names were rejected. One day, Mrs. Andy Brett walked into the post office with a pail of dewberries. She said, “*Try Dewberry.*” That name was accepted.

Dewberries belong to the rose family. They resemble blackberries and raspberries, but the plants are much smaller. Picking them is tricky, because they are fragile and fall off the stems at the slightest touch. Dewberries were once common in the eastern part of the Vermilion River subwatershed, but are seldom found today.



Dewberry *Rubus* sp. Leaves can be used for tea. Photo-Buzzintown

## POST CONTACT – FUR TRADE

In the early days of the fur trade Blackfoot, Cree, Assiniboine, Tsuu T’ina and Gros Ventre (Atsina) people followed the vast herds of bison that roamed the Vermilion River subwatershed. In December 1809, Alexander Henry the younger described travelling by dogsled (probably from Ft. Vermilion, across the river from where Lea Park is today) to watch the Blackfoot people trap buffalo in a buffalo pound in the vicinity of the present Village of Marwayne.

In September, 1846, artist Paul Kane, near present day Town of Vermilion: “*We passed through what is called the Long Grass Prairie. The bones of a whole camp of Indian, who were carried off by the fatal scourge... the smallpox, were here bleaching on the plains.*” During that trip, just south of modern day Willingdon, Paul Kane’s group

A buffalo pound.



from Occasional Paper No. 24 Communal Buffalo Hunting Among the Plains Indians Eleanor Verbitsky-Todd Archeological Survey of Alberta 1984

#### BUFFALO POUND

A temporary corral, designed to harvest large numbers of bison, built on the edge of the prairies near lightly treed areas. Where hunters could find enough wood, they created an open-ended enclosure. Into that they drove the herd to be killed with arrows, spears and later, guns.

The pound structure was flimsy, but the walls were draped with bison hides, giving the illusion of a solid wall. Once in the corral, the animals saw no visible escape route.

Cree camp near present Town of Vermilion. 1871. Photo-Charles Horetzky Library and Archives Canada C-00518

encountered a great herd of bison: “*We had much difficulty that evening in finding a place to encamp way from the immense number of buffaloes that surrounded us, and we found it necessary to fire off our guns during the night to keep them away.*”

On Christmas Day in 1857, John Palliser and his crew, crossed the Vermilion River just south of where flows into the North Saskatchewan River. “*We took a westerly course across a wide stretch of prairie and passing many herds of buffalo on our way.*”

## POST CONTACT – SETTLEMENT

From the time of Canadian Confederation (1867) to 1905, when Alberta became a province, all the land in the Vermilion River watershed east of Innisfree was in the District of Saskatchewan. Early travellers found it a place of forests, hay meadows and marshes. Forests are not what we associate with the Vermilion River subwatershed in the 21<sup>st</sup> Century, but at the turn of the 20<sup>th</sup> Century, early settlers had a love/hate relationship with the heavily treed areas they encountered. An abundance of wood for building and heating was a bonus, but forested land was difficult to clear and prepare for cultivation.



## There Were Trees Enough

In the early 1900s, people who homesteaded NW14-53-13-W4th built a log house thatched with wild grass in an area with a “*vast quantity of fire wood.*” There were so many trees that it was hard to clear for planting. It took the settlers 13 years to break 35 acres.

In 1901, there was a 128 acre farm beside a small lake (SW34-53-13 W4th) with enough timber to build a log house in a clearing at south end of the property. In 1902, on NW10-54-13-W4th, there was enough good timber to build a log house. Few nails and little hardware were used, because a trip to Edmonton by wagon took a week to 10 days. In 1904, settlers beside the Vermilion River (NE-26-54-12-W4th) described their property as rich with hay meadows and large tracts of forest. In November 1904, because there was no snow yet and the ground was not frozen, the Forbes family was able to cut enough timber to build a log house (SE 14-52-3-W4). In 1905, new settlers cut down 35 foot to 40 foot trees to build their house and barn. In 1909, settlers on NE32-54-11-W4th, still found good spruce timber to log. In 1929, people who farmed in the Vermilion River valley (SE & SW25-54-12-W4th) still reported large tracts of forest.

## Reminder of a Past Era

By the turn of the 20<sup>th</sup> Century, few new settlers were aware of the recent tremendous changes to First Nations culture and the land that had sustained them for thousands of years.

By 1900, overhunting and the advance of the agricultural frontier brought bison to the verge of extinction; fewer than 200 plains bison were left in the world. Ironically, the 1901 United States of America 10 dollar bill featured a bison, the image of which was of an animal kept at a New York zoo.

The only monuments to their passing were mountains of bison bones, bleaching in the sun, soon to be shipped east to be made into fertilizer. In 1902-03, in the Mannville area, “*Buffalo bones*

### HOW TO BUNDLE CUT WHEAT:

Pick up about 10 wheat stems. Twist them lightly to form a loose 'rope'.

Pick up an armload of wheat stems about circumference of your waist.

Wrap the twisted wheat rope around the sheaf of wheat once like a belt.

Twist the ends around each other twice (like you would a twist-tie).

Tuck the ends under the belt of wheat and put the sheaf to one side.

Stack 6-8 sheaves of wheat, leaning on each other, so the heads of wheat are in the air.

This is called a 'stook'. It allows the wheat to air dry.

Stooks can stand for 2-3 weeks in the field before the farmer brings them in for threshing.



#### BISON BONES SHIPPED EAST

Between 1890 and 1893, from prairies of Saskatchewan and Manitoba, with each skeleton weighing about 22.68 kilograms, and the average rail car carrying 12 tonnes of bones – 2500 full cars were counted. That means at least 1,500,000 bison were killed and left on the prairies.

*were everywhere. Skeletons of bulls, cows and calves lay in groups where they had been shot down twenty years before. Before one could cut hay it was necessary to pile up the bones to get them out of the way.” In 1973 in Stretton Creek coulees “many [bison] bones can still be found there.”*



Photo-Boone & Crockett Club

### Rapid Settlement

Settlement happened so quickly at the turn of the 20<sup>th</sup> Century that towns grew like mushrooms, seemingly overnight. The tiny community of Vermilion became a village in 1906 and reached town status barely a year later. In 1911, Vermilion built a lighting plant (generating electricity used only for lighting), which provided the town with electricity until 1953.

In 1908, the Vermilion Board of Trade lobbied the provincial government for a demonstration farm and/or agricultural college. In 1911, the government purchased

7 farms varying in size from 160 to 640 acres in Athabasca Landing, Claresholm, Medicine Hat, Olds, Sedgewick, Stony Plain and Vermilion. These were teaching farms, operated by the government as a mixed farm. Buildings included dairy barn, horse barn, house for the farm manager and a house for the farm hands.

In 1913, the Vermilion farm became the Vermilion School of Agriculture. The first class had 34 students, all male. By March, home economics courses had been added and female students were allowed to attend VSA. On the Vermilion Campus today (known as Lakeland College since 1975), one of the original buildings, the farm manager's house, is now, Alumni House.

The Hamlet of Two Hills sprung up around a restaurant. In 1926, Adelard Desrosiers opened a restaurant in the present location of Two Hills to feed construction crews who were building railroad tracks close by. She often fed a hundred people a day. The railroad meant an elevator needed to be built to store grain grown in the area. So she fed those construction workers as well. Sir Byron Edmund Walker had been dead for several years by that time, but his early efforts in planting his banks along new railways lines had become a tradition and a Canadian Bank of Commerce was built in the new community in 1927, two years before Two Hills was incorporated as a village.

The Hamlet of Mannville emerged on the east side of Birch Creek where it turns north to flow

Old barn near Dewberry.  
Photo-Bill Trout, Images Alberta





Starting in the 1970s large, vibrant rural communities began to decline as small family farms were absorbed into large farm operations. Photo-Linda Treleven, Images Alberta

**Brassie:** a fairway wood (2 Wood), fitted with a brass plate to protect the sole of the club from hard ground.

**Cleek:** After 1870, irons became known as cleeks with the iron head makers known as Cleekmakers.

**Niblick:** equivalent to a 9 iron

**Midiron:** equivalent to a 2/3 iron

into the Vermilion River. D. B. McLean established a homestead on NW 22-50-9-W4th. He was determined to set up a townsite on his property. But land surveyed for the train station was 2.5 miles east of there, so the new community had to move. By that time there was a hotel, two restaurants, a drug store, a general store, a livery stables and a couple of tent stores.

North of the present Village of Mannville, at the turn of the 20<sup>th</sup> Century, travellers mention a lake that covered at least 100 acres. *“The water table at that time was at a very high level and frogs chorused continuously from every slough.”*

In 1916, south of Vegreville, on Fraser’s farm, people came from as far away as Mundare and Beaver Lake to admire the new Mogul 5-16 Kerosene tractor. Mechanization had come to the Vermilion River subwatershed. In 1921, the community of Vegreville groomed land for the first golf course in the area. The local paper, mocking this new sport, which was considered to be for the wealthy, advised people to obtain *“a driver, a niblick, midiron, brassie, cleek, sporren, a haggis and a wee deoch an’doris.”*



A grand old building, lasting reminder  
of a town that once was here  
The Vermilion River, Images Alberta



## RAILROAD INFLUENCE

The first railroad lines put down in this watershed determined where communities would be built. In many communities, people lifted hotels, businesses and homes off the foundations to move them closer to new railway lines. “*The surest way to make money in the railway business was by determining the location of town sites and developing the surrounding lands.*”

In 1882, the Dominion Land Survey began in the Vermilion River subwatershed in the Marwayne area with three surveyors. In 1905, the Canadian Northern Railway came through 4.5 miles northeast of the new hamlet of Vegreville, so all the recently constructed buildings were laboriously moved across country, pulled by teams of heavy horses so they could be resituated next to the rail line, which ran through a flood plain, not a desirable location for a town.



The first tractors were steam powered. Steam was produced using a variety of fuels that were cumbersome to use and transport. The heavy, temperamental engines needed as much as an hour to build up enough heat to run and it took a lot of water to produce steam.

The kerosene tractor needed two fuel tanks—a small one for gasoline and a large one for kerosene. Gasoline got the tractor started and warmed up. Then the gas was turned off, the kerosene on, and the tractor kept running.

Kerosene was once about half the cost of gasoline, but new refining methods raised the quality of gasoline and lowered the cost. By 1954 kerosene had become nearly obsolete as a fuel.



Vegreville Train Station. August 1978, when Queen Elizabeth II and Prince Phillip stopped to visit Vegreville on their Canadian Tour, was the last known use for the CNR Station building as an official train station. In 2006 the CNR Station was designated a Provincial Historic Resource. Photo-Ellen Dunn

## TRANSPORTATION

In 1906, when there were only 41 automobiles in Alberta, the provincial government passed the Automobile Act, which set the speed limit at 10 miles (16 km) per hour in urban areas and 20 miles (22 km) per hour in the country. A driver's license cost 3 dollars, but there was no test to pass. Each driver received a number for a license plate, which he (it was most likely a 'he' in those days) had to supply. That number could be put on any surface as long as it could be read. License plate numbers were carved into wooden shingles, painted on scraps of tin and even embroidered on fabric. At that time 60% of the half million dollar provincial road and bridge budget went to building bridges, because they had to be strong enough to withstand heavy threshing machines and steam tractors. Early roadwork was precariously done, because it was still uncertain where roads should be. Every spring, most roads were muddy, rutted and impassable for weeks.

By 1912, there were 2500 drivers in Alberta, paying ten dollars for a license, plus a dollar for a set of the first government-made official plates. Alberta's first Highway Act, 1912, put roads into three categories: main, district and local. The legal speed limit at that time was 20 miles (22 km) per hour, except when passing horses, when the speed had to be reduced to 10 miles (16 km) per hour.

By 1918 there were 29,000 licensed drivers in Alberta, some of them now driving trucks. Alberta's second Highway Act of 1922, classed roads as main highways, essential market roads and local roads. Essential market roads had priority for improvement.

### Drainage in the Vermilion River subwatershed

The natural drainage profile of the Vermilion River subwatershed: steep in the upper reaches; flat around the Town of Two Hills; dropping more steeply through the Mannville area; flat below the Town of Vermilion; and then dropping rapidly to the Village of Marwayne. Although periodic flooding does occur throughout the subwatershed, this natural drainage profile has resulted in significant flooding in the flat areas of the river system.

Low-lying, marshy areas that collect and hold water are not suitable for agriculture, but the settlers who moved to the Vermilion River subwatershed, at the invitation of the

Porcelain enameled iron license plate 1913. The second government-made issue for the Province of Alberta.



First embossed license plate. All Alberta plates were embossed from 1918 on.

Dominion Government of Canada, were promised farmland. In order to keep the 160 acres they obtained, they were expected to put their land into agricultural production. Settlers who ended up with marshy land, needed a solution.

**Holden Drainage District No.1:** Created in 1919, the Holden Drainage District was the first Drainage District established in the province of Alberta. Drainage districts are farmer-led, cooperative groups that work to improve agricultural water management within a specific area of the province. Once formed, a drainage district has the power to set and collect taxes, to construct water management infrastructure and to enact bylaws.

Vermilion River as it passes through the Town of Vegreville.



The Holden Drainage District was established as a local authority to help farmers drain low-lying lands to increase agricultural production.

After severe flooding in the Vermilion River subwatershed in 1974, Alberta Environment initiated a number of flood mitigation projects.

**Channelization at Vegreville:** channel work only; no dykes or flood control structures were constructed.

**Channelization from Bens Lake to Morecambe:** channel work improved flow between Bens Lake and the six Vermilion Lakes. The channel was designed for drainage, not to contain flood runoff. Habitat improvement was included in this section consisting mainly of islands in the Vermilion Lakes to provide waterfowl nesting sites.

**Morecambe Structure:** This was built at the outlet of the last Vermilion Lake. It is the primary flow control structure on the system, designed to release water from the Vermilion Lakes. **Channelization downstream from Morecambe** was completed in 1976 to ensure the river would pass a minimum of 400 cfs (11.3 cms) at bank full stage.

In 1980-81 a new dam was constructed at the Town of Vermilion to replace the old dam built in 1950. The new dam does not control flooding, but the reservoir does provide some storage during peak flows.

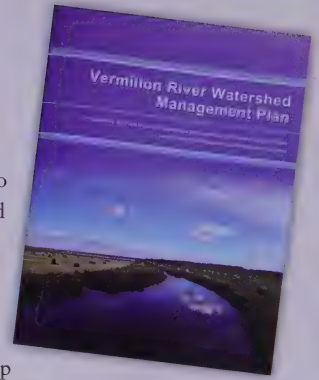
## Vermilion Provincial Park

Developed in the early 1950s, when the Vermilion River was dammed, it opened on May 29, 1953. It has about 23 km (14 miles) of hiking trails, including Wild Rose Trail, Cathedral Trail, Fescue Trail, and Lakeside Trail. There are also trails for cross-country skiing, horseback riding and five km of paved trails for rollerblading, biking, and wheelchair access. The Vermilion Provincial Park provides habitat for more than 100 different species of birds. The park features the Claude N. Brennan Memorial Trout Pond, ringed by a paved walking trail, with several benches along the way rest stops. Trout can be caught and then cleaned on site at a special fish hut.

The campground has 98 camping spots, (some are wheelchair accessible) as well as group use areas, electrical hook-ups, a sewage dumping station and picnic shelter. Several additional areas are available during the day, including two shale ball diamonds, several soccer fields, a wading pool and a mini-golf course.

## 21<sup>ST</sup> CENTURY

The people in the Vermilion River subwatershed were among the first in the North Saskatchewan River watershed in Alberta to join together at the community level to explore ways to improve watershed health. In 2009, the Vermilion River Watershed Management Project was born. It is a collaborative planning initiative that includes: the regional WPAC (*see the Introduction section for more information about WPACs*), the North Saskatchewan Watershed Alliance (NSWA), the North East Alberta Water Management Coalition (NEAWMC) and the Alberta North American Waterfowl Management Plan Partners (AB-NAWMP Partners). This group released the Vermilion River Watershed Management Plan (VRWMP) in 2012.



*“... over the past century the Vermilion River watershed has been altered considerably. Extensive wetland drainage has occurred to benefit agriculture, transportation and development. In 1974, the Government of Alberta responded to damaging flooding by channelizing the Vermilion Lakes and the Vermilion River at Vegreville, and by installing a water management structure at Morecambe. The structure was designed to facilitate drainage from the Vermilion Lakes during periods of wet weather and high runoff. These human alterations have affected a number of watershed functions, including the ability of the landscape to store water, recharge groundwater, contribute to stream base flow and lessen the severity of flooding. As a consequence, the State of the North Saskatchewan Watershed Report (2005) gave the Vermilion River watershed a subjective rating of ‘poor’.”*

From the Vermilion River Watershed Management Plan 2012

In 2014, the Vermilion River Watershed Management Project (VRWM Project) Implementation Team was formed to start on-the-ground implementation of the recommendations in the VRWMP. In 2015 the Implementation Team became a registered not-for-profit society, the Vermilion River Watershed Alliance (VRWA).

For more information about VRWA and/or about watershed management in the North Saskatchewan River watershed in Alberta – [www.nswa.ab.ca](http://www.nswa.ab.ca)



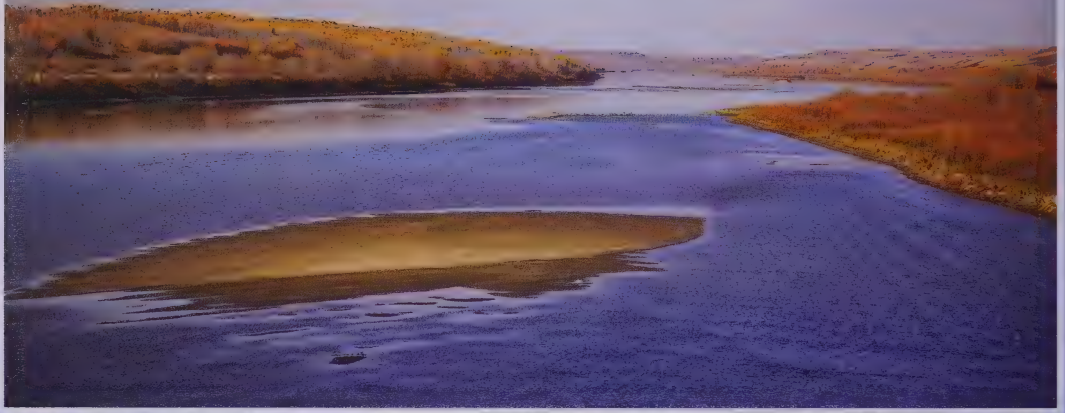
# MONNERY SUBWATERSHED

The Monnery subwatershed stretches across the provincial border into the Province of Saskatchewan, but since there is no mechanism for interprovincial subwatershed management, the Alberta section of the Monnery is all that is described in the State of the North Saskatchewan River Watershed Report 2005. It is all that is explored here. The 125,537 hectares (310,209 acres) of this subwatershed in Alberta are classified as being mostly part of a Dry Mixedwood Natural Subregion within a Boreal Forest Natural Region. Political boundaries within the Monnery subwatershed include the County of Vermilion River, Improvement District 18, and the settlements of Lloydminster, Streamstown, Tulliby Lake, Blackfoot, and the Makoo I. R. 120. Agriculture, oil and gas are important industries. This subwatershed has not had much study, but the information available suggests the Monnery subwatershed is fairly healthy.

NATURAL REGIONS & SUBREGIONS OF ALBERTA	
NATURAL REGION	NATURAL SUBREGION
Rocky Mountain	Alpine Subalpine Montane
Foothills	Upper Foothills Lower Foothills
Grassland	Dry Mixedgrass Mixedgrass Northern Fescue Foothills Fescue
Parkland	Foothills Parkland Central Parkland Peace River Parkland
Boreal Forest	Dry Mixedwood Central Mixedwood Lower Boreal Highlands Upper Boreal Highlands Athabasca Plain Peace-Athabasca Delta Northern Mixedwood Boreal Subarctic
Canadian Shield	Kazan Upland

From Natural Regions Committee 2006, Natural Regions and Subregions of Alberta. Compiled by D.L. Downing and M.W. Pattinson.

The North Saskatchewan River from the Highway 17 bridge on the Alberta Saskatchewan border. Photo-Bill Trout, Images Alberta



Looking west from highway 17 just south of the town of Saskatchewan River. Photo-Bill Trout, Images Alberta





# NATURAL FEATURES

## Lea Park Buffalo Jumps

To the Blackfoot (*Siksikaitstapi*) a buffalo jump was a *pishkun*, which loosely translates as “deep blood kettle”. The Blackfoot people, frequent visitors to the Monnery subwatershed before settlement, were accustomed to using buffalo jumps for harvesting a season’s supply of meat. Although buffalo jumps have not been officially identified this far north, local anecdotes persist about small jumps being used along the river near Lea Park.



Buffalo Jumps were cliff locations over which First Nations people herded bison. Two jump locations are interpreted in Alberta: the Dry Island Buffalo Jump Provincial Park southeast of Red deer and Head-Smashed-In Buffalo Jump northwest of Fort MacLeod (a UNESCO World Heritage Site). Montana has over 300 identified buffalo jump locations, including Ulm Pishkun, possibly the world’s largest buffalo jump.

Lea Park bridge. Possible buffalo jump site in the foreground. Photo-Bill Trout, Images Alberta



Sandy Beach Lake in late April. Photo-Heather Kuchma, Images Alberta

Sandy Beach Lake became a popular picnic and tenting location early in the 20<sup>th</sup> Century. By the 1930s holiday cabins were being built around the lake and in the 1950s cabin owners invested \$100.00 each to have power brought to the lake.

## NATURAL RESOURCES

### ANIMAL

**Pronghorn** *Antilocapra americana* is the fastest land mammal in the Western Hemisphere. The pronghorn has oversized windpipe, heart, and lungs to allow it to take in and process large amounts of air while running. It also has very large eyes with a 320° field of vision. Once abundant in the Monnery subwatershed, pronghorn range is now restricted to parts of southern Alberta.

photo-Yathin S Krishnappa,  
creative commons



**Tulliby/Tullibee** *Coregonus artedii* are freshwater whitefish also known as cisco, lake herring or chub. Except for being slimmer, tulliby resemble their whitefish cousins so closely they are often marketed as whitefish. Tulliby are a preferred fish for smoking.



Tullibee

**Great Northern Loon** *Gavia immer* is a well-loved water bird throughout Canada, so much so that the gold-coloured one-dollar coin introduced in 1987 with a loon image on the reverse is affectionately known as the loonie. In the lake country of the northern Monnery subwatershed the call of the loon is well known. The Cree call it *mwakwa*. Many First Nations people have stories featuring the loon. Some people could tell whether or not it would rain according to the variations of loon songs. The Algonquin people knew the loon as a messenger. An Innu story is told where the eerie cry of the loon is the spirit of a man who had been wronged, crying out for justice. The loon also features in the mythologies of European people. Norwegians say the loon call is the mournful sound of the spirit of a person who will drown soon. In Siberia, people once believed the loon escorted the souls of the dead to heaven.



Great Northern Loons *Gavia immer* Photo-Robert Burkholder, Images Alberta

## VEGETABLE

Use of wild food and medicine plants in the Monnery subwatershed is not as common as it once was, but some plants are still widely used.



Labrador Tea. Photo-Tree Time Services

**Labrador Tea** *Rhododendron groenlandicum* also known as muskeg tea, Hudson's Bay tea, or swamp tea was appreciated by Europeans during the fur trade era when supplies from London and Montreal arrived only once a year. This pleasant tasting tea is high in vitamin C (inhaling the steam helps clear congested nasal passages). The tea can be made, cooled and jarred for later use, but elders advise against storing the tea for more than a few days.





*Acorus calamus* illustration from an  
1885 Herbal.

**Ratroot** *Acorus calamus* is known in Britain as sweet flag. Still used in First Nations communities today, ratroot is an all-round remedy for many complaints around the world. The dried root is used by Ojibway in southeastern Manitoba to treat high cholesterol and in combination with White Water Lily *Nymphaea odorata* to treat diabetes. When eaten in crystallized form, it is called “German ginger”. In Europe *Acorus calamus* was often added to wine, and is one of the possible ingredients in absinthe. In Lithuania *Ajeras* (Sweet flag) is added to home-baked black bread.

**Sweet Grass** *Hierochloa odorata* grows in moist meadows. It is used by First Nations people in prayer and purifying ceremonies. The sweet smell comes from the anticoagulant, coumarin. Sweet grass is added to some aromatic pipe tobacco mixtures. It is easy to grow. Small, greenhouse-grown plants are available from wildflower nurseries. Coming into bloom in June, sweet grass spreads quickly if the ground is suitable.

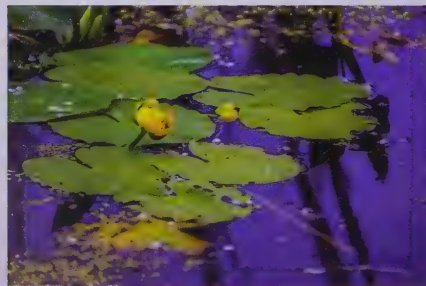


Sweet grass braids. Photo-Old Gypsy  
Roadside Market

**Yarrow** *Achillea millefolium* was used during the Middle Ages to flavour beer prior to the use of hops. In Europe the flowers and leaves are still used in the production of liquors and bitters. First Nations people have used it in tea to reduce fever and chew it for toothache relief. The leaves encourage clotting, so it can be used fresh to suppress nosebleeds. Also known as soldier’s woundwort, yarrow has a long history of use by traveling and invading armies in Europe and Asia.



Yarrow. Photo-Billie Milholland



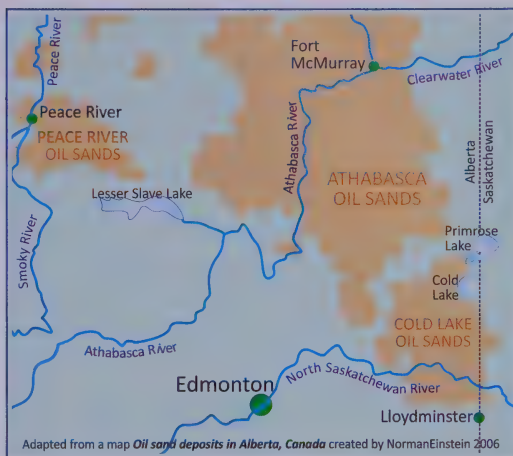
Yellow Pond Lily, Photo-Bill Trout, Images Alberta

**Yellow Pond Lily** *Nuphar luteum* grows fast, forming large colonies that shelter fish, frogs and insects. The leaves are resting places for dragonflies and bees. The plant provides food for geese, ducks, muskrat and beaver. The fruit is pod shaped and full of black seeds, which can be popped like popcorn for a nutritious snack.

## MINERAL

### Heavy Oil

The first discovery of heavy oil in the Monnery subwatershed occurred in 1938, but there was no serious development until Husky Oil moved into the area after World War II. Glenn Nielson, who lost his Alberta farm during the depression years of the 1930s, founded Husky Oil as a refining company in Cody, Wyoming to meet the needs of the American Navy during World War II. In 1946 Nielson dismantled a small Wyoming refinery, loaded the pieces onto 40 gondola cars, shipped them north by railway and reassembled it in Lloydminster. Within two years of Husky's arrival, oversupplies of heavy oil were stored in earthen pits holding up to 16,000 cubic metres each. At first Husky bought oil by weight instead of by volume because it was delivered clogged with earth, weeds and jackrabbits. It had to be strained and re-measured before it could be refined. By the early 1990s, production from the heavy oil belt was about 40,000 cubic metres per day and Husky was still one of Canada's biggest heavy oil producers.



Oil activity near Pasatnach Lakes. Photo-Heather Kutchma, Images Alberta

#### YELLOW POND LILY POPCORN

The little black seeds do crack open when pan roasted like popcorn, but they don't actually puff up. They are very nutritious, but can be bitter tasting if not prepared properly. Process the seeds by putting the round seed pod heads in water and letting them rot for a full three weeks. Natural enzyme action removes the bitterness. Air dry the seeds before popping. The seeds can also be ground and used to thicken soups and stews.

## WHAT'S IN A NAME?

### Horse

The Sarcee called the horse, “seven dogs,” since it was as strong as seven dogs. The Cree word for horse is *mistatim* (big dog). The Blackfoot word for dog is *amita*. Their word for elk is *Ponoko*, their word for horse, *ponokamitan*, elk dog.

In 1788, David Thompson’s Cree guide, *Saukamapee*, told him about the day the Blackfoot/ Piegan (Piikáni) saw their first horse. It was in 1730, after a battle between the Piegan and a band of marauding Snake (Shoshone). A horse the Shoshone brought with them was killed. Skirmishes with the Shoshone were common, but the strange animal they left behind, stretched out dead on the prairie was new. The Piegan moved their camp close to the dead animal, examining and discussing it for several days. By the time Anthony Henday travelled the prairies in 1754-55, he reported that the Blackfoot had “*the finest horses I have yet seen here.*”



Photo-Linda Treleaven, Images Alberta

## POST CONTACT – FUR TRADE

In September 1808, traveling west along the North Saskatchewan River in the Monnery subwatershed, North West Company fur trader, Alexander Henry describes buffalo crossing the river, “...*the whole body of buffalo on the south suddenly moved and went at full speed directing their course obliquely for the river – by this time the river was full of them swimming across, bellowing and grunting terribly.*”

In September of 1846, artist Paul Kane, riding west on the south side of the North Saskatchewan River, came upon a vast herd of buffalo about 10 miles upstream of Fort Pitt. They rode through that herd for three days, taking meat as they needed it.

On Christmas Eve 1857, Dr. Hector from the Palliser survey, travelled upstream by dogsled on the North Saskatchewan River ice across the Monnery subwatershed. It was one day’s journey from Fort Pitt to the mouth of the Vermilion River where they camped overnight in -9° F (-23° C) temperatures. He reports the presence of vast herds of buffalo along their route from Fort Pitt to Fort Edmonton.

In April 1863 Viscount Milton and Dr. Cheadle passed through the Monnery subwatershed on their way to Fort Edmonton. Cheadle recorded in his journal what he called a ‘prairie chicken dance’. “...*these birds gather at sunrise or sunset in parties of 20 or 30 at a favourite spot... and dance like mad. On these festive occasions they open their wings, put both feet together and hop like men in sacks, up to one another, waltz around and then to the next.*” He points out that the grass was beaten flat by the constant treading of their feet. *See the Frog subwatershed section for more about the Sharp-tailed grouse spring ritual.*

In 1876, the first mail service to the North Saskatchewan River watershed was established between Winnipeg and Edmonton. One of the stopping places on the route was just downstream of the present Lea Park Bridge. James McKay, Lord Southesk’s famous guide, received the first contract, delivering the mail once every three weeks over the cart trail via Fort Carlton and Fort Pitt. In October, 1880, the mail delivery contract was taken over by J. W. McLean, also known as “Flat Boat McLean.”

Photo-Roger Kirchen, Images Alberta





Close up of a Sharps Model 1875 single shot sporting rifle. Photo-Jack The Dog Gun Auction

Sharps rifles are a series of large bore, single shot rifles, with long-range accuracy. After the American Civil War the Sharps factory produced Models 1869 and 1874 in large numbers for commercial buffalo hunters. By 1874 the rifle was available in a variety of calibres, one of the few successful designs to transition to metallic cartridge use at that time.

## POST CONTACT – SETTLEMENT

After the American Civil War, which ended in 1865, northern industries returned to production. Buffalo hides became popular, because they made strong machine belts. Cross-country railways in the United States and Canada, as well as American government policies that encouraged the elimination of the buffalo from the western plains resulted in industrial-scale buffalo hunting. New tanning processes that made buffalo hides more valuable for many other commodities, along with the lack of hunting regulations and new more accurate, large-bore rifles hastened the massive slaughter and near extinction of the buffalo.

One buffalo hunter estimated that 4.5 million buffalo were slaughtered between 1872 and 1874. Buffalo coats were worn by both Canadian and American Military. The RCMP wore buffalo coats for decades. Guards on Parliament Hill wore buffalo coats until 1961.

Within two decades of Paul Kane's visit to the North Saskatchewan River watershed the immense herds of buffalo had been reduced to small wandering groups.

In 1876 – June 30, from the Annual Report, Department of the Interior, Dominion of Canada.

*“The subject which at present takes precedence of all others in connection with the Indian question in the North-West Territories, is the preservation of the buffalo. The rapid decrease in the numbers of the buffalo has become a matter of alarm to the Indians, who see that, unless steps are speedily taken to arrest it, their future condition will be one of extreme hardship.”*



Jan. 3, 1979: Beat cops in Edmonton hang up buffalo coats for good. Photo-Edmonton Journal

**Onion Lake Cree Nation** live on adjacent Makaoo 120 and Seekaskootch 119 Indian Reserves straddling the Alberta/Saskatchewan border. Chief *Seekaskootch* signed Treaty 6 at Fort Pitt in 1876. The demise of the buffalo had drastically reduced their options for survival. By 1894, the First Nations people at Makaoo 120 were raising enough grain to sustain themselves. They ground the grain in a water-powered grist mill. During the winter the men cut logs and sawed enough lumber with a water-powered sawmill to keep up with local demand.



## BARR COLONISTS

Isaac Montgomery Barr was born in Ontario. After a less than stellar career as an Anglican cleric he persuaded about 2,000 British citizens to help him expand the British Empire by planting a colony of 'pure British culture' in the empty territory of the Canadian West. Most of the colonists were middle class urbanites, with few mental or physical resources for weathering the long ocean, rail and wagon travel to their new home. By the time they reached North Battleford in the spring of 1903, complaints against Barr for misleading and taking advantage of them had multiplied. He was voted out of the prospective colony. For a leader they turned to Reverend George Exton Lloyd, who had been a steady force throughout their ordeal. Even though, for years they were still known as the Barr Colonists, they named their new settlement Lloyminster after Lloyd, an imposing Empire builder. And so they settled in a place where their community would later be bisected by both the Yellowhead Highway 16 and the 4th Meridian.

In 1903, cattlemen returning to the Beaverhill subwatershed from delivering cattle to the Barr Colony met a young man leading a cow on his way back to the colony. He had walked all the way to Calgary with a friend who had become homesick and wanted to return home to England. He had milked the cow into a 3-pound lard pail several times a day. That was all he had had to live on during his long trek back, which had taken many weeks.

In 1905, when Alberta and Saskatchewan became provinces, the interprovincial boundary passed through Lloyminster. In 1905, the Canadian Northern Railway put its station on the less populated Alberta side, but the colonists continued to develop the Saskatchewan side. Not until the oil boom in the 1970s did the Alberta side of Lloyminster grow to match the Saskatchewan side.

The community of Blackfoot began as Blackfoot Hills. The first post office in 1905 was also known as Blackfoot Hills, but it was changed to just Blackfoot in 1909. Because Blackfoot was on a direct communication route between Lloyminster and Edmonton it received telephone service early, in 1907 when



Crest at the bottom of each border marker. Photo-Heather Kuchma, Images Alberta

100 foot high border markers, City of Lloyminster, intersection of Highways 16 and 17. Photo-Heather Kuchma, Images Alberta



**WHAT TO BRING... THE LIST  
BARR GAVE PROSPECTIVE  
COLONISTS**

*"All bedcolthes, feather beds, ticks for mattresses but without stuffing, table linens, knives, forks, spoons, and any highly prized old china (which must be well packed), a good supply of clothing suitable for farmwork, including all old clothes, a good heavy overcoat and strong boots, but no hob-nailed boots nor fancy top-boots, for they are not used on the prairie. Carpenters' tools ... but no farm implements, for those made in Canada are cheaper and better adapted to the work."*

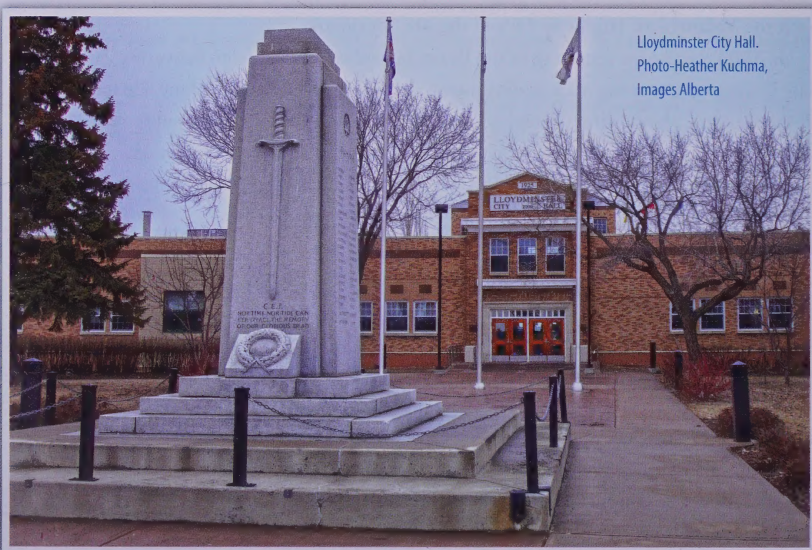
He also advised them to bring garden seeds, a good English saddle, rifles, but not revolvers. Cows, horses, wagons and tents would be available for purchase at the end of the rail, which for them was Saskatoon.

Alberta Government Telephone was in its first year of operation. At a toll office with a single telephone, people could make calls either east or west along the newly strung lines. They could not make calls north or south for several more years. During the 1930s, when Alberta Government Telephone could no longer support rural phone lines, operations were taken over by Blackfoot Mutual Telephone Company. It was one of many farmer co-ops that emerged during that time.

## 21<sup>ST</sup> CENTURY

Except for the City of Lloydminster, most of the land and population in the Monnery subwatershed are under the jurisdiction of the County of Vermilion River.

*See Vermilion subwatershed section for information about ongoing watershed management initiatives. See [www.nswa.ab.ca](http://www.nswa.ab.ca) for more subwatershed information.*



Lloydminster City Hall.  
Photo-Heather Kuchma,  
Images Alberta



# LIVING IN THE SHED

A glimpse of land use over time in the 12 subwatersheds of the North Saskatchewan River watershed in Alberta. How we used the land in the past has created both challenges and opportunities for us today.

*"Our land Kituskënāw of long, long ago was beautiful and full of mystery. There were people from the plains, mountains, woods and swamps. They were a mystery people, not truly understood by the white man."*

—Dr. Anne Anderson, Métis scholar.

*"Albertans are river people. Our earliest settlements grew up beside rivers...although we are river people we have let our rivers go by almost unremarked."*

—Kevin Van Tighem



NORTH SASKATCHEWAN  
WATERSHED ALLIANCE

[www.nswa.ab.ca](http://www.nswa.ab.ca)

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