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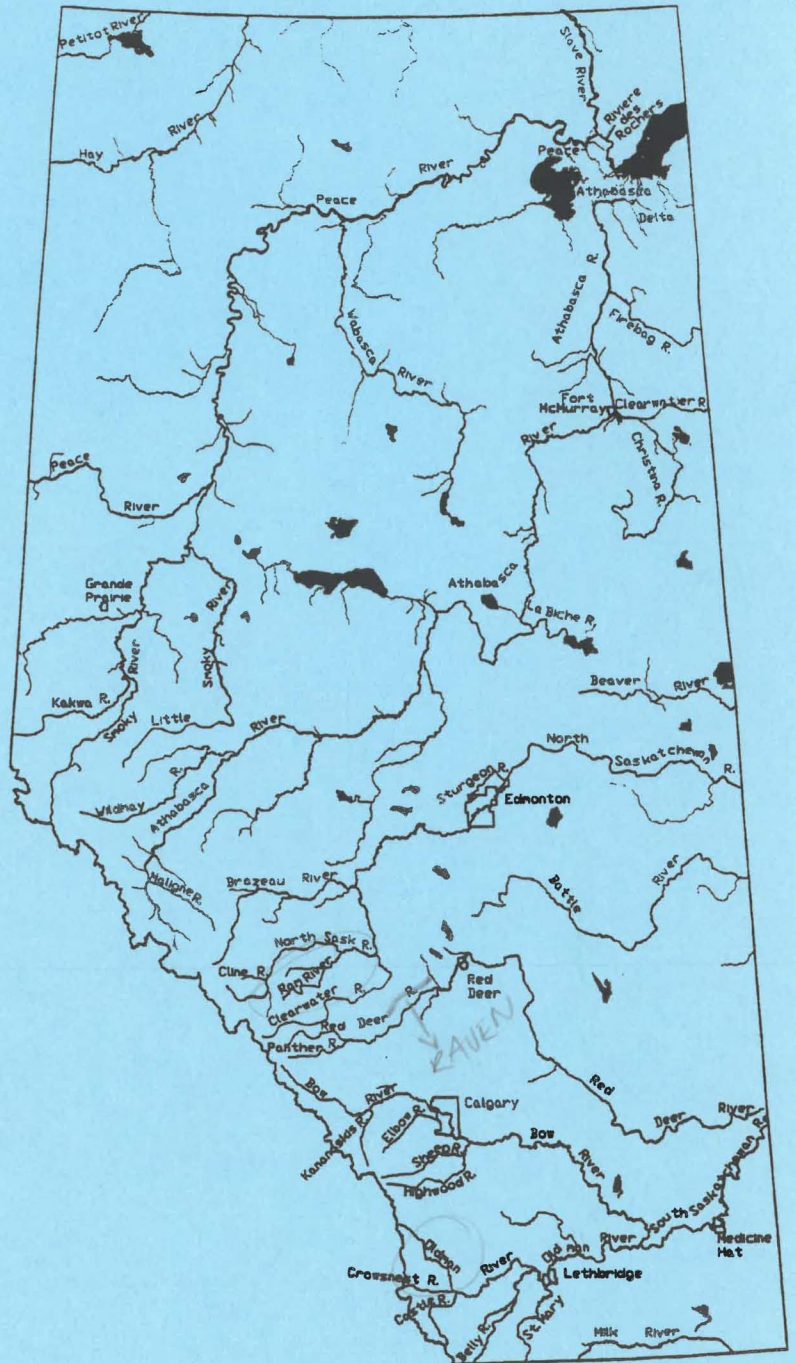


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# Canadian Heritage Rivers Systems Study of Rivers in Alberta

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EXECUTIVE SUMMARY  
February 1996



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ENVIRONMENTAL PROTECTION

River Study

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# CANADIAN HERITAGE RIVERS SYSTEM STUDY OF ALBERTA'S RIVERS

## EXECUTIVE SUMMARY

The Canadian Heritage Rivers System (CHRS) is a program developed and administered by designated departments of the federal, provincial and territorial governments to give national recognition to those rivers which best exemplify aspects of Canada's natural and human heritage and recreation opportunities. The program, established in 1984, is administered by the Canadian Heritage Rivers Board, of which Alberta is a member.

Currently, within Canada, 28 rivers (or river sections) totaling 6,349 kilometres have been nominated or designated to the system, including such rivers as the St. Croix (NB) and the Grand (ON).

When Alberta joined the CHRS program, Cabinet approved an implementation process which required a system study to be undertaken. This study provides a preliminary assessment of Alberta's rivers for the purpose of identifying those rivers (or river segments) which merit nomination to the Heritage Rivers System.

The study sets out a framework using criteria consistent with CHRS guidelines, but takes into consideration characteristics unique to rivers in Alberta. The criteria developed in this framework are applied in each of three CHRS categories including; natural heritage, human heritage and recreation values. A broad definition of each category includes:

### **Natural Heritage**

- dealing with unique natural features found along each river, including river landscapes, flow regimes, wildlife habitats, river processes, ecosystems, etc.

### **Human Heritage**

- dealing with human history associated with each river, including prehistoric (i.e. dinosaur period), early history (first nations, fur traders) and contemporary history (land use settlement patterns)

## **Recreation Values**

- dealing with existing recreation use potential of each river for such activities as; boating, fishing, nature appreciation and scenic values

The study was undertaken in three phases extending from September 1994 to January 1996.

A Technical Advisory Committee comprised of representatives from key provincial government agencies was established by Alberta Environmental Protection. The study provided a strong public participation and interest group involvement.

In order to undertake the evaluation of Alberta's rivers and identify a shortlist of suitable candidates in an objective manner, the overall study was completed in three phases. The following provides a brief overview of each phase of the study and the results that were achieved.

### **Phase 1 Framework Development**

The first objective of the Alberta Rivers Study was to develop a shortlist of rivers having sufficient data to evaluate, from a total of 72 rivers that were put forward by Alberta Environmental Protection. The shortlist was determined using a broad scale literature and data base review, input from local authorities, industry and government agencies and several workshops held between the consulting team and the Technical Advisory Committee.

Each of the 72 rivers were evaluated to identify unique features known about each river, the number of natural zones through which the river passed, and other data which could be substantiated and then categorized into one of three categories pending how strong the supporting data was for each river. Table 1 provides an overview of rivers considered for this study and the shortlist representing those rivers that were placed into the 'A' and 'B' categories.

In total, 39 rivers were selected for further evaluation using a framework consistent with CHRS guidelines.

The second objective of Phase 1 was to develop a suitable river evaluation framework. The system developed for the Alberta study was modeled after those applied in other provinces, particularly those of Saskatchewan and New Brunswick which were well organized, objective and defensible.

**Table 1 Original List Of Rivers Selected For Study**

<b>'A' List</b>	<b>'B' List</b>	<b>'C' List</b>
<b>Athabasca</b> Athabasca Clearwater Maligne	<b>Athabasca</b> Christina Firebag Lac La Biche Wildhay	<b>Athabasca</b> Berland, Dover, Ells, Gregoire, House, MacKay, McLeod, Miette, Pelican, Pembina, Richardson
<b>Beaver</b> Beaver		<b>Beaver</b> Sand
<b>Mackenzie</b> Slave	<b>Mackenzie</b> Hay Petitot Rivière des Rochers	<b>Mackenzie</b> Buffalo Dog River-Lelland Lake
<b>Peace</b> Peace Peace Delta Smoky Little Smoky	<b>Peace</b> Kakwa Wolf Wabasca	<b>Peace</b> Chinchaga Leige Notikewin Ponton Simonette Wapiti
<b>North Saskatchewan</b> Brazeau North Saskatchewan Ram	<b>North Saskatchewan</b> Battle Clearwater Cline Sturgeon Heart	
<b>Red Deer</b> Red Deer	<b>Red Deer</b> Panther	<b>Red Deer</b> Blindman James Little Red Deer Medicine
<b>Bow</b> Bow Highwood Kananaskis	<b>Bow</b> Elbow Sheep	<b>Bow</b> Ghost
<b>Oldman</b> Oldman Castle Crowsnest	<b>Oldman</b> Belly St. Mary	
<b>Mississippi</b> Milk	<b>South Saskatchewan</b> South Saskatchewan	

The resulting framework developed for the Alberta study is summarized in Figure 1. The framework is primarily theme driven providing a series of evaluation criteria within the broad CHRS theme categories of; natural heritage, human heritage and recreation values.

A ten point scoring system was applied in order to adequately address the range of qualities found within the heritage features of Alberta's rivers.

## **Phase 2 River Assessments**

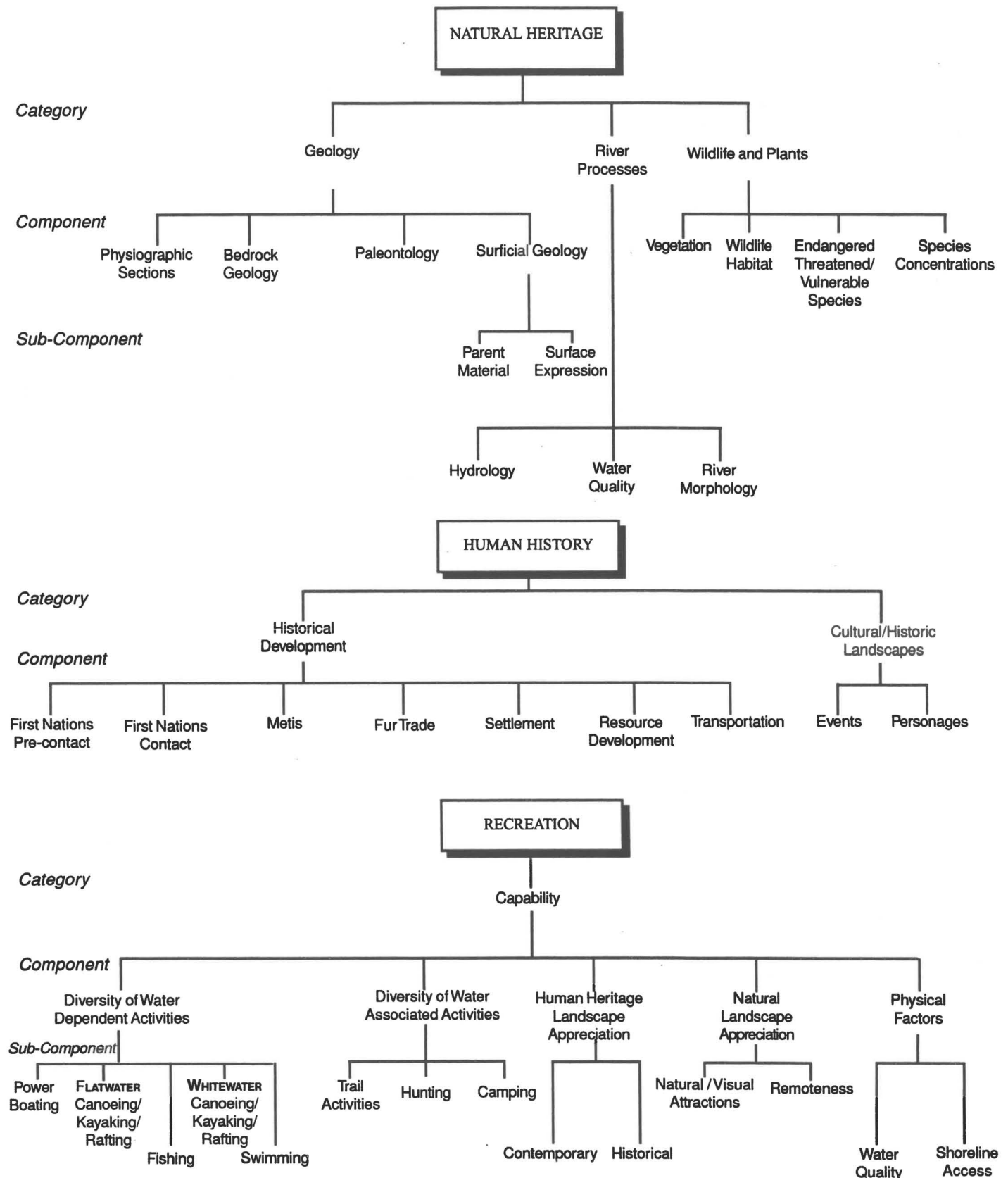
The purpose of this phase was to identify a further shortlist of potential candidate rivers which would merit consideration for a more detailed evaluation to be carried out in Phase 3 of the study. Phase 2 focused primarily on applying the system framework and arriving at a score value for each of the 39 shortlisted rivers. In addition, Phase 2 gave further opportunity for public input by undertaking a user survey intended to collect additional data for each river.

It should be pointed out that there are data gaps and limitations associated with this assessment and the results provide only a preliminary evaluation. Yet, in applying the framework methodology, it is felt that the results are objective.

Each of the 39 rivers was evaluated and ranked for its natural heritage, human heritage and recreation values.

A summary of the score values achieved in each category for each river and a final adjusted total score value based on a combination of all three totals is provided in Table 2.

**Figure 1 Overview of Thematic Framework**



### Phase 3 River Integrity And Resource Management Capability

The final phase of the Alberta Rivers Study is limited to those rivers which ranked highest for natural heritage, human heritage and recreation values as determined in Phase 2. In all 22 rivers qualified including; the top 20 rivers from the Phase 2 assessment as well as any river which scored in the top 8 of any one theme category (i.e. Little Smoky for natural heritage). In addition, the initial parameters of this study suggested that there should be at least one river from each representative drainage basin in the province. As the only representative of the Mississippi Drainage basin, the Milk River was included as the 22nd river to be further evaluated in this Phase.

Because each river was being assessed in more detail, it was important to try and segment the longer rivers into specific river reaches or segments illustrating a certain level of homogeneity. River segments were determined by identifying major river integrity constraints which could potentially affect a river's nomination to the CHRS. Such constraints include; major dams or impoundment's, industrial influences and sources of pollution.

Then each river was evaluated according to how well it met both general integrity guidelines as set out by CHRS and more specific integrity guidelines within each theme category. The results of this assessment classified each river or river segment into an 'A' or 'B' category reflecting how well it met the prescribed integrity guidelines.

The final evaluation given to the 22 shortlisted rivers was a management assessment intended to identify major river management issues or concerns and assess how well those concerns could be managed in the future should a particular river or river segment be nominated for CHRS status.

In the end, a priority list of rivers was determined based on how well a particular river met its integrity guidelines and how well it could be managed. The 22 rivers were classified into 'AA', 'A' and 'B' ratings. Table 3 provides an overview of the total classification, Map 2 illustrates the top 10 priority rivers. These rivers represent those that achieved an AA status because they had no serious management concerns.



**Table 2 Summary of Phase 2 Combined Evaluation Score Values**

<b>Rank</b>	<b>River</b>	<b>Summary Human Heritage</b> out of 100	<b>Summary Natural Heritage</b> out of 100	<b>Summary Recreation</b> out of 100	<b>Total</b> out of 300	<b>Adjusted Total</b> out of 100
1	Athabasca	66.6	93.30	72.3	232.20	77.40
2	North Saskatchewan	88.1	83.80	58.6	230.50	76.80
3	Red Deer	68.0	85.55	75.0	228.50	76.18
4	Peace	73.6	72.68	66.0	212.28	70.76
5	Bow	69.9	80.82	58.4	209.12	69.71
6	Oldman	59.9	79.16	63.6	202.66	67.55
7	Belly	49.6	66.08	52.5	168.18	56.06
8	Highwood	38.4	55.50	67.0	160.90	53.60
9	South Saskatchewan	43.4	59.58	54.4	157.38	52.46
10	Crowsnest	43.3	51.67	61.6	156.57	52.19
11	Battle	56.2	62.10	37.5	155.80	51.90
12	Smoky	18.7	75.55	58.4	152.65	50.88
13	Clearwater - Athabasca	47.7	44.16	60.1	151.96	50.65
14	Beaver	53.2	48.68	44.1	145.90	48.60
15	Slave	45.5	48.43	49.6	143.53	47.84
16	Elbow	23.7	66.25	51.6	141.55	47.18
17	Sheep	21.5	51.80	68.0	141.30	47.10
18	Brazeau	14.7	64.40	55.4	134.50	44.80
19	Clearwater - North Sask.	7.4	66.60	59.7	133.70	44.60
20	Castle	17.9	58.60	56.0	132.50	44.20
21	St. Mary	38.1	58.88	35.0	131.98	43.99
22	Peace-Delta	29.3	59.98	41.0	130.28	43.42
23	Little Smoky	4.6	68.60	55.9	129.10	43.00
24	Wildhay	10.6	62.49	55.0	128.09	42.70
25	Milk	23.8	58.92	43.4	126.12	42.04
26	Kananaskis	16.1	49.30	55.0	120.40	40.10
27	Maligne	1.4	56.67	59.3	117.37	39.10
28	Sturgeon	35.0	33.05	47.6	115.65	38.55
29	Panther	4.9	49.58	57.5	111.98	37.33
30	Ram	1.1	62.77	48.8	112.67	37.56
31	Kakwa	3.3	59.10	41.6	104.00	34.70
32	La Biche	31.8	32.50	38.4	102.70	34.20
33	Christina	8.3	50.00	42.1	100.40	33.50
34	Wabasca	7.0	45.83	43.9	96.73	32.24
35	Rivière des Rochers	27.7	29.45	38.5	95.65	31.88
36	Hay	7.6	37.50	40.7	85.80	28.60
37	Firebag	2.4	47.50	27.4	72.30	25.80
38	Cline	6.7	26.67	49.8	83.17	27.72
39	Petitot	6.3	12.78	42.5	61.58	20.53

**Table 3 Priority River Classification for CHRS Nomination**

Shortlisted Rivers	Classification		
	AA	A	B
Athabasca			
Seg. 1		✓	
Seg. 2			✓
Seg. 3			✓
Seg. 4		✓	
Seg. 5		✓	
Battle			
Seg. 1			✓
Seg. 2		✓	
Seg. 3			✓
Beaver		✓	
Belly		✓	
Bow			
Seg. 1			✓
Seg. 2			✓
Seg. 3	✓		
Seg. 4			✓
Brazeau			
Seg. 1			✓
Seg. 2			✓
Castle	✓		
Clearwater (Athabasca)	✓		
Clearwater (North Saskatchewan)		✓	
Crowsnest		✓	
Elbow			
Seg. 1			✓
Seg. 2			✓
Highwood	✓		
Little Smoky		✓	
Milk	✓		
North Saskatchewan			
Seg. 1	✓		
Seg. 2	✓		
Seg. 3		✓	
Oldman			
Seg. 1	✓		
Seg. 2	✓		
Peace			
Seg. 1	✓		
Seg. 2	✓		
Red Deer			
Seg. 1		✓	
Seg. 2	✓		
Sheep		✓	
Slave		✓	
Smoky		✓	
South Saskatchewan	✓		



Figure 2

# CHRS Priority Rivers (AA)

(not ranked in order of priority)

- 1 Peace River
- 2 Clearwater (Athabasca) River
- 3 N. Saskatchewan River
- 4 Red Deer River
- 5 Bow River
- 6 Highwood River
- 7 Oldman River
- 8 S. Saskatchewan River
- 9 Castle River
- 10 Milk River

## Legend

- AA River —
- National Park
- Boundary

**Alberta**

ENVIRONMENTAL PROTECTION

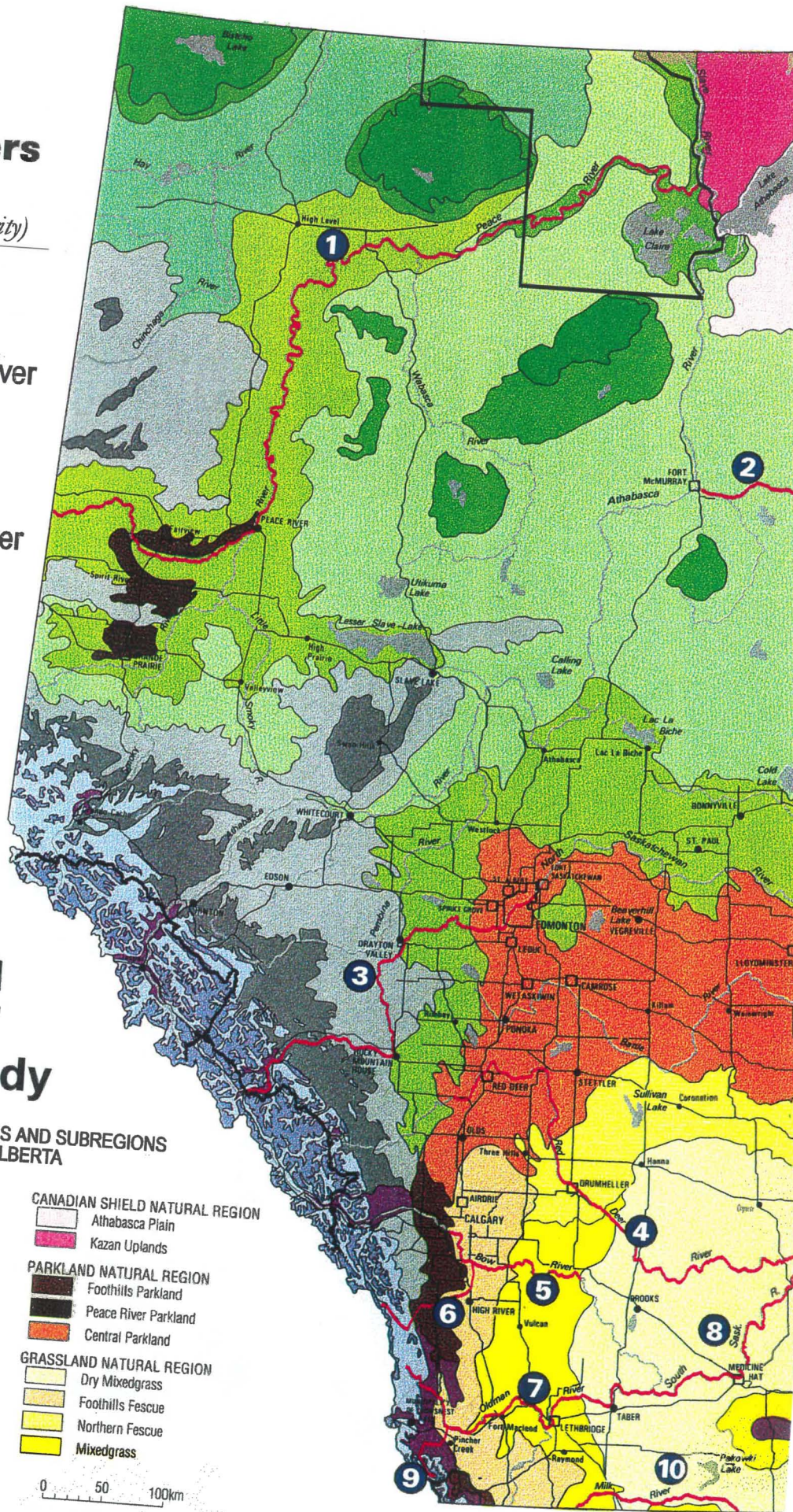
# CHRS River Study

## NATURAL REGIONS AND SUBREGIONS OF ALBERTA

- |  |  |  |  |
|--|--|--|--|
| <b>BOREAL FOREST NATURAL REGION</b>  |  | <b>CANADIAN SHIELD NATURAL REGION</b>  |  |
| <span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Central Mixedwood    | <span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Dry Mixedwood    | <span style="background-color: #FFFFFF; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Athabasca Plain    | <span style="background-color: #FF69B4; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Kazan Uplands        |
| <span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Wetland Mixedwood    | <span style="background-color: #3CB371; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Sub-Arctic       | <b>PARKLAND NATURAL REGION</b>   |  |
| <span style="background-color: #3CB371; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Peace River Lowlands | <span style="background-color: #3CB371; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Boreal Highlands | <span style="background-color: #8B4513; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Foothills Parkland | <span style="background-color: #8B4513; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Peace River Parkland |
| <b>ROCKY MOUNTAIN NATURAL REGION</b>   |  | <span style="background-color: #FF8C00; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Central Parkland   |  |
| <span style="background-color: #ADD8E6; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Alpine               | <span style="background-color: #ADD8E6; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Sub-Alpine       | <b>GRASSLAND NATURAL REGION</b>  |  |
| <span style="background-color: #8B4513; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Montane              |  | <span style="background-color: #FFFACD; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Dry Mixedgrass     | <span style="background-color: #FFFACD; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Foothills Fescue     |
| <b>FOOTHILLS NATURAL REGION</b>  |  | <span style="background-color: #FFFACD; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Northern Fescue    | <span style="background-color: #FFFACD; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Mixedgrass           |
| <span style="background-color: #808080; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Upper Foothills      | <span style="background-color: #808080; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Lower Foothills  |  |  |

Scale:

0 50 100km







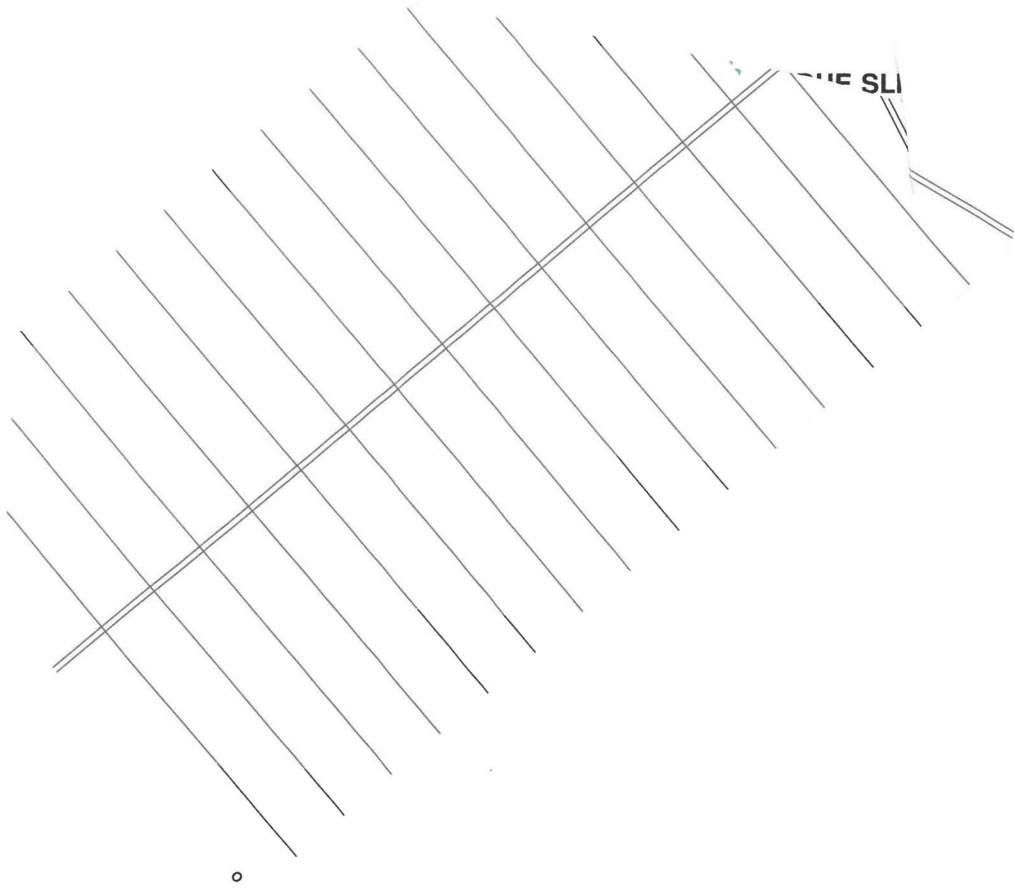
## **FUTURE CONSIDERATIONS**

The Alberta Rivers System Study has identified a priority list of rivers applying the accepted river evaluation methodology developed for this study. It is intended that the results are as objective as possible using an evaluation system that is consistent with CHRS guidelines, yet reflects Alberta's unique characteristics and management conditions.

The list as developed is by no means intended to exclude any river from being nominated. In fact the nomination process adopted by Alberta in joining the CHRS Board specifies that local authorities will serve as the lead agencies in recommending a river or river segment for nomination to the CHRS system. Special interest groups, industries and private citizens are welcome to suggest any river from those reviewed in the system study to the local authorities. In this case if further information or supporting documentation can be presented, that can be evaluated within the framework developed in this study, any river can be considered for nomination to the system.

This study has set forth a uniform and consistent approach that can be applied in evaluating a river's potential nomination. Once a river has been nominated, a more in depth river management planning study needs to be undertaken. Once such a study has been completed, and its results support the evaluation criteria, then the river can be officially designated for CHRS status.

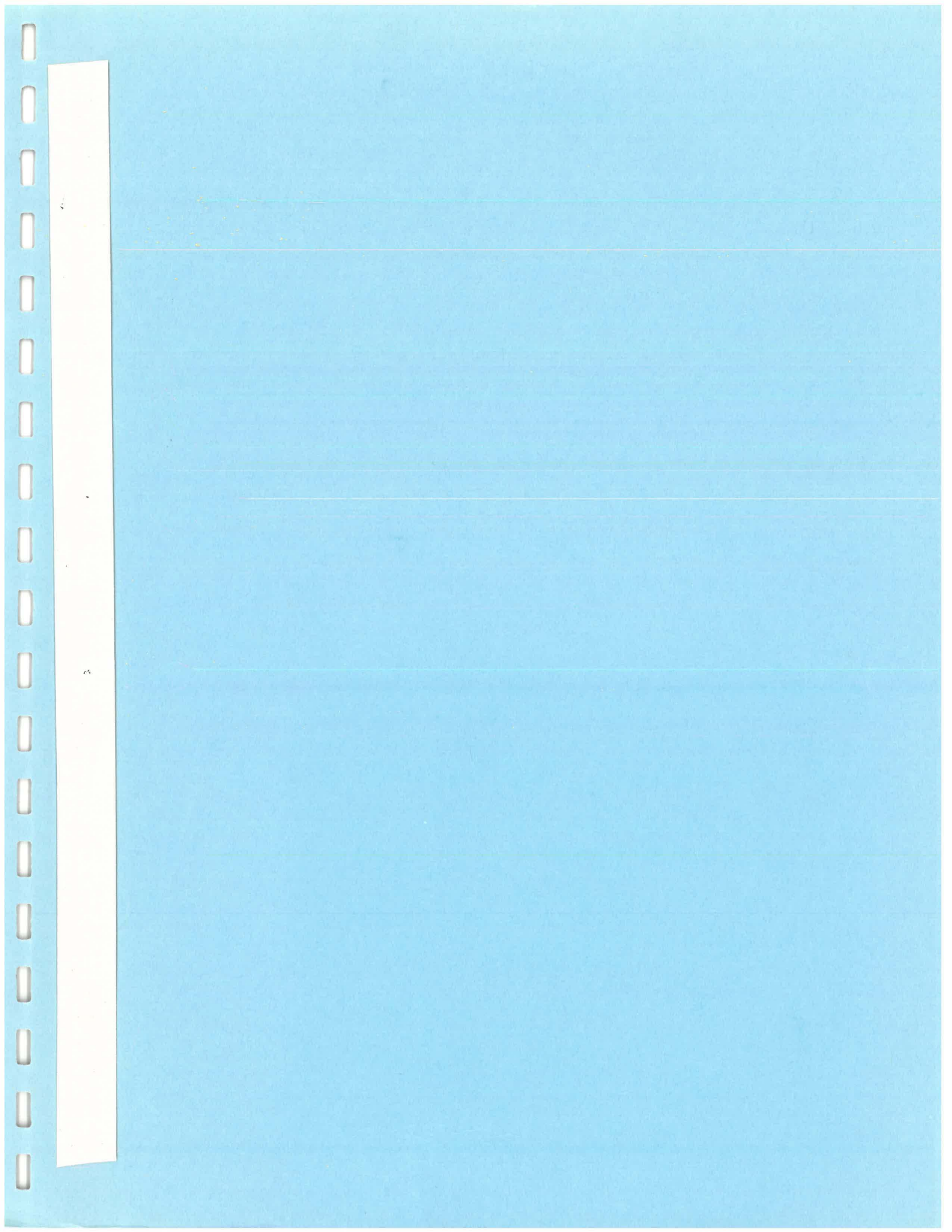




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