

**Report on the Blood Tribe (Kainai Nation): community vulnerabilities**

DRAFT

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**IACC Project, Unit 1 A:** An assessment of vulnerabilities of rural communities and households to water related climate conditions (Chile and Canada)

## **Introduction**

According to the Impacts, Adaptation and Vulnerability (IAV) report by the Intergovernmental Panel on Climate Change (IPCC) (2001), the provision of basic food, clean water and other basic needs for the poor is one of the greatest challenges for societies today. The report (2001) also suggests that climate change impacts affect the poor sectors of society most because they are likely more exposed, have less ability to adapt and therefore more vulnerable to the impacts. Thus, for the poor sectors of society, their vulnerability to climate change impacts further limits their opportunities for equitable standards of living.

Indigenous peoples from around the world have stated in the Indigenous Peoples Kyoto Water Declaration that “the most vulnerable communities to climate change are Indigenous Peoples and impoverished local communities occupying marginal rural and urban environments” (<http://www.indigenouswater.org/IndigenousDeclarationonWater.html>).

The IPCC’s 2001 IAV report also states that for indigenous people the change from a livelihood of subsistence—which was much more flexible to climate variability—to a form of livelihood more closely linked to commercial activities reduces their coping options to climate variability. Thus for most indigenous people in North America, whose subsistence livelihood has greatly been eroded, the impacts of climate change pose great challenges.

In addition to the risks of being physically more exposed to climatic hazards, indigenous peoples in Canada also struggle with the legacy of an imposed governance system, an externally imposed system of resource management, little or no control over waters flowing over their territories and deep emotional, physical and psychological scars left by their residential school experiences.

As part of the 2005 community-level field work for the MCRI Institutional Adaptation to Climate Change project, the Blood Tribe (also commonly known as Kainai Nation) in the South Saskatchewan River Basin (SSRB) was one of the communities selected for an in-depth field work for assessing the vulnerabilities and adaptive capacities of its population to water resource issues and other climatic conditions.

This document reports on the results from the 2005 field work conducted in the Blood Tribe community, identifying the current exposures and adaptive strategies, future exposures and adaptive strategies

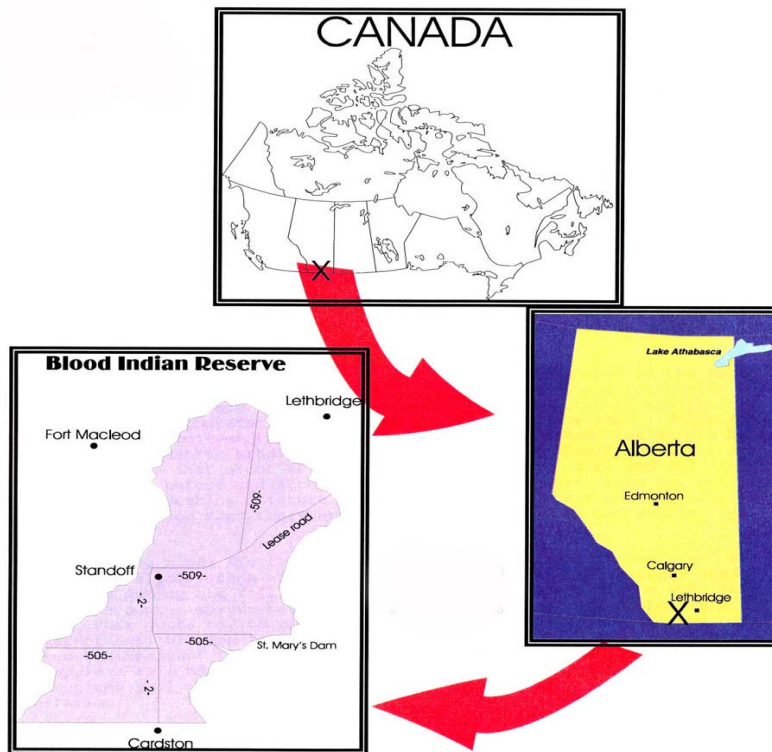
## **Blood Tribe Description**

Located in southern Alberta, with a territory of 547.5 square mile, the Blood Tribe is one of the largest reserves in Canada. According to Statistics Canada, the population of the Blood Tribe in 2001 was 3,850, with a decrease of about 10 percent from the 1996 population of 4,326. However, the Band estimates the current population to be about 9,000 to 10,000 people, with 6,000 to 7,000 people living on reserve. The Blood Tribe is a member of the Blackfoot Confederacy and the Treaty 7 Tribal Council. According to archeological findings, the Blackfoot people have been in the region for over 6,000 years. The population is spread out in various

communities over the land base: Standoff, Moses Lake, Lavern, Old Agency, Fish Creek, Ft. Whoop Up and Bullhorn.

The Blood Tribe reserve is bordered by the Belly, St. Mary's and Oldman Rivers. Of the 349,295 acres of the reserve's land base, approximately 200,000 acres are currently under cultivation, of which about 20,000 acres are irrigated and 180,000 under dry land cultivation. The 20,000 irrigated acres are managed by the Blood Tribe Irrigation Project (BTAP), and it is one of the largest irrigation projects in Canada.

Figure 1: Blood Tribe Location,  
(<http://www.bloodtribe.org/community/location.jpg>)



### **Challenges encountered during the fieldwork**

When conducting the fieldwork, most of the people contacted were willing to provide their time for the interviews. A great deal of appreciation goes to the many Band employees interviewed who took time from their busy schedules. There were a few, however, who just could not find the time to provide an interview.

The vast land of the Blood Tribe community is leased out to non-native farmers from the neighboring communities, who use the land for crop and hay cultivation as well for grazing. There are approximately 40-50 non-native farmers that lease land from the community; unfortunately, the time spent in the area was during the busiest time of the season for most of

these farmers and it was not possible to obtain a single interview from them. These farmers hold 3-5 year lease agreements with the community; they are key stakeholders in the community's land and water resources.

### **Interviews and data analysis**

From June to August 2005, and following the Fieldwork Guide designed specifically for the community-level fieldwork for this project, information was collected through secondary sources, 30 face to face individual interviews and one focus group. Members of the community interviewed included male and female, youth, elderly, business people, and several Band employees (please see Appendix I).

Also, following the Field Guide for Community-Based Assessment of Vulnerabilities, all the interviews were transcribed verbatim; the NVivo software package was then used to code and interpret the findings.

### **Objective**

The objective of the analysis of the findings was to assess vulnerabilities and adaptive capacities of the Blood Tribe community to impacts of climate change by focusing on its exposures and adaptations related to water use and the roles of institutions in its current and future adaptive capacities.

### **Conceptual Approach**

Consistent with the Vulnerability of Communities to Environmental Change conceptual paper developed by Smit et al. for the Institutional Adaptation to Climate Change (IACC) project, the following concepts of exposure, adaptive capacity and vulnerability were adopted to the Blood Tribe community, as follows:

#### **Exposure**

Exposure of the Blood Tribe to climate change impacts over time reflects the characteristics of the community relative to the climatic stimuli; characteristics of the Blood Tribe that contribute to its exposure reflect the broad social, economic, political, resources and location conditions of the community

#### **Adaptive capacity**

The ability of the Blood Tribe to undertake adaptations to (cope with) impacts of climate change given, among other things, its access to financial, technological and information resources, infrastructure, institutional environment, political influence, kinship networks, etc.

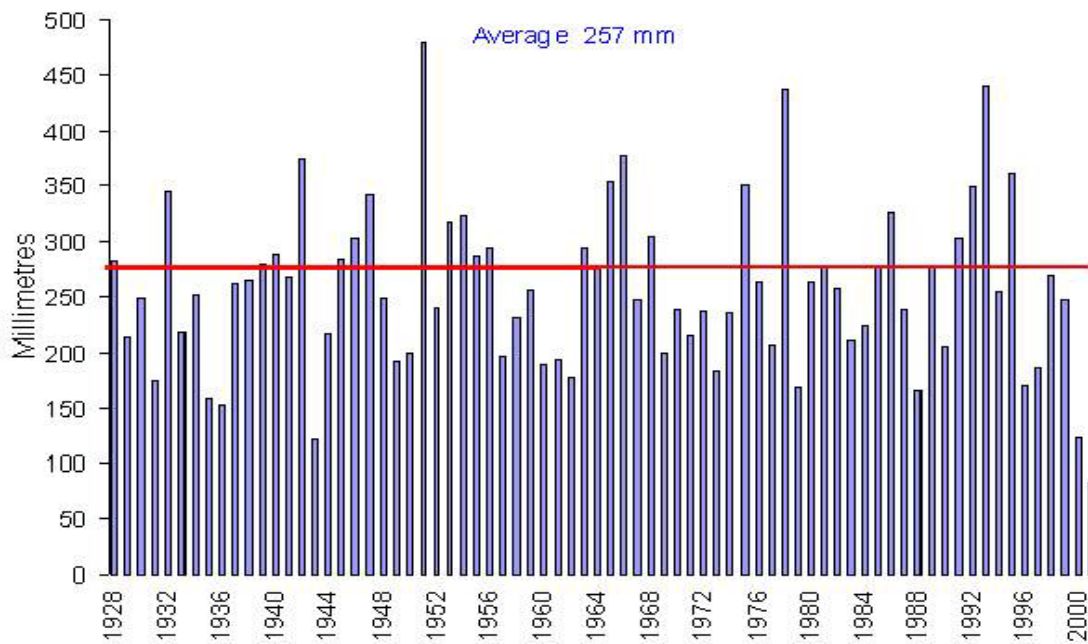
**Vulnerability**

The vulnerability of the Blood Tribe is as a function of its exposure to climate change and its adaptive capacity. The more the community is exposed to climate change, the more vulnerable it is; and, the less its adaptive capacity, the more vulnerable it is.

**Environmental hazards**

Alberta Environment in *Water for Life: Alberta’s Strategy for Sustainability (2003)* states that the province of Alberta is facing increasing demand on its water resources as result of population growth, agricultural and industrial development; while the supply is often limited by drought conditions. This increase in demand coupled with the fluctuations in the supply of water places heightened pressures on the province’s water resources and therefore putting at risk the well-being of Albertans.

**Figure 2: Average growing season precipitation (April 15-Oct.15) of 257 mm includes Bow Island, Lethbridge, Medicine Hat and Taber – (Environment Canada's data, 2001)**



From: Alberta Agriculture, Food and Rural Development, 2002. Southern Alberta Drought  
 According to Alberta Agriculture, Food and Rural Development (Figure 2), the southern region of Alberta, where the Blood Tribe is located, is historically affected by periodic floods and droughts. Two previous severe droughts occurred in 1936 and 1943; however, in 2001, southern Alberta, as shown in Figure 2, suffered the most severe drought than in any other season in the previous 74 years.

During the 2001 drought, only 83 mm of rain fell during the growing season between April 15 and October 15, compared to the historical average of 257 mm. Moreover, during the previous growing season, only 123 mm of rain fell, which is also well below the historical average. Thus,

although the southern Alberta region has a few water reservoirs, the consecutive drought years had severe impacts on the irrigation industry.

For the Blood Tribe Irrigation Project, a corporation of the Blood Tribe, the impacts of the 2001 drought involved the rationing of water supplies, and like other farmers in the region dependent on the St. Mary's River system, it received about 125 mm less of water than the required net amount for the growing season.

As also shown in Figure 2, there are also periodic floods in Southern Alberta—precipitation well above the historical average of 257 mm. The Blood Tribe was impacted significantly by the floods of 1995, 2002, and 2005. According to the Blood Tribe Housing Department, the costs to the community by the floods of 2002 amounted to \$8 million; whereas during the 2005 floods 397 homes were affected and the estimated costs amounted to \$ 6.5 million.

With regards to temperature, Khandekar (2002) in a study on behalf of Alberta Environment concludes that one of the most dramatic impacts of climate change in the prairies is the increase in mean temperature over the last fifty years; this increase in mean temperature is primarily due to the increase in the minimum temperature in the winter season. For Alberta, the temperature in the winter has increased by 1 °C to 3 °C, but it has cooled slightly in the summer time. Extreme colds in the winter have decreased and warm spells have increased.

### **Blood Tribe broad socio-economic forces**

Like the majority of the members of First Nations in Canada, the Blood Tribe community is experiencing dramatic socio-economic challenges as a result of past and present policies from its relationship with the Canadian government. These policies have largely determined the socio-economic dynamics within the community itself as well as its relationship with the larger Canadian society. Many First Nation members contend that policies such as the Indian act and residential schools were deliberately designed to assimilate the indigenous population into the mainstream Canadian society. These policies and their consequences persist through the control of the First Nations' governance systems and economies, and even, until recently the, the control of their traditions and ceremonies.

Based on various government publications, The Assembly of First Nations has compiled a fact sheet on First Nations' living conditions. According to this fact sheet, using the UN's Human Development Index, in 1998 First Nations in Canada ranked 63<sup>rd</sup> in the world in terms of quality of life indicators, while Canada dropped from 1<sup>st</sup> to 8<sup>th</sup> due to the Third World condition of First Nations. While the infant mortality rate for First Nation communities is 1.5 higher than the infant mortality rate for the rest of Canada.

### **The Indian Act**

According to Fleras (1996), the Indian Act, created in 1876, has allowed the Canadian government to take control over First Nations' political structure, identity, resources, land tenure system and economic development. The Indian Act continues to determine the identity of people according to the definition of Status and non-status Indians.

The Indian Act, through the control of the political structure of the Blood Tribe community, appears to have contributed to overt, and at times subtle, tensions between families and clans, between those who have occupancy rights to the land and those who do not; tensions that in turn result in an apparent questioning of the credibility and capacity of Tribe's Chief and Council, managers and directors.

### **Residential Schools**

Réame and Macklem (1994) trace the introduction of residential schools in the lives of First Nations in Canada to the mid 19<sup>th</sup> century. According to Réame and Macklem (1994), one of the main reasons for the establishment of residential schools in the first place was to reflect policy requirements for settling down the nomadic life of First Nations into reservations, while at the same time freeing up lands for settlement and economic development to the benefit of non-natives. The legacy of this policy is the deep and traumatic range of issues that First Nations nowadays continue to try to come to terms with. The consequences of the forceful internship of First Nations into Roman Catholic, Anglican, and Presbyterian schools, away from their parents and communities and the prohibition of their language and traditional practices, continue to reverberate in the Blood Tribe community.

The Indian Act and the consequences of residential schools has given rise to communities that face great socio-economic challenges—although they were once proud, independent and capable people—similar to the poorest and marginalized sectors of societies found in Developing countries. The challenges that prevail in First Nation communities, and which were clearly reflected in the interviews with the Blood Tribe people, include alcohol and drug abuse, family and community violence, suicides, tragic deaths and gangs; all resulting in an apparent loss of social cohesion and the break down of community networks.

### **Lack of Economic Activity, Unemployment, Poverty and Education**

Lack of access to capital appears to be the Achilles heel of the Blood Tribe community in its effort to implement community economic development. The difficulty in accessing loans for business start ups and economic development exacerbates the cycle of poverty, unemployment and low levels of education and skills. Although the community as whole is impoverished, there is evidence and a feeling in the community of a definite social stratification. Some of the community members who have occupancy rights to the land (10-12 percent of the people have occupancy rights) and those who are employed, largely through a handful of jobs in the Band's departments and agencies, constitute the sector of "haves," while the unemployed majority that relies on government assistances are the "have-nots." Several of the respondents felt that the cleavage between the have and have-nots is exacerbated by the concentration of decision making power in the hands of families with historical influence and power. It is felt that members of the community that have "connections" with the Chief and Council and head of departments often have greater chances for employment, housing, home repairs and renovations.

Although there were no current statistics on the exact unemployment rate in the community, several of the people interviewed estimated the rate to range from 60 percent to as high as 80 percent. Statistics Canada’s unemployment rate for the Blood Tribe for 1996 and 2001, are 29.00% and 45.00% respectively.

The have-not sector in the Blood Tribe community inevitably bears more the consequences of poor housing conditions, lack of recreation, education and training opportunities, and incidents of unsafe drinking water. Fournier and Crey (1997) observe that First Nation children in Canada suffer more from chronic respiratory and ear infections and that the average life expectancy for a First Nation child (until they reach adulthood) is eight year less than the national average.

The following tables from Statistics Canada’s data provide a detailed profile of the Blood Tribe community, compared to the rest of Alberta, in terms of population, level of education, income, employment, and housing.

**Blood Tribe community regarding population, level of education, income, employment, and housing (from Statistics Canada and albertafirst.com)**

**Table 1: Blood Tribe characteristics compared to Alberta**

<b>Characteristic</b>	<b>Blood Tribe</b>	<b>Alberta</b>
<b>Population and dwelling counts</b>		
Population 2001	3,852	2,974,807
Population 1996	4,326	2,696,826
1996 to 2001 (%) population change	-11	10.3
Population density per sq kilometer	2.7	4.6
Population 15 years and over	<b>2,885</b>	<b>2,357,215</b>
<b>Highest Level of Schooling</b>		
Total population aged 20-34	730	641,520
% of the population aged 20-34 with less than a high school graduation certificate	40.4	18.2
% of the population aged 20-34 with a high school graduation certificate and/or some postsecondary	37.0	32.2
% of the population aged 20-34 with a trades certificate or diploma	11.0	11.6
% of the population aged 20-34 with a college certificate or diploma	8.9	18.0
% of the population aged 20-34 with a university certificate, diploma or degree	2.1	20.0
<b>Total population aged 35-44</b>		
% of the population aged 35-44 with less than a high school graduation certificate	28.1	20.3
% of the population aged 35-44 with a high school graduation certificate and/or some postsecondary	27.2	23.8
% of the population aged 35-44 with a trades certificate or	18.4	16.4



diploma		
% of the population aged 35-44 with a college certificate or diploma	17.5	19.7
% of the population aged 35-44 with a university certificate, diploma or degree	7.9	19.8
<b>Income in 2000</b>		
Composition of total income (100%)	100.0	100.0
Earnings - % of income	61.8	81.1
Government transfers - % of income	35.9	9.3
Other money - % of income	2.2	9.5
<b>Labour Force Indicators in 2000</b>		
Participation rate	44.4	73.1
Employment rate	30.8	69.3
Unemployment rate	31.1	5.2
Median family income, 2000 (\$) - All census families	20,768	60,142
Median family income, 2000 (\$) - Couple families	23,872	65,041
Median family income, 2000 (\$) - Lone-parent families	14,624	32,763
Source: Statistics Canada 2001		

**Figure 2: Blood Tribe by age and gender**

<b>Population by Age and Gender</b>	<b>1996 Male</b>	<b>1996 Female</b>	<b>1996 Total</b>	<b>2001 Male</b>	<b>2001 Female</b>	<b>2001 Total</b>
Age 0 - 4	245	220	465	195	195	390
Age 5 - 14	515	575	1,090	450	425	875
Age 15 - 19	250	250	500	210	235	445
Age 20 - 24	165	145	310	150	135	285
Age 25 - 34	320	305	625	240	240	480
Age 35 - 44	305	295	600	305	290	595
Age 45 - 54	180	170	350	185	205	390
Age 55 - 64	115	120	235	120	110	230
Age 65 - 74	55	55	110	50	55	105
Age 75 and older	20	30	50	25	45	70
Total All Persons	2,160	2,170	4,330	1,930	1,925	3,855
Source: Statistics Canada 1996 & 2001 Census (numbers may not add up due to rounding)						

**Table 3: Blood Tribe level of schooling for population 20 years and older**

<b>Highest level of schooling for Population 20yrs and older</b>	<b>2001</b>	<b>%</b>
People without high school certificates	790	38.16%
People with high school certificates	130	6.28%
People with trades or non-university certificate or diploma	585	28.26%
People with post-secondary education (not completed)	440	21.26%

People with university diploma/certificate	40	1.93%
People with university degree	90	4.35%
Total Population 20 years and older	2,070	100.00%
Source: Statistics Canada 2001 Census (numbers may not add up due to rounding)		

**Table 4: Blood Tribe labor force by activity, 1996 and 2001**

Labour force by activity	1996	2001
In the labour force, both sexes	1,380	1,115
Not in the labour force, both sexes	1,385	1,385
Total population 15 and over	2,765	2,505
Employed, both sexes	980	770
Unemployed, both sexes	400	345
Participation rate, both sexes	50.00%	22.00%
Unemployment rate, both sexes	29.00%	45.00%
Source: Statistics Canada 1996 & 2001 Census (numbers may not add up due to rounding)		

**Table 5: Blood Tribe family income, 1996 and 2001**

Family Income (Number of Families)	1996	%	2001	%
less than \$19,999	320	42.67%	465	60.39%
\$20,000 - \$39,999	215	28.67%	305	39.61%
\$40,000 - \$59,999	120	16.00%	110	14.29%
\$60,000 and over	95	12.67%	50	6.49%
Total number of families	750	100.00%	930	120.78%
Average family income	\$30,124		\$26,659	
Median family income	\$23,264		\$20,768	
Source: Statistics Canada 1996 & 2001 Census (numbers may not add up due to rounding)				

**Table 6: Blood Tribe household income, 1996 and 2001**

Household Income (Number of Households)	1996	%	2001	%
less than \$19,999	405	41.54%	440	43.78%
\$20,000 - \$39,999	310	31.79%	335	33.33%
\$40,000 - \$59,999	150	15.38%	130	12.94%
\$60,000 and over	45	4.62%	95	9.45%
Total number of households	975	100.00%	1,005	100.00%
Average household income	\$30,766		\$28,987	
Median household income	\$23,672		\$22,976	
Source: Statistics Canada 1996 & 2001 Census (numbers may not add up due to rounding)				

**Table 7: Blood Tribe occupied private dwelling by type, 1996 and 2001**

Occupied Private Dwellings by Type	1996	% of total	2001	% of total
Apartments	0	0.00%	25	2.49%
Detached Duplexes	0	0.00%	0	0.00%
Movable Dwellings	10	1.02%	20	1.99%

Other single attached house	0	0.00%	0	0.00%
Row and semi-detached house	0	0.00%	0	0.00%
Single-detached house	965	98.47%	960	95.52%
Total number of occupied private dwellings	980	100.00%	1,005	100.00%
Private dwellings, owned	590	60.20%	520	51.74%
Private Dwellings, rented	255	26.02%	155	15.42%
Source: Statistics Canada 1996 & 2001 Census (numbers may not add up due to rounding)				

**Table 8: Blood Tribe private dwellings by period of construction**

<b>Private Dwellings by Period of Construction</b>	<b># of Dwellings</b>	<b>% of total</b>
Period of construction, before 1946	10	0.99%
Period of construction, 1946 - 1960	60	5.94%
Period of construction, 1961 - 1970	120	11.88%
Period of construction, 1971 - 1980	275	27.23%
Period of construction, 1981 - 1990	335	33.17%
Period of construction, 1991 - 2001	210	20.79%
Total number of private dwellings constructed	1,010	100.00%
Source: Statistics Canada 2001 Census (numbers may not add up due to rounding)		

**Results from the analysis of interviews conducted in the Blood Tribe community**  
(The full list of exposures and adaptive capacities are in appendix II)

<b>Current Exposures</b>
<b>Environment</b>
<ul style="list-style-type: none"> <li>• Climate                             <ul style="list-style-type: none"> <li>○ Temperature</li> <li>○ Droughts</li> <li>○ Floods (1995, 2002, 2005: housing costs \$8 million (2002); 2005, 397 homes affected, estimated costs \$ 6.5 million)</li> </ul> </li> <li>• BSE</li> <li>• Water quality</li> </ul>
<b>Economic:</b>
<ul style="list-style-type: none"> <li>• Lack of access to capital</li> <li>• Lack of infrastructure</li> <li>• Lack of economic activity</li> <li>• High unemployment</li> <li>• Poverty</li> <li>• Shortage of housing</li> </ul>
<b>Social:</b>
<ul style="list-style-type: none"> <li>• Drug and alcohol abuse</li> <li>• Addictions</li> <li>• Community and family violence</li> <li>• Problems in town sites</li> </ul>

<ul style="list-style-type: none"> <li>• Gangs</li> </ul>
<ul style="list-style-type: none"> <li>• Lack of recreation programs</li> </ul>
<ul style="list-style-type: none"> <li>• Lack of parenting skills</li> </ul>
<ul style="list-style-type: none"> <li>• Diabetes and cancer</li> </ul>
<p><b>Institution</b></p>
<ul style="list-style-type: none"> <li>• Institutional policies                             <ul style="list-style-type: none"> <li>○ Indian Act</li> <li>○ Residential schools</li> <li>○ Social Welfare</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• Federal and provincial agreements</li> </ul>
<ul style="list-style-type: none"> <li>• Elective system</li> </ul>
<ul style="list-style-type: none"> <li>• Questioning of Chief and council’s legitimacy and credibility (mistrust)</li> </ul>
<ul style="list-style-type: none"> <li>• Perceived weak leadership of Chief and council, managers and directors of the various Blood Tribe agencies.</li> </ul>

**Discussion of Current exposures**

**Environmental exposures**

Consistent with Khandekar’s (2002) conclusions regarding the increase in temperature over the last 50 years in the prairies, and particularly his observations of a decrease in extreme winter colds and an increase winter spells in Alberta, many of the interviewees noted that the winters in the Blood Tribe community are not as cold as before, less snow is being observed—some respondents noted that in the past they used to get as much as 4-5 feet of snow, but not anymore—and that the summers are cooler.

According to some of the respondents, some possible consequences of the change in temperature observed in the community include more incidences of colds in the winter time—and speculated that this is because bacteria may survive better without extreme cold temperatures, more mosquitoes in the summer time, kids do not go sleighing anymore because of the lack of snow, some birds no longer migrate, the Blood Tribe Agricultural Project (BTAP) lost crops in 2004 because there was not enough units of heat for a second crop, and, more grassfires during the early spring.

Over the last ten years, the Blood Tribe experienced severe floods in 1995, 2002 and 2005. The floods of 1995 was apparently worse than the other two. For 2002 and 2005, the costs to the Blood Tribe, according to the Housing Department, are the following: 2002, \$8 million; 2005, about \$ 6.5 million. In 2005, 397 out of 1280 total homes in the community were affected by flooded basements and/or water damaged because of leaks. Unfortunately, the costs to the Blood Tribe for the 1995 flood were not available.

Some people believe that the rivers with on-stream reservoirs such as the nearby St. Mary’s and Waterton rivers did not cause as much damage during the 2005 flood because their water flows were partly controlled by the reservoirs, whereas the un-dammed Belly River, and therefore its flow was not “controllable,” caused the most problems because it “peaked” quicker. However,

others disagree; some believe that with the amount of precipitation that fell in the area, the dams were filled to their maximum and once filled they had to release the water all at once, which caused worse downstream flooding.

According to the Blood Tribe Public Works department, due to the 2005 floods, a new well had to be dug for one of the communities because flood waters damaged the existing well through siltation. The cost for the new well was \$ 800,000, and the funds for digging this new well came from disaster relief programs. Flood events have also added extra costs to the maintenance of roads; however, since the 2002 floods, the Department of Public Works has upgraded some of the roads with more compaction and better drainage to prevent washouts during heavy precipitation events. Now that the roads are of better quality, the flow of excess water runs over the road rather than washing it out.

One of the respondents who lives by the Belly River mentioned that he has lost property to the last 3 floods; he also knows other people who live along the river that lost property due to the erosion of the river banks. In addition, a family member of the respondent had to stop farming as a result of the 1995 floods because the river flow washed away his irrigation equipment.

There have been periodic droughts in the Blood Tribe territory, but the 2001 drought, which affected most of the Canadian prairies, caused losses to the Kainai Agribusiness Corporation (KABC). Drought conditions caused the loss of feed crops for their 700 cattle herd. As a result, KABC reduced the size of the herd from 700 to 200. The combination of the drought and the subsequent Bovine Spongiform Encephalopathy (BSE), mad cow disease, case in Alberta, further affected the cattle operations of KABC, so at present the size of the herd is of about 300.

Water shortages during the 2001 drought also affected the operations of BTAP. The Band has been allocated water for irrigating 25,000 acres of land managed by BTAP, but during 2001 they were requested to reduce their water use, and according to Alberta agriculture, the Blood Tribe like other farmers in the southern Alberta that depend on the St. Mary's river received 125 mm less water than required for the growing season.

The allocation of water is a contentious issue for the Blood Tribe community. They contend that they do not have to abide to Alberta's water allocation management plan because they have special rights regarding water access to the rivers as per the treaty agreement signed with Canada. They believe that in the treaty signed they agreed as a nation to "share" their resources with Canada; therefore, since their territory is bounded by the St. Mary's, Belly and Oldman rivers, they are entitled to half of the flow of these rivers.

According to the Housing Department, there are 1280 homes on the Blood Tribe reserve; about 1000 of the 1280 have water cisterns. About 500 of the 1000 homes with cisterns are linked directly to a water line, but for the other 500 homes, water for the cisterns has to be trucked in. About 300-400 homes have wells. During the last three flood events, according to one department employee, wells were contaminated with surface runoff; on the other hand, according to some of the respondents, over the past few years some of these wells appear to be drying up, unlike years earlier when they had plenty of water.

The majority of the Blood Tribe people responded that there are no problems with the supply of water, either for domestic use or irrigation purposes, except in the 2001 drought when BTAP's and KABC's operations were affected by water shortages. Regarding water for domestic use, for the people connected to a water line there are no problems with supply or quality. However, for the 500 or so homeowners that have to get water trucked in for their cisterns, at times they may face some delays in waiting for the delivery of their water, but for the most part water supply is not a problem. During floods, like in 2005, water may become contaminated with surface waters, in which case an advisory notice is given to the communities so that they boil their water. Otherwise, quality of the water is not a problem. On occasions the color of the water can be brown during periods of floods, but safe to drink

A few people commented on the quality of the water from the rivers flowing by the Blood Tribe territory. They believe that pollution from agricultural operations upstream have affected the quality of the rivers. One member of the community expressed that he thinks that frogs have disappeared from the river ecosystem and that he wouldn't eat fish caught from the rivers.

Diabetes is one of the main health issues in the community, which is largely related to the diet of the people and the sedentary life style that they now have. The lack of availability of nutritious foods is an issue in the community. People appear to eat very unhealthy foods. The only local food store in the community has a very limited supply of fresh vegetables and fruits. According to a few respondents, people prefer to buy junk food and shop in big box stores in towns like Lethbridge, Fort McLeod and Cardston.

### **Social Exposures**

Unemployment is one of the main challenges in the community and it was brought up by most respondents as one of the major causes of the social challenges that the community experiences. According to Statistics Canada, in 2001 the unemployment rate in the community was 45 percent, compared to 29 percent in 1996. Statistics Canada does not have unemployment rates for more recent years; however, most of the respondents, including Band employees, believe that in 2005 the unemployment rate was very high, with estimates that ranged from 60 to 85 percent. Causes given for the high rate of unemployment include lack of skills and training opportunities and lack of business opportunities. Lack of access to capital was considered one of the biggest factors for the lack of economic activity in the community. The lack of access to capital prevents community members from starting up small businesses or agricultural activities. According to some respondents, to get into agriculture it is essential to have sufficient funds for machinery and equipment; however, nowadays one tractor alone could cost up to \$100,000. Therefore, to successfully engage in agriculture can only be achieved by undertaking a large farming operation so as to be able to recover the investments in expensive machinery and equipment, but because the community cannot access loans, large scale farming is not feasible.

The main impediment for First Nations people in accessing loans is possibly related to the system of land ownership. The Indian Act states that the territory of First Nation people is held collectively and belongs to the entire community. This type of property ownership does not encourage lending by financial institutions for individual housing and business development because the land cannot be used as collateral.

In the Blood Tribe the issue of land “ownership” appears to be one of the major sources of disputes within and between families. Although the Indian Act stipulates that the land belongs to the Band, not all members have access to the use of or benefits from the land. According to the Lands Department, only 10-12 percent to the Blood Tribe members has “occupancy” rights to the land. These rights enable the occupants of the land to use it and obtain benefits from it, but cannot sell the land to a non-member of the community. The majority of the land occupants in the Blood Tribe lease their lands to non-native farmers on 3-5 year leases. Several respondents believed that resolving the issue of land tenure is critical for addressing the many land disputes in the community. The Lands Department stated that there were about 100 outstanding land disputes in the community. Apparently a study conducted in the community regarding the flow of money in and out of the community showed that the leasing of land to non-natives results in a net annual outflow of \$ 48 million from the community. One non-native farmer alone rents 70,000 acres from the Blood Tribe.

There is a feeling from some of the respondents that issues such as the system of land tenure in the community can not be easily resolved by Chief and Council because of the complexity and sensitivity of the issue and the influence and power of the landowning families.

Several respondents suggested that an apparent weak leadership, especially of past Chiefs and Councils, together with the limited financial resources allocated by the Canadian to the community confine the leaders to address only the most immediate socio-economic needs—and even then, the Band’s resources are not even sufficient to meet immediate and pressing social needs such as housing. Therefore, given the many present socio-economic challenges in the community, issues concerning climate change are not given much thought to. In addition, one of the respondents commented that unless “you are a landowner and have crops or cattle, you will not be concerned with issues to do with the land such as moisture [...] you live on a day to day basis, wondering where you will get your next meal.”

It appears that because of the many socio-economic challenges that the community faces, there has been an erosion of communication among members of the community, loss of social cohesion and networks (a respondent suggested that this is because of the “white mentality that people increasingly now have”).

Some of the observations of the people interviewed for this study are consistent with the views of over 300 hundred members of the community consulted for the development of the Blood Tribe Community Development Five Year Master Plan, 2005—2009: Building Safe and Healthy Communities. People consulted for this 5-year master plan responded and ranked the main issues that the community faces as follows: alcohol and drugs, community and family violence, lack of employment and poverty, lack of recreation programs, and lack of parenting skills.

<b>Current Adaptive Strategies</b>
<b>Water management</b>
<ul style="list-style-type: none"> <li>• Water conservation</li> </ul>
<ul style="list-style-type: none"> <li>• Boil water, buy bottle water, use of water filters</li> </ul>
<ul style="list-style-type: none"> <li>• Buy water for cisterns from private supplier</li> </ul>
<ul style="list-style-type: none"> <li>• Cattle and horse ranchers fill dugouts in the spring</li> </ul>
<ul style="list-style-type: none"> <li>• Flood mitigation measures: improve drainage around homes</li> </ul>
<b>Financial</b>
<ul style="list-style-type: none"> <li>• Move off reserve for employment, education and training opportunities</li> </ul>
<ul style="list-style-type: none"> <li>• Move back to reserve for family support and no taxes on income</li> </ul>
<ul style="list-style-type: none"> <li>• Engage in informal economy</li> </ul>
<ul style="list-style-type: none"> <li>• Lease land to non-native farmers</li> </ul>
<ul style="list-style-type: none"> <li>• Engage in small businesses</li> </ul>
<b>Institution Internal</b>
<ul style="list-style-type: none"> <li>• Water quality testing</li> </ul>
<ul style="list-style-type: none"> <li>• Negotiating with Indian Affairs about moving homes away from flood plains</li> </ul>
<ul style="list-style-type: none"> <li>• Housing assesses drainage capacity of lands for building new homes</li> </ul>
<ul style="list-style-type: none"> <li>• Housing coordinates with Public Works when building a new home, making sure the home will have enough water supply</li> </ul>
<ul style="list-style-type: none"> <li>• Housing, Public Works, Emergency Services better prepared for 2005 floods</li> </ul>
<ul style="list-style-type: none"> <li>• Development of a the “Blood Tribe Community Five Year Master Plan, 2005-2009: Building Safe and Healthy Communities” to reduce violence in the community and ensuring a safe and healthy environment</li> </ul>
<ul style="list-style-type: none"> <li>• Task Force to implement initiatives towards the fulfillment of the of Community Master Plan, as well as other initiatives to promote community and individual healing</li> </ul>
<ul style="list-style-type: none"> <li>• Start up loans for small businesses</li> </ul>
<b>Institutions External</b>
<ul style="list-style-type: none"> <li>• Disaster relief help for 2002 and 2005 flood damage (help for homes, water pumps, oil and gas losses)</li> </ul>
<ul style="list-style-type: none"> <li>• The federal and provincial governments funded 1/3 each the establishment of the Blood Tribe Agricultural Project</li> </ul>
<ul style="list-style-type: none"> <li>• Alberta Environment communicates dam conditions with the Band during flood emergencies; “better” regulation of water flow may have lessened 2005 flood impacts</li> </ul>
<ul style="list-style-type: none"> <li>• Programs and campaigns by the Health department about prevention of diabetes</li> </ul>
<b>Technology</b>
<ul style="list-style-type: none"> <li>• The Housing Department is negotiating with Indian Affairs of moving homes away from flood plains, but also exploring the possibility of lifting homes on to stilts, as some of the homeowners have requested</li> </ul>
<ul style="list-style-type: none"> <li>• When building a new home the Housing department conducts soil drainage capacity of the land to determine future risks of flooding</li> </ul>
<ul style="list-style-type: none"> <li>• BTAP’s irrigation pivots are all computerized for greater control and monitoring of water use</li> </ul>
<ul style="list-style-type: none"> <li>• Public Works uses chlorination and sand filtration to ensure good water quality</li> </ul>



## **Discussion of Current Adaptive Strategies**

Although it appears that there is no problem with water supply for domestic use, most people do not water their lawns and stated that this is as one measure of minimizing water use. People who have to pay for trucking in water to fill their cisterns are much more conscious of conserving water: they take short baths, do laundry only when they have to, use water efficient taps and have water saving toilet tanks and try to fix water leaks as soon as possible.

The Blood Tribe Health Department routinely tests water quality for drinking, especially just after rainfall events. The Health Department in coordination with Public Works once a year cleans the cisterns of elderly members' homes, and Public Works delivers water free of charge for the elderly.

The Health Department has staff that does periodic water sampling to monitor the quality of drinking water for the community. The water sampling can be as often as weekly for the public water system, which include the public water wells. Homeowners' cisterns normally are sampled only once a year, but they can also be sample soon after a flood event or when a homeowner requests it.

Public Works plans to establish water treatment plants in most of the communities so that people have access to good quality drinking water. Public Works maintains and operates the 5 water treatment plants in the in Blood Tribe communities. Water treatment methods consist of liquid and gas chlorination. One of the treatment plants has chlorination and sand filtration because the water source originates from surface influence.

When building a home, the drinking water source is one of the main factors considered when deciding where it is to be located; the departments of Public Works and Housing work in cooperation for finding the best location. Some community members who have cisterns hire private individuals to truck in water for their cisterns, instead waiting to get it trucked in by Public Works, especially at times when Public Works falls behind in delivering the water.

The Housing department estimates that the losses from the 2005 floods were not as high as they could have been because of lessons learned from the previous floods. In 2005 they took measures to mitigate the impacts by quickly covering leaking doors and roofs of homes with plastic sheets and by using sum pumps to pump water out of basements as soon as possible. Public Works and Housing provided sum pumps to homeowners whose homes were flooded. During the floods, the Health Department had an advisory campaign for people to boil their drinking water, and for a time it also provided bottled drinking water. During the last flood many people volunteered to help flood victims, helping to evacuate them and provide them with food and shelter.

For preventative measures, one homeowner has put in a better drainage systems around his home to minimize the risks of future flooding. Also, one homeowner hopes to find a way to cover his furnace, located in the basement, with plastic or other material to stop water from getting into the furnace in the event of another flooding.

The housing department is negotiating with Indian Affairs for funding to move homes from the flood plains to places with less risks of flooding; however, this poses another challenge for the Band because it will have to find suitable locations where the homes are to be moved to. In addition, homeowners that do not have rights of occupancy to lands other than in the flood plain cannot easily move to another location; therefore, some of these homeowners are asking the housing department to put their homes on stilts and lifting the homes above flood levels; this could very well be the only option for some homeowners.

Also, according to the Housing department, it now conducts soil test on lands where a home is to be built, making sure that the soil has proper drainage capacity, and thus minimize the risks of future flooding.

The Blood Tribe has a general emergency disaster plan, but a Housing Department employee feels that Housing should have a specific one concerning floods. There have been 3 floods over the last ten years and housing has been the most affected. The Fire and Emergency Services houses the disaster relief coordination office; this office coordinates with other departments (Public Works, Health and Housing, Social Services, Police) in the event of emergency situations such as floods. Since the flood of 2002 Public Works has improved the quality of roads through more compaction and better drainage. Due to the increase in flood events over the last ten years, the Fire and Emergency Services department has acquired hip gaiters, flood lights and self-containing generators in preparation for future floods.

According to the previous director of BTAP, the corporation has actively asked input from elders, who have been strong in reminding the corporation managers of the importance of looking at resources more than just from the “economic side.” In the case of water, according to the ex-director of BTAP, the elders emphasize that it was not just given to the people, but also to the plants and animals. Therefore, water has to be looked at from a “spiritual side,” that the water is the source of all life, and that the people need to understand water from this perspective before it can be used for economic benefits.

One of respondent believed that Alberta Environment did a better job in 2005 in adjusting water flows from the various dams in the area and released slowly the excess water which lessened the flood impacts in the Blood Tribe community, unlike in 1995 when water had to be released all at once and believed to have been the cause of great impacts.

Individual community members appear to take various measures to cope with socio-economic challenges. One member stated that she lives on the reserve because her family lives there and provides a support system for her. Others suggested that some members get into alcohol and drug dealing because they cannot survive on \$ 234 a month, which is the monthly welfare amount they get. Others join Christian religions or one of the traditional societies for social support and for individual support in dealing with drug and alcohol abuse. Traditional societies such as the Horn Society, Crazy Dogs, and others also help some people deal with alcohol and drug abuse. It appears that some young people are joining these societies. However, there were mixed views on these societies. Some people view them as contradictory because many of the members do drink and others use these societies for their own “economic and political interests.”

Some traditional societies that had “died down” are now re-emerging. There is a society which translated from its Blackfoot name means “the ones that have water,” and this society has a “beaver” bundle. It seems that the beaver is a very important component of the bundle because of its strong association with water. According to one respondent, the re-emergence of these societies is important for the Blood Tribe people because it reminds them how as indigenous people they have been so closely “connected to the land, that the land has been such an integral part of their social fabric and that it affects their social interactions.” The lands department is conducting interviews with elders to document their traditional knowledge and support the re-emergence of societies such as “the ones that have water.” Also, the Red Crow College has courses that have included consultation with elders regarding traditional knowledge of plants and plant use; students in these courses obtain training on how to consult with elders.

According to one respondent, the recovery and validation of traditional knowledge and its associated values, practices and principles can help in addressing some of the challenges in the community, including in minimizing the current land tenure conflicts in the community. According to this respondent, the disconnectedness with the land, which started to emerge since the disappearance of the buffalo—the main food source and a critical cultural symbol for the Blackfoot people—has negatively influenced the community’s collective and broad outlook with regards to the land and their responsibility as stewards of it.

The police department and Social Services have launched a Foot Patrols initiative over the last couple of years. Community members are hired to walk at night around the town sites to prevent and report on problems related to gangs, drug and alcohol abuse and domestic violence. There is a perception in the community that these foot patrols have curbed some of the problems associated with gangs.

The Kainai Youth Council is a youth group that engages Blood Tribe youth in recreational and community services activities. It has also served as a voice for Blood Tribe youth in bringing forward youth perspective, needs and vision for the community. The Youth Council conducted a specific study with Blood Tribe youth that was integrated into the 5 year Community Development Plan.

A women’s group in the community is demanding accountability and transparency from the Band leaders. They lobbied the federal government to stop the imposition of the Governance Act that would have replaced the Indian Act. They did this because they believe that the community is not ready for “another Act to be imposed on them.” The women’s movement, spearheaded by one of the woman counselors, is demanding more accountability and transparency from the Chief and council. They have held major conferences with similar First Nation groups across Canada, and they are now open to men joining the group, or to help catalyze a similar men’s group in the community. .

Efforts to enhance trust, healing and communication between the community and the leaders are being undertaken by a Band liaison program. This program aims to facilitate open communication between the tribal government, administration, entities and BT membership and to promote individual, family and community healing. This will be done by sharing information with the membership about Chief and Council’s activities and making community members

aware of their rights with regards to the Band's activities. At the same time, it is expected that the more open communication between the Band and membership will contribute towards restoring trust and to promote accountability and transparency by the Band's entities.

There is a Wellness Centre that provides support and counseling to community members on issues related to alcohol and drug abuse and residential school impacts. The Centre gives the option of talking to a counselor from the community or one from outside the reserve. With personal and sensitive issues, some members may feel more comfortable speaking to an outsider rather than one from the community.

Although most people in the community are concerned with the current land tenure system of occupancy rights, they are not in favor of holding the land with private property titles, or "fee simple titles." They feel that holding land with fee simple titles would make members sell off their lands and further break the community apart, much like it has happened on some US reservations. One respondent provided another reason why many members of the community are against selling the land: "There are places everywhere around here that have a Blackfoot name, and a story and song that goes along with every place name, all the way back to the North Saskatchewan River, near Edmonton, and all the way down to Yellowstone, where the people all have land and stories and songs that go with each of these places, and they are really closely connected to the land, and if we start selling it then we are selling our soul, as far as I am concerned. We are selling part of ourselves and our history; that's not to be the case, we are supposed to preserve it for our youth, not sell it."

As mentioned above, in March 2005, through extensive consultation with the community, the Community Development office developed a 5 year plan—Blood Tribe Community Development Five Year Master Plan, 2005-2009: Building Safe and Healthy Communities--to address the main socio-economic needs of the community. The goals of this 5-year plan include the reduction of violence and its effects and ensuring a safe and healthy place for the community. The goals of the plan are hoped to be achieved by creating an environment in the community that incorporates culturally appropriate and traditional values, and through linkages and collaboration among the Band's departments and agencies in order to empower the community members to create a safe community and healthy lifestyle on the Blood Reserve (Community Development 5 year Master Plan, 2005).

Because of the immediate and critical nature of the socio-economic challenges that the Blood Tribe people face, one member believed that with all of the socio-economic problems that the blood tribe face, climate change impacts would not make much of a difference in making conditions worse for the people, in fact, because they are facing many socio-economic problems, they could survive just about any kind of climate change impacts, especially changes that will be slow and light and over a long period of time.

<b>Future exposures – constraints</b>
• More frequent floods and droughts
• Lack of economic activity
• Band’s limited financial resources
• Legitimacy of Chief and Council and other Band entities
• Lack of vision and planning; need for an environmental department
• Lack of awareness between the connection of floods, drought, scarcity of water and climate change impacts

**Discussion of future exposures – constraints**

In light of the history of periodic floods and droughts in the area where the Blood Tribe is located, the occurrence of droughts and floods in the future is almost a certainty; however the frequency and intensity of these events remain to be determined. Also, Khandekar’s conclusion of a definite change in temperature in the region, warmer winters and possible cooler summers, especially the latter, will continue to pose challenges for BTAPs and KABC operations. Wetter conditions and especially the decrease in units of heat will influence whether BTAP can obtain two crops per year. The director of Fire and Emergency Services noted that after a dry winter and spring there have been significantly more incidences of grass fires than when winters and spring have been wetter. Controlling increased grass fires could add further stress on the limited financial resources of the community.

If floods were to increase in frequency, the Blood Tribe Fire and Emergency Services foresees the need to obtain some equipment to be better prepared: a small all terrain vehicle—which could be used to get into rough areas—and a boat in order to gain access those houses in the low lying areas. With regards to long term planning, there is a need for moving homes from the flood plains that are at risk of flooding. There are about 500 homes in the flood plains. In the event of long and intense droughts, the Blood Tribe community will be at risk of having non-native farmers discontinue the leasing of land. According to the Lands Department, there have been no cases so far whereby non-native farmers have cancelled their leases because of continuous years of drought. However, if in the future the intensity and length of the droughts increase, non-native farmers may reconsider the leasing of the land.

Although at present it appears that for the majority of the members of the Blood Tribe there are no problems with the supply and quality of water for domestic consumption and use, there are concerns from some that some wells are drying up. For families that depend on well water the drying up of wells could become a major issue of concern.

One councilor interviewed expressed that most members of the Band Council have a limited and short term vision for the future and hence no planning exist for future needs with regards to environmental exposures.

Another issue that will continue to challenge the community is the issue concerning land tenure. Some people believe that the current system of ownership of the land will continue to be difficult to change because those who have rights of occupancy to land are very much attached to this system and would not want it changed.

Unless efforts to significantly develop economic development initiative in the community are implemented, the current conditions of high unemployment, poverty, substandard housing and lack of opportunities for education and training will continue to affect the community. Also, for many community members, unresolved residential school experiences will prolong issues of drug and alcohol abuse, addictions and violence.

<b>Future adaptive capacities -- opportunities</b>
• Integrate issues of climate change and environment in school curriculum
• Women’s group eager to use a participatory action research approach for initiatives on to education and programs related to climate change
• Wetter conditions—no need for irrigation
• Diversify crops
• Diversify markets
• Investment in wind mills
• Tourism, bed and breakfasts, interpretive centre

**Discussion of future adaptive capacities – opportunities**

Although the current and future challenges for the community are many, there are positive signs and evidence of genuine efforts in the community that are beginning to address some of the challenges. The Community Development Five Year Master Plan and a recent Task Force to implement some of the strategies developed in the Master Plan are indeed very positive signs. These are concrete efforts that show the importance of addressing the major socio-economic issues in the community.

There are great opportunities of integrating issues concerning exposures to climate change in the school curriculum. One community teacher interviewed expressed that “education [...] should not just be about going to class and learning about reading, writing and arithmetic, and going to grade 12 and then going to university and postsecondary.” According to this teacher, there is a need to have in the school curriculum a basic education that includes issues “concerning water and climate change, parenting skills, and looking into the future.”

The catalyst of the women’s movement in the community suggested that the implementation of programs related to climate change should be spearheaded by the women’s group and using a participatory action research approach. In addition she believes that women in the community are better at taking the leadership in tackling these issues; therefore for her it is clear that there is a need for women to participate more in politics and decision making processes in the community. According to this leader of the women’s group, women would make better leaders because as mothers and wives they care about the children, not that the men don’t, but women have a more holistic perspective, and feels that they would place more emphasis on their ancestors’ beliefs and teachings concerned the “land.” For this leader, “the land is not for the present generation only but for future generations as well.”

There are opportunities for diversifying the current economic base of the community. The Band is exploring the possibility of investing in a windmill project, which is becoming a major

economic activity in southern Alberta; also, there are discussions on the potential establishment of a pasta plant on the reserve, which will provide employment opportunities for community members. BTAP and KABC are also contemplating opportunities to diversify their agricultural production including the production of organic beef and potato farming.

Other community members spoke of the potential of developing economic activities based on tourism: the construction of an interpretive centre and bed and breakfasts. An employee of Kainai Resources, the oil and gas corporation, believes that the corporation does not have to restrict its operations to the reserve's boundaries, or Alberta or even Canada, in fact, he believes that in the next ten years the operations of the company will certainly be expanding beyond the Blood Tribe.

## **Conclusions**

After about two months of collecting information on the Blood Tribe community and many hours of conversation with members of the community, it is not surprising to find in the analysis of the data (transcribe interviews) that for the majority of the Blood Tribe people the main challenges in the community are socio-economic ones. Drug and alcohol abuse, addictions, community and family violence, unemployment, lack of skills, and shortage of housing are examples of these challenges. These challenges provide evidence for the ICPC 2001 report assertions that the poorest and most marginalized sectors of society suffer and will suffer more from impacts of climate change because they are more exposed to climate hazards, have less adaptive capacity and therefore more vulnerable.

For the majority of the Blood Tribe people droughts appear to not have affected their supply and quality of water for current uses and domestic consumption, and therefore they are not of significant concern. However, the opposite climatic events, floods, are a different story. During years of flooding the impacts on the community have been quite severe, from the damage caused to homes to impacts on water quality. Not surprisingly, homes located in flood plains have flooded during times of heavy precipitation and swollen rivers; even homes located above the flood plains have also been damaged. Poor drainage around homes and homes in disrepair have been significantly damaged during the past flood events.

On the other hand, droughts have had major impacts on the Blood Tribe entities of BTAP and Kainai Agribusiness Corporation. During drought events, these two corporations have either had to adjust their operations or suffer crop losses. Although these corporations have had relative success in providing jobs to some members of the Blood Tribe community, future extreme climatic events, such as droughts and floods, can potentially negatively impact their operations and therefore job losses may occur.

Considering the limited financial resources of the Blood Tribe, the success of the entities of the Blood Tribe is critical for improving the socio-economic conditions of the community. Therefore, measures that minimize climate exposures and increase the adaptive capacity of these entities are key to minimizing the vulnerability of the community to climate change impacts.

Perhaps due to the more obvious and immediate nature of the socio-economic challenges that the community faces, issues of climate change impacts do not appear to be of great concern for most of the people interviewed. However, the fact that they are not aware or are not concerned about the current and future impacts of climate change adds to the vulnerability of the community because adaptation measures are not prioritized.

Similarly, the various departments' programs and activities address and give priority to present socio-economic needs in the community. A planning entity/department in the community's governance structure could provide a very much needed long term vision and integrated approach to solutions for the socio-economic and environmental challenges that the community now face and will be facing.



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**Appendix: 1**

**Staff of the different Blood Tribe departments and agencies interviewed:**

Blood Tribe community liaison  
Director, Department of Economic Development  
Manager, Environment, Department of Lands  
Flood victims coordinator, Department of Housing  
Director, Kanai agribusiness  
Coordinator victim's services, Police Department  
Environment, Department of Lands  
Director, Blood Tribe Public Relations  
Department of Public Works  
Editor, Community Newspaper  
Director, Department of Health  
Blood Tribe Council Member  
Elementary School Teacher  
Instructor, Red Crow College  
Operations manager, Blood Tribe Agricultural Project (BTAP)  
Researcher, Blood Tribe Tribal Government  
Director, Department of Economic Development  
Director, owner, of community radio station  
Manager, Department of Family and Community Support Services  
Manager, Kainai resources  
General Manager, Kainai Agri Business Corp.  
Director, Department of Lands  
Director, Wellness Centre  
Director Emergency Services and Fire department  
Officer, Department of Lands  
Manager, Department of Social Development  
Manager, Department of Housing

Interviewed nine members of three of the communities on reserve: Stand off, Old Agency and Lavern

Focus group (3 instructors/researches at Red Crow College)

## Appendix II: Full list of current and future exposures and adaptive capacities of the Blood Tribe

<b>Current Exposures and Adaptive Capacities</b>
<b>Current Exposures:</b>
<b>Environment</b>
<ul style="list-style-type: none"> <li>• Climate <ul style="list-style-type: none"> <li>○ Temperature</li> <li>○ Droughts (2001: costs</li> <li>○ Floods (1995, 2002, 2005: housing costs \$8 million (2002); 2005, 397 homes affected, estimated costs \$ 6.5 million</li> </ul> </li> </ul>
• BSE
• Water quality
<b>Economic:</b>
• Access to capital
• Lack of infrastructure
• Lack of economic activity
• High unemployment
• Poverty
• Shortage of housing
• Overcrowding
• Lack of education, skills and trades
• Land tenure
• Land disputes
• Migration off reserve
• Limited agriculture activity
• Dependence on non-native farmers
<b>Social:</b>
• Drug and alcohol abuse
• Addictions
• Community and family violence
• Problems in town sites
• Gangs
• Lack of recreation programs
• Lack of parenting skills
• Diabetes and cancer
• Influence of modern living
• High birthrate
• Racism, discrimination
• Patriarchy
• Welfare dependency
• Fetal alcohol syndrome
• Child neglect

• Erosion of traditional values, beliefs and principles
• Lack of communication
• Loss of social cohesion and networks
• Consumerism
• Loss of pride and dignity
• Unresolved issues of abuse and victimization
<b>Institution</b>
• Institutional policies
○ Indian Act
○ Residential schools
○ Social Welfare
• Federal and provincial agreements
• Elective system
• Chief and council legitimacy and credibility (mistrust)
• Apparent weak leadership, (Chief and council and other leaders)
• Accountability and transparency
• Nepotism
• Establishment of town sites
• Negative influence of traditional societies
<b>Current Adaptive Capacities:</b>
<b>Water management</b>
• Water conservation
• Boil water, buy bottle water, use of water filters
• Buy water for cisterns from private supplier
• Dugouts filled in the spring by cattle and horse ranchers
• Flood mitigation measures: improve drainage around homes, protect furnace from water damage
<b>Financial</b>
• Move off reserve for employment, education and training opportunities
• Move back to reserve for family support and no taxes on income
• Engage in informal economy
• Engage in small businesses
• Buy groceries in bulk
• Hunt and fish to supplement food
• Lease land to non-native farmers
• Coop of bus drivers to engage in small business
• Crop sharing 2-3 times more income than leasing
• Couples may be having more children to obtain more income from social services
• Couples are having less children than before for economic reasons
<b>Institution Internal</b>
• Water quality testing
• Waive water fees for elderly and handicapped
• Housing, Public Works, Emergency Services better prepared for 2005 floods

<ul style="list-style-type: none"> <li>• Relocation of some homes from flood plains</li> </ul>
<ul style="list-style-type: none"> <li>• Kainai Resources trucks polluted water off reserve</li> </ul>
<ul style="list-style-type: none"> <li>• Water advisory notification after floods</li> </ul>
<ul style="list-style-type: none"> <li>• Supplied bottled water to residents during the last flood</li> </ul>
<ul style="list-style-type: none"> <li>• Corporations seek input from elders regarding sustainable use of resources</li> </ul>
<ul style="list-style-type: none"> <li>• Negotiating with Indian Affairs the moving of homes away from flood plains</li> </ul>
<ul style="list-style-type: none"> <li>• Housing now assesses drainage capacity of lands for building new homes</li> </ul>
<ul style="list-style-type: none"> <li>• Housing coordinates with Public Works when building a new home, making sure the home will have enough water supply</li> </ul>
<ul style="list-style-type: none"> <li>• During the last flood event, many members of the community volunteered to help victims with shelter and food</li> </ul>
<ul style="list-style-type: none"> <li>• Coordination among various departments and the Red cross during flood emergencies</li> </ul>
<ul style="list-style-type: none"> <li>• Establishment of town sites to minimize costs of infrastructure</li> </ul>
<ul style="list-style-type: none"> <li>• Outreach and programs for finding employment</li> </ul>
<ul style="list-style-type: none"> <li>• Counseling and healing programs for alcohol and drug abuse, and residential school impacts</li> </ul>
<ul style="list-style-type: none"> <li>• Corporations have crop insurance</li> </ul>
<ul style="list-style-type: none"> <li>• Band pays for all home insurances</li> </ul>
<ul style="list-style-type: none"> <li>• Band lease land to non-native farmers</li> </ul>
<ul style="list-style-type: none"> <li>• If landowner owns rent or loans to the Band, Housing gets 25 percent off from land lease proceeds towards payment</li> </ul>
<ul style="list-style-type: none"> <li>• Income from irrigated lands 2-3 times as much than from dry lands</li> </ul>
<ul style="list-style-type: none"> <li>• Implementation of foot patrols</li> </ul>
<ul style="list-style-type: none"> <li>• Blackfoot language in schools to maintain language and culture</li> </ul>
<ul style="list-style-type: none"> <li>• Traditional societies help deal with alcohol and drug abuse through the traditional values and beliefs</li> </ul>
<ul style="list-style-type: none"> <li>• Development of a the “Blood Tribe Community Five Year Master Plan, 2005-2009: Building Safe and Healthy Communities” to reduce violence in the community and family violence, ensuring a safe and healthy community</li> </ul>
<ul style="list-style-type: none"> <li>• Establishment of a Task Force to implement initiatives towards the fulfillment of the of Community Master Plan, as well as other initiatives to promote community and individual healing</li> </ul>
<ul style="list-style-type: none"> <li>• Start up loans for small businesses</li> </ul>
<ul style="list-style-type: none"> <li>• Establishment of a Band liaison program to facilitate open communication between Chief and Council and the Blood Tribe people; sharing of information on the Band’s activities and make people aware of their rights</li> </ul>
<p><b>Institutions External</b></p>
<ul style="list-style-type: none"> <li>• Disaster relief for 2005 flood damage: homes, water pumps, oil and gas losses</li> </ul>
<ul style="list-style-type: none"> <li>• Religious groups in the community help residents with maintenance of homes, grocery shopping, and providing advise for educational opportunities, as well as help in dealing with alcohol and drug abuse</li> </ul>
<ul style="list-style-type: none"> <li>• The federal and provincial governments funded 1/3 each the establishment of the Blood Tribe Agricultural Project</li> </ul>
<ul style="list-style-type: none"> <li>• Alberta Environment communicates dam conditions with the Band during flood</li> </ul>

emergencies; “better” regulation of water flow may have lessened 2005 flood impacts
<ul style="list-style-type: none"> <li>• Programs and campaigns by the Health department about prevention of diabetes</li> </ul>
<b>Technology</b>
<ul style="list-style-type: none"> <li>• The Housing Department is negotiating with Indian Affairs of moving homes away from flood plains, but also exploring the possibility of lifting homes on to stilts, as some of the homeowners have requested</li> </ul>
<ul style="list-style-type: none"> <li>• When building a new home the Housing department conducts soil drainage capacity of the land to determine future risks of flooding</li> </ul>
<ul style="list-style-type: none"> <li>• BTAP’s irrigation pivots are all computerized for greater control and monitoring of water use</li> </ul>
<ul style="list-style-type: none"> <li>• Public Works uses chlorination and sand filtration to ensure good water quality</li> </ul>
<ul style="list-style-type: none"> <li>• The Fire and Emergency Services department has acquired hip gaiters, flood lights, generators to use during flood emergencies.</li> </ul>
<b>Other</b>
<ul style="list-style-type: none"> <li>• Change of diet to the consumption of healthier foods</li> </ul>
<ul style="list-style-type: none"> <li>• BTAP monitoring soil quality</li> </ul>
<ul style="list-style-type: none"> <li>• A strong women’s group in the community very active in demanding accountability and transparency from Chief and Council and other Band entities</li> </ul>
<ul style="list-style-type: none"> <li>• Lands Department requirement that non-native farmers</li> </ul>
<ul style="list-style-type: none"> <li>• Challenging the jurisdiction of provincial and federal governments over Blackfoot territory to assert claims of sovereignty</li> </ul>

<b>Future Exposures and Adaptive Capacities</b>
<b>Exposures - Constraints</b>
<ul style="list-style-type: none"> <li>• Lack of economic activity</li> </ul>
<ul style="list-style-type: none"> <li>• Limited financial resources</li> </ul>
<ul style="list-style-type: none"> <li>• Legitimacy of Chief and Council and other Band entities</li> </ul>
<ul style="list-style-type: none"> <li>• Nepotism</li> </ul>
<ul style="list-style-type: none"> <li>• Lack of vision, planning: need of a department that deals directly with environmental issues and the “big” picture</li> </ul>
<ul style="list-style-type: none"> <li>• More frequent floods and droughts</li> </ul>
<ul style="list-style-type: none"> <li>• Dependence on dry land farming</li> </ul>
<ul style="list-style-type: none"> <li>• Community dependence on non-native farmers</li> </ul>
<ul style="list-style-type: none"> <li>• Lack of awareness between the connection of floods, drought, scarcity of water and climate change impacts</li> </ul>
<ul style="list-style-type: none"> <li>• Lack of entrepreneurship, money management skills and infrastructure—roads, irrigation, for future agricultural projects</li> </ul>
<ul style="list-style-type: none"> <li>• Lack of soil and benchmark to determine agricultural capabilities</li> </ul>
<ul style="list-style-type: none"> <li>• Wetter conditions—excess moisture for crops</li> </ul>
<ul style="list-style-type: none"> <li>• Lower temperatures—not enough heat units for crops</li> </ul>
<ul style="list-style-type: none"> <li>• Unresolved land tenure issues</li> </ul>
<ul style="list-style-type: none"> <li>• Lack of wills contribute to land disputes</li> </ul>
<ul style="list-style-type: none"> <li>• Need for more equipment to deal with future floods: small all terrain vehicles and a boat to access homes in low lying areas</li> </ul>

<ul style="list-style-type: none"> <li>• Need to move homes from flood plains (about 500 home)</li> </ul>
<ul style="list-style-type: none"> <li>• Unresolved water rights and management issues with the provincial and federal governments</li> </ul>
<p><b>Adaptive Strategies - Opportunities</b></p>
<ul style="list-style-type: none"> <li>• Integrate issues of climate change, environment in school curriculum</li> </ul>
<ul style="list-style-type: none"> <li>• Women’s group eager to spearhead education and implementation program related to climate change through a participatory action research approach</li> </ul>
<ul style="list-style-type: none"> <li>• Wetter conditions—no need for irrigation</li> </ul>
<ul style="list-style-type: none"> <li>• Diversify crops</li> </ul>
<ul style="list-style-type: none"> <li>• Diversify markets</li> </ul>
<ul style="list-style-type: none"> <li>• Invest in wind mills</li> </ul>
<ul style="list-style-type: none"> <li>• Potential establishment of a pasta plant</li> </ul>
<ul style="list-style-type: none"> <li>• Collective farming</li> </ul>
<ul style="list-style-type: none"> <li>• Continuation of counseling and healing programs</li> </ul>
<ul style="list-style-type: none"> <li>• More participation of women in politics</li> </ul>
<ul style="list-style-type: none"> <li>• Expansion of Kainai Resources (oil and gas) operations beyond reserve boundaries</li> </ul>
<ul style="list-style-type: none"> <li>• Continuation of joint ventures with off reserve entities</li> </ul>
<ul style="list-style-type: none"> <li>• Tourism, bed and breakfasts, interpretive centre</li> </ul>
<ul style="list-style-type: none"> <li>• Development of environmental regulations particular to the Blood Tribe based on values and ethics of the community</li> </ul>
<ul style="list-style-type: none"> <li>• Radio station provide a vehicle for communication, social cohesion and a voice for peoples concern</li> </ul>