

# Alberta Irrigation Information 2007



# ALBERTA IRRIGATION INFORMATION

FACTS AND FIGURES FOR THE YEAR 2007

WATER RESOURCES BRANCH  
IRRIGATION AND FARM WATER DIVISION

JUNE 2008

For more information, please contact:  
Bob Winter, Alberta Agriculture and Rural Development,  
100, 5401- 1st Avenue South  
Agriculture Centre,  
Lethbridge, Alberta T1J 4V6  
Telephone (403) 382-4424  
bob.winter@gov.ab.ca

For an electronic version of this report or additional  
information visit:

Website: [www.agric.gov.ab.ca](http://www.agric.gov.ab.ca)

Select: Information ⇒ Soil/Water/Air ⇒ Irrigation

## INTRODUCTION

This report is prepared by Alberta Agriculture and Rural Development. The purpose of this booklet is to provide a statistical overview of irrigation information and data relating primarily to the thirteen irrigation districts situated in southern Alberta, but also includes irrigation water use across the whole province.

## LIST OF FIGURES

Figure 1. Irrigated Crops within the 13 Irrigation Districts in Southern Alberta (1997 - 2007).....	3
Figure 2. Acres of Three Major Irrigated Specialty Crops – Dry Beans, Potatoes and Sugar Beets .....	3
Figure 3. Irrigated Crops within the 13 Irrigation Districts .....	5
Figure 4. On-farm Irrigation Methods within the 13 Irrigation Districts .....	5
Figure 5. Growth in Irrigation Across Alberta (1970 - 2007) .....	11
Figure 6. Irrigation District Annual Diversions (1976 - 2007).....	11
Figure 7. Irrigation District Water Use and Allocation (1976 - 2007) .....	12
Figure 8. Irrigation District Water Use Productivity (1980 - 2007).....	12
Figure 9. Density of Irrigation Area Relative to Infrastructure .....	15
Figure 10. Irrigation District Infrastructure Condition Rating .....	15
Figure 11. Private Irrigation in Alberta .....	19
Figure 12. Lethbridge Optimum Crop Water and Net Irrigation Requirements .....	20
Figure 13. Lethbridge Corn Heat Units (1997 - 2007).....	20
Figure 14. Bow Island Optimum Crop Water and Net Irrigation Requirements .....	21
Figure 15. Bow Island Corn Heat Units (1997 - 2007) .....	21
Figure 16. Brooks Optimum Crop Water and Net Irrigation Requirements.....	22
Figure 17. Brooks Corn Heat Units (1997 - 2007) .....	22
Figure 18. Historical Irrigation Energy Costs .....	23
Figure 19. Alberta's Irrigation Districts .....	24

## LIST OF TABLES

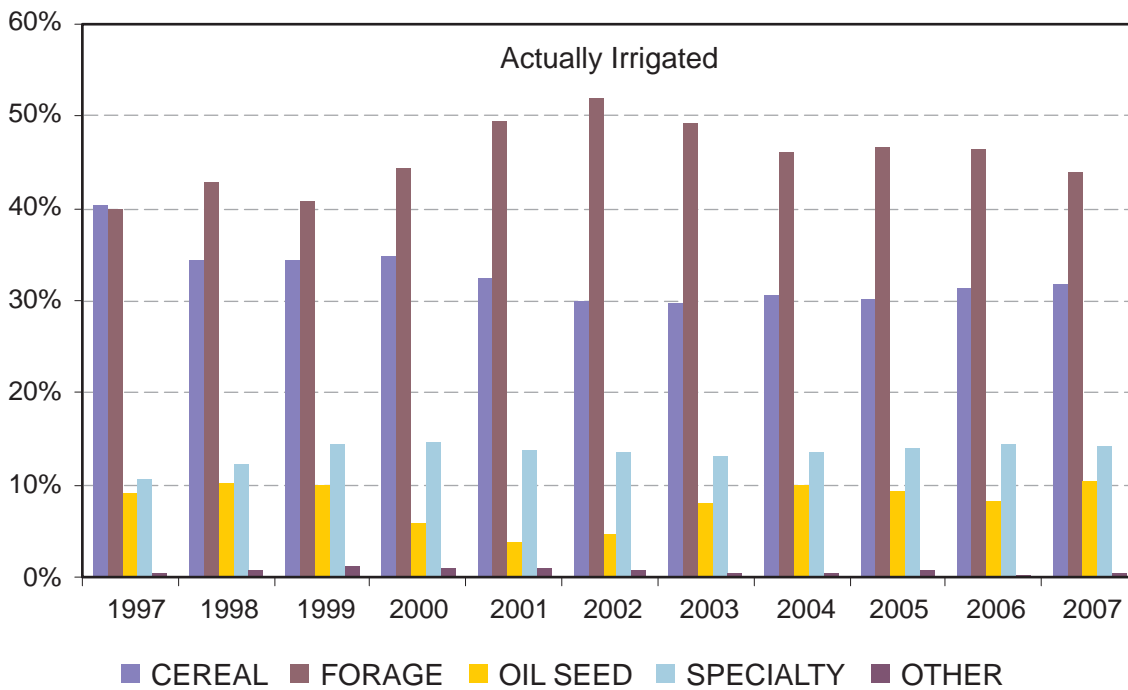
Table 1. Details of Crops Grown within the 13 Irrigation Districts .....	1
Table 2. Summary of Crops Grown within the 13 Irrigation Districts .....	2
Table 3. Alberta Potato Acreage.....	4
Table 4. Alberta Processed Vegetable Acreage .....	4
Table 5. On-farm Irrigation Method Summary within the 13 Irrigation Districts.....	6
Table 6. Assessment Roll Acres within the 13 Irrigation Districts.....	7
Table 7. Acres Actually Irrigated within the 13 Irrigation Districts.....	8
Table 8. Irrigation Districts Annual Water Rates.....	9
Table 9. Alberta Irrigation Districts Annual Irrigation Diversions.....	10
Table 10. Conveyance Infrastructure by Type of Works.....	13
Table 11. Irrigation District Infrastructure by Length and Replacement Cost .....	14
Table 12. Summary of Condition Assessments.....	15
Table 13. Irrigation District Reservoirs .....	16
Table 14. Provincially Owned and Operated Reservoirs.....	17
Table 15. Hydroelectric Plants Associated with Water Distribution Works .....	17
Table 16. Private Water Licences for Irrigation in Alberta .....	18
Table 17. Historical Rainfall in Southern Alberta .....	23
Table 18. Historical Corn Heat Units in Southern Alberta .....	23
Table 19. Frost Free Period (0° C) in Southern Alberta .....	23
Table 20. Frost Free Period (-2° C) in Southern Alberta .....	23
Table 21. Energy Type Used in the Irrigation Districts .....	24



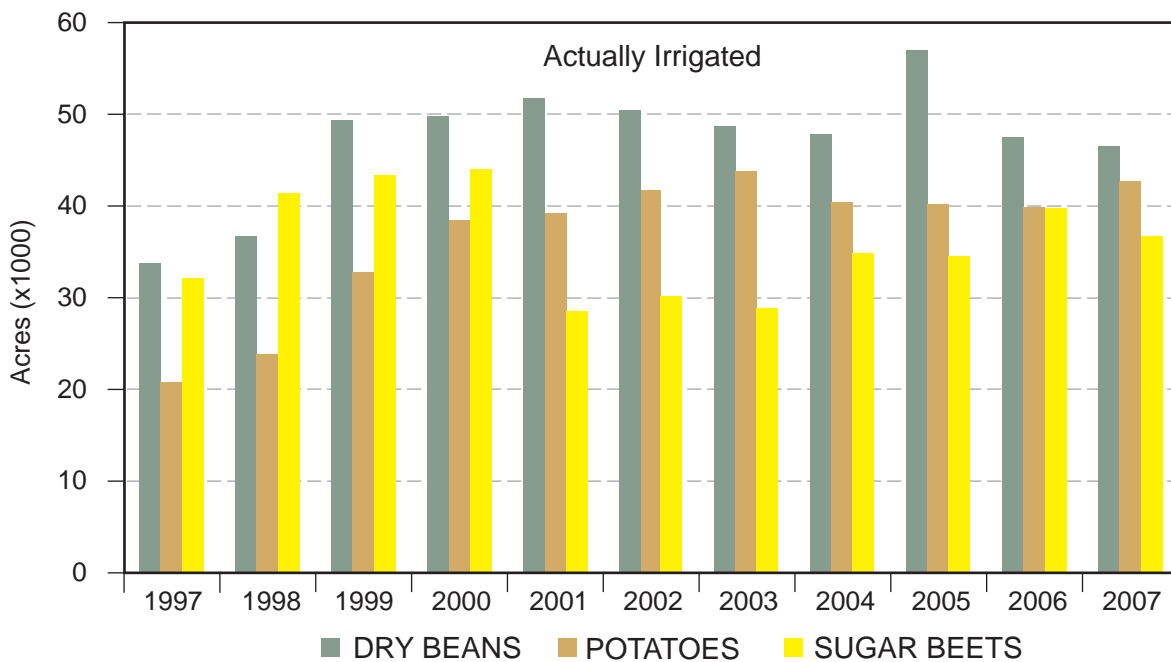
**Table 2. Summary of Crops Grown within the 13 Irrigation Districts**

CROPS	IRRIGATION DISTRICTS													TOTAL ASSESSMENT ROLL ACRES
	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	
Cereals	220	80,349	77,332	442	44,669	6,853	474	0	17,255	127,349	23,242	15,553	23,187	<b>416,925</b>
	5.9%	34.7%	27.2%	8.5%	25.4%	37.4%	13.0%	0.0%	37.3%	34.1%	28.1%	45.7%	24.1%	30.7%
Forages	2,141	57,012	156,494	4,276	112,151	9,599	2,995	1,101	24,547	113,236	25,047	15,390	61,977	<b>585,966</b>
	57.9%	24.6%	55.0%	82.2%	63.8%	52.5%	82.0%	100.0%	53.0%	30.4%	30.2%	45.2%	64.5%	43.2%
Oil Seeds	0	27,970	26,970	0	11,172	1,341	0	0	4,240	46,538	3,213	2,409	6,137	<b>129,990</b>
	0.0%	12.1%	9.5%	0.0%	6.4%	7.3%	0.0%	0.0%	9.2%	12.5%	3.9%	7.1%	6.4%	9.6%
Specialty Crops	0	44,840	21,708	0	5,533	507	0	0	264	69,285	28,153	633	4,746	<b>175,668</b>
	0.0%	19.4%	7.6%	0.0%	3.1%	2.8%	0.0%	0.0%	0.6%	18.6%	34.0%	1.9%	4.9%	13.0%
Other	1,338	21,542	1,915	487	2,389	0	185	0	0	16,588	3,149	59	44	<b>47,696</b>
	36.2%	9.3%	0.7%	9.4%	1.4%	0.0%	5.1%	0.0%	0.0%	4.4%	3.8%	0.2%	0.0%	3.5%
<b>TOTAL ASSESSMENT ROLL ACRES</b>	<b>3,699</b>	<b>231,713</b>	<b>284,419</b>	<b>5,205</b>	<b>175,913</b>	<b>18,300</b>	<b>3,654</b>	<b>1,101</b>	<b>46,306</b>	<b>372,996</b>	<b>82,804</b>	<b>34,044</b>	<b>96,091</b>	<b>1,356,245</b>

Note: Assessment roll acres include "irrigation", "terminable" and "annual" acres. Only "irrigation" and "terminable" acres are considered in district expansion limits.



**Figure 1. Irrigated Crops within the 13 Irrigation Districts in Southern Alberta (1997 - 2007)**



**Figure 2. Acres of Three Major Irrigated Specialty Crops – Dry Beans, Potatoes and Sugar Beets within the 13 Irrigation Districts in Southern Alberta (1997 - 2007)**

**Table 3. Alberta Potato Acreage** (seeded acres)

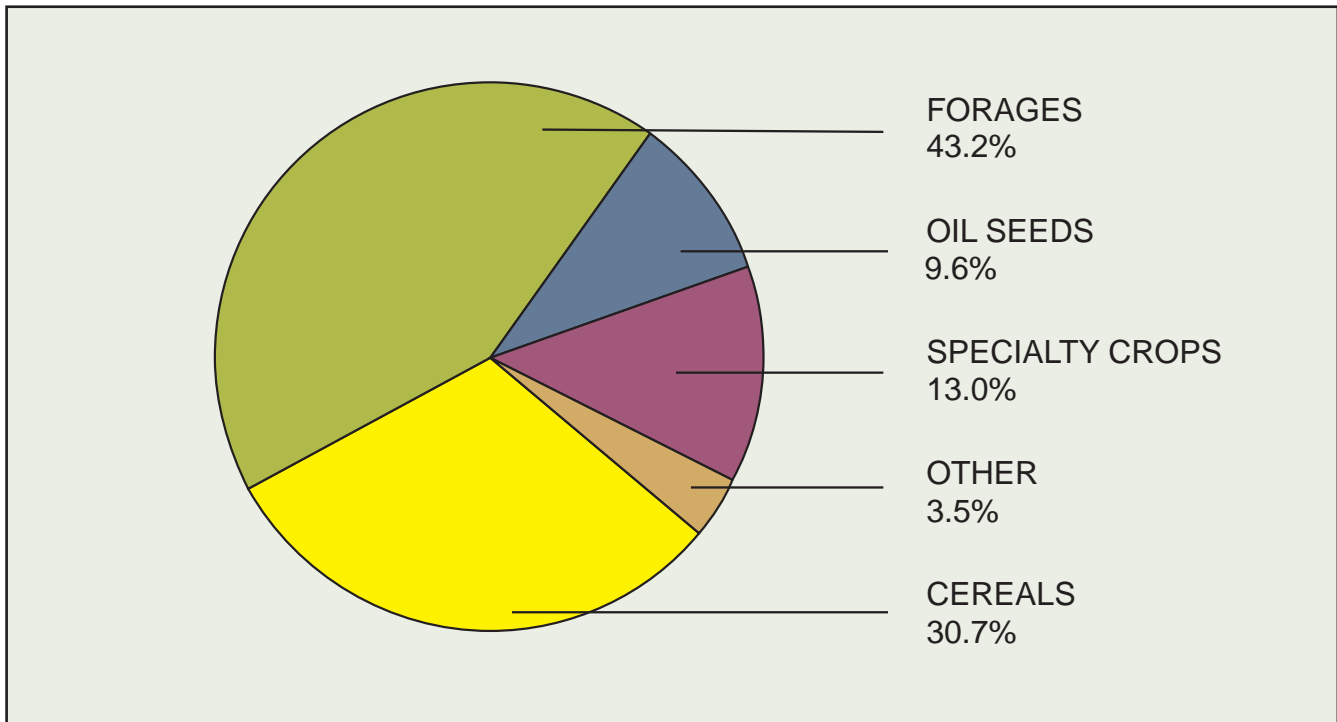
Year	Process	Seed	Table	Total
1990	15,383	5,117	7,882	28,382
91	12,300	5,735	6,509	24,544
92	9,700	5,515	6,970	22,185
93	13,115	5,850	6,115	25,080
94	13,210	7,390	6,075	26,675
1995	13,450	7,400	5,765	26,615
96	13,870	8,485	5,085	27,440
97	12,225	9,430	5,025	26,680
98	12,800	10,250	5,100	28,150
99	24,616	10,886	4,698	40,200
2000	32,563	12,037	4,331	48,931
01	34,877	12,595	3,883	51,355
02	37,296	14,644	3,241	55,181
03	40,960	13,690	4,125	58,775
04	38,077	11,062	3,508	52,647
2005	38,508	10,531	2,567	50,606
06	36,428	11,878	1,615	49,921
07	40,535	9,729	2,245	52,509

Notes: – data are obtained from the Potato Growers of Alberta  
– the above acreage is from the whole province of Alberta, but does not include the potato acreage from market gardens of less than 5 acres  
– typically, the processed and the table potatoes are irrigated

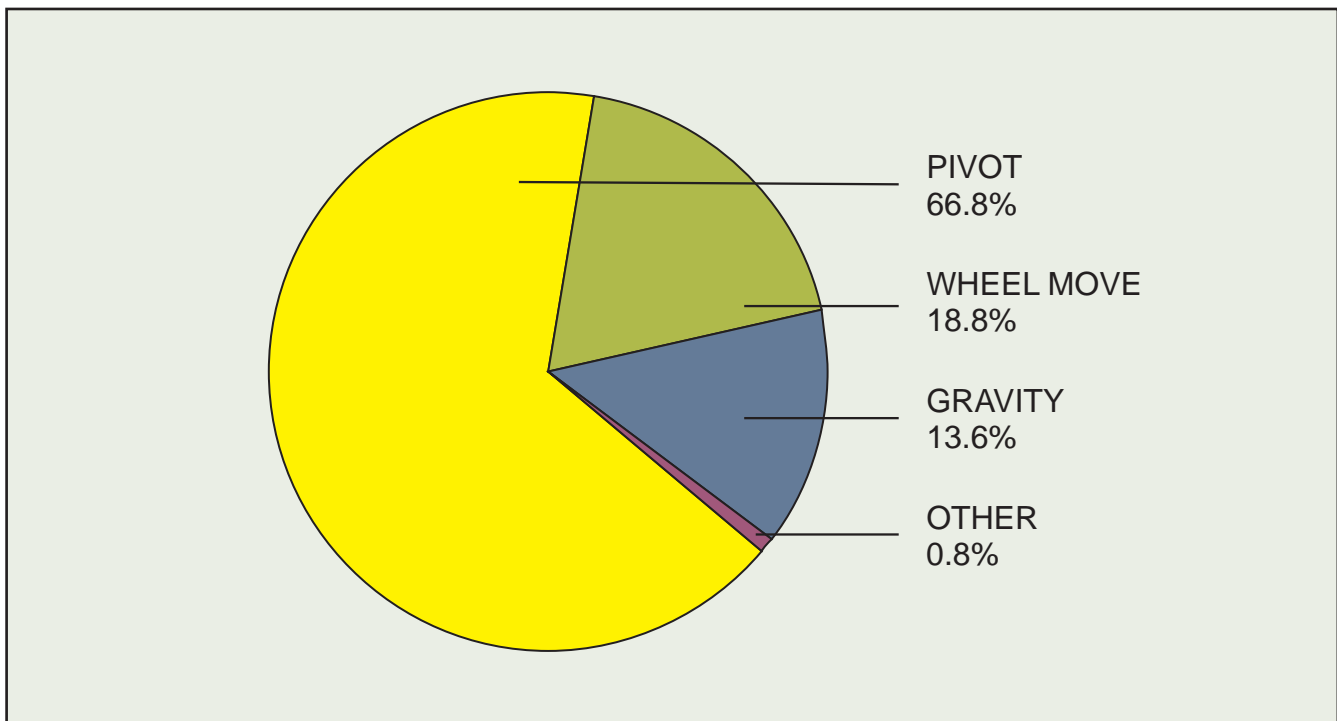
**Table 4. Alberta Processed Vegetable Acreage** (seeded acres)

Year	Carrots	Corn	Peas
1995	740	3,884	3,163
96	710	3,869	2,775
97	367	3,044	3,125
98	856	2,818	2,983
99	1,170	2,442	2,646
2000	854	2,577	2,563
01	994	3,992	3,967
02	479	3,712	4,053
03	441	4,329	4,534
04	1,009	3,365	4,534
2005	647	2,068	3,346
06	817	3,055	4,675
07	518	3,395	4,750

Notes: – data are obtained from the Alberta Vegetable Growers (Processing)  
– processing is defined as fresh, canned, or frozen vegetables for human consumption  
– all acres are irrigated



**Figure 3. Irrigated Crop Mix within the 13 Irrigation Districts in Southern Alberta**



**Figure 4. On-farm Irrigation Method Mix within the 13 Irrigation Districts in Southern Alberta**



**Table 5. On-farm Irrigation Method Summary within the 13 Irrigation Districts in Southern Alberta (acres)**

	IRRIGATION METHOD	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	Individual Method Total	Total Acres Covered	
<b>PIVOT SPRINKLER</b>	Pivot High Pressure	374	51,240	36,562	747	8,277	3,216		40	10,193	10,536	13,343	6,897	28,803	170,228	<b>864,758</b>	
	Pivot High Pressure - Corner arm		3,289	2,950		4,424				567	1,408	1,203		364	14,205		
	Pivot Medium Pressure			3,859		696				362					4,917		
	Pivot Medium Pressure - Corner Arm														0		
	Pivot Low Pressure		91,529	104,238	180	44,083	4,639				5,534	233,527	34,172	3,938	21,487		543,327
	Pivot Low Pressure - Corner Arm		12,552	6,647		58,246					965	37,950	9,745	141	893		127,139
	Linear - High Pressure					873					100		110				1,083
	Linear - Low Pressure			124	2,034		262				139	918	249		134		3,860
	percent of total -----	15.8%	75.2%	55.0%	19.5%	66.9%	42.9%	0.0%	3.6%	38.6%	81.2%	73.1%	52.8%	53.6%	66.8%	<b>66.8%</b>	
<b>WHEEL MOVE</b>	Wheel Move -Two Laterals	1,157	14,490	29,447	1,251	24,351	6,647	417		19,931	45,615	16,181	3,039	13,507	176,033	<b>242,921</b>	
	Wheel Move - Four Laterals		12,593	10,961	424	28,612	225			3,374	5,941	2,041	346	2,371	66,888		
		percent of total -----	49.0%	12.8%	14.2%	35.2%	30.3%	37.6%	11.9%	0.0%	50.3%	14.7%	22.6%	16.3%	16.5%		18.8%
<b>GRAVITY</b>	Gravity - Developed - No Control		5,625	55,441	135	319	3,439		493	1,357	404	601	93	215	68,122	<b>175,332</b>	
	Gravity - Developed - Controlled		13,753	15,803	85	1,073			568	1,587	1,065	1,333	2,253	24,896	62,416		
	Gravity - Undeveloped - Flood	474	5,592	15,467	1,771	1,077		3,093		1,235	10,658	1,288	3,976	90	44,721		
	Gravity - Undeveloped - Subsurface					3					70				73		
		percent of total -----	20.1%	11.8%	30.5%	41.8%	1.4%	18.8%	88.1%	96.4%	9.2%	3.5%	4.0%	30.4%	26.1%		13.6%
<b>OTHER</b>	Volume Gun - Stationary										143	10		175	472	<b>11,343</b>	
	Volume Gun - Traveller		40	325		144					189	46		1,083	1,683		
	Solid Set (underground sprinkler)			8		592				95	254			217	1,166		
	Hand Move (sprinkler above ground)	356	19	677	170	1,001	114			739	1,441	134	96	924	5,671		
	Micro - Spray - Sprinkler		215			41				42	28	15		83	424		
	Micro - Drip - Trickle							20			7	115		1,185	1,327		
	Other Application Use					601									601		
	percent of total -----	15.1%	0.1%	0.4%	3.6%	1.4%	0.7%	0.0%	0.0%	1.9%	0.6%	0.3%	0.5%	3.8%	0.9%	<b>0.9%</b>	
<b>Total Acres Irrigated</b>		<b>2,361</b>	<b>211,061</b>	<b>284,419</b>	<b>4,763</b>	<b>174,673</b>	<b>18,300</b>	<b>3,510</b>	<b>1,101</b>	<b>46,297</b>	<b>350,192</b>	<b>80,471</b>	<b>20,779</b>	<b>96,427</b>	<b>1,294,354</b>	<b>1,294,354</b>	

**Table 6. Assessment Roll Acres within the 13 Irrigation Districts**

YEAR	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	TOTAL
1970	6,673	23,783	199,729	4,523	89,360	8,506	3,719	2,068	20,847	197,540	57,484	33,353	44,006	691,591
71	6,548	24,071	200,459	4,343	89,883	8,105	3,719	2,068	20,349	199,572	59,172	33,353	43,949	695,591
72	3,131	24,196	202,225	4,305	89,379	9,042	3,719	2,068	20,269	204,051	59,833	33,353	43,899	699,470
73	3,081	26,756	205,481	4,305	98,206	9,182	3,719	2,068	20,647	216,136	61,692	33,353	43,919	728,545
74	3,081	118,741	207,245	4,421	105,958	9,077	3,717	2,068	23,257	237,244	63,823	34,034	44,219	856,885
1975	3,081	131,764	212,982	4,430	108,106	8,871	3,720	2,068	26,920	252,019	62,692	33,358	45,311	895,322
76	3,081	139,665	219,405	4,430	109,629	9,069	3,720	2,069	28,350	262,231	66,423	33,358	52,190	933,620
77	3,081	147,795	224,967	4,430	111,735	9,480	3,720	1,319	31,626	274,301	68,178	33,617	68,549	982,798
78	3,104	153,120	227,202	4,431	111,947	10,737	3,717	1,776	31,570	284,151	68,815	33,651	71,603	1,005,824
79	3,104	150,160	227,254	4,477	111,924	10,797	3,710	1,776	31,524	287,329	69,828	33,546	74,525	1,009,954
1980	3,104	164,889	229,110	4,477	112,562	10,797	3,710	1,776	33,681	293,126	70,368	33,544	76,029	1,037,173
81	3,096	174,641	230,553	4,457	113,845	10,963	3,710	1,776	35,385	299,548	70,819	33,417	79,633	1,061,843
82	3,127	179,613	239,651	4,423	114,919	11,647	3,710	1,716	39,130	301,446	71,529	33,383	81,864	1,086,158
83	2,916	181,174	244,099	4,440	116,745	12,357	3,710	1,776	39,148	313,728	72,623	33,448	81,480	1,107,644
84	3,051	183,529	244,243	4,440	117,869	13,047	3,710	1,776	41,729	319,712	72,971	33,534	82,974	1,122,585
1985	3,399	185,034	246,658	4,460	118,883	14,218	3,710	1,319	44,990	328,063	73,063	33,854	84,245	1,141,896
86	3,444	189,202	247,804	4,460	126,307	14,579	3,690	1,210	44,950	331,493	73,314	34,336	83,924	1,158,713
87	3,444	190,263	249,372	4,479	128,867	14,885	3,690	1,210	44,407	334,285	73,654	34,450	85,405	1,168,411
88	3,435	192,424	252,432	4,709	131,565	15,030	3,690	1,210	44,196	339,091	73,602	34,615	86,198	1,182,197
89	3,500	194,977	256,353	4,729	133,620	15,569	3,700	1,210	44,144	342,451	74,898	34,818	87,242	1,197,211
1990	3,500	199,980	260,523	4,742	135,632	15,099	3,728	1,210	44,044	349,849	74,568	34,769	88,480	1,216,124
91	3,527	201,070	263,889	4,762	137,719	16,665	3,728	1,210	44,305	350,108	77,740	34,687	88,112	1,227,522
92	3,519	202,499	269,462	4,800	139,688	16,391	3,734	1,210	44,279	351,393	78,177	34,868	87,949	1,237,969
93	3,519	204,466	270,008	4,780	138,095	16,775	3,737	1,210	44,229	353,039	78,412	34,772	87,453	1,240,495
94	3,519	205,983	272,024	4,780	141,517	16,785	3,727	1,210	44,219	353,466	78,629	34,438	86,725	1,247,022
1995	3,519	207,652	273,848	4,780	143,608	17,908	3,727	1,210	43,678	356,618	78,676	34,428	86,942	1,256,594
96	3,519	209,560	276,405	4,760	147,241	18,169	3,727	1,210	44,315	358,399	79,069	34,506	87,258	1,268,138
97	3,519	209,686	279,966	4,760	150,843	18,300	3,713	1,210	44,810	360,659	79,788	34,353	86,284	1,277,891
98	3,519	210,690	280,573	4,769	153,365	18,300	3,722	1,210	45,533	360,780	80,455	34,352	86,771	1,284,039
99	3,609	211,152	281,107	4,769	154,886	18,300	3,722	1,210	45,751	367,161	81,984	34,352	88,131	1,296,134
2000	3,609	210,352	281,720	4,763	157,825	18,300	3,722	1,210	45,888	369,771	82,257	34,329	87,236	1,300,982
01	3,611	209,927	281,710	4,763	163,878	18,300	3,712	1,210	46,235	370,925	82,261	34,329	87,924	1,308,785
02	3,611	214,279	282,516	4,763	163,870	18,300	3,712	1,210	46,304	371,319	82,284	34,423	96,512	1,323,103
03	3,611	214,585	282,961	4,763	164,288	18,320	3,712	1,210	46,304	372,114	82,562	34,423	96,646	1,325,499
04	3,611	216,533	283,625	4,763	175,568	18,320	3,712	1,210	46,296	372,979	82,515	34,093	96,535	1,339,760
2005	3,608	219,733	283,706	4,763	175,628	18,320	3,561	1,210	46,296	372,619	82,533	34,081	96,415	1,342,473
06	3,608	221,677	284,074	4,763	175,636	18,320	3,561	1,101	46,306	372,618	82,527	34,025	96,100	1,344,316
07	3,699	231,713	284,419	5,205	175,913	18,300	3,654	1,101	46,306	372,996	82,804	34,044	96,091	1,356,245

Notes: – BRID increased 94,000 acres in 1974 with the amalgamation of the BRID and the Bow River Project (Federal).

– Assessment roll acres include "irrigation", "terminable" and "annual" acres. Only "irrigation" and "terminable" acres are considered in district expansion limits.



**Table 8. Irrigation Districts Annual Water Rates** (\$ per assessed acre per year)

YEAR	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID
1982	\$2.50	\$6.50	\$6.50	\$5.00	\$12.00	\$6.00	\$3.00	\$3.00	\$6.25	\$12.00	\$10.75	\$3.25	\$6.30
83	\$5.00	\$9.00	\$6.75	\$8.00	\$12.50	\$6.00	\$5.20	\$3.00	\$6.50	\$12.00	\$11.00	\$3.25	\$6.50
84	\$6.00	\$10.00	\$7.00	\$8.00	\$12.50	\$6.00	\$5.20	\$3.00	\$6.50	\$12.00	\$11.00	\$3.25	\$6.75
1985	\$6.00	\$10.00	\$7.00	\$7.50	\$12.50	\$6.00	\$5.20	\$4.00	\$6.50	\$12.00	\$11.00	\$3.25	\$7.25
86	\$6.00	\$10.00	\$7.25	\$7.50	\$12.50	\$6.00	\$5.20	\$6.00	\$6.50	\$13.00	\$11.00	\$3.25	\$7.47
87	\$6.00	\$10.00	\$7.50	\$7.50*	\$12.50*	\$6.00	\$5.20	\$6.00	\$6.50	\$13.00	\$11.00	\$3.25	\$7.47
88	\$7.00*	\$10.00	\$7.50	\$8.00*	\$12.50*	\$6.00	\$5.20	\$6.00	\$6.50	\$13.00	\$12.00	\$3.25	\$7.70
89	\$7.00*	\$10.00	\$8.00	\$8.00*	\$13.50*	\$6.00	\$6.20	\$6.00	\$6.50	\$13.25	\$12.00	\$3.50	\$8.00
1990	\$8.00*	\$10.00	\$8.50	\$8.00*	\$13.50*	\$6.00	\$6.20	\$6.00	\$6.50	\$14.00	\$12.00	\$3.75	\$11.00
91	\$8.00*	\$10.00	\$8.50	\$7.00*	\$13.50*	\$6.00*	\$6.20	\$6.00	\$6.50	\$14.00	\$12.00	\$4.00	\$13.00
92	\$8.00*	\$11.00	\$8.50	\$7.00*	\$14.00*	\$6.00*	\$6.20	\$6.00	\$6.50	\$14.00	\$12.00	\$4.25	\$13.50
93	\$8.00*	\$11.00	\$8.50	\$7.00*	\$14.00*	\$6.00*	\$6.20	\$6.00	\$6.50	\$14.25	\$12.00	\$4.50	\$13.50*
94	\$8.00*	\$12.00	\$8.50	\$7.00*	\$14.00*	\$6.50*	\$6.20	\$6.00	\$7.00	\$15.25	\$12.00	\$4.50	\$14.75*
1995	\$8.00*	\$13.00	\$8.50	\$8.00*	\$14.00*	\$7.00*	\$8.00	\$8.50	\$7.00	\$16.15	\$12.00	\$4.50	\$14.75*
96	\$8.00*	\$13.00	\$8.50	\$8.00*	\$14.00*	\$7.00*	\$8.00	\$8.50	\$7.50	\$16.15	\$12.00	\$6.50	\$15.25*
97	\$8.00*	\$13.00	\$7.50	\$8.00*	\$14.00*	\$7.00*	\$8.00	\$8.50	\$7.50	\$16.15	\$12.00	\$6.75	\$15.25*
98	\$8.00*	\$13.50	\$7.50	\$8.00*	\$14.00*	\$7.50*	\$8.00	\$8.50	\$8.50	\$16.65	\$12.00	\$7.00	\$16.25*
99	\$8.00*	\$14.50	\$7.50	\$8.00*	\$14.00*	\$7.50*	\$8.00	\$8.50	\$8.50	\$17.00	\$12.00	\$7.25	\$16.25*
2000	\$8.00*	\$14.50	\$7.50	\$8.00*	\$14.00*	\$7.50*	\$8.00	\$8.50	\$8.50	\$17.50	\$12.00	\$7.50	\$16.25*
01	\$8.00*	\$14.50	\$7.50	\$8.00*	\$14.00*	\$7.50*	\$8.00	\$8.50	\$8.50	\$17.90	\$11.00	\$7.50	\$16.25*
02	\$8.00*	\$14.50	\$7.50	\$8.00*	\$14.00*	\$7.50*	\$8.00	\$6.00	\$8.50	\$16.90	\$11.00	\$7.75	\$16.25*
03	\$9.00*	\$15.00	\$0.00	\$10.00*	\$14.00*	\$8.00*	\$8.00	\$13.58	\$8.50	\$17.90	\$11.00	\$8.25	\$16.25*
04	\$9.00*	\$14.50	\$0.00	\$11.00*	\$14.00*	\$8.00*	\$8.00	\$13.58	\$9.50	\$17.90	\$11.00	\$8.25	\$16.25*
2005	\$9.00*	\$14.50	\$0.00	\$11.00*	\$14.00*	\$8.50*	\$10.00	\$13.58	\$9.50	\$17.90	\$11.00	\$8.25	\$16.25*
06	\$9.00*	\$14.50*	\$0.00	\$11.00*	\$14.00*	\$8.50*	\$10.00	\$15.00	\$9.50*	\$18.50	\$11.00	\$8.25	\$16.25*
07	\$9.00*	\$14.50*	\$0.00	\$11.00*	\$14.00*	\$9.00*	\$10.00	\$18.00	\$9.50*	\$18.75	\$8.00	\$8.25	\$16.25*

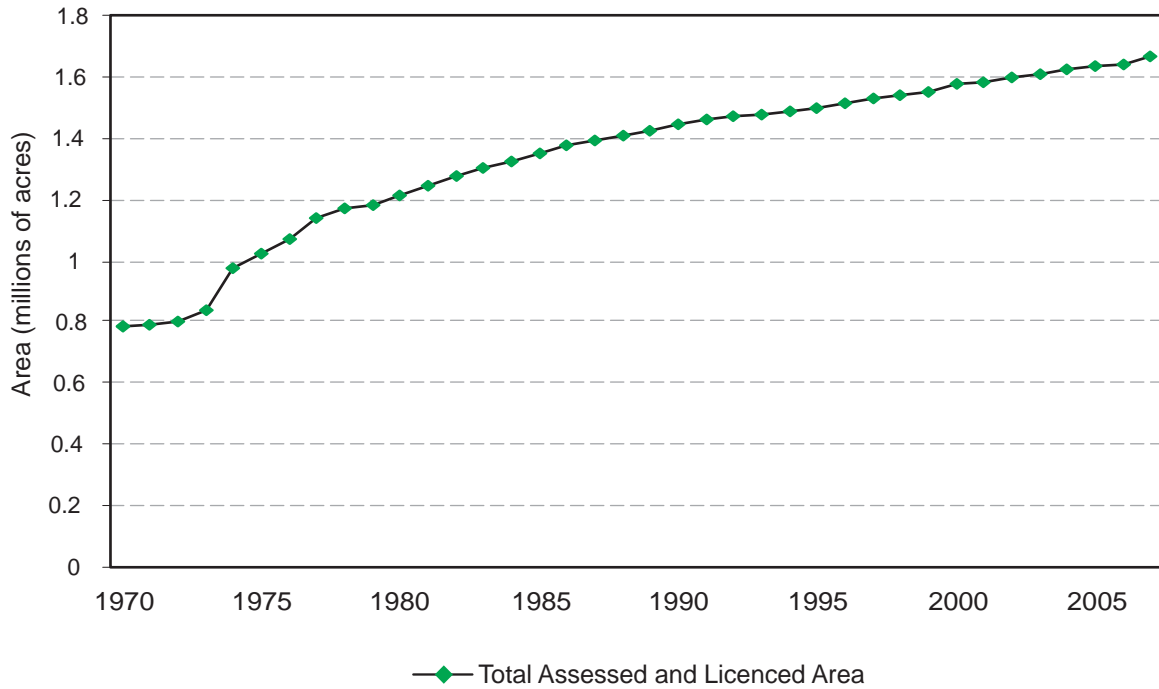
Note: \* The districts levy the following additional surcharges.

- AID – \$2.00 per acre for pipeline delivery in township 2
- \$3.00 per acre for pipeline delivery in township 3
- BRID – \$0.60 per acre inch for excess water use on flood parcels
- LID – \$3.00 per acre for pipeline delivery
- LNID – \$0.15 per psi for pressure pipeline up to and including 40 psi
- \$0.30 per psi for pressure pipeline above 40 psi
- MID – \$1.00 per 10 psi for pressure pipeline
- RID – \$100 per acre inch for volumes over the annual allocation of 17 inches
- WID – \$3.10 per 10 psi delivered

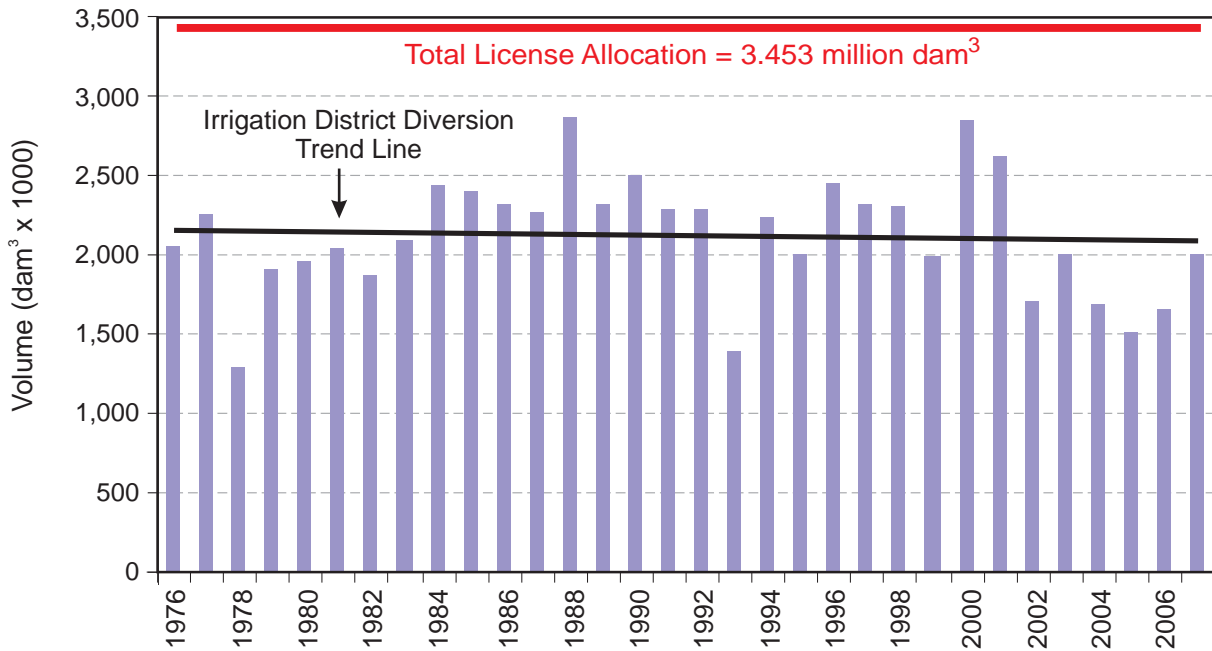
**Table 9. Alberta Irrigation Districts Annual Irrigation Diversions**

DISTRICT	OLDMAN RIVER BASIN										BOW RIVER BASIN			TOTALS
	AID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	BRID	EID	WID	
<b>WATER SOURCE</b>	diversion from Belly River	diversion from Belly River	diversion from Oldman River	diversion from Belly, Waterton, & St. Mary Rivers	diversion from Belly River	diversion from Gros Ck. & Ross Ck.	diversion from SMRID main canal	diversion from Belly, Waterton, & St. Mary Rivers	diversion from SMRID main canal	diversion from Belly & St. Mary Rivers	diversion from Bow River	diversion from Bow River	diversion from Bow River	
<b>EXPANSION LIMITS (acres)</b>	5,000	4,770	177,000	18,300	4,240	1,210	46,500	372,000	82,200	34,400	232,000	311,000	95,000	1,383,620
<b>WATER LICENCE ALLOCATION (acre-feet)</b>	9,000	12,000	334,450	34,000	8,000	3,000	81,000	722,000	158,000	66,210	450,000	762,000	160,400	2,800,060
<b>YEAR</b>	<b>VOLUME OF WATER DIVERTED (acre-feet)</b>													
1976			154,844	9,295		1,981	36,414	339,188	86,330	14,998	309,000	565,100	153,222	1,670,372
77			169,436	18,439		2	48,317	423,509	122,209	31,050	304,600	572,100	137,008	1,826,670
78			85,934	4,378		2,489	12,848	202,066	35,303	10,620	204,268	387,100	102,959	1,047,965
79			138,630	13,059		5,561	24,521	303,097	94,736	23,517	262,593	542,846	138,630	1,547,190
1980			134,576	10,710		0	19,944	340,254	94,858	17,754	287,892	548,686	136,198	1,590,872
81			132,955	8,869		264	22,162	379,075	108,427	12,242	307,452	577,969	108,630	1,658,045
82			142,683	13,068		3,551	27,697	332,337	91,998	19,133	281,000	481,258	129,712	1,522,437
83			150,790	14,363		1,354	14,955	361,537	97,674	24,078	313,897	580,299	146,737	1,705,684
84			177,543	18,857		67	17,544	492,674	101,643	25,093	322,335	657,640	162,140	1,975,536
1985	5,020	8,500	184,029	18,533	4,250	3,827	27,302	425,583	95,751	24,193	337,409	655,188	158,897	1,948,399
86	4,074	6,858	182,408	14,114	3,212	1,832	22,045	406,536	101,597	20,106	309,580	680,592	131,333	1,884,287
87	4,392	5,644	181,597	14,649	3,180	1,321	40,559	426,434	98,621	19,958	275,841	639,928	129,712	1,841,836
88	6,910	9,398	222,943	22,918	6,066	256	55,411	563,621	121,668	30,462	389,186	730,274	171,868	2,336,101
89	4,613	3,517	198,622	12,338	2,750	122	34,540	504,255	78,396	18,372	301,442	605,148	122,416	1,882,719
1990	3,754	5,328	192,136	13,555	3,290	298	32,000	467,244	98,572	16,133	334,304	689,178	128,091	1,983,883
91	3,556	4,468	184,840	12,712	2,662	1,775	30,702	391,634	94,956	17,003	264,340	629,872	147,547	1,694,388
92	2,170	11,216	137,008	15,695	4,118	0	32,070	441,745	101,122	18,628	295,238	625,650	135,387	1,824,187
93	2,126	1,824	61,775	4,848	988	3,300	13,574	218,375	59,278	8,107	222,380	423,551	114,309	1,134,435
94	4,110	4,319	180,000	13,895	3,325	758	28,328	415,162	103,028	16,827	333,446	559,476	132,104	1,794,778
1995	1,802	1,548	110,200	4,248	861	208	17,600	385,290	79,818	7,710	244,160	602,098	116,254	1,574,150
96	4,035	4,892	209,600	12,506	2,660	1,085	45,527	498,483	127,436	19,832	331,342	615,478	117,065	1,989,941
97	6,051	5,193	193,574	12,564	1,529	1,760	38,043	466,000	115,582	20,364	354,420	593,782	116,740	1,925,602
98	4,874	5,331	160,800	9,671	2,323	1,726	33,834	424,700	116,300	14,895	312,164	638,500	142,367	1,867,485
99	3,485	11,415	179,987	25,178	2,499	1,700	42,960	405,000	105,208	20,900	277,097	426,788	88,410	1,590,627
2000	6,000	11,240	245,976	35,375	6,700	0	58,202	562,100	140,046	37,200	374,565	675,000	156,400	2,308,804
01*	3,952	7,593	275,475	21,173	6,814	0	40,207	426,400	94,770	27,526	456,678	685,000	160,000	2,205,588
02	2,938	9,835	109,704	10,788	3,033	N/A	23,552	263,700	53,324	21,283	179,842	430,000	149,577	1,257,576
03	4,598	7,964	187,518	20,711	5,889	N/A	49,723	385,300	86,500	32,500	268,097	459,700	128,700	1,637,200
04	3,440	5,425	159,286	12,391	2,660	N/A	28,224	327,800	64,399	21,600	226,810	417,370	114,000	1,383,405
2005	4,000	6,243	134,088	8,859	2,067	1,190	27,046	306,300	72,487	13,717	209,140	318,000	120,000	1,223,137
06	3,681	5,341	178,500	14,114	3,987	0	37,049	354,500	82,448	20,390	212,751	335,210	73,000	1,320,971
07	3,235	6,330	235,390	18,238	3,600	N/A	34,493	419,600	100,903	31,801	251,477	417,830	68,000	1,603,730
Percent of Licence (2007)	35.9%	52.8%	70.4%	53.6%	45.0%	0.0%	42.6%	58.1%	63.9%	48.0%	55.9%	54.8%	42.4%	57.3%
Average Volume	4,035	6,497	168,526	14,378	3,411	1,138	31,794	392,742	94,543	20,562	292,336	555,207	129,294	1,711,188

Notes: – Data are obtained from Alberta Environment for AID, LID, MVID, RCID, and UID, and Irrigation Districts for BRID, EID, LNID, MID, RID, SMRID, TID, and WID.  
 – RCID has a second supply from Ross Creek, but data has not been consistently recorded at that location.  
 – Diversion data represent the gross diversion into and through the works of the districts and include volumes used directly for irrigation purposes, reservoir filling and the water supplied or licensed to municipal, domestic, other agricultural, industrial and environmental uses.  
 – UID licence amended in 2004, re-allocating 1300 acre-feet of diversion authority to the Southeast Alberta Water Cooperative.  
 – \*Water rationing in effect for MID, RID, SMRID, and TID in 2001.

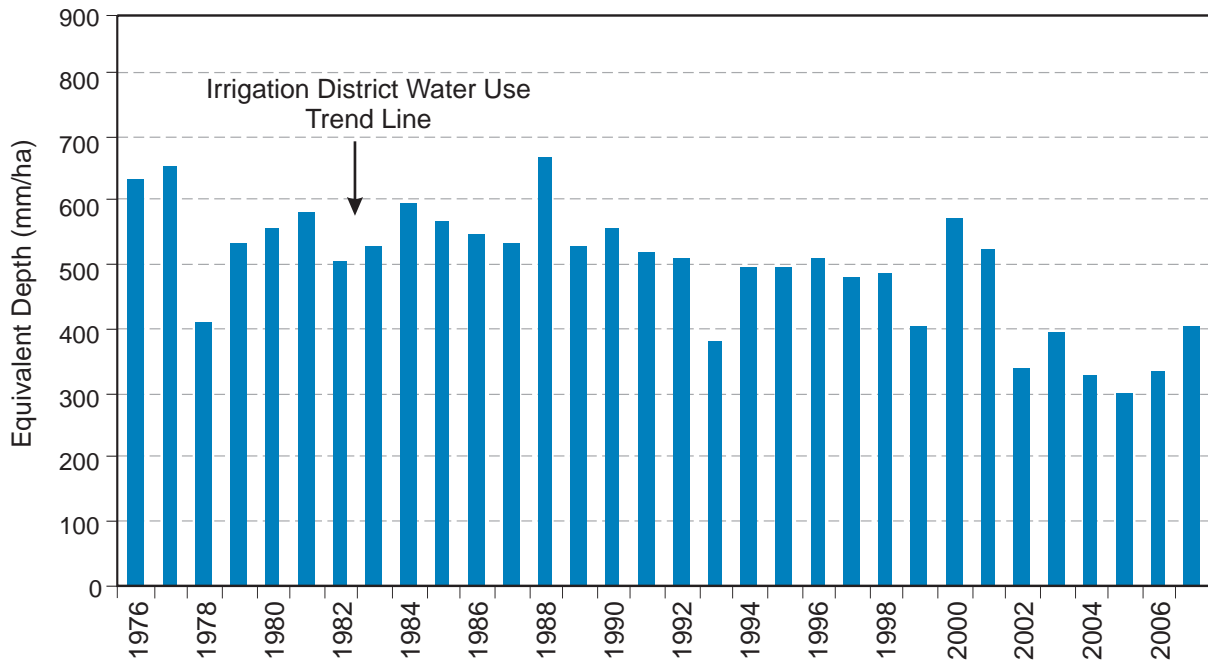


**Figure 5. Growth in Irrigation Across Alberta (1970 - 2007)**



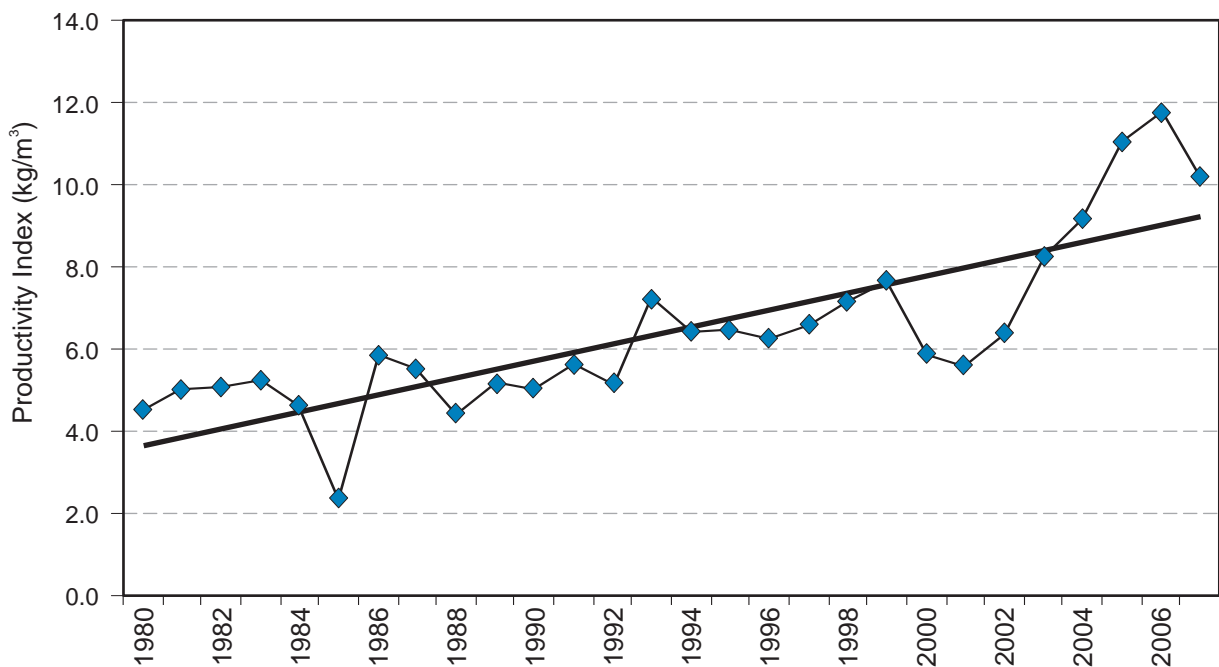
**Figure 6. Irrigation District Annual Diversions (1976 - 2007)**

Note: The annual gross diversion volumes represent the gross volume of water diverted into the works of all 13 irrigation districts and includes water distributed for irrigation purposes, volumes which may have accrued as net gains in reservoir storage, and volumes diverted through the works of the districts for other uses such as domestic, municipal, other agricultural, industrial, recreational and habitat enhancement purposes.



**Figure 7. Irrigation District Water Use and Allocation (1976 - 2007)**

Note: Irrigation district water use is annual gross diversion of water (into the works of all 13 irrigation districts), divided by the total number of hectares actually irrigated. However, this “depth” also includes water which may have accounted as net gains in reservoir storage water diverted for other uses such as domestic, municipal, other agricultural, industrial, recreational and habitat enhancement purposes.



**Figure 8. Irrigation District Water Use Productivity (1980 - 2007)**

Note: Commodity yield per unit area divided by the volume of irrigation water diverted per unit area provides a measure of productive output per unit of irrigation water used. The historical yields of sugar beets (as recorded by the Alberta Sugar Beet Growers Marketing Board), the historical yields of potatoes (as compiled by the Potato Growers of Alberta) and the historical yields of soft white spring wheat (as provided by the Alberta Soft Wheat Growers) are tallied and then divided by the respective annual gross water use values of the 13 irrigation districts to derive a ‘Productivity Index’.

**Table 10. Conveyance Infrastructure by Type of Works**

Irrigation District	REHABILITATED										UN-REHABILITATED		Total Conveyance Works (km)
	Membrane-Lined Canals		Pipelines - Closed		Pipelines - Open		Concrete - Lined		Earth Canals		Un-Rehabilitated Canals		
	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	
AID	3.8	11.2%	16.0	47.1%	0.2	0.6%	0.0	0.0%	1.2	3.5%	12.8	37.6%	<b>34</b>
BRID	179.8	17.1%	315.6	30.0%	15.1	1.4%	34.4	3.3%	224.9	21.4%	283.5	26.9%	<b>1053</b>
EID	313.1	16.3%	826.8	43.1%	41.8	2.2%	0.0	0.0%	213.3	11.1%	521.9	27.2%	<b>1917</b>
LID	2.0	3.7%	28.7	53.6%	0.3	0.6%	0.0	0.0%	11.7	21.9%	10.8	20.2%	<b>54</b>
LNID	56.8	7.7%	339.5	45.7%	12.6	1.7%	48.6	6.5%	68.1	9.2%	216.5	29.2%	<b>742</b>
MID	1.2	1.2%	54.5	52.8%	1.1	1.1%	0.3	0.3%	36.9	35.8%	9.2	8.9%	<b>103</b>
MVID	0.0	0.0%	15.0	37.8%	1.8	4.5%	0.0	0.0%	17.0	42.8%	5.9	14.9%	<b>40</b>
RCID	1.3	4.0%	13.0	40.2%	1.7	5.3%	0.0	0.0%	9.5	29.4%	6.8	21.1%	<b>32</b>
RID	0.0	0.0%	104.5	43.6%	8.0	3.3%	0.0	0.0%	95.2	39.7%	32.0	13.4%	<b>240</b>
SMRID	66.3	3.7%	766.4	43.3%	17.4	1.0%	96.3	2.6%	460.6	26.0%	411.2	23.3%	<b>1818</b>
TID	57.7	17.5%	155.0	46.9%	11.7	3.5%	8.7	2.6%	70.8	21.4%	26.7	8.1%	<b>331</b>
UID	15.8	6.6%	52.3	21.8%	30.7	12.8%	0.3	0.1%	57.6	24.0%	83.6	34.8%	<b>240</b>
WID	38.4	3.6%	71.8	6.7%	33.5	3.1%	5.3	0.5%	149.1	13.8%	779.3	72.3%	<b>1077</b>
<b>Total</b>	<b>736</b>	<b>9.6%</b>	<b>2,759</b>	<b>36.2%</b>	<b>176</b>	<b>2.3%</b>	<b>144</b>	<b>1.9%</b>	<b>1,416</b>	<b>18.6%</b>	<b>2,400</b>	<b>31.5%</b>	<b>7681</b>
Headworks Owned by Alberta Environment (AENV)												<b>339</b>	
Total Length of Conveyance System in Southern Alberta (km)												<b>8020</b>	

NOTE: Rehabilitated infrastructure includes those works re-constructed through:

- the Irrigation Rehabilitation Program (IRP)
- Alberta Environment's headworks improvement program
- individual district O & M program

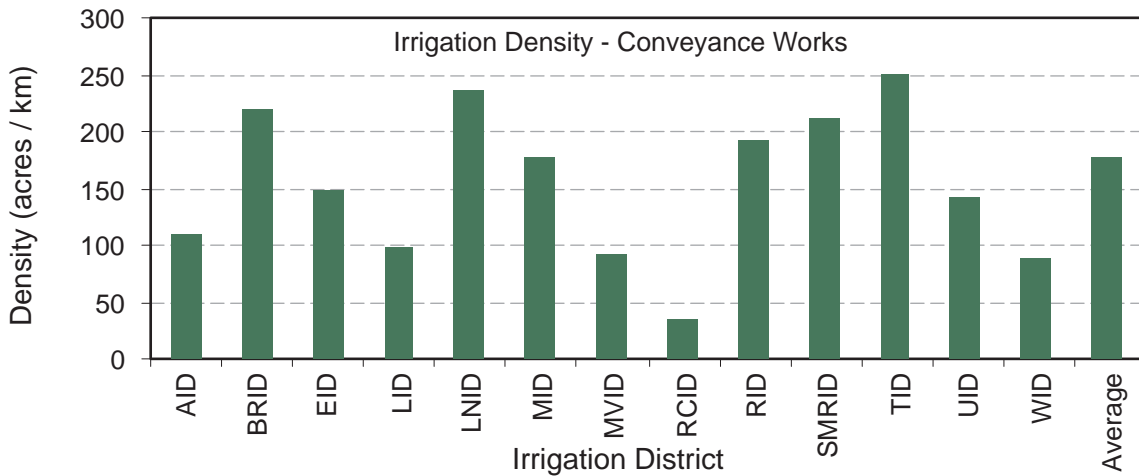
Totals only include irrigation conveyance works, ie. does not include domestic water supply



**Table 11. Irrigation District Infrastructure by Length and Replacement Cost**

IRRIGATION DISTRICTS	CONVEYANCE WORKS	DRAINAGE WORKS		MAJOR STRUCTURES	TOTAL of ALL WORKS
	(length - km) (replacement cost)	CONSTRUCTED (length - km) (replacement cost)	NATURAL (length - km) (replacement cost)	(number of units) (replacement cost)	(length - km) (replacement cost)
AID	34 \$10,404,820	0 \$0	19 \$304,925	0 \$0	53 \$10,709,745
BRID	1053 \$387,139,735	54 \$3,309,730	502 \$5,678,134	22 \$97,752,916	1,609 \$493,880,515
EID	1917 \$668,258,361	172 \$7,615,049	1704 \$15,545,438	61 \$349,421,106	3,793 \$1,040,839,954
LID	53 \$12,800,754	10 \$435,135	0.4 \$6,464	0 \$0	63 \$13,242,353
LNID	742 \$250,581,776	19 \$863,932	224 \$2,755,947	2 \$2,879,826	985 \$257,081,481
MID	103 \$28,826,867	13 \$619,404	150 \$2,139,413	0 \$0	266 \$31,585,684
MVID	40 \$14,804,083	1 \$32,955	0 \$0	0 \$0	41 \$14,837,038
RCID	26 \$4,213,814	3 \$104,966	5 \$19,809	1 \$135,000	34 \$4,473,589
RID	240 \$70,498,302	19 \$965,690	188 \$3,511,575	0 \$0	447 \$74,975,567
SMRID	1818 \$648,717,683	33 \$2,526,628	346 \$4,986,030	48 \$335,617,499	2,197 \$991,847,840
TID	331 \$120,787,353	56 \$3,943,887	16 \$156,443	12 \$14,168,210	402 \$139,055,893
UID	240 \$77,397,137	4 \$295,672	56 \$670,794	11 \$16,206,484	300 \$94,570,087
WID	1077 \$323,990,870	8 \$643,943	864 \$15,530,846	13 \$18,179,874	1,948 \$358,345,533
<b>DISTRICT TOTALS</b>	<b>7,674</b> <b>\$2,618,421,555</b>	<b>392</b> <b>\$21,356,991</b>	<b>4,073</b> <b>\$51,305,818</b>	<b>170</b> <b>\$834,360,915</b>	<b>12,140</b> <b>\$3,525,445,279</b>

NOTE: – Constructed drainage works include both open channels and pipelines.  
 – Natural drains are those channels that exist as natural watercourses and provide a means to drain unused tailwater away from irrigated works.  
 – Total of All Works length values include the summation of conveyance and drainage works only.



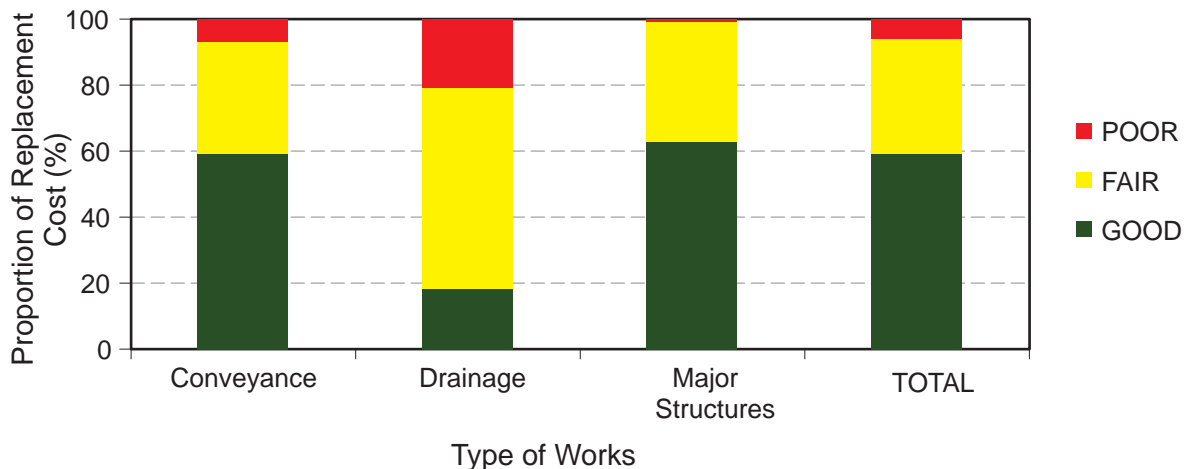
**Figure 9. Density of Irrigation Area Relative to Infrastructure**

Note: Irrigation Density is a measure of the “compactness” of an irrigation district. Greater compactness or being able to serve more irrigated area per unit of conveyance length is one factor that leads to opportunities for conveying water more efficiently.

**Table 12. Summary of Condition Assessments (All Works by Replacement Cost)**

Works Category	Good	Fair	Poor	TOTAL
<b>Conveyance</b>	\$1,547,225,644	\$892,410,086	\$178,785,827	\$2,618,421,557
<b>Drainage</b>	\$13,510,695	\$44,687,466	\$15,064,649	\$73,262,810
<b>Major Structures</b>	\$526,840,690	\$300,308,391	\$7,211,834	\$834,360,915
<b>TOTAL</b>	<b>\$2,087,577,029</b>	<b>\$1,237,405,943</b>	<b>\$201,062,310</b>	<b>\$3,526,045,282</b>
<b>Proportion</b>	59.2%	35.1%	5.7%	100%

Note: In 2006, the construction and material costs used in these calculations were updated to reflect current prices. Combined with the updated works conditions, this resulted in an approximate 21% increase over 2005 values. The last valuation was done in 2000. Construction and material costs are updated approximately every five years.



**Figure 10. Irrigation District Infrastructure Condition Rating**

Table 13. Irrigation District Reservoirs

Location	Reservoir	Approximate Date of Impoundment	Live Storage (dam <sup>3</sup> )	Live Storage (acre-feet)
Bow River Irrigation District	Badger	1985	53,650	43,494
	'D' Reservoir	2005	395	320
	'H' Reservoir	1953	2,220	1,800
	Lost Lake	1973 - 1987*	5,050	4,094
	'PFRID' Reservoir	2005	586	475
	Scope	1953	19,740	16,003
	Total storage	-	81,641	66,186
Eastern Irrigation District	Bantry # 1	1968	617	500
	Bantry # 2	1967	5,550	4,500
	Cowoki Lake	1937	19,735	16,000
	Crawling Valley	1984	130,500	105,797
	'J' Reservoir	1949 - 1966*	615	500
	Kitsim	1980	26,520	21,500
	Lake Newell	1914	320,215	259,600
	One Tree	1935	2,345	1,901
	Rock Lake	1956	9,250	7,500
	Rolling Hills	1940 - 2003*	46,000	37,292
	Snake Lake	1997	18,230	14,779
	Tilley "A"	1972	33,300	26,996
	Tilley "B"	1973 - 1979*	38,235	30,997
Total storage	-	651,112	527,862	
Lethbridge Northern Irrigation District	Park Lake	1928	740	600
	Picture Butte	1936	1,600	1,297
	Vandenburg	1992	114	93
	Total storage	-	2,454	1,990
Raymond Irrigation District	Corner Lake	1925	495	400
	Craddock	1925	615	500
	Factory Lake	1925	370	300
	Total storage	-	1,480	1,200
St. Mary River Irrigation District	Bullshead	1954	125	101
	Chin	1954	190,330	154,300
	Cross Coulee	1954	2,590	2,100
	Forty Mile	1987	86,345	70,000
	Murray	1954	30,590	24,800
	North East	1954	2,095	1,698
	Raymond	1954	1,600	1,297
	Sauder	1953 - 1982*	37,745	30,600
	Seven Persons	1953	1,355	1,099
	Sherburne	1952	10,625	8,614
	Stafford	1954 - 1982*	23,315	18,900
	Yellow Lake	1952	18,130	14,690
Total storage	-	404,845	328,199	
Taber Irrigation District	Fincastle	1952	3,085	2,501
	Horsefly	1950	9,250	7,499
	Taber Lake	1955	6,415	5,200
	Total storage	-	18,750	15,200
United Irrigation District	Cochrane Lake	1923	3,100	2,513
Western Irrigation District	Chestermere	1944	5,180	4,200
	Langdon	1979	7,895	6,400
	Total storage	-	13,075	10,600
<b>Grand Total</b>	-	-	<b>1,176,457</b>	<b>953,751</b>

Note: – all reservoirs are off-stream storage sites

\* denotes year of reservoir enlargement

**Table 14. Provincially Owned and Operated Reservoirs**

Source Supply for:	Reservoir	Approximate Date of Impoundment	Live storage (dam <sup>3</sup> )	Live storage (acre-feet)
Bow River Irrigation District	Little Bow	1920	21,078	17,088
	McGregor	1914	351,059	284,604
	Travers *	1954	104,638	84,830
	Total Storage	-	476,775	386,522
Lethbridge Northern Irrigation District	Keho	1920	95,635	77,531
	Oldman River *	1991	490,180	397,390
	Total Storage	-	585,815	474,921
Ross Creek Irrigation District	Cavan	1950	4,625	3,750
Mountain View, Leavitt, Aetna	Payne	1942	8,690	7,045
St. Mary Project (SMRID, MID, TID, RID)	Jensen *	1948	19,000	15,403
	Milk River Ridge	1957	127,297	103,200
	St Mary *	1951	369,310	299,400
	Waterton *	1965	111,196	90,147
	Total Storage	-	626,803	508,150
Diversions Outside of Irrigation Districts	Chain Lakes *	1966	14,679	11,900
	Twin Valley Dam *	2003	62,700	50,831
	Pine Coulee	1998	51,000	41,346
	Women's Coulee	1949	362	293
	Total Storage	-	128,741	104,370
<b>Grand Total</b>	-	-	<b>1,831,449</b>	<b>1,484,759</b>

Note: – \* denotes on-stream storage reservoir

**Table 15. Hydroelectric Plants Associated with Water Distribution Works**

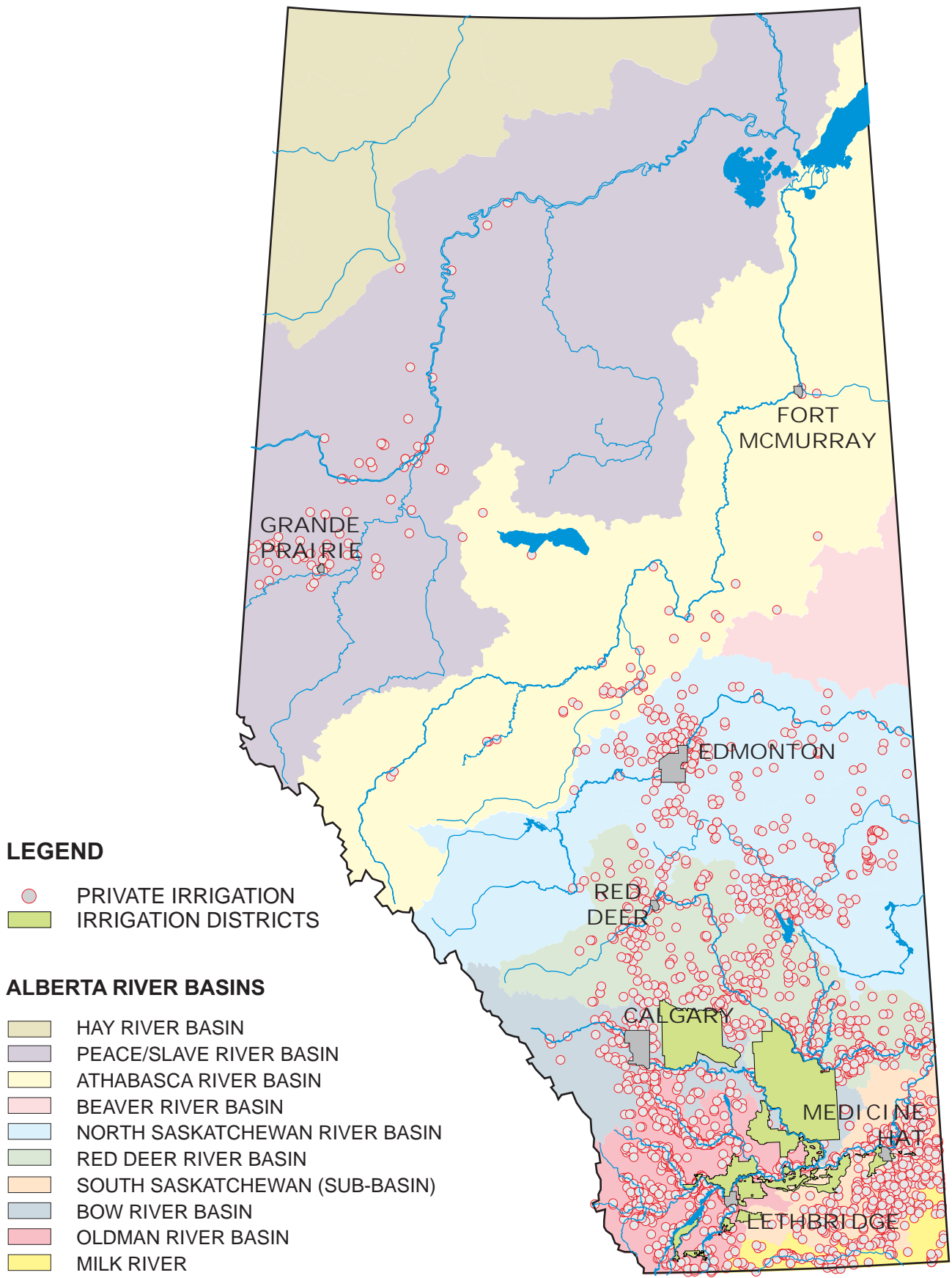
Location	Owner	Capacity (megawatts)
Oldman Reservoir	ATCO Electric	32.0
Waterton Reservoir	Canadian Hydro	2.8
Belly River Chute	Canadian Hydro	3.0
St. Mary Reservoir	Canadian Hydro	2.5
Taylor Coulee Chute (Jensen Reservoir)	Canadian Hydro	12.7
Raymond Reservoir	Irrican	20.5
Chin Chute (Chin Reservoir)	Irrican	11.0
SMRID - Main Canal Drops #4, #5 and #6	Irrican	7.0

**Table 16. Private Water Licences for Irrigation in Alberta**

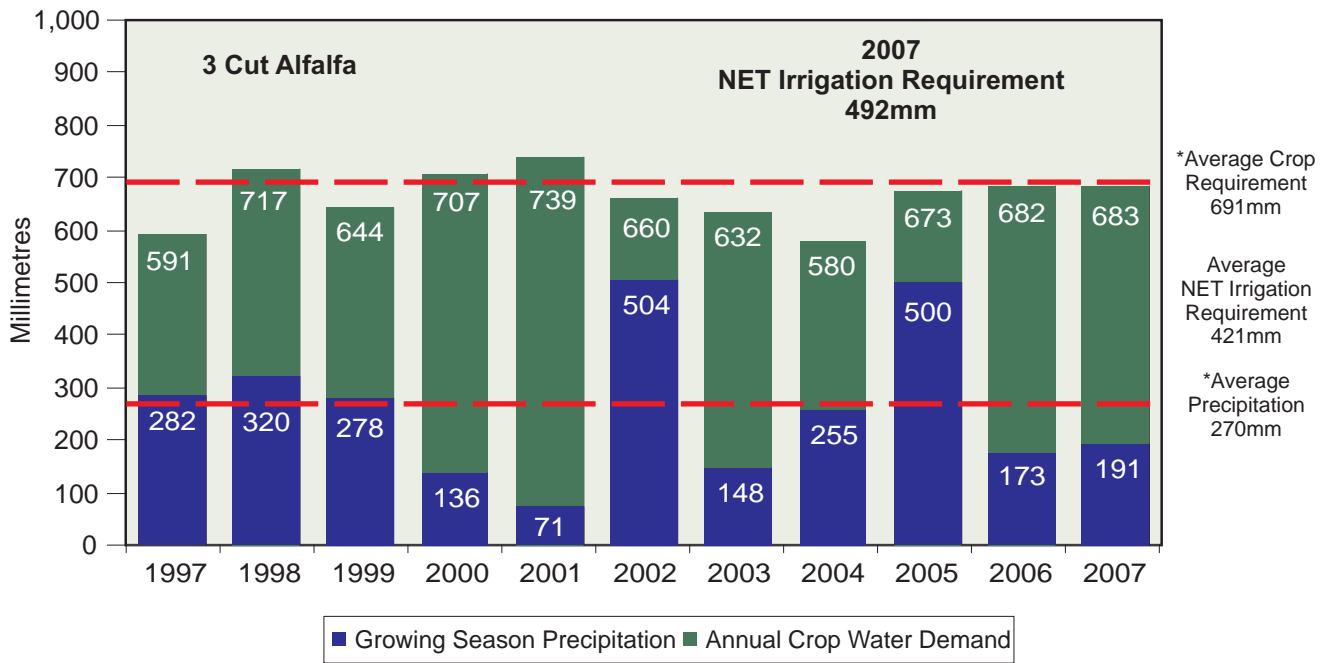
There are 2,924 individual irrigation projects, outside of the 13 irrigation districts, irrigating approximately 310,733 acres in Alberta. These projects vary in size from 1 acre to over several thousand acres of agricultural or horticultural production. Each of these projects is licensed to an individual, a group of producers or to private or public lands (ie. golf courses or parks). The agricultural feasibility of these projects is reviewed by Alberta Agriculture and Rural Development and the licencing is regulated by Alberta Environment.

RIVER BASIN	Total Acres Irrigated	No. of Licences 1 to 100 ac.	No. of Licences 101 to 300 ac.	No. of Licences over 300 ac.
ATHABASCA RIVER	2,213	42	5	1
MILK RIVER	18,823	98		14
NORTH SASKATCHEWAN RIVER	28,194	331	57	15
PEACE RIVER	3,501	72	9	0
SOUTH SASKATCHEWAN RIVER				
- Bow River	28,915	156	61	20
- Little Bow River	29,958	133	63	22
- Lower Oldman River	15,725	22	24	11
- Red Deer River	45,779	421	89	19
- South Saskatchewan River	47,815	535	81	25
- Upper Oldman River	7,545	64	22	3
- Waterton / Belly / St. Mary Rivers	52,253	132	72	19
- Willow Creek	30,012	151	75	17
<b>Total (2007)</b>	<b>310,733</b>	<b>2,157</b>	<b>601</b>	<b>166</b>
2006	296,964	2,150	579	159
2005	293,055	2,138	572	154
2004	285,276	2,113	575	152
2003	283,254	2,108	571	149
2002	275,599	2,100	567	141
2001	272,353	2,085	558	143
2000	277,826	2,076	555	140
1999	257,258	1,863	509	137
1998	255,192	1,884	501	138
1997	253,868	1,893	486	129

Notes: – upper Oldman reach is defined as upstream of the Belly River confluence  
– lower Oldman reach is defined as downstream of the Belly River confluence  
– 25,000 acres from the Waterton / Belly / St. Mary Rivers category is for the Blood Tribe Agricultural Project  
– does not include irrigation licences issued to irrigation districts in southern Alberta  
– data are obtained from Alberta Environment  
– licence authorization as of January 2007



**Figure 11. Private Irrigation in Alberta**

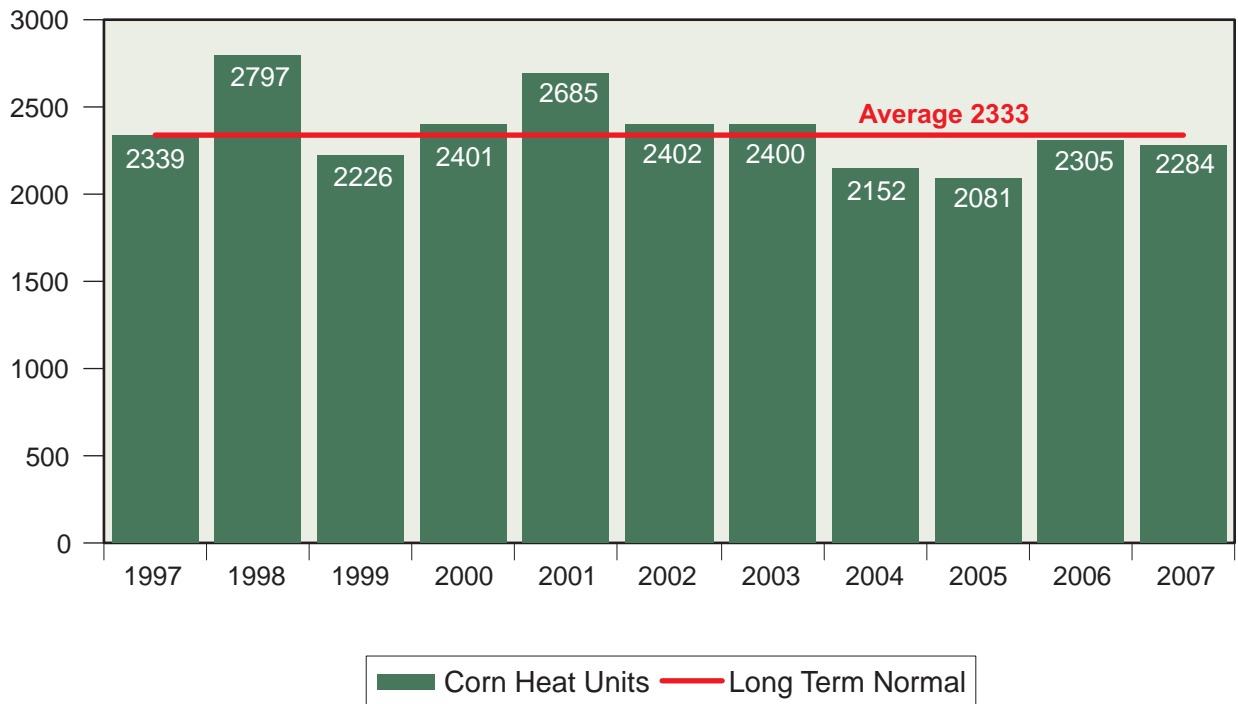


**Figure 12. Lethbridge Optimum Crop Water and Net Irrigation Requirements (1997 - 2007)**

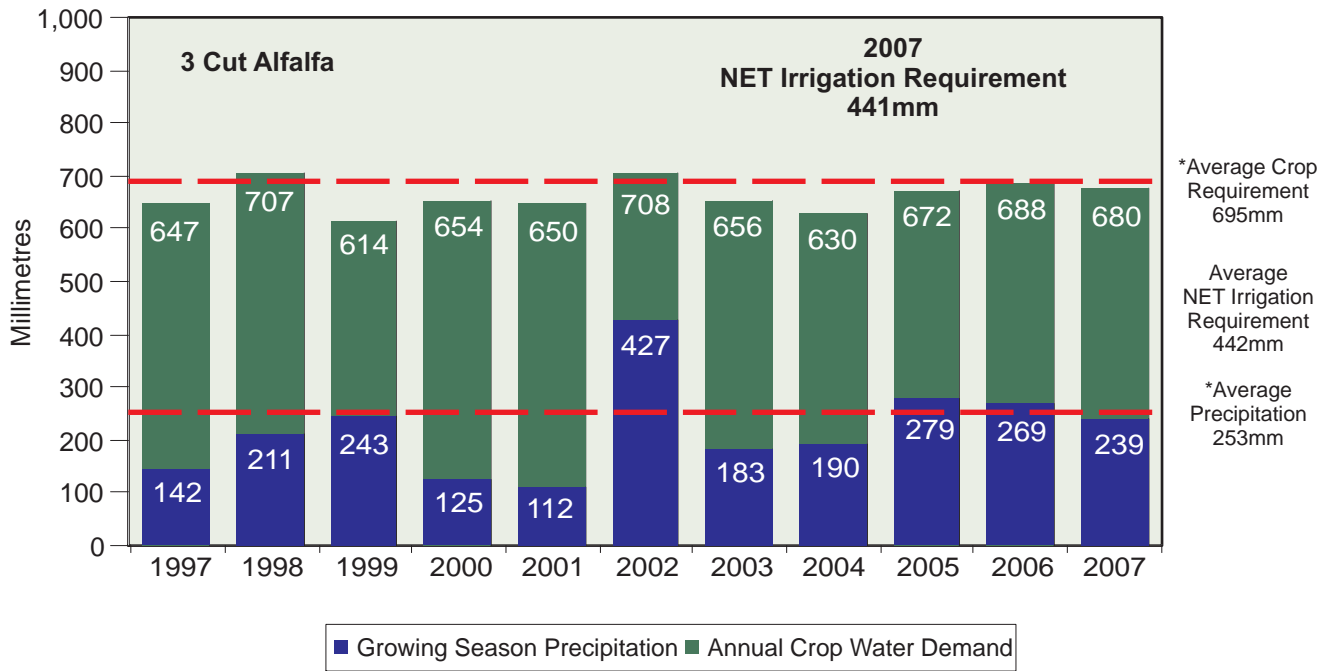
Note: The high water use, 3 cut alfalfa is used in these examples because this crop's annual growing season closely coincides with the annual irrigation season.

The difference between the total crop water requirement and total precipitation is the NET irrigation requirement.

\*The average crop requirement and average precipitation are from the period 1970 to 2007.



**Figure 13. Lethbridge Corn Heat Units (1997 - 2007)**

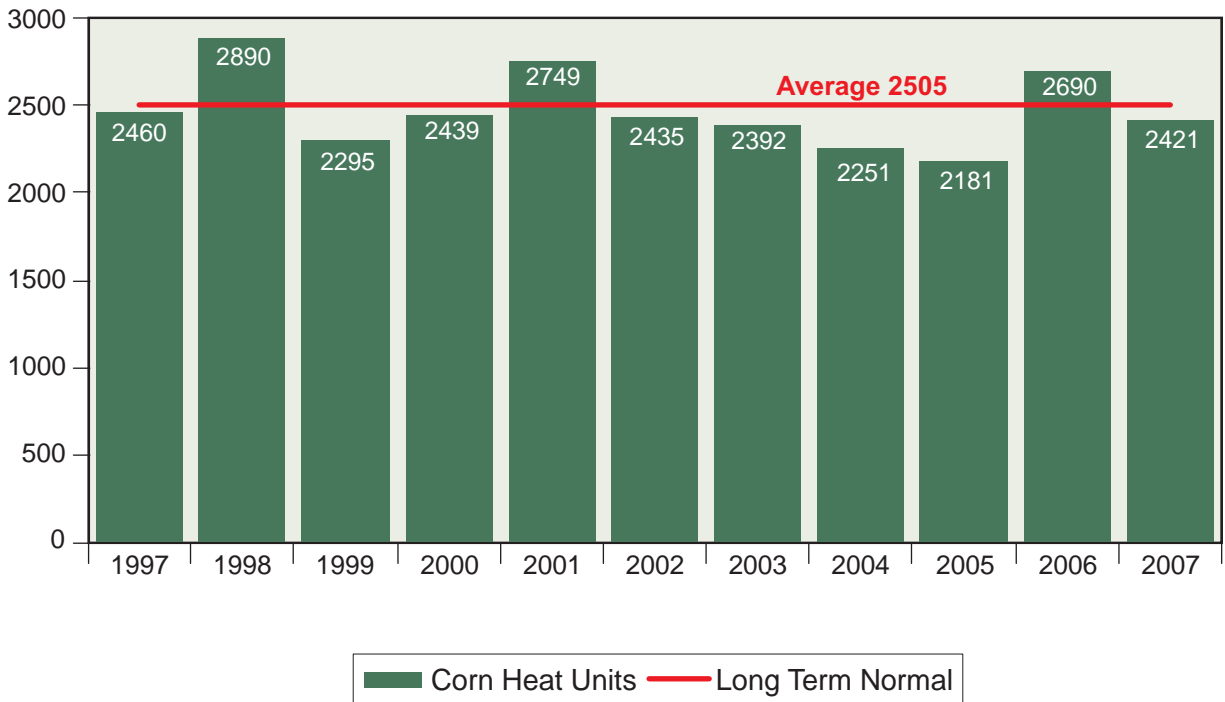


**Figure 14. Bow Island Optimum Crop Water and Net Irrigation Requirements (1997 - 2007)**

Note: The high water use, 3 cut alfalfa is used in these examples because this crop's annual growing season closely coincides with the annual irrigation season.

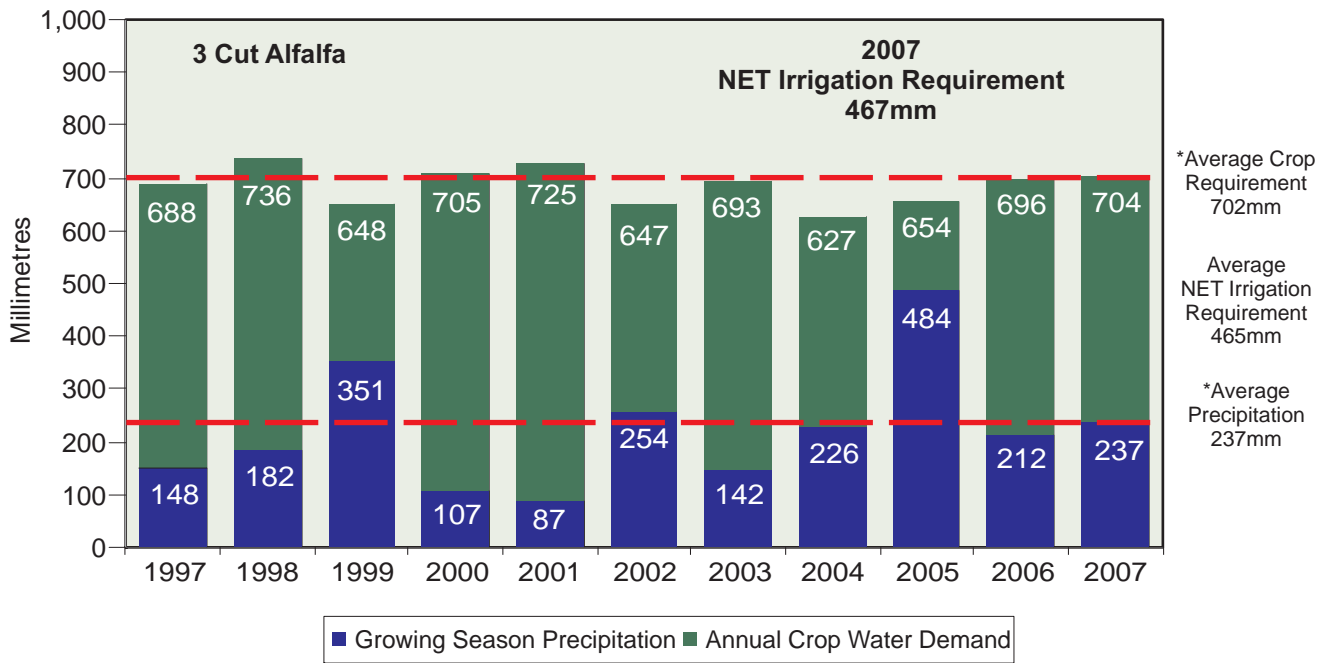
The difference between the total crop water requirement and total precipitation is the NET irrigation requirement.

\*The average crop requirement and average precipitation are from the period 1970 to 2007.



**Figure 15. Bow Island Corn Heat Units (1997 - 2007)**



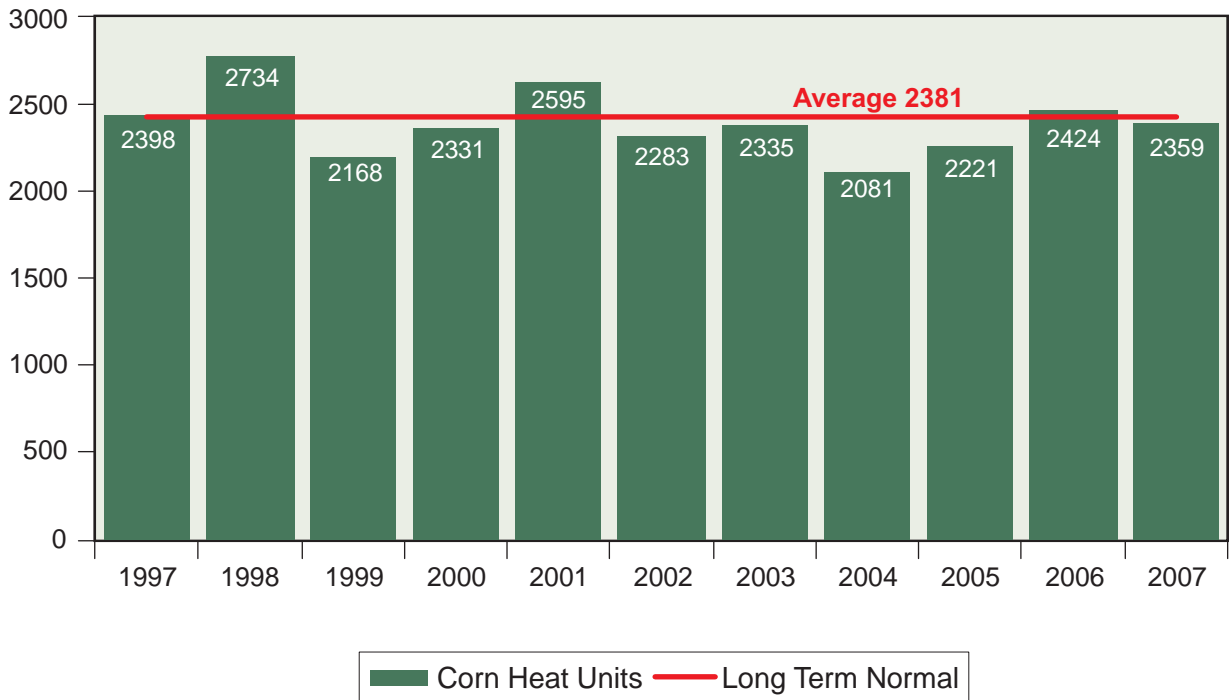


**Figure 16. Brooks Optimum Crop Water and Net Irrigation Requirements (1997 - 2007)**

Note: The high water use, 3 cut alfalfa is used in these examples because this crop's annual growing season closely coincides with the annual irrigation season.

The difference between the total crop water requirement and total precipitation is the NET irrigation requirement.

\*The average crop requirement and average precipitation are from the period 1970 to 2007.



**Figure 17. Brooks Corn Heat Units (1997 - 2007)**

**Table 17. Historical Rainfall in Southern Alberta (April 15 to October 15)**

AREA	MAXIMUM RAINFALL (mm)	MINIMUM RAINFALL (mm)	NORMAL RAINFALL* (mm)	2007 RAINFALL (mm)	2007 % OF NORMAL
Lethbridge	534 (1978)	71 (2001)	270	191	71%
Bow Island	439 (1993)	112 (2001)	253	239	94%
Brooks	484 (2005)	87 (2001)	237	237	100%

\* Note: Normal rainfall 1970 - 2007

**Table 18. Historical Corn Heat Units in Southern Alberta (May 15 to 1st Killing Frost)**

AREA	MAXIMUM CHU (1997-2007)	MINIMUM CHU (1997-2007)	LONG TERM NORMAL*	2007 CHU	2007 % OF NORMAL
Lethbridge	2797 (1998)	2081 (2005)	2333	2284	98%
Bow Island	2890 (1998)	2181 (2005)	2505	2421	97%
Brooks	2734 (1998)	2081 (2004)	2381	2359	99%

\* Note: Long term normal - 25 year period

**Table 19. Frost Free Period (0° C) in Southern Alberta**

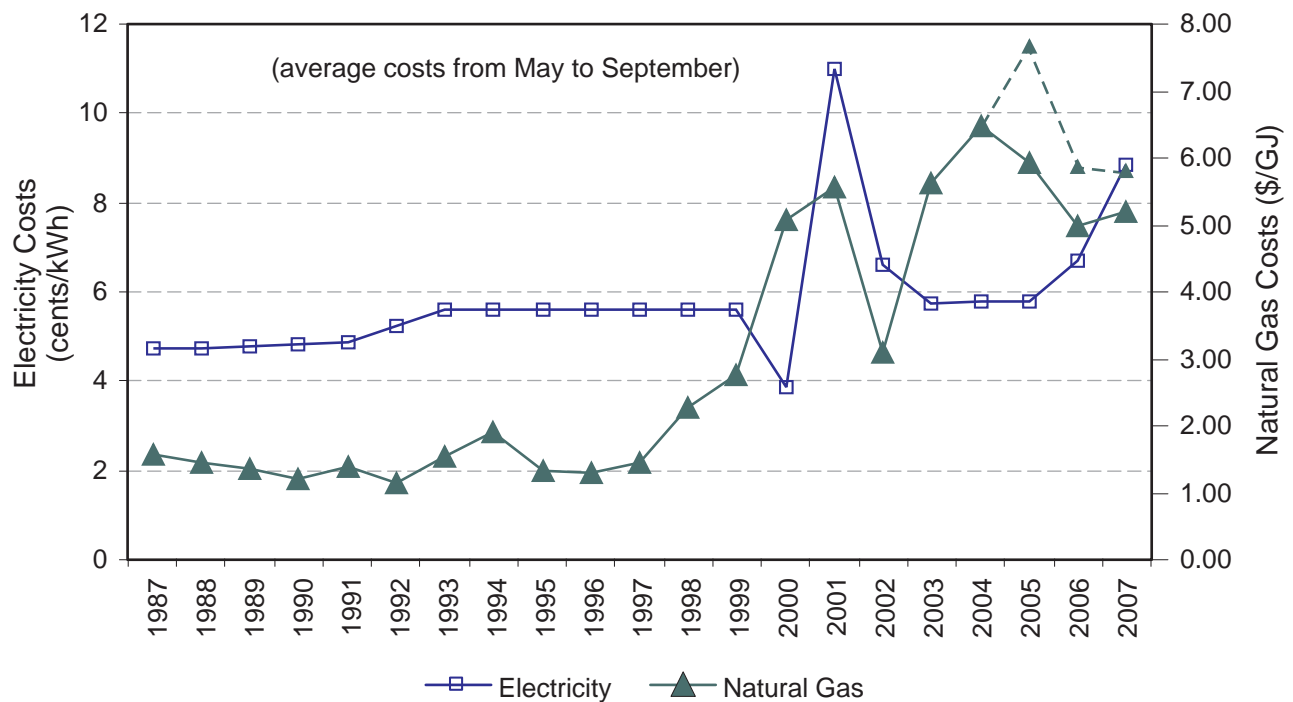
AREA	AVERAGE LAST FROST	AVERAGE FIRST FROST	AVERAGE FROST FREE DAYS*	2007 FROST FREE DAYS	2007 % OF NORMAL
Lethbridge	May 23	Sept 17	117	144	123%
Bow Island	May 17	Sept 20	126	144	114%
Brooks	May 22	Sept 14	115	144	125%

\* Note: Average frost free days 1951 - 1980

**Table 20. Frost Free Period (-2° C) in Southern Alberta**

AREA	AVERAGE LAST FROST	AVERAGE FIRST FROST	AVERAGE FROST FREE DAYS*	2007 FROST FREE DAYS	2007 % OF NORMAL
Lethbridge	May 6	Oct 1	148	161	109%
Bow Island	Apr 28	Sept 30	155	165	106%
Brooks	May 8	Sept 29	144	155	108%

\* Note: Average frost free days 1951 - 1980



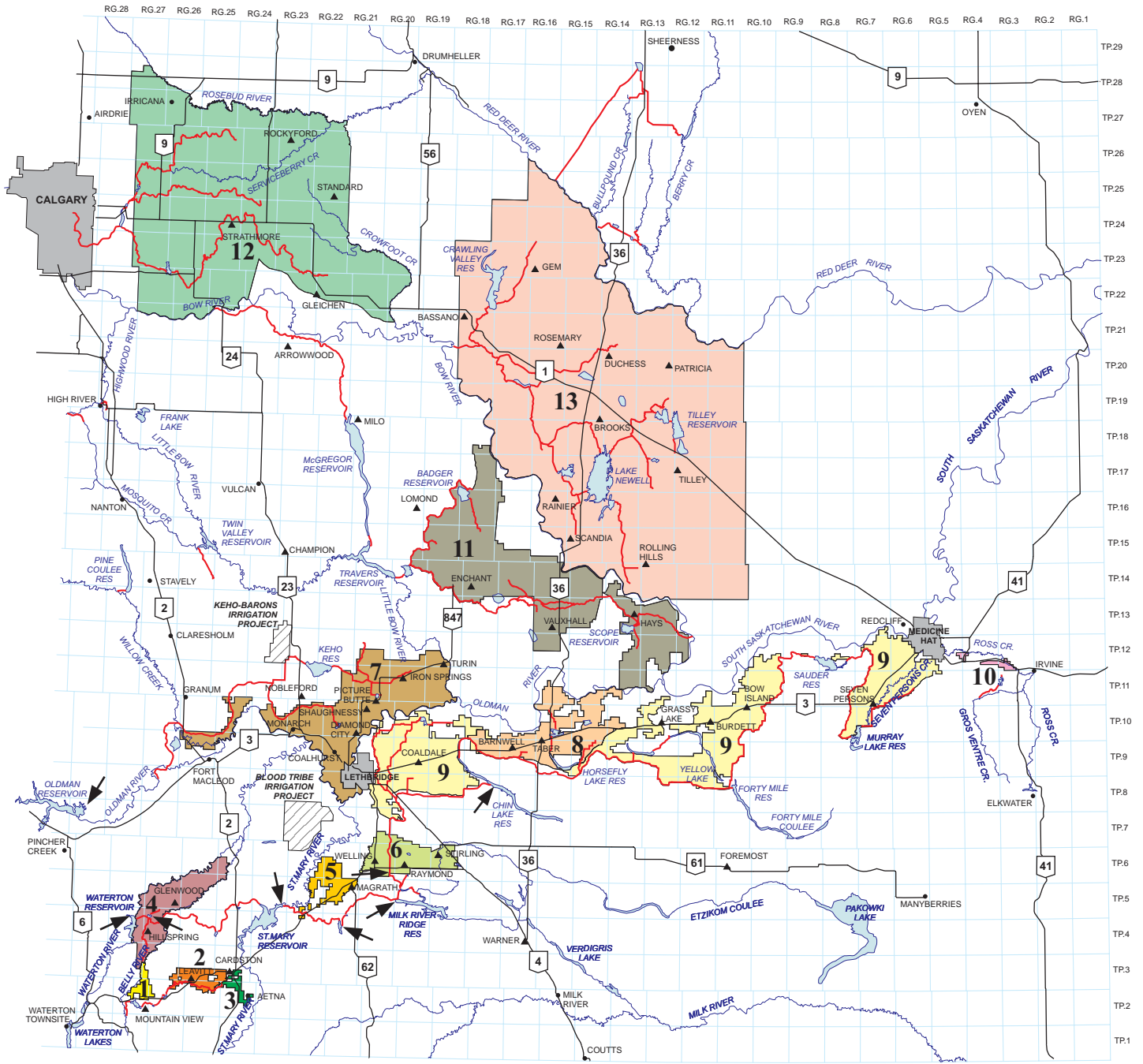
**Figure 18. Historical Irrigation Energy Costs**

Note: 2007 Natural Gas cost reduced by an average \$0.60 per GJ – Alberta Government rebate

**Table 21. Energy Type Used in the Irrigation Districts (acres irrigated by energy type)**

Energy Type	BRID	EID	LNID	MID	RID	SMRID	TID	UID	WID	Average Energy Type
Electricity	61.2% 129,105	31.5% 89,475	43.7% 74,510	9.2% 1,683	32.9% 14,871	49.1% 176,318	56.2% 45,255	40.9% 5,991	27.4% 26,345	39.1%
Natural Gas	21.4% 45,075	28.7% 81,523	40.7% 69,366	56.7% 10,384	50.5% 22,842	44.0% 158,038	37.8% 30,385	14.1% 2,064	26.4% 25,404	35.6%
Diesel	4.0% 8,387	5.2% 14,853	0.7% 1,179	0.0% 0	1.0% 444	1.5% 5,446	1.0% 775	1.3% 189	7.8% 7,539	2.5%
Gravity	12.6% 26,659	32.1% 91,324	11.0% 18,698	33.9% 6,203	7.4% 3,330	4.9% 17,584	4.8% 3,856	43.7% 6,409	31.0% 29,827	20.1%
Pump Pressure	0.2% 397	0.7% 2,004	2.5% 4,204	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.1% 125	0.4%
Other*	0.6% 1,269	1.0% 2,856	0.7% 1,192	0.2% 30	2.0% 891	0.4% 1,342	0.2% 185	0.1% 12	7.3% 7,052	1.4%
Unknown	0.1% 168	0.8% 2,384	0.8% 1,296	0.0% 0	6.4% 2,888	0.0% 130	0.0% 15	0.0% 0	0.0% 0	0.9%

Notes: – \* other includes gasoline, propane or butane  
– AID, LID, MVID and RCID did not report any data



- 1 Mountain View Irrigation District
- 2 Leavitt Irrigation District
- 3 Aetna Irrigation District
- 4 United Irrigation District
- 5 Magrath Irrigation District
- 6 Raymond Irrigation District
- 7 Lethbridge Northern Irrigation District
- 8 Taber Irrigation District
- 9 St. Mary River Irrigation District
- 10 Ross Creek Irrigation District
- 11 Bow River Irrigation District
- 12 Western Irrigation District
- 13 Eastern Irrigation District

- ▲ Communities receiving irrigation water
- Communities not receiving irrigation water
- ↙ Hydroelectric plants associated with water distribution works
- Main canals

There are 13 irrigation districts in southern Alberta providing water to 1,356,245 assessed acres of farmland. The infrastructure within these irrigation districts is comprised of approximately 8,020 kilometers of conveyance system, of which 339 kilometers are owned and operated by Alberta Environment.

**Figure 19. Alberta's Irrigation Districts**